Preserving Our Natural Heritage

I 29.2: H42/2/v.1

GOVT. DOCUMENTS
DEPOSITORY ITEM

OCT 10 1990

CLEMSON
LIBRARY

CLEMSON UNIVERSITY LIBRARY
DOCUMENTS DEPT.

Preserving Our Natural Heritage

Volume I
FEDERAL ACTIVITIES

[Information herein current as of October 31, 1975]

Prepared for the U.S. Department of the Interior
National Park Service
Office of the Chief Scientist
by
The Nature Conservancy
and
Published in cooperation with the U.S. Man and the Biosphere Program

---

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

Stock Number 024-005-00681-8

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

Library of Congress Catalog Card Number 77-077480

CLEMSON UNIVERSITY LIBRARY
DOCUMENTS DEPT.

Preface

This volume is a contribution to the exchange of information among nations. The information offered for exchange here concerns the way in which the United States attempts to protect certain areas of ecological value. The present volume concerns only the efforts of departments and agencies of the Federal government to protect such areas; it does not deal with the efforts of state or local governments or private organizations. Even given this built-in simplication, however, the facts of natural area protection have proven difficult to collect because different departments and agencies use different categories and pay different degrees of attention to the enterprise. There is no single source of natural area information at the Federal level.

This volume is also a contribution to the effort in this country to protect the elements of our natural heritage. It has drawn together an immense amount of information from a variety of sources. It represents the best and most current overview of Federal natural areas activities to date. The hope is that it will be continually updated and will remain a useful working document.

A great many people both in and out of the Federal government have given generously of their time to make this volume possible. It is impossible to name them all; to single out a few would undoubtedly lead us inadvertently to leave out others equally deserving of special mention. The Nature Conservancy simply wishes to thank all those people who gave us advice, read drafts of chapters, or helped in other ways for their substantial contribution.

Project staff:

Hardy Wieting, Jr.
Legal Advisor, Government Program
Director

Susan Lukowski
Associate Director

Nancy Buckingham
Research Assistant

Myron Schamis
Research Assistant

John Humke
Senior Advisor

Table of Contents

PART ONE

INTRODUCTION

Chapter One:

Origins of the Project and Basic Information

1.1 Origins and nature of the project

Two international events have added special urgency to a long-standing need for a comprehensive study of the protection of the natural heritage of this country. The first is the establishment by Unesco of its Programme on Man and the Biosphere. The program was officially established by the 16th Session of the General Conference of Unesco in 1970.[1] In general terms, the program is an intergovernmental, interdisciplinary, problem-solving effort; it is concerned with the structure and functioning of the biosphere and its ecological regions and with the interaction of human impact on the biosphere and of the impacted biosphere on human beings. The present 14 projects which constitute the program were accepted by its supervisory body, the International Coordinating Council, in 1974. Projects 1 through 7 of the program deal with particular geographic regions (tropical forests, temperate forests, grazing lands, arid land, fresh and marine water, islands, and mountains and tundra). Projects 9 through 14 are concerned with systems and processes (major engineering works, demographic changes, urban systems, pesticide management, environmental perception, and pollution).

Project 8 is concerned with the development of an international network of "biosphere reserves," or protected natural areas, for research and conservation of the genetic material these areas contain.[2] In addition to conserving genetic material of presently or potentially useful species, the areas are to be baselines against which change can be measured and the performance of other ecosystems judged. Two basic types of reserves are distinguished: natural ecosystems where human influence has been and will continue to be slight; and ecosystems exhibiting human impact.

A distinction is also drawn between reserves representative of the biomes of the world and reserves constituting unique areas. A task force was set up in 1973 to consider various questions relating to the selection and establishment of both sorts of reserves. A final report was issued by this task force in 1974.[3] The essential criteria for selecting representative areas were: (1) representativeness of the characteristic features of a particular biome; (2) diversity, in the sense of maximum representation of ecosystems, communities and organisms characteristic of the biome; (3) naturalness or absence of human impact; and (4) effectiveness of the area as a conservation unit. It is agreed that a biosphere reserve has to be large enough so that the diversity of species which interact with each other within the reserve can be effectively preserved over as long a period as possible; appropriate legal and administrative authority making such protection possible is also necessary. Selection of unique areas is to be based on some specific characteristic or combination of characteristics which distinguish them from other parts of the biome to which they belong. To give examples used in the report: centres of distribution of rare or endangered species; areas where there is a confluence of different floristic provinces; or a newly-formed volcanic island which affords unique ecosystem research opportunities.

The second international event prompting the present study is an "Agreement on Cooperation in the Field of Environmental Protection" entered into on the 23rd of May, 1972, between the United States of America and the Union of Soviet Socialist Republics.[4] This agreement was entered into in accordance with a prior, more general agreement "on Exchanges and Cooperation in Scientific, Technical, Educa-

[1] See Technical Appendix 1(d).

[2] See Technical Appendix 1(e).

[3] Unesco, Task Force on: Criteria and Guidelines for the Choice and Establishment of Bisophere Reserves, *MAB Report Series No. 22*, May, 1974.

[4] See Technical Appendix 1(a) for full text of the treaty.

tional, Cultural, and Other Fields" signed on the 11th of April, 1972.

The May 23rd agreement on environmental protection declared that both governments attach "great importance to the problems of environmental protection." It assumed that contemporary scientific, technical and managerial achievements can improve "the interrelationship between man and nature," that mutual cooperation in the field of environmental protection would benefit both nations, and that "economic and social development for the benefit of future generations requires the protection and enhancement of the human environment today." The agreement committed the two countries to cooperation in the field of environmental protection.

Cooperation under the agreement is to be devoted to working out measures to prevent and to study pollution "and to develop the basis for controlling the impact of human activities on nature." Under Article 2, cooperation is to be implemented in eleven different fields ranging from various different forms of pollution to the effects of climatic changes, earthquake prediction, legal and administrative measures for protecting environmental quality, and the "preservation of nature and the organization of preserves."

The first meeting of the committee established under Article five of the agreement, the U.S.-U.S.S.R. Joint Committee on Cooperation in the Field of Environmental Protection, was held in Moscow from the 18th to the 21st of September, 1972. The committee signed a Memorandum of Implementation outlining specific projects in the eleven subject areas named in the agreement. Under the subject area "Nature and Preserves," the following project, the forerunner of the present project on protected natural areas was agreed to:

> 3. *Reserved Areas*
>
> Each side will exchange information and visits and develop appropriate research projects on preserves, their classification, organization and maintenance, on arid land ecology, and on parks, including a joint project involving the Yellowstone National Park (U.S.) and the Caucasian State Preserve (USSR).
>
> A meeting of specialists in the U.S. early in 1973 will concern itself with Projects 2[5] and 3. The lead agency for the U.S. is the Department of the Interior and for the USSR the Ministry of Agriculture.

The second meeting of the committee in November of 1973 noted in its summary of activities, under section V (p. 5), that U.S. specialists had visited the U.S.S.R. in January and their Soviet counterparts had visited the U.S. in October and that both had "made extensive field trips to parks and wildlife research stations." The memorandum issued at the meeting called (at p. 9) for cooperation during 1974 to be carried out with respect to the "organization of preserves."

The third meeting of the committee in December 1974 issued a Report on Implementation which stated:

> *Project V-3 Organization of Preserves*
>
> In terms of organizational programs, scientific direction, and exchange of visits, the work undertaken in this area during 1974 was closely related to that undertaken in Project V-1 (Protection of Rare and Endangered Species).
>
> The project leaders held extensive discussions in Paris in May, in the USSR during October, and in the USA during November 1974. These included the question of future cooperation in the field of biosphere reserves, joint publication of articles on preservation and conservation of nature, the preparation of a bilingual glossary, exchange of information and persons relating to citizen organizations, and expansion of educational and public information aspects.

The memorandum of the third meeting, however, went further than this and distinguished between exchange of information on Biosphere Reserves and exchange of information on Protected Natural Areas and

---

[5] Project 2 was on "Tundra Ecosystems and Permafrost."

National Parks. Plans for the former, created as Project V-4.1, were summarized as follows:

Project V-4.1 Biosphere Reserves

The Joint Committee approved a new project on biosphere reserves in consonnance with the provisions of the US-USSR communique signed in Moscow on July 3, 1974. In the first quarter both sides will designate project leaders. The first step in cooperative work on this project will be a preliminary meeting of USSR and US specialists in the US in the first half of 1975. As a second step a symposium on biosphere reserves will be held in the USSR during the second half to discuss (1) concepts guiding the selection of biosphere reserves within the guidelines set by the "Man and the Biosphere" program initiated by UNESCO and examples of implementation of these concepts; (2) means of preserving natural ecosystems; and (3) problems and methods of scientific research used in the acquisition of baseline data on the dynamics of ecosystems, and monitoring of the environment. The proceedings of the symposium will be published in the English and Russian languages. Arrangements for the symposium will be resolved by correspondence between the project leaders.

The July 3rd communique referred to here recognized the desires of the US and the USSR to expand their bilateral exchange of environmental information to include assisting the MAB Program.

Plans for the latter, Project V-3.1, were set out as follows:

Project V-3.1 Protected Natural Areas and National Parks

The project leaders will meet approximately every 18 months, alternately in the USA and the USSR.

In 1975 work will begin on a bilingual glossary of nature preservation and conservation terms. Each side will provide definitions of terms to be included in both English and Russian.

During 1975 both sides will undertake preparations to facilitate participation of citizen organizations in the implementation of this project. Citizen organizations of the two countries concerned with the preservation and conservation of nature and outdoor recreation will become involved in the project through exchange of: (a) popular publications; (b) information on the activities of these citizen organizations; (c) the names of the persons responsible for these activities; and (d) future exchange of persons representing these organizations.

In the third quarter both sides will undertake preparations to facilitate the development of educational and public information programs. These will include educational films, TV films, publications of popular booklets, lectures, and other types of information suitable for public dissemination.

Both sides agreed to examine the possibility of continuing the production of TV films on protected natural areas and national parks in both countries similar to the one produced during 1974 by a US film crew about Soviet preserves.

During the fourth quarter the two sides will jointly publish a collection of articles treating the subject of preservation and conservation of nature in specially protected areas of the USA and the USSR.[6] The articles will be prepared by specialists designated by each side. Publication will be in English and Russian, each side preparing its articles in both languages.

In connection with the above programs, in the fourth quarter each side will designate one or two specialists conversant in English and Russian, who jointly will spend up to 45 days in each country to study common problems of the preservation and conservation of nature in specially protected areas of both countries. The specialists will represent their respective project leaders and will jointly prepare a plan for future cooperative work.[7] The Soviet side proposes that such exchange be carried out on the "receiving side pays" basis.

The present study, in addition to providing background material for the MAB program, may be viewed as a contribution to the "collection of articles treating the subject of preservation and conservation of na-

[6]The Russian version apparently has it that the articles will be prepared in 1975 for publication in 1976.

[7]This sentence was apparently omitted from the Russian version.

ture in specially protected areas of the USA" mentioned in the above description. At any rate, the function of preparing this collection (or unified analysis, as it has become) is to describe how natural areas are protected in this country, the reasons for which they are protected, the sorts of areas which receive protection, and who is responsible for creating and maintaining systems of protected areas.

One point worth noting here concerns the best method of conveying to readers of this study the information it contains. Generally speaking, there are two different approaches one might take. The first is to get at what is being done to protect certain areas in this country at the Federal level by describing the functions of certain governmental agencies as they specifically affect such areas. Under this approach, the information gathered and analyzed in the course of completing the study would be presented on an agency-by-agency basis. Descriptions of protected area activity would be embedded to a certain extent in an attempt to convey, however briefly, the overall functions of particular agencies, many of which may be quite irrelevant to the project. The second way of approaching the project is to try to describe directly different types of protected areas which exist within the United States at the Federal level and then secondarily to show what agency (or agencies) is involved in designating, protecting, or maintaining that type of area. Both approaches have their merits and demerits. Agency-by-agency presentation tends to chop up programs which affect more than one agency and makes appreciation of the full program difficult. On the other hand, it has the advantage that setting the administrative context down clearly (knowing, for example, that the National Forest System is administered by the Department of Agriculture) helps identify protection limits because of the fundamental nature of the administering agency, on the particular type of area in question. The study which follows generally proceeds on the agency-by-agency basis; yet it attempts to strike some compromise with the alternative method of organization by singling out certain systems of protected areas for treatment in chapters of their own where agency affiliation plays a distinctly secondary role.

1.2 Government and protected natural areas

In order to comprehend what follows, it is necessary to explain at this point certain features of the system of government in the United States, particularly as they relate to land. The first point is that not all land is owned by government. Together the Federal government, the state governments, and local governments own a large percentage[8] of the land in the U.S.; but the remainder is owned by private individuals or corporations. Private ownership does not, however, entail an unbridled right to do with one's land as one wishes—many laws, many of an environmental nature—regulate ownership by private individuals.

The second point is that there are various levels of government in this country and thus various sources of the regulatory laws just referred to. There is the Federal government, a state government for each of the fifty states, and various forms of local government, the most important being city governments and county governments. (Puerto Rico and other territories which have not achieved statehood have their own governments, but to simplify matters these are not discussed here). The most fundamental document setting out relative authority and jurisdictions of these levels of government is the Constitution of the United States of America. Many difficult questions of interpretation of this document have arisen and many have been settled either by the Supreme Court of the United States or by, in some instances,

[8] The Federal government owns one-third of the land in the United States. Department of the Interior, *Public Land Statistics 1973*, Table 7, p. 10.

lower courts; these questions are not particularly pertinent here. What is pertinent is simply the fact that the levels of government just named operate simultaneously and, on the whole smoothly despite certain jurisdictional conflicts at times.

The third point is that any of the three levels of government in the United States may enact laws which attempt to protect natural areas. Governments on each level have in fact done so. The present volume deals with the Federal level—the level which has produced, to take but two examples, the Wilderness Act and the Primitive Areas program of the Bureau of Land Management. The former was created by Congress, the legislative branch of the Federal government. The latter was created by administrative regulations promulgated by an agency which is part of the executive branch of the Federal government.[9]

The Federal level of government is divided into three main branches by the Constitution: Congress, the President, and the Supreme Court.[10]

The legislative process. The Congress of the United States was created by Article I, section 1, of the Constitution, adopted by the Constitutional Convention on September 17, 1787, providing that "All legislative Powers herein granted shall be vested in a Congress of the United States, which shall consist of a Senate and House of Representatives." Article I, enumerates specific powers of Congress and adds the power "to make all Laws which shall be necessary and proper for carrying into Execution the foregoing Powers, and all other Powers vested by this Constitution in the Government of the United States, or in any Department or Officer thereof." All legislation (such as the Wilderness Act) must pass both the House of Representatives and the Senate and must be signed by the President in order to become law. The President may veto legislation, in which case it can still become law by a two-thirds vote of both Houses of Congress. When a bill (pending legislation) is introduced in the House (or Senate), the procedure for its enactment as law is as follows, unless the Members agree to suspend the normal rules:

1. Assignment to House (or Senate) committee having jurisdiction.
2. If favorably considered, it is reported to the House (or Senate) either in its original form or with amendments.
3. If the bill is passed by the House, it is sent to the Senate and referred to the committee having jurisdiction. (Senate passed bills are sent to the appropriate House committee.)
4. In the Senate (or House) committee the bill, if favorably considered, may be reported in the form received, or amended.
5. The approved bill or resolution is reported to the Senate, (or House) and if passed by that body, is returned to the House (or Senate).[11]
6. If one body does not accept the amendments to a bill by the other body, a conference committee comprised of Members of both bodies is usually appointed to effect a compromise.
7. When the bill or joint resolution is finally approved by both Houses, it is signed by the Speaker and the Vice President and is presented to the President.
8. Signature by the President.[12]

[9]See Chapters Eight and Four, respectively.

[10]See Technical Appendix 1(b) for the full text of the U.S. Constitution.

[11]A verbatim transcript of proceedings and debates in the House and Senate is kept and is published in the *Congressional Record.* Committee hearings are also published separately for each bill but not collected in one publication.

[12]At this stage the law is assigned a "Public Law" number, *e.g.*, P.L. 88-577. The first two numbers indicate the Congress which was in session when the bill passed. The law is also put into a series of volumes containing laws in the order they were passed. This series of volumes is called *Statutes at Large.* The citation to these volumes which shows where P.L. 88-577 can be found is 78 *Stat.* 896. The first number is the volume number; the second is the page number. Finally, the law is codified and put into the *United States Code,* the basic working source of laws for lawyers, courts, and administrators. The citation in the code for P.L. 88-577 (the Wilderness Act) is 16 U.S.C. 1131-1136. The first number is the Title number (the Title number functions effectively as a volume number) and

It was essentially this course that the Wilderness Act took.

One other fact about the legislative process should be brought out at this point before the discussion passes to a description of administrative procedure. This is the distinction between "authorization" and "appropriation" of funds by Congress. Some laws passed by the Congress and signed by the President require neither authorization of money nor appropriation of money—a law, for example, which simply declares an area already in Federal ownership to be a wilderness area. Most laws, however, include some financial provision. Generally, the law creating a new program will contain a provision *authorizing* funds to pay for and maintain the program. Even though the law has been passed and signed, however, this provision has no immediate effect on the U.S. Treasury, the repository of Federal funds. Congress has created an overall *appropriations* process which is designed to take the various authorizations which have been made and measure them against existing funds and credit (*i.e.,* the ability of the government to borrow funds). The appropriations process results in a separate piece of legislation which when passed actually appropriates Federal dollars. Not infrequently, programs authorized for a certain level of funding will not be appropriated to this amount in the final appropriations bill passed; sometimes no funds at all will be appropriated.

The administrative process. Protected natural areas programs which are created by administrative regulations follow a different course. This course may vary widely depending on the agency or department in question. Such regulations are essentially acts of the executive branch, and the President provides a certain unity in that Article II, section 1, of the Constitution declares that "the executive Power shall be vested in a President of the United States of America." But in fact the creation of executive departments within the executive branch and the numerous agencies under (and in some cases independent of) the various departments has led to substantial complexity and variation in the way in which administrative programs are created. Departments and agencies are generally the subject of a single "organic act" or a series of laws enacted by Congress imposing on them certain duties or areas of responsibility. The President may also delegate specific duties to these departments and agencies by means of an Executive Order. Thus, at the present time the executive branch consists of an intricate web of powers and responsibilities.

Instead of presenting in detail how numerous regulations are established by administrative agencies, it will be helpful to present a simplified version which gives a good idea of the general process of establishment. Generally, a department or agency will be aware of the need to fill in certain specific gaps in its authority with more detailed rules and regulations. People in the department or agency will be assigned to draft these. The draft regulations are often put before the public in an open hearing where various viewpoints are expressed; modifications may then be made in the regulations as a result of this process. Further modifications may be made as the result of discussions inside the department or agency. When regulations are proposed, they are put before the public by publication in a daily compilation of regulatory activity called the *Federal Register.*[13] Both proposed and final regulations are published there. Final Regulations are, like individual pieces of legislation which are passed by Congress, codified. In this form they appear in the *Code of Federal Regulations* (CFR).

---

the other numbers are section numbers. Sometimes section numbers are preceded by a lower case "s," as in "s.1131." For further explanation, see Technical Appendix 1(c).

[13] For further explanation, see Technical Appendix 1(c).

It should be noted that in addition to regulations, many departments and agencies develop internal manuals or handbooks. These are internal documents designed for people who work as administrators. They provide additional sources of authority for departmental or agency action. In many cases there is overlap between what appears in the *Code of Federal Regulations,* or even in specific legislation, and what appears in the manuals. The manuals are, as has been said, internal documents, but they are available to the public under the Freedom of Information Act.[14]

Summary. The purpose of this short explanation of the structure and mechanisms of government in the United States has been two-fold. First, it has introduced the reader to some concepts, structures, procedures, and sources of authority which play an important part in the descriptions of particular U.S. protected natural area programs which follow. Second, it has highlighted an especially important point for the relationship of government to protected natural areas. This point is that there is a multitude of ways in which protected natural areas can be established, that there is a multitude of ways in which laws, or other actions having the force of law, affecting established areas can be promulgated, and that there is, as a result, a multitude of types of programs for the protection of natural areas. It is therefore impossible to describe completely in a single volume all of the intricacies of the protection of natural areas, even at the Federal level alone, in the United States; but it is hoped that a picture which is basically accurate and informative can be painted of this important subject.

1.3 The history of protecting natural areas in the United States

Shortly after the American Revolution, the Federal government embarked upon a policy of acquiring new lands. This policy was pursued vigorously, so that the extent of the public domain grew over a relatively short period of time. Massive cessions of western land claims by seven of the original states were augmented by the five-hundred million acre Louisiana Purchase and by the Spanish cession of Florida. This created a huge United States land base which was undeveloped and largely unexplored for many years. From 1845 to 1853 the United States acquired over 780 million acres of land through the Treaty of Guadalupe Hidalgo, the Oregon Compromise, the Gadsden Purchase, and the admittance of Texas to the Union. In 1867 the purchase of Alaska (close to 300 million acres) from Russia constituted the last major addition of lands to the public domain.

At the same time as these acquisitions were taking place, numerous programs to transfer public domain lands out of Federal ownership were begun. For example, when Ohio was admitted to the Union in 1802, it was given one square mile (or "section") out of each township of 36 square miles for the support of its common schools. This policy was followed in a number of other states. Federal land grants were also extended to other purposes—higher education (establishment of the land-grant colleges); railroads, roads, and other means for transportation; and swamp overflow land which was given to the states in the hopes that this would result in its improvement. The Federal government also provided incentives to private individuals to enter, and obtain title to, and develop the public domain lands. Under pressure to dispose of Federal lands to retire military bounty land warrants which accumulated during the Revolution and to provide revenues to retire the public debt, Congress enacted the Land Act of 1796. This Act established a general scheme of auction and sale of lands in the public domain. Sale remained the chief method of disposing of Federal land in the early 19th century. In 1862, after much controversy, President Lincoln signed the

[14]See Technical Appendix 1(c) for a summary of this Act.

Homestead Act. This Act constituted a major shift in policy in favor of land conveyances to settlers. In return for a relatively small unit of free land, the settler was expected to reside on the land for a required period, improve it by cultivation and construct various improvements, including a house. Other laws encouraged transfer of Federal land to private ownership to be used for agricultural purposes, livestock raising, and mineral exploration and development. The Mining Law of 1872, the Desert Land Act of 1877, and the Stock Raising Homestead Act of 1916 are examples.

It is generally agreed by historians of the subject that around the middle of the 19th Century a shift in attitude about the policy of transferring lands out of public ownership occurred. The shift was caused by the enormous depletion of vast resources which had taken place in a very short time. The concern appeared not so much in the form that, as an end in itself, land should be retained in public ownership. It appeared more in the form that in order to prevent permanent eradication of natural resources which were needed by the nation as a whole, it was wise to use policies designed to retain (or at least regulate carefully) the disposal of public lands.

The two resources which caused the most concern were probably timber and wildlife. It is difficult now to comprehend the vast expanses of forest which covered North America when the first European settlers arrived. Facts and figures are probably far less able to capture this picture than this eloquent passage from *The Quiet Crisis* by Stewart Udall, former Secretary of the Interior:

> The virgin forests of North America were among the masterpieces of the natural world: east of the Great Plains nearly every acre was covered by trees; to the west softwood stands flourished on the slopes and in the valleys of the Rocky Mountains; and rising above the Pacific shore line, in the most productive timber zone in the world, redwood and fir stands provided a crescendo of arboreal splendor. (Chapter V, paragraph 3).[15]

By the latter half of the 19th Century millions of acres of these forests had been cut down. The causes were numerous: farmers cleared land in order to produce crops[16]; fuel for steamboats and later for railroads was needed (by 1865, railroads used 6.5 million cords of wood each year, in addition to hundreds of millions of board feet for construction and for ties); developing cities continually needed lumber; fires destroyed as much as 25 million acres each year. Most historians of this devastation emphasize that government corruption and private waste and even maliciousness (some lumberman "deliberately set fire to the debris they left behind, thus destroying seedlings that would have replenished the ravaged forests"[17]) played a substantial role, but whatever the reasons, the result was that in the late 1800's "Forest Devastation" became "a political issue of substantial magnitude."[18]

Wildlife Devastation also became an issue. Three dramatic examples indicated how this came about: the passenger pigeon, the fur seal, and the American buffalo. In 1810 an ornithologist saw in Kentucky a single flock of passenger pigeons which he estimated (by gauging speed of flight and then timing passage of the flock) was 240 miles long, a mile wide, and consisted of 2 billion birds. It has been speculated that there were in the United States at this time about 5 billion such birds and that they constituted the most abundant wildlife species on the continent. On September 1,

---

[15] See also Richard G. Lillard, *The Great Forest* (1947, reprinted 1973), p. 3: "When the explorers landed, America was trees."

[16] "At a very modest estimate, 150 million acres of the improved land in farms in 1900 had been cleared of its forest cover by the patient labor of the original settlers and their descendants." Paul Gates, *History of Public Land Law Development* (1968), p. 531.

[17] S. Udall, *The Quiet Crisis* (1969), p. 68.

[18] R. W. Behan, "Forestry and the End of Innocence," 81 *American Forests* 19 (May 1975).

1914, at 1 P.M., the last remaining passenger pigeon on earth died in a zoo in Cincinnati. Hunting had taken a large toll—the meat of the bird was highly desirable. Massive numbers were slaughtered for feed for livestock, particularly hogs; James Audubon witnessed one particularly large kill conducted for this purpose. A book describing various extinct species says:

> The last of the great pigeon hunts took place near Petoskey, Michigan, in 1878. A mighty flock nested there in a forest range 28 miles long. The main body of birds—nearly a billion of them—occupied a compact mass a mile wide and 5 miles in length. The hunters moved in and killed 300 tons of birds in a month. Five freight-car loads of pigeons were shipped out every day for thirty days.[19]

Forest devastation also contributed to extinction of the species since the bird depended on forests as part of the breeding cycle, for migratory patterns, and for food.

No one is sure of the exact number, but it can safely be said that at the turn of the 18th century millions of fur seals inhabited islands in the Bering Sea. One of the early witnesses to this natural abundance was the Russian navigator, Gerasim Pribilof. Pribilof was also one of the first to harvest the seals (for their pelts) on the islands that now bear his name. This harvesting continued for decades until, when the Tsar agreed to sell Alaska to the U.S. in 1866, only about half of a population originally containing perhaps as many as five million seals was left. (Stellar's sea cow, another resident of the area, had been eradicated as early as 1768).[20] Udall tells the story of what then happened:

> The Americans of the Alaska Commercial Company, which received the United States franchise for the Pribilof furs, proceeded to outdo the Russians in slaughtering the animals. They launched a promotional sales campaign that soon brought competitors into the Bering Sea—seagoing hunters who shot the animals in the ocean during their migrations.
>
> As the Pacific whaling industry declined, whalers turned to sealing, and by 1880 seal hunting on the high seas was big business. Most of the animals which were shot were gravid, and many were not recovered; as a result, the waste was enormous.
>
> The United States government showed less interest in the depletion of the herds than in the revenues paid by the sealers. In the first twenty years of its operation the Alaska Company took enough sealskins to repay the entire cost of the Alaska Purchase.[21]

Finally, with only about three per cent of the estimated original population left, the U.S. entered into the Fur Seal Treaty with Russia, Canada and Japan. (Subsequently, in 1966 the U.S. passed the Fur Seal Act, 16 U.S.C. 1151-1187, in 1972 the Marine Mammal Protection Act, 16 U.S.C. 1361-1407, and in 1973 the Endangered Species Act, 16 U.S.C. 1531-1534, all of which further protect fur seals).

The story of the American bison, or buffalo as almost everyone calls it, is similar in some respects to that of the fur seal except that in this case the animal is a symbol of one of the most important and famous eras in American history: the opening of the West. Again, no one knows the exact number of buffalo that existed before devastation began, but many would guess 50 million and some would guess twice that number. The Indians who inhabited the Great Plains had for many years hunted the buffalo for food, as well as for the animal's hide since it could be used for clothing, wigwams, and even canoes. (The horns were also used—to drink from—and so were the bones, for weapons and for tools.) All authorities agree that the Indian's hunting of the buffalo made no substantial impact on the vast herds. Early settlers did some damage, but they too mainly used the buffalo as a means of sustaining their own

[19] Robert Silverberg, *The Auk, the Dodo and the Oryx: Vanished and Vanishing Creatures* (1967), p. 161.

[20] *Ibid*, p. 79.

[21] *The Quiet Crisis* (1969), p.75.

lives. What is remarkable about the virtual extermination of 50 to 100 million buffalo is that it resulted primarily from an official policy of the U.S. government. This policy, recommended by the Army, was to kill the buffalo in order to defeat the Indians. Professional hunters were thus loosed upon the plains to slaughter buffalo in large numbers. The hide and the tongue were all that were important (and sometimes the loin): the rest of the animal was left to rot. The slaughter proceeded so rapidly that, although it had only begun in earnest about 1871, by 1875 a bill to restrict the killing passed both houses of Congress because the immense reduction in the numbers threatened to wipe out something Congress felt was part of the nation's heritage. President Grant, a former Army general in the Civil War, vetoed the bill, however. Silverberg describes what happened then and notes the key role that protected areas played in saving the buffalo from extinction:

> Startled by the efficiency of the campaign, some conservationists finally succeeded in getting the public to see that a great tragedy had taken place. If the unlimited hunt continued, the last few bison soon would be dead. State officials began to collect the scattered survivors of the massacre. One state found ten bison, another four, another turned up a herd of twenty-five. These were put in protected reserves.
>
> Congress officially ended the butchery in 1889. A last roundup was held and eighty-nine wild bison were gathered. These were the only survivors of a population of 60 million on the prairies. In addition, about five hundred American bison were safe behind fences in Yellowstone National Park, and some five hundred more were protected in a Canadian national park. Since many of these bison were old and past the time of fertility, it seemed almost certain that extinction was near for the species. A serious epidemic or two, a bad winter on the prairies, and the last survivors would die.
>
> Dedicated individuals saw that this did not happen. They were led by William T. Hornaday of the New York Zoological Park, who founded the American Bison Society to protect and preserve the remaining animals. Hornaday's crusade raised money to establish bison reservations, to provide shelter and winter fodder for the animals, and to bring about matings. When President Theodore Roosevelt gave the organization his support in 1905, many Americans joined the effort.[22]

The examples here of devastation—of forest and of wildlife—should not be interpreted as indicating that no one in America was aware of the problem or that no one was aware of the need to protect resources and the natural areas where these resources were found. On the contrary, in 1832 artist and naturalist George Catlin recommended as a result of his close study of the American Indian that vast regions protecting the Indian way of life and the ecology (especially the buffalo) on which it depended should be set aside as a "magnificent park" by "some great protecting policy of government."[23] Still earlier, the conservation of topsoil (another resource devastated by poor management) through proper care for the land had been advocated by Thomas Jefferson and fellow Virginian Edmund Ruffin. President John Quincy Adams in the mid-1820's opposed the promotion of landgrabbing which had been encouraged by the General Land Office;[24] Adams wanted government actively to promote the rational use of land and resources for national needs of wide benefit, including the encouragement of science and education. Congress itself showed some awareness of the problem. In 1849 it created the Department of the Interior and provided that it should take over the func-

---

[22] *Op. cit.,* pp. 56-7. See also Ruth Sievers, ". . . to check the action of destructive causes . . .," 1975 *National Rifle Association Conservation Yearbook,* pp. 22-35 at p. 26.

[23] *Letters and Notes on the the Manners, Customs and Conditions of the North American Indians,* Vol. 1, (reprinted 1965) at p. 289.

[24] This office was established in 1812 in the Treasury Department. It was authorized to survey, manage, and dispose of the public domain and to administer all legislation affecting the public lands.

tions of the General Land Office and certain other agencies. Not long after, Congress took other steps which directly set aside protected areas; these steps will be discussed presently.

The pivotal figure in the process of awareness was probably George Perkins Marsh. Trained as a lawyer, elected to the U.S. House of Representatives, ambassador to Turkey and to Italy, he had learned much about ecology from observing the devastation of the hillsides in his home state of Vermont—learning which he supplemented by voracious reading on all aspects of the subject. His classic book, *Man and Nature,* first published in 1864, was concerned with the balance of nature and the effects of human activity upon this balance: a concern made clearer when his book was published a decade later under the new title, *The Earth as Modified by Human Action.* Marsh wrote:

> The ravages committed by man subvert the relations and destroy the balance which nature had established between her organized and her inorganic creations, and she avenges herself upon the intruder, by letting loose upon her defaced provinces destructive energies hitherto kept in check by organic force destined to be his best auxiliaries, but which he has unwisely dispersed and driven from the field of action. When the forest is gone, the great reservoir of moisture stored up in its vegetable mould is evaporated, and returns only in deluges of rain to wash away the parched dust into which that mould has been converted. The well-wooded and humid hills are turned to ridges of dry rock, which encumbers the low grounds and chokes the watercourses with its debris, and—except in countries favored with an equable distribution of rain through the seasons, and a moderate and regular inclination of surface—the whole earth, unless rescued by human art from the physical degradation to which it tends, becomes an assemblage of bald mountains, of barren, turfless hills, and of swampy and malarious plains. There are parts of Asia Minor, of Northern Africa, of Greece, and even of Alpine Europe, where the operation of causes set in action by man has brought the face of the earth to a desolation almost as complete as that of the moon; and though, within that brief space of time which we call "the historical period," they are known to have been covered with luxuriant woods, verdant pastures, and fertile meadows, they are now too far deteriorated to be reclaimable by man, nor can they become again fitted for human use, except through great geological changes, or other mysterious influences or agencies of which we have no present knowledge, and over which we have no prospective control. The earth is fast becoming an unfit home for its noblest inhabitant, and another era of equal human crime and human improvidence, and of like duration with that through which traces of that crime and that improvidence extend, would reduce it to such a condition of impoverished productiveness, of shattered surface, of climatic excess, as to threaten the depravation, barbarism, and perhaps even extinction of the species.[25]

Passages such as this did much to bring about an awareness of the problem of devastation and the realization that something needed to be done.

It is interesting to compare Marsh's views with that of Frederich Engels, who wrote in 1876:

> Let us not however, flatter ourselves overmuch on account of our victories over nature. For each such victory it takes its revenue on us. Each of them, it is true, has in the first place the consequences on which we counted, but in the second and third places it has quite different, unforeseen effects which only too often cancel the first . . . Thus at every step we are reminded that we by no means rule over nature like a conqueror over a foreign people, like someone standing outside nature—but that we, with flesh, blood and brain, belong to nature, and exist in its midst, and that all our mastery of it consists in the fact that we have the advantage over all other creatures of being able to know and correctly apply its laws.

As our knowledge grows, Engels nevertheless is certain, human beings will more and

[25] Reprinted in I. Barton and R. Kates, *Readings in Resource Management and Conservation* (Univ. of Chicago Press 1965), p. 174.

more be in a position to "learn and hence control even the more remote natural consequences of at least our most ordinary productive activities." So, ignorance, not some ineluctable consequence of the process of civilization, is for Engels at the root of our ecological problems. To ignorance, however, Engels also added the pursuit of wealth, arguing that it is in fact a characteristic of capitalism that it does not concern itself with the remote consequences of its actions. "What cared the Spanish planters in Cuba," Engels rhetorically asks, "who burned down forests on the slopes of the mountains and obtained from the ashes sufficent fertiliser for *one* generation of highly profitably coffee trees—what cared they that the heavy tropical rainfall afterwards washed away the now unprotected upper stratum of the soil, leaving behind only bare rock!"[26]

One of the things that needed to be done was to begin protecting natural areas. Catlin's early proposal has already been mentioned. Marsh recommended:

> It is desirable that some large and easily accessible region of American soil should remain, as far as possible, in its primitive condition, at once a museum for the instruction of the student, a garden for the recreation of the lover of nature, and an asylum where indigenous tree . . . plant . . . beast, may dwell and perpetuate their kind.[27]

The philosopher, Ralph Waldo Emerson, had urged that the forests should be preserved as "graceful parks." Naturalists capable of conveying their feeling for nature through powerful prose, Henry David Thoreau and John Muir, supported the protection of natural areas and the creation of national parks.

Perhaps that first substantial step by government in response to the awful facts of devastation and the positive philosophy of preservation was the Yosemite Grant of 1864. Under this grant President Abraham Lincoln ceded Yosemite Valley and "the Mariposa Big Tree Grove" of giant sequoias to the state of California as a state park on the condition that the giant Sequoia trees there be protected from exploitation by commercial enterprises.[28] Eight years later, in 1872, the first major, permanent Federal land reservation was created by Congress, Yellowstone National Park. The park contained about 400 buffalo, and one of the motives in creating the park may have been to protect that fast dwindling species. Unfortunately, although game was protected within the park, buffalo skins and heads were bringing lucrative prices, and poachers presented a constant problem—a problem exacerbated by the fact that poaching was generally treated lightly by the authorities. This problem was solved, however, in 1894[29] when Congress passed the Lacey Act for Protection of the Yellowstone Park. Congressman Lacey's law contained stiff penalties not only for the killing of game, but also for destroying timber or removing minerals; the law also extended these protections to parks besides Yellowstone. And in 1890, Congress had created three other parks: Yosemite National Park; General Grant National Park (later added to Kings Canyon National Park); and Sequoia National Park.

The creation of a forest reserve system

---

[26] Friedrich Engels: "The part played by labour in the transition from ape to man" (written in 1876 but not published until 1896, in the *Neue Zeit*), in Karl Marx and Friedrich Engels: *Selected Works* (London, 1950), Vol. 2, pp. 82-3 and 85.

[27] *The Earth as Modified by Human Action* (1874), p. 327.

[28] Paul Gates, *History of Public Land Law Development*, U.S. Government Printing Office (1968), p. 566.

[29] In 1883, it should be added Congress passed what is now 16 U.S.C. 23:

> The Secretary of the Army, upon the request of the Secretary of the Interior, is authorized and directed to make the necessary details of troops to prevent trespassers or intruders from entering the park for the purpose of destroying the game or objects of curiosity therein, or for any other purpose prohibited by law, and to remove such persons from the park if found therein.

also took place at this time. In 1877 Carl Schurz, a former Senator from Wisconsin, was appointed Secretary of the Interior. Schurz conducted an extensive study of American forests which was extremely critical of the timbering industries' lack of concern for the renewability of the woodland resource they were exploiting. Schurz was versed in European forestry practices that place a high value on renewability. Schurz also appreciated the unique qualities of some of the California redwood trees and recommended that various sections in the state be reserved from sale or disposal.[30] But Congressmen from states dominated by the timber industry as it then existed rejected Schurz's study and his calls for reform. The Interior Department's appropriation for forest inspection against trespass and other violations of laws already in force (appropriations Schurz had put to effective use) was cut off as a result. Nonetheless, the movement towards a system of forest reserves was underway. In 1875, a group of concerned and knowledgeable individuals formed themselves into the American Forestry Assocation and began a campaign similar to Schurz's for conservation of woodland. Finally, in 1891 President Benjamin Harrison and his Secretary of the Interior, John Noble, managed to convince a Senate-House conference committee to attach a "rider"—an additional section introduced at the last moment—to a public lands bill. This "rider" empowered the President to "set apart and reserve" timberland "as public reservations" by public proclamation. It has been claimed that few in the Congress who accepted this addition to the bill realized its full potential. At any rate, Harrison exploited this potential. Within a month of signing of the bill into law, he withdrew by public proclamations as reserves about 1.2 million acres of timberland, and before his Presidency expired he had withdrawn over 13 million acres. In 1897, Harrison's successor Grover Cleveland, signed a proclamation that set aside as forest reserves an area well over 21 million acres, and he had previously set aside millions of other acres.[31] His proclamation caused a furor among western Congressmen, but it also resulted in recognition of the need for some form of adequate protection and management of the areas reserved (a need President Cleveland himself had been concerned about). This need first was met by The Forest Management Act of 1897, in essence the first organic act of the Forest Service.

The systems of protected natural areas described here—the creation of parks and forest reserves—were but first steps in a process of setting aside portions of the landscape. This process appears at least initially to have been a response to the problem of devastation rather than an effort to create a true system of "protected natural areas."

1.4 The importance of protecting natural areas

It must be remembered that the fundamental purpose of the U.S.-U.S.S.R. agreement is cooperation, mainly through the exchange of information about each other's programs, in the field of environmental protection. Since the importance of protecting natural areas to the general goal of environmental protection has only recently been fully appreciated, even among experts, it may be worthwhile explaining why natural areas are of importance to the environment. The fact that this appreciation is fairly recent and the fact that natural areas are of importance in environmental protection are both attested to in a recent newspaper article on the Earthcare Conference held June 5th, 1975, at U.N. Head-

[30] *Speeches, Correspondence and Political Papers of Carl Schurz*, F. Bancroft, ed., (1973), Vol. 3, p. 82.

[31] Gates, *op. cit.*, pp. 567-69 and M. Frome, *The Forest Service* (1971), pp. 11-12.

quarters (the article also in effect defines the term "natural area"):[32]

The conference title—Earthcare: Global Protection of Natural Areas—had not prepared me for the mind-stretching experiences that developed during its sessions. I had thought that I was reasonably current with ecological thinking, but I discovered that no individual can possibly keep pace with the emergence and exploration of environmental problems at home and abroad. The program leaders could have presented a four-month program as easily as a four-day series.

"Global Protection of Natural Areas" today means far more than the wilderness protection of former years. Today natural areas are recognized as more than living museums of the diverse habitats that make up the world's biosphere, more than areas for scientific study and recreation, more than gene pools for species that are, or that may become, important for man's survival. Of course, they provide sanctuary for multitudes of plant and animal species that would otherwise disappear, and they thereby assure the on-going functioning of the evolutionary processes. (Only a short span of geological time ago, any observer then on earth would hardly have attached much significance to the survival of those primitive hominoids from which we have descended!)

As brought out in the Earthcare sessions, natural areas are also vital to maintaining the quality of life, particularly for urban man. Natural areas not only protect watersheds and preserve the sufficiency and quality of water supplies; they also influence climate, facilitate the functioning of the hydrological and oxygen cycles, and keep the environment hospitable to man.

In the context of the conference, natural areas are not simply primeval wilderness and national parks such as we have sought to protect in this country; they are all environments in which nature and natural forces have the opportunity to perform their beneficient life-sustaining operations. Essentially, the basic concern of the ecologists, other scientists, conservationists and politicians attending the conference is that the natural life-support systems on which the survival of man and all forms of life depend shall be preserved from the onslaughts of modern industrial man.

This series of observations seems based on such statements as the following, found in the volume presented to all participants in the conference, by Harold Jefferson Coolidge, Honorary President of the International Union for the Conservation of Nature and Natural Resources:

> The basic reasons for maintaining the forms of land use found in national parks, reserves, and natural areas arise from the need to preserve, as far as possible, the ever-scarcer unmodified and fragile habitats of a variety of biotic environments, despite the increasing intensity of the use of the earth and a growing need to increase its productivity in order to meet the demands of growing populations.
>
> In natural areas scientists may carry out a great variety of studies—studies of ecosystems as a whole, of various parts of them, of food habits, distributions, evolution, migration, limiting factors, and so on. In terms of individual species, the protection of the habitat is certainly as important as the protection of the animal itself, and reserves are the most effective method to conserve threatened species of all kinds of life, animal and vegetable. Type habitats are as important to ecologists as type specimens are to zoologists. To be effective, reserves must be large enough to provide for the entire life cycle of the species within them or of the ecosystem involved.
>
> By maintaining their habitats in parks, "gene banks" of animal and plant life may be preserved. These are important not only for research, but may provide vital economic benefits. Reintroduction of preserved plants and seed stocks to areas outside parks may help to build new food sources. Similarly, various forms of wildlife may, in the future, be developed into a vital and well-managed protein supply.
>
> Natural areas are very important to the general climate and fertility of the regions in which they are found. By maintaining a forest, the streams usually associated with it contribute to cloud formation and rainfall,

[32] Irston R. Barnes, "Earthcare Conference: Protecting Natural Areas," *The Washington Post*, July 13, 1975, p. F2.

without which the water table and fertility will be reduced. Soil erosion, with its danger of "dust bowl" developments in periods of drought, is also prevented.

Tourism in natural areas can be a great source of income. Witness the fact that it is the second largest money producer for the government of Kenya. An important reason for the attraction of parks is their great aesthetic value. Locations removed from urban life can, if properly managed, allow visitors to enjoy the beauty, peace, and quiet of the natural world. Nature reserves and parks are, of course, of exceptional educational value as well.[33]

The fact is that natural areas are so important that we need to set aside, in viable units, adequate examples of the full array of extant ecosystems, biological communities, endangered species habitats, and endangered physico-chemical environmental features. There is good evidence that unless we do this now the degree of natural diversity which presently exists will be substantially diminished as a result of ill-planned uses of land and water. The effect of this diminishment will be to weaken the health and the stability of the ecological systems on which we depend. Nature is a healer of wounds. It has this power, we believe, largely in virtue of the fact that it is diverse and that when something, such as disease or a pest, expands abnormally, diversity works ultimately against a permanent imbalance. Similarly, each extant biological species, no matter how peculiar, is a potential resource of indefinite value. Unless the habitat which supports the resource is maintained, the species will become extinct and whatever value it may have possessed will be permanently extinguished. Diminishment of diversity also means that opportunities for scientific research will be lost, that the effectiveness of monitoring environmental degradation by reference to undisturbed ecosystems will be impaired, and that certain educational and aesthetic experiences will be limited.

Having said this, one point which must be noted is that there is at present in the United States no one, overall system for protecting natural areas. The protection of areas which is achieved is the result of a great many, often uncoordinated, efforts, efforts which occur on two basic levels: (1) the level of government and (2) the private level. The present volume treats only part of the first level, *i.e.*, the efforts of the Federal government. Concerning the Federal government, the Public Land Law Review Commission[34] said in its summary document, *One Third of the Nation's Land* (at p. 87): "The Federal land-managing agencies have proceeded quite independently in establishing natural areas, with no uniform guidelines for agency designation." The Commission also recommended "a plan to assure representation of all important natural situations . . ."

These conclusions have been put in another form by The Nature Conservancy, a private conservation organization: that there is at present no philosophy guiding protection efforts.[35] Thus, for example, if prairie ecosystems are not at present adequately represented in the array of natural areas which has been protected, there is no generally adopted natural area philosophy which would make it imperative that such

[33]"Toward the Development of International Natural Areas," *Earthcare: 14th Biennial Wilderness Conference* (1975), pp. 46-7.

[34]The Commission was created in 1964 by an Act of Congress and consisted of Members of Congress and of persons appointed by the President, mainly from the private sector. An Advisory Council of Federal Liaison Members and non-Federal Government Members also assisted the Commission, as did representatives named by the Governor of each of the fifty states.

[35]See The Nature Conservancy's *The Preservation of Natural Diversity: A Survey and Recommendations* (1975) for a deeper exploration of this point. See also Technical Appendix 2(a), a speech on the application of ecological principles to National Parks by the Assistant Secretary of the Interior for Fish and Wildlife and Parks.

an ecosystem be added.[36] Moreover, there is no coordinating agency in a position to adopt such a philosophy, to gather appropriate information,[37] and to point out gaps among the types of ecosystems which receive protection.

---

[36]One agency, the National Park Service, has since June 18, 1969, been operating under a specific guideline recognizing "gaps and inadequacies." This guideline was promulgated by the Secretary of the Interior and is quoted in the Foreward to *Part Two of the National Park System Plan: Natural History* (1972) by then Director George Hartzog. It reads:

> The National Park System should protect and exhibit the best examples of our great national landscapes, riverscapes and shores and undersea environments; the processes which formed them; the life communities that grow and dwell therein; and the important landmarks of our history. There are serious gaps and inadequacies which must be remedied while opportunities still exist if the System is to fulfill the people's need always to see and understand their heritage of history and the natural world.
>
> You should continue your studies to identify gaps in the System and recommend to me areas that would fill them. It is my hope that we can make a significant contribution to rounding out more of the National Park System in these next few years.

[37]A committee jointly sponsored by the Council on Environmental Quality and the Federal Council for Science and Technology recently found with respect to ecological information as a whole:

> Ecological research activities are scattered throughout many agencies of the Federal Government with little overall coordination, direction, or definition of priorities. Large volumes of survey, monitoring, and research information of ecological value are gathered by Federal agencies, but with limited or specialized use, generally primarily by the collecting agency. These data, together with non-Federal information, constitute resources of enormous value if selected, focused, analyzed, and integrated for applicability to specific environmental problems, to strengthening the ecological basis for regulatory actions in land, water, air, and resource management and to mitigation of environmental impacts.

See *The Role of Ecology in the Federal Government*, December 1974, p. 3.

1.5 Bibliography

Barnes, Irston R. "Earthcare Conference: Protecting Natural Area" in *The Washington Post.* Washington, D.C.: July 13, 1975, p. F2.

Cheyney, E. G. and T. Schantz-Hansen. *This is Our Land: The Story of Conservation in the United States.* St. Paul: Webb Book Publishing, 1950.

Clawson, Marion and Burnell R. Held. *The Federal Lands: Their Use and Management.* Baltimore: Johns Hopkins Press, 1957.

Clepper, Henry (ed.). *Origins of American Conservation.* New York: Ronald Press, 1966.

Frome, Michael. *Battle for the Wilderness.* New York: Praeger Publishers, 1974.

Frome, Michael. *The Forest Service.* New York: Praeger Publishers, 1971.

Gates, Paul. *History of Public Land Law Development.* Washington, D.C.: U.S. Government Printing Office, 1968.

Leopold, Aldo. *A Sand County Almanac.* New York: Oxford University Press, 1949.

The Nature Conservancy. *The Preservation of Natural Diversity: A Survey and Recommendations.* Arlington, Virginia: The Nature Conservancy, 1975.

Office of the Federal Register, National Archives and Records Service, and General Services Administration. *Code of Federal Regulations.* Washington, D.C.: U.S. Government Printing Office, (published yearly).

Pinchot, Gifford. *Breaking New Ground.* New York: Harcourt, Brace, 1947.

The Public Land Law Review Commission. *One Third of the Nation's Land.* Washington, D.C.: U.S. Government Printing Office, 1970.

Reed, Nathaniel P. "How Well has the United States Managed its National Park System? The Application of Ecological Principles to Park Management" in *Second World Conference on National Parks.* Morges, Switzerland: International Union for the Conservation of Nature, 1974.

Trefethen, James. *An American Crusade for Wildlife.* New York: Winchester Press, 1975.

Van Hise, Charles R. *The Conservation of Natural Resources in the United States.* New York: Macmillan, 1970.

1.6 List of technical appendices

(a) "Agreement on Cooperation in the Field of Environmental Protection Between the United States of America and the Union of Soviet Socialist Republics," (unpublished). Washington, D.C.: U.S. Department of the Interior, May 23, 1972.

(b) "The Constitution of the United States" in *United States Government Manual.* Office of the Federal Register, National Achives and Records Service. Washington, D.C.: General Services Administration, 1974-1975.

(c) "Guide to Government Information" in *United States Government Manual.* Office of the Federal Register, National Archives and Records Service. Washington, D.C.: General Services Administration, 1974-1975.

(d) "Resolution Creating the Programme on Man and the Biosphere" in Annex III to *MAB Report No. 1.* November, 1971.

(e) Synopsis from "Final Report of Expert Panel on Project 8: Conservation of Natural Areas and of the Genetic Material They Contain," *MAB Report No. 12.* September, 1973.

PART TWO

MAJOR FEDERAL AGENCIES WITH NATURAL AREA PROGRAMS

Chapter Two:

National Park Service

A. The National Park Service
   - 2.1 Responsibilities and functions
   - 2.2 Overall objectives

B. Natural Area Activities
   - 2.3 Park Service categories, land classification, and theme studies
   - 2.4 Entry process
   - 2.5 Protection
   - 2.6 Management
   - 2.7 Natural area scientific research
   - 2.8 Illustrative examples:
     - (a) Yellowstone National Park, Wyoming
     - (b) Yosemite National Park, California
     - (c) Glacier Bay National Monument, Alaska
     - (d) Golden Gate National Recreation Area, California
     - (e) Point Reyes National Seashore, California
     - (f) Indiana Dunes National Lakeshore, Indiana
     - (g) Big Thicket National Preserve, Texas
     - (h) Little Lostman Creek Redwood Natural Area, California

C. Park Service Authority, Structure and Funding
   - 2.9 History and legislative authority
   - 2.10 Administrative structure and personnel
   - 2.11 Funding and budgetary authority

D. Information and Bibliography
   - 2.12 Key information contacts
   - 2.13 Bibliography
   - 2.14 List of technical appendices

A. The National Park Service

2.1 Responsibilities and functions

The National Park Service (hereafter referred to as "Park Service") is responsible for 287 units of the Park System, encompassing 31,027,077 acres.[1] A useful breakdown of this acreage is by the Park Service's three administrative categories: natural area comprises 25,826,745 acres, recreational area 4,698,956 acres, and historical area 501,376 acres. The largest component of the Park System, in terms of units, is the 81 National Monuments established by Presidential proclamation or by Congress. There are 52 National Historic Sites and 16 National Historical Parks. There are 38 National Parks, 16 National Recreation Areas, and 14 National Seashores and Lakeshores. The proliferation of names for units within the system (there are to date about 24 name groups in all) is due to Congressional discretion in entry legislation. For a complete listing of the Park System units and acreage, see Technical Appendix 2(b).[2]

The Park Service administers three designation programs which it does not include within the system: National Natural Landmarks; National Environmental Education Landmarks; and National Historic Landmarks. Natural Landmarks are discussed at length in Chapter Twelve; section 2.4, below, contains information on the remaining two Landmark Programs.

In addition to its responsibilities for managing the National Park System and studying proposed additions to the system, the National Park Service cooperates with others to identify significant natural, historic, and recreational resources. The National Park Service, under authority granted to the Secretary of the Interior, may enter into a variety of cooperative agreements and other arrangements for the perpetuation of natural, historic, and recreational resources of national significance.[3]

The Park Service performs the following functions[4]:

1. Manages a National Park System composed of almost 300 natural, historic, recreational, and cultural parks embracing 30.4 million acres in [50] States, Puerto Rico, and the Virgin Islands, together with the National Capital Park System of metropolitan Washington, D.C.;
2. Conducts National Survey of Historic Sites and Buildings, Historic American Buildings Survey, Historic American Engineering Record Survey, nationwide archeological salvage program, studies of prospective environmental education landmarks, studies of natural and historical themes, studies of natural and historic resources of the National Park System, and studies of historic Federal property declared surplus or proposed for demolition;
3. Administers system of National Historic Landmarks, National Natural Landmarks, and National Environmental Education Landmarks;
4. Maintains National Register of Historic Places and registers of National Historic Landmarks, National Natural Landmarks, National Environmental Education Landmarks, and Research Natural Areas on Federal lands;
5. Provides matching grants-in-aid to States and the National Trust for Historic Preservation for historical surveys and plans and for acquisition, restoration, and rehabilitation of historic and cultural properties;

---

[1] Figures are as of June 30, 1975, and are from the Park Service's Division of Land Acquisition. The acreage includes inholdings, *i.e.,* lands in non-Federal ownership contained in a Park System unit.

[2] "Index of National Park System and Affiliated Areas," National Park Service, January 1, 1975. The term "Park System" is defined in the first footnote to section 2.4, below.

[3] *Management Policies,* National Park Service, 1975, p. 8.

[4] *U.S. Department of the Interior Departmental Manual,* Chapter 1, Part 145.1.2, Release No. 1577, 9/19/73.

6. Provides technical and professional assistance to Federal, State, and local governments, and to public and private owners of natural, cultural, and urban properties;
7. Through cooperative agreements, administers recreation on lands under the jurisdiction of other Federal agencies;
8. Provides professional and administrative support to the Advisory Council on Historic Preservation; Advisory Board on National Parks, Historic Sites, Buildings, and Monuments; National Park Foundation; American Revolution Bicentennial Commission; and more than 25 other national, regional, and park advisory boards.

2.2 Overall objectives

The Park Service's basic and long-range objectives have evolved through a history of legislation. As stated in the *Department of the Interior Manual,* these objectives are:

1. To provide for the highest quality of use and enjoyment of the National Park System by increased millions of visitors in years to come;
2. To conserve and manage for their highest purpose the natural, historical, and recreational resources of the National Park System;
3. To develop the National Park System through inclusion of additional areas of scenic, scientific, historical, and recreational value to the Nation;
4. To communicate the cultural, inspirational, and recreational significance of the American heritage as represented in the National Park System;
5. To increase the effectiveness of the National Park Service as a "people-serving" organization dedicated to park conservation, historical preservation and outdoor recreation.[5]

[5] *U.S. Department of the Interior Departmental Manual,* Chapter 1, Part 145.1.2, Release No. 1577, 9/19/73.

B. Natural Area Activities

2.3 Park Service categories, land classification and theme studies

The three broad "categories," natural, recreational, and historic, into which all units of the Park System[6] are placed for general management and overall administrative purposes, were established by the Secretary of the Interior[7] in 1964. This was an official recognition that the units of the Park System had grown quite diverse in nature and in purpose, and the three category approach was meant to facilitate all types of references to the system as a whole. For example, acreage figures and classification of units are drawn up by the three categories as well as by the types of establishing legislation (see section 2.4) and the groups of names selected for units by Congress.

The use of the three categories were, and are, not intended to mean that a unit categorized as, say, a recreation area, may not also possess important natural or historical features and be managed accordingly. Rather, under both the old Master Plan and now under the *Management Policies* guidelines, developed in 1975, each unit should be managed with the recognition that each may contain portions suitable for other uses, regardless of the major category with which the unit is primarily identified.

Within each Park, regardless of the management category or the natural or historic theme it portrays, the Park Service classifies all lands for management purposes based on a land classification system designed to

[6] The three landmarks programs: Natural, Historic, and Environmental Education, are not officially considered part of the Park System. See section 2.4 for discussion.

[7] Memorandum from Secretary of the Interior Stewart Udall to George Hartzog, Director of the National Park Service, July 10, 1964, reprinted in the Park Service's *Administrative Policies-Natural Area Category,* revised 1970, Appendix A-3, pp. 76-80.

recognize the inherent qualities of Park land, the visitor uses they may serve, and the special uses allowed by law or administrative regulations.

The land classification concept has recently been revised as part of the Park Service's policy review. The new "zone" concept is more flexible, allowing the designation of sub-zones to meet specific Park needs. These are listed below:[8]

1. Natural Zone
   (a) Wilderness/Wilderness Study subzone
   (b) Environmental Protection subzone
   (c) Outstanding Natural Feature subzone
   (d) Natural Environment subzone
2. Historic Zone
   (subzones as needed)
3. Development Zone
   (no subzones)
4. Special Use Zone
   (a) Reservoir subzone
   (b) Landscape Management subzone
   (c) Private Development subzone
   (d) Resource Utilization subzone
   (e) Other, as required

The specific names used for Park Service units assigned by the Congress generally describe the management categories into which each fits:

1. Park: can be natural or historic
2. Monument: can be natural or historic
3. Parkway: recreational only
4. Seashore, Lakeshore: recreational only
5. Battlefield, Cemetery: historic only
6. National Preserve: natural only
7. National Recreation Area: recreational only
8. National Memorial: historic only
9. National River: recreational only

In recent years, the Park Service, like other Federal and state agencies, has been turning more toward comprhensive long-range planning. One example of this has been the development of a "theme study" approach. Theme studies identify the "gaps" in the Park System, types of areas which are not currently adequately represented. Theme studies also provide the basic reference for identification of potential National Natural Landmarks (see section 12.2, below).

The idea of the theme study approach for natural areas originated in a 1969 memorandum from the Secretary of the Interior to the Director of the National Park Service[9] and was set out in the 1972 volume, *Part Two of the National Park System Plan—Natural History.*[10] (For the most recent listing of themes, see Chapter Twelve of the present report at section 12.2.) The theme study approach is best explained in the introductory section, "Natural History Themes and Natural Regions," of the 1972 volume, which is reproduced in part here as follows:

> The significant natural, scenic, and scientific heritage of the United States of America should be represented ultimately in a completed National Park System. The questions have long been asked as to what a completed system means, what criteria can be used to define the contents of such a system, and what

[8] See *Management Policies,* National Park Service, 1975, pp. II-3 to II-5, for a more complete explanation.

[9] Memorandum from Secretary of the Interior Walter J. Hickel to George Hartzog, Director of the National Park Service, June 18, 1969, reprinted in the Park Service's *Administrative Policies-Natural Area Category,* revised 1970, Appendix B, pp. 84-89.

[10] The theme studies continue to be used and are referred to in *Management Policies,* 1975, Chapter I, p. I-5, which states:

> . . . Studies by the Department of the Interior will continue to identify the outstanding natural and historic resources of the United States which merit and require protection and preservation. Proposals for the addition of natural and historical parks to the National Park System will be evaluated in terms of the natural and historic themes identified in *Part One of the National Park System Plan: History* (1972) and *Part Two of the National Park System Plan: Natural History* (1972). These documents serve to identify the thematic components of a national preservation system. Where there are representative resources as described in the Plan which meet the Criteria for Parklands, and which may be threatened with damage or destruction, the National Park Service will recommend appropriate action to be taken to assure their protection.

constitutes significance. Answers to such questions are fundamental in producing a realistic plan of what the National Park System should contain, and it is toward this end that the following analysis is made. The use of themes, or categories of natural phenomena, and regions, among which the theme characteristics differ significantly, are the essential aspects around which the study is made.

The analysis and categorization of the natural phenomena of the United States are efforts to organize these phenomena into a system of natural history themes having their bases in observable physiographic and biological features. Such a system should form a matrix into which present and future ideas, concerning natural history themes, may be incorporated.

The physiographic and biologic features of the country tend to be regionally oriented, thereby providing an opportunity to divide the country into relatively homogeneous areas or natural regions. These regions, based largely on Fenneman's (1928) classic physiographic division, give primary consideration to the geologic histories, structures, and landforms, which in turn influence considerably the climates, soils, vegetation, and animal life associated with the regions.

The natural history themes, in their broadest definitions, are a series of categories encompassing essentially all the natural phenomena of the country. Any major theme varies throughout its natural range and these variations generally become significant from one region to another. For example, the boreal forest theme is characterized differently in each region where it occurs—such as in the Middle Rocky Mountains where it is characterized by Engelmann spruce, subalpine fir, lodgepole pine, and white bark pine; in the Southern Appalachian Ranges by red spruce and Frazer fir, and in Interior and Western Alaska by white and black spruce. Each significant natural history theme within a natural region is called a regional theme. A single natural region may have as few as six or as many as 18 regional themes.[11]

Based on this discussion of themes, the Park Service identifies gaps; the introduction of the 1972 volume states (at p. 3):

> A major gap in the National Park System is identifiable as (1) a natural region having poor representation in the National Park System, or, (2) a regional theme having prime significance and little or no representation in the National Park System.
>
> It should be noted that a single new park might provide adequate representation for many themes and in so doing provide a more ecologically complete and manageable unit.

One example of such a gap is the prairie lands which both the Park Service and outside groups recognize as being inadequately represented in the Park System based on the theme approach.

In a concluding section, "Natural History Themes—Brief Descriptions", the Park Service further elaborates on the role of themes:[12]

> In identifying themes, two major interrelated categories of natural phenomena must be recognized. One, the geological category, results from forces and processes acting through and upon the earth's inorganic substance to produce landforms and other evidences of nonliving entities. The biological world is here represented as fossilized records of organisms but the fossils and the processes through which they are preserved are geologic. Themes within the geological category must take into account the historical aspects of the development of the earth's surface and the evolution of life. In this respect the geological time scale, recognized and generally accepted by geologists, provides a useful and workable tool. Individual themes must embrace segments of time of sufficient duration to include closely related events and associated land structures, environments, and stratigraphic formations, including fossiliferous deposits. Certain existing landforms and landscape features are of such prominence and importance as to require recognition and study under special themes outside of the historical context.
>
> The second major category involves biological forms and processes. Since the foci of interest and importance lie in the interactions among the biological components and be-

[11] *Part Two of the National Park System—Natural History*, 1972, p. 1.

[12] *Ibid.*, p. 123.

tween the biological components and the abiotic environment, as well as in the individual life forms, this is more properly designated as the ecological category.

Within the ecological category themes are based primarily on the ecosystem which is defined as the natural community including its component organisms together with the abiotic environment, all forming an interacting system. As in the geological category there are some biological phenomena that have intrinsic interest apart from the ecosystem in which they occur.

The basic philosophy of a system of themes has implications and connotations that require explanation. Natural history is complex. To individual scientists, as to individual laymen, it may have very different meanings. These differences arise from the consideration of these entities and processes from various points of view. Collectively among human minds, natural history therefore becomes polydimensional and difficult to resolve into a generally acceptable rational system of categories of a nature that would be useful for purposes of evaluation and selection of representative areas. The only apparently reasonable alternative in a system of themes such as outlined below. These themes involve not only entities and processes but also the aspects from which they are viewed. By their very nature, themes intersect and overlap. Because of this, no single area is characterized solely by a single theme, although a single theme may be of overwhelmingly dominant importance.

The theme study work on natural areas is the responsibility of the National Natural Landmarks Program staff, under the Office of the Chief Scientist, which is charged with conducting studies of particular sites for possible inclusion within either or both the Natural Landmarks Program and the National Park System. The studies are conducted on a natural region approach through contracts with scientists in the region (see section 12.2, below). Once a theme study makes recommendations for new units of the Park System, the staff apprises the Secretary of the Interior's Advisory Board on National Parks, Historic Sites, Buildings and Monuments of these recommendations, and the Board then has the opportunity to advise that the area be studied in the future for possible inclusion in the System. If the Board so advises the Secretary and he approves, the New Areas Branch of the Park Service's Division of Legislation and the Park Service's appropriate regional office may be requested to conduct suitability and feasibility studies of the areas. Beyond this point, the political realities of public support, Congressional interest, and bureaucratic procedures are in motion, and may work for or against the establishment of a park in the area.

Since its creation, the theme study approach has been of primary value for the identification of potential National Natural Landmarks. Theme studies have been carried as far as identifying potential park units and gaps in the System, but have not so far been directly responsible for the establishment of new Park System units. The studies are useful for the future; when increased acquisition and management funds encourage new units entry into the System, the theme studies, and feasibility and suitability studies of particular areas, will probably come into further use.

2.4 Entry process

Major units of the National Park System[13] have entered the System by special Acts of Congress providing for the acquisition of land, the nature of protection afforded to each unit, the unit's purposes, and other pertinent features.

Where special Acts of Congress are concerned, it should be noted that the Act has most likely passed as a result of a complex political process. This process includes, in a

[13] The definition of the term "National Park System" is found in 16 U.S.C. 1c(a). The System includes "any area of land and water . . . administered by the Secretary of the Interior through the National Park Service for park, monument, historic, parkway, recreational, or other purposes."

typical case, the desires of a particular member of Congress and his or her constituency to see an area proposed, the pressures of various groups interested in the area, and public hearings. Public hearings take place before committees of Congress or groups of local citizens. It is generally at Congressional hearings that the Park Service expresses its view that the proposed addition is or is not recommended. Since 1970 the Park Service has attempted to respond to Congressional proposals on the basis of its National Park System Plan, including the "theme study" approach contained therein. But the views of the Park Service are not binding on Congress. The complex political process referred to here for entering units into the Park System has, therefore, not in all cases unfolded in the light of a general guiding philosophy such as that represented in the natural history theme study approach.[14]

In addition to special Acts of Congress, there are two existing laws which provide broad authority for entering units into the Park System by a somewhat indirect route. The first such broad authority used by the Park Service is the 1906 Antiquities Act.[15] This law authorizes the President to declare historic landmarks, historic or prehistoric structures, and other objects of historic or scientific interest to be National Monuments, provided such monuments are on lands which are Federally owned or controlled.

The Antiquities Act was used both before and after the Park Service was created in 1916 to establish National Monuments. It is the only legislation which provides for entry into the Park System by Presidential Proclamation. Early in its application, it was used to establish significant monuments by Presidents Roosevelt, Taft and Wilson. By 1916, there were 20 monuments (7 historic and 13 scientific areas) including Petrified Forest in 1906 and the Grand Canyon in 1908. Dinosaur National Monument was proclaimed in 1915 and the Katmai National Monument in Alaska was proclaimed in 1918. By this time, when these extensive lands were entered into the Park Service by Presidential Proclamation through the Antiquities Act, the application of the Act had been broadened to include holdings which fall into the Park Service's natural category. Although the majority of National Monuments are small in acreage and established primarily for their historical significance, 15 with over 50,000 acres each have been made part of the National Park System. A "gentlemen's agreement" between President Franklin Roosevelt and Congress in 1943, the result of a controversy concerning protection of Jackson Hole, Wyoming, effectively inactivated this Presidential authority. The understanding was that only Congress would add new natural land units to the system. The Antiquities Act was used, however, on several occasions since then by President Eisenhower and President Johnson to establish monuments. Congress, however, responded to these actions by later altering and redefining the areas proclaimed.

Another law which permits large natural areas of land to come into the Park System without specific Acts of Congress is the 1946 Cooperation Agreement Act.[16] The Park Service, because of its management capability, may enter into cooperative

[14] Two acts specifically concerned with the preservation of historic sites are: (1) The Historic Sites Act of 1935 which has been used to identify and designate historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States (but which has not been used for parks which are primarily considered to be, and managed as, natural areas); and (2) the 1966 Historic Preservation Act which expanded the program directed towards protection, rehabilitation, restoration and reconstruction of historic districts, sites, buildings, structures and objects significant in American history, architecture, archeology and culture, and formalized the National Register and set up grants programs for States to conduct surveys and develop sites for preservation under State Plans. For further discussion of this see section 2.8.

[15] 16 U.S.C. 431.

[16] 16 U.S.C. 17, j-2.

agreements with other agencies to manage the land of these agencies for park purposes. The law is specific in stating that the purpose of the management will be for recreation. Natural area considerations may enter into management of specific portions in practice. The Management Objectives of the National Park Service have been restated by its Director in July 1975, "Management Objectives of the National Park Service" (see Technical Appendix 2(c) to the present chapter). The Bureau of Reclamation is the main agency involved in cooperative agreements. Management may take the form of a joint undertaking between the National Park Service and the other agencies which are party to the agreements.

Eight units of the Park System have entered through the 1946 Act: six of these remain under cooperative agreements; for the other two, specific Congressional Acts have been passed which provide separate authority for their management. These are Glen Canyon National Recreation Area and Lake Mead National Recreation Area. All eight of these areas are within the recreation category of the three broad National Park Service categories (natural, historic, recreational), and are buffer-type areas around reservoir-related projects.

Thus, with the exception of natural areas proclaimed as National Monuments under the Antiquities Act of 1906, and with the exception of the six recreation areas managed under cooperative agreement as noted above under the 1946 Cooperative Agreement Act, and except for the Historic Preservation Program, all other significant National Park units of the National Park System have entered through individual Acts of Congress. It takes approximately two to four years, and sometimes longer, for Congress to draw up and enact the authorizing legislation to create a particular unit of the Park System.

Beginning with the establishment of Yellowstone, the first National Park established by Congress in 1872, private citizens have initiated movements and studies which have led to the establishment of Parks, Monuments and other units of the Park System. The Park Service itself has in recent years taken the initiative to bring areas into the system, particularly in the last two decades, with the limitation that for the past few years the administration has not recommended increased funding for Park Service acquisitions.

With recent separate pieces of legislation authorizing the entry of a land unit into the Park System, Congress frequently states in the Act that a sum not to exceed a stated amount (a "ceiling") is authorized for the acquisition of the area. The Act does not state from where the money will come. Since 1965, however, land acquisition funds have come from the Land and Water Conservation Fund.[17] Prior to 1959 National Park units were created primarily out of public domain lands or from donations by states or private parties.

One of the first areas to be acquired by purchase by the Park Service directly from private landowners, and without interim assistance (from state governments) was Minute Man National Historical Park, a small project originally estimated to cost about $5 million in 1959, with $5.9 million additional in land acquisition funds added in 1970. The $5 million came out of the general fund of the Treasury with the understanding that it was to be used for construction purposes, and that construction purposes would include acquisition of Minute Man Historical Park. Between 1959 and 1964, other areas of the Park System which were not acquired from public lands were authorized by Congress to be purchased in the same way. In 1964 the Land and Water Conservation Fund Act was passed. Four Federal agencies together share approximately 40% of the annual appropriations for acquisition purposes, the States and territories receiving the other 60%. Park acquisition funds have

[17] See section 6.4 below for explanation of the Fund.

come from the Land and Water Conservation Fund annual appropriations since 1965. The Fund, however, is not identified as the funding source in establishing legislation providing for new units. The National Park Service has received about $75 million annually in recent years from the Fund for acquisition of parkland. For further discussion of funding and the Land and Water Conservation Fund, see section 2.11 of this Chapter.

Annual Land and Water Conservation Fund appropriations are not large enough, however, to cover the cost of authorized acquisitions which arise each year.[18] For example, it is estimated that Big Cypress Swamp in Florida will cost up to $156 million ($116 million in Federal funds and $40 million in state funds) which will be spent purchasing tracts currently in private ownership. It is clear that the acquisition of this land will take a number of years since not all of the annual Land and Water Conservation Fund money can be spent at one time to cover the cost of this particular project, which is only one of several ongoing land acquisition projects. Consequently, there is a backlog of National Park units and parts of units to be acquired by the Park Service. Since 1965, and into the foreseeable future, the Land and Water Conservation Fund is the only significant source of acquisition funding for the Park Service, although the Forest Service, Fish and Wildlife Service and Bureau of Land Management, which receive Fund monies, have other additional sources of acquisition funds.

Owing to personnel shortages for acquisition activities, the Park Service has recently contracted with the U.S. Army Corps of Engineers to handle the acquisition of two areas: Big Thicket National Preserve (see section 2.8 for a discussion of this area) and Cuyahoga Valley National Recreation Area. The Park Service provides the acquisition funds appropriated by Congress for these areas to the Corps, and the Corps in turn takes over the acquisition functions. These arrangements are provided for by a Memorandum of Agreement for each area between the Park Service and the Corps. A similar situation involved the Corps in the acquisition of Biscayne National Monument for the Park Service.

Acquisition, however, can mean one of several things. A Congressional Act enabling a unit to enter the Park System may or may not describe how acquisition will take place. Acquisition may be by (1) purchase; (2) condemnation; (3) donation; (4) exchange; (5) transfer; or (6) withdrawal, and usually involves a combination of these methods.

(1) The "Cape Cod Formula" which refers to the entry legislation for Cape Cod National Seashore, which provided a model for the regulation and purchase by the Park Service of privately held improved property situated within proposed park boundaries, is a statutory technique by which the impact of new parks establishment on resident families is lessened, and the overall cost of acquisition is reduced, thereby enhancing the chances for Congressional approval of the new park. More land within the Park unit is retained in private ownership and thus is not taken off the local tax roles.

The Cape Cod formula concept has been included in a number of park unit establishment Acts, although the language varies from Act to Act. In the Act establishing Cape Code National Seashore, the term "improved property" is defined to mean a detached one-family dwelling, the construction of which was begun before a date prior to the passage of the enabling Act when, because of preliminary studies and surveys, landowners would have had reasonable notice of Park Service plans; in-

[18] "The 93rd Congress, either by totally new authorizations or through amendatory legislation to existing areas, authorized the acquisition of some 698,632 acres of privately owned land, having an estimated value of $381,110,000." Testimony before Congress by Chief of the Division of Land Acquisition, National Park Service, March 31, 1975.

cluded is the land on which the dwelling is situated, but the land is not to exceed three acres. The Secretary of the Interior may exclude from land so designated such lands as are necessary for access to, and the management and protection of, the park. Again, the language and terms of this "formula" has varied in the different entry legislation in which it has been used.

(2) Technically, purchase and condemnation are defined as "willing" and "unwilling purchase", respectively. The condemnation authority of the National Park Service is an exercise of the power of eminent domain deriving from a general statute enacted in 1888.[19] In condemnation, an agency must pay just compensation to the owner, and the land must be acquired for a recognized public purpose, in accordance with the Fifth Amendment of the United States Constitution. There is an important distinction in the concept of unwilling purchase, or condemnation, between those lands which have no complications on their title of ownership and are purchased at fair market value, and those lands which have "defective title" of ownership and are purchased at fair market value after the Federal government has assumed the responsibility and costs of clearing title. All Federal condemnation matters are handled by the U.S. Department of Justice. Federal agencies must make "every reasonable effort to acquire expeditiously real property by negotiation" before condemnation can be employed.[20]

(3) Donation has played a part in the shaping of the National Park System because a number of areas have been donated by states, private individuals, and organizations.

(4) Exchange of lands means exchange between the National Park Service and non-Federal parties which have land, such as state and local governments and private parties. The exchange is made on the basis of the dollar market value of the lands in question, rather than on the acreage figures.

(5) A major land transfer into the National Park System took place in 1933 when an Executive Order pursuant to a Congressional Act on government reorganization provided that the Departments of War and Agriculture would transfer such lands as Military Parks and Military Cemeteries to the Park Service's administration. Land transferred from other Federal agencies plays a continued role in the expansion of the Park System and may account for all, most, or only a small portion of a unit entering the system.

(6) Withdrawal by Congress or the President of Federal lands under the administration of another agency for park purposes is another important method by which the Park System has in the past increased. Presidential authority for park withdrawals rests on the Antiquities Act, 16 U.S.C. 431.

Having discussed the various methods of acquisition, it is useful to look at an example of an area now in the process of being acquired. Voyageur's National Park in Minnesota will contain 219,128 acres; different portions are being acquired in the following ways:

80,407	acres—water surface acreage to be donated by the state of Minnesota
34,038	acres—land donated by the state of Minnesota (some of which the state will have to purchase or acquire on its own by other means)
25,804	acres—transfered by the Forest Service
78,879	acres—to be acquired by the Park Service through willing or unwilling purchase
219,128	acres—TOTAL

Since 1965 and the use of Land and Water Conservation Fund money for acquisition, new units to the Park System have

[19] 40 U.S.C. 257.

[20] It is instructive to elaborate on this matter by reproducing a portion of the authority which establishes the policy to be followed in condemnation cases. See Technical Appendix 2(g).

been added through the means discussed above in approximately these proportions:[21]

purchase: voluntary and involuntary (condemnation)	26.4%
donation	6.8%
exchange	3.3%
transfer	28.3%
withdrawal	35.2%
TOTAL	100 %

Proposal of any unit for the National Park System,[22] according to the 1975 Park Service's *Management Policies,* is based on the following criteria:[23]

1. An area must be nationally significant in terms of portraying those natural and historical themes identified in the National Park System Plan; or, if a recreation area, it must serve significant regional recreation needs on a scale which cannot reasonably be met by others;
2. It must be feasible of administration and protection.

If an area meets the foregoing criteria, as applicable, the Service then considers:

1. Whether the area is assured of being adequately protected outside the System, and,
2. Whether, under such protection, it would be available for public appreciation and use.

If the latter two criteria will be met by other means, the Service would not recommend the addition of the area to the System. Any addition to the System must, of course, be finally effected through Congressional legislation.[24]

The National Park System does not include the three Landmarks Programs which are administered by the Park Service. The Environmental Education Landmarks Program offers Park Service recognition to areas and programs which are basically in the hands of the outside organizations which manage the 19 Landmarks in a variety of ways, all serving the purpose of furthering environmental education. Only one such Landmark exists on Park Service lands. With few exceptions, the 19 units and the 20,309 acres in the program do not include natural areas *per se.* The National Historic Landmarks Program is not of direct interest to this study; it is a recognition program established through the 1935 Historic Sites Act and funded by the 1966 Historic Preservation Act for small areas, such as buildings and estates, of national, regional, and state historic interest. The third program, the National Natural Landmarks Program, is of considerable interest in the study of Federal natural area programs and is discussed at length in Chapter Twelve.

2.5 *Protection*

The National Park Service declares its intentions to protect its lands and resources in its organic Act of 1916, wherein it is stated that that Act's purpose:

> . . . is to conserve the scenery and the natural historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.[25]

This statement has been interpreted by the Park Service, by Congress and by outside parties as a directive for the Park Service to protect its areas. For example, a 1969 study by the Advisory Board of Wildlife Management, appointed by Secretary of the Interior Udall, makes these statements on protection:[26]

> . . . In implementing this Act (of 1916) the newly formed Park Service developed a philosophy of wildlife conservation to provide

[21] Figures for 1975 are tentative. They have been supplied by the Park Service's Division of Land Acquisition.

[22] The Park System does not officially include National Natural, Environmental Education or Historic Landmarks.

[23] *Management Policies,* National Park Service, Chapter 1, 1975, pp. I-3 and I-4.

[24] Under the "gentlemen's agreement" referred to above, the Antiquities Act is rarely used to establish new units in the Park System.

[25] 16 U.S.C. 1.

[26] Reports of the Special Advisory Board on Wildlife Management for the Secretary of the Interior 1963-1968.

for purposeful management of plant and animal communities as an essential step in preserving wildlife resources . . .

Throughout Park Service literature the word "protection" appears. As an example, the following paragraph has been excerpted from Chapter one of *Management Policies,* the 1975 National Park Service management guidelines book (at p. I-2):

> Against the background of conservation activities, the National Park Service rededicates itself to its role of preserving the outstanding natural, historic, and recreational resources of our country, and of working with others to protect deserving areas wherever they occur. Only through the concerted efforts of our citizenry and of governmental bodies at all levels can a truly national network of historic, natural, and recreational lands be achieved. The Service sees its role as central to such a network: as a leading voice for preservation apart from its management responsibilities; as a leader in developing and employing exemplary preservation practices and in providing opportunities for quality park use on the lands entrusted to its care; and as being responsible for seeking out and recommending the acquisition of those areas that qualify for addition to the National Park System.

Most units of the National Park System, in particular the units classified as natural areas, enter the system (or are re-established therein) by separate and individual Acts of Congress. Each of these Acts establishes positive guidance for the nature and extent of protection to be afforded an area by referring to the purposes of the 1916 Act or by stating the need to preserve some important natural feature.

However, because visitor use[27] of various sorts is a primary purpose for the establishment of Park System units, and visitor uses are accommodated by physical facilities, concessions, etc. (all of which is often provided for in the establishing Acts), the Park Service can not and does not practice strict preservation management of all natural resources within the boundaries of a unit of the Park System, but rather, simply extends the degree of its resource conservation beyond that of other Federal landholding agencies.

As in the case of the other major agencies treated in this study, mining entry for locateable minerals (hard rock minerals) and mineral leasing for oil, gas, sulphur, and phosphate can take place in some Park Service natural areas.[28] Six National Park units are open to mining entry under the 1872 mining laws: Death Valley National Monument, Mount McKinley National Park, Crater Lake National Park, Coronado National Memorial, Glacier Bay National Monument, and Organ Pipe Cactus National Monument. The other Park System units have been closed to mining entry because the 1916 Act creating the Park Service has been interpreted so as to preclude this activity unless other specific legislation provides for it in particular areas. Only Mount McKinley National Park was left open to mining entry by its establishing Act; the remaining five were opened by later legislation.

One of these Park units has recently been in the public spotlight because of large-scale mining being carried out within its borders. Death Valley National Monument, famous around the world, is currently being strip-mined for borax and talc. The situation has been discussed by the press;

[27] In Calendar Year 1974, the total count on visitors for all units of the Park System was 217,438,000; this was up from 121,312,000 for Calendar Year 1965, and 50,008,000 for Calendar Year 1955. (Figures are from the staff of the Statistical Unit of the National Park Service.)

[28] An important distinction between mining entry and mineral leasing should be made with regard to the rights of those parties undertaking either activity: under the 1872 mining laws, a party with a valid mining claim receives ownership in absolute fee title, or "patent," to the surface and subsurface. A party leasing for mineral production under the 1920 Mineral Leasing Act, 16 U.S.C. 181, does not receive ownership, and the leasing agreement contains a time period after which the agreement has to be renewed. Under leasing a royalty is paid to the Federal government.

excerpts from an article by the *Washington Post*[29] describe it as follows:

> . . . The Tenneco Corp., in a move that has both frustrated and enraged the National Park Service, has staked a mining claim here, apparently with the intent of opening a strip mine directly in the line of sight from the scenic turnout.
>
> * * *
>
> After a 30-year decline, mining activity is booming in Death Valley. There is borax here and Tenneco wants it. Already the company has opened two strip mines inside the monument where huge earth-hauling equipment is removing 130,000 tons of borax a year. The U.S. Borax and Chemical Corp. also is searching for new deposits.
>
> Borax, however, is not the only mineral that has become economically attractive here as demand for raw materials continues to soar. In the southern section of the monument, eight talc mines have been opened in recent years and large white scars now mark their presence on the slopes of the Panamint mountains.
>
> In all, Park Service officials say, 1,827 mining claims have been filed inside the monument, covering more than 36,000 acres.
>
> "The history of borate mining, with all its 20-mule team fame, is pale by comparison (to present activity)," a recent Park Service reported noted. "As a result the natural features, which the monument was established to protect, are being totally and irreparably altered at a rate of nearly 200 acres per year. Exploration, work done to hold mining claims is marring the natural features on an additional 1,000 acres per year."
>
> "PICTURESQUE MINER"
>
> The whole thing seems incongruous inside one of the nation's great natural shrines. Visited by 700,000 persons a year, Death Valley is usually regarded—like all national parks and monuments—as inviolate forever.
>
> Yet the mining activity, for all its incongruity, cannot be stopped by the Park Service, according to a recent ruling by the attorney for the Interior Department.
>
> Although the monument was originally withdrawn from mining when it was established in 1933, a concerted lobbying effort by mining companies, with the help of the Secretary of Interior, persuaded Congress to reverse itself a few months later. The monument was reopened to mining.
>
> In a recommendation to Congress that such rights be restored, then Secretary of Interior Harold L. Ickes wrote: "It was not the desire to prevent prospecting and mining within the area, as such activities would in no way interfere with the preservation of the characteristics of the area sought to be preserved. In fact the picturesque miner is one of the characteristics which give the area the color of the early pioneer days and his continuance there would be a very desirable feature . . ."
>
> * * *
>
> Any effort to limit future mining activities, the company official said, would be opposed.
>
> "The Park Service is trying to deny us the mining right that was given to us by Congress," said William Tilden, counsel for Tenneco. "In doing so, it seems to us that they become proprietary. But they do not own the monument, the people do, and we believe Congress has spoken for the people."
>
> NO ACTION BY CONGRESS
>
> Late last year, the Park Service forwarded to Congress a recommendation that much of the monument be placed under a wilderness classification, thereby excluding future mining expansion, with present claims honored. Congress has yet to act on the recommendation.
>
> A stronger measure, in the form of a draft bill, was circulated internally at National Park Service headquarters in Washington. The bill would have given the Secretary of Interior the authority to withdraw from mining all lands inside national monuments that were deemed to be of natural, scenic or historical value. The bill, however, was never submitted to Congress.

As in the case of mining entry, mineral leasing can be conducted within the Park System only in those areas where Congress, by legislation, has specifically permitted it.

Currently the Park System units open to mineral leasing, subject to the 1920 Act and the later Mineral Leasing Act for Acquired

[29] *Washington Post,* September 20, 1975, Editorial Section.

Lands, are six recreation areas which were established through the 1946 Act which provides for Park Service management for recreation purposes on other agencies' lands (see section 2.4). These are: Amistad Recreation Area, Arbuckle National Recreation Area, Sanford National Recreation Area, and Shadow Mountain National Recreation Area. Also open to mineral leasing are National Recreation Areas established by individual Acts of Congress which specifically permit mineral leasing: Glen Canyon National Recreation Area; Lake Mead National Recreation Area; and the Whiskey-town-Shasta-Trinity National Recreation Area.

2.6 Management

In mid-1975 the Park Service extensively revised its park planning process. The changes made were designed primarily to develop a more flexible planning method and to more effectively comply with recent legislation affecting the environment, historic resources and cooperative planning. The following excerpt from the introduction of "The Planning Process of the National Park Service" characterizes the new process:

> Park Service planning must comply with the provisions of the National Environment Policy Act of 1969 and other pertinent statutes, and it must reflect concern with the spirit as well as the letter of these laws.
>
> The public must be encouraged, and given opportunities, to participate in the planning process. Further, a public record must be maintained to document this process.
>
> The planning process must be flexible in order to adapt to changing management needs and budgetary and manpower limitations. A mechanism must be developed that will allow *regular* assessment of each park's planning needs. The planning process must also include a feedback system for self-correction, so that unrealistic objectives and strategies can be identified and culled, and more viable ones can be developed.
>
> The long-standing policy of employing a multidisciplinary team to accomplish planning tasks must be reemphasized.
>
> More emphasis must be placed on the gathering of sufficient information for thorough assessment of alternative strategies, for forecasting the consequences of these strategies, and for making final decisions.

The planning process involves six essential steps (the documents produced at the end of each step are shown in parentheses):

> The development of management objectives designed to achieve a park's purpose (statement for management)
>
> The identification of planning tasks required to achieve the objectives (outline of planning requirements)
>
> The specification of a method for conducting the programmed planning tasks (task directive)
>
> The collection of required information about the natural, cultural, and socioeconomic environment of the park (information base)
>
> The development of alternative strategies for meeting the management objectives, and the analysis of their probable consequences (environmental assessment)
>
> The section of the most acceptable strategy, the amplification of the proposals included in this strategy, and the assessment of consequences as required (plan and, where necessary, environmental statement).[30]

The following material has been excerpted from the August 1975 draft of "The Planning Process of the National Park Service" where it pertains specifically to management.[31]

PURPOSE AND CONTENTS

> The first document to be prepared as part of the planning process is the statement for management. Each park must have an approved statement for management, which is subject to annual review and revision.
>
> The statement for management can be

[30] "The Planning Process of the National Park Service," National Park Service, Chapter 1, Release No. 1, p. 1.

[31] See Technical Appendix 2(f) for the complete draft of the planning process document.

CLEMSON UNIVERSITY LIBRARY
DOCUMENTS DEPT.

used to guide short- and long-term management of the park and to determine the nature and extent of planning required to meet the park's management objectives. In the absence of more specific planning documents, the statement for management provides a general framework for directing park operations and communicating park objectives to the public.

The statement for management is to include the following sections: (1) Purpose of the Park; (2) Significance of Park Resources; (3) Land Classification; and (4) Management Objectives. The procedures and responsibilities for preparation of the statement are described thusly:

As stated, each park must have an approved statement for management. The regional director schedules the preparation of this document, providing assistance to the park as necessary. The superintendent is responsible for the actual preparation of the statement.

Prior to approval, the draft statement for management must be made available for public review and comment for a period of no less than 30 days. Following public review, and modification of the document as necessary, the draft statement is submitted to the Director for policy review. When cleared, it is transmitted for approval by the regional director.

The approved statement for management is subject to annual review, during which it is revised as necessary. Any revisions must be reviewed and approved, following the same procedure as for the original statement.

Planning documents must reflect the purpose, objectives, constraints and policies indicated in the statement for management. Thus, if conditions change or new information is brought to light during the planning process rendering the statement for management out-of-date, the statement must be revised, reviewed for compliance with existing policy, and approved.

An impact analysis is not prepared on the statement for management because the statement provides information and policy guidance only, and does not in itself authorize actions. Proposed actions are subject to impact analysis and public scrutiny during the planning process.

The approved statement for management is distributed by the superintendent to interested citizens, concessioners, and park employees. The public is notified of the statement's availability through local and regional news media.

The superintendent and regional director are authorized to continue or initiate *only* the following actions based on an approved statement for management:

Management actions that cause no significant changes in the park environment and that reflect the approved management objectives. Major actions affecting the capacity of an area for public use or resulting in irretrievable environmental impact cannot be implemented without appropriate advance planning.

Improvement or rehabilitation of existing facilities for maintenance or refurbishment purposes, or minor improvements to fulfill health and safety requirements. Upgrading of visitor accommodations, construction of facilities to meet existing or projected public needs (such as parking lots and utilities), or other similar actions cannot be initiated.

Resurfacing and normal maintenance of roads and trails. Realignment, upgrading, or changing the status of roads and trails, except for emergency and safety purposes, is not authorized.

Each unit of the Park System is managed in a different fashion, befitting its unique character and problems. Some parks are more heavily visited than others, or contain more fragile environments than others. All parks must be managed to avoid excessive public traffic or use. Use limitations often are unpopular, but in most cases visitors can understand being turned away from totally occupied facilities. However, it is much more difficult for the visitor to understand being prevented from using a trail where limitations are more difficult to comprehend and may appear to be arbitrary. In response to the problems of excessive visitor use and conveying readily comprehensible limitations, the Service has developed a camping permit system for all backcountry use on an overnight basis. This is a problem which the Park Service will

find itself facing more often due to several converging considerations: the need to protect Park System lands of all sorts from irrevocable abuse through over-use; public pressures to increase protection for the parks on the one hand and to ask for more and better public facilities on the other hand, and the need for the Park Service to annually request Congressional appropriations substantial enough to meet the increasing costs of management for these and other problems.

One example for this discussion is Yosemite National Park (see section 2.8), a popular older park for which the Park Service is currently revising the management plan with respect to types of uses, overuses, concessions, and additional visitor and resident facilities in the area. Part of this revision process includes holding public hearing in several localities to incorporate the thinking of the general public in the new management plan.

A second management issue which has arisen within the last few years is the question of "urban" parks. There are currently three such areas established by Congress as National Recreation Areas intended to make outdoor recreation available to major urban areas. The three are Golden Gate National Recreation Area in San Francisco, (see section 2.8), Gateway National Recreation Area in New York City, and Cuyahoga Valley National Recreation Area between Cleveland and Akron, Ohio.

Unlike the other major Federal landholding agencies described in this study, that is, the Forest Service of the Department of Agriculture and the two Department of the Interior agencies, the Fish and Wildlife Service and the Bureau of Land Management, the National Park Service does not operate under the concept of multiple use and sustained yield which are briefly defined[32] as:

> . . . providing maximum public benefits through the best combination of uses of which an area is capable, and . . . managing renewable resources to provide a satisfactory level of continued output, without impairing their future sustained productive potential at anticipated needs . . .

Rather, the Park Service does recognize, particularly in the recreation area category, the concept of "optional resource use"—permitting resource recovery activities which existed prior to the entry of a park unit into the system such as grazing, where the attempted cessation of these activities may have otherwise impeded the entry of a given unit into the system.[33]

The development of roads, trails, facilities, educational and recreational programs, and accommodations are part of the Park Service's management and maintenance responsibilities. "Mission 66," a ten year planning and funding effort which is further discussed in section 2.9, brought these needs up to date and projected future needs and plans through the decade of the 1960's. They are, however, an on-going series of activities which annually require review, preparation and execution.

The balance between preservation and use, the two major mandates of the Park Service stemming from its 1916 organic Act, is struck somewhere between the poles of managing the park units for protection, regardless of which of the three categories they fall in, and managing them for use. One formula for determining the balance depends upon the results of a three question exercise: (1) What kinds of development are acceptable and needed to provide use?; (2) How much development is needed?; and (3) What should be the level of intensity of use of this development?[34]

Integrated with the questions of development and use is the skein of issues dealing with commercial concessions permitted on Park System lands. Their impact should

[32] *U.S. Department of the Interior Departmental Manual,* Chapter 1, 135.1.2, Release No. 1508.

[33] Interview with National Park Service Planning and Program Policy Branch, 8/12/75.

[34] *Ibid.*

not be dismissed lightly; as of January 1975, there were 338 concessioners located on 86 park units, or about one-third of all park system units. However, concession management, must, by the nature of this study, be made only a passing reference. The interested reader is referred to the "Study of National Park Service Concessions Management" of 1974-1975 for further detail.[35]

2.7 *Natural area scientific research*

The science policy of the National Park Service (see Technical Appendix 2(h)) states, *inter alia:*

> Natural and social science information is necessary for the management of the natural resources of the National Park System. It is therefore the policy of the National Park Service to conduct a program of natural and social science whose purpose shall be to support management in carrying out the mission of the National Park Service by providing decision assistance in all aspects of planning, design, construction and operation of the units of the National Park System.
>
> It shall also be the policy of the National Park Service to promote the scientific use of the units of the National Park System when such use shall be consistent with the purposes for which the unit was established.

Within this framework the role and function of the Chief Scientist (see Technical Appendix 2(i)) is stated, in part, as follows:

> The Chief Scientist is the principal Assistant to the Director for the program of scientific studies in the National Park Service. He oversees the natural resources science program developed in consultation with the various Associate and Assistant Directors. He coordinates and provides staff direction for a broad and balanced science program that benefits National Park Service management responsibilities. He represents the Service's interest in scientific and research circles, including relations with other agencies engaged in research. He determines the methods to be used in conducting National Park Service science programs.
>
> He develops Servicewide policy concerning science programs and activities, and monitors the effectiveness of the Service's scientific policies, programs and activities. The main thrust of these activities include all of those activities required for the proper scientific input into planning, design, construction and operation inventory, classification and analysis of all land, water, vegetative, wildlife resources and environmental quality of the units of the National Park System.

Each region has a Regional Chief Scientist reporting to the Regional Director, or his representative, who is responsible for managing and operating the regional science program. Research scientists in parks and/or universities report to the Superintendent and/or the Regional Chief Scientist directly. The science program in each region is based upon the research needs of the various parks as expressed in Resource Management Plans, Interpretive Plans and Visitor Use Plans, plus regional needs in general.

To augment this work, cooperative agreements are established with universities through a Master Memorandum or Understanding. The resulting university research centers are directly involved in conducting mission-oriented research for parks which is not possible under present manpower capabilities. To date (since 1970), approximately 40 of these centers have been established.

In addition, scientists at the National Park Service Denver Service Center, Denver, Colorado, coordinate the preparation of management and development plans, and assist in the monitoring and implementation of plans and facilities construction. The National Park Service Science Center at Bay Saint Louis, Mississippi, conducts research, develops a Resource Basic Inventory for National Park System areas, and administers the National Natural Landmarks Program (see Chapter Twelve).

---

[35] Unpublished memorandum from the Concessions Management Task Force to the Deputy Assistant Secretary of the Interior for Management, Richard R. Mite, January 31, 1975.

The Park Service has a policy of encouraging the dissemination of its findings in scholarly journals of general circulation and through its own publication program. The program provides: (1) editorial services for authors submitting manuscripts to scientific journals, and (2) several series in which new information regarding park resources are presented in the form of the Scientific Monographs, Occasional Papers, Natural Resources Reports, Natural Region Theme Studies, Ecological Services Bulletin, Urban Ecosystem Series, Proceedings, Miscellaneous and Annual Report Series. The Office of the Chief Scientist Annual Report is a compilation of all known scientific research projects conducted in the National Park System by Federal and non-Federal scientists on a calendar year basis. This report, plus the other documents and services mentioned, provides continued input of National Park Service scientific information to the scientific community.

2.8 Illustrative examples:

(a) Yellowstone National Park, Wyoming

Yellowstone, the first National Park established by Congress, is located in the Rocky Mountains, mostly in Wyoming and partly in Montana and Idaho. It was created by an Act of Dedication which was passed by Congress and signed by President Ulysses S. Grant on March 1, 1872. The Park was "set apart as a public park or pleasuring ground for the benefit and enjoyment of the people."[36] The park was put under the exclusive control of the Secretary of the Interior, whose duty it was to make and publish such rules and regulations as he deemed proper for the Park's care and management. The regulations were to provide for the preservation from injury of spoilation of all timber, mineral deposits, natural curiosities, or wonders within said park, and their retention in their natural condition.[37]

Acreage: Yellowstone consists of 2,221,773 acres.

Elevation: The elevation ranges from 5,314 feet to 11,358 feet.

Geological features: Yellowstone's geological features are some of the park's main attractions. There are about 3,000 geysers and hot springs. Old Faithful, the most famous of these, erupts at 65 minute intervals to a height of 106 to 184 feet for a duration of two to five minutes. The Grand Canyon[38] of the Yellowstone River is 24 miles long and from 800 to 1,200 feet deep with two connected waterfalls that total a 417 foot drop. Yellowstone Lake is the highest large lake in North America. It has an elevation of 7,733 feet; and it is 20 miles long and 14 miles across, covers 139 square miles, and has a shoreline of 100 miles. The mountain ranges surrounding Yellowstone are spectacular. They include the Snowy and Beartooth ranges to the north, the Absaroka along the eastern border, the Gallatin bordering the northwest, and the lofty Teton Range with its snow-capped peaks to the south.

Flora and fauna: With an altitudinal variation of 6,000 feet, the park includes several plant communities. Prominent at lower elevations is the Douglas fir forest; this is a medium dense forest of medium tall needleleaf evergreen trees in which Douglas fir *(Pseudotsuga menziesii)* predominates, and other components include quaking aspen *(Populus tremuloides)* and lodgepole pine *(Pinus contorta)*. At higher elevations the western spruce-fir forest predominates; this is a dense to open forest of low to medium tall needleleaf evergreen trees in which the dominants are subalpine fir *(Abies lasiocarpa)* and Englemann spruce

[36] 16 U.S.C. 21.

[37] 16 U.S.C. 22.

[38] Not to be confused with the more famous Grand Canyon in Arizona.

(Picea englemannii). A great variety of wildflowers grow in the alpine meadows at still higher elevations, and in the spring and summer these areas are often ablaze with color. Some of the most common plants are Indian paintbrush *(Castilleja miniata)*, mountain blueball *(Mertensia ciliata)*, fireweed *(Epilobium angustifolium)*, various asters, penstemons, and lupine *(Aster, Penstemon, Lupinus* spp.), and the official park flower, the Rocky Mountain Blue Fringed Gentian *(Gentiana elegans)*.

Yellowstone is a great wildlife sanctuary where the animals are protected and free to roam. Among the mammals seen commonly are the elk *(Cervis canadensis)*, moose *(Alces alces)*, bison *(Bison bison)*, mule deer *(Odocoileus hemionus)*, and black bear *(Ursus americanus)*. Other mammals include the threatened grizzly bear *(Ursus horribilis)*, pronghorn antelope *(Antilocapra americana)* and bighorn sheep *(Ovis canadensis)*. Yellowstone is also a sanctuary for the rare trumpeter swan *(Olor buccinator)*; it nests in the park and is commonly seen in Yellowstone Lake and Yellowstone River. The white pelican *(Pelecanus erythrorhynchos)*, osprey *(Pandion haliaetus)* and bald eagle *(Haliaeetus leucocephalus)* also nest in the park.

Uses: Among the many uses of the park are: cross-country skiing, snowshoeing, camping, horseback riding, sightseeing and hiking.

Some uses are restricted: Snowmobiling is allowed on uplowed roads only. Fishing, boating and backcountry travel is by permit only. Prohibited activities include hunting, and feeding bears and other wildlife.

Much scientific research is being conducted within the park. Other studies beside the one on the Bison discussed in section 2.7 of the Park Service chapter are studies concerning the natural geo-thermal features of the park, pollution studies on the Yellowstone River and studies on human-wildlife interaction.

Designation: Mounting concern by a few for the conservation of the nation's resources and preservation of its scenic beauty had by 1864, through the Yosemite Valley Act, established the precedent for perpetual public ownership of significant portions of the public domain for uses other than resource exploitation.

The Act of March 1, 1872 (16 U.S.C. 21), which established Yellowstone National Park, reaffirmed this principle and laid down criteria for selection of such lands to be set aside, thus establishing the basic framework for the unique land use policy embodied within the present National Park System.

Management: Yellowstone is classified as a "natural area" under the three types of Park Service administered lands. See section 2.3, for a discussion of these classifications.

The Yellowstone Master Plan calls for the restoration of the natural regime. Towards this end it suggests the following:

> In preserving the natural resources of the park, past efforts were primarily directed toward protecting the forest from fire and insect losses, and toward manipulating fish and wildlife population for favored species. With increased knowledge of ecological processes gleaned from relatively recent problem-oriented research, it has become apparent that this "first aid" approach to resource management is not the long term solution. As a natural area, Yellowstone should be a place where all the resources in a wild land environment are subject to minimal management. Normally, natural changes in individual plant and animal populations should not be interfered with. Indeed, change must be accepted as inevitable; it is an important aspect of a natural regime.[39]

Contact:

Park Superintendent
Yellowstone National Park
Wyoming 82010

[39] U.S. Department of the Interior, National Park Service, *Yellowstone Master Plan,* June 11, 1974, p. 24.

(b) Yosemite National Park, California

Yosemite, one of the oldest National Parks, established in 1890, lies within the Sierra Nevada mountains of California. Visitors to the Park can witness a wonderland of sculptured peaks and domes; waterfalls tumbling from hanging valleys down the faces of shining granite cliffs; groves of giant sequoias and extensive forests of pine, fir, and oak; wildflowers in alpine meadows; and hundreds of species of birds and mammals.

Acreage: Yosemite comprises 760,917 acres.

Elevation: Elevations within the Park range from lower than 2,000 feet to more than 13,000 feet above sea level.

Geological features: Carved along fractures in granite-like rocks by the Merced River and a series of intermittent glaciers, Yosemite Valley is now a partially filled U-shaped trough with a flat floor.

Due to slower down-cutting by tributaries of the Merced River and by subsequent glaciers plucking weak rocks, free-leaping waterfalls, such as Yosemite Falls, plunge as much as 1,000 feet and more from the valley rim. Yosemite Falls drops 2,425 feet in two falls and a cascade; Bridalveil Fall—620 feet; Sentinel Falls, in a series of cascades—3,000 feet; Ribbon Fall—1,612 feet; Nevada Fall—594 feet; and Vernal Fall—317 feet.

There are many grand rock formations in Yosemite created by uplifting and glaciation, exfoliation, and other processes of weathering and erosion. Half Dome towers almost one mile above Yosemite Valley. It can be seen from many points in the Park. El Capitan is an immense granite monolith with a 3,000 foot sheer cliff and a summit hovering 3,600 feet above Yosemite Valley.

Flora and fauna: Yosemite is famous for its Mariposa Grove of giant sequoias *(Sequoia gigantea)* reputed to be the "largest living things on earth." Never found in pure stands, *Sequoia gigantea* shares the forest with a mixture of evergreens and an understory of deer brush, azalea, manzanita, and dogwood.

Two forest types (as defined by Küchler[40]) occur within the park. The red fir forest is a tall dense forest of needleleaf evergreen trees, with patches of shrubby undergrowth; red fir *(Abies magnifica)* predominates, along with a variety of pines *(Pinus contorta, P. jeffreyi, P. monticola)*. At higher elevations, lodgepole pine-subalpine forest occurs. This needleleaf evergreen type may be fairly dense to quite open and medium tall at lower elevations to krummholz at the higher elevations. In addition to lodgepole pine *(Pinus contorta)* other components include whitebark pine *(P. albicaulis)* and mountain hemlock *(Tsuga mertensiana)*. At the highest elevations, alpine meadows and barrens occur. These are treeless areas dominated by a variety of short grasses, sedges, and many forbs.

Mammals present include mule deer *(Odocoileus hemionus)*, mountain lion *(Felis concolor)*, bobcat *(Lynx rufus)*, black bear *(Ursus americanus)*, and pika *(Ochotona princeps)*. Bird species present on the valley floor include Steller's jay *(Cyanocitta stelleri)*, Western tanager *(Piranga ludoviciana)*, black-headed grosbeak *(Pheucticus melanocephalus)*, and acorn woodpecker *(Melanerpes formicivorus)*. The American dipper *(Cinclus mexicanus)* can be seen along streams.

Uses: Visitors to Yosemite can enjoy camping, hiking, rock climbing, skiing, snowshoeing, fishing, horseback riding and swimming.

Designation: Yosemite's protection began on June 30, 1864, when President Lincoln signed into law a bill granting to the state of California, the Mariposa Grove of Big Trees and Yosemite Valley "to be held for public use, resort and recreation." Yosemite so became the first state park in the nation.

---

[40] Küchler, A. W. 1964. *Potential Natural Vegetation of the Conterminous United States.* American Geographical Society, New York.

In 1890, Congress established Yosemite National Park which encompassed territory surrounding the state grant. The Yosemite Valley and the Mariposa Grove of Big Trees were receded to the Federal Government and incorporated into the National Park in 1906.

Withdrawal Status: With the passage of the Act establishing Yosemite as a National Park, the area was withdrawn from mineral entry as well as commercial timber cutting.

Management: A significant effort is presently being understaken to revise Yosemite's planning and management objectives. The plans are currently at the stage of public review. As of September 17, 1975, the following are the preliminary draft planning objectives:

1. *Restore and maintain natural terrestrial, aquatic and atmospheric ecosystems so they may operate essentially unimpaired.*
   —conduct continuing research to gather and analyze information necessary for managing natural resources;
   —restore altered ecosystems as nearly as possible to conditions they would be in today had natural ecosystem processes not been disturbed;
   —protect threatened and endangered plants and animal species and reintroduce, where practical, those eliminated from the natural ecosystems;
   —permit only those types and levels of use or developments that do not significantly impair park natural resources and direct development and use to environments least vulnerable to deterioration;
   —limit unnatural sources of air, noise, visual, and water pollution to the greatest degree possible;
   —identify and perpetuate natural processes in park ecosystems.
2. *Preserve, restore, or protect significant cultural resources, (Historic and prehistoric).*
   —identify, evaluate, and determine the significance of cultural resources, encompassing buildings, structures, sites and objects;
   —provide for the preservation, restoration, or protection of these significant cultural resources;
   —permit only those uses that are compatible with the preservation of significant cultural resources.

Contact:
Park Superintendent
Yosemite National Park
California 95389

(c) Glacier Bay National Monument, Alaska

Glacier Bay National Monument is located at the northwest end of the Alexander Archipelago in southeastern Alaska. It offers the opportunity to experience landscape and life in evolution. One can witness the interrelationships between geology, climate, glaciation and biological communities of land and sea. Established by Presidential Proclamation, Glacier Bay was set aside to conserve this extraordinary segment of Alaska in its natural condition.

Acreage: Glacier Bay has a total of 2,805,269 acres. This makes it the largest area in the National Park System.

Elevation: The range in elevation is from sea level to 15,320 feet.

Geological features: Several tidewater glaciers offer a spectacular show of geologic forces in action. As water undermines the ice fronts, great blocks of ice up to 200 feet high break loose and crash into the sea, creating huge waves and filling the narrow inlets with massive icebergs.

The snow and ice-clad mountains of the Fairweather Range are as impressive as the glaciers. The highest peak in the range is 15,320-foot Mount Fairweather. Several other summits, including Mounts Crillon, Quicy Adams, LaPerouse, Lituya, and Salisbury, exceed 10,000 feet. The steepness of their slopes is dramatically visible throughout the upper bay. In Johns Hopkins Inlet, several peaks rise from sea level to 7,000 feet within four miles of the shore. The peaks supply moisture to all glaciers on the peninsula separating Glacier Bay from the Gulf of Alaska.

The deep fiords are a direct result of glacier erosion by quarrying and abrasion. Quarrying is caused by an ice mass plucking soil and rock from the sides and floor of the valleys. This material acts as a powerful abrasive on the underlying bedrock as the glacier moves forward, widening and deepening the trough. Landslides contribute to this widening. Great slides occur when the glacier removes bedrock support from under masses of soil and rock on the upper slopes of an inlet.

Flora and fauna: All stages of plant succession are illustrated at Glacier Bay. The barren, ice-scoured rocks are soon covered by mosses and lichens. A pioneer plant, *Dryas,* forms dense mats on the sands and gravels, building soil for the willow and alder thickets that soon follows. Much later, Sitka spruce *(Picea sitchensis)* crowds out the thick brush. The last stage of the succession occurs as western hemlock *(Tsuga heterophylla)* slowly replaces the spruce, and much of the undergrowth gives way to a deep carpet of moss. A hemlock forest, by-passed by the glaciers, can be seen on the slopes south of Mount Wright.

Alaska brown bears *(Ursus middendorffi),* black bears *(U. americanus),* and the rare glacier, or "blue" bears (probably a color phase of *U. americanus)* may sometimes be observed quite close to the glacier fronts as well as in the more developed plant communities. Lynx *(Lynx canadensis),* wolves *(Canis lupis),* coyotes *(C. latrans),* and wolverines *(Gulo luscus)* also range over a wide area. The abundant mountain goats *(Oreamnos americanus)* prefer the high, rocky crags and can often be sighted on Mount Wright and elsewhere. Sitka deer *(Odocoileus hemionus)* and moose *(Alces alces)* inhabit the forests along with martens *(Martes americana),* otters *(Lutra canadensis),* and mink *(Mustela vison).* Harbor seals *(Phoca vitulina),* Stellar's sea lions *(Eumetopias jubata),* Pacific killer *(Orcinus rectipinna)* and humpback whales *(Megaptera novalangliae),* and Pacific harbor porpoises *(Phocoena vomerina)* are frequently seen throughout the waters of the bay. Icebergs sometimes provide convenient beds for seals.

Large numbers of waterfowl frequent the inlets and islands. One may see various species of geese, cormorants, loons, gulls and terns, murrelets, guillemots, puffins, and many ducks. In late spring, large flocks of sandhill cranes *(Grus canadensis)* migrate through the Monument. Shorelands are inhabited by a multitude of birds. Bald eagles *(Haliaeetus leucocephalus),* ptarmigan *(Lagopus* spp.), spruce grouse *(Canachites canadensis),* northwestern crows *(Corvus caurinus),* and ravens *(Corvus corax)* are common residents.

Numerous streams are filled with spawning salmon in late summer and early autumn. Dolly Varden *(Salvelinus malma)* and cutthroat trout *(Salmo clarki)* live in many of the crystal-clear lakes and streams.

Uses: Between May and September, Glacier Bay offers the general public boating, camping, hiking, fishing, showshoeing, skiing and mountain climbing.

Extensive scientific research is taking place on post-glacial succession.

Designation: The Establishment Proclamation, No. 1733 of February 26, 1925, signed by President Calvin Coolidge, set aside Glacier Bay as a National Monument. The President cited the Antiquities Act of 1906 (16 U.S.C. 431) as the authority for this proclamation.

Withdrawal status: Glacier Bay National Monument was opened to prospecting and mining under the Act of Prospecting on June 22, 1936.[41] Mineral exploration varies in intensity from year to year, only one patented mine located in the Monument. Documents on file in the State Recorder's Office indicate that on March 20, 1970, there were 262 valid mining claims on which assessment work had been performed by eight companies or individuals.

Protections afforded: Proposed for wilderness designation are 2,210,600 acres. At

[41] 49 *Stat.* 1817.

present the proposal has been rejected by the President pending a mineral survey.

Management: The following are the management objectives outlined in the Glacier Bay Master Plan draft of August, 1971.

General Management

1. Manage the Monument as a unit under the management of the Alaska Group at Anchorage, along with Mount McKinley National Park, Katmai National Monument, and Sitka National Monument.
2. Preserve the wilderness integrity of the Monument by accepting the premise that the waters of Glacier Bay will be its roadways of access, and that vehicular roads are destructive and unnecessary in this environment.
3. Seek National Park Status for the Monument as recommended by the National Parks' Advisory Board, and to phase out prospecting and mining activity in order to protect important scientific and scenic values.
4. Visitor accommodations and services will be limited to those essential to visitor use and in keeping with the purpose of the area.
5. Provide for the continued use of government-owned transportation facilities to properly carry out the missions and objectives of Glacier Bay National Monument.
6. Provide adequate administrative and personnel housing within the area to properly carry out the functions of management.

Resources Management

1. Manage the natural resources of the Monument to ensure the perpetuation of the factors basic to the Monument's establishment following the general principle of allowing natural processes to proceed unchecked, as this area is characteristically in dynamic post-glacial change.
2. Encourage and administer a viable and purposeful research program to the end that facts can be developed to insure proper management of the area.
3. Work closely with North Tongass National Forest, Alaska Division of Lands, the Bureau of Land Management and Alaska Department of Fish and Game on programs of natural resource conservation and public use.

Contact:
Chief Park Ranger
Glacier Bay National Monument
Box 1089
Juneau, Alaska 99801

(d) Golden Gate National Recreation Area, California

Golden Gate National Recreation Area, located in San Francisco and Marin Counties in the San Francisco Bay area of California, consists of former military reservations, state and county parklands and private lands. Most of its rocky seacliffs, sandy beaches and forested hills are less than an hour away from residents and visitors to the Bay area. The establishment of this National Recreation Area has helped to alleviate over-use of Point Reyes National Seashore. The National Park Service is currently preparing a parkwide plan for both Golden Gate and Point Reyes with the goal of identifying important recreational opportunities and assuring that the parklands are wisely managed and protected. The public is involved to a large degree in the planning process for the two areas.

Acreage: Golden Gate comprises 35,000 acres of urban and rural parklands.

Elevation: The elevation ranges from sea level to 2,500 feet.

Geological features: The ten different units of this National Recreation Area vary in geological features. Alcatraz Island is a huge rock in the San Francisco Bay. The land of the San Francisco Bay front varies from areas of bay fill to the rocky prominence of Fort Mason to Fort Point. Rising steeply from the ocean, the San Francisco Headlands has become well known for its hazardous, unstable cliffs, and susceptibility to major landslides. The sandy Baker and Phelan Beaches interrupt these steep cliffs and landslide areas. The Ocean Beach unit is divided into three parts: the low, flat beach at the north end; the stretch of shifting sand dunes, and the narrow beach,

steep cliffs and windswept uplands at Fort Funston. Erosion is a major problem along the beach front. Angel Island's shoreline contains many small beaches and coves touched by relatively quiet waters. The island is sedimentary bedrock. The landscape of the Marin Headlands can be described as hilly shrubland with coastal cliffs, pocket beaches, coves, and two winding valleys. Mount Tamalpais is characterized by steep slopes, deep wooded canyons and high elevations presenting spectacular panoramic views. Its shoreline consists primarily of rugged cliffs and rocky promontories Olema Valley was primarily formed by the San Andres Rift Zone, a major geological fault on the California Coast. Two separate but parallel streams flow in opposite directions along the fault. The surrounding watershed has a gently rolling terrain.

Flora and fauna: Alcatraz supports an interesting range of plants, mostly exotic. The island is a resting place for birds and Stellar's sea lions *(Eumetopias jubata)*. Land's End, within the San Francisco Headlands, is a popular bird observation area, while Seal Rock is a favorite spot for watching sea lions. On Angel Island, both land and seashore species can be seen. Seals and sea lions can be seen and heard along with raccoons, deer, and various waterfowl. The Gerbode Preserve of the Marin Headlands contains four ecosystems: broadleaf forest, grassland, marsh, and chaparral, which is a very dense vegetation of broadleaf evergreen sclerophyll shrubs, including chemise *(Adenostoma fasciculatum)*, manzanita *(Arctostaphylos* spp.) and California lilac *(Ceanothus* spp.).[42] Many rodents and reptiles are found in the Headlands along with their predators, including hawks, eagles, owls, raccoons, and skunks. Along the coast are birds and marine invertebrates. Mt. Tamalpais has a great variety of vegetation types including forests of California laurel *(Umbellularia californica)*, oak, Douglas fir *(Pseudotsuga menziesii)* and redwood *(Sequoia sempervirens)*, and grassland and chaparral communities. Equally diverse are the wildlife and fish populations. There are egret and heron rookeries as well as salmon spawning grounds. The north end of Olema Valley consists of grasslands with dense tree cover in the draws and gullies.

Uses: The predominant uses of Golden Gate are: sightseeing, hiking, nature study, picnicking, surf fishing, swimming and beachcombing.

Designation: Golden Gate National Recreation Area was established on October 27, 1972, by an Act of Congress (16 U.S.C. 460bb).

Management: The following are the planning objectives for both Golden Gate and Point Reyes:

1. Ensure the preservation of outstanding natural, historic, scenic and recreational resources for public use and enjoyment.
2. Preserve the park as far as possible in its natural setting, and protect it from development and uses which would destroy the scenic beauty and natural character of the area.
3. Provide only those facilities whose purpose relates to the preservation and enjoyment of the natural, historic and cultural values for which the park was established.
4. Provide recreation opportunities to the widest possible variety of potential uses, considering such factors as age, income and geographic origin.
5. Directly involve a broad representation of the potential park users in the planning process through workshops, surveys and consultation with the Citizens' Advisory Commission.
6. Manage and develop the park in a manner that reflects a harmonious relationship between its purpose and use and the goal of surrounding communities.
7. Minimize the impact of access and transportation facilities upon the parklands and support efforts to avert congestion on recreation access routes outside the park.

[42] Küchler, A. W. 1964. *Potential Natural Vegetation of the Conterminous United States.* American Geographical Society, New York.

8. Coordinate planning and management efforts with those of other park and recreation agencies in the Bay Area to avoid unnecessary duplication of facilities and programs.
9. In accordance with sound principles of land use planning, collect and evaluate information in order to determine the nature of the land, the user and the possible impact of one upon the other. This information must include:
   a. The history and evolution of the land.
   b The natural systems and processes that continue to operate within the park.
   c. The sensitivities of the lands and waters to human use and the relative suitability of various activities.
   d. The characteristics of the potential park user including attitudes/life-stye, demography, population trends and recreation needs.
   e. Regional land use patterns as they relate to the park and affect the behavior of potential park uses.
   f. Existing use patterns within the park.[43]

Contact:

Park Superintendent
Golden Gate National Recreation Area
Fort Mason
San Francisco, California 94123

(e) Point Reyes National Seashore, California[44]

Point Reyes National Seashore was established on September 13, 1962. Located about thirty miles north of San Francisco, California, this national seashore consists of habitats that range from heavy forest to exposed slopes that provide living space for 300 species of birds, 72 species of mammals, many other land and marine animals and a great variety of plants.

Acreage: There are 64,546 acres within Point Reyes.

Elevation: Elevation ranges from sea level to 1,407 feet.

Geological features: Point Reyes is a peninsula joined to the mainland along the San Andreas fault. The primary features are long beaches backed by tall cliffs, lagoons and esteros, and forested slopes.

Flora and fauna: Point Reyes has a wide range of plant ecosystems. The Douglas-fir forest is often referred to as the "black forest" because of the reduced light caused the forest's density. The Bishop pines *(Pinus muricata)* are a fire-adapted species. There are plans to undertake experimental burns of this species for management purposes. In two or three pockets along creeks in the southern section of Point Reyes are coast redwoods *(Sequoia sempervirens)*. The mixed evergreen-broadleaf forest is characterized by California laurel *(Umbellularia californica)* and tan-oak *(Lithocarpus densiflorus)* in the moister parts and coast live oak *(Quercus wislizenii)* and Pacific madrone *(Arbutus menziesii)* on the dryer sites. Also present is hard chaparral characterized by mananitas (*Arctostaphylos* spp.). At lower elevations are annual grasslands, which include many European weeds. Dwarf forms of coyote brush *(Baccharis consanguinea)* and lupine (*Lupinus* spp.) are present in the beach and dune areas.

Among the native mammals are black-tailed deer *(Odocoileus columbianus)*, gray fox *(Urocyon cineroargenteus)*, bobcat *(Lynx rufus)*, occasional mountain lions *(Felix concolor)*, and badgers *(Taxidea taxus)*. Marine mammals present are California gray whale *(Eschrichtius glaucus)*, California sea lion *(Zalophus californianus)*, Steller's sea lion *(Eumetopias jubata)*, harbor seal *(Phoca vitulina)*, and, infrequently, the elephant seal *(Mirounga angustirostris)*. Over 300 species of birds at Point Reyes include the red-shouldered hawk *(Buteo lineatus)*, white pelican *(Pelecanus erythrorhynchos)*, brown pelican *(Pelecanus occidentalis)*, common murre *(Uria aalge)*, Steller's jay *(Cyanocitta*

---

[43]U.S. Department of the Interior, National Park Service, *Planning Opportunities, Point Reyes National Seashore, Golden Gate National Recreation Area.*

[44]The Park Service is currently developing a parkwide plan for the management of both Point Reyes and Golden Gate National Recreation Area. See Illustrative example (d), *Golden Gate National Recreation Area,* for a discussion of this effort.

stelleri) and occasional bald eagles *(Haliaeetus leucocephalus)*.

Uses: Visitor activities at Point Reyes include fishing, boating, picnicking, hiking, bicycling and horseback riding. Reservations and special permits are required for camping. Swimming, surfing and wading are allowed only in certain areas because of the pounding surf and rip tides.

There are two Research Natural Areas open to scientific study.

Ranching and dairying are permitted on inholdings within Point Reyes.

Designation: Point Reyes National Seashore was established on October 20, 1972 (16 U.S.C. 459(c)).

Withdrawal status: Point Reyes was not withdrawn from the public domain. It has been purchased totally from private landholders.

Protections afforded: Point Reyes is currently classified as a "recreation area" under the three Park Service administered land types (natural, recreation and historic). There is a bill before Congress (H.R. 8023) to change this classification to "natural area." Natural area classification would afford further protection.

Management: The following are the management objectives for Point Reyes as set up by the draft Master Plan of April, 1971:[45]

1. The resources of the Seashore will be managed and developed to perpetuate the quality of appearing to be major piece of "untouched" California coastal landscape.
2. The diversity and contrast now apparent in Seashore resources will be maintained.
3. Both planning and management must insure that all development and use is both visually and ecologically compatible with the landscape.
4. Research Natural Area status will be sought for specific areas within the Seashore.
5. Efforts to maintain a stable shellfish population in Seashore waters will be undertaken in cooperation with the State Department of Fish and Game.
6. Carrying capacities will be developed for management units within the Seashore based on continuing ecological studies as well as esthetic values.
7. Steps will be taken to determine the means and feasibility of reintroducing extirpated species.
8. Qualified research studies will be encouraged to increase public knowledge of the resource and in recognition of the unique research opportunities inherent within it.

Contact:

Park Superintendent, or
Research Biologist
Point Reyes National Seashore
Point Reyes, California 94956

(f) Indiana Dunes National Lakeshore, Indiana

The Indiana Dunes, lying along the southern shore of Lake Michigan, once comprised a 25-mile strip of uninhabited, tree-covered dunes, cattail marshes, and sandy beaches, stretching continuously from East Chicago to Michigan City. In 1916, Stephen Mather, first Director of the National Park Service, recommended the area for a national park. Thereafter industrial and residential development occurred and substantially reduced the natural area. The National Lakeshore, created by Congress in 1965 mainly due to the efforts of Senator Paul Douglas of Illinois, preserves a unique ecosystem for scientific study and public recreation. It also represents an example of natural area management in close proximity to considerable heavy industry and residential development.

Acreage: The site contains 8,338 acres. A bill currently before Congress would authorize the acquisition of an additional 4,200 acres. The 2,182 acre Indiana Dunes State Park adjoins the site. The enabling legislation for the Lakeshore authorized acquisition of the state park upon consent

[45] See Illustrative example (d) for the planning objectives of both Point Reyes and Golden Gate.

of the state of Indiana, but no such action has been taken.

Elevation: The area ranges from 500 to 600 feet above sea level.

Topographical features: The Indiana Dunes is an unusual complex of exceptional sand dunes, numerous marshes, swamps and bogs, and a white sand beach. The sand dunes rise to heights of 200 feet in a series of ridges and valleys, simulating miniature mountain ranges.

Fauna and flora: Following the slow retreat of the Wisconsin glaciers, the plans which are now characteristic of the northern forests moved through the dunes area northward. Where conditions of soil, moisture, and temperature were favorable, isolated colonies of northern species held on. Here in the dunes and in the well-drained, sandy flats—cooled by the moderating breezes of Lake Michigan—jack pine *(Pinus banksiana)* and white pine *(P. strobus)* have managed to hang on south of their normal range. Behind and within the main dune complex are a number of low swamps and bogs. In these, northern plants lie cloistered within the larger world of oak-hickory forest and prairie species. Tamarack *(Larix laricina)*, buckthorn *(Rhamnus alnifolia)*, leather leaf *(Chamaedaphne calyculata)*, checkerberry *(Gaultheria procumbens)*, orchids and other unusual plants characterize these special environments. Here, and elsewhere throughout the proposed lakeshore, there is a mixture of plants of the northern and central forests, and there are occurrences of flora of both the Prairie Peninsula and the Atlantic Coastal Plain species.[46]

Aquatic birds include several varieties of heron which stay in the area from spring through fall. Studies have shown that the animal life, particularly the insect life of the Indiana Dunes, becomes increasingly complex as the vegetation communities become more and more complex.[47]

Uses: The site is a day-use area open for recreational uses, including bathing, hiking, bicycle and horseback riding on trails; no camping is permitted. No off-road vehicles or motorcycles are permitted. Hunting and trapping are also prohibited. The park has an environmental education program and is open for research by the scientific community.

Protection: The enabling legislation for Indiana Dunes National Lakeshore is Public Law 89-761, November 5, 1966 (16 U.S.C. 460u to 460 u-9).

Management: The Indiana Dunes is managed primarily for outdoor recreation and scientific study, as consistent with the protection of the natural features, fauna and flora.

There are now approximately eight million people within a 50-mile radius of the park, and ten million are projected for 1980. Over-use may well become a major management problem.

The site is adjoined by a power plant and a steel mill. In cooperation with state authorities and the Environmental Protection Agency, some progress in eliminating water and air pollution have been made under the provisions of the Federal Water Pollution Control Act and the Clean Air Act.

There have been only minor problems with former landowners with respect to certain retained rights.

Contact:

Superintendent
Indiana Dunes National Lakeshore
Route 2
Box 139A
Chesterton, Indiana 46304

[46] Report No. 334 of the Senate Committee on Interior and Insular Affairs, 89th Congress, 1st Sess., "Providing for the Establishment of the Indiana Dunes National Lakeshore," p. 6.

[47] See generally, Victor Shelford, *Animal Communities in Temperate America.*

(g) Big Thicket National Preserve, Texas

The Big Thicket in southeast Texas once comprised several million acres and contained several different plant associations ranging from savannah, to swamps of baldcypress *(Taxodium distichum)*, to upland mixtures of American beech *(Fagus grandifolia)*, sweetbay *(Magnolia virginiana)*, white oak *(Quercus alba)* and loblolly pine *(Pinus taeda)*. A biological crossroads unique in the United States, the Thicket has been greatly reduced by logging, clearing for agricultural uses and oil field operations, and more recently, vacation home subsidivisions. It is now divided into strips and blocks of ecological islands and these islands are steadily being encroached upon.

The 1974 Act of Congress authorizing the establishment of the National Preserve calls for the acquisition of twelve distinct units encompassing representative sections of the remaining Thicket and neighboring ecosystems, with an approximate total acreage of 84,550 acres. Land acquisition is in progress.

Acreage: The 84,550-acre approximate total breaks down as follows:

Big Sandy Creek unit, Polk County, Texas, comprising approximately 14,300 acres;

Menard Creek Corridor unit, Polk, Hardin, and Liberty Counties, Texas, including a module at the creek's confluence with the Trinity River, comprising approximately 3,359 acres;

Hickory Creek Savannah unit, Tyler County, Texas, comprising approximately 668 acres;

Turkey Creek unit, Tyler and Hardin Counties, Texas, comprising approximately 7,800 acres;

Beech Creek unit, Tyler County, Texas, comprising approximately 4,856 acres;

Upper Neches River corridor unit, Jasper, Tyler, and Hardin Counties, Texas, including the Sally Withers Addition, comprising approximately 3,775 acres;

Neches Bottom and Jack Gore Baygall unit, Hardin and Jasper Counties, Texas, comprising approximately 13,300 acres;

Lower Neches River corridor unit, Hardin, Jasper, and Orange Counties, Texas, except for a one-mile segment on the east side of the river including the site of the papermill near Evadale, comprising approximately 2,600 acres;

Beaumont unit, Orange, Hardin, and Jefferson Counties, Texas, comprising approximately 6,218 acres;

Loblolly unit, Liberty County, Texas, comprising approximately 550 acres;

Little Pine Island-Pine Island Bayou corridor unit, Hardin and Jefferson Counties, Texas, comprising approximately 2,100 acres;

Lance Rosier Unit, Hardin County, Texas, comprising approximately 25,024 acres.

Elevation: Approximate elevations of proposed units range from 5 to 320 feet above sea level.

Geological features: The Big Thicket region is flat in the south and gently rolling in the north. An often imperceptible grade is responsible for slow drainage and locally severe lowland flooding during periods of heavy precipitation. Channels of the larger streams typically form wide meanders.

Fauna and flora: The vegetation which exists on the Big Thicket National Preserve reflects the diverse environmental conditions of the area. Changes in elevations, soils, and drainage account for the greater part of the diversity of the plant communities. The region supports a floralistically diverse forest, which contains elements characteristic of forests in the Appalachian Mountains, the Piedmont Plateau, the Atlantic and Gulf Coastal Plains, subtropical America, and the Florida Everglades and swamps. Many species of the area are near the limit of their range, thus lending to the diversity of the areas geological composition. This diversity of composition is of significance in that the Preserve will prove to be an excellent natural laboratory for scientific study. The reserve contains many ferns, species of insectivorous plants, 40 wild orchid species, some found nowhere else.

The many vegetation types of the Big

Thicket provide diverse habitats for numerous animals. Mammals include the otter *(Lutra canadensis)*, bobcat *(Lynx rufus)*, armadillo *(Dasypus novemcintus)* and an occasional black bear *(Ursus americanus)*.

The Big Thicket is located between the Mississippi Valley Flyway and the Gulf Coastal Flyway to Mexico. The known bird fauna of more than 300 species indicates an overlapping of the ranges of eastern and western species. Relatively rare birds reported from the Big Thicket include the southern bald eagle *(Haliaeetus l. leucocephalus)*, the red-cockaded woodpecker *(Dendrocopos borealis)*, and the brown-headed nuthatch *(Sitta pusilla)*. The ivory-billed woodpecker *(Campephilus principalis)*, the largest woodpecker in North America, may survive in the area.

The warm, humid climate of the region favors an exceptionally rich amphibian and reptilian fauna including the American alligator *(Alligator mississipiensis)*, Louisiana pine snake *(Pituophis melanoleucus ruthveni)*, and the Houston toad[48] *(Bufo houstonensis)*.

Uses: Permitted uses are planned to be outdoor recreation and scientific study. Hunting, fishing and trapping on lands and waters under the Secretary's jurisdiction within the Preserve will be permitted, in accordance with applicable state and federal laws, except that the Secretary may designate zones where, and periods when, no hunting, fishing or trapping may be permitted for reasons of public safety, administration, fish or wildlife management, or public use and enjoyment.[49]

Protection: The enabling legislation for the Big Thicket National Preserve is Public Law 93-439, October 11, 1974. The Act authorizes the acquisition of the Preserve without purchase of oil, gas and other mineral rights.

Management: A principal purpose of the Preserve will be to protect key areas for scientific study, rather than to provide solely for outdoor recreational opportunities. In this respect, the Big Thicket National Preserve is similar to the Big Cypress National Fresh Water Reserve. Development of the area for visitor use will consist mainly of access roads to the edges of the units, trails, interpretive facilities, primitive campsites and boat launching facilities so that visitors may explore the Preserve from the numerous streams, rivers, and bayous.

Big Thicket National Preserve borders the Southeast Texas Urban Region which occupies only five percent of the total land area of Texas but is home for approximately 3,280,000 persons, 24 percent of the State's population.

Houston, the fastest growing of the ten major cities in the United States, is an hour's drive from the Big Thicket. The Houston metropolitan area has grown 40 percent in population from 1960-1970 (1.4 million in 1960 to 2.0 million in 1970).[50] Over-use may well become a management problem in the future, but a more immediate threat would come from adverse development in the surrounding region.

Control of hydrological manipulation within the Preserve's watersheds is critical in the preservation of the natural biota. Alternation of existing water flows has potentially signficant adverse ecological effects, particularly along the Neches River bottomlands and Pine Island Bayou where periodic flooding is a key factor in maintaining floodplain forest communities.[51]

---

[48]Some of the evidence on the fauna and flora of the region is found reprinted in Hearing before the Subcommittee on National Parks and Recreation of the House Committee on Interior and Insular Affairs, "Proposed Big Thicket National Reserve." Texas, 93rd Congress, 1st Sess. (1973), pp. 379-383.

[49]Public Law 93-439, October 11, 1974.

[50]Hearing before the Subcommittee on National Parks and Recreation of the House Committee on Interior and Insular Affairs, "Proposed Big Thicket National Reserve," Texas, 93rd Congress, 1st Sess. (1973), p. 384.

[51]*Ibid.*, p. 382.

Contact:
Project Manager
Big Thicket National Reserve
P.O. Box 7408
Beaumont, Texas 77706

(h) Little Lostman Creek Redwood Natural Area, California

Little Lostman Creek Redwood Natural Areas, situated within Redwood National Park, consists of a complete watershed that contains relatively unmodified upland redwood vegetation.

Acreage: The area contains 2,480 acres.

Elevation: The area ranges from 100 to 2,400 feet above sea level.

Topographical features: The Little Lostman Creek Redwood Natural Area is a long narrow valley with steep rugged slopes, containing the entire length of the Little Lostman Creek.

Fauna and flora: Although approximately ten percent of the basin was modified by timber harvest prior to 1968, the remainder is dominated by the coast redwood *(Sequoia sempervirens)* and an associate, Douglas-fir *(Pseudotsuga menziesii)*. At lower elevations western hemlock *(Tsuga heterophylla)* is abundant. Tan oak *(Lithocarpus densiflorus)*, grand fir *(Abies grandis)* and madrone *(Arbutus menziesii)* are found in greater numbers with increasing elevation.

Common mammals such as black tail deer *(Odocoileus hemionus)*, black bear *(Ursus americanus)*, and an occasional Roosevelt elk (a race of *Cervus canadensis*) and mountain lion *(Felis concolor)* are present. Amphibians are abundant including the Pacific giant salamander *(Dicamptodon ensatus)* and species of the genera *Taricha, Plethodon, Aneides, Bufo, Hyla, Rana, Ensatina, Batrachoseps,* and possibly *Ascaphus.*

Uses: The area is devoted to use for scientific research and education. Although it is not fenced off, there is very limited general visitor use of the area.

Protection: The designation of the site as a Research Natural Area was approved on November 26, 1973, by the regional director for the Western Region of the Park Service upon the recommendation of the Superintendent of Redwood National Park, and the Regional Scientist. The enabling legislation for Redwood National Park is Public Law 90-545, October 2, 1968. No exploitative use of the natural resources is permitted. (For general discussion of protection see section 2.5.)

Management: Little Lost Man Creek Redwood Area is managed so as to preserve it in its natural state for scientific study. The area is not fenced off but neither is it identified, and there are no marked trails crossing it. A paved road crosses outside at the headwater of the creek, and a dirt road, now closed, is situated at the mouth. The very limited public use of the area presents no threat to the preservation of the area.

A master plan has not yet been finalized for Redwood National Park, but this plan can be expected to take the area into consideration, and no facilities for intensive activities will be developed in the general surroundings.

Contact:
Superintendent
Redwood National Park
Drawer N
Crescent City, California 95531

C. Park Service Authority, Structure and Funding

2.9 History and legislative authority

Yellowstone, the first and one of the most famous National Parks, was established by a specific Act of Congress in 1872, nearly half a century before the creation of the National Park Service. By 1916 when Congress passed the legislation creating the National Park Service, there were already 15 National Parks and 22 natural or scientific National Monuments. The Parks had been previously established by individual Acts of

Congress, as in the case of Yellowstone, and the National Monuments established under the 1906 Antiquities Act. The Antiquities Act[52] gave the President the authority to establish as National Monuments any lands, owned or controlled by the Federal government, which had historic or prehistoric structures or features of historic or scientific interest. This Act is discussed further in sections 2.4 and 2.5.

With the passage of this 1916 organic Act,[53] a loose-knit collection of ecologically valuable, historically significant, and scenic western lands called variously "national parks," "monuments" and "reservations," were officially tied together under a centralized administration recognized as an agency of the Department of the Interior.

The purpose of the new agency was originally:

> . . . to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.[54]

In the early years of park history these lands were not effectively closed off from a myriad of depleting and destructive uses, from hunting and grazing to souvenir hunting. Until World War I, U.S. Army troops were stationed within park lands to patrol and discourage illegal and destructive acts, to fight fires and build roads—services, among others, later to be performed by civilian park staff after the war.

By 1928, the Park Service had grown to administer 21 National Parks and 33 National Monuments, with a budget of $9 million and an annual count of 2.6 million visitors.[55]

Successive laws as well as trends have substantially diversified the Park Service's holdings, responsibilities, and missions. The Act of February 21, 1925, for example, provided for "securing the lands in the Southern Appalachian Mountains and Mammoth Cave Regions of Kentucky for perpetual preservation as National Parks." This led to the 1926 Congressional authorization of Great Smokey Mountains, Mammoth Cave, and Shenandoah National Parks which supplemented Acadia, the first National Park in the East. All of these parks involved the acquisition of lands in private ownership, accomplished through donations or interim state assistance. These actions were significant because until that time the National Parks and Monuments had been established from the public lands.[56]

A major land-managing boost and new twist to the Park Service's responsibilities came with the Executive Order transfer of some 50 historical sites to the Park System, mainly from the Departments of War and Agriculture, the indirect effect of a 1933 government reorganization Act which put battlefield sites, National Military Parks and Military Cemeteries under the Park Service's administration.

The Great Depression of the 1930's led to the creation of the Civilian Conservation Corps, a Federally-administered employment program designed to do public works and put a dent in the massive unemployment problem. Much of its work was done in Park Service lands: building roads, bridges, buildings, campsites, trails, restoring historic buildings and battlefields. Over $220 million was available from a number of emergency relief programs over this period of time, and other money came in for land acquisition, recreation lands development and maintenance of the Civilian Conservation Corps itself.

The Depression and New Deal years

---

[52] 16 U.S.C. 431.

[53] 16 U.S.C. 1, as Amended.

[54] 16 U.S.C. 1, as Amended. (This statement has been attributed to landscape architect Frederick L. Olmstead, Jr., in William C. Everhart's *The National Park Service,* Praeger, 1972, p. 21.)

[55] Interview with Staff Historian, National Park Service, August, 1975.

[56] *U.S. Department of the Interior Departmental Manual,* Chapter 1, Part 145.1.2, Release No. 1577, 9/19/73.

spawned some important Park Service legislation which reshaped the Park Service's missions and activities, and contributed to its present diversity of lands and objectives. Perhaps the most notable is the 1935 Historic Sites Act which established ". . . a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States."[57] The Act also directed the Secretary of the Interior to carry out wide-ranging programs in the field of history, and gave the Secretary responsibility for national leadership in the field of historic preservation. Another provision of the Act was the establishment of the Advisory Board on National Parks, Historic Sites, Buildings, and Monuments, which has had strong influence upon the development of the National Park System.[58]

New types of parks began to appear in the National Park System as a result of additional legislation. The 1936 Park, Parkway and Recreation Study Act initiated studies for areas having primary recreational significance, thus beginning planning attempts, on a national scale, for outdoor recreation needs,[59] which, along with natural area preservation and historic preservation, was to become a major objective of the Park Service. The rural parkway concept was introduced into the system with the 1936 Act which placed the Blue Ridge Parkway under the administration of the Park Service. The Cape Hatteras National Seashore, the first National Seashore, was established by the Act of 1937.

In 1946, another Act of Congress provided the Park Service with authority to administer recreation on areas under the jurisdiction of other Federal agencies under individual inter-agency cooperative agreements. Six recreation areas are presently administered by the Park Service under the law.

World War II began a decade and a half of lean years for the Park Service and the Park System, years which abated finally with the inception of "Mission 66," a ten year long-range program intended to put the parks and the system back into shape by 1966 for its fiftieth anniversary celebration. Congress and the President endorsed the program and continued to appropriate funds sufficient to meet its objectives: one estimate is that over $1 billion was spent.[60] Mission 66 was designed to develop and replace physical facilities, supply visitor accommodations, upgrade staff performance through the creation of training centers and improve protection and law enforcement activities. It did not focus on land acquisition *per se* or the acquisition of new historic areas so much as on upgrading and supplying facilities for the increasing visitor use demands on the parks.

The Land and Water Conservation Fund Act, passed in 1964, provides money annually to the Park Service and several other Federal agencies and to state governments to acquire land primarily for outdoor recreation purposes. It is the primary source of Park Service funding for land acquisition (see section 2.11).

The 1960's brought yet a new trend to Federal thinking and behavior: awareness of diminishing natural resources, and pollution and conservation problems. These problems and consequent legislation had affected the Park Service and other land-holding agencies in various ways. The Wilderness Act of 1964, for example—discussed in Chapter Eight—called for the Secretary of the Interior to review National Park System lands and National Refuge System lands of over 5,000 acres in size to determine their suitability for Congressional approval to enter the Wilderness System where these lands would be preserved

[57] 16 U.S.C. 461-467.

[58] *U.S. Department of the Interior Departmental Manual,* Chapter 1, Part 145.1.2, Release No. 1577, 9/19/73.

[59] W. Everhart, *The National Park Service,* Praeger, 1972, p. 33.

[60] *Ibid.,* p. 36.

for future generations in a primitive condition. Another example is the National Environmental Policy Act of 1969 which requires every agency to assess the impact of its activities on the environment.

These are only two of a number of laws which have focused on the environmental considerations of the Park Service and the rest of the Federal government during the 1960's. This trend has gained in strength and controversy in the last five years, particularly in light of the recent energy resources shortages. The Department of the Interior has not resolved these conflicts to the full satisfaction of any of its agencies, but the Park Service is in a different position from either the Bureau of Land Management or the Fish and Wildlife Service. This is discussed in section 2.4 and 2.5.

The Park Service's mission has thus evolved from a simpler one of preserving areas of scenic wonder for visitors to a fairly complex and sophisticated *raison d'etre:* the identification, acquisition, protection, and management of natural, historical, and recreational areas.

2.10 Administrative Structure and personnel

The National Park Service is divided between the Washington office and field offices around the country. The latter may be broken down as follows: two training centers (at Harpers Ferry and Grand Canyon), eight regional offices (and the National Capital Parks office which functions as a regional office), and 287 park units which are segregated by type as follows: 74 Natural Areas units, 167 Historical Areas units, 45 Recreation Areas units, and the National Capital Park group.

Total National Park Service employment as of July 30, 1975, (the peak summer month) was 17,541. The January 31, 1975, figure was approximately 12,458. The difference is attributed to fewer seasonal employees in January than in the heavy tourist month of July.

	permanent	part-time & seasonal
Washington office	522	330
Field services	6,724	10,906

It has proven impossible to break these figures down into those directly concerned on a full-time basis with "protected natural areas," as such areas are understood in this study.

2.11 Funding and budgetary authority

There are two primary funding sources for the Park Service: direct annual Congressional appropriations; and the Land and Water Conservation Fund, which is administered by the Bureau of Outdoor Recreation of the Department of the Interior.

Annual Congressional appropriations come from the general fund of the U.S. Treasury and are expended among three major Park Service programs. These are: one, general operations of park areas, consisting of management, resource management, interpretation activities, visitor protection and maintenance; two, planning and development, including the construction of new facilities and major rehabilitation of existing facilities; and three, grants and assistance which include several programs, but primarily the historic preservation actvities authorized under the Historic Preservation Act of 1966.

Total Park Service annual Congressional appropriations in recent years have been as follows: in FY 1973 $235,787,000, in FY 1974 $297,065,000, in FY 1975 $345,291,000, and in FY 1976 the estimated figure—as presented to Congress—was $346,832,000.[61]

The Land and Water Conservation Fund has been the major source of money for Park Service land acquisition since 1965, which roughly coincides with the beginning of large-scale purchases for additions to the

[61] Source: Personal communication from William Quick, Chief, Programming and Budget Division, National Park Service.

Park System. Prior to the early 1960's, most additions to the System were established from Federal domain lands and some private lands were donated to the Park Service. See section 2.4 on entry processes.

The purposes of the Fund, as stated in the Act, are:[62]

> To assist in preserving, developing and assuring accessibility to all citizens of the United states of America of present and future generations and visitors who are lawfully present within the boundaries of the United States of America such quality and quantity of outdoor recreation resources as may be available and are necessary and desirable for individual active participation in such recreation and to strengthen the health and vitality of the citizens of the United states by (1) Providing funds for and authorizing Federal assistance to the States in planning, acquisition, and development of needed land and water areas and facilities and (2) Providing funds for the Federal acquisition and development of certain lands and other areas.

Approximately 40% of the Land and Water Conservation Fund is disposed of among four Federal agencies: National Park Service, Fish and Wildlife Service, Bureau of Land Management, and the Forest Service of the Agriculture Department. The Bureau of Outdoor Recreation's Division of Federal Land Acquisition makes recommendations to the Secretary of the Interior on how to allocate the Fund money among the four agencies. Once allocated, most of it is tied by Congress to specific projects. A small portion, however, is kept for "opportunity buying" and not earmarked beforehand. The amended Land and Water Conservation Fund Act permits Fund monies appropriated for Federal purposes to be used to acquire property for the preservation of endangered as well as threatened species of fish and wildlife, and for endangered or threatened species of plants.[63]

According to the Act, the President may allot Fund money to the Federal agencies:[64]

1. For the acquisition of land, waters, or interest in land or waters as follows:

   National Park System; Recreation Areas—Within the exterior boundaries of areas of the national park system now or hereafter authorized or established and of areas now or hereafter authorized to be administered by the Secretary of the Interior for outdoor recreation purposes.

   National Forest System—Inholdings within (a) wilderness areas of the National Forest System, and (b) other areas of national forests as the boundaries of those forests exist on the outdoor recreation purposes: Provided, that lands outside of but adjacent an existing national forest boundary, not to exceed five hundred acres in the case of any one forest, which would comprise an integral part of a forest recreational management areas may also be acquired with monies appropriated from this fund: Provided further, that not more than 15 per centum of the acreage added to the National Forest System pursuant to this section shall be west of the 100th meridian.

   Endangered Species and Threatened Species—For lands, waters or interests therein, the acquisition of which is authorized under section 5(a) of the Endangered Species Act of 1973, needed for the purpose of conserving endangered or threatened species of fish or wildlife or plants.

   Recreation Act Refuges—For the incidental recreation purposes of section 2 of the Act of September 28, 1962, (76 Stat. 653; 16 U.S.C. 460 k-l); and
2. For payment into miscellaneous receipts of the Treasury as a partial offset for those capital costs, if any, of Federal water development projects hereafter authorized to be constructed by or pursuant to an Act of Congress which are allocated to public recreation and the enhancement of fish and wildlife values and financed through appropriations to water resource agencies.

Since 1973, the annual Congressional appropriations for the Fund has been approximately $300 million for combined Federal and state allotments.

[62] P.L. 88-578, subsection 1 (b).
[63] 16 U.S.C. 460*l*-9(a) (1) and (2).
[64] *Ibid.*

The following table will put the Federal portion of the Land and Water Conservation Fund in perspective for the last four years.

LAND AND WATER CONSERVATION FUND APPROPRIATIONS FOR FEDERAL ACQUISITION

	FY 1973	FY 1974	FY 1975	FY 1976 (estimated)
NPS	$76,789,000	910,000		
		(78,000,000)*	80,154,000	77,440,000
FS	29,624,000	3,973,000	30,884,000	29,980,000
FWS	4,597,000	0	9,494,000	8,500,000
		(2,650,000)*		
BLM	1,827,000	0	500,000	2,000,000
		(1,194,000)*		

*In FY 1974 these appropriations were impounded by the Administration; the agencies carried over from FY 1973 and previous years' unused Fund money.

D. Information and Bibliography

2.12 Key information contacts

Budget:

Chief
Programming and Budget Division
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-4566

General Information:

National Park Service Information Office
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-4747

Deputy Director of the National Park Service
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5081

History:

Special Assistant to the Director
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-6864

Staff Historian
Historical Section
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-2338

Assistant Director
Park Historic Preservation
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-7550

Land Acquisition:

Chief
Division of Land Acquisition
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 523-5252

Legislation:

Attorney
Conservation and Wildlife
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-7957

Chief
Division of Legislation
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5883

Assistant Solicitor
Parks and Recreation
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-7957

Management Policies:

Associate Director
Park Systems Management
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5731

Program Specialist
Planning and Program Policy
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 523-5262

Chief
Division of Environmental Quality
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5625

National Natural Landmarks Program:

Science Program Specialist
Office of the Chief Scientist
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 523-5051

Research Natural Areas and Environmental Policy:

Associate Chief Scientist for Environmental Policy
Office of the Chief Scientist
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 523-5051

Scientific Research:

Chief Scientist
Office of the Chief Scientist
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5181

Associate Chief Scientist for Research
Office of the Chief Scientist
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 523-5051

Science Program Specialist
Office of the Chief Scientist
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 523-5051

Statistical Data:

Chief
Record and Support Section
Division of Land Acquisition
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 523-5120

Visitor Services:

Chief
Visitor Services
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 523-3884

Chief
Statistical Unit, Visitor Services
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 523-5270

2.13 Bibliography

Bureau of Outdoor Recreation. *Bureau of Outdoor Recreation Manual.* Washington, D.C.: U.S. Department of the Interior.

Bureau of Outdoor Recreation. *Department of the Interior Departmental Manual.* Washington, D.C.: U.S. Department of the Interior.

Concessions Management Task Force. "Study of National Park Service Concessions Management." Unpublished Memorandum to Deputy Assistant Secretary of the Interior for Management, Richard R. Hite, January 31, 1975.

Everhart, William C. *The National Park Service.* New York: Praeger Publishers, 1972.

Lee, Ronald F. *Family Tree of the National Park System.* Philadelphia: Eastern National Park and Monument Association, 1972.

National Park Service. *Administrative Policies—for Natural Areas of the National Park System.* Washington, D.C.: U.S. Department of the Interior, 1970.

National Park Service. "Briefing Book 1973." Washington, D.C.: U.S. Department of the Interior, 1973.

National Park Service. "Management Policies." Washington, D.C.: U.S. Department of the Interior, 1975.

National Park Service. *Office of the Chief Scientist Annual Report, CY 1974.* Washington, D.C.: U.S. Department of the Interior, 1974.

National Park Service. *Part Two of the National Park System Plan—Natural History.* Washington, D.C.: U.S. Department of the Interior, 1972.

National Park Service. "Public Use of the National Park System—Fiscal Year Report—1974." Washington, D.C.: U.S. Department of the Interior, No. 125, 1974.

Office of the Federal Register, National Archives and Record Service and General Services Administration. *Code of Federal Regulations.* Washington, D.C.: U.S. Government Printing Office, 1975.

Stewart, Philip O. "National Park Service Land Acquisition Program." Unpublished testimony delivered before Congress, March 31, 1975.

The Public Land Law Review Commission. *One Third of the Nation's Land.* Washington, D.C.: U.S. Government Printing Office, 1970.

U.S. Department of Justice. "Progress, Property and Just Compensation, The Power of Eminent Domain." Washington, D.C.: U.S. Government Printing Office, 1966.

U.S. Department of Justice, Land and Natural Resources Division. "A Procedural Guide for the Acquisition of Real Property by Governmental Agencies." Washington, D.C.: U.S. Government Printing Office, 1972.

Wildlife Management Institute. "Reports of the Special Advisory Board on Wildlife Management for the Secretary of the Interior 1963-1968." Washington, D.C.: Wildlife Management Institute, 1969.

2.14 *List of technical appendices*

(a) "How Well Has the United States Managed its National Park System? The Application of Ecological Principles to Park Management" in *Second World Conference on National Parks.* Nathaniel P. Reed, Sir Hugh Elliot (ed.) Morges, Switzerland: International Union for the Conservation of Nature, 1974, pp. 38-49.

(b) *Index of the National Park System and Affiliated Areas.* National Park Service. Washington, D.C.: U.S. Government Printing Office, 1975.

(c) *Management Policies.* National Park Service. Washington, D.C.: U.S. Department of the Interior, 1975, Chapters I, II, VI, VII, and IX.

(d) "National Parks Are Beset by Policy Problems" in *Conservation Foundation Letter.* Washington, D.C.: July and August, 1975.

(e) National Park Service Regional Offices.

(f) *The Planning Process of the National Park Service.* National Park Service. Washington, D.C.: U.S. Department of the Interior, 1975.

(g) Uniform Policy on Real Property Acquisition Practices (P.L. 91-646, Title III, January 2, 1971).

(h) "Science Policy." National Park Service. Washington, D.C.: U.S. Department of the Interior, May 8, 1974.

(i) "Chief Scientist, Role and Functional Statement." National Park Service. Washington, D.C.: U.S. Department of the Interior, May 8, 1974.

Chapter Three:

Fish and Wildlife Service

A. The Service

3.1 Responsibilities and functions

The Fish and Wildlife Service of the Department of the Interior has a mixture of responsibilities and functions, some of which serve to protect natural areas or bear on such protection and others of which are irrelevant to this goal. Administration of the National Wildlife Refuge System is a major activity of the Service. Many of the elements of this System, described below, can be considered protected natural areas, but because of the great variations in the Acts of Congress establishing certain elements of the System and the great variations in administrative regulations governing these and other elements, it is difficult to quantify the overall natural area activity of the Service.

The Service (formerly the Bureau of Sport Fisheries and Wildlife) has major responsibilities for national programs relating to migratory birds,[1] mammals,[2] endangered species,[3] sport fisheries,[4] and certain Federal aid to the states.[5] The Service also has less substantial responsibilities under many other programs which affect fish and wildlife. The exercise of these responsibilities and functions serve to preserve, directly or indirectly, a wide variety of habitat types possessing many values.

Administration of the National Wildlife Refuge System is the major direct habitat preservation effort of the Service. The System includes many units within individual refuge boundaries which can be considered to be protected natural areas. A number have been officially designated as research natural areas and wilderness areas. As of June 30, 1975, the System included 378 National Wildlife Refuges containing lands and waters exceeding 32,000,000 acres. Refuge ranges from 0.6 to 8,900,000 acres in size. An additional 30,000,000 acres in Alaska are expected to be added to the System in the near future.

"National Wildlife Refuge System," according to the *Code of Federal Regulations:*

> . . . means all lands, waters, and interests therein administered by the U.S. Fish and Wildlife Service as national wildlife refuges, wildlife ranges, game ranges, wildlife management areas, waterfowl production areas, and areas for the protection and conservation of fish and wildlife, that are threatened with extinction.[6]

The Refuge System contains 284 Migratory Bird (Waterfowl) Areas, 70 Migratory Bird (General) Areas, 16 Big Game Areas, four National Game Ranges, four National Wildlife Ranges, and over 2,300 Waterfowl Production Areas scattered in 116 counties in the north-central United States. The Fish and Wildlife Service also has obligations for 58 Wildlife Management Areas or Coordination Areas under cooperative agreements with Federal, state, local and private agencies and organizations (see 16 U.S.C. 661).[7]

---

[1]The Migratory Bird Treaty Act of 1918 and amendments (16 U.S.C. 703-711) implemented treaties with Great Britain (for Canada), Mexico (1936) and Japan (1974) providing for regulations to control taking, sellings, transporting and importing migratory birds and providing for penalties for their violation.

[2]The Marine Mammal Protection Act of 1972 (16 U.S.C. 1361-1407) established the responsibility of the Department of the Interior for the taking and importation of certain marine mammals, including the sea otter, walrus, polar bear, dugong, and manatee.

[3]The Endangered Species Act of 1973 (16 U.S.C. 1531-1543) is explained below in sections 3.8 and 13.2.

[4]The Fish and Wildlife Coordination Act of 1934 (16 U.S.C. 661-666c) authorized assistance to Federal, State and other agencies in development, protection, rearing and stocking of fish and wildlife and controlling losses thereof.

[5]The Federal Aid in Wildlife Restoration Act of 1937 (16 U.S.C. 669) provided funds from an excise tax on sporting arms and ammunition to States on a matching basis for land acquisition, research, development and management projects.

[6]*Code of Federal Regulations,* Title 50, Chapter I, section 25.

[7]"National Wildlife Refuge System, 1976," xeroxed, October 1975 (information current of June 30, 1975). Fish and Wildlife Service, Division of Wildlife Refuges. See Technical Appendix 3(a).

The elements of the System are defined in the *Code of Federal Regulations:*[8]

"Wildlife refuge area" means any area of the Wildlife Refuge System except wildlife management areas. (See definition of wildlife management areas below.)

"Migratory bird" refers to those species listed under the section 1.11 of Chapter one, Title 50 of the *Code of Federal Regulations;*

"Big game" means large game mammals, including moose, elk, caribou, reindeer, musk ox, deer, big horn sheep, mountain goat, pronghorn, bear, wild hogs, and peccary;

"Game range" means any area of public land administered jointly by the U.S. Fish and Wildlife Service and Bureau of Land Management for the protection and management of wildlife resources and for the grazing of domestic livestock under the terms of an Executive or Public Land Order establishing a specific area;

"Wildlife range" means any area of public land administered by the U.S. Fish and Wildlife Service for the protection and management of wildlife resources under the terms of an Executive Public Land Order establishing a specific area;

"Waterfowl production area" means any small wetland or pothole area acquired pursuant to section 4(c) of the amended Migratory Bird Hunting Stamp Act (72 Stat. 487; 16 U.S.C. 718b), owned or controlled by the United States and administered by the U.S. Fish and Wildlife Service as a part of the National Wildlife Refuge System;

"Wildlife management areas" (sometimes referred to as coordination areas) means any area of acquired land or public land withdrawn by the U.S. Fish and Wildlife Service and made available to the various states, or instrumentalities thereof, by cooperative agreement for management of wildlife resources in accordance with the Act of March 10, 1934 (48 Stat. 401), as amended.

The Service defines its functions as follows:[9]

1. Acquires, protects, and manages unique ecosystems necessary to sustain fish and wildlife such as migratory birds, resident species, and endangered species;
2. Operates fish hatcheries to support research, develop new techniques, and supplement angling pleasure for the well being of an ever growing number of Americans seeking recreation on streams, rivers, reservoirs, lakes, and sea shores;
3. Conducts fundamental research on fish, wildlife, and their habitats to provide scientific information leading to better management, healthier, more vigorous animals, and protection of the fish and wildlife from dislocation or destruction of their habitats, overuse, and industrial, agricultural, and domestic pollutants;
4. Develops, promulgates, and applies methods to control damage by birds and other wildlife to crops, domestic commercial animals, other wildlife, airplanes, and other property;
5. Renders financial and professional technical assistance to states through Federal aid programs for the restoration of fish and wildlife;
6. Conducts programs of research, enforcement, management, and professional technical assistance to other agencies for the protection of endangered species;
7. Promulgates and enforces regulations for the protection of migratory birds, marine mammals, fish, and other nonendangered wildlife from illegal taking, transportation, or sale within the United States or from foreign countries;
8. Conducts programs of planning, evaluation, and professional technical assistance to other agencies for the proper use and protection of fish and wildlife habitat subject to man's manipulation of his environment;
9. Conducts programs of interpretation, education, and recreation to foster a stewardship ethic in the American public through high quality fish- and wildlife-oriented experience;
10. Communicates information essential for public awareness and understanding of the importance of fish and wildlife resources to man and in interpreting fish and wildlife changes reflecting environmental degra-

---

[8]*Code of Federal Regulations,* Title 50, Chapter I, section 25.

[9]*U.S. Department of the Interior Manual,* Chapter I, part 142.1.1, Release No. 1579, 10/5/73.

dation that ultimately will effect the well-being of man.

The Service participates in the Research Natural Areas Program of the Federal Committee on Ecological Reserves (see Chapter Eleven). The Service has designated to date 172 Research Natural Areas, which occupy about 3.5% or 1.2 million acres of the Refuge System.[10]

3.2 Overall objectives

The three basic objectives of the Fish and Wildlife Service as stated in the *Department of the Interior Manual* are:

1. To assist in the development and application of an environmental stewardship ethic for our society, based on ecological principles, scientific knowledge of fish and wildlife, and a sense of moral responsibility;
2. To assist and guide the conservation, development, and management of the Nation's fish and wildlife resources;
3. To assist in the development of a national program to provide the American public opportunities to understand, appreciate, and use fish and wildlife resources. These objectives support the Service mission of assuring maximum opportunity for the American people, consistent with their needs and desires, to benefit from fish and wildlife resources as part of man's natural environment.[11]

[10] It should also be mentioned that the Service maintains an Office of Biological Services for research into environmental problems. The Office is currently pursuing three categories of research: (1) the Aquatic Ecosystem; (2) the Upland Ecosystem; and (3) Inventory and Systems Development. The Office contains an Environmental Assistance unit, which deals with, *e.g.*, problems created by the Alaska pipeline, Idaho phosphate mining, use of pesticides and other toxics. An example of a specific project the Office is undertaking is a national inventory of wetlands of the United States. See *An Introduction to the Office of Biological Sciences*, Fish and Wildlife Service, June 1975, pp. 151 ff.

[11] *U.S. Department of the Interior Departmental Manual*, Chapter 1, part 142.1.1A, Release No. 1579, 10/5/73.

B. Natural Area Activities

3.3 Program objectives

Considering that substantial portions of the Refuges are natural areas by themselves, it is important to describe the objectives of the Refuge System, reproduced here as they appear in the Service's Refuge System 1970 *Objectives Handbook:*

OUTPUT-PRODUCING OBJECTIVES
(In Priority Ranking)

1. To assure the survival in a natural state of each of this Nation's plant and animal species.
2. To assure the continued availability of habitat capable of supporting migratory bird populations at desired levels.
3. To demonstrate both optimizing and maximizing practices of wildlife and wildlands management, including demonstrations of reconciling wildlife needs with human modifications of traditional habitat.
4. To expand understanding and appreciation of wildlife, wildlands ecology, and man's role in his environment.
5. To increase the amount and availability of professional wildlife and wildlands management expertise, services, and facilities, and to make the public aware of them.
6. To communicate information essential to an optimal level of public understanding of the benefits obtained from the Refuge System.
7. To contain all lands or networks of lands of national significance whose benefits to the public can best be achieved by the distinctive competence of the National Wildlife Refuge System.
8. To establish and preserve in a natural state selected areas for reference observation, scientific study, and/or specialized public use, and in which the major ecological communities in the system are represented.
9. To raise to optimum levels the kinds, range, amount, and quality of wildlife and wildlands oriented recreation.
10. To apportion wildlife population and related benefits in accordance with estab-

lished criteria for social and geographic distribution of these benefits.

11. To contain wildlife populations representative of all major vegetative associations.
12. To maximize the abundance and diversity of native wildlife on each refuge, compatible with carrying capacity and other constaints.
13. To remove the calculated surplus of refuge animals and other environmental products for maximum public benefit, while minimizing both displeasure of the nonconsumptive public and adverse effects on other wildlife and environmental values.
14. To seek out, identify, designate, preserve, and appropriately use sites and objects on refuges that are recognized to have esthetic, historic, geologic, archeologic or scientific values.
15. To utilize the network of refuge environments and their wildlife populations to provide ecological monitoring services to the Nation.
16. To establish on selected refuges, sanctuaries in which the major wildlife communities in the system are represented, hunting and other recreational removal of wildlife are not allowed, there is minimum disturbance to wildlife, and the needs of wildlife are fulfilled.
17. To reduce off-refuge damage from refuge wildlife to an acceptable ratio of cost of control to loss.
18. To increase other non-mission oriented economic and social benefits to individuals, communities, regions and the Nation that either enhance or do not detract significantly from wildlife and related environmental benefits.

(The *Operations Handbook* also contains criteria and systems management objectives which are reproduced below in section 3.6.)

The *Code of Federal Regulations* further elaborates on the purposes of Refuges:

> All wildlife Refuge areas are maintained for the fundamental purpose of developing a national program of wildlife conservation and rehabilitation. These areas are dedicated to wildlife found thereon and for the restoration, preservation, development and management of wildlife habitat; for the protection and preservation of endangered or rare wildlife and their associated habitat; and for the management of wildlife; in order to obtain maximum production for perpetuation, distribution, dispersal, and utilization. This subchapter effectuates these primary objectives in accordance with the obligations of the United States under the treaties with Great Britain and the United Mexican States, and allows public enjoyment of wildlife refuge areas consistent with these objectives.[12]

Some natural area activities and programs of the Service are authorized by Congressional legislation, such as the Wilderness program and the Endangered Species program, while others are operated under Service-administered regulations and policies, such as Research Natural Areas and Public Use Natural Areas. A fifth program conducted within the National Wildlife Refuge System is the National Natural Landmarks program which is under the aegis of the National Park Service but administered by the agencies on whose lands the Natural Landmarks are designated.

Program objectives therefore appear in specific legislation, the *Code of Federal Regulations,* administrative manuals of the Service, and internal and inter-agency memoranda.

The Research Natural Area program[13] is affiliated with the inter-agency Federal Committee on Ecological Reserves (for discussion of this committee see Chapter Eleven). The definitions and objectives of the program have been drawn from the guidelines of the Federal Committee on Ecological Reserves. The Federal Committee definition of a Research Natural Area which serves as a guide to the Service is:

> . . . an area where natural processes are allowed to predominate and which is preserved for the primary purposes of research and

[12] *Code of Federal Regulations,* Title 50, Chapter I, section 25.2.

[13] An example of a Service designated Research Natural Area, Stinking Lake in Oregon, is discussed below in section 3.7.

education. These areas may include: 1. Typical or unusual faunistic and/or floristic types, associations, or other biotic phenomena. 2. Characteristic or outstanding geologic, pedologic, or aquatic features and processes.

Research Natural Areas have these objectives:

1. To assist in the preservation of examples of all significant natural ecosystems for comparison with those influenced by man;
2. To provide educational and research areas for scientists to study the ecology, successional trends, and other aspects of the natural environment;
3. To serve as gene pools and preserves for rare and endangered species of plants and animals.[14]

The Service, while using the Federal Committee's definition and objectives in its Research Natural Area program, does not restrict area uses solely to research and education. (See section 3.6.) In 1972 the Federal Committee published a new definition and set of objectives which the Refuges Division of the Service maintains can also be applied to its Research Natural Area Program.[15] (See Chapter Eleven for further discussion.)

A "Public Use Natural Area", a Fish and Wildlife Service administratively created designation, is defined as ". . . a relatively undisturbed ecosystem or sub-ecosystem that can be enjoyed by the public under certain restrictions without destroying it."[16] The objectives for establishing a Public Use Natural Area are:

1. To assure the preservation of such a variety of significant natural areas for public use that, when considered together, they will illustrate the diversity of the system's natural environments.
2. Along with Research Natural Areas, Public Use Natural Areas serve to preserve for the future valuable environments that are essentially unmodified by man.[17]

An example of a Public Use Natural Area, the Melz Slough in Illinois, is discussed below in section 3.7.

The Endangered Species program—*i.e.*, the program which has developed as a result of the obligations imposed on the Secretary of the Interior to protect endangered and threatened species by the Act of 1973[18]—has been conducted by the Service. Lists of endangered and threatened animal species have been prepared and are under continual study.[19] Regulations concerning endangered and threatened species have been drafted and published, as have regulations governing acceptable state plans for the protection of such species. The decisions the Service must make in this area are often the subject of controversy. The Service also manages some endangered species habitat. See section 3.7.

Wilderness is another area of Service concern. The Service does not have the role of being main administrator of the National Wilderness Preservation System (described in Chapter Eight), as it does with the Endangered Species program, but the Service participates in the designation and protection of areas

> . . . where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain . . . (where) land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.[20]

---

[14] 1968 *Directory of Research Natural Areas,* Federal Committee on Research Natural Areas, 1968, p. 2.

[15] Interview with Staff, Division of Wildlife Refuges.

[16] *Program Planning-Budgeting-Evaluation System Handbook.* Fish and Wildlife Service. Wildlife Refuge Handbook, H-4, III, 1972.

[17] *Ibid.*

[18] See Chapter Thirteen, below.

[19] For the latest lists, see Technical Appendix 3(f).

[20] 16 U.S.C. 1131(c).

One such area the Service has designated is the Great Swamp in New Jersey. Details on this area are given below in section 3.7.

The National Natural Landmarks program, a unique inter-agency administrative program which is operated by the National Park Service through cooperative memoranda with the Fish and Wildlife Service, Bureau of Land Management and the Forest Service, has provided for added natural area recognition of 22 areas within the National Refuge System. A National Natural Landmark is an area which is considered to have national significance, possessing exceptional value or quality in illustrating or interpreting the natural heritage of the nation, and must present a true, accurate and essentially unspoiled example of natural history.

> The objective of the Natural Landmarks program is to assist in the preservation of a variety of significant natural areas which, when considered together, will illustrate the diversity of the country's natural history. This objective is attained through identification sites eligible for inclusion in the national registry.[21]

3.4 Program entry process

The vast bulk of the land held by the Fish and Wildlife Service is administered under either the National Wildlife Refuge System or the National Fish Hatchery System. The Service also administers an easement program to protect waterfowl production areas (*i.e.*, to prevent landowners from draining such areas) which covers about one million acres.

The entire National Wildlife Refuge System is considered by some to constitute a natural area system. The wide-ranging number of uses permitted on the Refuges, however, significantly qualify the acreage which should really be considered in this category.[22] See the illustrative examples in section 3.7 for an enumeration of uses permitted on various areas.

Land enters the jurisdiction of the Fish and Wildlife Service by way of an Act of Congress; by an administrative action such as transfer of land from another agency, Federal or state; or by receipt of a gift of land from a state or unit of local government, a private organization, or an individual. Another way of looking at land entry is as follows. In June of 1974, the latest month for which published figures are available, the land under the Service's jurisdiction entered in the following proportions: 81% has been reserved from the public domain (in the great majority of this the Service now has sole or primary control of the land, but some is jointly administered with other agencies); 14% has been acquired either from another Federal agency, by devise or gift, or by direct purchase, and 5% is leased or subject to an easement agreement. The acreage figures are about 27.5 million acres reserved from the public domain; 4.5 million acres acquired; and 1.5 million acres leased or subject to an agreement.[23]

Since 1973 the Refuge field management program has been operating with a "Refuge Benefit Unit" System. This system was designed to provide the Refuge System with an overall assessment of Refuge activities based on the values and purposes for which each Refuge was established. The assessment is conducted through a set of about 70 recognized "outputs," or types of activities, which can take place on particular Refuges. Units under the Refuge Benefit Unit System are assigned to these outputs each year according to a predetermined scale. Obvi-

---

[21] See Chapter Twelve, below, for a full description of the program and for appropriate citations. See section 3.7, below, for a discussion of a Natural Landmark on Fish and Wildlife Service property.

[22] Acreage figures on "protected natural areas" are not available from the Division of Refuges, however, and such figures would be extremely difficult to gather, given the fact that there is no generally adopted definition of the term.

[23] Division of Realty, Fish and Wildlife Service, *Annual Statistical Reports, Fiscal Year 1974,* Table 1, p. 3.

ously, some Refuges will be capable of more outputs than others.

The intention of the system is to be able to compare any Refuge to any other Refuge, and any particular project on a given Refuge can be weighed against another project to determine its cost/benefit value. The Refuge Benefit Unit System is therefore a tool in Refuge management decisions on each Refuge, and an overall evaluation method for administration of the Refuge System.

Refuge Benefit Units, accrued on an annual basis per Refuge, enable the components of the Refuge System to be ranked by the number of units scored. Budget allocations by Refuges and outputs take into account annual totals of Refuge Benefit Units.

Most of the outputs in the Benefit Unit System are based on wildlife and wildlife-related values. For example, public use activities such as camping, boating, swimming, off-road vehicle use, and picnicking receive no Benefit Units, while the designation of a Research Natural Area or a Public Use Natural Area add one million benefit Units each, and the Congressional establishment of a wilderness area adds ten million Benefit Units to a Refuge's total. For each visitor/hour spent in environmental education activities, a Refuge receives 150 Benefit Units, while each visitor/hour spent in hunting receives 50 Benefit Units. The introduction of a major non-Refuge activity on a Refuge, such as the operation of a power plant facility, neither adds nor subtracts Refuge Benefit Units automatically,

Table I

Office of Endangered Species
Endangered Species Acquisition Projects FY 1968 through FY 1975[24]

Project and State	Primary Species	Acreage	Obligated Acquisition Funds[25]
National Key Deer, Florida	Key deer	2,734	$ 1,683,466
Mason Neck, Virginia	Southern bald eagle	950	2,378,534
Okefenokee, Georgia	Alligator	23,289	935,065
Great White Heron, Florida	Southern bald eagle	503	113,103
Cathlament, Oregon	Columbian white-tailed deer	2,888	1,871,600
Tenasillake, Washington	Columbian white-tailed deer	1,411	802,900
St. John's, Florida	Dusky seaside sparrow	2,749	1,241,373
Hawaiian Water Birds, Hawaii	Hawaiian coot, Hawaiian stilt, Hawaiian gallinule	1,095	1,629,121
Blackwater, Maryland	Delmarva fox squirrel	588	188,037
Attwater's Prairie Chicken, Texas	Attwater's greater prairie chicken	2,112	1,059,124
California Condor, California	California condor	1,871	510,000
Patuxent, Maryland	(research for endangered species)	462	936,076
	TOTAL	40,652	$13,348,000

[24] Source: Office of Endangered Species and International Activities, October 1975. There are slight discrepancies with the figures given by the Division of Realty, which puts the acreage figure at 40,732 and the amount at $13,468,000.

[25] Money comes from the Land and Water Conservation Fund.

but the effect of that activity on the Refuge may be to decrease the number of Benefit Units over time due to its infringement on other outputs.

Refuges' staffs are engaged in continuing inventory and checking processes built into the Service's Refuge management program; this includes the identification of potential Research Natural Areas, Public Use Natural Areas, Wilderness Areas and endangered species habitat. Research Natural Areas or Public Use Natural Areas must be officially approved by the Service's Director, a step which constitutes designation.

There are currently 172 officially designated Research Natural Areas which occupy about 3.5% or 1.2 million acres of the 33 million acres of the Refuge System. There are currently 29 Public Use Natural Areas which total 6,439 acres.

Habitat acquired for the preservation of endangered species by the Service's Office of Endangered Species and International Activities is passed on to the Refuge System for management. Lands acquired do not necessarily constitute natural areas *per se.* However, the Division of Wildlife Refuges which manages them may identify some or parts of these acquisitions for natural area programs. An example is the area purchased to preserve the Attwater's Prairie Chicken habitat, part of which was already established as a National Natural Landmark prior to entering the Refuge System (for further discussion of this area, see section 3.7). Since the purpose of preserving endangered species is to increase their numbers until they are no longer threatened or endangered, time may come when these species are eliminated from the official lists.

Land obtained for the purpose of protecting endangered species habitat to date has been purchased, although transfers from other agencies and gifts are not precluded by the Endangered Species Act. Table 1 summarizes purchases through Fiscal Year 1975.

Other programs within the National Wildlife Refuge System are the Wilderness System and the National Natural Landmarks Program. These are treated in detail in Chapters Eight and Twelve, respectively, which should be referred to for discussion of their entry processes. There are currently 41 Wilderness Areas established within Refuges, totaling 575,620 acres, and there are 21 National Natural Landmarks within Refuges totaling 2,414,912 acres.

3.5 Protection

The basic statutory protection found in the statutes for elements of the National Wildlife Refuge System is as follows:

> (c) No person shall knowingly disturb, injure, cut, burn, remove, destroy, or possess any real or personal property of the United States, including natural growth, in any area of the System; or take or possess any fish, bird, mammal, or other wild vertebrate or invertebrate animals or part of nest or egg thereof within any such area; or enter, use, or otherwise occupy any such area for any purpose; unless such activities are performed by persons authorized to manage such area, or unless such activities are permitted either under subsection (d) of this section or by express provision of the law, proclamation, Executive order, or public land order establishing the area, or amendment thereof: *Provided,* That the United States mining and mineral leasing laws shall continue to apply to any lands within the System to the same extent they apply prior to October 15, 1966, unless subsequently withdrawn under other authority of law.[26]

This subsection goes on to note the special obligations connected with endangered and threatened species and to specify the relationship of Federal and state regulation of hunting and fishing:

> With the exception of endangered species and threatened species listed by the Secretary pursuant to section 1533 of this title in States

[26] 16 U.S.C. 668dd (c).

wherein a cooperative agreement does not exist pursuant to section 1535(c) of this title, nothing in this Act shall be construed to authorize the Secretary to control or regulate hunting or fishing of resident fish and wildlife on lands not within the system.[27]

The activities permitted under subsection (d) referred to in the first of the two quotations set out above depend upon a general power vested by the statute in the Secretary of the Interior to issue regulations for elements of the System. These regulations must be "compatible with the major purposes for which such areas were established:"

(d) The Secretary is authorized, under such regulations as he may prescribe, to—

(1) permit the use of any area within the System for any purpose, including but not limited to hunting, fishing, public recreation and accommodations, and access whenever he determines that such uses are compatible with the major purposes for which such areas were established: Provided, That not to exceed 40 per centum at any one time of any area that has been, or hereafter may be acquired, reserved, or set apart as an inviolate sanctuary for migratory birds, under any law, proclamation, Executive order, or public land order may be administered by the Secretary as an area within which the taking of migratory game birds may be permitted under such regulations as he may prescribe; and

(2) permit the use of, or grant easements in, over, across, upon, through, or under any areas within the System for purposes such as but not necessarily limited to, powerlines, telephone lines, canals, ditches, pipelines, and roads, including the construction, operation, and maintenance thereof, whenever he determines that such uses are compatible with the purposes for which these areas are established.[28]

Criminal penalties are specifically provided for violators of the statute or Secretarial regulations:

(e) Any person who violates or fails to comply with any of the provisions of this Act or any regulations issued thereunder shall be fined not more than $500 or be imprisoned not more than six months, or both.[29]

Provision is also made for enforcement:

(f) Any person authorized by the Secretary of the Interior to enforce the provisions of this Act or any regulations issued thereunder, may, without a warrant, arrest any person violating this Act or regulations in his presence or view, and may execute any warrant or other process issued by an officer or court of competent jurisdiction to enforce the provisions of this Act or regulations, and may with a search warrant search for and seize any property, fish, bird, mammal, or other wild vertebrate or invertebrate animals or part or nest or egg thereof, taken or possessed in violation of this Act or the regulations issued thereunder. Any property, fish, bird, mammal, or other wild vertebrate or invertebrate animals or part or egg thereof seized with or without a search warrant shall be held by such person or by a United States marshal, and upon conviction, shall be forfeited to the United States and disposed of by the court.[30]

Another protection provided by the statute concerns not the intrusions of unauthorized malefactors on Refuge System land, but a limitation on the authority of the Secretary to dispose of elements of the System:[31]

No acquired lands which are or become a part of the System may be transferred or otherwise disposed of under any provision of law (except by exchange pursuant to subsection (b)(3) of this section).[32]

Despite this last limitation on the Secre-

[27] *Ibid.*

[28] 16 U.S.C. 668dd (d).

[29] 16 U.S.C. 668dd (e).

[30] 16 U.S.C. 668dd (f).

[31] 16 U.S.C. 668dd (a).

[32] This subsection authorizes the Secretary: to acquire lands or interests therein by exchange (a) for acquired lands or public lands under his jurisdiction which he finds suitable for disposition, or (b) for the right to remove, in accordance with such terms and conditions as the Secretary may prescribe, products from the acquired or public lands within the System.

tary's authority, the overall framework of protection represented in the statutory sections quoted above contains few absolute prohibitions. This is in contrast to the Endangered Species Act of 1973 which specifically prohibits a long list of detrimental activities.[33] The prohibitions contained in the Refuge System protection framework are not absolute because the Secretary, under subsection (d) set out above, is authorized to issue regulations governing elements of the System.[34] To be sure, these regulations must not be incompatible with the major purposes for which such areas were established, but the fact is that different individual elements have been established for widely different purposes and there is, in addition, considerable discretion in interpreting what is "compatible" and what is not. The result is a variety of regulations covering such subjects as general recreational use of the Refuge System, the use of boats, hunting, and sport fishing. All of these activities are permitted in certain circumstances, as are trapping and even commercial harvest of fishery resources, if a permit is obtained.

There are other points which involve the protected status of units of land under the jurisdiction of the Fish and Wildlife Service. Two ways in which the Service may obtain jurisdiction of land units are (1) purchase, which generally includes mineral or subsurface rights as well as surface rights; and (2) withdrawal of lands from the public domain. Of these two, withdrawal requires special discussion.[35]

Withdrawal, a formal action by the Secretary of the Interior, has the effect of limiting the use of the land for a specific purpose or purposes, including the protection of natural areas from appropriation under such laws as those providing for mining entry or mineral leasing.[36] In the case of the Fish and Wildlife Service, the main use of withdrawal is to set aside public lands for Refuge or other wildlife purposes. In this there is a distinction which should be noted: *viz.*, that between primary and secondary withdrawals: these connote the priority of purposes for which land is withdrawn. If the land has been withdrawn mainly for fish and wildlife purposes it is primary; otherwise it is secondary. This is particularly useful in understanding some of the cooperative agreements which have resulted in the establishment of Refuges or Coordination Areas. For example, a Federal agency (such as the National Aeronautics and Space Administration) may acquire a land unit for a specific agency purpose and recognize that a portion of that land which is not needed for its own purpose is suitable for wildlife purposes. The wildlife uses here justify a secondary withdrawal.

Examples of Refuges which have been in part or completely withdrawn are the Fish and Wildlife Service's four Game Ranges which, until recently, were managed jointly by agreement between the Service and the Bureau of Land Management. In 1974, at the request of the agencies, the Secretary of the Interior issued public land orders transferring the three still in joint hands to the sole administration of the Bureau which is to continue managing them as Game Ranges. The Bureau, while not yet having taken over sole responsibility due to a legal cloud on the transfer, has declared publicly that it will not alter the present withdrawal status, which precludes mining entry, when it receives stewardship of the Ranges, although it could at anytime request that the Secretary revoke or alter that status.

---

[33]See section 13.2, below.

[34]The Secretarial regulations which have been codified are found in Subchapter C of Chapter I of Title 50 of the *Code of Federal Regulations.*

[35]Compare Chapter Four for a discussion of withdrawal as it works in the Bureau of Land Management.

[36]Note that 16 U.S.C. 668dd (a), quoted at the beginning of this section, specifically provided that the mining and mineral leasing laws were to continue to apply to any lands within the Refuge System to the same extent as before October 15, 1966, the date 668dd became effective.

To date only two Refuges are still open to mining entry: the Clarence Rhodes and the Cape Newenhan Wildlife Refuges, both in Alaska. All units of the Refuge System are open to mineral leasing except for the Simeonof and portions of the Salton Sea and Salt Plains Refuges, and the Desert National Wildlife Range.[37]

While withdrawal can protect an area against certain uses by the public and the Federal and local government, a withdrawal can be revoked or altered by the Secretary. Indeed 16 U.S.C. 668dd(a) specifically provides: "Nothing contained in this Act shall restrict the authority of the Secretary to modify or revoke public land withdrawals affecting lands in the System . . . whenever he determines that such action is consistent with the public interest." Therefore, withdrawal, whether temporary or permanent, is still tentative in nature, not something which is as binding as an Act of Congress setting an area aside.

When land is purchased or otherwise acquired in fee simple, subsurface as well as surface rights are included and come under Service jurisdiction. Such land, although in public ownership, is not open to the general public land laws, and thus is not subject to withdrawals. Funds to acquire such land were authorized by Congress—rather than allocated by the Secretary—and only Congress can authorize a change in the status of Refuges which have become part of the system by this means.

Natural areas within the Refuge System—Research Natural Areas, Public Use Natural Areas, land acquired for the protection of endangered species, National Natural Landmarks and Wilderness Areas—all receive the protection afforded to Refuges discussed above. Beyond that, there are variations in what these special designations mean in terms of protection.

Research Natural Areas, Public Use Natural Areas, and National Natural Landmarks are designations which officially identify certain sites on the bases of particular criteria; they can all be disestablished by an administrative process, and thus receive no additional protection beyond that afforded by their designation. However, these designated areas must be taken into account in environmental impact statements required by the 1969 National Environmental Policy Act[38] before any plan by Federal agencies to manipulate land or water is carried out.

Land which is the recognized habitat of an endangered species is indirectly subject to the strong protection provided by the Endangered Species Act. Although species destruction is directly forbidden by the Act, habitat disruption is obviously related to the purpose of the Act and is in fact contrary to the legislative history of the Act.[39] Also, protection is provided against Federal activities endangering such habitat in that section 7 of the Act prohibits actions on the part of any agency which further endangers an endangered species.

Wilderness Areas, once designated by Congress, must be administered to preserve the wilderness character of the area and devoted to the public purposes of recreational, scenic, scientific, educational, conservation and historical use. Certain uses are prohibited by the Act, as are certain Federal, state, community and private activities. The Wilderness System is discussed in detail in Chapter Eight.

One final point should be made about protection. Under the Fish and Wildlife Coordination Act (16 U.S.C. 661-666c) and the Fish and Wildlife Act of 1956 (16 U.S.C. 742a *et seq.*), the Secretary of the Interior has authority to coordinate actions by Federal agencies affecting Fish and Wildlife. This has led the Secretary to conclude Memoranda of Understanding with several agencies ensuring that the Interior Department in general, and the Fish and

[37] Interview with Fish and Wildlife Service, Division of Wildlife Refuges, October, 1975.

[38] See section 13.3, below, for a discussion of this Act.

[39] See section 13.2, below, for a discussion of this Act.

Wildlife Service in particular, will be consulted before actions affecting fish and wildlife are undertaken. An example of such a memorandum, the one involving the Army Corps of Engineers, is reproduced as Technical Appendix 3(b).

3.6 Management

Guidelines for management come from pertinent legislation, from policy statements and objectives contained in the *Code of Federal Regulations,* from the guidelines of the Federal Committee on Ecological Reserves, and from the Service's *Field Manual.*

The Service's *Field Manual* sets out management procedures in detail, discussing authorizations, acquisitions, lines of authority, and public relations in the management process. A section from the *Manual,* "3111. Development and Management Plans" has been reproduced as Technical Appendix 3(e).

The Federal Committee on Ecological Reserves has been the impetus behind the establishment of Research Natural Areas on Federally-held lands. This Committee does not hold land itself. (Chapter Eleven deals with the Committee.) The following is the Committee's revised definition of a Research Natural Area or Ecological Reserve (in 1974 the newly reorganized Committee revised its 1968 definition to permit limited deliberate manipulation for management purposes, it now reads):

> A Research Natural Area is a physical or biological unit where natural conditions are maintained insofar as possible and which is reserved for the primary purpose of research and education. These conditions are achieved by allowing ordinary physical and biological processes to operate without human intervention. However, under specific circumstances, on certain Areas, deliberate manipulation intended to maintain the unique features that the Research Natural Area was established to protect may be utilized.[40]

Management on Refuges and within special program natural areas means, for the most part, allowing, controlling and prohibiting certain activities relative to each Refuge and programs objectives. This is usually accomplished by specific regulations dealing with issuing permits, limiting or discouraging certain types of uses, and enforcing special laws, such as game laws.

Permits are required for some types of special use—from hunting to building a power plant. Certain types of permit applications may be refused or reviewed by Refuge managers, by the Service's Director, or by the Secretary of the Interior. Uses may be limited by restricting activities to specified areas or to specified times of the year. For example, public visits to the Refuge at Mason Neck, Virginia, are limited to specific months in order not to disturb nesting bald eagles. Some uses which are permissable are in effect discouraged by not being listed under permitted activities in Refuge literature. Certain areas of delicate value, such as Research Natural Areas, may not be identified on maps or referred to in Service literature in order not to attract interest. These areas may also be fenced and/or posted to prevent unauthorized entry.

Management objectives are set out in a general fashion in the 1970 National Wildlife Refuges *Objectives Handbook.* The list which follows is a portion of that reproduced above in section 3.3:

Criteria and Systems Management Objectives

(Not in Priority Ranking)

19. To manage public use of refuges for optimum wildlife and wildlands benefits to

---

[40] Federal Committee on Ecological Resources, "Standards and Policy Guidelines for Research Natural Areas," 1974, (unpublished).

people while minimizing degradation of the resource base.

20. To maintain at above minimum recovery levels all native species found on each refuge.
21. To maximize naturalness and natural beauty in the utilization and manipulation of refuge resources.
22. To minimize losses and harm to refuge users from other refuge users and from the environment.
23. To make decisions that evidence commitment to long-term future values appropriate to a conservation philosophy.
24. To employ increasingly precise and powerful methods of managerial science to maximize the effective functioning of the Refuge System.
25. To improve the ability to predict and manage production of refuge outputs.
26. To employ the best qualified people with high potential for growth, creativity, and personal improvement; to provide education, training, standards and incentives to assure sustained high levels of performance and job satisfaction.
27. To secure, communicate, and use effectively the information necessary for sound managerial decisions in the Refuge System.
28. To anticipate the changing needs that people have for the Refuge System and to appropriately respond to these needs.
29. To optimize management of each refuge and the Refuge System for:
    a. Maximum number of total benefits.
    b. Widest range of benefits.
    c. Greatest diversity of benefits.
    d. Greatest utilization of each refuge resource.
    e. Best combination of benefits.
    f. Minimum conflict among those who receive benefits from refuges.
    g. Best social and geographic distribution of benefits.
    h. Greatest long-term security and future values of resources.
    i. Least cost.
    j. Maximum accommodation of the public needs.

3.7 Illustrative examples:

(a) Upper Mississippi River Wildlife and Fish Refuge

The Upper Mississippi River Wildlife and Fish Refuge was established by Act of Congress on June 7, 1924.[41] The Secretary of Agriculture (in 1939 the responsibility was shifted to the Secretary of the Interior) was authorized to acquire non-agricultural lands between Wabasha, Minnesota, and Rock Island, Illinois. The purpose was to provide "a Refuge and breeding place for migratory birds included in the . . . convention between the United States and Great Britain. . . .," as well as for other forms of wildlife, and to conserve wild flowers and aquatic plants.

Lands were included in the Refuge by fee purchase and by reservation from the public domain by a series of Executive Orders. Twenty-four acres were added by gift and by lease or easement. The balance was placed in the Refuge under a general plan and by cooperative agreements with the Corps of Engineers and the four states involved: Illinois, Iowa, Minnesota and Wisconsin.

Acreage: The present acreage total is 195,093, or, according to the four state breakdown: Illinois—23,261 acres, Iowa —50,639 acres, Minnesota—33,004 acres, and Wisconsin—88,189 acres.

Elevation: The range is from 200 to 600 feet.

Topographical features: This is essentially flood plain area with gradual slopes, sand prairies, wet marches, timber areas, river and river bottom land.

Fauna and flora: There exists both aquatic and terrestrial animal and plant life on the Refuge. Nearby 350 species of wildlife indigenous to the area have been identified. These include: bald eagles *(Haliaeetus leucocephalus),* wood ducks *(Aix sponsa),* whistling swans *(Olor columbianus),* and can-

[41] 16 U.S.C. 721-731.

vasback ducks *(Aythya valisineria),* as well as an array of small mammals and whitetail deer. The dominant plant community is the northern floodplain forest, in which cottonwood *(Populus deltoides),* black willow *(Salix nigra),* and American elm *(Ulmus americana)* predominate. Other components of this type include river birch *(Betula nigra),* green ash *(Fraxinus pennsylvanica), silver maple (Acer saccharinum),* and box elder *(Acer negundo).* Poison ivy *(Rhus radicans)* is very dense in places. In season, cardinal-flowers *(Lobelia cardinalis)* and great lobelia *(L. siphilitica)* appear. There are several Carolinian species on the refuge which are 350 miles north of their normal range.

Uses: The Refuge is used to maintain examples of delicate marsh land ecology for research and posterity, but recreation uses, such as boating and picnicking are very popular. Unlike many Refuges, 80% of this area is open to waterfowl hunting. Trapping is also allowed by permit. Motorized vehicle use is limited mostly to boats and snowmobiles because of the marsh character of the land.

Withdrawal status: Ownership (in fee simple) of this Refuge was acquired by the Fish and Wildlife Service with mineral rights; therefore the area is not automatically open to mining entry and does not need to be withdrawn from this purpose, but mineral leasing remains at the option of the Secretary of the Interior.

Protection problems: An internal problem is the accumulation of sediment of the river areas which fill marshes and threaten wildlife by altering its habitat. Dredging and the creation of spoil islands, done by the Army Corps of Engineers as part of their responsibility to keep open a nine foot deep river channel, have also had a negative impact on maintenance of the aquatic environment.

Protection afforded: The area is protected and managed as part of the National Wildlife Refuge System. Several parts of this Refuge were considered for the Wilderness System by the Service but the issue is clouded because of the problems involving sedimentation and dredging which would affect the proposed areas. Establishment as a Wilderness Area would alter the Army Corps of Engineers' role and its responsibilities for keeping the river water navigable. There are also continual external pressures on the Refuge from local groups and companies which want to develop or use parts of the area for purposes incompatible with Refuge objectives.

Management: General objectives of the Upper Mississippi River Wildlife and Fish Refuge are to manage the Refuge for the following, to:

1. Preserve intact the undiluted wild-land character and natural beauty of the river with its habitat and wildlife;
2. Provide habitat for the nearly 350 species of wildlife indigenous to the valley with particular emphasis on wintering bald eagles, breeding wood ducks, all migrating waterfowl with special concern for whistling swans and canvasback ducks, and resident furbearers;
3. Foster public understanding of flood plain ecology and appreciation for the fragile nature of its ecosystems through wildlife-wildlands interpretation and environmental education;
4. Provide both consumptive and non-consumptive recreation to the extent possible with the preservation of the resources;
5. Cooperate with other agencies and private interests to promote sound management of all the resources of the river.[42]

Contact:

Refuge Manager
Box 226
Winona, Minnesota 55987

(b) National Elk Refuge, Wyoming

The National Elk Refuge was created to provide winter range for the preservation of the Jackson Hole elk herd. Congress es-

[42] Upper Mississippi River Wildlife and Fish Refuge Wilderness Study Report (unpublished), pp. 7-8.

tablished the area in 1912, before the creation of the Fish and Wildlife Service. It is located in an intermountain valley within view of the famous Teton Mountains of Wyoming.

Acreage: The area contains 23,972 acres.

Elevation: The range is from 6,250 feet in the southwestern corner to 7,245 feet in the north-central part.

Topographical features: The lower elevations are characterized by marsh and wet meadowlands with numerous springs and seeps. The higher slopes and ridges are well drained and covered with grasses and forbs. Lodgepole pine *(Pinus contorta)* and quaking aspen *(Populus tremuloides)* occur on the western exposures.

Sheet and gully erosion are apparent on some of the steeper slopes. Soils at lower elevations are alluvial, generally composed of a sandy loam, and are shallow and permeable. There are considerable areas of gravelly soils and cobble on the south slopes and ridges.

Fauna and flora: The main animals on the Refuge beside the elk *(Cervus canadensis)* are moose *(Alces alces)* and bighorn sheep *(Ovis canadensis)*. There are also water impoundments which provide habitat for waterfowl, including trumpeter swans *(Olor buccinator)*. Two plant community types are present. At higher elevations, the western spruce-fir forest[43] predominates, in which subalpine fir *(Abies lasiocarpa)* and Engelmann spruce *(Picea engelmannii)* are the dominant species. At lower elevations, the dominant community is the sagebrush steppe, characterized by big sagebrush *(Artemisia tridentata)* and blue-bunch wheatgrass *(Agropyron spicatum)*.

Uses: Several agencies, state and local, and utilities companies have permits or easements for water use, roads, utility lines above and below ground, and equipment storage units. Some recreation uses are permitted including an area set aside as a local park: limited hunting of elk is permitted as part of the herd management program (see Management): there are trails and roads, and motorized vehicles are permitted. A National Fish Hatchery occupies 40 acres and obtains its water from Refuge water sources. There are also several gravel pits.

Designation: The Refuge was established by an Act of Congress in 1912.

Withdrawal status: Ownership (in fee simple) of this Refuge was acquired by the Service with mineral rights; therefore the area is not automatically open to mining entry and does not need to be withdrawn from this purpose; mineral leasing remains at the option of the Secretary of the Interior.

Protection problems: Apparently there are none.

Protection afforded: The area is protected and managed as part of the National Refuge System which has authority to enforce measures against abuses. The entire Refuge has been identified for wilderness study and as a Research Natural Area but both have been turned down.

Management: The primary goal of management on the National Elk Refuge is to provide habitat and care for the elk that winter on this area. All management functions are conducted in a manner to protect this resource from undue exploitation from all sources. Management consists of caring for and feeding a maximum of 7,500 elk. Hay or alfalfa pellets are used during the short period that feeding is necessary. The Refuge operation tries to rely on natural feed and introduced grasses that are consumed in the fields. Special investigations now in progress involve trapping of elk, disease research, and ecology studies of coyotes. All of these activities depend to some degree upon the use of motorized entry.

To discourage the buildup of a resident elk herd a special hunt is held on the Refuge over a three week period each fall. This hunt permits 180 people to pursue elk.

---

[43] Küchler, A. W. 1964. *Potential Natural Vegetation of the Conterminous United States.* American Geographical Society, New York.

Hunters are restricted to foot or horseback. The hunters and patrolling Refuge personnel use the road and trail system heavily during this time. During the summer the requirements of irrigation, wildlife census, and fire control require that the interior roads and trails be open to motorized entry for authorized vehicles.

Secondary management goals include protection and maintenance of other wildlife habitat, especially for the trumpeter swan, Great Basin Canada goose and other migratory birds.

The patrolling and protection of the Refuge involves fence and sign maintenance, posting of public use areas and routine patrols by motorized vehicles over nearly all of the Refuge.

Contact:
Refuge Manager
Fish and Wildlife Service,
National Elk Refuge
Box C, Jackson, Wyoming 83001

(c) Stinking Lake Research Natural Area, Oregon

The Stinking Lake Research Natural Area is an example of a shallow alkaline lake and surrounding alkaline soil. The area has been set aside for its vegetation. The natural area will provide protection for soils, vegetation, and wildlife and to allow undisturbed natural succession in a fragile ecosystem. Continued grazing pressure has affected the ecological balance of the area. Nesting cover removal for high potential shorebirds, as well as other birds, and nesting site and physical disruption of the sand dunes and upland areas are directly caused by grazing pressure. The area's unique qualities as a potential place for research relate to the fact that it is a highly productive aquatic wildlife environment that is ecologically complete.

Acreage: The area contains 1,555 acres. There are 752 acres of alkaline lake, 282 acres of big sagebrush, 192 acres of alkali saltgrass, 154 acres of black greasewood, and 230 acres of covered sand dunes.[44]

Elevation: The range is from 4,112 to 4,125 feet.

Topographical features: East of the lake there are hilly sand dunes and gently-rolling to flat land. Gradual sloping occurs from the lake shoreline to the abrupt rocky rims that are the north, west and south boundaries of the natural area. The lake is shallow, thermal, spring-fed and alkaline.

Fauna and flora: Thousands of shorebirds and waterfowl of many species utilize the lake from late spring through fall, feeding on abundant invertebrate life. Wading birds, terns, and gulls feed on small fish including speckled dace *(Rhinichthys osculus)* present in the lake and spring head area. Raptors (red-tailed hawk—*Buteo jamaicensis,* golden eagle—*Aquila chrysaetos,* and prairie falcon—*Falco mexicanus)* are present in small numbers, feeding on small mammals in the area. Several species, including the loggerhead shrike *(Lanius ludovicianus),* Brewer's sparrow *(Spizella breweri),* sage sparrow *(Amphispiza belli),* and sage thrasher *(Oreoscoptes montanus)* nest in the upland areas.

Vegetation on the Stinking Lake Research Natural Area consists mainly of black greasewood *(Sarcobatus vermiculatus),* big sagebrush *(Artemesia trindentata),* and alkali saltgrass *(Distichlis stricta).*

Uses: Research is the primary use made by the Fish and Wildlife Service. Although there is a long-standing tradition of cattle grazing on the Refuge by permit, this is being phased out on the Research Natural Area.

Designation: The area was officially designated as a Research Natural Area on March 4, 1975.

Withdrawal status: Ownership (in fee simple) of this Refuge was acquired by the Ser-

[44] These acreages overlap.

vice with mineral rights; therefore the area is not automatically open to mining entry and does not need to be withdrawn from this purpose; mineral leasing remains at the option of the Secretary of the Interior.

Protection problems: This area of eastern Oregon is very sparsely populated with few roads and little prospect of development in the near future. The cattle grazing is the major threat to habitat by removing nesting cover, physically disrupting the sand dunes and interfering with natural succession of this fragile ecosystem.

Protection afforded: The area is protected and managed as part of the National Wildlife Refuge System. This Research Natural Area is one of two on the Malheur National Wildlife Refuge, which has a total of 181,000 acres—the other Research Natural Area is Harney Lake, and area of 30,000 acres. Both of these special areas are fenced in and will be posted against trespassing.

Management: The major themes of management policy for Stinking Lake are protection, preservation and strict regulation of use. The area is fenced off and closed to the general public. Entry is by written permit, granted only to serious researchers. Even environmental education groups from colleges and universities have been kept largely on the periphery. Despite the occasional intruder, this is not foreseen as a major problem because of the isolation of the area.

On-site staff has done some monitoring of populations of wildlife, particularly of shorebirds. Researchers from Oregon State University have been investigating a type of crayfish indigenous to Stinking Lake and the surrounding area.

Contact:
Refuge Manager
Fish and Wildlife Service,
Malheur National Wildlife Refuge
Box 113, Burns, Oregon 97720

(d) Attwater's Prairie Chicken National Wildlife Refuge, Texas

This area was originally acquired by one private conservation organization, The Nature Conservancy, for another, the World Wildlife Fund. The object of acquisition was to preserve habitat of the colorful Attwater's prairie chicken *(Tympanuchus cupido attwateri)* which is on the official United States endangered species list.

In May 1969, at the request of the World Wildlife Fund, the National Park Service studied the area and eventually designated a 3,467 acre area as a National Natural Landmark. (This program is discussed in Chapter Twelve.) This designation continues to apply while the Fish and Wildlife Service is leasing the area from the Fund with an option to buy; the Division of Refuges now manages the entire area.

The authority for this Federal project is contained in the Fish and Wildlife Act of 1956 and the Endangered Species Act of 1973. Land and Water Conservation Act funds are being used to purchase the lands in this project. The Service is currently authorized to acquire about 8,000 acres for this project. Land acquisition is handled by the Service's Regional Office in Albuquerque, New Mexico.

Acreage: At present there are 5,576 acres within the Refuge: 2,109 acres have been purchased and 3,467 (the National Natural Landmark area) are being leased. An additional 2,500 acres are authorized for purchase.

Elevation: The range is from 170 to 200 feet. This is a flat, sloping area which increases ten feet in elevation per mile.

Topographical features: The entire area is sloping prairie land with sandy knolls and pothole depressions which retain water. The San Bernard River is adjacent to the area, and one small creek flows through the area. The rainfall averages about 40 inches a year.

Fauna and flora: Armadillo *(Dasypus novemcintus)* are present on the Refuge.

Among the birdlife besides the prairie chicken are white-tailed hawks *(Buteo albicaudatus)* and Audubon caracaras *(Caracara cheriway)*. The ground cover is mostly of two native perennial grasses: blue-stem *(Andropogon* sp.) and a species of *Paspalum*, both tall grasses. The trees are few and scattered, largely around the creeks and river bank areas; these include species of ash *(Fraxinus)*, hackberry *(Celtis)*, cottonwood *(Populus deltoides)*, water oak *(Quercus nigra)*, sycamore *(Platanus occidentalis)*, and live oak *(Quercus virginiana)*.

Uses: The only uses permitted on the land are wildlife observation, public education, and research. All use is being strictly controlled.

Designation: The National Park Service, after an on-site evaluation, designated 3,467 acres as a National Natural Landmark in May, 1969, at the request of the owner, the World Wildlife Fund.

Withdrawal status: Ownership of this Refuge is being acquired in fee simple by the Service except for certain mineral rights outstanding in third parties. Mineral activity on the Refuge is, however, controlled and regulated under Titles 43 and 50 of the *Code of Federal Regulations* (sections 3103.2 and 29.31 respectively), and withdrawals are presently not necessary.

Protection problems: Other than to minimize visiting by the general public, there appear to be no protection problems current or foreseen.

Protection afforded: The area is operated as part of the National Wildlife Refuge System and receives the protection afforded to all Refuges. In addition, the Attwater's prairie chicken and its habitat are protected under the 1973 Endangered Species Act which prohibits the "taking" of an endangered species or disturbing its habitat by any individual or agency, Federal, state, or local. The Service has enforcement authority under a number of laws (see section 3.5).

The area is continually patrolled. A staff of four full-time employees work on-site, and the Refuge Manager lives on-site.

Management: The area is being managed with primary consideration to the presence of an endangered species: public or other outside uses, including wildlife observation, are discouraged. The area is essentially being left alone except for patrolling against unauthorized visiting and for monitoring work being done by the staff on the Attwater's prairie chicken. A closely controlled cattle grazing program maintains the native prairie and duplicates the historical effect the bison had on the prairie in the region.

Contact:

Fish and Wildlife Service,
Division of Wildlife Refuges
P.O. Box 1306
Albuquerque, New Mexico 87103

(e) The Great Swamp, New Jersey

Since the Great Swamp is on the National Registry of Natural Landmarks it is sufficient here simply to quote in full the information on this area contained in the registry:

"The Great Swamp was created about 15,000 years ago when the melting waters of the Wisconsin Glacier poured into a rough oval-shaped basin, now known as the Passaic Valley, which is surrounded by hills from 160 to 200 feet above the swamp. Thus, was formed Lake Passaic which later drained northward forming the Passaic River and leaving behind the Great Swamp. Today the swamp is drained by two major brooks into the Passaic River."

"The western quarter of the basin includes a considerable amount of cleared lowlands, most of which are now untilled, apparently due to flooding and the high water table. The central and eastern portions of the basin include extensive areas of unspoiled, low, forestland interspersed with marshes and shrub swamps that furnish food and cover for a fascinating variety

of wildlife including white-tailed deer and many species of water fowl. Muskrats and raccoons are widely distributed in the marshy sections. There are extensive stands of highbush blueberries. In addition to vigorous stands of moisture-loving trees, shrubs, and herbs an amazingly diverse upland flora occurs on the higher terraces and ridges which extend out into the swamp."

"Great Swamp is a unique blend of unspoiled forest, swamp and marshland with many kinds of wildlife. The diversity of habitats gives the site unusual interest. It is serving as a source of inspiration, recreation and education by bringing a touch of the wilderness to a heavily industrialized region."

"Great Swamp is located seven miles south of Morristown in Morris County, New Jersey. It occupies a basin of about 8,000 acres of which about 2,000 acres were acquired with funds contributed by conservation-minded people under the leadership of the North Jersey Conservation Foundation and the North American Wildlife Foundation. This land was then donated to the Federal Government for administration by the Bureau of Sport Fisheries and Wildlife[45] as a National Wildlife Refuge. Additional land is being acquired to bring the Refuge to approximately 5,500 acres. The Morris County Park Commission, the New Jersey Audubon Society and the Bureau of Sport Fisheries and Wildlife cooperate in providing outdoor education on the site."

Contact:

Fish and Wildlife Service,
Division of Refuges
Department of the Interior
Washington, D.C. 20240

(f) Melz Slough Public Use Natural Area, Illinois

Melz Slough, situated within the Chautauqua National Wildlife Refuge, was established as a Public Use Natural Area because, being among the few remaining tracts with virgin timber on the Illinois River Bottom, it is an example of the climax vegetation that was once common to this floodplain.

Acreage: The area comprises 95 acres.

Elevation: Approximately 435 feet above sea level.

Topographical features: The area is within the floodplain of the Illinois River. Every spring and early summer the area is normally under two feet or more of water.

Fauna and flora: Red maple *(Acer rubrum)* is the most numerous species encountered, accounting for some 90% of all timber. Also present are pecan *(Carya illinoensis)*, cottonwood *(Populus deltoides)*, willow *(Salix nigra)*, elm *(Ulmus americana)*, and ash *(Fraxinus pennsylvanica)*. The area provides the necessary breeding and nesting habitat for many birds and mammals.

Uses: The area is open to the public for observation and appreciation. Hunting is not permitted, though warm-water fishing is allowed. Access is limited to a system of self-guiding wildlife trails and to boats—research by the scientific community is welcome.

Designation: Melz Slough was designated a Public Use Natural Area on March 27, 1974.

Withdrawal status: The Chautauqua National Wildlife Refuge, of which the subject tract is a part, was purchased by the Fish and Wildlife Service in 1936, with mineral rights. Therefore the area is not automatically open to mining entry and does not need to be withdrawn from this purpose, but mineral leasing remains at the option of the Secretary of the Interior.

Protection afforded: Designation as a Public Use Natural Area serves as in-house notice for the Fish and Wildlife Service not to permit any economic use of the area, such as timber cutting or building of dikes and roads.

Management: The area is managed as an integral part of the Chautauqua National

[45] Now the Fish and Wildlife Service.

Wildlife Refuge. The area is not fenced off or identified by signs. The public is welcome subject to the use restrictions mentioned above. (See *Uses.*)

Contact:

Refuge Manager
Chautauqua National Wildlife Refuge
Route 2
Havanna, Illinois 62644

C. Service Authority, Structure and Funding

3.8 History and legislative authority

The Refuge System has been shaped by a number of laws, some, both general and specific, preceding the creation of the Service itself. Since the 1903 law establishing the first Refuge, a number of Congressional Acts have authorized the purchase and creation of specified Refuges. This was the case with the Upper Mississippi River Wildlife and Fish Refuge which is discussed in section 3.7.

Several broader Acts passed in the early years of this century were major contributors to the National Wildlife Refuge System: The Migratory Bird Treaty Act of 1918 implemented treaties for the protection of migratory birds which were determined to be a Federal responsibility; the Migratory Bird Conservation Act of 1929 authorized acquisition, development, and maintenance of migratory bird Refuges; the Migratory Bird Hunting Stamp Act of 1934, as Amended, requires waterfowl hunters to purchase "Duck Stamps" in order to hunt waterfowl, and requires that Duck Stamp revenue be used to buy Waterfowl Production Areas and Migratory Bird Refuges.[46]

The organic Act of the system is the National Wildlife Refuge System Administration Act of 1966 which expresses policy and provides guidelines for operating the system (this included consideration to species threatened with extinction which was later to be the focus of the Endangered Species Acts). Variation of uses on the Refuges grew with the 1962 Refuge Recreation Act which also authorized the purchase of adjacent lands to serve for recreation purposes and as buffer areas to the Refuges.

Funds for the purchase of adjacent recreation lands were authorized under the Land and Water Conservation Fund Act of 1965, as Amended, which also authorized the Service and certain other Federal agencies to collect entrance and user fees under certain qualifications.

The Fish and Wildlife Coordination Act of 1934, as amended in 1958, among other major authorities authorizes Federal water resource agencies (for example: Army Corps of Engineers, Bureau of Reclamation) to acquire lands in connection with water resource projects specifically for the conservation and enhancement of fish and wildlife, and requires consultation with the Service and the wildlife agency of any state wherein the waters are proposed or authorized to be manipulated by Federal agencies, or parties acting under Federal license, for the purpose of minimizing impact on, and losses of, wildlife.

The requirements of this Act have led to the establishment of 59 Coordination Areas or Wildlife Management Areas.[47]

Among the many other remaining laws directing or affecting the Refuge System, the 1964 Wilderness Act and the 1973 Endangered Species Act are perhaps the most interesting from the perspective of this study on the protection of natural areas. The Wilderness Act required the Secretary of the Interior to review every roadless area of 5,000 or more acres and roadless islands on Refuges and Game Ranges for possible

[46] Duck Stamp revenues and other sources of funding are discussed in section 3.10.

[47] See section 3.1, above, for the definition of these terms.

nomination as wilderness areas through 1974.[48] To date, 41 have been approved by Congress, and others are pending or continue to be reviewed. The Act and the Wilderness System are discussed in Chapter Eight in detail.[49]

The 1973 Endangered Species Act, the third in a series since 1966, includes authority to identify plants as well as animals, and while not extending full protection to plants, opens up the justification for preserving flora habitat within the Federal land-holding agencies.

The Act sets forth steps for the determination of endangered and threatened species which are essentially that the Secretary of the Interior continually review animals and plants for endangered or threatened species, and, that he review nominations from the general public. Notice then is published in the *Federal Register,* and each state known to have such species is allowed 90 days in which to comment before a decision is made by the Secretary.

Acquisition of lands and waters to protect endangered or threatened species is permitted by the Act with funds made available pursuant to the Land and Water Conservation Fund Act of 1965.

The Secretary of the Interior may enter into cooperative agreements with states having established and maintained an adequate and active program for the conservation of endangered and threatened species. As of October 1, 1975, seven states (Colorado, Delaware, Michigan, New Jersey, New Mexico, South Carolina, and Washington) have programs which qualify by the Secretary's standards for cooperative agreements.

Any state which has entered into a cooperative agreement may apply to the Secretary of the Interior for financial assistance to assist in the development for conservation of endangered or threatened species. The Federal share of the program costs cannot exceed 66⅔% of the estimated program costs of the agreement, but may be increased to 75% whenever two or more states "having a common interest in one or more endangered or threatened species, the conservation of which may be enhanced by cooperation of such states, enter jointly into an agreement with the Secretary." Any action taken in cooperation with the states is subject to periodic (not greater than one year) review by the Secretary.

Although the first U.S. Wildlife Refuge was established in 1903 on Pelican Island, Florida,[50] it was not until 1940 that the Fish and Wildlife Service, which was to become responsible for Refuge management, was established within the Department of the Interior.

The early beginnings of the agency date from at least 1871 with the Congressional establishment of the position of Commissioner of Fish and Fisheries. Then in 1885, a trend of research responsibilities toward wildlife resources began with the creation of the Entomological Division within the Department of Agriculture, for the promotion of the study of the interrelation of birds and agriculture, an investigation of the food, habits, and migration of birds in relation to both insects and plants, and publishing reports thereon.[51]

Eleven years later the Division of biological Survey was created within the Department of Agriculture by Congress, ". . . For biological investigations, including the geographic distribution and migrations of animals, birds, and plants.[52]

With the passage of the Lacey Act of 1900 (16 U.S.C. 701), the Department of the Interior also became responsible for wildlife research, but its duties went beyond that to include conservation, protection and restoration of game birds and other

[48] 16 U.S.C. 1132(c).

[49] See also section 3.4, above.

[50] Public Land Law Review Commission, *One Third of the Nation's Land,* 1970, p. 281.

[51] Act of March 3, 1885 (23 Stat. 353).

[52] Act of April 23, 1896 (29 Stat. 99).

wildbirds. Thus, the need for law enforcement authority materialized.

Finally, the Fish and Wildlife Service was created to house, under the roof of the Department of the Interior, both the commercial fisheries activities and the wildlife activities of the Division of Biological Survey with the Reorganization Plans of 1939 and 1940.[53] The organic Acts of the agency, however, are the 1956 Fish and Wildlife Act, which established a comprehensive national fish and wildlife policy[54] and the 1966 National Wildlife Refuge System Administration Act.

The preceding laws are among the most significant to review for the purposes of this study; however, many others are responsible for the shape and authority of the Refuge System and the Service; these are synopsized in Technical Appendix 3(d).

3.9 Administrative structure and personnel

The Service is headquartered in Washington, D.C. The field administration of the Service is divided among Alaska, and six regions, each region covering several states.

Around the country there are 190 field stations which primarily oversee Refuge activities.[55] Not all of the 376 Refuges have on-site managers, some managers are responsible for a number of Refuges. Refuge managers answer directly to the regional directors.

The Service's Washington headquarters is divided into fish and wildlife management activities, research, and administrative support activities. The wildlife branch is divided into six program-oriented divisions which deal with activities of the National Refuge System, a Division of Wildlife Refuges which oversees general Refuge management, and a Division of Realty which conducts real estate functions and maintains land records and statistics.

The total number of permanent employees of the Service is 4145. Approximately 827 people work for the Division of Refuges: 29 in the Washington office and 798 outside.[56]

3.10 Funding and budgetary authority

The total Fish and Wildlife Service budgets for the last three years have been $198.2 million for FY 1974, $226.7 million for FY 1975, and $229 million estimated for FY 1976—the 1976 figures have not yet been approved by Congress. These figures include appropriated funds; receipts (which are receipts from the sales of Refuge products, Federal aid program receipts, and Duck Stamp receipts); and reimbursible funds (money transferred from other agencies).

In 1972, the Fish and Wildlife Service began to undergo a management and function reorganization based on program management instead of its traditional organization management. Program management is expected to increase the flexibility of the available personnel, expertise, funds, and field office resources by permitting the entire Service to be more responsible to its ongoing missions and new issues as they come up. Program management provides for lateral as well as vertical resources allocation. Funding is thus dispersed on program bases rather than by organizational divisions. Hence, there are com-

[53]These were done by Executive action.

[54]This Act also segregated the fish and wildlife interests by the creation of the Bureau of Commercial Fisheries and the Bureau of Sport Fisheries and Wildlife. The commercial fisheries interest, uncomfortable within the Department of the Interior, was transferred by a 1974 amendment to the Act to the Department of Commerce, while at the same time, the name "Bureau of Sport Fisheries and Wildlife" was dropped, and the name "Fish and Wildlife Service" was resurrected.

[55]There are about 1600 field units serving the various functions of the Fish and Wildlife Service including and in addition to refuges.

[56]Figures as of June 30, 1975, from the Fish and Wildlife Service Personnel Office.

plexities involved in the descriptions of budget allocations.

The Fish and Wildlife Service has three main line operations and its administrative support staff operation. The three are: (1) Research-Environment, which includes the Office of Biological Services, (2) Federal assistance, which includes the Office of Endangered Species, (3) Fish and Wildlife Management, which includes the Division of Wildlife Refuges. The three line operations are each headed by a program manager who oversees the work of the units within that line operation, and, in addition, the purpose of the "Activities" (or functions) assigned to the line operation.

An Activity (or function) is a funding category under which one or more actual programs may be administered. These programs may remain within a single line operation, or they may be conducted through two or all of the line operations, depending on their nature.

The Fish and Wildlife program manager oversees three: (1) the Wildlife Resources Activity with the Migratory Bird Program, the Mammals and Non-Migratory Bird Program, and the Animal Damage Control Program;[57] (2) the Fishery Resources Activity with the Inland Fish and Resources Program; and (3) the Interpretation and Recreation Activity with the Interpretation and Recreation Program.

For the purpose of this study, funding is broken into two categories: funding for acquisition and funding for operations and management.

The largest funding source for acquisition is revenue from, and Congressional advances on, the sale of "Duck Stamps," proceeds of which go to the Migratory Bird Conservation Fund (MBCF). The Land and Water Conservation Fund (LWCF) is the second largest source of land acquisition funding; the Fund primarily supports the Endangered Species Acquisition Program at present.

In summary, the total of both sources of acquisition funding ranges from $20 to $22 million between FY 1974 and FY 1976, which is approximately one-tenth of the Service's annual budget.

Some special Congressional authorization can make available Land and Water Conservation Fund appropriations for the acquisition of specific areas which are then managed by the Refuges Division. Some of the areas which are being acquired in this way are Virginia Featherstone Marsh, Tinicum Environmental Center in Pennsylvania, and San Francisco Bay National Wildlife Reserve in California.

	Duck Stamp Revenue		Congressional Advance		Total MBCF	LWCF
FY 1973	$10.7 Million	+	$7.1	=	$17.8	$4.6
FY 1974	10.2	+	3.5	=	13.7	(Carry over from FY 1973 of $2.65)
FY 1975	11.1	+	1.0	=	12.1	9.5
FY 1976	12.0[58]	+	0	=	12.0	8.5[59]

Funding for operations and management of Refuges activities, excluding administration support activities, comes from four types of Congressional appropriations: habitat preservation; wildlife resources; endangered species; interpretation and recreation.

Habitat preservation money goes primarily to the Service's Office of Biological

[57]A program mainly for the control of animals which are thought to prey on farm animals.

[58]These are projected receipts, final figures will be available in May 1976.

[59]Amount not yet approved by Congress in budget for FY 1976 (also does not include a carry over of $6 million from 1975).

Services for research but small portions are earmarked for Refuge field stations' studies of potential wilderness areas. The Refuges portion of these funds are expiring with the expiration of the wilderness study requirement in the Wilderness Act. (See Chapter Eight.) In FY 1974 Refuges received $625,000, in FY 1975 $150,000 and in FY 1976 $150,000 is estimated.[60] Wildlife resources money goes to primarily two programs: migratory birds, and nonmigratory birds and mammals. These figures are $15.9 million for FY 1974, $17.5 million in FY 1975, and $17.9 million in FY 1976 estimated. Land and Water Conservation Fund money for endangered species is allocated between the Office of Endangered Species and International Activities, where it is used for acquisition, and the Refuge System where it is used for operations and management. Refuges received in FY 1974 $780,800, in FY 1975 $898,000 and in FY 1976 $1 million estimated. Lands acquired and managed for the Interpretation and Recreation Program are adjacent to existing Refuges. They are used for environmental education and general public use, and also serve as a buffer zone when there are adjacent Refuges.

In summary, the actual and projected amounts received for Refuge management between FY 1974 and FY 1976 are between $20 and $22 million annually, approximately one-tenth of the Service's overall budget.

D. Information and Bibliography

3.11 Key information contacts

Administration:

Personnel Staffing Specialist
Division of Staffing and Employment Program
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-7742

Budget:

Chief
Division of Realty
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-4676

Acting Chief
Division of Wildlife Refugees
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-3923

Assistant Budget Officer
Division Program Analyst
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-4597

General Information:

Public Affairs Office
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5634

Lands and Realty:

Chief
Division of Realty
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-4676

Realty Specialist
Division of Realty
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-3225

[60] Interview with Fish and Wildlife Service staff, September, 1975.

Legislation and Legislative History:

District Attorney
Conservation and Wildlife Division
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-2172

Attorney
Conservation and Wildlife Division
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-7957

Assistant Solicitor
Conservation and Wildlife Division
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-2172

National Natural Landmarks and Public Use Natural Areas:

Assistant Program Coordinator
Division of Interpretation and Recreation
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-4491

Refuges and Wilderness Areas:

Wilderness Planner
Branch of Planning
Division of Refuges
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-2691

Specific Natural Area Sites Information:

(Contact the Refuge Managers who are listed in the technical appendix to this study.)

3.12 Bibliography

Buckman, Robert E. and Richard L. Quintus. *Natural Areas of the Society of American Foresters.* Washington, D.C.: Society of American Foresters, 1972.

Federal Committee on Research Natural Areas. *A Directory of Research Natural Areas.* Washington, D.C.: U.S. Government Printing Office, 1968.

Fish and Wildlife Service. *Department of the Interior Departmental Manual.* Washington, D.C.: U.S. Department of the Interior.

Fish and Wildlife Service. *1975 Directory of National Wildlife Refuges.* Washington, D.C.: U.S. Department of the Interior, 1975.

Fish and Wildlife Service. *U.S. Department of the Interior Budget Justifications, FY 1976.* Washington, D.C.: U.S. Department of the Interior, 1975.

Gates, Paul W. *The History of the Public Land Law Development.* Washington, D.C.: U.S. Government Printing Office, 1968.

National Park Service. *National Registry of Natural Landmarks,* (mimeographed). Washington, D.C.: U.S. Department of the Interior.

Office of the Federal Register, National Archives and Records Service, and General Services Administration. *Code of Federal Regulations.* Washington, D.C.: U.S. Government Printing Office, 1974.

The Nature Conservancy. *The Preservation of Natural Diversity: A Survey and Recommendations.* Arlington, Virginia: The Nature Conservancy, 1975.

The Public Land Law Review Commission. *One Third of the Nation's Land.* Washington, D.C.: U.S. Government Printing Office, 1970.

3.13 List of technical appendices

(a) "1975 Directory of National Wildlife Refuges." Fish and Wildlife Service. Washington, D.C.: U.S. Department of the Interior, 1975.

(b) "Memorandum of Understanding Between the Secretary of the Interior and the Secretary of the Army." July 13, 1967.

(c) "1974 Refuge Managers' Address List." Fish and Wildlife Service. Washington, D.C.: U.S. Department of the Interior, 1974.

(d) "Selected List of Federal Laws and Treaties Relating to Sport Fish and Wildlife." Fish and Wildlife Service. Washington, D.C.: U.S. Department of the Interior, 1974.

(e) "Development and Management Plans" in *Field Manual.* Fish and Wildlife Service. Washington, D.C.: U.S. Department of the Interior.

(f) "Endangered and Threatened Wildlife and Plants" in *Federal Register.* Fish and Wildlife Service. Washington, D.C.: U.S. Department of the Interior, Vol. 40, No. 188, September 26, 1975, and "List of Endangered Species in the Continental United States." Smithsonian Institution. Washington, D.C.: Smithsonian Institution, 1974.

Chapter Four:

Bureau of Land Management

A. The Bureau

4.1 Responsibilities and functions

The Bureau is responsible for the management of approximately 450 million[1] acres of the public domain and the resources contained therein. This comprises about one-fifth of all land in the United States.[2] The Bureau is responsible for determination of the use made of this land, establishment of management policies and programs, "realty activities," and cadastral surveys.

The determination of land uses and the establishment of management policies and program for the Bureau's public domain lands take into account a variety of resource activities. The major ones are: domestic livestock grazing, fish and wildlife ecology and habitat development, outdoor recreation, timber production, watershed protection, wilderness preservation, minerals development, environmental protection and enhancement, river basin planning, and general land use classification under the concept of multiple use and sustained-yield. Resource management and development activities are supported by a construction and maintenance program which provides and maintains roads, trails, and physical improvements such as recreation facilities and watershed control structures; and by a program to protect the public lands and their resources from wildfires and from all forms of public and private misuse.[3]

Realty activities include: the adjudication of competing mineral lease applications; the management, together with the Office of Geological Survey, of leasable mineral resources; the management of salable mineral materials, the administration of the general mining laws, the coordination of potential or planned mineral uses with all aspects of surface management; the disposition of Bureau-managed lands for non-Federal purposes; the granting and administering of various rights-of-way easements and permits for occupancy of public lands; and the maintenance of basic land ownership records of all public lands.[4] Realty activities are conducted not only on all public lands under its administration, but also for 1.1 billion acres of the Outer Continental Shelf, and some 369 million acres of mineral estate (subsurface) underlying land under other ownership, Federal or private (for example, the National Forests which are administered by the U.S. Department of Agriculture.)[5]

The Bureau executes cadastral public land surveys in order to carry out the specific statutory responsibility of the Secretary to survey the public and certain other Federal lands so as not to impair bona fide private rights. It prepares and approves the land and mineral plats that provide the legal descriptive basis for management and disposal of the public land. It also prepares the maps required for mineral leasing on the Outer Continental Shelf.[6] (For a discussion of the Bureau's responsibilities and

---

[1] Bureau of Land Management, *Public Land Statistics*, 1973, p. 20.

[2] These lands are located primarily in 11 states west of the Mississippi River, and in Alaska, which currently has two-thirds of the Bureau's land. The 11 states are: Washington, Oregon, California, Nevada, Idaho, Montana, Wyoming, Utah, Arizona, New Mexico and Colorado. Small portions of Bureau land are located in most of the other 18 states containing land in the public domain.

[3] *Department of the Interior Departmental Manual*, Chapter 1, section 135.1.2F, release no. 1508, May 22, 1972.

[4] *Department of the Interior Departmental Manual*, Chapter 1, section 135.1.2F, release no. 1508, May 22, 1972.

[5] *The Budget of the United States Government, Fiscal Year 1976*, Appendix Volume, p. 511.

[6] *Department of the Interior Departmental Manual*, Chapter 1, section 135.13, release no. 1508, May 22, 1972.

functions by a non-Federal organization, see Technical Appendix 4(d).)

4.2 Overall objectives

The basic objective of the Bureau is to manage all the resources for which it is responsible to provide maximum public benefit both currently and in the future, with full consideration for good conservation practices and for protection and enhancement of environmental quality. This includes the dedication to carrying out whatever programs are required to insure that the stewardship of the public lands and their resources leads to the optimum planned use for the long range public good. Within this broad objective, other important and more specific objectives have been established:[7]

1. Multiple use—to provide maximum public benefits through the best combination of uses of which an area is capable;
2. Sustained yield—to manage renewable resources to provide a satisfactory level of continued output, without impairing their future sustained productive potential at anticipated needs;
3. Environmental quality—to maintain and enhance the quality of the environment and consider environmental quality in all resource decisions regarding the Bureau's lands and its responsibilities;
4. Land use evaluation—to evaluate public domain lands based on their potential resource values and uses for either retention under Federal ownership for multiple use management, or, disposal to non-Federal ownership when other land uses such as residential, urban, industrial, or commercial development are determined to represent the maximum public benefit of the land over time;
5. Non-renewable resources—to manage non-renewable resources (primarily mineral with commercial value) to assure orderly and timely resource development in meeting regional and national needs; to obtain fair market value return to the Federal Government; to assure the environment protection, and if appropriate, improvement, during the process of obtaining these resources;
6. Service to the public—to insure that the Bureau's management practices are designed with consideration to the present and future needs of state and local governments and the general public. This involves encouraging public participation in management decisions and carefully evaluating present public attitudes against projected public needs;
7. Equal employment opportunity—to comply with equal employment opportunity principles in all actions.

B. Natural Area Activities

4.3 Program objectives

Natural area activities and programs of the Bureau operate under administrative regulations established by inference from the authority of certain general legislation. Policy statements, first published in the *Federal Register* for general public notice and comment, are later codified in the *Code of Federal Regulations,* a government-wide compendium of administrative regulations. In addition, the Bureau of Land Management has, as do other agencies, its own administrative manuals which spell out organization, criteria, procedure, management, establishment and disestablishment of program areas (as well as provide details on other elements of the Bureau's operations).

At least five specific natural area type programs are participated in or conducted by the Bureau: Research Natural Areas (19 areas, 44,675.16 acres); National Natural Landmarks (35 areas, 2,356,320 acres); Outstanding Natural Areas (23 areas, 390,212.41 acres); Primitive Areas (11 areas, 234,003 acres); and Recreation Lands (29 areas, 2,640,222 acres). The Bureau has also withdrawn at least three other "natural areas," totaling 74,353 acres.

[7] *Department of the Interior Departmental Manual,* Chapter 1, section 135.1.2, release no. 1508, May 22, 1972.

The Research Natural Area program is affiliated with the interagency Federal Committee on Ecological Reserves (for discussion of this committee see Chapter Eleven). Research Natural Areas are established and maintained by the Bureau:

> . . . for the primary purpose of research and education. Scientists and educators are encouraged to use Research Natural Areas in a manner that is nondestructive and consistent with the purpose for which are area is established. The general public may be excluded or restricted where necessary to protect studies or preserve Research Natural Areas. Lands having the following characteristics may qualify:
>
> (1) Typical or unusual faunistic or floristic types, associations, or other biotic phenomena, or,
>
> (2) Characteristic or outstanding geologic, pedologic, or aquatic features or processes.[8]

The National Natural Landmarks program is administered by the National Park Service. The Bureau has formally agreed to participate, and Bureau lands remain in the Bureau's control. See Chapter Twelve for an explanation of the way the Landmarks program works.

Outstanding Natural Areas and Primitive Areas appear twice in the *Code of Federal Regulations.* An effort is currently being made to unify under one section all of the information which pertains to the four groups of natural area programs mentioned above. As distinguished from a Research Natural Area, an Outstanding Natural Area is established to:

> . . . preserve scenic values and areas of natural wonder. The preservation of these resources in their natural condition is the primary management objective. Access roads, parking areas and public use facilities are normally located on the periphery of the area. The public is encouraged to walk into the area for recreation purposes wherever feasible.[9]

The Bureau's policy for natural areas, RNAs as well as ONAs, states:

> Where appropriate the Bureau shall establish and record areas of sufficient number and size to provide adequately for scientific study, research, recreational use and demonstration purposes. These will include:
>
> (a) The preservation of scenic values, natural wonders and examples of significant natural ecosystems;
>
> (b) Research and educational areas for scientists to study the ecology, successional trends, and other aspects of the natural environment;
>
> (c) Preserves for rare and endangered species of plants and animals.[10]

The Primitive Area program was established on the pattern of the Wilderness System, although unlike the latter, a Primitive Area designation is an administrative rather than a legislative action. (The Wilderness System is discussed in Chapter Eight.) Primitive Areas are defined by the Bureau as:

> Natural, wild and undeveloped lands in settings essentially removed from the effects of civilization are appropriate for designation as Primitive Areas. Essential characteristics are a natural environment that can be conserved and on which there is no undue disturbance by roads and commercial uses. Primitive Areas may be representative of natural environments ranging from the southwest desert to the arctic tundra.[11]

The objectives behind the Primitive Area program are to:

> (a) Allow the free operation of natural ecological succession to the extent feasible for scientific and other study;
>
> (b) Preserve solitude, physical and mental challenge, inspiration and primitive recreation values;
>
> (c) Preserve public values that would be lost if the lands were developed for commercial purposes or passed from Federal ownership;

---

[8] *Code of Federal Regulations,* Title 43, Chapter II, section 6225.0-5(a). The language is taken from the 1968 *Directory of Research Natural Areas* published by the Federal Committee on Research Natural Areas.

[9] *Ibid.,* section 6225.0-5(b).

[10] *Code of Federal Regulations,* Title 43, Chapter II, section 6225.0-6.

[11] *Ibid.,* section 6221.1.

(d) Allow the natural restoration of the primitive character of the lands.[12]

The last group, Recreation Lands, is based on a much broader definition which takes into account some types of lands and uses which may not qualify for natural area consideration. Recreation Lands are described as:

. . . Tracts of land usually several thousand acres in size where recreation is or is expected to be a major use, and designation will assist the public by making the areas known to them. Some examples of areas which may be designated as recreation lands follow: Scenic areas of natural beauty such as waterfalls; habitat of interesting, rare or unusual plants or animals; gorges; natural lakes; geological areas of outstanding structural or historical features of the earth's development such as caves, glaciers and other phenomena; roadless areas in which the primitive environment is preserved, sometimes referred to as wilderness, wild, primitive, roadless or virgin areas. Recreation lands will contain one or more of the six classes adopted by the Bureau of Outdoor Recreation. These classes will be identified and described at the time an area is designated. These lands may be defined briefly as follows:

Class I—High-density recreation areas. . . .

Class II—General outdoor recreation areas. . . .

Class III—Natural environment areas (Varied and interesting land forms, lakes, streams, flora, and fauna within attractive natural settings suitable for recreation in a natural environment and usually in combination with other uses);

Class IV—Outstanding Natural Areas. . . .

Class V—Primitive Areas. . . .

Class VI—Historic and cultural sites. . . .[13]

The following tables list the areas considered by the Bureau to be official Research Natural Areas, Outstanding Natural Areas, other "natural areas," Primitive Areas, Recreation Lands, and National Natural Landmarks. With respect to the areas contained in the first four tables, the following general statement can be made. Basically, the Bureau considers an area worthy of official listing if it has been *designated.* An area may be designated only after it has been classified, withdrawn, or legislatively created.[14] The concept of designation did not develop until the late 1960's, however, so in some cases the Bureau considers *classifications* or *withdrawals* alone (*i.e.,* without designation) to be sufficient, especially with respect to certain withdrawals in 1965 in Nevada. The concepts of classification, withdrawal, and designation are all discussed in section 4.5, below. It should also be mentioned that individual state and district offices of the Bureau maintain areas as in effect Research Natural Areas or natural areas, on a more or less formal basis; figures on these have never been collected in one central location, and the areas are subject to change as personnel or policies in the offices concerned change.[15]

Table 1

List of Research Natural Areas

Alaska

Halibut Cove Natural Forest Study Area — 120 acres

Anchorage district, Alaska

Withdrawal as natural forest area:
PLO[16] 2908
28 FR[17] 1048—2/2/63
(Anchorage Land Office File No. 022503)

[12]*Code of Federal Regulations,* Title 43, Chapter II, section 6221.0-2.

[13]*Ibid.,* section 2071.1(b)(1).

[14]*Code of Federal Regulations,* Title 43, section 2071.1.

[15]The same is true for Rangeland Research Areas which are small areas (generally no larger than 10 acres) set aside as exclosures and baselines for the purpose of comparing some use, such as grazing, on adjacent property.

[16]PLO is the standard abbreviation for Public Land Order; hereinafter this abbreviation is used.

[17]FR is the standard abbreviation for *Federal Register;* hereinafter this abbreviation is used. The number preceding "FR" is the volume number, the number after FR is the page number.

Arizona

Big Sage Natural Area 160 acres
Arizona Strip district, Coconino County, Arizona
Designation:
37 FR 20731—10/3/72
see also FR for 9/25/72
(Arizona Land Office File No. 7057)

Colorado

Somerville Table Natural Area 435 acres
Canon City district, Fremont County, Colorado
Withdrawal for protection of natural areas:
PLO 3530
30 FR 1193—2/4/65
(Colorado Land Office File—Misc. No. 88702)

McElmo Reptile Natural Area 443.39 acres
Montrose district, Montezuma County, Colorado
Withdrawal for protection of natural areas:
PLO 3530
30 FR 1193—2/4/65
(Colorado Land Office File—Misc. 88702)
Partial revocation:
PLO 3701
30 FR 7899-7900—6/18/65
(Colorado Land Office File—Misc. No. 88702)

Nevada

Hicks Station Natural Area 22 acres
Battle Mountain district, Eureka County, Nevada
Withdrawal for protection of natural areas:
PLO 3530
30 FR 1193—2/4/65
(Nevada Land Office File—Misc. 88702)

Heusser Mountain Bristlecone Pine Natural Area 480 acres
Ely district, White Pine County, Nevada
Withdrawal for protection of natural areas:
PLO 3530
30 FR 1193—2/4/65
(Nevada Land Office File—Misc. 88702)
Designated 1/29/65; no FR cite available

Shoshone Pygmy Sage Natural Area 160 acres
Ely district, White Pine County, Nevada
Withdrawal for protection of natural areas:
PLO 3530
30 FR 1193—2/4/65
Designated:
35 FR 19367-9—12/22/70

Pine Creek Canyon Natural Area 150 acres
Las Vegas district, Clark County, Nevada
Withdrawal for protection of natural areas:
PLO 3530
30 FR 1193-1194—2/4/65

Pinyon-Joshua Tree Transition Area 640 acres
Las Vegas district, Nye County, Nevada
Withdrawal for protection of natural areas:
PLO 3530
30 FR 1193—2/4/65
(Nevada Land Office File—Misc. 88702)

New Mexico

Mathers Natural Area 362.34 acres
Roswell district, Chavez County, New Mexico
Classification for multiple use management:
35 FR 13670—8/27/70
(New Mexico Land Office File No. 929, Amendment 2)

Oregon

Cherry Creek Research Natural Area 590 acres
Coos Bay district, Coos County, Oregon
Withdrawal for protection of natural areas:
PLO 3530
30 FR 1193—2/4/65

Lost Forest Natural Area 8960 acres
Lakeview district, Lake County, Oregon
Designation:
38 FR 10825—5/2/73
(Oregon Land Office File No. 8457)

Brewer Spruce Natural Area 210.36 acres
Medford district, Josephine County, Oregon
Withdrawal for protection of natural areas:
PLO 3530
30 FR 1193—2/4/65
(Oregon Land Office File—Misc. 88702)

Horse Ridge Natural Area 600 acres
Prineville district, Deschutes County, Oregon
Withdrawal as natural area:
PLO 2956
28 FR 2279—3/8/63

Myrtle Island Natural Area 28 acres
Roseburg district, Douglas County, Oregon
Withdrawal as natural area:
PLO 754
16 FR 9570 and 9582—9/20/51

Little Sinke Natural Area 80 acres
Salem district, Polk County, Oregon
Withdrawal as natural area:
38 FR 21167—8/6/73
(Oregon Land Office File No. 8920)

Jordan Craters Research Natural Area 30,114.7 acres
Vale district, Malhein County, Oregon
Designated:
40 FR 52748—11/12/75

Utah

Joshua Tree Natural Area (National Natural Landmark) 1,040 acres
Cedar City district, Washington County, Utah
Classification for multiple use management:
35 FR 9863-9865—6/16/70
(Utah Land Office File No. 6047)

Cleveland Lloyd Dinosaur Quarry (National Natural Landmark) 80 acres
Moab district, Emery County, Utah
Classification for multiple use management:
33 FR 15915—10/29/68

Table 2

List of Outstanding Natural Areas

Arizona

Vermillion Cliffs 50,135.87 acres
Arizona district, Coconino County, Arizona
Proposed classification for multiple use management:
33 FR 11550-11551—8/14/68 (50,495.87 acres)
(Arizona Land Office File No. 2695)
Classification for multiple use management:
33 FR 17365-17366—11/23/68
(Arizona Land Office File No. 2695)
(deducts 360 leaving 50,135.87 acres)
Designation:
34 FR 642-643—1/16/69 (135.87 acres)

California

San Benito Mountain Natural Area 1500 acres
Fulsom district, San Benito County, California
Designation:
36 FR 16122—8/19/71
(California Land Office File No. S-4Y77)

Negit Island 197 acres
Bakersfield district, Mono County, California
Designation:
37 FR 18224—9/8/72
Withdrawal by Act of Congress:
March 4, 1931

Montana

Square Butte Natural Area 1,946.53 acres
Lewistown district, Chouteau County, Montana
Classification for multiple use management:
35 FR 19132—12/17/70
Designation—Outstanding Natural Area:
37 FR 18573—9/13/72
(Montana Land Office File No. 17848)

Nevada

Cave Valley Cave Geologic Area 40 acres
Ely district, White Pine County, Nevada
Classification for multiple use management:
32 FR 8537-8538—6/14/67 and/or
32 FR 9239-9246—6/29/67[18]
Amendment to final classification for multiple use management:
35 FR 19367-19369—12/22/70
(Nevada Land Office File No. 892-A and No. 1005-A)

Goshute Canyon Natural Area 7,529 acres
Ely district, White Pine County, Nevada
Classification for multiple use management:
32 FR 8537-8538—6/14/67 and/or
32 FR 125, 9239-9240—6/29/67
Amendment to final classification for multiple use management:
35 FR 19367-19369—12/22/70
(Nevada Land Office File No. 892-A and No. 1005-A)

Goshute Cave Geologic Area 199.87 acres
Ely district, White Pine County, Nevada
Classification for multiple use management:
32 FR 8537-8538—6/14/67 and/or
32 FR 9239-9240—6/29/67
Amendment to final classification for multiple use management:
35 FR 19367-19369—12/22/70
(Nevada Land Office File No. 892-A and No. 1005-A)

[18]These classifications and the ones that follow do not refer to the areas by name but by reference to Nevada Land Office File Nos. only (specifically to maps in these files).

Leviathan Cave Geologic Area 1,000 acres
Ely district, White Pine County, Nevada
Classification for multiple use management:
32 FR 8537-8538—6/14/67 and/or
32 FR 9239-9240—6/29/67
Amendment to final classification for multiple use management:
35 FR 19367-19369—12/22/70
(Nevada Land Office File No. 892-A and No. 1005-A)

Mt. Grafton Scenic Area 14,600 acres
Ely district, White Pine County, Nevada
Classification for multiple use management:
32 FR 8537-8538—6/14/67 and/or
32 FR 9239-9240—6/29/67
Amendment to final classification for multiple use management:
35 FR 19367-19369—12/22/70
(Nevada Land Office File No. 892-A and No. 1005-A)

Shoshone Ponds Natural Area 1,240 acres
Ely district, White Pine County, Nevada
Classification for multiple use management:
32 FR 8537-8538—6/14/67 and/or
32 FR 9239-9240—6/29/67
Amendment to final classification for multiple use management:
35 FR 19367-19369—12/22/70
(Nevada Land Office File No. 892-A and No. 1005-A)

Swamp Cedar Natural Area 3,200 acres
Ely district, White Pine County, Nevada
Classification for multiple use management:
32 FR 8537-8538—6/14/67 and/or
32 FR 9239-9240—6/29/67
Amendment to final classification for multiple use management:
35 FR 19367-19369—12/22/70
(Nevada Land Office File No. 892-A and No. 1005-A)

Whipple Cave Geologic Area 80 acres
Ely district, White Pine County, Nevada
Classification for multiple use management:
32 FR 8537-8538—6/14/67 and/or
32 FR 9230-9240—6/29/67
Amendment to final classification for multiple use management:
35 FR 19367-19369—12/22/70
(Nevada Land Office File No. 892-A and No. 1005-A)

Desert View Natural Environment Area 18,640 acres
Las Vegas district, Clark County, Nevada
Designated:
35 FR 14948—9/25/70

Sunrise Mountain Natural Area 10,240 acres
Las Vegas district, Clark County, Nevada
Designated:
35 FR 14949 at 14950-51—9/25/70

Virgin Mountain Natural Area 6,560 acres
Las Vegas district, Clark County, Nevada
Designated:
35 FR 14949-50—9/25/70

Lahontan-Cutthroat Trout 12,316 acres
Winnemucca district, Humboldt County, Nevada
Designation:
30 FR 6747—2/22/74

New Mexico

Guadalupe Canyon Natural Area 3,618.65 acres
Las Cruces district, Hidalgo County, New Mexico
Classification for multiple use management:
38 FR 6992—5/9/68
Designation:
36 FR 16122—8/19/71
(New Mexico Land Office File No. 4380)

El Malpais 83,999.49 acres
Albuquerque and Socorro districts, Valencia County, New Mexico
Classification for multiple use management:
35 FR 12019-12020—7/25/70
Designation:
39 FR 17451—5/16/74
(New Mexico Land Office File No. 19956)

Utah

Devil's Garden Natural Area 640 acres
Kanab district, Garfield County, Utah
Classification for multiple use management:
Outstanding Natural Area:
35 FR 19529-19530—12/23/70
(Utah Land Office File No. 8742)

Escalante Canyons Natural Area 129,000 acres
Kanab district, Kane and Garfield Counties, Utah
Classification for multiple use management:
Outstanding Natural Area:
35 FR 19529-19530—12/23/70
(Utah Land Office File No. 8742)

The Gulch Outstanding Natural Area 3,430 acres
Kanab district, Garfield County, Utah
Classification for multiple use management:
Outstanding Natural Area:
35 FR 19529-19530—12/23/70
(Utah Land Office File No. 8742)

North Escalante Canyon 5,800 acres
Kanab district, Garfield County, Utah
Classification for multiple use management:
Outstanding Natural Area:
35 FR 19529-19530—12/23/70

Phipps-Death Hollow Outstanding Natural Area 34,300 acres
Kanab district, Garfield County, Utah
Classification for multiple use management:
Outstanding Natural Area:
35 FR 19529-19530—12/23/70
(Utah Land Office File No. 8742)

Table 3

List of Other "Natural Areas"

California

Amargosa Canyon—Dumont Dunes Natural Area[19] 22,763 acres
Bakersfield district, Inyo and San Bernardino Counties, California
Withdrawal for natural area:
PLO 5537
40 FR 43028—9/18/75

Idaho

Snake River Birds of Prey Natural Area[20] 26,310 acres
Boise district, Ada, Elmore and Owyhee Counties, Idaho
Withdrawal for natural area:
PLO 5133
36 FR 20228—10/19/71

Nevada

Highland Range Crucial Bighorn Habitat Area 25,280 acres
Designation:
35 FR 14949 at 14950—9/25/70
Description:
Supports an unusual concentration of Nelson's bighorn sheep. It has been identified in an approved Habitat Management Plan as crucial to survival of a highorn herd, and in need of special management for protection and maintenance of the vegetation and wildlife habitat.

Table 4

List of Primitive Areas

Arizona

Aravaipa Canyon 5,080 acres
Gila and Salt River Meridian: T6S, R17-19E.
Designation:
34 FR 642—1/16/69, added to 36 FR 846—5/6/71[21]
Description:
Relatively inaccessible canyon area of diverse topographic and climatic features. Stream that flows through the canyon sustains two endangered species of fish and supports a significant density of riparian vegetation. Terrain is mountainous with canyon wall drops of over 1000 feet in some places.

Paiute Primitive Area 35,092 acres
Principal Meridian Gila and Slat River Mohave County: T39N, R14W; T39N, R15W; T40N, R15W; T41N, R14W.
Designation:
40 FR 44168—9/25/75
Description:
This area is located about 15 miles southwest of St. George, Utah, near Interstate Highway 15. Elevation ranges from 3,000 feet to over 8,000 feet. Vegetation is desert type up to Ponderosa pine and soils are shallow and rocky. This area forms part of the ruggedly scenic background of the Virgin River Canyon.

---

[19]See (technical) amendments at: 40 FR 53237—11/17/75 and 40 FR 54572—11/25/75.

[20]This area roughly corresponds to the Swan Falls Canyon of the Snake River Research Natural Area listed as area #260 in the 1968 *Directory of Research Natural Areas* published by the Federal Committee on Research Natural Areas (now the Federal Committee on Ecological Reserves).

[21]Area had been classified under Classification and Multiple Use Act of 1964 and had been partially withdrawn.

Paria Canyon 27,515 acres
Gila and Salt River Meridian: T41, 42 N, R5, 6 E, T40, 41 N, R7E.[22]

Designation:
34 FR 642—1/16/69[23]

Description:
Canyon of immense geological and archaeological value. Gorges 2,800 feet deep into the Paria Plateau. Six miles of the 15 mile canyon is extremely narrow.

California

Chemise Mountain Privitive Area 3,941 acres
Principal Meridian Humboldt: T56, R1E; T55, R2E.

Designation:
40 FR 44341—9/26/75

Description:
Located within the King Range National Conservation area and overlooking the Pacific Ocean about 50 air miles south of Eureka. Elevation ranges from sea level to 2,600 feet. Ocean front cliffs, narrow beaches and rugged hillsides are primary attractions.

Colorado

Powderhorn Primitive Area 40,400 acres
Principal Meridian, New Mexico: T46 N, R2W; T44N, R2W.

Designation:
38 FR 23427—8/30/73[24]

Description:
High mountain alpine areas in the Rockies with several lakes and perennial streams as well as 4 other bio-climatic zones. Elevation ranges from 8600 feet to 12,644 feet.

Montana

Beartrap Canyon 2,761 acres
Principal Meridian, Montana: T3, 4 S, R1E.

Designation:
37 FR 18573—9/13/72[25]

Description:
A rough terrained area enclosing the fast flowing Madison River. Excellent fishing in coniferous vegetated environment.

Centennial Mountains Primitive Area 24,165 acres
Principal meridian, Montana: T 14S, R1E; T 15S, R1E; T 14S, R1W; T 15S, R1W; T 14S, R2W; T 15S, R2W; T 14S, R3W; T 15S, R3W, T 15S, R4W.

Designation:
40 FR 32848—8/5/75

Description:
This area is located some 70 miles west of Yellowstone National Park on the border between Montana and Idaho. The mountains are extremely rugged with high open ridges and numerous alpine meadows. The area abounds with wildlife including the threatened grizzly bear and endangered Rocky Mountain wolf. The area is adjacent to the Dubois Experimental Sheep Range.

Humbug Spires 7,041 acres
Principal Meridian, Montana: T1 N, R8W; T1 S, R1W; T1 S, R9W.

Designation:
37 FR 18573—9/13/72

Description:
Hard rock spires jutting out of timbered ridges. Nine spires are from 300 to 600 feet in height. Over 50 others of varied heights in the immediate vicinity.

Utah

Dark Canyon 74,317 acres
Salt Lake Meridian.[26]

Designation:
35 FR 14621—9/18/70[27]

Description:
Series of colorful canyons and high mesas on the eastern side of the Colorado River from Gypsum Canyon south to Dark Canyon.

Grand Gulch 24,080 acres
Salt Lake Meridian: T38-40's, R15-18E.

Designation:
35 FR 14859—9/24/70[28]

Description:
Colorful canyons and high mesas characteristic of this area. Relatively inaccessible, abounding in

[22] 8,726 acres are located in Utah.

[23] Classified under Classification and Multiple Use Act of 1964 on November 23, 1968 and August 12, 1970.

[24] Withdrawn, August 23, 1973, by PLO 5386.

[25] Withdrawn by PLO 5062.

[26] 57,248 acres are under the jurisdiction of the Bureau.

[27] Area had been classified under Classification Multiple Use Act of 1964.

[28] Area had been classified under Classification Multiple Use Act of 1964.

interesting geological phenomena and archaeological values.

Wyoming

Scab Creek Primitive Area 6,680 acres
T32N, R106W; T33N, R106W; T32N, R107W.
Designation:
40 FR 26721—6/25/75
Description:
Rocky, steep, rough terrain on eastern side of upper Green River Valley. Elevation 7,400 to 9,600 feet.

Table 5

List of Recreation Lands

Arizona

Virgin River Gorge Recreation Lands 23,070.31 acres
Withdrawn: PLO 5263
Description:
The Virgin River Canyon is the only opening in the Virgin Mtns., a deep gash that exposes a varied and colorful geology for the enjoyment of the traveler. The gorge is narrow on both the east and west ends. Views are limited to the nearby rims, with brief vistas up side canyons. In the middle section the valley is broad with moderate topography permitting continuous views of the canyon rims on either side.

California

Afton Canyon Recreation Lands 4,560 acres
Description:
Here the Mojave River flows through a scenic canyon. The area has archaeological, geologic and historic values and the old Mojave Indian Trail.

Alabama Hills Recreation Lands 29,974 acres
Description:
Two miles west of Lone Pine, California provide for fishing, camping, hiking, hunting and scenic vistas of the Sierra Nevada Mountains. Primary attraction is the visual resource and aesthetic nature of the rock formations.

Bighorn Mountains and Whitewater River Recreation Lands 145,700 acres
Description:
Biological and ecological values range from a high mountain desert environment to excellent Joshua tree—Pinyon pine—Juniper forests. Petroglyph Springs is an outstanding archaeological site. Upland game birds and deer provide hunting opportunities, and there is potential for riding and hiking.

Calico Recreation Lands 136,810 acres
Description:
Includes Murphey Well Indian Petroglyph Site, Tin Can Alley Recreation Site, and the Rainbow Basin Natural Area which has upper Miocene mammal fossils. The area also has historical values and Joshua View, a place to see large Joshua trees.

Chuckwalla Recreation Lands 395,980 acres
Description
An area rich in historical, biological and geological values.

Chuckwalla Valley Desert Lily Recreation Lands 2,040 acres
Description:
A natural biological area featuring the Desert Lily.

Eastern Mojave Recreation Lands 713,455 acres
Description:
Outstanding archaeological values including a cindercone, petroglyph site, and many pictograph areas. Other features are the Kelso Sand Dunes, Cima Dome Natural Area, a Joshua Tree forest, and the Granite Pass Recreation Site.

Fort Piute Recreation Lands 4,680 acres
Description:
Features include Old Fort Piute, the Mojave Indian Trail, the old Governmental Road, outstanding petroglyphs, and archaeological values. It receives intensive use for camping and picnicking.

Grapevine Canyon Recreation Lands 21,165 acres
Description:
A portion of the San Bernardino Mountains; used for picnicking and camping.

Imperial Sand Hill Recreation Lands 252,169 acres
Description:
This area features sand dunes intensively used by drivers of off-road vehicles, an abandoned gold mine, and small game hunting.

Kingston Peak Recreation Lands 37,265 acres

Description:
An important archaeological area with rugged mountains that provide limited hiking, riding, and upland game hunting.

Mecca Hills Recreation Lands 20,480 acres

Description:
A natural environmental area featuring multicolored canyons that receive intensive use from hikers and picnickers. Interpretive sites are proposed for Pointed Canyon and Box Canyon.

Old Woman Mountains Recreation Lands 93,740 acres

Description:
Archaeological values; upland game bird hunting and camping.

Picacho Recreation Lands 127,450 acres

Description:
A rugged area of broad washes dominated by Picacho Peak: above average scenic features, undisturbed ecological values and hunting of small game, deer and waterfowl.

Rodman Mountains Recreation Lands 324,480 acres

Description:
This area is popular with motorcyclist and off-road drivers. It has archaeological values and receives considerable use from campers, picnickers and hikers. Opportunities for upland game hunting.

Santa Rosa Mountains Recreation Lands 60,920 acres

Description:
Spectacular view of Coachella Valley; Indian ruins and native fan palm groves; hunting of upland game birds and deer; areas for riding and hiking.

South Yuba Trail Recreation Lands 6,065 acres

Description:
Six miles of foot and horse trail along the north side of the South Yuba River Canyon. Initial 1½ miles is a self-guided nature trail, traverses a rugged canyon with trees, flowers and spectacular views of the river and surrounding country. Historical remnants of Gold Rush days are exhibited. Hiking and hunting is good with an abundance of small game within this rugged and primitive area.

Trona Pinnacles Recreation Lands 19,600 acres

Turtle Mountains Recreation Lands 91,520 acres

Description:
These scenic mountains include the twin Mopah Peaks, pinnacle formations, lava flows and canyons. The area also has archaeological values, geological values, upland game bird hunting, camping, hiking and picnicking.

Whipple Mountains Recreation Lands 86,845 acres

Description:
Rugged, picturesque mountains provide a backdrop for numerous recreation developments along the Colorado River and Lake Havasu. The area also has geological and ecological values.

Yuba Desert Recreation Lands 147,710 acres

Description:
This area receives intensive use by campers, picnickers and hikers. It has important geological, archaeological and historic values.

Colorado

Gunnison Gorge 30,135 acres

Description:
Adjacent to Black Canyon of Gunnison National Monument, Gunnison River dissects the associated gorge for an outstanding visual attraction. Activities include boating, hiking, rock-hounding, fishing, hunting and camping.

Nevada

Las Vegas Dunes 9,000 acres

Designation:
35 FR 14949 at 14950—9/25/70

Description:
". . . high value for off-road recreational vehicle use."

Red Rock 61,881 acres

Description:
Multicolored sandstone mountains, unique desert vegetation and archeological sites provide unlimited recreational opportunities as a visual and interpretive resource area. Picnicking, camping, hiking, sightseeing, horseback riding, rock climbing and nature study are but a few of the attractions. An area unique in geological, ecological and historical values. Includes Pine Creek Canyon, Sand Stone Quarry, Brownstone, White Rock, Willow Springs and Rams-Head interpretive sites. Popular area for Las Vegas residents.

New Mexico

Organ Mountains 27,167 acres

Description:
At the southern tip of the Rockies, ridge of vertical, volcanic rock formations protrude 5,100 feet above the Inlarbsa Basin to provide an unexcelled scenic and interpretive resource. Camping, hiking, nature study, horseback riding, and sightseeing are but a few of the opportunities. Aguine Spring, San Augustin Wayside, Soledad Ecology Garden, and Pine Hill and Baylor Pass Trails are developed interpretive sites within the resource area. It has important historical, geological and ecological values. Organ Mountain Trail is an 8.7 mile national recreation trail, leading from Aguine Spring.

Oregon

Deer Creek 640 acres

Deschutes 39,000 acres

Description:
The Deschutes in north-central Oregon lies the rain shadow of the Cascade Mountains of Mount Hood and Mount Jefferson. With varying topography the river has formed a canyon 1,000 to 1,500 feet deep providing scenic vistas and one of the finest trout fishing streams in the United States. This area is rich is geologic, historic, archaeologic and ecologic values. Camping, boating, hunting, rock-hounding, nature study and sightseeing are favorite attractions.

Steens Mountain 140,607 acres

Description:
Eastern escarpment rising abruptly from the Alvord Desert 5,000 feet to the rugged crest-line at 9,670 feet forms one of the highest fault blocks known. Dissected by glaciation this impressive mountain range in southeastern Oregon provides fishing, hunting, rock-hounding, hiking, camping, photography and sightseeing as major activities. This area is also rich in geological, archaeological, historical and ecological values.

Table 6

List of National Natural Landmarks

Alaska

Aniakchak Crater 20,000 acres
Arrigetch Peaks 25,600 acres
Lake George 64,000 acres
Malaspina Glacier 960,000 acres
Mount Veniaminof 800,000 acres
Unga Island 6,400 acres
Walker Lake 181,120 acres

Arizona

Hualapai Valley Joshua Trees 3,000 acres
(includes partial private ownership)
Willcox Playa 2,400 acres

California

Amboy Crater 5,760 acres
(includes partial Dept. of Navy and private ownership)
Cinder Cone Natural Area 25,600 acres
(includes partial State of California ownership)
Fish Slough 6,400 acres
(includes partial City of Los Angeles, State of California, and private ownership)
Rainbow Basin 800 acres
Sand Hills 24,000 acres
Trona Pinnacles 1,280 acres
Turtle Mountains Natural Area 95,360 acres
(includes partial State of California ownership)

Colorado

Garden Park Fossil Area 160 acres
(includes partial private ownership)
Slumgullion Earthflow 1,000 acres
(includes partial Forest Service and private ownership)

Idaho

Cassia Silent City of Rocks 18,500 acres
(includes partial Forest Service and private ownership)
Great Rift 1,000 acres
Hagerman Fauna Sites 3,875 acres

Montana

Bridger Fossil Area 160 acres
Bug Creek Fossil Area 800 acres

Nevada

Lunar Crater 400 acres

New Mexico

Fort Stanton Cave 985 acres
Grants Lava Flow 53,760 acres
(includes partial State of New Mexico and private ownership)
Kilbourne Hole 5,760 acres
(includes partial private ownership)
Torgac Cave 120 acres

Oregon

Horse Ridge Natural Area	600 acres

Utah

Cleveland-Lloyd Dinosaur Quarry	80 acres
Henry Mountains	32,640 acres
Joshua Tree Natural Area	1,000 acres

Wyoming

Como Bluff	3,680 acres
(includes partial State of Wyoming and private ownership)	
Crooked Creek Natural Area	160 acres
Lance Creek Fossil Area	9,920 acres
(includes partial State of Wyoming and private ownership)	

4.4 Program entry process: Multiple Use Planning System

Identification and establishment of natural areas under any of the Bureau's natural area programs are not part of a special effort, but rather another element in the agency's basic activities and considerations. A brief understanding of this will help place the Bureau natural areas activity in perspective. The on-going mission of the Bureau is to determine to what appropriate uses its lands can be put working within the concepts of multiple-use and sustained-yield, and based on social, economic and environmental considerations and compatibility of use. (See section 5.2, for further analysis of these concepts.) This activity is initiated primarily at the district and state office levels. Management of the land is altered by the decisions made in the process and suited to the specific uses to which the land is committed, such as natural area use.

The Multiple Use Planning System, an administrative system derived from general management directives in several different statutes, provides the Bureau with a Unit Resource Analysis and Management Framework Plan which together enable the agency to arrive at its use and management decisions. Unit Resource Analyses have been completed for about 70% of the Bureau's total of 635 planning units, and land use decisions have been made for about 46% of the planning units.[29]

Under the Multiple Use Planning System certain steps are taken which may be summarized as follows:

(1) A state director or district manager undertakes a Unit Resource Analysis to identify the current conditions and potential uses of a planning unit of land. Impetus for analysis of any particular unit arises out of the director or manager's discretionary management priorities or from "supplemental guidance" from the Washington office of the Bureau. This impetus may be influenced by outside pressures for the establishment of particular uses within the unit (*e.g.*, a conservation organization or local government agency may call the manager's attention to a unit which would be suited for a natural area.) Representatives from some or all of the nine Bureau divisions, may call on other government and private expertise to assist in drawing up an inventory.

During its analysis the Recreation Division, which is responsible for natural areas and Primitive Areas, employs a Quality Evaluation System. The system assigns numerical evaluation to rating criteria in order to assess the current condition of the unit with regard to specific uses without considering the effects these uses may have on the resources or on other resource uses.

(2) The potential resource uses are assessed in terms of supply and demand and other economic factors.

(3) Social and environmental impact considerations are taken into account for these uses (the environmental protection enhancement aspect stems from the National Environmental Policy Act).

(4) Conflicts and competing aspects of potential uses are identified.

(5) The Unit Resource Analysis, background and alternative land use proposals are presented by the Bureau's field office to the public and to other Federal and local government offices for comment.

(6) The field office then arrives at some basic decisions concerning the uses. These de-

[29]As of mid-1975.

cisions are developed into a Management Framework Plan for the unit.

(7) The Plan is then reviewed at the state office. (Reviews are periodically made by the Washington office during the normal evaluation process.)

The basic data to determine natural area uses for all Bureau lands which have Unit Resource Analysis may already exist. (What may be needed to provide the Bureau with a tabulation of potential natural areas are an assessment of current inventories and improved planning procedures to identify these areas. Both the assessment and procedure improvement are currently underway.)

(8) The Bureau's districts resource specialists who oversee the land uses determined by the Management Framework Plan then develop programs consistent with the Plan. This completes the classification process.

(9) The district manager is responsible for managing the unit according to the departmental regulations and guidelines for each type of area and use permitted. The guidelines were drawn up by each of the nine respective resource divisions in the Bureau's Washington office, and are ultimately issued by the Bureau's Director.

Thus, in theory, a natural area is determined to be a natural area and afforded some recognition by the Bureau after an analysis which takes into account a variety of factors.

4.5 Protection

Protection of natural areas within the Bureau of Land Management is provided through one of three processes: (1) "withdrawal," the process by which the public domain is reserved for certain specific purposes and thereby segregated from the operation of various other public land laws enacted by Congress authorizing the use or disposition of the lands or the mineral deposits therein or both (Public Land Law Review Commission, *Study of Withdrawals and Reservations of Public Domain Lands* (1969) at p. 1); (2) "classification" under the now expired Classification and Multiple Use Act of 1964; (3) or specific regulation.

To eliminate some or all of the conflicting claims for use of a land unit which can be made by the public and other governmental agencies under the approximately 3000 laws under which the Bureau operates, the Bureau, state or district office may recommend withdrawal of the unit from some or all applicable laws.

Withdrawal began as a tool to limit and control the entry to public lands permitted under the homestead and mining laws of the nineteenth century.[30] It has the effect of limiting the use of the land for a specific purpose or purposes, including the protection of natural areas which are otherwise in jeopardy from claims made under various land laws.

Both Congress and the President can withdraw lands. There are, however, two kinds of Executive withdrawals: the "inherent" right of the Executive to make withdrawals, a claim first put forth by President Theodore Roosevelt; and withdrawals under the Pickett Act of 1910, passed during President Taft's Administration, which strengthened the general withdrawal powers of the Executive Branch. Today the President retains the authority to withdraw lands,[31] although this power has also been delegated to the Secretary of the Interior who makes withdrawals for all of the Executive agencies.[32]

The mechanics of the Bureau-initiated withdrawal process[33] involve a number of steps beginning with a request for permission to file an application for withdrawal. The request is usually made by a state or

---

[30]See Technical Appendix 4(b), "General Characteristics of a Withdrawal or Reservation," for further discussion.

[31]In 1941 the U.S. Attorney General held that the Pickett Act ". . . may not properly be construed as covering the full authority of the President, but must be considered only as affirming the authority which had been brought in question, namely, that to make temporary withdrawals." *Opinions of the Attorney General,* Vol. 40, p. 77 (1941).

[32]Withdrawal powers were delegated to the Secretary of the Interior by Executive Order 10355, May 26, 1952.

[33]See Technical Appendix 4(b).

district office, and involves approval of the Washington Bureau and Interior Department's hierarchy, publication of public notice in the *Federal Register,* calling, when warranted, for public hearings in the area of the proposed withdrawal, review by other Bureau and Department offices in Washington, and finally, approval of the Secretary of the Interior. The final product is issued as a public land order.[34]

Other agencies beside the Bureau, within the Interior Department, do not request permission to file for withdrawal with the Bureau's Director but from the Assistant Secretary in the Department responsible for that agency's activities, and that Assistant Secretary forwards the request to the Assistant Secretary for Land and Water Resources (under whose authority the Bureau falls). Agencies outside the Department file an application directly with the appropriate state office of the Bureau.

The Secretary has discretionary authority to withdraw public land from operation of any or all of the public land laws, including the mineral leasing law (which deals with, *e.g.,* gas, oil, coal, phosphate) and from the mining laws (which deals with, *e.g.,* gold, silver, copper).

Withdrawal is recommended for a natural or Primitive Area only after the Unit Resource Analysis and Management Framework Plan indicate that conflicting uses permitted by law may provide a substantial impact on the unit. A proposed withdrawal can meet with opposition from parties with interests in other uses provided by law. To date it appears that twenty of the Bureau's Research Natural Areas have been partially or completely withdrawn. Verification of this figure is lacking, however.

Once an area has been withdrawn, that action can be changed by the Secretary upon consideration of either public or private petition, or by the Act of Congress.

A withdrawal order can also be modified or revoked, partially or completely, by the Secretary, using the same authority under which the withdrawal was made, or pursuant in Executive Order 10355.

Classification, authorized under the Taylor Grazing Act, the Classification and Multiple Use Act of 1964 (expired 1970), and the general directives to the Bureau contained in a variety of conflicting statutes, is a process of determining the uses of land. This process enables the Bureau, once it has determined the appropriate uses of a land unit, to dispose of or retain and manage that land consistent with a prior overall plan for such units.

Although the Taylor Grazing Act of 1934 gave the Bureau authority to classify land, the 1964 Act directed the agency to develop criteria, issued as regulations, which established an overall planning formula for its lands. This trend of land use planning had been gaining impetus among Federal landholding agencies during the 1960's and continues today. The proposed Federal land use legislation, which if passed by Congress, would further the planning concept by encouraging state and local governments to develop comprehensive land use plans for urban and non-urban areas.

Lands which were classified for multiple use under the 1964 Act remain so classified, even though the Act's authority has expired.

Specific regulations may be applied to any area, including a natural area, to afford it specific protection without going through withdrawal. These are usually initiated at the state or district office level and surface during the final stages of the Multiple Use Planning System (see section 4.3).

Designation, a term which may imply protection in some natural area programs—particularly non-Federal—may be part of the Bureau's natural area program, but it does not afford legal protection. Designation "refers to the official identification and naming of a general area or site on public land or other Federal land exclu-

[34]Executive Order No. 10355 of May 26, 1952, sec. 1(b).

sively administered by the Secretary through the Bureau of Land Management.[35] Designation is interpreted by Bureau staff as a "commitment by the Bureau to itself to manage a land unit (*e.g.*, a natural area) consistent with its decision to identify that area for specific purposes." A Bureau natural area may be designated only after it has been classified, withdrawn, or legislatively created.[36] (It should be noted that President Franklin Roosevelt issued the General Withdrawal Orders of 1934 and 1945, Executive Orders 6910 and 6964, withdrawing all public lands. Specific withdrawals which have been made subsequent to this action are technically supplemental.)

Following are an example of a Withdrawal for Natural Area and a Designation of a Research Natural Area reproduced exactly as they appeared in the *Federal Register:*

Bureau of Land Management
(Serial No. A 7057)

Arizona

Designation of Big Sage Research Natural Areas[37]

Pursuant to the authority in 43 CFR Part 2070, and the authorization from the Director, dated September 12, 1972, I hereby designate the following described public lands as the Big Sage Research Natural Area:

T40 N., R 1 E., GSR Meridian, Arizona, Sec. 28, NE¼.

This area aggregates 160 acres of public domain.

These lands will be used as an illustration of the effect adjacent vegetative manipulation projects, as a site for scientific study of a nearly pure big sage stand, and as a control site for Forest Service evaluation of a previous land treatment.

Dated: September 25, 1972.
Joe T. Fallini,
State Director

(FR Doc. 72-16778 Filed 10-2-72; 8:47 am)

(Public Land Order 5372)
(Oregon 8920)

Oregon

Withdrawal for Natural Areas[38]

By virtue of the authority vested in the President and pursuant to Executive Order No. 10355 of May 26, 1952 (17 FR 4831), it is ordered as follows:

1. Subject to valid existing rights, the following described land, which is under the jurisdiction of the Secretary of the Interior, is hereby withdrawn from all forms of appropriation under the public land laws, including the mining laws, 30 U.S.C. Ch. 2, but not from leasing under the mineral leasing laws, and reserved for scientific, educational, and research purposes:

WILLAMETTE MERIDIAN
LITTLE SINK NATURAL AREA

T.8S., R.6W.,
sec. 33, W½NW¼.

The area described aggregates 80 acres in Polk County.

2. The withdrawal made by this order does not alter the applicability of the public land laws governing the disposal of its mineral or vegetative resources other than under the mining laws.

Jack Horton
Assistant Secretary
of the Interior

July 30, 1973
(FR Doc. 73-16089 Filed 8-3-73; 8:45 am)

4.6 Management

Management of a given area is determined through the Multiple Use Planning System, an administrative system providing a Unit Resource Analysis and a Management Framework Plan,[39] which enables the

[35] *Code of Federal Regulations,* Title 43, section 2070.0-5.

[36] *Code of Federal Regulations,* Title 43, section 2071.1.

[37] *Federal Register,* Vol. 37, p. 20731, October 3, 1972.

[38] *Federal Register,* Vol. 38, p. 21167, August 6, 1973.

[39] For the Management Framework Plan, see Technical Appendix 4(c).

agency to arrive at its use and management decisions.

Guidelines specifically for the management of natural areas are contained in several sources; they are not spelled out in the *Code of Federal Regulations* or in administrative manuals as are those of the Forest Service. The major sources used are Bureau memoranda, the guidelines of two organizations (one governmental, the other private), and policy statements and objectives discussed in the *Code of Federal Regulations.*

The agency memoranda are background memos for individual areas accumulated over time which establish approved management patterns for types of areas, those managed as natural areas as well as for other multiple use purposes.

Two organizations have put forth definitions and criteria for Research Natural Areas which are used by the Bureau and other agencies. One is the Federal Committee on Ecological Reserves (formerly the Federal Committee on Research Natural Areas) which has been the impetus behind the establishment of Research Natural Areas on Federally-held lands. (This Committee does not own land itself.) Its language and criteria are the most precise. The Committee is discussed at length in Chapter Eleven. The following is the Committee's revised definition of a Research Natural Area which is now included in a broader category called Ecological Reserves (in 1974 the newly reorganized Committee revised its 1968 definition to include areas which permit limited deliberate manipulation for scientific research purposes):

> A Research Natural Area is a physical or biological unit where natural conditions are maintained insofar as possible and which is reserved for the primary purpose of research and education. These conditions are achieved by allowing ordinary physical and biological processes to operate without human intervention. However, under specific circumstances, on certain Areas, deliberate manipulation intended to maintain the unique features that the Research Natural Area was established to protect may be untilized.[40]

The 1974 revised objectives are:

1. To preserve adequate examples of all ecosystems;
2. To provide research and educational opportunities for scientists in the observation and study of the environment;
3. To preserve the full range of genetic diversity for native plants and animals;
4. And to provide a basis for organized research and exchange of information on Research Natural Areas.[41]

The Society of American Foresters is another group, a group which includes non-Federal membership, which has issued similar guidelines that have been used by the Bureau and other agencies in determining natural area management.

While natural areas are often defined ideally as being united to specific uses, such as scientific or educational, in order to avoid as much outside disturbance as possible, most types or classifications or established natural areas do not strictly limit use or access to exclude such activities by the public as: hiking, photography, bird-watching, or other similar pastimes which are more likely to leave the areas unscarred and uncluttered.

The Bureau of Land Management Outstanding Natural Areas Program uses the definition and objectives of the Society of American Foresters to identify Outstanding Natural Areas; this permits public activities such as the ones mentioned above:

> A physical and biological unit in as near a natural condition as possible which exemplifies typical or unique vegetation and associated biotic, edaphic, geologic and aquatic features. The unit is maintained in a natural condition by allowing physical and biologi-

---

[40] Federal Committee on Research Natural Areas, "Standards and Policy Guidelines for Research Natural Areas," 1972 (unpublished).

[41] *Ibid.*

cal processes to operate, usually without direct human intervention.[42]

According to the Society of American Foresters, natural areas are established primarily for purposes of science and education, but are open to unabusive uses; they:

1. Provide outdoor laboratories for the study of natural processes in relatively undisturbed ecosystems;
2. Provide benchmarks against which both harmful and beneficial effects of man-caused changes can be assessed;
3. Serve as reservoirs of genetic diversity;
4. Serve as outdoor classrooms for the education of those interested in natural forest landscapes.[43]

Bureau natural area policy statements from the *Code of Federal Regulations* provide that (for definitions see section 4.3 on program objectives):

> Where appropriate the Bureau shall establish and record areas of sufficient number and size to provide adequately for scientific study, research, recreational use and demonstration purposes. These will include:
>
> (a) The preservation of scenic values, natural wonders and examples of significant natural ecosystems.
>
> (b) Research and educational areas for scientists to study the ecology, successional trends, and other aspects of the natural environment.
>
> (c) Preserves for rare and endangered species of plants and animals.[44]

4.7 Illustrative examples:

(a) Halibut Cove Natural Forest Study Area, Alaska

Halibut Cove Natural Forest Study Area, the Bureau's only Research Natural Area in Alaska, is a rolling and heavily forested tract on the western Kenai peninsula; it was established in conjunction with a Society of American Foresters program for a system of such natural areas throughout the United States.

Acreage: The area comprises 120 acres.

Elevation: From sea level to nearly 400 feet.

Geological features: The tract is located about one-quarter mile back from the shoreline of Halibut Cove, but a tidewater lagoon which drains dry at low tide lies within 300 feet of the southwest corner. Situated at the terminus of a mountain ridge, the southeast portion of the tract is highest with decreasing elevation to the north and west grading into a nearly level glacial outwash moraine. The snout of Grewingk Glacier and a terminal lake draining from the extensive ice fields in the over 5,000 foot mountain backbone of the Kenai Peninsula lie within two miles and at an elevation of under 200 feet.

Fauna and flora: The tract is dominated by Sitka spruce *(Picea sitchensis)*. Black cottonwood *(Populus trichocarpa)* is also present. Dominating the understory is devilscrub *(Oplopanax horridus)*, with alder *(Alnus* sp.), elderberry *(Sambucus* sp.), blueberry *(Vaccinium* sp.), and rusty menziesia *(Menziesia* sp.) also common.

Moose *(Alces alces)* and black bear *(Ursus americanus)* and perhaps grizzly *(U. horribilis)* are known to frequent the general area, along with wolves *(Canus lupis)*, coyotes *(Canus catrans)* and foxes *(Vulpes vulpes)*. Probably the main residents of the tract are the red squirrel *(Tamiasciurus hudsonicus)* and the porcupine *(Erethizon dorsatum)*.

Uses: The area is maintained primarily for research purposes. Public visitation is not encouraged.

Designation: The subject area originated in August 1952, as a 20-acre permanent sample plot and natural forest area, one of five on the western Kenai Peninsula.

---

[42] Buckman, Robert G. and Richard L. Quintas, *Natural Areas of the Society of American Foresters,* Washington, D.C., 1972, p. 1.

[43] Buckman, Robert G. and Richard L. Quintas, *Natural Areas of the Society of American Foresters,* Washington, D.C., 1972, p. 1.

[44] *Code of Federal Regulations,* Title 43, Chapter 2, section 6225.0-6.

These areas were established in conjunction with a Society of American Foresters program for a system of such natural areas throughout the United States.

Withdrawal status: Pursuant to Public Land Order 2908 the tract was withdrawn from all forms of disposition under the public land laws, including the mining and mineral leasing laws. Notice appeared in the *Federal Register,* Volume 28, p. 1048, on February 2, 1963.

Protection afforded: (See *Withdrawal status.*)

Management: The area is being managed to preserve its primitive forest character for research by the scientific community. Management policy is one of protection from trespass and fire. Neither of these objectives presents any special problems. The area has not been fenced off because of the total isolation of the area and the absence of publicity. The fact that the area receives approximately 100 inches of rainfall a year, has eliminated fire as a major threat.

Despite the fact that the area surrounding the tract is designated as state park, title has not yet passed from the United States. It has, however, been tentatively approved for patent, giving the state the management rights.

Katchemak State Park, which provides a buffer area for Halibut Cove, is viewed by the State Division of Parks primarily as a de facto wilderness park with only light development of trails, campsites and the like designated to facilitate this concept.

Contact:

Bureau of Land Management
Anchorage District Office
4700 East 72nd Avenue
Anchorage, Alaska 99507

(b) El Malpais Outstanding Natural Area, New Mexico

The El Malpais lava flow area in Valencia County, New Mexico, has been both outstanding and unique geological natural and archaeological features to qualify it as an Outstanding Natural Area.[45]

Currently there is a land exchange in process between the Bureau of Land Management, a group of Navajo Indians, and a private landholding company, the Arizona-New Mexico Land Co., which may eventually consolidate areas of the El Malpais which are at present in a checkerboard private-and-public ownership pattern.

Acreage: The entire area is approximately 35 miles by 15 miles in size. The Bureau considers the total acreage 156,643; however, the actual designated area is 84,000 acres. 64,000 acres are managed as an Outstanding Natural Area, 30,000 acres are buffer areas, and the remaining acreage is a Bureau "exclusively cultural resource area" which was not designated.

Elevation: The range is from 6,400 to 8,400 feet.

Geological features: This is primarily a high valley area. Black flow lava covers 85,000 acres; the most recent flow was about 2,000 years ago. The lava area contains approximately 12 lava flows, the longest is 17 miles in length. There are 12 known ice caves, more than 20 gas and lava splatter cones, and volcanic cinder cones. A sandstone bluff on the east side of the flow contains one of the largest natural arches in New Mexico.

Fauna and flora: The area is currently inhabited by mutant black furred field mice *(Microtus* sp.), deer and antelope *(Antilocapra americana).* The higher ground is ponderosa pine *(Pinus ponderosa)* forest; lower areas are characterized by juniper-pinyon woodland, which are open groves of needleleaf evergreen low trees with an admixture of shrubs and herbaceous plants. The dominant tree species are oneseed juniper *(Juniperus monosperma)* and pinyon pine *(Pinus edulis).* Spring-fed ponds to the north contain some rare and endangered

[45] This Malpais area may have been the setting for an Indian Reservation in Aldous Huxley's 1935 book, *Brave New World.*

lower plant species (*e.g.*, lichens and aquatic plants).

Cultural history: There are pre-historic and historic archaeological ruins and trails throughout the area. The area seems to have been a contact point for the Mogollon Culture to the south, the Anasazi culture to the north and the Patayan and Sinauga cultures to the west. The history of present-day Native-Americans such as the Acoma, Laguna and probably the Zia Pueblos is directly linked to the many ruins in and around El Malpais.

Uses: For both Outstanding and Research Natural Areas, the Bureau's general statement on uses is:

> No persons shall use, occupy, construct or maintain improvements in natural areas in a manner inconsistent with the purpose for which the area is established; nor shall he use, occupy, construct or maintain improvements unless permitted by law or authorized by the regulations of this subpart.[46]

The actual uses of the El Malpais area are primarily scenic recreation activities; there are roads on the outer edges of the area which provide for motorized travel. Some grazing take place on the outer perimeters of the lava areas. Hunting is also allowed.

Designation: This was designated as an Outstanding Natural Area; the *Federal Register* entry appeared on May 9, 1974.

Withdrawal status: The area was classified for multiple use management on July 25, 1970; see *Federal Register,* Vol. 35, pp. 12019-20.

Protection problems: The Bureau has limited enforcement authority and cannot currently make arrests; it can only record offenses and report them to the U.S. Magistrate and to local authorities. There is no full-time, permanent staff overseeing area for abuses; vandalism and unauthorized gathering of archaeological finds are continuous problems. The greatest long-range danger to the area is probably the population impact of summer cabin communities on its western side.

Protection afforded: The Antiquities Act and Historical Sites Act protections are invoked in management policy. A Bureau patrol frequents the area acting as a deterrent rather than an enforcement agent. El Malpais was *designated* a National Natural Landmark under the name "Grants Lava Flow" in April 1969. Due to multiple ownership the Landmark has never been *registered* (see section 12.4, below).

Management: The area is being managed to preserve natural and cultural resources in their primitive condition for enjoyment by the public and study by the scientific community. While accessibility has been improved, future roads, parking areas and public use facilities, other than trails and related structures, are to be located on the periphery. This will preserve approximately 65 square miles as roadless and primitive in character. The public will be encouraged to walk rather than drive. Trail improvements will be restricted to those necessary to visitor safety. Otherwise, trails will be marked; and signs and a separate self-guiding trail booklet will provide interpretive information on historic Indian use and occupation of the area and on natural features. Hobby collecting and off-road vehicle travel will be prohibited. Overnight use of undeveloped portions of the Malpais will be discouraged and rules pertaining to undesignated camping will be strictly enforced. Visitor registration and ranger patrols will serve the public safety and prevent abuse of natural features.

In addition, utility rights-of-way, and range improvements, such as fences and water development/or livestock are to be limited to the periphery of the area. Watershed improvement practices such as retention dams and brush control will not be permitted. There will be no timber sales within the Outstanding Natural Area boundary; no permits will be issued to remove non-locatable common variety minerals, and all non-reserved national re-

---

[46] *Code of Federal Regulations,* Title 43, Chapter 2, section 6225.1.

source lands within the boundary will be withdrawn from entry under the mining and land laws. Any oil and gas leasing or exploration will be restricted to those actions which do not result in surface disturbance or visible pollution.

Contact:

Recreation Planner, Bureau of Land Management
U.S. Post Office (Federal Building), Box 1449
Santa Fe, New Mexico 87501

(c) Grand Gulch Primitive Area, Utah

The Grand Gulch in San Juan County, Utah, is an almost inaccessible canyon and high mesa area established as a Primitive Area because of its geological structures that are typical of this desert region and its valuable archaeological contents.

Acreage: 24,080 acres are claimed by the Bureau; approximately 5,400 acres of the original Primitive Area are now managed by the National Park Service. This transfer took place when the Glen Canyon National Recreation Area was created and included the lower end of Grand Gulch. The vertical walls of the canyon which make it so inaccessible serve in place of a buffer zone. The Bureau is currently considering enlarging the area to provide Primitive Area status to adjacent canyons where similar wilderness and archaeological values exist.

Elevation: 5,000 feet is the approximate average elevation of the entire area; however, the Primitive Area varies from near level ground on Cedar Mesa to near vertical drops of approximately 800 feet in the canyon.

Geological features: This is a desert mesa and canyon area created by water flow through sandstone rock over a long time. Most of the Gulch is very dry. Potholes hold some water and there are a few springs. The San Juan River flows through the Glen Canyon Natural Recreation Area at the end of the Gulch.

Fauna and flora: Deer, bobcats *(Lynx rufus)* and smaller animals inhabit the area, but although hunting is permitted, wildlife and game are too few in number to invite much hunting. Except for the San Juan River there is no fishing. Plant life consists of some pinyon pine *(Pinus edulis),* Utah and Rocky Mountain juniper *(Juniperus osteosperma* and *J. scopulorum),* and cottonwood *(Populus fremontii).*

Cultural history: The local Bureau office claims that the area is one of the better preserved and varied remaining sites of Anasazi Indian culture. Remaining intact or in good condition are cliff dwellings, subterranean religious structures (called kivas), pictorgraphs and petroglyphs. Management studies for the area have been conducted by the University of Michigan and the Museum of Northern Arizona. These studies were funded by the Bureau.

Uses: The official Bureau statement on criteria for use of a Primitive Area reads:

1. Public use of Primitive Areas for recreation purposes is encouraged to the optimum extent consistent with the maintenance of the primitive environment;
2. Travel in Primitive Areas is restricted to nonmechanized forms of locomotion;
3. Construction will not be allowed in or on the land except in connection with authorized nonrecreation uses of the lands, and as necessary to meet requirements for the protection and administration of the area (including measures required in emergencies involving the health and safety of persons within the area);
4. Roads, mechanized equipment, commercial timber harvesting, nontransient occupancy, and the landing of aircraft is prohibited except in connection with activities necessary in the use of the lands for authorized nonrecreation purposes, and then only under conditions specified by the authorized officer;
5. Grazing of domestic livestock, water storage projects, and right-of-way for utility lines and other purposes may be permitted by the authorized officer under such conditions and restrictions as he deems necessary to preserve primitive values.[47]

[47] *Code of Federal Regulations,* Title 43, Chapter 2, section 6221.2.

The actual uses of the Grand Gulch area are scientific and educational, and recreation (although motorized vehicles are not permitted), the latter of which is actually in conflict with the first two, given the valuable and fragile nature of the archeological and geological features in the canyon. Hunting is permitted although there is limited game available. Camping is also permitted.

Designation: Grand Gulch was classified as a Primitive Area on December 2, 1970, under the Classification and Multiple Use Act of 1964.

Withdrawal status: the area has been segregated under the Classification and Multiple Use Act of 1964 from locateable mineral laws, public entry and public sale. Notices appear in the *Federal Register,* Volume 35, on June 4, 1970, September 24, 1970, and December 15, 1970.

Protection problems: The main threats to the maintenance of the valuable features of the Gulch are pilfering and vandalism of the archeological sites and geological formations. Increased volume of visitors to the site, occurring over the last two or three years has added to the dangers. This is primarily due to the paving of state highway U-95 which runs nearby. A few primitive roads are on the perimeter of the Gulch. Another National Park Service area nearby, the Bridges National Monument, attracts visitors to the Gulch.

Considering the fragile and valuable nature of the area and its scientific and educational attributes, the very fact that the general public is permitted in for recreational activities would seem to constitute a threat by virtue of incompatible use.

Protection afforded: A Bureau ranger station has been established with someone on duty at all times. The Bureau has limited enforcement authority and must rely on other Federal and local agencies once an abuse has been discovered. A Bureau helicopter occasionally patrols the site (and is available for rescue efforts). All visitors going into the Gulch are required to register at the ranger station before entering the canyon.

Management: The area is being managed with primary consideration to the preserve of the archaeological remains. The general public is admitted, party size limited to 25 persons, with registration required at the local ranger station or at the district office.

The ruins have not been restored, but many have been stabilized. This process involves disassembling the stones and rejoining them with mortar.

The area is ranger patrolled against unauthorized visitation and tampering with the ruins (an offense under the Antiquities Act).

Contact:

Recreation Planner, or,
Archaeologist, Bureau of Land Management
P.O. Box 11505
Salt Lake City, Utah 84111

For more on the Bureau's Primitive Area program, see Technical Appendix 4(e).

(d) Alaska as a natural area

With specific regard to Bureau natural area programs in Alaska, there is one Research Natural Area of 120 acres, actually an "inholding" within a recently created state park. This area, Halibut Cove, is described above at 4.7(a). At present the Bureau has no other formally established natural areas in the state. On first thought, this is almost incredible considering that of the approximately 375 million acres in the state, the Bureau administers 273 million acres. Some background information will shed light on the circumstances under which the Bureau—and the other major Federal landholding agencies researched for this study—operate in Alaska where less than one million acres is actually in private ownership (the rest is under Federal or state administration).

In the years prior to the passage of the Alaska Native Claims Settlement Act of

1971, the establishment of natural areas under Bureau programs and similar administrative programs under other agencies were allegedly discouraged by considerations such as these: (1) the small size of the Alaskan staff of the Federal agencies; (2) emphasis on the basic firefighting duties of the Bureau in Alaska; (3) the idea that so much land was there that it was apparently unnecessary to preserve or protect any areas not already included in state or National Park, National Wildlife Refuge and National Forest Systems because the population was so small; (4) until the discovery of the vast oil and gas reserves near Prudhoe Bay there appeared to be no major threat to the status quo of the land; (5) the state of Alaska under the Alaska Statehood Act of 1959 has claim to approximately 103 million acres of land. The state has until 1984 to make its selections. Prior to the Alaska Native Claims Settlement Act, the state could lay claim to unappropriated and unreserved land which might include land in Federal natural area programs. This land transfer could result in alternations in the use and management of those areas which had been identified under Federal programs. As of 1975, only about 68 million of the 103 million acres have been selected by the state; (6) large areas are needed in Alaska to support wildlife compared to the areas needed to support wildlife in the lower 48 states (for example, the Arctic National Wildlife Range in northeastern Alaska is the largest component of the Wildlife Refuge System in the United States); (7) there has been resistance to many Bureau of Land Management withdrawals, by some special interest or commodity groups, due to the magnitude necessary to protect natural areas; (8) the long-standing situation of the claims of natives, the giant oil and gas strikes, and the resulting Alaskan Native Claims Settlement Act of 1971 have contributed to a land planning upheaval of behemoth proportions among the parties involved in Alaska.

The Secretary of the Interior has proposed to Congress that two areas be withdrawn and jointly under the administrative programs of the Bureau and the Fish and Wildlife Service as part of the "four systems" program established under the Alaska Native Claims Settlement Act, section 17(d) (2).[48] This section of the Act authorized the Secretary of the Interior to withdraw up to 80 million acres of land to be studied for possible addition to the National Park, National Forest, National Wildlife Refuge, and Wild and Scenic Rivers Systems. (These proposals were submitted in December 1973; Congress has five years from that date in which to act.)

C. Bureau Authority, Structure, and Funding

4.8 History and legislative authority

The most often used phrase connected with the Bureau's legislative authority is that it operates under some 3,000 laws. This figure includes Congressional legislation, Executive (Presidential) Orders, and Public Land Orders (which, issued at the discretion of the Secretary of the Interior, have the effect of law). Unlike most other Federal agencies, the Bureau does not have an "organic act"—a single act which sets forth its responsibilities and objectives, and provides the legal authority to execute them. Since 1964, however, efforts have been made by Congress to draft such an act.

It is important to note that, with three specific exceptions, these laws do not grant the Bureau enforcement authority. The first exception is the Land and Water Conservation Fund Act of 1965, as Amended, which gives the Bureau the authority to issue permits and collect fees for recreation uses of its land. The second is the Wild

[48] These areas are Iliamna National Resource Range (2.85 million acres) and Moatok National Arctic Range (7.59 million acres).

Horse and Burro Act which provides the Bureau with penalty and arrest authorities. The authorities have so far only been delegated to the Bureau's Director who, in turn, has to delegate the authority to those Bureau personnel in the field who will be charged with the law's enforcement responsibilities. Until that time, the protection aspects of the Act, as far as the Bureau is concerned, are only potential. The third is the Sykes Act, as Amended, which provides authority for establishment of cooperative agreements between the Bureau and individual states (none of which have yet been enacted) to provide for law enforcement against off-road vehicle violations and certain wildlife violations.

Although the 3,000 laws remain "on the books" and therefore theoretically in force, many of them are in reality no longer viable and seldom, if ever, invoked. Many of these were promulgated during the first half of United States history when the prevailing attitude was that title to lands under Federal ownership would eventually pass to private hands under Congressional homesteading and other laws.

Disposal of Federal-owned lands was still a major function of the Federal government when the Bureau of Land Management was created in 1946, although the Bureau also leased, managed and administered the lands which it retained.[49] The Bureau was established in accordance with the provisions of sections 402 and 403 of the President's Reorganization Plan No. 3 of 1946.

The guiding philosophy of Federally-owned lands was altered to some degree from disposal to custodial management between the turn of the century and the passage of the Taylor Grazing Act of 1934.[50] The Mineral Leasing Act of 1920 permitted the Secretary of the Interior to issue leasing permits for the development of "leasable" minerals—oil, gas, coal—but provided that the Federal Government retain title to the land. This is in contrast to the mining laws of 1866, 1870 and 1872 pertaining to "locatable" minerals—gold, silver, copper—which allowed the transfer of title to private parties who staked out claims to lands for those mining purposes.

A major concept the Bureau operates under is that of "withdrawal." Withdrawal is:

> the process by which the public domain is . . . reserved for certain specific purposes and thereby segregated from the operation of various other public land laws enacted by Congress authorizing the use or disposition of the lands. Public Land Law Review Commission, *Study of Withdrawals and Reservations of Public Domain Lands* at p. 1 (1969).

Withdrawal has been used for protected natural area purposes. For further discussion of withdrawal, see section 4.5. The Pickett Act of 1910 strengthened withdrawal, permitted the Secretary of the Interior to exclude the lands from various existing disposal laws, and imposed a need to administer in a different way those lands which were retained.

The 1934 Taylor Grazing Act, still in force today, signaled the end of unrestricted entry solely at the initiative of individuals into the remaining unappropriated[51] public domain by requiring grazing

[49] The Act of April 25, 1812, established the General Land Office as a bureau of the Treasury Department. The Office was transferred to the Department of the Interior when that Department was created in 1849. Passage of the Taylor Grazing Act led to the establishment of the Grazing Service to manage grazing districts authorized under the Act. In 1946, the General Land Office and the Grazing Service were combined to form the Bureau of Land Management.

[50] For two perspectives on this, see Marion Clawson, *The Bureau of Land Management*, New York: Praeger Publishers, Inc., 1971, pp. 19-20 and U.S. Senate Committee on Interior and Insular Affairs, *National Resource Lands Management Act (Report to Accompany S. 424)*, Washington: U.S. Government Printing Office, 1974, p. 27.

[51] "Appropriated lands" (a concept wholly different from Congressional appropriations), as used in the public land laws, refers to lands on which specific individuals had acquired rights, *e.g.*, fee title or mining claims. These rights may include the right to enter and use a recreation area.

regulations and providing authority to continue the study of erosion and flood control, and perform such work as may be necessary to protect and rehabilitate areas subject to the Act. It also provided land classification authority enabling the Secretary of the Interior to establish how those public lands might be used (or disposed of) in the public interest. This allowed the Secretary to preclude the application of the numerous disposal laws which pertained to Bureau lands (with the exception of the Mining Law of 1872 which was excluded from the classification requirement of section 7 of the Taylor Act).[52]

An era of more intensive management came about during the late 1940's when more funds became available from receipts generated from Federal lands and new or heretofore impractical management techniques came into use. The Bureau, created during this time, generated receipts in excess of its expenditures. In 1947, the first fiscal year of its operation, the Bureau collected $21 million in receipts and expended $5 million.[53] Although this pattern continues today, the Bureau's budget remains small in comparison to its responsibilities for its vast domain.

The Classification and Multiple Use Act of 1964 provided additional but temporary authority to develop criteria for land classification to determine which public lands should be disposed of or retained by the Bureau in Federal ownership for multiple use management, particularly where prior authority was lacking or unclear. This authority expired in 1970, although classifications made under it are still in effect.[54] Classification of an area under this Act achieved results similar to the withdrawal process mentioned earlier; once classified for certain use, the land was effectively segregated from other specified forms of appropriation under the public land laws.

Currently, the Bureau conducts its ongoing missions of management and classification in accordance with not only laws but administrative policies and regulations issued at various agency and departmental levels over the years. These are particularly essential to the actual management of individual areas and to the multiple use framework by which they are administratively classified. These are discussed in section 4.4.

4.9 Administrative structure and personnel

The Bureau is headquartered in Washington, D.C., and includes a field organization of 11 state and 61 subordinate district offices, and four Outer Continental Shelf offices.[55] The latter perform almost all functions related to the Shelf minerals leasing program. There is a Service Center in Denver which provides technical support assistance, handles data processing and some cadastral survey work, and acts as a resource center which provides field offices with advice and guidance on resources management. The Bureau also has a major administrative responsibility in the Inter-Agency Fire Center in Boise, Idaho.

The Bureau's Washington headquarters is divided between resource activities and administrative support activities. The resource activities are handled by nine divisions which determine policy for, and review the work and recommendations of, the Bureau's state, district and special field offices. It is at the field level that planning and development processes generally originate and actual management of areas occurs.

Despite the extensive land holdings and major management responsibilities of the Bureau, there are only 448 employees in

[52]The Public Land Law Review Commission, *One Third of the Nation's Land,* Washington: U.S. Government Printing Office, 1970, p. 22.

[53]Clawson, *op. cit.* pp. 21-22.

[54]*The Public Land Law Review Commission, op. cit.* p. 43.

[55]These are located in New York City, New Orleans, Anchorage, and Los Angeles.

the Washington, D.C. offices and 4,458 employees in the field.[56]

4.10 Funding and budgetary authority[57]

Bureau-wide appropriation figures specifically designated for the Management of Lands and Resources were: in FY 1973 $78 million, in FY 1974 $96 million, in FY 1975 $175.7 million, and in FY 1976 $192.6 million.

The increases of approximately $80 million between FY 1974 and FY 1975 and $17 million between FY 1975 and FY 1976 primarily signify pay raises and increased funding for the Bureau's energy management programs. Between FY 1975 and FY 1976, offshore energy management increased by $3.9 million which reflect the government's concern with the management and use of energy resources. These program increases were partially offset by decreases in other resource programs.

Funding for the Recreation Division (which is the unit responsible for Research Natural Areas, Outstanding Natural Area, and Primitive Area programs) was $4.9 million in FY 1975. Costs for the management of natural area program activities was less than 5% of this figure in FY 1975.[58] The request to Congress was $4.9 million in FY 1976. The figures for the Recreation Division include only management costs. Figures for Recreation Division management framework planning and development and classification processes were $1.6 million in FY 1975 and $1.6 million in FY 1976.

The Bureau's budget consists partly of Congressional appropriations[59] and partly of a set share of on-going receipts not appropriated by Congress but generated from Bureau activities, including: sales of public lands and minerals, fees and commissions, mineral leasing, grazing fees, right-of-way leases and timber sales in western Oregon.

Monies generated from the Bureau's activities which are not in turn designated for its own expenses are either transferred to states and counties in lieu of taxes on the land and other revenue-sharing arrangements, or are placed in the general fund of the United States Treasury.

D. Information and Bibliography

4.11 Key information contracts

Administration:

Assistant Chief
Division of Management Research
Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-6825

Alaska:

Chief
Branch of Mineral Economic Analysis
Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-8457

Bureau Coordinator for Alaskan Native Claims Settlement Act

---

[56]The field offices' employee breakdown is: state office—1,422; district office—2,367; Outer Continental Shelf Office—137; Denver Service Center—470; Inter-Agency Fire Center—30; Alaska Pipeline Unit—42. (Figures as of May 24, 1975. These figures vary by employment categories and turnovers throughout the year. The ceiling number for full-time, permanent employees for FY 1975 was 4,512 for the entire Bureau.)

[57]Figures here were provided by the Chief, Division of Budget and Program Development of the Bureau of Land Management.

[58]Estimate is from Recreation Division Staff, Bureau headquarters in Washington, D.C., June 26, 1975.

[59]This is for Management of Land and Resources and for Construction and Maintenance (which are both direct appropriations) and for Public Land Development Roads and Trails (the authority for which comes from Federal highway acts).

Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-8693

Budget:

Chief
Division of Budget and Program Development
Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-8571

General Information:

Assistant Director of Resources
Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-8291

Public Affairs Office
Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5717

Legislative and Withdrawal (Protection):

Assistant Solicitor
Energy and Resources Division
Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-4444

Attorney
Energy and Resources Division
Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-4667

Natural Resource Specialist
Land and Realty Division
Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-8731

Legislative History:

Chief
Division of Cooperative Relations
Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5629/343-8947

Natural Area Program and Recreation Division:

Outdoor Recreation Planner
Recreation Division
Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-9353

Public Land Statistics:

Statistical Analyst
(Public Land Statistics)
Record Division
Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5311

Specific Natural Area Sites Information:

(Contact the State or District Offices which are listed by state in Technical Appendix 4(a) of this study.)

4.12 Bibliography

Buckman, Robert G. and Richard L. Quintus. *Natural Areas of the Society of American Foresters.* Washington, D.C.: Society of American Foresters, 1972.

Bureau of Land Management. *Department of the Interior Departmental Manual.* Washington, D.C.: U.S. Department of the Interior.

Bureau of Land Management. *Public Land Statistics 1973.* Washington, D.C.: U.S. Government Printing Office, 1974.

Bureau of Land Management. *U.S. Department of the Interior Budget Justifications, FY 1976.* Washington, D.C.: U.S. Department of the Interior, 1975.

Clawson, Marion. *The Bureau of Land Management.* New York: Praeger Publishers, Inc., 1971.

Committee on Interior and Insular Affairs, U.S. Senate. *National Resource Lands Management Act (Report to Accompany S. 424).* Washington, D.C.: U.S. Government Printing Office, 1974.

Federal Committee on Research Natural Areas. *A Directory of Research Natural Areas.* Washington, D.C.: U.S. Government Printing Office, 1968.

Gates, Paul W. *History of Public Land Law Development.* Washington, D.C.: U.S. Government Printing Office, 1968.

Office of the Federal Register, National Archives and Record Service, and General Services Administration. *Code of Federal Regulations.* Washington, D.C.: U.S. Government Printing Office, 1974.

The Nature Conservancy. *The Preservation of Natural Diversity: A Survey and Recommendations.* Arlington, Virginia: The Nature Conservancy, 1975.

The Public Land Law Review Commission. *One Third of The Nation's Land.* Washington, D.C.: U.S. Government Printing Office, 1970.

4.13. List of technical appendices

(a) "State and District Offices." Bureau of Land Management. Washington, D.C.: U.S. Department of the Interior.

(b) "General Characteristics of a Withdrawal or Reservation" in Appendix A of *A Study of Withdrawals and Reservations of Public Domain Lands.* Public Land Law Review Commission. Washington, D.C.: Public Land Law Review Commission, 1969.

(c) "Management Framework Plans" in *Bureau of Land Management Manual.* Bureau of Land Management. Washington, D.C.: U.S. Department of the Interior, Release No. 1-955, March 19, 1975.

(d) "One-Fifth of Our Nation's Land: Leftovers or National Resource?" in *Land Use Letter.* League of Women Voters of the United States. Washington, D.C.: League of Women Voters of the United States, May, 1975.

(e) "Primitive Areas—A New Designation Under BLM" in *The Living Wilderness.* Bob Whitaker. Washington, D.C.: The Wilderness Society, Autumn, 1969.

E. Addendum

4.14 Addendum

In October of 1976, Congress passed and the President signed the "Federal Land Policy and Management Act of 1976." This Act substantially affects the Bureau of Land Management, so much so that it is worth setting out its outline here so that the reader can compare the authorities under which the Bureau has heretofore been acting with those under which it will in future act.

Title I, of the Act is in effect an "organic act" for the Bureau of Land Management. The title begins with a statement of policy that all public lands will generally be retained in the ownership and management of the Federal government and that this ownership should be aimed at protecting

the quality of scientific, scenic, historical, ecological, environmental; air and water resources, and archeological values which the land contains. Management is to be on the basis of the multiple-use and sustained-yield principle. The government shall receive fair market value for use of public lands and their resources. Regulations and plans to protect areas of critical environmental concern are to be developed promptly.

Title II of the Act provides for land use planning and land acquisition and disposal. The Secretary of the Interior is to prepare and maintain an inventory of all public lands and resources, giving priority to areas of critical environmental concern. (The Forest Service is directed to coordinate its land use plans with those of Indian tribes). Provision is made for either body of the Congress to veto by concurrent resolution a management decision which totally excludes one or more principal uses from a tract of 100,000 acres or more.

Land sales are authorized under certain conditions, but areas designated as wilderness, national wild and scenic rivers, and national trails cannot be sold.

The conferees authorize the Secretary, with limitations, to make, modify, extend, or revoke withdrawals. New Secretarial withdrawals of 5,000 acres or more would be subject to disapproval by a concurrent resolution of both bodies of Congress. Withdrawals are limited to 20 years terms; however, they may be renewed.

Mineral reservations and conveyances are dealt with. All mining claims must be re-registered in three years or they become invalid.

Title III of the Act provides for administration. The director of the Bureau is to be appointed by the President with the advice and consent of the Senate. Hunting and fishing would be permitted on Bureau and on Forest Service lands under state authorities. Nothing in the Act is to be construed as authorizing Federal permits. However, the Act authorizes the two agencies to ban hunting and fishing when necessary for reasons of public safety, administrative supervision, and compliance with relevant laws.

For the first time the Bureau has law enforcement authority. However, the Secretary of the Interior is to achieve maximum feasible reliance, in his discretion, upon local law enforcement officials in enforcing Federal laws and regulations.

The Act permits the Bureau to use Land and Water Conservation Fund money for acquiring land for outdoor recreational purposes.

Title IV sets out terms and conditions for grazing leases and permits.

Title V authorizes the granting of rights-of-way through public lands and national forests, excluding designated wildernesses, under specified conditions.

Title VI establishes the California Desert Conservation Area, with an implementation plan deadline of Sept. 30, 1980. The area will be managed in accordance with multiple-use principles, including mining, and $40 million is authorized for the program. Additions to the King Range National Conservation Area are also approved. Within 15 years, the Bureau is to review roadless areas of 5000 acres or more for possible wilderness designation. Withdrawals from mining of study areas are permitted under certain conditions, as is wildlife habitat management.

Title VII describes the effects of the Act on existing rights and repeals a host of laws relating to homesteading (except in Alaska) and small tracts, disposal, and withdrawals.

Chapter Five:

Forest Service

A. The Forest Service

5.1 Overall objectives

The overall objective of the Forest Service is to provide national leadership in forest management, protection and utilization. This objective is exercised in three major ways. The agency is vested with authority over the 183 million acres of the National Forests. It conducts forest research nationwide. It provides cooperative assistance to state and private forestry programs. This objective is the outcome of an extensive evolution of Forest Service-related legislation, which will be sketched here shortly.

First, however, it is important to note that among the goals the Service includes in its objectives is the establishment, management, and preservation of certain natural areas. Some of the Service's natural area activities are Service-initiated—for example, the Special Interest Areas program—and some are requirements imposed by legislation which deals with other agencies besides the Service—for example, the Wilderness System. It is impossible to quantify in any meaningful way the Service's natural area activities as a percentage of its overall activities, but it is clear that they are by no means insignificant. A look at the illustrative examples set out below in section 5.7; perusal of Technical Appendix 5(d), "Formally Dedicated Special Interest Areas in the National Forest System;" and an understanding of the way in which the Service has committed itself to natural area activities in written documents (many are quoted below in section 5.3) confirms this conclusion.

The early directions of the Forest Service can be seen in such initial laws as the Creative Act of 1891, the Organic Administration Act of 1897, the Transfer Act of 1905, and the Weeks Law of 1911.[1] The Creative Act, often referred to as the Forest Reserve Act, authorizes the President to withdraw portions of the public domain and designate them as "forest reserves." A system of administration of the reserves was set forth in the Organic Administration Act of 1897. It also qualified the objectives of the reserves as being:

> . . . for the purposes of securing favorable conditions of water flows and to furnish a continuous supply of timber for the use and necessity of citizens of the United States.[2]

Until 1911 with few exceptions national forests were located west of the Great Plains, having been derived from the public domain. The Weeks Law of 1911 made it possible for the National Forest System to expand in the East by authorizing the Federal government to purchase private lands for watershed protection.[3] This law also provided for Federal cooperation with the state for forest fire protection. The policy of Federal-state-private cooperation in forestry greatly expanded with the passage of the Clarke-McNary Act of 1924. It provided for the distribution of Federal monies to state and private forests for fire protection on a matching basis. It also provided matching funds for state forest tree nurseries, distribution of planting stock, free technical assistance to forest owners, and studies of forest taxation. The land acquisition policy of the Weeks Law was extended providing for the purchase of lands needed for the production of timber as well as for watershed protection. The McSweeney-McNary Act of 1928 firmly established the legal foundation for research as a major function of the Forest Service, increased the authorization of Federal funds for a broad program of forest research, and authorized a nationwide survey of forest resources, which, in 1930, the Forest Service launched as a major continuing activity.

---

[1] These Acts are in 16 U.S.C. 471-538, as are the other Acts mentioned in this section (except the Wilderness Act, the National Environmental Policy Act, Land and Water Conservation Fund Act and the Resources Planning Act).

[2] 16 U.S.C. 475.

[3] See 16 U.S.C. 515.

The Cooperative Forest Management Act of 1950 extended Forest Service cooperation to provide technical services to forest landowners.

Perhaps more than any other, the Multiple Use-Sustained Yield Act is the one which most clearly characterizes the National Forest System management policy (see section 5.2). The following is an interesting early discussion of the principle:

> The central thought in the management and use of the resources of the national forests is to so adjust one use to the other that the greatest net public benefit will result—to obtain the greatest total of crops, uses and services. Where necessary the attainable maximum of any one of these can be relinquished if the grand total of public values is thereby increased. Where one use must be exclusive, the highest use in the public interest is given the right of way. Where two or more uses can occupy a given area with some concession by each, a suitable compromise is effected. Thus, in the first case, where recreational use would incur risk of pollution of a city water supply, it is excluded from the watershed; where public use would create an unacceptable risk on an area of unusual fire hazard on which a new tree crop is being fostered, the public is excluded during the fire season; where a water-power development would destroy or seriously impair the recreational or aesthetic value of a lake, it is excluded if the latter values are held to be paramount in the public interest. In the second case, timber cutting is usually permitted on watersheds, but so regulated as to avoid impairment of the watershed value . . . Almost every national forest furnishes an example of a large variety of overlapping uses so harmonized as to avoid any measurable conflict . . .[4]

It should be stressed that section two of the Act states that "the establishment and maintenance of areas of wilderness are consistent with the purposes and provisions of this Act." Therefore, the concept of wilderness preservation embodied in the 1964 Wilderness Act was very much in compliance with the concept of multiple-use. (See section 8.8 for the history of Forest Service Wilderness.)

Wildlife, habitat for which had been managed by the Forest Service for many years, has recently been the subject of special legislation. The 1973 Endangered Species Act[5] superseded two previous Acts, established a more comprehensive law enforcement plan, distinguished two categories of endangerment, "threatened" and "endangered", and called for the consideration of plant species.

The National Environmental Policy Act has had a profound impact on Forest Service activities. According to the Act, all Federal agencies shall:

> include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—
>
> (i) the environmental impact of the proposed action,
>
> (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
>
> (iii) alternatives to the proposed action,
>
> (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
>
> (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.[6]

The most recent piece of legislation affecting the evolution of Forest Service objectives is the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1601-1610, also known as the Resources Planning Act or the Humphrey-Rarick Act). This legislation is discussed in the following section.

---

[4] C. M. Granger of the U.S. Forest Service in *A National Plan for American Forestry,* published as Senate Document No. 12, 73rd Congress, 1st session, 1933.

[5] 16 U.S.C. 1531-1543.

[6] 42 U.S.C. 4332(c).

5.2 *Functions and responsibilities*

The Forest Service has the responsibility of managing 187 million acres, including 155 National Forests, 19 National Grasslands, and 17 Land Utilization Projects,[7] located in 44 states, Puerto Rico and the Virgin Islands. The resources of these lands are managed according to the Multiple Use-Sustained Yield Act of 1960:

> It is the policy of the Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes. The purposes of this Act are declared to be supplemental to, but not in derogation of, the purposes for which the national forests were established as set forth in the Act of June 4, 1897 (16 U.S.C. 475). Nothing herein shall be construed as affecting the jurisdiction or responsibilities of the several States with respect to wildlife and fish on the national forests. Nothing herein shall be construed so as to affect the use or administration of the mineral resources of national forest lands or to affect the use or administration of Federal lands not within national forests.[8]

The Act defines the terms "multiple use" and "sustained yield" as follows:

> (a) "Multiple use" means the management of all the various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.
>
> (b) "Sustained yield of the several products and services" means the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the national forests without impairment of the productivity of the land.[9]

The Act specifically directs the Secretary of Agriculture to pursue the multiple use-sustained yield concept in his administration (through the Forest Service) of the national forests:

> The Secretary of Agriculture is authorized and directed to develop and administer the renewable surface resources of the national forests for multiple use and sustained yield of the several products and services obtained therefrom. In the administration of the national forests due consideration shall be given to the relative values of the various resources in particular areas. The establishment and maintenance of areas of wilderness are consistent with the purposes and provisions of this Act.[10]

Among the resources continually listed by the Forest Service as being present in the National Forests are the following:[11]

(1) Timber
(2) Outdoor Recreation
(3) Wildlife and Fish
(4) Water
(5) Grazing Land
(6) Minerals

Certain natural area "resources" or values have also been listed. Since the initiation of wilderness preservation in 1924 by the Forest Service, for example, wilderness has generally been combined with outdoor recreation as an identifiable resource. Recent planning documents have even included passages such as this:

Unique Features of Forest and Range Lands

In recent decades, there has been growing

[7] Land Utilization Projects are provided for in the Bankhead-Jones Farm Tenant Act of 1937 (7 U.S.C. 1010-1012).

[8] 16 U.S.C. 528.

[9] 16 U.S.C. 531.

[10] 16 U.S.C. 529.

[11] This list can be constructed from almost any general description of its activities produced by the Forest Service.

interest in identifying and protecting the unique cultural, physical, and biotic features of forest and range lands such as significant archeological or historical sites, habitats of rare or endangered species of plants and animals and "unique islands" of undisturbed forest or range vegetation. While many unique features of these kinds have been identified and suitably preserved, protected or managed by public or private agencies much remains to be done.

Many of the features which make particular places or sites unique are likely to be destroyed or irreparably damaged by the use of forest and range land for other purposes. Thus, there is an urgent need to accelerate the work underway to inventory all significant features that may be of interest to future generations.[12]

Another major responsibility of the Forest Service is to conduct cooperative programs with state and local governments, forest industries, and private landowners, assisting them in the protection and management of 574 million acres of forest and associated watershed lands. Assistance is given in fire control improvement, protection of forests from insects and diseases, production and distribution of forest tree planting stock, developing multiple-use management, and in improvement of practices in harvesting, processing and marketing of forest products. This responsibility derives from the Weeks and Clarke Acts and the Cooperative Forty Management Acts, mentioned above in section 5.1, and a specific provision of the Multiple Use-Sustained Yield Act:

> In the effectuation of this Act the Secretary of Agriculture is authorized to cooperate with interested State and local governmental agencies and others in the development and management of the national forests.[13]

Forest Service research programs began under the old Division of Forestry in the 1880's, expanded with the establishment of field experimental stations in 1908 and later, got a big boost by establishment of the Forest Product Laboratory in 1910, was assisted by the legislation of 1924, achieved formal major independent status by the McSweeney McNary Act, and received major support from the nation's forestry schools by the McIntire-Stennis Act of 1962. Forest Service research was recently accelerated by new planning legislation such as the Resources Planning Act of 1974 with its requirement of assessments and inventories: the research conducted covers a broad range of natural resource uses and activities and is now geared to study problems involving forest and related ecosystems and their relationship to urban areas. The ultimate goal of the research programs is "to protect the Nation's natural resources, gain the maximum conservation, economic, and social benefits from their use, and leave the environment unspoiled."[14]

The Resources Planning Act of 1974 (16 U.S.C. 1601-1610), it is said by a leading conservation organization, has put the term "National Forest System" "into the statute books."[15]

It defines the System as encompassing not only the National Forests but also the National grasslands and "land utilization projects"[16] (areas mostly in the Great Plains that were acquired by the Federal government after they were virtually abandoned by farmers and ranchers during the "dust bowl" years of the 1930's). The law directs the Forest Service to do more intensive planning than ever before. It calls for the preparation of a "renewable resource assessment" for the President and Congress. This assessment is a comprehensive inventory and analysis of supply and demand of the renewable resources. The first draft was

---

[12] *The Nation's Renewable Resources—An Assessment, 1975,* U.S. Department of Agriculture, Forest Service, August, 1975.

[13] 16 U.S.C. 530.

[14] *What the Forest Service Does,* U.S. Forest Service, Department of Agriculture, pp. 17-18.

[15] "National Outlook," *Audubon,* Vol. 77, No. 1, January, 1975, p. 126.

[16] 16 U.S.C. 1609.

published in August, 1975, and the final draft (due by the end of 1975) is to be updated during 1979 and each tenth year thereafter. Also required by the Act is the preparation of a four-year program for management of the National Forest System, for research, and for cooperative state and private forestry programs. The Resources Planning Act increased authorization for annual funding for conducting the continuing inventory of national timber resources (first authorized in 1924) from $5 million to $20 million and broadened the survey to include other resources.

B. Natural Area Activities

5.3 Program objectives

The Forest Service is involved in at least eight types of natural area programs. Two, one involving Special Interest Areas, the other involving Primitive Areas, are operated under Service-administered regulations and policies. The Research Natural Areas program is affiliated with the interagency Federal Committee on Ecological Reserves (see Chapter Eleven). The National Natural Landmarks Program is under the control of the National Park Service, but landmarks are administered by the agencies on whose land the Natural Landmarks are designated. The Forest Service also takes major parts in the National Wilderness Preservation System, the National Wild and Scenic Rivers System, the National Trails System, and the Endangered Species Program, all authorized by Congressional legislation.[17]

The objectives of these various programs can be found in specific legislation, in the *Federal Register,* in the *Code of Federal Regulations,* in internal and interagency memoranda, and in the administrative manual of the Service.

The Forest Service administratively recognizes various areas of scenic, historical, geological, botanical, zoological, paleontological, and other values worthy of special classification. These are collectively called Special Interest Areas. There are currently 136 such areas in 29 states, totaling 989,744 acres.[18]

The authority for Special Interest Areas is the:

> Organic Administration Act of June 4, 1897, which authorizes the Secretary of Agriculture to regulate occupancy and use of the National Forests. Classification of special interest areas which should be managed for recreation use substantially in their natural condition is authorized under 36 CFR 294.1a.[19] Such areas which are of a nature or significance to justify or require more intensive management, protection interpretation, or use are authorized under 36 CFR 294.1b. (*Forest Service Manual* 2360.1)

The objectives of the administratively classified Special Interest Areas are:

> To protect and, where appropriate, foster public use and enjoyment of areas with scenic, historical, geological, botanical, zoological, paleontological, or other special characteristics. To classify areas that possess unusual recreation and scientific values so that these special values are available for public study, use, or enjoyment. (*Forest Service Manual* 2360.2)

Definitions for types of Special Interest Areas are as follows:[20]

> *Scenic Areas.* Scenic areas are places of outstanding or matchless beauty which require

[17]The Forest Service also has Experimental Forests and Ranges and Wildlife Management Areas; in a few instances programs on such lands could be considered natural area programs. For example, the Seymour Eagle Management Area in the Tongass National Forest of Alaska is managed "to protect a significant area of bald eagle habitat" according to the March 8, 1972, Special Zone management plan recommended by the Forest Supervisor.

[18]This is the gross acreage. It includes not only National Forest lands but also private inholdings or other public lands which are not National Forest lands. The net acreage (only National Forest lands) is 941,247.

[19]That is, Title 36 of the *Code of Federal Regulations,* section 294.1a.

[20]Historic areas are omitted here.

special management to preserve these qualities. They may be established under 36 CFR 294.1 whenever lands possessing outstanding or unique natural beauty warrant this classification. (*Forest Service Manual* 2362.41)

Paleontological Areas. Paleontological areas contain relict specimens of fauna and flora. These are the plant and animals (nonhuman) that span geologic time between the period when life first appeared on earth and the age of man. Significant specimens may include precambrian rocks; shellfish; early vertebrates; coal swamp forests; early reptiles; dinosaurs; pterodactyls; and pre-historic animals. (*Forest Service Manual* 2362.45)

Geological Areas. A geological area is a unit of land with outstanding formations or unique geological features of the earth's development, including caves and fossils. Geological areas will be classified under 36 CFR 294.1 and preserved as nearly as possible in an undisturbed condition. The geological formations will be protected from the encroachment of roads or other improvements. All Practical precautions will be taken to prevent the defacement or destruction of the geologic formation by vandals. (*Forest Service Manual* 2362.42)

Botanical Areas. A botanical area contains specimens or group exhibits of plants, plant groups and plant communities which are significant because of form, color, occurrences, habitat, location, life history, arrangement, ecology, environment, rarity, and/or other features. (*Forest Service Manual* 2362.43)

Zoological Areas. A zoological area contains authentic, significant and interesting evidence of our American national heritage as it pertains to fauna. The areas are meaningful because they embrace animals, animal groups or animal communities which are natural and important because of occurrence, habitat, location, life history, ecology, environment, rarity or other features. (*Forest Service Manual* 2362.44)

The Service also administers Primitive Areas in its wilderness program. There are 19 such areas at present, consisting of 3,407,640 acres. The term "Primitive Area" is administratively created and dates back over forty years in the Service's history. (See section 5.8, below.) The types of areas designated Primitive Areas are very similar to the types of areas which are the subject of the Wilderness Act; in fact, the Wilderness Act specifically required the Secretary of Agriculture to study all areas classified as "primitive" by him or by the Chief of the Forest Service for inclusion in the Wilderness System.[21] The Wilderness Act prohibits any additional "Primitive Area" designations by the Secretary.[22] The designation has thus become basically a holding category for areas likely to become Wilderness Areas.

The Forest Service has established 117 Research Natural Areas in 30 states and Puerto Rico, totaling 126,732 acres as of July 15, 1975. Forest Service authority to classify Research Natural Areas is found in section 251.23 of the *Code of Federal Regulations.*

The Research Natural Area program is affiliated with the inter-agency Federal Committee on Ecological Reserves (for discussion of the Committee, see Chapter Eleven). The Federal Committee definition of a Research Natural Area, which the Forest Service also uses, is:

> . . . an area where natural processes are allowed to predominate and which is preserved for the primary purposes of research and education. These areas may include: 1. typical or unusual faunistic and/or floristic types, associations, or other biotic phenomena; 2. characteristic or outstanding geologic, pedologic, or aquatic features and processes.[23]

Authority to "establish a series of research natural areas" is vested in the Chief of the Forest Service by Title 36 of the *Code of Federal Regulations,* section 251.23. The objectives of Research Natural Areas established in this way by the Forest Service are

---

[21] 16 U.S.C. 1132(b).

[22] This is an interpretation of 16 U.S.C. 1132(b) by the Office of General Counsel of the U.S. Department of Agriculture.

[23] 1968 *Director of Research Natural Areas,* Federal Committee on Research Natural Areas, 1968, p. 2.

identical to those set forth by the Federal Committee on Research Natural Areas.

1. To assist in the preservation of examples of all significant natural ecosystems for comparison with those influenced by man;
2. To provide educational and research areas for scientists to study the ecology, successional trends, and other aspects of the natural environment;
3. To serve as gene pools and preserves for rare and endangered species of plants and animals.[24]

The Forest Service policy statement for Research Natural Areas states:

> The Forest Service will cooperate with other public agencies and such private and professional organizations as The Nature Conservancy, Society of American Foresters, American Society of Range Management, and Ecological Society of America, to establish and maintain an adequate number and variety of research natural areas. The use of Forest Service research natural areas by scientists within and outside the Forest Service, and use for certain educational purposes is encouraged.
>
> Research natural areas should represent as many as possible of the major, natural timber types or other plant communities in unmodified condition. Other forest or range conditions that have special or unique characteristics of scientific or educational interest, such as outliers of grass or timber types, unique bog associations, or unusual combinations of flora may also be set aside. To whatever extent is feasible, animal life also should be present in unmodified condition.[25]

The National Natural Landmarks program is an administrative program operated by the National Park Service (See Chapter Twelve for discussion of the program). National Natural Landmarks are identified through "theme studies" and are recorded on an official Registry. The themes are a series of categories encompassing essentially all of the nation's natural phenomena.[26]

> The objective of the Natural Landmarks program is to assist in the preservation of a variety of significant natural areas which, when considered together, will illustrate the diversity of the country's natural history. This objective is attained through identification of sites eligible for inclusion in the national registry. . . .
>
> Inclusion in the national registry is intended to (1) encourage the preservation of sites illustrating the geological and ecological character of the United States, (2) enhance the educational and scientific value of sites thus preserved, (3) strengthen cultural appreciation of natural history, and (4) foster a wider interest and concern in the conservation of the Nation's natural heritage.[27]

There are as of October 1975, 22 National Natural Landmarks on Forest Service lands, totaling 249,163 acres. Other National Forest properties are currently being evaluated for their potential as additions to the Registry.

The Forest Service is the major participant in the National Wilderness Preservation System. (See Chapter Eight for a detailed discussion of the System.) As of October 1975, there were 85 national forest wilderness areas, totaling 11.6 million acres. The 1964 Wilderness Act immediately designated as wilderness all National Forest "wild", "wilderness" and "canoe" areas. It also directed the Secretary of Agriculture to review all National Forest "primitive areas" as to their suitability or non-suitability as wilderness within the following ten years. These 34 "Primitive Areas" of 5.5 million acres were to be managed for wilderness purposes under regulations of the Secretary until Congress determined otherwise. This study is now complete and recommendations for additional wilderness have been presented to Congress.

The Forest Service also cooperates with the Fish and Wildlife Service in the Endangered Species Program (see Chapters

[24] *Ibid.*

[25] *Forest Service Manual* 4063.1.

[26] "Establishment of Natural Landmarks and New Units of the National Park System," National Park Service, (unpublished).

[27] *Federal Register,* Vol. 38, No. 171, September 5, 1973.

Three and Thirteen). The Endangered Species Act, the legislative authority for the program, states that the objectives are to "conserve to the extent practicable the various species of fish or wildlife and plants facing extinction" and to help provide "a means whereby the ecosystems upon which endangered and threatened species depend may be conserved."[28] Facts and figures concerning the Service's participation in the program have proven impossible to find; however see Illustrative example 5.7(d) for an example of a Service program to protect the red-cockaded woodpecker. The Service *Manual* sets forth the policy objectives of the Service's involvement in the Endangered Species Program. It states that the Forest Service will:

> establish wildlife or fish habitat as the primary use on limited areas of land or water which are key to the survival, in descending order, of (1) endangered species, (2) threatened species, (3) species for which the National Forests or National Grasslands make up a major portion of their range, and (4) other species which depend upon limited areas of seasonal range for survival.[29]

The Forest Service participates in the Wild and Scenic Rivers program (see Chapter Nine) and the National Trails System (see Chapter Ten). The objectives of the Wild and Scenic Rivers System are stated as follows:

> It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreation, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.[30]

The objectives of the National Trails System are as follows:

> In order to provide for the ever-increasing outdoor recreation needs of an expanding population and in order to promote public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas of the Nation, trails should be established (i) primarily, near the urban areas of the Nation, and (ii) secondarily, within established scenic areas more remotely located.[31]

As of October, 1975, the Forest Service administers seven Wild and Scenic Rivers totaling 585.55 miles. Two Recreational Trails, totaling 51 miles, are administered solely by the Forest Service, along with major parts of two Scenic Trails. The Appalachian Scenic Trail, jointly administered by the Park Service and the Forest Service, consists of 828 miles managed by the Forest Service. The Pacific Crest Scenic Trail is jointly administered by the Park Service, the Forest Service and the Bureau of Land Management. The Forest Service manages 1,850 miles of it, most of its length.

5.4 Program entry process

As has been said, the Forest Service administers 136 Special Interest Areas totaling almost a million acres. It also administers 19 Primitive Areas totaling almost 3.5 million acres. These areas were administratively created as part of an overall planning process for individual forests. The *Forest Service Manual* (at 2360.1) has this to say about the designation of special zones within the planning process:

> Each established or potential area will be recognized in the Forest multiple use plan. They will be recognized in the unit plan as a special management zone (FSM 2124). A special zone plan will set forth the management situation, basic assumptions, management objectives, and coordination requirements.[32]

---

[28] 16 U.S.C. 1532.

[29] *Forest Service Manual* 2603.

[30] 16 U.S.C. 1271.

[31] 16 U.S.C. 1241(a).

[32] Coordination requirements are defined in *Forest Service Manual* 8225: "Coordinating requirements state minimum coordination required in planning and carrying out activities. They consider assumptions about future public demands upon forest land and Forest Service management policies."

Planning will be conducted in the same general manner as prescribed for Primitive Areas and Wilderness (FSM 2322).

Approval of the plan will also constitute classification of the area and the plan will so provide. The Forest Officer authorized to classify an area (FSM 2360.4) is authorized to approve the plan.

The boundaries should be carefully selected so as to be easily recognized, readily enforced and inclusive of all values to be protected. The general instructions on boundaries for wildernesses (FSM 2320) are applicable, except as to the degree of isolation required.[33]

The *Forest Service Manual* suggests, as a general guide, that areas considered for entry as Research Natural Areas should

> . . . show evidence of no major disturbance by man, such as timber cutting, for at least the past 50 years. On rare occasions, however, in a valuable plant community that should be preserved, the most suitable area that approaches these conditions should be selected. Certain valuable second-growth timber types may also be preserved as research natural areas if sufficient need can be shown.[34]

Forest Service Research Natural Areas (there are 117 at present) should be large enough to provide essentially unmodified conditions in their interior portions—usually over 300 acres. Exceptions are made in outstanding or particularly unusual cases. Selection and establishment of Research Natural Areas on National Forest land may be initiated in the Research Division or the National Forest Resource Management Division of the Forest Service. The responsibility of proposing the area's establishment belongs to Forest Supervisors and research project leaders. Every area recommended must be documented by an approved "establishment report" signed by the Forest Supervisor, Regional Forester and Experimental Station Director and sent to the Washington Office to be approved by the Director, Recreation Management Staff and the Deputy Chief for Research prior to the Forest Service Chief's signature.

Within the Memorandum of Agreement on the Designation of Natural Landmarks in National Forests is the process for entry of Landmarks:

1. The Forest Service may report to the National Park Service any geological or ecological sites on National Forest land and waters which it considers a potential natural landmark. . . .[35]
2. The Park Service will give the above information . . . to the study team doing the appropriate theme study. The study team will consider the Forest Service nominations along with other important sites and will recommend those sites which appear to be potentially eligible for inclusion in the National Registry of Natural Landmarks.
3. The Park Service will notify the Regional Forester concerned of the Forest Service sites recommended in each theme study as potential natural landmarks, and will request a reply from him as to which sites he would like to have the Park Service undertake onsite natural landmarks evaluation studies. The Park Service makes onsite natural landmarks evaluation studies of most sites recommended as potential natural landmarks in the studies. When mutually agreeable, the Forest Service will conduct onsite landmark evaluation studies of recommended sites on lands under its administration. The Park Service will provide the Forest Service with guidelines for evaluating potential natural landmarks. Copies of the completed evaluation will be submitted to the Park Service.
4. Upon completion of the onsite evaluations the Park Service will send the Regional Forester a copy of its Evaluation Report and any other pertinent data on each Forest Service site that it has evaluated. The Park Service will present sites recommended by the Regional Forester that appear qualified to the Advisory Board on National Parks, Historic Sites, Buildings

[33] *Forest Service Manual* 2360.1.

[34] *Forest Service Manual* 2360.1.

[35] *Forest Service Manual* 2360.3 states that Special Interest Areas and Research Natural Areas are to be evaluated for nomination to the National Registry of Natural Landmarks.

and Monuments of the Secretary of the Interior for consideration. The Advisory Board's recommendations will be transmitted to the Secretary and, if approved by him, the Secretary will announce his determination that the sites are eligible for registration in the National Landmarks Program.[36]

5. Whenever any Forest Service sites are designated as eligible natural landmarks, and the Regional Forester so requests, the Park Service will register the sites and send certificates of registry to him. . . .
6. The Regional Forester will then take the appropriate steps to protect the important natural features of each site designated as a Registered Natural Landmark. Provided that the landmark is protected, no restrictions are placed on the Forest Service in managing such a site under the Multiple Use Concept.

For a detailed description of the process for adding units to the National Wilderness Preservation System, see Chapter Eight, section 8.2. The processes for the Wild and Scenic Rivers System may be found in Chapter Nine, section 9.2 and for the National Trails System, in Chapter Ten, section 10.2.

The Forest Service plays an active role in the Endangered Species Program by working closely with the Fish and Wildlife Service and the states in locating and designating critical habitats[37] on all lands involving Forest Service Programs. The Forest Supervisor is given the authority to evaluate the need for establishing endangered or threatened species areas. Their establishment must be approved by the Regional Forester.

5.5 Protection

The basic authority to create National Forests is given by the Creative Act of 1891, cited in 16 U.S.C. 471, which contains the official regulations issued under the authority of the Act, and which reads in part as follows:

> The President of the United States may, from time to time, set apart and reserve, in any State or Territory having public land bearing forests, in any part of the public lands wholly or in part covered with timber or undergrowth, whether of commercial value or not, as national forests, and the President shall, by public proclamation, declare the establishment of such forests and the limits thereof.

The power to disestablish them or alter their boundaries is provided in 16 U.S.C. 473:

> The President of the United States is authorized and empowered to revoke, modify, or suspend any and all Executive orders and proclamations or any part thereof issued under section 471 of this title, from time to time as he shall deem best for he public interests. By such modification he may reduce the area or change the boundary lines or may vacate altogether any order creating a national forest.

The authority of the President to create new National Forests in most western states was terminated by Congress in 1907 and 1912.[38] Although any individual national forest is subject to the underlying discretion of the President, existing National Forests are protected by regulations which 16

---

[36] Memorandum of Agreement. Designation of Natural Landmarks in National Forests, signed June, 1972.

[37] "Critical habitat," is defined in Fish and Wildlife regulations published in the *Federal Register,* Vol. 40, No. 78, as follows:

"Critical habitat" for any Endangered or Threatened species could be the entire habitat or any portion thereof, if, and only if, any constituent element is necessary to the normal needs or survival of that species. The following vital needs are relevant in determining "critical habitat" for a given species:

(1) Space for normal growth, movements, or territorial behavior;

(2) Nutritional requirements, such as food, water, minerals;

(3) Sites for breeding, reproduction, or rearing of offspring;

(4) Cover or shelter; or

(5) Other biological, physical, or behavioral requirements.

[38] 16 U.S.C. 471, 471a.

U.S.C. 551 authorizes the Secretary of Agriculture to make:

> The Secretary of Agriculture shall make provisions for the protection against destruction by fire and depredations upon the public forests and national forests which may have been set aside or which may be hereafter set aside under the provisions of section 471 of this title, and which may be continued; and he may make such rules and regulations and establish such services as will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the forests thereon from destruction; and any violation of the provisions of sections 473 to 478 and 479 to 482 of this title or such rules and regulations shall be punished by a fine of not more than $500 or imprisonment for not more than six months, or both. Any person charged with the violation of such rules and regulations may be tried and sentenced by any United States magistrate specially designated for that purpose by the court by which he was appointed, in the same manner and subject to the same conditions as provided for in section 3401(b) to (e) of Title 18.

A case in the United States Court of Appeals for the Ninth Circuit (this court hears appeals from Federal District Courts in the western states) in 1965 held that section 551 authorizes the Secretary to issue regulations establishing primitive, wilderness and wild areas. The case also held that the designation of a particular area within a National Forest in Idaho as wilderness was not arbitrary or capricious and sustained the designation against those who wished to exploit resources in the area.[39]

A more recent case has held that sales of timber by the Forest Service from the Monongahela National Forest were not made in accordance with the Organic Administration Act of 1897 (16 U.S.C. 476, specifically). The District Court enjoined the Forest Service from selling other than "dead, matured and large growth trees"; and required each individual tree to be marked before harvesting and removal from the forest, as specified in the Organic Administration Act of 1897. The Government appealed the case to the United States Fourth Circuit Court of Appeals, (which covers the southeast states) but the Fourth Circuit upheld the District Court's opinion.[40] This demonstrates that citizens may utilize judicial procedures to insure that the bureaucracy operates in strict compliance with the law.

With respect to protection of the Service's 136 Special Interest Areas, the *Forest Service Manual* states at 2360.1 that they are to be:

> managed for recreation use substantially in their natural condition. Such areas which are of a nature or significance to justify or require more intensive management, protection, interpretation, or use are authorized under 36 CFR 294.1b.

It must be emphasized that Special Interest Areas are afforded no further protection than that in the agency manual. No Congressional recognition or protection of these areas exists.[41]

The Forest Service Manual states that if a Research Natural Area is to be of value for scientific study, it:

> must be protected against activities which directly or indirectly modify ecological processes . . . Logging activities and uncontrolled grazing by domestic livestock are not permitted. The criterion for management of research natural areas is for protection against unnatural encroachments.[42]
>
> Research natural areas should be withdrawn from mineral entry.[43]

---

[39] *McMichael v. U.S.*, 355 F. 2d 283 (C.A. Idaho 1965).

[40] *West Virginia Division of the Izaak Walton League v. Butz*, 5 ELR 20572 (4th Cir. Aug. 21, 1975). The District Court case is found at 367 F. Supp. 422 (N.D. W. Va. 1973).

[41] Primitive Areas are provided Congressional recognition and protection in the Wilderness Act of 1964. Areas so classified on September 3, 1974, "shall continue to be administered under the rules and regulations affecting such areas on September 3, 1964, until Congress has determined otherwise." 16 U.S.C. 1132(b).

[42] *Forest Service Manual* 4063.4.

[43] *Forest Service Manual* 4063.49.

Limited publicity is given to Research Natural Areas. This can, odd though it may seem, be considered a major means of protection. Publicity is to be:

> . . . generally limited to professional groups at either national, state, or university levels and mainly to inform scientists and educators of the location, vegetation types, and administering agency in order to make the fullest proper use of the research natural areas. Other publicity should be avoided.[44]

Public use, *i.e.*, picnicking, camping, collecting plants, etc., which contributes to the modification of Research Natural Areas is discouraged or expressly prohibited if these uses may possibly cause serious impairment of the area's research or education value.

Modification or disestablishment of Research Natural Areas is the same as that for experimental forests and ranges:[45]

> Action Required. When retention of a formally established experimental area can no longer be justified, a proposal to terminate its classification should be prepared by the Director. Concurrence by the Forest Supervisor and Regional Forester and approval by the Chief complete the action.[46]

The *Forest Service Manual* has a specific section on the protection of National Natural Landmarks:

> Protection. Continuing integrity is essential to National Landmark values. Natural Landmarks should be managed in such a way as to pose no threat to the perpetuation of the feature or species designated. Other uses of the site or area which do not interfere with the purpose of the landmark designation or the integrity of the natural values represented are acceptable.
>
> The Natural Landmarks Program does not have the protection features of Section 106 of the National Historic Preservation Act of 1966. Thus, designation of a National Natural Landmark presently constitutes only an agreement with the owner to preserve, insofar as possible, the significant natural values of the site or area. Administration and preservation of Natural Landmarks is solely the owners responsibility. The agreement may be terminated by either party upon notification of the other.
>
> It is expected that in the future Congress will provide additional protection for Natural Landmarks. In the meantime Regional Foresters will follow the general protective features of Section 106 of the National Historic Preservation Act in managing National Natural Landmarks. This means to determine in advance, through the preparation of environmental impact statements and consultation with professionals, whether any contemplated action involving a Natural Landmark will have an adverse effect. If so: (1) Seek alternative actions to alleviate the effect or if this is not practical or possible; (2) Plan to minimize the effect and delay action until a request in writing for the National Park Service to remove the site or area from the Registry has been acted upon.[47]

National Forest Wilderness Areas are afforded protection by specific provision of the Wilderness Act:

> Except as otherwise provided in this Act, each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character. Except as otherwise provided in this Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, education, conservation and historical use.[48]

However, the Act also provides that wilderness areas on national forest lands are subject to various "special uses" which appear to be somewhat incompatible with the main objectives of the system. There exist provisions for mining, livestock grazing and construction of water projects. Mining claims may be filed until 1984. Livestock

---

[44] *Ibid.*, 4063.43.

[45] *Ibid.*, 4063.6 (4063 deals generally with Research Natural Areas).

[46] *Forest Service Manual* 4062.4.

[47] *Forest Service Manual* 2363.37.

[48] 16 U.S.C. 1133(b).

grazing is allowed to continue where it was established before 1964. And, if the President determines that it would better serve the interests of the United States, water projects may be developed.[49]

Protection for endangered species on National Forest lands is provided in two ways, both of which are contained in the Endangered Species Act itself. One is a list of specific prohibitions against harming or trading in endangered species.[50] These prohibitions apply to everyone. The other is a specific provision prohibiting Federal agencies from undertaking any action which further endangers an endangered species.[51]

The Forest Service is given the authority for closure of endangered species areas under regulations found in Title 36 of the *Code of Federal Regulations* section 261.11(i). This authority is delegated to Regional Foresters. Technical advice regarding such closure is sought from Federal, state and other wildlife specialists, according to the Service manual at 2633.4.

For discussion of protections afforded Wild and Scenic Rivers, see section 9.3, below; for National Trails, see section 10.3, below.

5.6 Management

Special Interest Areas are recognized as a part of particular forest multiple use plans. They are recognized in the unit plan as special management zones. A special zone plan sets forth the management situation, management objectives, and coordination requirements. The plans are approved by the Forest Officer who was authorized to classify the Special Interest Area.[52] The *Forest Service Manual* also states that Special Interest Areas are to be:

> managed for recreation use substantially in their natural condition. Such areas which are of a nature or significance to justify or require more intensive management, protection, interpretation, or use are authorized under 36 CFR 294.1b.[53]

Boundaries are carefully selected so as to be easily recognized, readily enforced, and inclusive of all values to be protected, thus allowing for more systematic management.

The *Forest Service Manual* calls for careful consideration of the types of occupancy and use to be permitted, limited or prohibited. The decision of what uses will be allowed is left to the approving officer, in most cases, the Forest Supervisor. Each individual classification of Special Interest Areas (geological, botanical, zoological, paleontological) has its own specific types of development and use restrictions. These are set forth in the *Manual,* Chapter 2362.42-2362.45.

Management objectives for Research Natural Areas are specified in the Forest Service Manual:

> A research natural area must be protected against activities which directly or indirectly modify ecological processes if the area is to be of value for observation and research on plant and animal succession, habitat requirements of species, insect and fungus depredations, soil microbiology, phenology, and related phenomena. Logging activities and uncontrolled grazing by domestic livestock are not permitted. The criterion for management of research natural areas is for protection against unnatural encroachments.[54]

No physical improvements such as roads, trails, fences or buildings are permitted although temporary research facilities are allowed if approved by the Forest Service Experimental Station Director. Fires are to be extinguished as quickly as possible, but no cleanup or reforestation should be undertaken. Unless there is a threat of infestation or infection to adjacent forests, there is no control of insects of diseases.

---

[49] 16 U.S.C. 1133(d).

[50] 16 U.S.C. 1538.

[51] 16 U.S.C. 1536.

[52] *Forest Service Manual* 2360.3.

[53] *Ibid.,* 2360.1.

[54] *Forest Service Manual* 4063.4.

Use restrictions are included in the management plan for Research Natural Areas. Public uses which contribute to the modification of an area are discouraged, and uses which may seriously impair research or educational value are prohibited. Scientists and educators are encouraged to use the areas. Their research is to be essentially nondestructive in nature.

Management practices necessary to preserve some representation of the vegetation for which the natural area was created originally may be authorized by the Station Director. Only the already tried and reliable practices (*e.g.*, prescribed burning or selective cutting) are to be undertaken, and then only where the vegetative type would otherwise be lost without management. Where management practices are necessary a portion of natural areas should be kept untreated as a "green check."[55]

Management of National Natural Landmarks is mentioned in the Memorandum of Agreement before the Forest Service and the National Park Service:

> The Regional Forester will then take the appropriate steps to protect the important natural features of each site designated as a Registered Natural Landmark. Provided that the landmark is protected, no restrictions are placed on the Forest Service in managing such as site under the Multiple Use Concept.[56]

The following basic management principle is applied to National Forest Wilderness Areas:

> National forest wilderness resources shall be managed to promote, perpetuate, and, where necessary, restore the wilderness character of the land and its specific values of solitude, physical and mental challenge, scientific study, inspiration, and primitive recreation.[57]

To adhere to this principle National Forest wilderness is to be managed with respect these three objectives:[58]

1. Natural ecological succession of plants and animals will be allowed to operate freely, to the most practical degree.
2. Wilderness will be made available for human use to the fullest extent consistent with maintenance or primitive conditions.
3. Where conflicts arise, wilderness values will be dominant to the extent not limited by the law, or by Department regulations.

The Endangered Species program gives threatened and endangered wildlife species on National Forest System lands special protection and management commensurate with their individual needs (see section 5.5, above). The planning process includes a management plan for each species and an evaluation by the Forest Supervisor as to the need for the establishment of endangered or threatened species areas.[59]

Management of the Wild and Scenic Rivers and National Trails System is according to the objectives of these programs. These programs are discussed in Chapters Nine and Ten, respectively.

5.7 Illustrative examples:

(a) Ancient Bristlecone Pine Botanical Area, California

Within the Inyo National Forest in California is the Ancient Bristlecone Pine Botanical Area. It was established as an area primarily valuable for scenic, botanical, and historical purposes. The area contains the oldest known living thing, the bristlecone pine, *Pinis aristata.*

Acreage: The total acreage is approximately 28,960 acres.

Elevation: The range in elevation is from 7,800 feet to about 12,000 feet with an average elevation of 10,000 feet.

Topographic features: The area lies along the crest of the White Mountain range with

[55] *Forest Service Manual* 4063.48.

[56] Memorandum of Agreement on National Natural Landmarks between the Forest Service and the National Park Service, signed June, 1972.

[57] *Code of Federal Regulations,* Title 36, section 293.2.

[58] *Ibid.*

[59] *Forest Service Manual* 2633.4.

typically steep and broken topography. There are some areas of relatively level sage brush and grassland.

Flora and fauna: About 40% of the area is covered by living or dead bristlecone pine. Most of the remainder is mixed sage brush and high mountain meadow type with very little barren area.

The bristlecone pine is especially important scientifically because of its extraordinary longevity. It provides excellent quality growth rings which record past climatic changes. This is a quality found in less than 1% of the world's conifers. The trees also serve for basic research in genetics and other areas of forest biology.

There is very little browse growing under the bristlecone pines. However, adjacent lands are used by mule deer, chukar partridge, and on occasion, by desert bighorn sheep. The creeks contain native rainbow and planted Piute trout.

Uses: Legitimate scientific study of the bristlecone pines and related flora and fauna is encouraged. Special use permits are required for any cutting or removal of wood or plants.

The area is also used for public recreation. This public use is concentrated in areas where it can be controlled without damage to the land or scientific values. Interpretive services are provided to acquaint the public with Forest Service objectives and to make the visit enjoyable and informative.

The Forest Service is of the opinion that there is no conflict between the grazing of domestic stock and the purpose of the classified area. There is supposedly not sufficient feed growing within the stands of bristlecone pine to draw cattle near the trees.

Designation: The "Classification Order Establishing the Ancient Bristlecone Pine Forest as a Botanical Area" was signed by R. E. McArdle, Chief of the Forest Service, on April 11, 1958. The authority given the Chief to establish Special Interest Areas is Regulation U-3(a), found in Title 36 of the *Code of Federal Regulations,* section 294.1b.

Withdrawal status: The entire area has been withdrawn from mineral entry to preserve the oldest and most highly valued trees. The zone of valuable minerals is at a lower level than the subject area so no major conflicts were involved with the withdrawal.

Protection problems: The twisted sandblasted wood is unfortunately for their protection valuable as department store window decorations and mantel ornaments. Souvenirs of bristlecone pine are sold from the private land in the area. The retail price is very high (in 1958 is was estimated a truckload was worth $5,000). Therefore, strict protection from vandalism is necessary for the scientifically important trees.

Protection afforded: The area is protected and managed as a part of the National Forest System which has the authority to enforce measures against abuses. A full-time protection aid is assigned to the area from May 1 to November 30.

Special use permits are required for any cutting or removal of wood or plants. This permit is specific to individuals or groups involved, time of collection, and amounts of material to be taken. The oldest tree is not identified for the general public.

2,330 acres of the area is further protected by Research Natural Area status.

Management: The Classification Order establishing the Botanical Area states that:

> The Ancient Bristlecone Pine Forest will be managed in near natural condition for the purpose of protecting and preserving the ancient specimens of bristlecone pine found within the area and for public enjoyment thereof. Roads and trails may be developed in this area as needed to give reasonable public access to the area for scientific study and enjoyment, but these will be located so as to do minimum damage to the ancient trees and scenic environment. Public use facilities may be established as needed, provided that this can be done without undue injury to the primary purpose for which the area is established. Adequate steps will be taken to protect

the area from vandalism or other damage.[60]

(b) Dukes Research Natural Area, Michigan

The Dukes Research Natural Area is located in the Upper Peninsula Experimental Forest within the Hiawatha National Forest which has its headquarters in Marquette, Michigan. The area contains mature northern hardwoods that have been undisturbed for over 60 years.

Acreage: The Dukes contains 233 acres.

Elevation: Elevations range from 1070 to 1100 feet.

Topographic features: The area occupies a glacial till plain that has little relief. It is on the divide between the drainages of Lake Superior and Lake Michigan.

Flora and fauna: Five forest types are represented, ranging from sugar maple-dominated hardwood stands on mesic sites to swamp conifer forests on the wet lowlands. The other sites are dominated by hemlock, yellow birch, red maple, black ash, and American elm. All types are of commercial value in this area.

The Research Natural Area is well suited for the study of small mammals, amphibians, reptiles, and invertebrates under undisturbed condition. Notable small mammals occurring here are: white-footed and deer mice, red-backed voles, northern flying squirrels, short-tailed and masked shrews, and snowshoe hares. Notable mammals that make use of the area are white-tailed deer and black bear. Also, a number of song and predatory birds, plus ruffed grouse and woodcock, inhabit the area.

Uses: Those conducting research on this area have an unusual opportunity to obtain baseline information on the composition of undisturbed stands in the vicinity. The Dukes contains a large number of successionally advanced forest communities of this region. These make the area well suited to ecological studies on such matters as community development and site relationships.

The area is sporadically used by hunters, trappers and hikers. Previous hunting pressure and levels of game population have not been excessive and suggest that future game production and hunting should not conflict with research goals for the area. No other recreation use of the area has been observed.

Designation: The Dukes Research Natural Area was established by the Designation Order signed by John McGuire, Chief, U.S. Forest Service on November 19, 1974, under the authorization of Title 36, section 251.23 of the *Code of Federal Regulations.* The area had previously (May 1974) been *designated* a National Natural Landmark; in July 1975 the Forest Service *registered* the area as a National Natural Landmark (see section 12.4, below).

Withdrawal status: Mineral rights are not held by the Forest Service. Problems may arise with exploration or development of minerals in the area but even then surface disturbance is not inevitable.

Protection afforded: (see *Withdrawal status* and *Designation*).

Management: No specific management is prescribed for the mature hardwood forest. The area is left in its natural state for baseline research.

(c) Osceola Natural Area, Florida

Located in Osceola National Forest, this tract, now a National Natural Landmark, harbors an undisturbed mixed hardwood swamp with associated pine flatwoods and cypress swamp. It forms part of the watershed that drains to the Middle Prong of the St. Marys River. The presence of virgin cypress is a significant feature, one age class being over 500 years old.

Acreage: The total acreage of the tract is 373 acres.

---

[60]"Classification Order Establishing the Ancient Bristlecone Pine Forest as a Botanical Area," signed by R. E. McArdle, Chief, U.S. Forest Service on April 11, 1958.

Elevation: The average elevation is 160 feet.

Topography: The topography is basically flat; however, minor rises and depressions are reflected by variations in vegetation.

Flora and fauna: The area possesses three major vegetation types: pine flatwoods, mixed hardwood swamp and cypress swamp. Pine flatwoods, occupying roughly 178 acres, predominate over the site with dominants varying from longleaf pine to slash pine to pond pine in the wettest flatwoods. The mixed hardwood swamp is the most significant vegetation present and occupies about 131 acres. It is estimated to be 150 years old and consists of canopy species including cypress, loblolly bay, sweetbay, swamp tupelo, and red maple. Two distinct age classes of virgin cypress occur in this community, the oldest being well over 500 years old; the second and younger class is from 200 to 500 years old.

Intermittent streams flow through the flatwoods providing excellent habitat for wildlife, such as white-tailed deer. Water moccasin and rattlesnakes are also present.

Designation: Osceola Natural Area was established by the Society of American Foresters on September 16, 1936. It comprised 1,000 acres. A subsequent joint amendment to the 1936 establishment report reduced the size of the area to 373 acres. The reasons for the reduction in size, summarized from the amendment, are as follows:

1. The reduced area has all forest types in large stands.
2. The reduced area is more representative of the natural condition since it does not have any worked timber.
3. The reduced area is better protected from encroaching outside fires because of existing barriers in roads and swamps.
4. There is an imperative need for rapid access to inside fires to prevent possible total loss of the area.

The area was proposed for Natural Landmark status under the Inland Wetlands Theme Study conducted by the National Natural Landmarks Program and was designated as such on June 14, 1955.

Protections Afforded: This Natural Landmark has simply the protections afforded a designated Landmark and Research Natural Area. See section 5.5 for a discussion of these. See also Chapters Twelve and Eleven, below.

Protection Problems: The logging and drainage of surrounding lands pose the most serious threats to the integrity of the Landmark due to an increase in the fire hazard and possible alteration of drainage conditions within the tract.

Management: Fire has been excluded as a management tool since natural area designation. This has caused the extensive reduction of some species for which the area is considered important, such as the longleaf pine. Little, if any, logging ever occurred here due to swampy conditions and poor accessibility.

(d) Francis Marion National Forest Endangered Species Program, South Carolina

The Forest Service has set up a program for the protection of the red-cockaded woodpecker within the Francis Marion National Forest in South Carolina.[61] The species may have become endangered due to the disappearance of the old, diseased pine trees it requires for nesting. Forest management practices in the past have called for the cutting of such trees in most forest situations in the Southeast where this bird has been an inhabitant. To date, about 1,500 cavity trees[62] are being protected as part of the management for the woodpecker within the Francis Marion Forest.

Acreage: The Francis Marion National Forest has a total of 249,401 acres. There are 4,032 acres reserved for colony sites (areas where the old, diseased trees are

[61] The program is also conducted on the Sumter National Forest in South Carolina.

[62] Cavity trees are those trees which have been excavated by the woodpecker for use as a nesting cavity.

present with nesting colonies of woodpeckers).

Elevation: Elevation ranges from mean sea level to 40 feet above sea level.

Topographical features: The entire National Forest is on the flat Coastal Plain.

Flora and fauna: The red heart disease is caused by a fungus which attacks the important southern pines including loblolly and slash pines which are both present in the Francis Marion National Forest.[63]

Animals within the forest include typical species of the lower Coastal Plain such as feral hogs, deer, turkey, bear and alligator. Other birds besides the woodpecker sharing the Francis Marion National Forest are osprey, eagle, kite, and many songbirds.

Uses: The entire Francis Marion National Forest is managed under the multiple use concept. In the case of the red-cockaded woodpecker, parts of the forest are being managed for it. Logging takes place in the woodpecker sites, but only for direct habitat improvement since thinning is necessary from time to time to keep the sites open.

Designation: The Francis Marion National Forest was established by presidential proclamation on July 10, 1936. The program for the protection of the woodpeckers began in 1967.

Protections afforded: The Endangered Species Act directs Federal agencies not to take any action which would further jeopardize an endangered species.

Management: All trees within the colony site (198 ft. radius from each cavity tree) are marked and excluded from logging, except those which require removal for habitat improvement. This provides a buffer for expansion and prevents windthrow of cavity trees. Cavity trees are marked with double silver bands. Others with single bands.

[63]It is believed by many that the presence of the red-heart disease makes the tree vulnerable to such excavation; however, the matter is the subject of controversy among scientists.

C. Authority, Structure and Funding

5.8 History and legislative authority

The period immediately following the Civil War was one of continued exploitation of land and other resources. According to what has been called "The Myth of Superabundance," it was assumed by many that the natural resources of the United States were inexhaustible. The vast forests were one of the first resources to be exploited. People of this era felt that "trees, like Indians, were an obstacle to settlement, and the woodsmen were therefore pioneers of progress.[64]

Lumbering became the nation's largest manufacturing industry, with no control on logging procedures. In addition, fires were caused by loggers (some say by settlers), burning up to 25,000,000 acres a year. Lumbering was a "strip-and-run" enterprise involving a huge waste of resources. Sawmills were dismantled and moved further on as the best timber stands were cut, leaving sawmill ghost towns.[65]

The Myth of Superabundance was challenged by George Perkins Marsh in his book *Man and Nature,* published in 1864.[66] Marsh pointed out the vital function that forests serve as watersheds. Urging the practices of prescribed cutting and replanting, he attempted to show that the forest was nature's chief conserver of water and soil. He was familiar with the German and French methods of artificial planting of trees on farms and with their policy of cutting only mature timber and suggested the U.S. adopt these methods. He also urged that the nation take on a program of experimental forestry.

[64]Stewart Udall, *The Quiet Crisis,* (New York: Holt, Rinehart, and Winston, 1964), p. 67.

[65]*Ibid.,* pp. 67-70. Removal of trees by farmers, of course, had an equal or possibly greater impact on the forest resource. See Paul Gates, *History of Public Land Law Development* (1968), p. 531.

[66]See section 1.3, above, for more on Marsh.

Another voice raised against the exploitation of the forests was that of Carl Schurz, Secretary of the Interior in the 1870's. He initiated an intensive study of forest depredation. In 1877 his first report excoriated lumbermen who were "not merely stealing trees, but whole forests". His suggested remedies for the problem were setting aside forests in Federal ownership, reforestation, charges to users of national resources, criminal penalties for the setting of forest fires, and the establishment of a commission to study the forest practices of other countries.

The first organized public effort in behalf of forestry was perhaps sparked by the shock of the worst forest fire in U.S. history (in terms of human lives lost) in the vicinity of Peshtigo, Wisconsin, in 1871 where 1,500 people lost their lives and nearly 1.3 million acres were burned.[67] A paper entitled "On the Duty of Government in the Protection of Forests" was prepared and delivered by Franklin B. Hough, a New York State physician, naturalist and census taker, at the 1873 annual meeting of the American Association for the Advancement of Science. Hough urged Congress and the states to recognize the need for "cultivation of timber and preservation of forests and to recommend proper legislation for securing these objectives." Hough's paper was a motive force in the founding of the American Forestry Association in 1875, a most influential private organization, and in establishment of the first Federal forestry office in the Department of Agriculture.

The first bill attempting to establish national "forest reserves," based on their value in streamflow regulation, was introduced in Congress in 1876, but failed to pass. Later that year another bill containing some of Hough's recommendations was passed. It authorized the Department of Agriculture to gather statistics, and to study and report on the forest situation, on the best means for the preservation and renewal of forests, and on European forestry practices. The Commissioner of Agriculture appointed Frankin Hough to collect the information. The report he delivered in 1878 was a voluminous compilation of statistics and scientific studies of the benefits of forest cover on climate, streamflow and soil, pointing out the detrimental effects of forest devastation.

In 1891 the Forest Reserves Act, also called the Creative Act, was passed by Congress giving the President the authority to withdraw portions of the public domain and designate them as "forest reserves." A major figure in the drafting and a major proponent of the law was Bernard E. Fernow, who had become head of the Division of Forestry in 1886 (the office had become a division in 1881). This law marked the creation of what was in effect a National Forest System, although at this time the reserves were under the Department of the Interior. Almost thirteen million acres of reserves were set aside by President Benjamin Harrison by the end of his term in 1893.

The Act of 1891, however, merely set aside the forest reserves as closed areas; no provision was made for a plan of operation. In 1896 a National Forest Reserve Commission was set up by the National Academy of Sciences to consider the protection and use of the reserves. The Commission's report urged first that the forest reserve system be expanded, more than doubled, in fact. Despite severe opposition in the West, President Grover Cleveland complied, withdrawing on one day, February 22, 1897, more than 21 million acres, in addition to 4.5 million acres he had set aside nearly four years earlier. The report also recommended that measures be taken for the protection and administration of the reserves. The outcome was passage of the Organic Administration Act of 1897 which established a system of administration and set forth the objectives of the reserves as being

[67] Michael Frome, *The Forest Service* (New York: Praeger Publishers, Inc., 1971), p. 4.

"for the purpose of securing favorable conditions of waterflow, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States."[68]

A major early figure in getting forestry principles applied on the land in this country was Gifford Pinchot. In 1898 he succeeded Fernow as Chief of the Division of Forestry in the Department of Agriculture.[69] Having as yet no forest reserves to manage, Pinchot decided to lend assistance in forest management to landowners. The Division sent out Circular No. 27 of October 15, 1898, entitled "Assistance to Farmers, Lumbermen, and other Owners of Forest Lands." Free assistance was given to study farm woodlots and provide working forestry plans. Owners of large tracts were required to pay for field assistance.

Pinchot was instrumental in organizing the Society of American Foresters in 1900. The Society was to promote professional ideas and ideals, high technical standards, and forest sciences.[70] The organization brought together foresters and leaders of government including Cabinet members and the President.

In 1901 Theodore Roosevelt became President upon the assassination of William McKinley. He was an ardent outdoorsman and conservationist, and very aggressive in pressing for his policies. He and Pinchot became close friends and found themselves in agreement on conservation matters. Roosevelt gave strong support to Pinchot's efforts to have the forest reserves transferred from the Department of the Interior's General Land Office to the Department of Agriculture. The American Forestry Association organized numerous other organizations to support the effort, which succeeded early in 1905 with passage of the Transfer Act.[71] The Department of Agriculture's forest agency became known as the Forest Service. Pinchot now had forests to administer. The doctrine governing the forest reserves became "wise use" instead of mere custody, and in 1907 this philosophy was emphasized by the change from "forest reserves" to "National Forests".

Regulations for sale and cutting of timber established by the General Land Office were refined and extended, and fees were charged "for any permit, right, or privilege, so long as that charge is consistent with the purposes for which the preserves were created," according to the Forest Service's "Use Book" or manual. The fees applied principally to grazing of domestic livestock at first.

President Theodore Roosevelt shared Pinchot's deep concern for the nation's natural resources. During his term he set aside 132 million acres of forest and park land. In March of 1908 alone he reserved 15 million acres. This was just before he was forced to sign an appropriation bill with a rider restricting his authority to proclaim reserves under the Forest Reservation Act of 1891. A group of western Senators from timber-rich states felt that enough reserves had been set aside in their states and attached the rider.

Roosevelt was succeeded by William Howard Taft, a man who was not as single-minded as Pinchot and Roosevelt for conservation. He dismissed Pinchot from office as a result of Pinchot's highly publicized open defiance of the Secretary of the Interior, Richard Ballinger, objecting to the procedure used in the issuance of permits for mineral exploration and extraction from public lands in Alaska.

The forestry movement quickly gathered momentum with the Weeks Law of 1911. National Forests were greatly expanded in the East as the government began buying

[68] 16 U.S.C. 475.

[69] Dr. Fernow had resigned to start the country's first four-year professional forestry school, at Cornell University. During the next six years, ten other schools of forestry were started.

[70] Frome, *The Forest Service,* p. 13.

[71] Actually the "Transfer Act" was part of The General Appropriations Act for fiscal year 1906.

back cut-over and farmed-out areas under the justification of wastershed protection along navigable rivers. The Act states that:

> The Secretary of Agriculture is authorized and directed to examine, locate, and recommend for purchase such forested, cut-over or denuded lands within the watersheds of navigable streams or for the production of timber and to report to the National Forest Reservation Commission the results of such examination . . .[72]

The first landscape architect hired by the Forest Service, Arthur Carhart, was instrumental in the move to preserve "roadless areas." During his time of service (1919-1923), he argued that the best development plan for the Trappers Lake, Colorado, area in the Rocky Mountains was one that protected the natural beauty of the shoreline, although he did allow for some summer home and camping facilities development (which never occurred), set well back from the lake. Trappers Lake is now part of the new Flat Tops Wilderness. Carhart's feelings were similar with respect to recreational development of the Border Lakes area now known as the Boundary Waters Canoe Area in Minnesota. His recreation plan of 1921 for the area called for its preservation as a "watertrail wilderness." Later, in 1926, he (then in the capacity of private citizen), Sigurd Olsen, the noted conservationist of the Boundary Waters area, and other conservationists were successful in helping to get the area administratively designated by the Forest Service as the Superior Primitive Area, with the express written support of the Secretary of Agriculture, William Jardine.[73]

In a memorandum written in 1919, Carhart listed four types of areas that should be free of summer home development. They were: "the superlative area, the unsuited high ridge of a mountain range, the area that should be for the group rather than the individual, such as lakeshore or stream bank, and the area of greatest use for preservation owned by the Federal government."[74] It is not clear however, that he had in mind here the vast expanses we now think of as wilderness areas.

Aldo Leopold, a Forest Service colleague of Carhart's, developed his own wilderness philosophy. He proposed a new guide for the preparation of management plans for the National Forests. The richest and most accessible forest regions, capable of high quality timber production, would be reserved for logging while the remaining regions would be kept for recreation, game management, and wilderness uses. He developed a concept of wild areas for the Southwest based on four objectives: "(1) prevent annihilation of rare plants and animals, like the grizzly; (2) guard against biotic disruption of areas still wild; (3) secure recognition, as wilderness, of low-altitude desert generally regarded as valueless for recreation because it offered no pines, lakes, or other conventional scenery; and (4) induce Mexico to cooperate in wilderness protection." Leopold specifically sought to establish a wild area within the Gila National Forest in New Mexico. The designation was approved in 1924 by the District Forester (now called Regional Forester).[75]

Chief of the Forest Service in the mid-1920's, William B. Greeley, cautious at first, mindful of timber demands, later became a proponent of the Gila designation and encouraged other District Foresters to do the same with comparable areas, and especially to safeguard potential "wilderness" areas.[76] He directed Assistant Chief L. F. Kneipp to undertake an inventory of roadless or wil-

---

[72] 16 U.S.C. 515, 521.

[73] September 17, 1926. Copy in Regional Archives and Records Center, Chicago, Illinois. It recognized wilderness designation as part of national recreation policy by the Forest Service.

[74] Frome, *Battle for Wilderness,* (New York: Praeger Publishers, Inc., 1974), p. 119.

[75] Frome, *Battle for Wilderness,* p. 120.

[76] Memo to each of the western District Foresters, December 30, 1926.

derness areas in order to develop a Forest Service-wide policy. As a result of this study, Greeley issued Regulation L-20 in 1929 which provided for the establishment of "Primitive Areas." The regulation, in part, reads as follows:

> The Chief of the Forest Service shall determine, define, and permanently record . . . a series of areas to be known as primitive areas, and within which, *to the extent of the Department's authority,* will be maintained primitive conditions of environment, transportation, habitation, and subsistence, with a view to conserving the value of such areas for purposes of public education, *inspiration,* and recreation. Within any area so designated (except for permanent improvements needed in Experimental Forests and Ranges) no occupancy under the special-use permit shall be allowed, or the construction of permanent improvements by any public agency be permitted, except as authorized by the Chief of the Forest Service or the Secretary of Agriculture.[77]

Under this regulation and subsequent regulations U-1 and U-2, 72 Primitive Areas, constituting some 14 million acres, were designated.[78] Thirty of these areas were over 100,000 acres in size, and 42 were less than 100,000 acres. Three additional areas in Minnesota were classified as "Roadless Areas." Regulations U-1 and U-2 provided further protection of these areas and stated that the Secretary of Agriculture, upon recommendation of the Forest Service, could designate unbroken tracts of land 100,000 acres or more as "wilderness areas" and other lands of 5,000 to 100,000 acres as "wild areas." Prohibited in these areas were: commercial timber cutting, roads, hotels, stores, resorts, summer homes, camps, hunting and fishing lodges, motorboats and airplane landings.[79]

The areas classified as "wilderness" and "wild" were later to become components of the National Wilderness Preservation System. The "Primitive Areas" were to be reviewed as to their suitability or nonsuitability as wilderness within ten years after the passage of the Wilderness Act of 1964.[80] (See Chapter Eight for a detailed discussion of the Wilderness System and continuation of the history of Wilderness preservation.)

Shortly, after World War I, the Forest Service under Chief Forester Henry Graves began to develop a broad national policy emphasizing public regulation of cutting on private lands. Pinchot and his supporters pushed for expanded public ownership and regulation of private holdings. The Society of American Foresters was divided on the issue. However, Chief Forester William B. Greeley who took office early in 1920, favored the idea of Federal-state-private cooperation in forest protection and reforestation. He opposed regulation. The Clarke-McNary Act of 1924[81] was passed largely through his efforts and reflected this approach. It provided Federal money for (1) protection of private lands from fire and (2) free planting and free advice, including help in looking for tax relief. Provisions were made in the Act for the purchase of lands necessary for timber or watershed protection. In 1928, the McSweeny-McNary Act[82] increased Federal funds for forest research programs and authorized a nationwide survey of forest resources, still a major Forest Service activity.

The role of the Forest Service was enhanced during the New Deal era. The Civilian Conservation Corps became one of the most significant New Deal programs.[83] Forest Service people played a major part in

[77] Underlined passages were deleted and the phrase in parentheses added by an amendment of 1930. This regulation is no longer in effect since the Wilderness Act called for the review of all Primitive Areas for suitability as part of the National Wilderness Preservation System.

[78] Since about 3.5 million acres are currently held in this category, the remainder of the 14 million acres went into the Wilderness System.

[79] Frome, *The Forest Service,* p. 96.

[80] 16 U.S.C. 1131.

[81] 16 U.S.C. 471, 505, 515, 564 *et seq.*

[82] 16 U.S.C. 581 *et seq.*

[83] Frome, *The Forest Service,* p. 20.

directing the natural resource work of the young men in hundreds of Civilian Conservation Corps camps on National Forest lands. Major tasks of the Civilian Conservation Corps were reforestation, fire control efforts, and development for campers and other recreational uses. During the nine years of the program, more than two million young men participated, planting more than half of the trees planted in the nation's history up to that time.

Federal regulation of private timber harvesting was also pressed from 1933 to 1943, without success, by Chief F. A. Silcox and Acting Chief Earle Clapp. The monumental Copeland Report of 1933[84] and the Western Range report of 1936,[85] both prepared by the Forest Service, were strong calls for Federal action to protect the nation's timber and grassland resources against private abuse. A study completed and issued by the Forest Service in 1945 to reappraise the National Forest situation showed that sawtimber quality and quantity had declined and that poor timber cutting practices were evident on 64 per cent of all private forest land. The issue of further public regulation was again raised, this time by Chief Lyle Watts, but no Federal regulatory legislation was passed. States began to take action to regulate timber harvesting on private land. The Cooperative Forest Management Act of 1950[86] which made cooperative management aid available to all private forest landowners and processors of forest products, was passed by Congress. The Timber Resource Review released in 1958 by the Forest Service showed a much more favorable national situation.

The 1950's brought a rise in population with an accompanying rise in leisure activities. A move to improve overtaxed recreation facilities was initiated by the Forest Service in 1957 with a program called "Operation Outdoors." The Multiple Use-Sustained Yield Act of 1960[87] set forth the policy that National Forests are to be administered for outdoor recreation, range, timber, watershed, and wildlife and fish. The Act also was careful to state that nothing in the Act was to affect the use or administration of the mineral resources of national forest lands. In 1960 also the four million acres of land utilization projects were given status as "National Grasslands."[88]

The Wilderness Act of 1964[89] authorized and directed the Forest Service to help in securing for present and future generations an "enduring resource of wilderness," something the Service had been doing on its own since 1924 through the creation of wilderness and primitive and other areas. It provided official Congressional endorsement of long-standing Forest Service policies and extended them to other Federal lands. The Land and Water Conservation Fund Act of 1964[90] provided for the allocation of funds to Federal agencies and the states for the acquisition of outdoor recreation areas. The Act is administered by the Bureau of Outdoor Recreation, Department of the Interior, but the Forest Service is a major beneficiary, regularly receiving money to purchase private inholdings and other tracts within National Forest boundaries. In 1973, the Endangered Species Act[91] was passed directing all Federal agencies to protect species of native fish and wildlife and plants threatened with extinction.

The National Environmental Policy Act

---

[84] *A National Plan for American Forestry,* Senate Document No. 12, 73rd Congress, 1st Session, 1933 (two volumes).

[85] *The Western Range,* Senate Document No. 199, 74th Congress, 2nd Session, 1936.

[86] 16 U.S.C. 568c, 568d.

[87] 16 U.S.C. 528 *et seq.* See also sections 5.1 and 5.2, above.

[88] See section 5.1 for discussion of land utilization projects.

[89] 16 U.S.C. 1131. See Chapter Eight for a detailed study of this Act.

[90] 16 U.S.C. 460d, 4601-4 *et seq.*, discussed in Chapter Four, above.

[91] 16 U.S.C. 1531-1543.

of 1969[92] has had a profound effect on Forest Service activities. The Act requires environmental impact statements to be prepared for all major actions taken by all Federal agencies, including the Forest Service.

"The most significant piece of forestry legislation enacted in more than a decade"[93] is the Forest and Rangeland Renewable Resources Planning Act of 1975. It ranks along with the Weeks Law, the Clarke-McNary Act, the McSweeney-McNary Act and the Multiple Use-Sustained Yield Act. It calls for the preparation of a Renewable Resources Assessment, a Renewable Resource Program in relation to the findings of the Assessment, and a comprehensive inventory of national forest lands and renewable resources. (See section 5.1 for further discussion of this most recent piece of Forest Service legislation.)

5.9 Administrative structure and personnel

The Forest Service has a single central authority in Washington, D.C., that operates through a decentralized organization and an inspection system to ensure application of uniform principles in the field. There is a clearly defined chain of command and delegation of authority with a combination of line and functional staff. The line staff is responsible for deciding on and activating over-all objectives, policies, plans, and programs and for coordinating different functional activities. The functional staff's role is primarily to advise, recommend, observe, and report. The Forest Service is headquartered in Washington, D.C., with a staff of 816, including, the Chief, an Associate Chief, and five Deputy Chiefs.

There are three parts to the over-all Forest Service program. They are: National Forest System, State and Private Forestry, and Research. Each is directed by a Deputy Chief. The fourth deputy chief is in charge of Program Planning and Legislation, and the fifth is in charge of Administration. This lineup is reflected in the regional offices, except for Research which is conducted through the experiment stations, Forest Products Laboratory, and Institute of Tropical Forestry.

The Chief and Deputy Chiefs formulate overall administrative policy regarding forestry, coordinating agency-wide programs and activities, appointing and approving key personnel, and reviewing project decisions. Under the five deputies are functional staff units of specialists who establish, interpret, and enforce technical operating procedures within the limits of established policies and instructions.

There are nine regional offices for the National Forest System. (See Technical Appendix 5(b).) The Regional Forester is in charge of the administration of all National Forest System activities in a region. Staff Unit directors within the regional office furnish specialized assistance and advice in the following: fire control, timber management, range and wildlife, lands, recreation and watersheds, fiscal control, information and education, personnel management, and engineering.

As of September 1975, the Forest Service had a total of 19,494 full-time employees.[94] There are eight Forest and Range Experiment Stations[95] with research efforts generally divided among them along specific program lines such as wilderness research or watershed studies or landscape management. Two additional units have specific charters: the Forest Products Laboratory and the Institute of Tropical Forestry.

---

[92] 42 U.S.C. 4321, 4331-4335, 4341-4347.

[93] "Administration of Public Land Laws in the National Forests," John R. McGuire, Chief, Forest Service, U.S. Department of Agriculture, (paper presented at the Public Land Law Institute in 1975).

[94] Interview with Forest Service Employment Division, October, 1975.

[95] See *What the Forest Service Does,* U.S. Department of Agriculture-Forest Service, pp. 18-19, for a list.

There are two State and Private Forestry Areas for the eastern United States where private forestry holdings exceed Federal, while in the West these responsibilities are assigned to the Regional Foresters. Regional Foresters, Station Directors and Area Directors are all the same rank, and have a straight line relationship to the chief.

5.10 Funding and budgetary authority

The total funds available to the Forest Service in any given year are derived from funds appropriated each year by Congress; receipt accounts (Trust Fund); deposits by cooperators; and allocation accounts. The vast bulk of this total consists of appropriated funds, receipt accounts, and the Trust Fund. Figures for these categories are easily obtainable. The total of these categories for 1974 was $873.1 million; for 1975, $896.1 million[96]; for 1976, $859.8 million.[97]

The allocation accounts are monies appropriated to another department or agency of the Federal government which are furnished by that department or agency for work done by the Forest Service under programs beneficial to both agencies. One allocation account which is of significance to natural area activities is money which comes to the Forest Service from the Bureau of Outdoor Recreation's Land and Water Conservation Fund. The Fund provides money for acquisition of additional land and water areas for outdoor recreation within and adjacent to the National Forests and Congressionally designated areas. (See Chapter Six for a further discussion of the Land and Water Conservation Fund.) For 1974, the total appropriated for allocation to the Forest Service from the Land and Water Conservation Fund was $4 million; for 1975, $30.9 million; and for 1976 (estimated), $30 million.

The Trust Fund is a fund established in the Forest Service itself. It consists of contributions received from "cooperators," including counties, states, timber sales operators, individuals, and associations, and these contributions are expended by the Forest Service in accordance with the terms of the applicable cooperative agreements. The money is spent for the protection and improvement of the National Forests, work performed for National Forest users, and forest investigations and protections, reforestation, and administration of private forest lands. The total receipts to the Fund for 1974 were $68.6 million; for 1976 it is projected to be $72.9 million.[98]

There is no indication in Forest Service figures of what part of the Service's funding goes directly to natural area activities. Approximations or rough estimates, however, can be obtained from the individual Forest Service divisions involved in various natural area activities. The Wildlife Management Unit said that less than 10% of their division's budget was spent for their endangered species program in the years 1974 and 1975.[99]

D. Information and Bibliography

5.11 Key information contacts

Administration:

Deputy Chief
Administration
The Forest Service
U.S. Department of Agriculture
Washington, D.C. 20250
(202) 447-6707

[96]This is an estimated figure, which is all that the Forest Service budget office has available at this time.

[97]*Ibid.*

[98]Source: Personal communication from Assistant Budget Officer, U.S. Forest Service, September 17, 1975.

[99]Source: Deputy Director, Wildlife Management Division.

Budget:

Budget Officer
The Forest Service
U.S. Department of Agriculture
Washington, D.C. 20250
(202) 447-6987

Endangered Species Program:

Director
Wildlife Management
The Forest Service
U.S. Department of Agriculture
Washington, D.C. 20250
(202) 235-8015

Legislation:

Deputy Chief
Programs and Legislation
The Forest Service
U.S. Department of Agriculture
Washington, D.C. 20250
(202) 447-6663

National Natural Landmarks, Special Interest Areas and Wilderness:

Director
Recreation Management
The Forest Service
U.S. Department of Agriculture
Washington, D.C. 20250
(202) 447-3706

Research Natural Areas and Experimental Forests:

Associate Deputy Chief, Research
The Forest Service
U.S. Department of Agriculture
Washington, D.C. 20250
(202) 447-6666

Wild and Scenic Rivers:

Director
Watershed Management
The Forest Service
U.S. Department of Agriculture
Washington, D.C. 20250
(202) 235-8096

5.12 Bibliography

Buckman, Robert E. and Richard Quintus. *Natural Areas of the Society of American Foresters.* Washington, D.C.: Society of American Foresters, 1972.

Burton, Ian and Robert W. Kates (eds.). *Readings in Resource Management and Conservation.* Chicago: University of Chicago Press, 1965.

Butler, Ovid (ed.). *American Conservation: In Picture and in Story.* Washington, D.C.: American Forestry Association, 1941.

Cameron, Jenks. *The Development of Governmental Forest Control in the United States.* Baltimore: Johns Hopkins Press, 1928.

Cheyney, E. G. and T. Schantz-Hansen. *This is Our Land: The Story of Conservation in the United States.* St. Paul: Webb Book Publishing, 1950.

Clawson, Marion and Burnell R. Held. *The Federal Lands: Their Use and Management.* Baltimore: Johns Hopkins Press, 1957.

Clepper, Henry (ed.). *Origins of American Conservation.* New York: Ronald Press, 1966.

Clepper, Henry. *Professional Forestry in the United States.* Baltimore: Johns Hopkins Press, 1971.

Clepper, Henry and Arthur B. Meyer. *American Forestry: Six Decades of Growth.* Washington, D.C.: Society of American Foresters, 1960.

Conover, Milton. *The General Land Office—Its History, Activities and Organization.* Baltimore: Johns Hopkins Press, 1923.

Federal Committee on Research Natural Areas. *A Directory of Research Natural Areas.* Washington, D.C.: U.S. Government Printing Office, 1968.

Frome, Michael. *Battle for the Wilderness.* New York: Praeger Publishers, 1974.

Frome, Michael. *The Forest Service.* New York: Praeger Publishers, 1971.

Frome, Michael. *The National Forests of America.* Waukesha: Country Beautiful Corporation, 1968.

Hibbard, Benjamin H. *A History of the Public Land Policies.* Madison: University of Wisconsin Press, 1965.

Ise, John. *The United States Forest Policy.* New Haven: Yale University Press, 1920.

Kinney, J. P. *The Development of Forest Law in America.* New York: John Wiley, 1917.

Leopold, Aldo. *A Sand County Almanac.* New York: Oxford University Press, 1949.

Lillard, Richard G. *The Great Forest.* New York: Knopf, 1947.

Morgan, George T. *William B. Greeley: A Practical Forester, 1879-1955.* St. Paul: Forest History Society, 1961.

Munns, Edward N. *A Selected Bibliography of North American Forestry.* Washington, D.C.: U.S. Department of Agriculture, Misc. Pub. No. 364, 1940.

National Park Service. *National Registry of Natural Landmarks,* (mimeographed). Washington, D.C.: U.S. Department of the Interior.

The Nature Conservancy. *The Preservation of Natural Diversity: A Survey and Recommendations.* Arlington, Virginia: The Nature Conservancy, 1975.

Office of the Federal Register, National Archives and Records Service, and General Services Administration. *Code of Federal Regulations.* Washington, D.C.: U.S. Government Printing Office, 1968.

Pinchot, Gifford. *Breaking New Ground.* New York: Harcourt, Brace, 1947.

Pinkett, Harold T. *Gifford Pinchot: Public and Private Forester.* Urbana, Ill: University of Illinois Press, 1970.

Platt, Rutherford, H. *The Great American Forest.* Englewood Cliffs, N.J.: Prentice-Hall, 1965.

The Public Land Law Review Commission. *One Third of the Nation's Land.* Washington, D.C.: U.S. Government Printing Office, 1970.

Roberts, Paul H. *Hoof Prints on Forest Ranges: The Early Years of National Forest Range Administration.* San Antonio, Texas: Naylor, 1963.

Rodgers, A. D., III. *Bernhard Eduard Fernow.* Princeton: Princeton University Press, 1949.

Salmond, John A. *The Civilian Conservation Corps, 1933-1942: A New Deal Case Study.* Durham: Duke University Press, 1967.

Schenck, Carl Alwin. *The Biltmore Story: Recollections of the Beginning of Forestry in the United States.* Ovid Butler (ed.). St. Paul: American Forest History Foundation, Minnesota Historical Society, 1955. Reprinted 1975, F.H.S.

Smith, Darrell H. *The Forest Service—Its History, Activities and Organization.* Washington, D.C.: Brookings Institution, 1930.

Van Hise, Charles R. *The Conservation of Natural Resources in the United States.* New York: Macmillan, 1910.

Widner, Ralph R. (ed.). *Forests and Forestry in the American States: A Reference Anthology.* Washington, D.C.: National Association of State Foresters, 1968.

Winters, Robert K. (ed.). *Fifty Years of Forestry in the U.S.A.* Washington, D.C.: Society of American Foresters, 1950.

5.13 List of technical appendices

(a) Creative Act of 1891 (26 Stat. 1103; 16 U.S.C. 471, March 3, 1891).

(b) "Field Offices of the Forest Service." The Forest Service. Washington, D.C.: U.S. Department of Agriculture, December, 1972.

(c) Forest and Rangeland Renewable Resources Planning Act of 1974 (P.L. 93-378; 88 Stat. 476-480, August 17, 1974).

(d) "Formally Dedicated Special-Interest Areas in the National Forest System." The Forest Service. Washington, D.C.: U.S. Department of Agriculture, August 8, 1975.

(e) Multiple Use—Sustained Yield Act (74 Stat. 215; 16 U.S.C. 528-531, June 12, 1960).

(f) *National Forest System.* The Forest Service. Washington, D.C.: U.S. Department of Agriculture, June 30, 1974.

(g) Organic Administration Act of 1897 (30 Stat. 34, as Amended; 16 U.S.C. 473-478, 479-482, 551, June 4, 1897).

Chapter Six:

Bureau of Outdoor Recreation

A. The Bureau

6.1 Introduction and overview

The Bureau of Outdoor Recreation, a Bureau housed in the Department of the Interior, does not hold or manage land. It is thus distinct in a very important sense from the other administrative units described in this volume. As a general statement, the Bureau coordinates recreation-related activities of all levels of government and the private sector to conserve, develop, and utilize outdoor recreation resources. It also is in charge of developing a nationwide outdoor recreation plan designed to provide a policy framework within which Federal outdoor recreation-related programs will be developed and maintained and which will guide Federal, state, local and private efforts in the area. Another primary function of the Bureau is administration of the Land and Water Conservation Fund. The purpose of this fund is to provide matching grants to states and local governments for planning, acquisition, and development of recreation lands and facilities and to provide money for acquisition of Federally-administered recreation areas.

6.2 History and creation

Any adequate explanation of the role of the Bureau of Outdoor Recreation must spring from an understanding of two important facts: (1) the long history which lies behind the creation of the Bureau and (2) the way in which the Bureau was ultimately created.

Any history of conservation, parks, or outdoor activities can almost arbitrarily begin with some effort by President Theodore Roosevelt. Roosevelt's contributions in these areas were so enormous that almost all of what has happened since can be traced, by common consent among historians, to something which occurred in his administration. It is thus surprising to find that a recent and authoritative book on the Bureau traces the Bureau's origin to an ad hoc committee of Cabinet members appointed in 1924 by President Calvin Coolidge, although in a footnote it credits Roosevelt's general role.[1] This committee was formed by Coolidge at the same time he made the statement that "country recreation for as many of our people as possible should be our objective" and that to the present time the Federal government's concern with this goal had been expressed in "an incoherent manner."[2] The committee recommended to the President that he call a National Conference on Outdoor Recreation, which was held in Washington in May of 1924 and which represented 128 different organizations.

Aside from a policy statement supporting coordination of all phases of outdoor recreation and calling for a national outdoor recreation plan, the conference established an executive committee which helped the conference to continue its existence until a second meeting was held some years later and a number of studies and surveys had been published. The last of these publications, a summary document published as Senate Document No. 158 of the First Session of the 70th Congress, May, 1928, contained the following summary of major proposals:

(a) A continuing body should be created by law or executive order
  (1) to develop and promote Federal outdoor recreation policy
  (2) to advise as to the best means of coordinating common functions of government relating to outdoor recreation and to conservation
  (3) to bring agencies of the government into active cooperation with national organizations dealing with outdoor recreation and conservation, and
  (4) to promote research on the use of

[1] Edwin M. Fitch and John F. Shanklin, *The Bureau of Outdoor Recreation* (Praeger 1970).

[2] *Ibid.*, p. 43.

Federal natural resources for recreational purposes.

(b) Regional studies should be initiated to determine how best to utilize national parks and forests for their educational, scientific, inspirational and recreation values.

(c) The objectives and standards of the National Park system should be established by law and a definite basis should be provided for the recreational use of parks in coordination with recreation in the National Forests and on other Federal lands.

(d) The Secretary of Agriculture should establish by proclamation wilderness areas not subject to exploitative social or economic use.

(e) Lands in the public domain chiefly useful for recreation should be classified as such and their administration turned over to the States or minor political units.

The conference and its executive committee went out of existence in 1929. There is no need to relate in detail the long history of committees, studies, and recommendations which followed until the establishment of the Outdoor Recreation Resources Review Commission by President Eisenhower in 1958. Some idea of the labyrinthine interim between these two dates should be given, however:

1. National Resources Planning Board (1935), created by Executive Order. Committee of the Board commissioned the National Park Service to produce *Recreation Lands in the United States* (1935).
2. Park, Parkway, and Recreational Study Act of 1936—authorized, among other things, *A Study of the Park and Recreation Problem of the United States* by the National Park Service (1941).
3. Technical Committee on Recreation, a 1935 subcommittee of the Interdepartmental Committee to Coordinate Health and Welfare Activities. The committee published a report in 1937, recommending a separate bureau to coordinate all forms of recreation in the U.S. As an alternative it recommended an interdepartmental committee.
4. Federal Interagency Committee on Recreation, formed in 1946 at the invitation of the Secretary of the Interior. The committee lacked a staff, but through its member agencies managed to publish various pamphlets, including "The Role of Federal Government in the Field of Public Recreation," last revised in 1961. The committee was disbanded in 1962 when the Bureau of Outdoor Recreation was created.

The importance of the Outdoor Recreation Resources Review Commission, created by Congress in 1958, lies partly in the fact that it was created 35 years after Coolidge's initial statement, partly in the fact that the commission did a good job, and partly in the fact that high-level appointments were made to the commission and to its satellite committees. The commission itself consisted of four members from the House of Representatives, four members from the Senate, and seven "informed," "concerned," and "experienced" private citizens. The Act creating the commission also provided that Secretaries of Federal agencies appoint contact officers to the commission; there officers, together with 25 additional members drawn from representative state and private organizations, formed an advisory council to the commission. The commission itself created what was in effect another advisory council by getting each state governor to appoint a contact officer.

In its final summary report, *Outdoor Recreation for America* (1962), the commission recommended a national policy of shared responsibility for outdoor recreation resources—shared at all levels of government and with the private sector. The role of the Federal government should be to protect and enhance its own resources and to assist state and local governments. The role of the states was considered to be key, and it was decided they should have the primary responsibility for designing their own outdoor recreation systems. The commission asked the states to consider new ways of financing recreation and to exploit traditional ways such as the issuance of general revenue bonds, but it also recommended a

Federal grants-in-aid program on a matching basis to help states acquire recreation areas.

The commission also recommended the creation of a bureau of outdoor recreation. No better summary and analysis of this recommendation exists than in the book by Fitch and Shanklin:

> The commission's recommendations for the creation of a bureau of outdoor recreation were prompted not only by the need for coordination but by the hope that such a bureau would carry forward the work that the commission had so carefully begun. Coordination was only part of the task, even though a very important part. There was need to encourage common standards for the acquisition and handling of shoreline around newly established reservoirs and for the protection and management of fish and wildlife in all federal landholdings, irrespective of agency ownership. There was need for a joint attack on the problems of conflict between economic and recreational use. There was need for a national plan for outdoor recreation as a continuing enterprise—an enterprise that in the past had proved beyond the capability of a single federal landholding agency.
>
> The commission's recommendation for the new bureau, however, envisioned even more than this. Like the commission itself, the new bureau would have no operating responsibility for any outdoor recreation project. It would thus be in a position to promote the cause of outdoor recreation in a manner that an operating bureau, tied to its own land and recreation responsibilities, would be unable to do.
>
> Commission members did a great deal of soul-searching before they reached a decision to place the Bureau of Outdoor Recreation within the Department of the Interior. The possibility of establishing an independent agency, responsible to the Executive Office of the President, was carefully explored. Congressional members were so strongly opposed, however, that this proposal was soon abandoned. There was therefore no practical alternative to placing the new bureau in an existing department. The Department of the Interior was finally selected because of its prominence in the development of federal interest in outdoor recreation and because of the amount of coordination that had to take place between the several land agencies within the Department itself.
>
> A recreation advisory council was proposed to overcome the difficulties of promoting coordination by a bureau irrespective of the department in which it might be administratively placed. Acting within a framework of policy guidance established by the council, it was expected that council support of the Bureau of Outdoor Recreation would result in a more effective coordination of the programs of the states and territories and more than twenty federal agencies.
>
> The Commission's report briefly outlined the functions which it proposed that Congress should give to a Bureau of Outdoor Recreation. The Bureau should assume the recreation planning responsibilities given to the Secretary of the Interior by the Park, Parkway, and Recreation Area Study Act of 1936. It should coordinate (perhaps "encourage the coordination of" is the more realistic phrase) the related outdoor recreation activities of federal departments and agencies. It should both stimulate and assist the states in recreation planning. It should administer a grant-in-aid program to states needing financial help for both state and local outdoor recreation activities. It should sponsor research and encourage interstate and regional cooperation. Finally, the new bureau should develop a Nationwide Outdoor Recreation Plan and within the framework of that plan, should encourage federal, state, and private agencies "to adopt programs designed to attain the many benefits of outdoor recreation.[3]

The recommendations of the commission were strongly endorsed by President Kennedy in a message to Congress in March of 1962. A Department of the Interior task force was named to draft legislation implementing the President's recommendation and to create, insofar as possible under *existing* authority, a bureau in the Department with the functions recommended for the bureau of outdoor recreation.

The latter task was accomplished swiftly.

---

[3] *Ibid.*, pp. 68-70.

On April 2, 1962, the Secretary of the Interior issued a release[4] creating the Bureau of Outdoor Recreation. The Secretary also named Dr. Edward C. Crafts, then assistant chief of the Department of Agriculture's Forest Service, as the Bureau's first director. The Release in effect created the Bureau by assigning to it certain functions previously given to the Park Service under the Park, Parkway, and Recreational Area Study Act of 1936: authority to conduct resource surveys, to initiate and to promote coordinated research, to act as a data center for outdoor recreation, and to begin to put together a nationwide outdoor recreation plan. On April 27th, an Executive Order[5] was issued by President Kennedy, creating a Cabinet-level Recreation Advisory Council charged with:

(1) the protection and appropriate management of scenic areas, natural wonders, primitive areas, historic sites, and recreation areas of national significance,
(2) the management of Federal lands for the broadest possible recreation benefit consistent with other essential uses,
(3) the management and improvement of fish and wildlife resources for recreational purposes,
(4) cooperation with and assistance to the States and local governments,
(5) interstate arrangements, including Federal participation where authorized and necessary, and
(6) vigorous and cooperative leadership in a nationwide recreation effort.

The council was in fact designed to add authority to the Bureau's actions by, directly or indirectly, endorsing them. The Secretary of the Interior was appointed the first head of the council, and it was decided that the Secretary of Agriculture would alternate the leadership with the Secretary of the Interior at two year intervals. The Secretary of the Interior made the Director of the Bureau of Outdoor Recreation the head of the council's staff, further interlocking the two units.

Although the task force's draft legislation failed to pass Congress, a subsequent bill, the Outdoor Recreation Act of 1963, was enacted into law on May 28, 1963. Although this law does not mention the Bureau and simply empowers the Secretary of the Interior to perform certain functions, it is generally referred to as the "Organic Act" of the Bureau of Outdoor Recreation because the Secretary delegated his functions under the Act to the Bureau.

6.3 The Outdoor Recreation Act[6]

The Act begins with an important statement of Congressional perception of the outdoor recreation needs of the American people:

> The Congress finds and declares it to be desirable that all American people of present and future generations be assured adequate outdoor recreation resources, and that it is desirable for all levels of government and private interests to take prompt and coordinated action to the extent practicable without diminishing or affecting their respective powers and functions to conserve, develop, and utilize such resources for the benefit and enjoyment of the American people.

Section 2(a) of the Act authorizes the Secretary of the Interior to perform certain functions in order to carry out the purposes of the Act. Specifically, the Secretary is empowered to undertake these activities:

> (a) Inventory.—Prepare and maintain a continuing inventory and evaluation of outdoor recreation needs and resources of the United States.
>
> (b) Classification.—Prepare a system for

[4]Departmental Manual Release No. 497 (Fitch and Shanklin incorrectly cite Secretarial *Order* No. 497 as the authority for the Bureau's creation). The release cited as authority Reorganization Plan No. 3, a general reorganization authority, which had been approved by Congress in 1950.

[5]Executive Order No. 11017. The council eventually evolved into the present Council on Environmental Quality.

[6]The Act appears, as Amended, at 16 U.S.C. 460*l*-460*l*-3. The Act was Public Law 88-29.

classification of outdoor recreation resources to assist in the effective and beneficial use and management of such resources.

(c) Nationwide Plan.—Formulate and maintain a comprehensive nationwide outdoor recreation plan, taking into consideration the plans of the various Federal agencies, States, and their political subdivisions. The plan shall set forth the needs and demands of the public for outdoor recreation and the current and foreseeable availability in the future of outdoor recreation resources to meet those needs. The plan shall identify, critical outdoor recreation problems, recommend solutions, and recommend desirable actions to be taken at each level of government and by private interests. The Secretary shall transmit the initial plan, which shall be prepared as soon as practicable within five years hereafter, to the President for transmittal to the Congress. Future revisions of the plan shall be similarly transmitted at succeeding five-year intervals. When a plan or revision is transmitted to the Congress, the Secretary shall transmit copies to the Governors of the several States.

(d) Technical Assistance.—Provide technical assistance and advice to and cooperate with States, political subdivisions, and private interests, including nonprofit organizations, with respect to outdoor recreation.

(e) Regional Cooperation.—Encourage interstate and regional cooperation in the planning, acquisition, and development of outdoor recreation resources.

(f) Research and Education.—(1) Sponsor, engage in, and assist in research relating to outdoor recreation, directly or by contract or cooperative agreements, and make payments for such purposes without regard to the limitations of section 529 of Title 31 concerning advances of funds when he considers such action in the public interest, (2) undertake studies and assemble information concerning outdoor recreation, directly or by contract or cooperative agreement, and disseminate such information without regard to the provisions of section 3204 of Title 39, and (3) cooperate with educational institutions and others in order to assist in establishing education programs and activities and to encourage public use and benefits from outdoor recreation.

(g) Interdepartmental Cooperation.—(1) Cooperate with and provide technical assistance to Federal departments and agencies and obtain from them information, data, reports, advice, and assistance that are needed and can reasonably be furnished in carrying out the purposes of this Act, and (2) promote coordination of Federal plans and activities generally relating to outdoor recreation. Any department or agency furnishing advice or assistance hereunder may expend its own funds for such purposes, with or without reimbursement, as may be agreed to by that agency.

(h) Donations.—Accept and use donations of money, property, personal services, or facilities for the purposes of this Act.[7]

The Act also provided for interdepartmental and interagency cooperation and assistance:

Sec. 3. In order further to carry out the policy declared in section 1 of this Act, the heads of Federal departments and independent agencies having administrative responsibility over activities or resources the conduct or use of which is pertinent to fulfillment of that policy shall, either individually or as a group, (a) consult with and be consulted by the Secretary from time to time both with respect to their conduct of those activities and their use of those resources and with respect to these activities which the Secretary of the Interior carries on under authority of this Act which are pertinent to their work, and (b) carry out such responsibilities in general conformance with the nationwide plan authorized under section 2(c) of this Act.[8]

6.4 The Land and Water Conservation Fund

The Land and Water Conservation Fund

[7] 16 U.S.C. 460*l*-1.

[8] Section 4, the final section of the Act, provided:

As used in this Act, the term "United States" shall include the District of Columbia and the terms "United States" and "States" may, to the extent practicable, include the Commonwealth of Puerto Rico, the Virgin Islands, Guam, and American Samoa.

Act of 1965, P.L. 88-578,[9] as amended, establishes a fund to finance with Federal dollars matched by state or local money, the planning, acquisition, and development of outdoor recreation areas and facilities. Like the Outdoor Recreation Act, the Act does not mention the Bureau of Outdoor Recreation,[10] but administration of the fund has been delegated to the Bureau by the Secretary. Projects eligible to receive funding must be in accord with a Statewide Comprehensive Outdoor Recreation Plan (SCORP) prepared by each state and approved by the Bureau. The fund is also used to acquire National Park Service, Fish and Wildlife Service, Bureau of Land Management and Forest Service recreation lands.

The objectives as stated in section 1(b) of the Act are:

> . . . to assist in preserving, developing, and assuring accessibility to all citizens of the United States of America of present and future generations and visitors who are lawfully present within the boundaries of the United States of America such quality and quantity of outdoor recreation resources as may be available and are necessary and desirable for individual active participation in such recreation and to strengthen the health and vitality of the citizens of the United States by (1) providing funds for an authorizing Federal assistance to the States in planning, acquisition, and development of needed land and water areas and facilities and (2) providing funds for the Federal acquisition and development of certain lands and other areas.

The fund is a separate fund established in the Treasury. Certain specific revenues (*e.g.*, surplus property receipts, Outer Continental Shelf mineral leasing receipts) are automatically put into the fund. Direct appropriations may also be made. Of the total money in the fund, 60% is available for state purposes, 40% for Federal (see section 5(a) of this Act).

From the 60% state portion (and according to an allocation formula in section 6(b)):[11]

> Section 6(a). The Secretary of the Interior (hereinafter referred to as the "Secretary") is authorized to provide financial assistance to the States from moneys available for State purposes. Payments may be made to the States by the Secretary as hereafter provided, subject to such terms and conditions as he considers appropriate and in the public interest to carry out the purposes of this Act, for outdoor recreation: (1) planning, (2) acquisition of land, waters, or interests in land, waters or (3) development.

Section 6(c) provides:

> Payments to any State shall cover not more than 50 per centum of the cost of planning, acquisition, or development projects that are undertaken by the State. The remaining share of the cost shall be borne by the State in a manner and with such funds or services as shall be satisfactory to the Secretary. No payment may be made to any State for or on account of any cost or obligation incurred or any service rendered prior to the date of approval of this Act.

Under the Act, planning is not only an activity which may be legitimately funded, but a *qualification* for states seeking to receive funds. This is explained in section 6(d):

> (d) Comprehensive State Plan Required: Planning Projects — A comprehensive statewide outdoor recreation plan shall be required prior to the consideration by the Secretary of financial assistance for acquisition or development projects. The plan shall be adequate if, in the judgment of the Secretary, it encompasses and will promote the purposes of this Act. The plan shall contain: (1) the name of the State agency that will have authority to represent and act for the State in

[9] The Act appears in the U.S. Code beginning at 16, U.S.C. 460*l*-4. The Act was passed in 1964, but did not take effect until January 1, 1965.

[10] An amendment in 1972, found at 16 U.S.C. 460*l*-6a(h), required the Bureau by name to submit annual reports concerning recreation fees.

[11] The formula provides each state with an initial share equal to all other shares but then provides additional money to states based on their total populations and the populations within Standard Metropolitan Statistical Areas.

dealing with the Secretary for purposes of this Act; (2) an evaluation of the demand for and supply of outdoor recreation resources and facilities in the State; (3) a program for the implementation of the plan; and (4) other necessary information, as may be determined by the Secretary.

The plan shall take into account relevant Federal resources and programs and shall be correlated so far as practicable with other State, regional, and local plans. Where there exists or is in preparation for any particular State a comprehensive plan financed in part with funds supplied by the Housing and Home Finance Agency, any statewide outdoor recreation plan prepared for purposes of this Act shall be based upon the same population, growth, and other pertinent factors as are used in formulating the Housing and Home Finance Agency financed plans.

From the 40% Federal portion, funds are allotted (section 7(a)):

(1) for the acquisition of land, waters, or interests in land or water as follows:

National Park System; Recreation Areas—Within the exterior boundaries of areas of the national park system now or hereafter authorized or established and of areas now or hereafter authorized to be administered by the Secretary of the Interior for outdoor recreation purposes.

National Forest System—Inholdings within (a) wilderness areas of the National Forest System, and (b) other areas of national forests as the boundaries of those forests exist on the effective date of this Act (January 1, 1965) which other areas are primarily of value for outdoor recreation purposes: Provided, that lands outside of but adjacent to an existing national forest boundary, not to exceed five hundred acres in the case of any one forest, which would comprise an integral part of a forest recreational management area may also be acquired with moneys appropriated from this fund: Provided further, that not more than 15 per centum of the acreage added to the National Forest System pursuant to this section shall be west of the 100th meridian.

Endangered Species and Threatened Species—For lands, waters, or interests therein, the acquisition of which is authorized under section 5(a) of the Endangered Species Act of 1973, needed for the purpose of conserving endangered or threatened species of fish or wildlife or plants.

Recreation at Refuges—For the incidental recreation purposes of section 2 of the Act of September 28, 1962 (76 Stat. 653; 16 U.S.C. 406 k-1); and

(2) for payment into miscellaneous receipts of the Treasury as a partial offset for those capital costs, if any, of Federal water development projects hereafter authorized to be constructed by or pursuant to an Act of Congress which are allocated to public recreation and the enhancement of fish and wildlife values and financed through appropriations to water resources agencies.

6.5 Other functions[12]

Water Resource Project Reviews

The Bureau of Outdoor Recreation evaluates water development proposals from recreation and aesthetic standpoints. The Bureau assesses how the project would meet recreation needs; estimates recreation use based on an optimum plan of development; estimates economic benefits which could result from the project's recreation opportunities; recommends how the area might be conserved or enhanced for recreation purposes; and determines the impact of the proposal on natural or scenic resources. The Bureau reviews environmental statements on proposed water resource projects to determine if the impact on recreation-related resources has been adequately assessed and if alternatives have been fully considered. The Bureau also reviews proposed water resource projects that require a Federal permit for construction. The reviews determine whether adequate consideration has been given to preserving

[12] These are concisely described in a Bureau publication, *The Bureau of Outdoor Recreation—Focal Point for Outdoor America* (1974) on which the following account is largely based.

natural, scenic, and recreational resources of the area; how the project could meet outdoor recreation needs; and to what extent the project conforms to state outdoor recreation plans.

Transportation Project Reviews

Under Section 4(f) of the Department of Transportation Act of 1966, as amended, the Secretary of Transportation cannot approve transportation projects that would disturb public parkland, wildlife refuges, or historic sites unless there is no "feasible and prudent" alternative. If such land is used, all possible planning must be undertaken to minimize environmental harm. The Act requires the Secretary of Transportation to work with the Departments of the Interior, Housing and Urban Development, and Agriculture in developing transportation programs with measures to protect the land's natural beauty. Within Interior, the Bureau of Outdoor Recreation coordinates the review and regulation of transportation projects that could have major environmental consequences.

Environmental Services

Bureau staff review recreation-related environmental statements prepared by other Federal agencies. The Bureau also prepares environmental statements on its own activities. To ensure adherence to legislative procedures and time frames established by the Council on Environmental Quality, the Bureau maintains an environmental quality manual and provides guidance to Bureau personnel on Federal environmental regulations.

Inventory and Budget Reviews

Periodically, the Bureau inventories Federal programs, policies, and functions related to outdoor recreation. "Federal Outdoor Recreation Programs," published in 1967, contained the results of an early survey. It described 263 programs of 93 governmental agencies, classified by type of program and assistance offered. In 1970, the survey and review was revised in "Federal Outdoor Recreation Programs and Recreation-Related Environmental Programs." This survey is updated every few years. Recreation planners, budget officials, and policy-makers need to know Federal expenditures for outdoor recreation. The Bureau occasionally consolidates and disseminates information on the recreation budgets of Federal agencies, and monitors interagency agreements affecting recreation programs.

The Surplus Property Program

The Bureau has been delegated the Secretary of the Interior's responsibility under P.L. 91-485 for conveying to state and local governments deeds for surplus real property owned by the Federal government. State and local units of government apply for such property for public park and recreation purposes, and the Bureau deeds the property to them with the approval of the General Services Administration. In the event of conflicting applications, the Bureau will determine which will receive the deed, and a field office periodically monitors the land to see that its use conforms with the terms of the deed. Surplus lands which become park and recreation areas must be open in part with facilities, leaving other portions in their undeveloped state with only nature trails added.

Recreation Resources Surveys

The Bureau studies areas to determine potential outdoor recreation uses, and recommends to the Secretary, other Federal Departments, Congress, the states, and local governments possible future action that could preserve and develop the recre-

ational potential. This general function includes the specific duty of studying potential additions to the Wild and Scenic Rivers System and potential additions to the National Trails System, where those additions are under the jurisdiction of the Secretary of the Interior (and not the Secretary of Agriculture).[13]

Special Activities

The Bureau represents the Secretary of the Interior at meetings of the Advisory Council on Historic Preservation. The Bureau also aids Departmental officials in the President's program to encourage development of appropriate Federal programs in areas adversely affected by closings or cutbacks in military bases or defense contracts.

In 1971, the Bureau published "Off-Road Recreation Vehicles," a Departmental task force report on off-road vehicle impact on Federal lands. Coordinated by the Bureau, the task force made recommendations that formed the basis for President Nixon's Executive Order 11644 which required Federal land-managing agencies to develop regulations controlling off-road vehicle use and to designate areas where off-road vehicles are permitted or banned.

The Bureau represents the Department in negotiations with the four major timber companies whose lands were included in the Redwood National Park under Public Law 90-545, 16 U.S.C. 79(a)-(j).[14]

[13]See Chapter Nine and Ten, respectively, for the requirements with respect to studying "potential additions" to these systems. The Bureau has been delegated the primary responsibility for making these required studies.

[14]The Bureau also provides planning services to Federal, state, and local recreation programs and the private sector through technical assistance publications, liaison work, and a clearinghouse file. The Bureau also works with the Bureau of Mines in reclaiming surface-mined land for recreation. See Technical Appendix 6(a).

6.6 *Structure*

The organizational structure[15] through which the Bureau carries out its functions consists of a central office in Washington, D.C., and seven regional offices. The Director is the chief executive of the Bureau and reports to the Secretary through the Assistant Secretary for Fish and Wildlife and Parks. Each regional office is headed by a Regional Director who reports to the Director.

The central office consists of the Director's office, which includes that of the Deputy Director, and 12 divisions and offices. The Director's office also contains (1) the Office of Communications, which is responsible for planning, organizing, and directing a nationwide public information program to improve public understanding and awareness of the policies and programs of the Department of the Interior and the Bureau of Outdoor Recreation. The office prepares, publishes, and disseminates reports, brochures, news releases, films, and other material relating to Bureau activities. And (2) the Office of Congressional Affairs which is responsible for providing a central source of information for Congressional inquiries; for furnishing material and other assistance to Members of Congress; and for legislative reporting and review and legislative project coordination.

The central office also contains the Assistant Director for Federal Programs and Planning. The Assistant Director's primary responsibilities are concerned with supervising four divisions which are summarized in the draft chapter of the Departmental Manual as follows:[16]

[15]Information on structure can be obtained in draft form (1967) from Chapter 2 of Part 148 of the *Department of the Interior Departmental Manual.* This material is somewhat out-of-date, but generally gives a good picture.

[16]Some of these descriptions appear under the jurisdiction of other offices in the draft manual, but reorganization of the Bureau has mainly resulted in a transfer of divisions rather than complete reshaping of the duties of particular offices.

(1) *Division of Cooperative Service* is responsible for administering a program for transferring surplus Federal real property compliance responsibilities for property transferred for historic monument purposes as well as for park and recreation purposes. Provides information, advice, and assistance to States, local subdivisions of government, other public authorities, and the private sector on all aspects of outdoor recreation. This is accomplished through an informational clearinghouse designed to collect and disseminate recreational information; assisting regional offices in establishing effective lines of communications with professional clientele in State and local governments, and private groups and individuals; and by conducting workshops on a variety of subjects affecting professionals in the field of outdoor recreation.

(2) *Division of Federal Land Acquisition* provides professional staff services in the review and evaluation of proposed acquisitions of land and water areas by Federal agencies from the Land and Water Conservation Fund. Reviews proposed reprogramming requests of such Federal agencies and makes recommendations to the Director thereon. Promotes the coordination of land acquisition programs of Federal agencies. Responsible for the coordination and control of all phases of the Redwood National Park land acquisition program. Plans, reviews, coordinates, and supervises land appraisal activities including the procurement of fee appraisals by contract. Represents the Bureau in negotiations, conferences, and meetings relative to the acquisition and transfer of land.

(3) *Division of Federal Programs* promotes a continual review of Federal programs relating to outdoor recreation activities and makes recommendations to coordinate more effectively outdoor recreation activities among the various Federal agencies. Provides guidance to public and private recreation agencies with respect to the Nationwide Outdoor Recreation Plan and is responsible for the implementation of recommendations contained in the Plan. The Division is also responsible for advising and consulting with representatives of the Department of Transportation with regard to developing transportation plans and programs to include measures to maintain or enhance the natural beauty of the lands traversed. Develops standards for establishment of user fees and coordination of user fee programs of the Federal agencies. Conducts, sponsors, and stimulates research in all aspects of outdoor recreation, including studies of human behavior as it relates to outdoor recreation. (Coordinates Bureau's involvement in international recreation. Assists Department of Defense in development of its recreation resources.)

(4) *Office of Environmental Affairs* is the Bureau's focal point for all environmental matters and carries out activities designed to assure quality control on all environmental statements prepared and/or reviewed by the Bureau. The Office is responsible for providing staff guidance to all Bureau units regarding environmental matters, (and) monitoring environmental interests of other Federal agencies, and private and public organizations. . . .

The Assistant Director for State Programs and Studies supervises three divisions at the present time. These divisions tend to have more specific authorities and tasks than, for example, the Division of Federal Programs. The Assistant Director's office itself is generally responsible for directing the Bureau's grants-in-aid program under the Land and Water Conservation Fund and for assisting states in developing State Comprehensive Outdoor Recreation Plans. The three divisions the Assistant Director supervises are described in the draft manual chapter as follows:[17]

(1) *Division of State Programs* is responsible for administering the Land and Water Conservation Fund by which Federal Funds are made available to States on a matching basis for recreation planning, land acquisition, and development; prepares the annual allocation of funds to States for the Secretary's approval; reviews project applications for conformity to State plans; and conducts compliance reviews of projects financed with matching Federal funds. In addition, the Division provides guidelines for the preparation and review of State Outdoor Recreation Plans, and evalu-

[17]See two previous footnotes.

ates and prepares recommendations for Bureau action on completed plans. An approved Plan is a pre-requisite for State participation in the Land and Water Conservation Fund. Emphasis is placed on ensuring that Federal plans and programs are considered in the State planning program, and that effective Federal-State relations are maintained in the process.

(2) *Division of Water Resources* conducts studies and reports on the recreation aspects of Federal water development programs and projects. Provides estimates of outdoor recreation use, evaluates benefits and costs, and determines the least costly alternative means of providing reasonably equivalent benefits, and other data pertinent to formulations and evaluation of projects for authorization by the Congress. Coordinates studies with other Federal agencies and with States and local agencies with a view toward securing requisite letters of intent to cost share and administer recreation at Federal water resource projects. Reviews reports and environmental statements on water resource developments prepared by other Federal agencies and by private interests requiring a Federal action, license, or permit.

(3) *Division of Resource Area Studies* is responsible for directing the development of plans, procedures, and methods for the proper conduct of the resource area studies program. These activities include carrying out Bureau responsibilities relating to studies of rivers and trails proposed for inclusion in the national systems; studies of recreation area proposals authorized by specific laws, Congressional resolution or Secretarial direction; review of wilderness and national recreation area proposals of other Federal agencies; and planning and technical assistance to governmental agencies and private interests in the conservation, use and development of recreation resources. A major phase of the resource area studies program involves providing urban planning and technical assistance in support of efforts to bring parks to the people by encouraging State and local governments to assume greater responsibilty for providing for local needs.

The Assistant Director for Management and Budget supervises three divisions: Personnel and Management; Budget and Finance; and Systems Management.

The regional organization of the Bureau is very important since a large part of the Bureau's function is to assist states financially and with various services. There are seven geographic regions, each with a Regional Director. Each regional office carries out responsibilities within its geographic area that are connected with all Bureau functions.

6.7 Funding and personnel

Two separate points must be covered in describing the funding of the Bureau of Outdoor Recreation. One is the direct appropriations to the Bureau itself for basic expenses of its operations. The other is the amount appropriated to the Land and Water Conservation Fund for distribution by the agency to other Federal agencies and to state governments. It is not possible to determine how much of these two amounts in any given year were spent for natural area activities.

Direct appropriations for Bureau operations fall into two categories: one for the Bureau's activities in administering the Land and Water Conservation Fund (these appropriations are segregated from the general Congressional appropriation to the fund) and the other for salaries for Bureau activities in connection with its responsibilities under the Outdoor Recreation Act (and certain other legislation). The figures from these two sources for fiscal years 1974 and 1975 are as follows:[18]

---

[18]Source: Personal communication with Bureau of Outdoor Recreation, Division of Finance and Budget, September 1975 (the figures have been rounded and do not include certain supplemental appropriations). See also the appropriation bills passed by Congress for the two years in question: P.L. 93-404 (August 31, 1974) and P.L. 93-120 (October 4, 1973).

	FY 74	FY 75
Land and Water Conservation Fund	5,545,000	6,580,000
Outdoor Recreation Act	4,696,000	5,380,000
	10,241,000	11,960,000

The amounts appropriated to the Land and Water Conservation Fund for distribution by the Bureau of Outdoor Recreation to other Federal agencies and to state governments are much larger than this. For example, for fiscal years 1974 and 1975, the combined allotments for the state portion of the fund were $65,767,000 and $179,880,000, respectively. The amounts allotted to Federal agencies for these same fiscal years can be summarized in a table:

	FY 1974	FY 1975
National Park Service	$910,000 (78,000,000)*	$80,154,000
Forest Service	3,973,000	30,884,000
Fish and Wildlife Service	0 (2,650,000)*	9,494,000
Bureau of Land Management	0 (1,194,000)*	500,000
Total	4,883,000	121,032,000

*In FY 1974 these appropriations were impounded by the Administration; the agencies carried over from FY 1973 and previous years unused Federal money.

The Bureau's personnel has expanded substantially since the Bureau's origin in 1963. The Bureau ended that year with about 125 employees. By 1969, it had about 500 employees, a level it has maintained, roughly, to the present.[19]

[19]Congress authorized 534 full-time positions for 1974 and 1975, but administrative ceilings on hirings kept the total employees working for the Bureau below that figure for those years. Source: Letter from the Bureau's personnel section to The Nature Conservancy, September 22, 1975.

B. Natural Area Activities

6.8 Natural areas and the history of outdoor recreation

It will be remembered that President Coolidge's original statement in 1924 referred to the Federal government's role with respect to "country recreation." Although the common term quickly became "outdoor recreation," the intention throughout the history of the movement has been to foster a relationship between the people of the United States and nature, or the natural environment in which people live.

This concern for nature is perhaps most vividly seen in the recommendations made by the Outdoor Recreation Resources Review Commission. These recommendations were based upon a foundation—a foundation which consisted of a proposed classification of outdoor resources. The classification system the commission proposed is this:

Class I. *High-density recreation areas*—areas intensively developed and managed for mass use.

Class II. *General outdoor recreation areas*—areas subject to a substantial development for a wide variety of specific recreation uses.

Class III. *Natural environment areas*—various types of areas that are suitable for recreation in a natural environment and usually in combination with other uses.

Class IV. *Unique natural areas*—areas of outstanding scenic splendor, natural wonder, or scientific importance

Class V. *Primitive areas*—Undisturbed roadless areas, characterized by natural, wild conditions, including "wilderness areas."

Class VI. *Historic and cultural sites*—sites of major historic or cultural significance, either local, regional or national.

It is striking that of the six classes proposed here only two are purely recreational in nature. The remaining four show concern for other values, and three—half of

the entire classification system—show specific concern with nature and the protection of nature. It must be recalled that this report was prepared from 1958 to 1962, almost a decade before environmental protection was formally adopted in a comprehensive way by the Federal government with the passage of the National Environmental Policy Act.

The Bureau's present classification system (described below in section 6.10) closely parallels the one recommended by the commission.

6.9 Natural areas and the Nationwide Outdoor Recreation Plan

One of the duties of the Bureau under the Outdoor Recreation Act is to prepare and maintain "a comprehensive nationwide outdoor recreation plan."[20] The first such plan, Outdoor Recreation—A Legacy for America, was completed by the Bureau in 1973 and transmitted to the Secretary of the Interior, and ultimately to the President and Congress.

Although somewhat muted, the plan retains some of the emphasis on natural areas present in the classification recommended by the Outdoor Recreation Resources Review Commission. The emphasis in the plan appears in the section entitled "Areas of Critical Concern." This section says (at p. 27):

> Some of America's natural resources need special consideration for their high recreation potential or their need to be protected. These are areas of great value to outdoor recreation on which uncontrolled development could result in irreversible damage to historic, cultural, or aesthetic values, or natural systems or processes. Examples include coastal zones and estuaries; shorelines and flood plains of rivers, lakes, and streams; islands; rare or valuable natural areas; and scenic or historic areas.

The plan then goes on to discuss some specific areas of critical concern, and it will be useful to review parts of this discussion.

The most important part, for present purposes, deals with "unique or valuable natural areas." The Bureau's discussion (at p. 39) of the subject is brief, but important:

> Natural areas may be categorized as follows: (1) those of a pristine nature which serve as prime examples of ecosystems or geological formations; (2) those of special value for education purposes; and (3) those used for nature appreciation by the casual observer, particularly areas of great natural beauty. Frequently, these natural areas are small—less than 100 acres in size—and are close to regions of dense population.
>
> A Directory of Research Natural Areas on Federal Lands of the United States of America, published in 1968 by a Federal Committee on Research Natural Areas, describes 336 protected natural areas ranging in size from 3 to 134,000 acres and located in 42 of the 50 States and in the Commonwealth of Puerto Rico. Efforts are currently underway to identify and designate additional areas with special attention directed to areas on nonfederal public lands and private holdings.
>
> The National Natural Landmarks program, administered under the authority of the Historic Sites Act (P.L. 74-292), provides for the identification and registration of natural area sites of outstanding significance which could be privately as well as publicly owned. If a site meets natural area criteria established by the National Park Service, and if the landowner agrees to manage the property in a manner that will preserve the site's integrity, it may be designated as a Registered Natural Landmark.
>
> While the program represents an important step forward in preserving natural areas, the protection it affords frequently is inadequate and the incentives it provides insufficient. The greatest drawback is lack of funds for acquisition and for payment to landowners for maintenance and management. Equally important is the need for protection of a site's integrity through broad land use planning and regulation authorities.

This discussion is followed by a series of *recommendations,* (at p. 39):

> The Federal Government will take the ini-

[20] 16 U.S.C. 460*l*-1(c).

tiative in achieving the goals of the National Natural Landmarks program by undertaking the identification and protection of nationally significant natural areas. To further the program's objectives, the Administration will seek enactment of legislation to provide recognition of the properties listed on the Registry of Natural Landmarks and to expand the Registry to include for recognition purposes areas of State and local significance.

The Department of the Interior will complete a program of identification and selection, and a plan for acquisition of those superlative areas needed for the Federal recreation estate.

States not now having a natural area preservation program should be encouraged to develop one. Special emphasis should be placed on protecting natural areas representative of those already greatly altered by man.

Private organizations should be encouraged to assist governmental agencies in the identification and classification of natural areas.

Natural lakes as well as natural land areas are also discussed (at p. 40):

The United States has about 250 fresh water lakes with surface areas of 10 square miles or more. Nearly 100 of these are in Alaska, and about 100 are in the five states of Minnesota, Wisconsin, Michigan, New York, and Maine. All of the natural lakes with surface areas of 10 or more square miles are located in 23 States.

In addition to the natural fresh water lakes are a number of significant natural saline lakes. The largest and best known of these are the Great Salt Lake in Utah; Pontchartrain in Louisiana; Salton Sea, Mono, and Eagle in California; Walker in Nevada; and Goose in Oregon and California. These lakes, fresh and saline alike, are rich in a variety of natural, commercial, recreation, and aesthetic resources which are being diminished by commercial and residential pollution.

There is a need to identify and protect for public use and enjoyment those lakes which have significant values and which should be managed for outdoor recreation, wildlife conservation, and scenic beauty. Supplemental to this is the need to develop research programs to examine the many aspects of natural phenomena in natural lakes and lake areas.

And this recommendation follows (also at p. 40):

There is a responsibility for States to initiate comprehensive inventories and analyses of lakes to identify more definitively those with high recreation, natural, and fish and wildlife values. Supplemental programs to protect these values also should be established.

Wetlands are discussed separately (at p. 36):

When wetlands are drained, filled, diked, or otherwise altered, the Nation's wildlife and recreation resources suffer long-term effects in species survival and loss of valuable recreation space. An overall strategy is needed to prevent continuing loss of valuable wetland resources.

At the beginning of the Nation's history, there were an estimated 127 million acres of wetlands. The last comprehensive wetland inventory was conducted in the 48 contiguous States during the mid-50's and revealed only about 80 million acres, of which 74.4 million had some value to waterfowl. This decline may reflect the problem of competing demands for scarce land and the need for a comprehensive land use program.

The major efforts to inventory and manage wetlands thus far have been related almost entirely to waterfowl management. The tremendous variety of recreational opportunities and the recreation experiences annually enjoyed by millions of people in wetlands areas have been only peripheral considerations.

This discussion is followed by a set of recommendations (also at p. 36):

To more rationally plan for the acquisition and management of wetlands, a comprehensive inventory will be undertaken by the Fish and Wildlife Service in cooperation with appropriate Federal and State agencies. Based on this inventory and on consultations with Federal and State agencies, the Department of the Interior will develop a plan for protecting those wetland areas of highest wildlife and recreation value with emphasis on methods that do not require public acquisition. The Department will determine the desirability and feasibility of reestablishing wetlands in

areas with high wildlife or waterfowl potential.

To encourage interim retention and protection of remaining wetlands, the Administration will seek Congressional approval of legislation which would:

(a) Make development of coastal wetlands less attractive from a tax standpoint by:
   1) permitting only a straight line method of depreciation;
   2) requiring gains on the scale of improvements to be treated generally as ordinary income;
   3) disallowing deductions for draining, dredging, or filling; and
   4) providing that deductions for interest and taxes attributable to improvements may not exceed income therefrom.

(b) Allow income tax deductions for charitable contributions of certain less-than-fee interests in real property for conservation purposes.

States which do not have wetlands preservation programs should enact legislation modeled after that proposed above. Such complementary actions are necessary to realize full protection of wetlands.

Other natural areas discussed are: (1) shorelines, beaches, and estuaries; (2) trails; (3) islands; (4) rivers and streams, (5) wilderness; and (6) arid and semiarid lands. (See pp. 27-48.)

6.10 *Natural areas and the Land and Water Conservation Fund*

The Bureau's grants-in-aid which are made from the fund are made according to rules set down in the Bureau's *Outdoor Recreation Grants-in-Aid Manual.*[21] The manual calls for states to draw up a Statewide Outdoor Recreation Plan (known generally as a SCORP or SCORP plan). The "basic requirements" (see Chapter 2 of the manual) include an "outdoor recreation inventory." The manual says (at 630.2.5D(2)) that "States may utilize the Bureau of Outdoor Recreation Classification System . . . or design an alternative system which facilitates the analysis of supply data."

The Bureau's classification contains the same categories exactly as were contained in the Outdoor Recreation Resources Review Commission's recommended system, with the exception that Class IV, "Unique natural areas," has been renamed "Outstanding natural areas." Since natural areas are the primary concern here, there is no need to reproduce the manual sections on high density recreation areas, general outdoor recreation areas, and historic and cultural sites, but the remaining sections are of interest for format as well as for content:[22]

Class III: *NATURAL ENVIRONMENT AREAS*

1. *Class Examples*
   Portions of the Allagash country of northern Maine and cutover areas in northern Lake States. Public lands of this category often adjoin outstanding natural Class IV, and primitive Class V areas in national and State parks and forests as in the case of the Grand Teton National Park and the Superior National Forest.
2. *Physical Characteristics*
   Varied and interesting land forms, lakes, streams, flora and fauna within attractive natural settings.
3. *Location*
   Usually more remote from population centers than Class I and II areas and occur throughout the country and on an acreage basis are the largest class in both public and private ownership.
4. *Activities*
   Extensive weekend and vacation types dependent on quality of the natural environment, such as sightseeing, hiking, nature study, picnicking, camping, swimming, boating, canoeing, fishing, hunting,

[21] The latest edition of the complete manual was approved in Release No. 125 by the Director and was made effective by that release as of March 15, 1974. Some revisions have been subsequently made.

[22] See Illustration No. 1 to the "Basic Requirements" section of the manual for the complete classification system.

and mountaineering. The primary objective is to provide for traditional recreation experience in the out-of-doors, commonly in conjunction with other resource uses. Users are encouraged to enjoy the resource "as is," in natural environment.

5. *Developments*
Access roads, trails, picnic and campsite facilities and minimum sanitary facilities. There may be other compatible uses of the area such as watershed protection, water supply, grazing, lumbering, and mining provided such activities are managed so as to retain the attractiveness of the natural setting.

6. *Responsibility*
Federal, State, or local governments, including regional park and recreation authorities and private ownerships.

Class IV: *OUTSTANDING NATURAL AREAS*

1. *Class Examples*
The scenic sites and features in this class are limited in number and are irreplaceable. They range from large areas within Yosemite Valley and the Grand Canyon to smaller sites such as Old Faithful in Yellowstone National Park; Old Man of the Mountain, N.H.; and the Bristle Cone Pine Area in the Inyo National Forest, Calif.

2. *Physical Characteristics*
Outstanding natural features associated with an outdoor environment that merit special attention and care in management to insure their preservation in their natural condition. Includes individual areas of remarkable natural wonder, high scenic splendor, or features of scientific importance. One or more such areas may be part of a larger administrative unit, such as a national park or forest.

3. *Location*
Any place where such features are found.

4. *Activities*
Sightseeing, enjoyment, and study of the natural features. Kinds and intensity of use limited to the enjoyment and study of the natural attractions so as to preserve the quality of the natural features and maintain an appropriate setting. May be visited on a day, weekend, or vacation trip.

5. *Developments*
Limited to minimum development required for public enjoyment, health, safety, and protection of the features. Wherever possible, access roads and facilities other than trails and sanitary facilities should be kept outside the immediate vicinity of the natural features. Visitors should be encouraged to walk to the feature or into the area when feasible. Improvements should harmonize with and not detract from the natural setting.

6. *Responsibility*
Public agencies (Federal, State, and local), and private landowners, with assistance from public agencies, who may identify, set aside, and manage natural features. Generally, the Federal Government assumes responsibility for the protection and management of natural areas of national significance; and local government and private owners for areas of primarily local significance.

Class V: *PRIMITIVE AREAS*

1. *Class Examples*
This class will be composed of two types of areas:

V-A includes only those areas designated under the provision of P.L. 88-577, the Wilderness Act (78 Stat. 890; 16 U.S.C. 1131). Examples:

Bob Marshall Wilderness, Flathead and Lewis & Clark National Forests, Montana; Great Gulf Wilderness, White Mountain National Forest, N.H.

V-B includes all other areas having the characteristics of the class. Examples:

Sawtooth Primitive Area, Boise, Sawtooth and Challis National Forests, Idaho; the undeveloped portion of Anza Borrego Desert State Park, Calif.

Note: Some Federal lands may change from V-B to V-A under the provisions of the Wilderness Act.

2. *Physical Characteristics (V-A and V-B)*
Extensive natural, wild and undeveloped areas and setting essentially removed from the effects of civilization. Essential characteristics are that the natural environment has not been disturbed by commercial utilization and that the areas are without mechanized transportation. The area must

be large enough and so located as to give the user the feeling that he is enjoying a "wilderness experience." The site may vary with different physical and biological conditions and may be determined in part by the characteristics of adjacent land. Size may vary in different parts of the country. These areas are inspirational, esthetic, scientific, and cultural assets of the highest value.

3. *Location*
   V-A—Wherever established by law.
   V-B—Usually remote from population centers.
4. *Activities (V-A and V-B)*
   Those activities that are usually done without or with a minimum of mechanized transportation or permanent shelter or other conveniences.
5. *Developments*
   V-A—As prescribed in Wilderness Act.
   V-B—Usually no development of public roads, permanent habitations or recreation facilities except trails. No mechanized equipment allowed except that needed to control fire, insects and disease. Commercial use of the area that may exist at the time of establishment should be discontinued as soon as practical.
6. *Responsibility*
   V-A—Federal
   V-B—Usually Federal but may also be by State agencies or private landowners (such as the high mountain country held by large timber and mining companies).

6.11 Illustrative examples:

(a) The Tennessee Heritage Program

The Bureau makes grants to states for outdoor recreation planning, as well as for acquisition or developments of recreation areas. Planning for the inventory and protection of a state's natural areas is recognized by the Bureau as a legitimate subject for assistance.

An example of such assistance occurred in 1975 when the Bureau funded the Tennessee Heritage Program. Funding was on a matching basis. In this case, the state provided funds of its own from general revenues plus a gift from a private foundation to use as the basis for the Bureau's matching grants. In other words, the Bureau provided funds sufficient to match the total of the funds appropriated by the state from its own treasury plus funds donated to the state by a private foundation. The purpose of the Bureau's assistance was to enable the state Department of Conservation to meet its own requirement (contained the state's Natural Areas Preservation Act) for annual natural area planning and to enable the state generally to plan for the role of natural areas in the development of its Statewide Outdoor Recreation Plan.

The "Heritage Program" which the Bureau helped the state of Tennessee to undertake is a joint venture between the state and a private conservation organization, The Nature Conservancy. The Conservancy describes the concept of a natural heritage program in its current "draft technical discussion." The program is concerned with inventorying and protecting natural areas, and it begins:

> by developing a classification of the elements of diversity throughout the state. The classification serves as a skeletal structure for organizing natural landscape information so that dissimilar factors are distinguished and similar ones are grouped to facilitate direct comparison. The units of classification may be thought of as "targets" for both data collection and protection activity. The classification system is a working one, and retains the flexibility to be changed as need dictates. Individual categories may be added as they are identified, or preexisting categories may be subdivided. Whole new classes of elements may be added, such as soil types or historical and cultural elements.
>
> This classification system insures that nothing is overlooked in the process of inventory. It is also the basis for developing the next significant innovation within the system, which is to break the natural landscape down into its component elements. The purpose of doing so is to lump "apples with apples" to

facilitate the analysis of relative quality based on real objective data rather than subjective and abstract judgments. Previous natural areas inventories (and most current ones) have been designed to operate on a site-by-site basis, which presents several difficulties. One is the difficulty of establishing ecological boundary conditions, which is no simple matter. Another is that sites are nominated on an overall, simple "niftiness" basis rather than as a result of systematic consideration of needs. Most serious of all, every individual site is in fact unique, either because it possesses unduplicated attributes and/or because it is a unique mix of elements. For this reason, rigorous comparison becomes impossible because of the dominance of imcommensurable factors. The Heritage approach circumvents all of these difficulties . . . the landscape is treated in terms of individual occurrences of generalized element types, an approach which gives the system four distinct capabilities which are directly applicable to an objective assessment of relative criticality.

Overall criticality is dependent first on the criticality of individual elements within the state, then on the qualities of the individual occurrences of a given element, and finally on the qualities of "ensembles" of occurrences. In other words, site identification becomes a result of rigorous analysis of fundamentally similar ecological entities. Reflecting the logic of this assessment process, the system is capable of providing (1. an index of ambient rarity of elements (i.e., which elements have the fewest significant occurrences); 2. the status of current land protection in terms of elements (which occurrences are on already protected tracts within the state); 3. the ability to objectively compare the qualities of the recorded occurrences for individual elements (giving preference to those which are rarest and least protected); and 4. the ability, through mapping processes, to determine the spatial relationship between various element occurrences so as to select priority ensembles (sites) for efficient protection efforts.

Another important part of Heritage programs is to plan for preservation/protection of the critical areas identified by the inventory. The Conservancy has considerable experience in this area, not just in direct acquisition, but also in the full spectrum of protection techniques and programs in use across this nation. The Conservancy constantly up-dates knowledge in this field and is often called upon for advice from government and other groups. In the Heritage program context, the Conservancy would explore the current situation in the state, identify strengths and weaknesses, and after close consultation with attorneys, government officials, and other local experts, propose alternative model legal, legislative, or administrative actions which would, if adopted, provide protection for the identified areas.

The relationship of the state government to the heritage concept as well as the perpetual nature of the overall program process is explained by the Conservancy as follows:

> The usual approach is to hire and train an individual to become the program coordinating staff within the Heritage area. It is the Conservancy's goal for this individual to transfer to government employment (or already be an employee) after the initial phases so the state will retain the capabilities generated within the program. A very important part of the Heritage concept is for inventory and preservation operations to continue within the Heritage state so that the ecological data base may be incrementally expanded and improved and so that the process can *continuously* evolve in a fashion required by the dynamics of alteration of uses of land within the states.
>
> Therefore, it is extremely important that the state not look on this joint proposal as an end in itself to be terminated when the product is "completed." There must be a recognition by both the state and the Conservancy of the necessity for funding and operational support for continued internal effort. At the same time it is the Conservancy's purpose to engender within the state the full range of capabilities required for systems maintenance. In this way the Heritage program can help to create a broader base of professionals actively specializing in this field, and by helping to increase the state's own capability, the Conservancy can enhance the basis for coordination and operational efficiency in the state.

The program outlined here seems to comport with an important mandate contained

in the Bureau's *Grant-in-Aid Manual,* Chapter 1, part 630.1.2C:

> *Planning Program.* A State outdoor recreation plan should not be viewed as a static document, but rather the record of findings and decisions resulting from an ongoing planning process. The plan should be flexible and designed to be modified and updated in response to changing development patterns, socio-economic conditions, and other factors which influence the demand for, and the provision of recreation opportunities.

(b) Savage Gulf, Tennessee

Savage Gulf, an outstanding representative of the mixed-mesophytic region of the eastern deciduous forest is an example of an area acquired by a state agency with the assistance of funds administered by the Bureau of Outdoor Recreation. The area is being acquired by the state of Tennessee by matching its own funds with those from the Land and Water Conservation Fund. The total funding by the Bureau of Outdoor Recreation approved to date for this project is $841,861.

Acreage: Savage Gulf contains 11,200 acres.

Elevation: The elevation ranges from approximately 1,200 feet to 1,960 feet.

Geographical features: Precipitous sandstone cliffs lie at the top of the gorge. Below the base of the cliffs talus slopes form a series of natural terraces to Savage Creek at the bottom. The word "gulf" is Old English, meaning "a deep hollow chasm, or abyss," and is commonly used by the local people for such places.

Flora and fauna: The gorge contains 1,000 to 1,500 acres of virgin mixed-mesophytic forest. Some 10,000 acres of surrounding forest land has been selectively logged and is in late successional stages of pine and second growth mixed hardwoods.

Birds reported in the area include: the black-billed cuckoo *(Coccyzus erythropthalmus),* Bachman's sparrow *(Aimophila aestivalis),* Bewick's wren *(Thryomanes bewickii),* yellow-throated vireo *(Vireo flavifrons),* bluebird *(Sialia sialis)* and 17 species of warblers, including the blue-winged warbler *(Vermivora pinus).* Also present is the endangered red-cockaded woodpecker *(Dendrocopos borealis).*

Uses: Savage Gulf is to be used only for scientific and educational purposes, however, hiking and other non-consumptive types of recreational uses will also be allowed.

Designation: Savage Gulf became a National Natural Landmark on August 25, 1971.

Protections afforded: A full-time employee of the state is stationed at Savage Gulf to manage and protect the area.

Management: The area is to be managed so as to maintain its very high degree of natural integrity. Collecting of fauna and flora is allowed only by permit. No picnicking or camping is allowed.

(c) Everglades National Park, Florida

The third largest of the National Parks, Everglades is one of the most unusual areas in the United States. The Park preserves about seven percent of the immense sweep of Everglades landscape found only in South Florida. The "Everglades," occurring also outside the Park, was once a wide grassy area constituting a sixty mile wide river less than six inches deep when full, and bone dry during the dry season. The bottom of the Everglades is covered with sawgrass *(Mariscus jamaicensis),* rushes *(Scirpus* spp.) and scattered clumps of trees, in which sweet bay *(Magnolia virginiana)* and red bay *(Persea borbonia)* are prominent components.

Two thirds of the Park is part of the marine-estuarine system of the South Florida coast. Greatly influenced and shaped by the sea, the Park contains one of the largest marine preserves in the National Park System. The significance of Ever-

glades National Park is found in its diversity and vulnerability. Controlled more than anything by the dynamics of change, the area is both natural and man-made.

Acreage: The Everglades National Park covers an area of 1,400,533 acres.

Elevation: Elevation ranges from approximately 12 feet in the northeastern part of the Park to sea level.

Geological features: Everglades has very little relief and during part of the year much of it lies under water. The main features besides the expansive everglades are the hardwood hammocks which grow on small elevations only a few inches above the general level of the terrain, and cypress heads which are associations of cypress trees growing in slight depressions from the general level of the terrain. These hammocks and heads are formed of outcroppings of limestone, the remains of ancient beaches, ridges or marl, or the shell mounds built long ago by Indians. The highest ground is a limestone ridge which marks the eastern rim of the Everglades. At most, this ridge rises a little more than twenty feet above sea level but within the Park its greatest height is seven feet. For the most part the ridge is composed of bare limestone. The pine trees on the ridge grow out of holes in the solid rock which contain pockets of soil. These holes, called sinks or solution holes, are formed by the leaching action of acid on the soft limestone. This acid is produced in the process of decaying organic matter.

Flora and fauna: There are four primary terrestrial biotic communities within the Everglades. They are the hardwood hammocks, cypress heads, mangrove swamps and the everglades themselves. In addition, along the southern and western edge of the Park, there is the marine community; mostly in water averaging 12 to 15 feet in depth. In these biotic communities a few rare and endangered species of orchids and air plants exist that are found nowhere else in the continental United States.

Nearly all of the native species of semi-tropical Florida are found in the Park. It is an important nesting, feeding and wintering area, as well as a resting place for birds migrating to and from Central and South America. Species exist in the Everglades that exist nowhere else, ten of which are on the rare and endangered species list of the Fish and Wildlife Service. They are: the Florida panther *(Felis concolor coryi),* West Indian manatee *(Trichechus manatus),* American alligator *(Alligator mississipiensis),* American crocodile *(Crocodylus acutus),* brown pelican *(Pelecanus occidentalis),* Florida Everglades kite *(Rostrhamus sociabilis),* southern bald eagle *(Haliaeetus leucocephalus),* Cape Sable sparrow *(Ammospiza mirabilis),* Arctic peregrine falcon *(Falco peregrinus),* and red-cockaded woodpecker *(Dendrocopos borealis).* The State of Florida recognizes additional endangered species in this area. They are: the Florida great white heron *(Ardea occidentalis),* Florida sandhill crane *(Gres canadensis),* roseate spoonbill *(Ajais ajaja),* wood ibis *(Mycheria americana),* eastern reddish egret *(Dichromanassa rufescens),* Florida mangrove cuckoo *(Coccyzus minor),* and Florida water rat *(Neofiber alleni).*

In total, the known flora and fauna in this general area includes 52 species of aquatic plants, 60 species of terrestrial plants, 36 species of mammals, 206 species of birds, 52 species of reptiles, 17 species of amphibians, 61 species of fish and three species of shellfish.

Uses: The primary uses of Everglades National Park are hiking, bird-watching, boating and fishing.

Designation: An Act of May 30, 1934 (45 Stat. 816) authorized the establishment of the Park when title had been vested in the United States. The Park was established December 6, 1947, with the passage of 16 U.S.C. 410.

Protection: The Act establishing Everglades National Park has strong protective language. Part of it reads as follows:

The said area or areas shall be permanently

reserved as a wilderness, and no development of the project or plan for the entertainment of visitors shall be undertaken which will interfere with the preservation intact of the unique flora and fauna and the essential primitive natural conditions now prevailing in this area . . .[23]

A wilderness proposal of 1,378,400 acres of the Park is now pending in Congress. If this area is designated wilderness it would mean that almost all of the Park would be afforded this further protection.

Protection problems: As stated earlier in the introduction to this example, the Everglades is both natural and man-made. It is partly man-made due to the extensive history of digging, draining and diking in and around the Park area.

Such activities have been undertaken for purposes of creating land for the development of farms and towns, for flood control and for water supply. These problems still exist and continue to pose a threat to the integrity of Everglades National Park.

Management: Everglades is in the Park Service natural area management category. The following are the general management objectives for the Everglades National Park:

1. Obtain necessary staff, funds and facilities through proper programming to operate all park programs at prescribed standards on a year-round basis.
2. To regulate visitor use as necessary to preserve intact the flora and fauna and to adequately protect the park visitor.
3. Establish and maintain cooperative efforts with other Federal, State and local agencies directed toward the control of outside influences which may adversely affect the intact preservation of flora, fauna and other natural resources of the park.
4. In concert with professional planners, develop management, maintenance, visitor and other attendant facilities in the glades, mangrove and Gulf Coast Districts required to assure maximum benefit and enjoyment of visitors and to insure essential primitive natural conditions of the park within these districts.
5. Limit concession facilities at Flamingo to present commitments. Improve operation of these facilities to prescribed service standards for concession operations.
6. Acquire in fee simple all private lands within the boundaries of the park.
7. Obtain a secession of exclusive jurisdiction from the State of Florida over all lands and waters within the exterior boundaries of the park which have been acquired or are hereafter acquired, which have not been included in a previous cessation of jurisdiction.
8. Improve public and community relations through a more active program of participation in local community affairs, particularly in Dade, Collier and Monroe Counties areas.[24]

Contact:

Park Superintendent
Everglades National Park, Box 279
Homestead, Florida 33030

C. Information and Bibliography

6.12 Key information contacts

Director's Office
Bureau of Outdoor Recreation
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5741

Office of Communications
Bureau of Outdoor Recreation
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5726

Assistant Director for Management and Budget
Bureau of Outdoor Recreation
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5475

[23] 16 U.S.C. 510c.

[24] *Management Objectives, Everglades National Park,* May 25, 1972, pp. 10-11.

Assistant Director for Federal Programs and Planning
Bureau of Outdoor Recreation
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-7375

Division of Land Acquisition
Bureau of Outdoor Recreation
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-7665

Division of Federal Programs
Bureau of Outdoor Recreation
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5971

Assistant Director for State Programs and Studies
Bureau of Outdoor Recreation
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-7801

Division of State Programs
Bureau of Outdoor Recreation
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-7801

6.13 Bibliography

Bureau of Outdoor Recreation. *Coordination of Federal Outdoor Recreation Assistance Programs.* Washington, D.C.: U.S. Department of the Interior, 1968.

Bureau of Outdoor Recreation. *Focal Point for Outdoor America.* Washington, D.C.: U.S. Department of the Interior, 1974.

Bureau of Outdoor Recreation and the School of Natural Resources, University of Michigan. *National Conference on Outdoor Recreation Research.* Washington, D.C.: U.S. Department of the Interior, 1963.

Bureau of Outdoor Recreation. *Outdoor Recreation—A Legacy for America.* Washington, D.C.: U.S. Department of the Interior, 1973.

Citizens' Advisory Committee on Recreation and Natural Beauty. *Community Action for Natural Beauty.* Washington, D.C.: U.S. Government Printing Office, 1968.

Fitch, Edwin M. and John F. Shanklin. *The Bureau of Outdoor Recreation.* New York: Praeger Publishers, 1970.

Outdoor Recreation Resources Review Commission. *Outdoor Recreation for America, A Report to the President and Congress,* Washington, D.C.: U.S. Government Printing Office, 1962.

President's Council on Recreation and Natural Beauty. *From Sea to Shining Sea.* Washington, D.C.: U.S. Government Printing Office, 1968.

President's Recreation Advisory Council. *General Policy Guidelines for Outdoor Recreation,* (circular No. 2). Washington, D.C.: U.S. Government Printing Office, 1964.

Senate Document No. 158 (70th Congress, 1st Session). *National Conference on Outdoor Recreation.* Washington, D.C.: U.S. Government Printing Office, 1928.

Udall, Stewart. *The Quiet Crisis.* New York: Holt, Rinehart & Winston, 1963.

6.14 List of technical appendices

(a) *Department of the Interior Departmental Manual.* Bureau of Outdoor Recreation. Washington, D.C.: U.S. Department of the Interior, Chapter 1, Part 148, December 1, 1976.

Chapter Seven:

Department of Defense

A. Objectives and Programs

7.1 Overview and framework

The Department of Defense[1] holds about 31 million acres of land within the United States, an area larger than the Commonwealth of Virginia and almost as large as that under the control of the United States Fish and Wildlife Service. The land is held primarily for military purposes or, in the case of the Army Corps of Engineers, for certain civil works projects. The vast majority of Defense's land is situated in rural areas, and much is either natural area or unimproved open space. It is mainly this fact and the immense size of Defense's landholdings which justify an examination here of that Department's protected natural areas systems.

Defense has adopted the concept of multiple use-sustained yield as its guiding land management philosophy. But unlike the United States Forest Service, the agency for which the Multiple-Use Sustained-Yield Act was enacted, Defense has developed no land use classification to parallel the Primitive Area or Special Interest Areas classifications.[2] The Wilderness Act, which directed the U.S. Forest Service the U.S. Fish and Wildlife Service, and the National Park Service to inventory their lands for Wilderness Areas did not apply to Defense.[3] As a result, there has been no systematic effort undertaken to identify, designate, and protect natural areas on all Defense-held lands. Only the Army Corps of Engineers, at its Water Resource Development Projects, has classified areas as Natural Areas or Fish and Wildlife Areas. The action that has been taken in this area on military lands has been on an *ad hoc* basis, and consequently varies from installation to installation.

This *ad hoc* approach makes it difficult to gain an overall perspective on Defense's natural area programs, particularly in quantitative terms, but individual programs can be investigated and certain interesting examples are worthy of attention.

The acreage held by Defense has been analyzed as follows:[4]

Table 1

Real Property Held by the Department of Defense in the United States

	Number of Installations	Urban (Acres)	Rural (Acres)	Total
Dept. Army	1,279	820,270.0	10,193,116.0	11,013,386.0
Dept. Navy (including Marines)	681	1,816,187.7	1,753,433.1	3,569,620.8
Dept. Air Force	2,145	36,463.0	8,315,115.0	8,351,578.0
Corps of Engineers	1,193	58,463.5	7,742,781.0	7,801,244.5
Total—Defense	5,298	2,731,384.2	28,004,445.1	30,735,829.3

[1]The Department contains the Armed Services—Army, Navy, and Air Force—and the Army Corps of Engineers. The Corps performs non-military as well as military functions and is therefore discussed separately.

[2]For further information on the Forest Service, see Chapter Five.

[3]The Act does not exclude any agency's, even Defense's, lands from possible entry into the Wilderness System; however, only the agencies mentioned were directed to make inventories. For further information on the Wilderness System, see Chapter Eight.

[4]General Services Administration. *Inventory Report on Real Property Owned by the United States Throughout the World as of June 30, 1974* (Washington, D.C.: Government Printing Office, 1975), Appendix 1, Tables 1, 2, and 7, pp. 39, 44-45, 61.

This total acreage can further be broken down as follows by service and predominant usage.[5]

As the figures in Table 2 indicate, the Defense Department holds land primarily for military and military support purposes, and in the case of the Army Corps of Engineers primarily for flood control and navigation, and power development and distribution purposes. Only the Corps is shown by the General Services Administration's *Inventory Report on Real Property Owned by the United States throughout the World* as dedicating any land, 50,697.7 acres, predominantly to forest and wildlife uses. It would, however, be inaccurate to evaluate Defense's natural area policies and programs on this basis alone. For while natural area management is clearly incidental to the major mission of any given installation, all Defense-held land is subject to the conservation policies enunciated in Defense Directive 5500.5, "Natural Resources—Conservation and Management," May 24, 1965. This document, which implements all relevant Executive Orders and Acts of Congress, recognizes the responsibility which falls on Defense as a trustee of Federal land:

Table 2

Real Property Held by Defense in the U.S.
By Service and Predominant Usage

Predominant Usage	Dept. Army (Acres)	Dept. Navy/ incl. Marines (Acres)	Dept. Air Force (Acres)	Corps of Engineers (Acres)	Total Defense (Acres)
Forest & Wildlife	0	0	0	50,697.7	50,697.7
Parks & Historic Sites	0	0	0	397.2	397.2
Office Building	0	0	0	112.1	112.1
Military (excluding Airfields)	9,913,950.0	1,295,240.0	6,902,329.0	0	18,111,519.0
Airfields	67,450.0	796,532.1	1,430,900.0	0	2,294,882.1
Harbor & Port	21,871.0	0	0	1,900.3	23,771.3
Power Development & Distribution	0	0	0	715,035.6	715,035.6
Reclamation & Irrigation	0	0	0	18,541.2	18,541.2
Flood Control & Navigation	0	0	0	7,012,782.2	7,012,782.2
Institutional	427,678.0	859.8	0	0	428,537.8
Housing	0	0	0	4.2	4.2
Storage	340,906.0	15,820.0	0	142.9	364,325.0
Industrial Research & Development	45,641.0	0	0	71.4	45,712.4
Other	0	0	0	1,577.4	1,577.4
TOTAL	**11,013,386.0**	**3,569,620.8**	**8,351,578.0**	**7,801,244.5**	**30,735,829.3**

[5] *Ibid.*, Appendix 1, Table 11, pp. 72-81.

> The Department of Defense, as an important occupier of Federal lands, has an obligation to the American people to act responsibly and effectively in conservation management *and environmental protection* including the duty to restore, improve, develop and conserve through wise-use, the renewable natural resources (of the lands and waters) *of forests, fish and wildlife, soil and water, and grasslands on the lands and waters* under military control. The conservation programs required by this Directive and the military mission need not, and shall not, be mutually exclusive.[6]

Defense personnel at all echelons of command are instructed to support national conservation policies and programs in accordance with the directive:

> Intelligent and sympathetic understanding of natural resources, natural beauty, and recreation problems, and the relationship and responsibility at all Department of Defense echelons to such problems, must be an important and identifiable function of command management.[7]

In furtherance of the policies outlined in this directive the various services have issued instructions to their own installations.[8] Relevant documents include the following:

Department of the Army:
Army Regulation 420-74, "Natural Resources—Land, Forest, and Wildlife Management," June, 1966. Technical Manual 5-634, "Woodland Management," April, 1963.

Army Corps of Engineers:[9]
ER 1120-2-400, "Investigations, Planning, and Development of Water Resources: Recreation Resources Planning," November 1, 1971. ER 1130-2-400, "Project Operation: Recreation-Resource Management of Civil Works Water Resource Projects," May 28, 1971. ER 1130-2-406, "Lakeshore Management at Civil Works Projects," December 13, 1974.

Department of Navy:
SECNAV Instruction 6240.6D, "Department of the Navy Environmental Protection Program," January 31, 1975 (applicable to Marine Corps). OPNAV Instruction 6240.3D, April 24, 1975.

Marine Corps:
MC Order P11000.8A, "Real Property Facilities Manual, Vol. V, Environmental Management," April 7, 1975. MC Order 110015.4, "Conservation of Endangered Species," January 28, 1975.

Department of the Air Force:
AF Manual 126-1, "Conservation and Management of Natural Resources," February 22, 1972.

The keystone of Defense's natural resource conservation management policies are the twin concepts of multiple-use and sustained-yield as defined in the Multiple-Use Sustained-Yield Act of 1960 (16 U.S.C. 528). Under this concept resources uses must be planned and coordinated to achieve a predetermined objective. Multiple use management requires the adjustment, modifications, and manipulation of resources in time, intensity, and place.[10] One natural resource use may never arbitrarily exclude another natural resource

---

[6] Department of Defense Directive 5500.5, "Natural Resources—Conservation and Management," May 24, 1965, p. 2. (See Technical Appendix 7(b)). Words in italics are from draft updating the directive; words in parenthesis are deleted.

[7] *Ibid.*, p. 3.

[8] It should be noted that although the directive now in effect was issued in 1965, the majority of service instructions and manuals which implement it have been revised since that date and incorporate the spirit and imperatives of all subsequent environmentally significant legislation. Directive 5500.5 is itself in the process of revision. The draft bears the imprint of all relevant legislation, most significantly that of the National Environment Policy Act of 1969 and of the Endangered Species Act of 1973. All quotations from the draft are in italics, it being understood that the wording does not reflect the final and official Department of Defense pronouncement on the subject. They are included as a means of illustrating possible trends and directions.

[9] The Corps is not bound by Directive 5500.5, but documents relevant to Corps natural area activities are listed here with other relevant documents for convenience.

[10] Air Force Manual 126-1, "Conservation and Management of Natural Resources," February 22, 1972, Ch. 1, pp. 1-2.

use. (For further discussion multiple-use sustained-yield, see section 5.1.)

While the Multiple-Use Sustained-Yield Act applies only to the Forest Service, Defense, at its own discretion, has instructed that, within the limitations of the overriding military mission, all installations are to be managed so as to:

1. Protect, conserve, and manage the watersheds and natural landscapes, the soil, the beneficial forest and timber growth and the fish and wildlife as vital elements of an optimum natural resources program.
2. Utilize and care for natural resources in the combination best serving the present and future needs of the United States and its people.
3. Provide for the optimum ecological development of land and water areas and access thereto in accordance with Section V (Access to Military Lands and Waters). Multiple use, by no means an assemblage of single uses, is defined, within the meaning of this Directive, as a conscious, coordinated management of the resources, each with the other, without impairment of the productivity of the land and water.[11]

Thus aside from the military and military support activities dictated by the mission of the installation, other co-existing uses are soil and water conservation, forestry, fish and wildlife management, and public outdoor recreation.

7.2 *The Armed Services: Natural resource management programs*[12]

In application of the aforementioned principles, each military installation with suitable land and water areas is instructed to develop as part of its overall land management plan a continuing program for the management and conservation of renewable natural resources. Marine Corps Order P11000.8A, "Environmental Management," April 7, 1975, describes the planning process as requiring as a first step the assessment of renewable resources and related environmental assets which may be affected, whether on military land or not, and specifies that:

> The assessment shall identify and evaluate the condition (of) potential wetlands, marine and estuarine areas, fresh water, woodlands, grasslands and natural beauty; identify and describe historic, cultural, and outstanding natural features; and discuss any other significant environmental element. Sufficient information shall be presented and included in the Multiple-Use Natural Resources Management Plan to guide management decisions and support future environmental assessments required by the National Environmental Policy Act.
>
> Information regarding the limitations and potential of soils is essential to land use evaluation and the environmental assessment process. Interpretation of soils and climatic data by experienced, professional personnel will provide information regarding soil capability for timber production, wildlife habitat, agricultural outleasing potential, facility siting, and other land uses . . .[13]

A graphic illustration showing the various stages of resource planning and the sequence for development of the natural resources management plan appears in Table 3.[14]

To manage and conserve all natural resources in a manner that is in the best long range national interest, Air Force Manual 126-1, "Conservation and Management of Natural Resources," February 22, 1972, imposes the following order of priority as between potentially competing uses:

1. First priority will be given to the protection and preservation of habitat utilized by rare

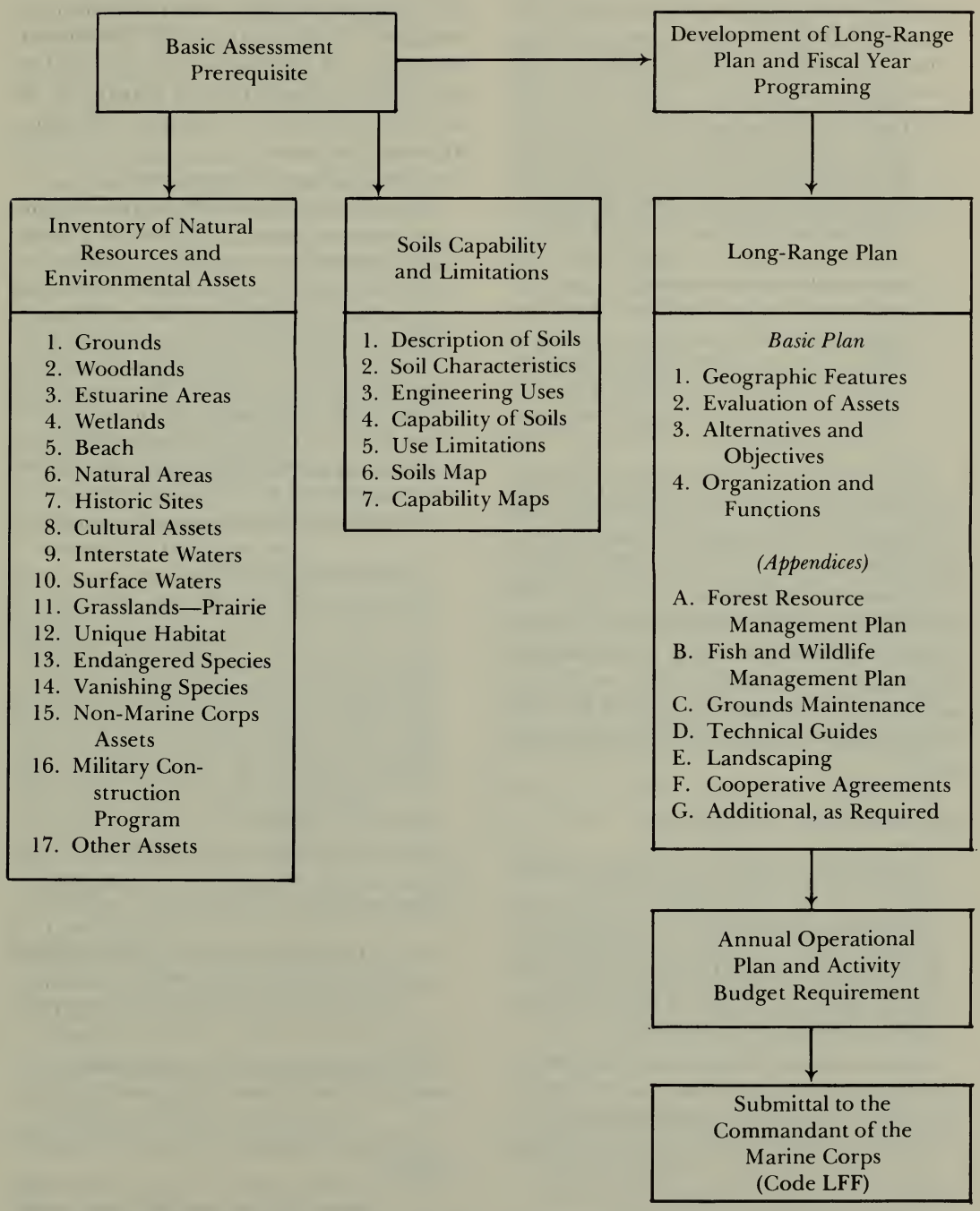
[11] See Technical Appendix 7(b), p. 4.

[12] While the natural resources programs of the various services are not identical in every detail, they are sufficiently similar to be discussed together, with any outstanding differences being duly noted. Citations to the instructions or manuals of one service are, likewise, meant to be illustrative of the basic philosophy and procedures of the entire Defense Department.

[13] Marine Corps Order P11000.8A. "Real Property Facilities Manual, Vol. V, Environmental Management," April 7, 1975, Ch. 2, pp. 7-8.

[14] *Ibid.*, Ch. 2, p. 9.

Table 3


Basic Assessment Prerequisite
Development of Long-Range Plan and Fiscal Year Programing
Inventory of Natural Resources and Environmental Assets
1. Grounds
2. Woodlands
3. Estuarine Areas
4. Wetlands
5. Beach
6. Natural Areas
7. Historic Sites
8. Cultural Assets
9. Interstate Waters
10. Surface Waters
11. Grasslands—Prairie
12. Unique Habitat
13. Endangered Species
14. Vanishing Species
15. Non-Marine Corps Assets
16. Military Construction Program
17. Other Assets
Soils Capability and Limitations
1. Description of Soils
2. Soil Characteristics
3. Engineering Uses
4. Capability of Soils
5. Use Limitations
6. Soils Map
7. Capability Maps
Long-Range Plan
Basic Plan
1. Geographic Features
2. Evaluation of Assets
3. Alternatives and Objectives
4. Organization and Functions
(Appendices)
A. Forest Resource Management Plan
B. Fish and Wildlife Management Plan
C. Grounds Maintenance
D. Technical Guides
E. Landscaping
F. Cooperative Agreements
G. Additional, as Required
Annual Operational Plan and Activity Budget Requirement
Submittal to the Commandant of the Marine Corps (Code LFF)

and endangered species, and special interest areas. These resources are irreplaceable and will be protected and managed to enhance their value. The area should be limited to the size necessary to protect the values identified;

2. Second priority will be given to the management and conservation of those areas capable of providing intensive recreation use such as camping, winter sports, and water sports sites. Such areas will primarily be managed for their recreational values;
3. The remaining areas will be managed to provide for the greatest net public benefit. This determination must be based upon an analysis of the ecological factors involved, the supply and demand relationship of the various resources and uses to each other. In determining greatest net public benefit, full consideration must be given to the tangible, intangible, socio, and economic values.[15]

Department of Defense Directive 5500.5 specifically calls for the preparation by each installation of management plans for (1) soil and water, (2) fish and wildlife, and (3) recreation (if recreation is not otherwise planned for). While plans for the first two categories include attention to endangered species and "open space values" and "natural beauty," it is mainly plans for fish and wildlife and recreation that are of concern here.

Fish and Wildlife Management

> A continuing program of fish and wildlife habitat management, *including protection of endangered or threatened fauna,* complying with accepted scientific practices integrated and consistent with the total natural resources will be the objective of the Defense Fish and Wildlife Management program.[16]

Pursuant to the Congressional authorization contained in the Sikes Act (16 U.S.C. 670a-f),[17] it is Defense policy to require all installations having suitable land and water areas for the propagation, conservation, and management of fish and wildlife resources to execute a tripartite cooperative agreement with the state and the U.S. Fish and Wildlife Service. A list of Defense installations having cooperative agreements with state fish and game commissions and the U.S. Fish and Wildlife Service can be found in Technical Appendix 7(f) and a Sample Cooperative Agreement can be found in Technical Appendix 7(g).

Primary emphasis in fish and wildlife management plans is placed on the development of environmental conditions favorable to the production of fish and wildlife by natural means, *i.e.,* habitat protection, control, and improvement. Artificial stocking is not regarded as a major management technique except in special cases, and then only upon the advice and guidance of appropriate state and Federal natural resource officials. Likewise for the introduction of foreign or exotic species.[18]

> Air Force Manual 126-1:
>
> The habitat management objective is to improve and maintain the ecological balance and inherent recreational values of the environment by providing the recognized habitat needs of the featured species[19] . . . The habitat will be purposefully managed for featured or selected species to the extent that it can be done in mutual harmony with the military use and other resources.[20]

Air Force Manual 126-1 outlines the major responsibilities involved in conducting a wildlife management program:

a. First consideration will be given to the protection of habitat utilized by rare and endangered species. Deliberate measures will

[15]Air Force Manual 126-1, Ch. 1., p. 2.

[16]Department of Defense Directive 5500.5, p. 6.

[17]See Technical Appendix 7(h).

[18]Army Regulation 420-74, "Natural Resources—Land, Forest, and Wildlife Management," June 1966, p. 24.

[19]The species for which the habitat will primarily be managed.

[20]Air Force Manual 126-1, Ch. 3, pp. 3-4. It would appear that the "featured species" concepts works against (unless the species is rare) the preservation of natural diversity.

be taken to prevent the extermination of such species;

b. Indigenous species, game and non-game, will be favored over exotic species;

c. Key wildlife areas and wetlands that are of value to waterfowl will be maintained and protected whenever possible;

d. The advice of wildlife biologists should be obtained in the stocking of indigenous species;

e. Animal control will be accomplished in cooperation with the U.S. Bureau of Sport Fisheries and Wildlife[21] and appropriate State agency. Game species will primarily be controlled through the planned and orderly harvest in accordance with State and Federal laws. Additional controls may be necessary when populations threatened public health, safety, or cause excessive damage to other resources. Such controls requires the coordination of appropriate Federal or State agencies.

f. In areas where wildlife is a hazard to aircraft operations the habitat will be purposely managed to discourage the concentration of problem species.[22]

This same concern for habitat is reflected in the guidelines for conducting a fishery management program.

All waters suitable for fish will be managed within their ecological limits to produce the proper number and sizes. Waters whose value for fish have been destroyed (*e.g.*, by pollution, pesticides, etc.) will be rehabilitated to the fullest extent possible. Specifically:

a. First consideration will be given to the protection of habitat utilized by rare and endangered species. Deliberate measures will be taken to prevent the extermination of such species.

b. Natural habitat and environmental conditions should guide the decisions in planning to stock or introduce fish into rehabilitated waters. When waters are to be rehabilitated for the stocking of fish, the installation should obtain the advice and guidance of fishery biologists.[23]

Measures for the control of predators must also be authorized and approved by the appropriate state and Federal officials. Control of animals proven to be undesirable in specific instances is recognized.

Scientific research has shown that there is no valid justification for the widespread destruction of animals classed as predators. All such mammal or bird damage control programs shall be conducted in a manner which contributes to the maintenance of environmental quality, to the conservation and protection, to the greatest degree possible, of the Nation's wildlife resources, including predator animals.[24]

Fish and wildlife management plans are prepared for a projected five-year period and are reviewed and revised annually to maintain a current operational program.

Recreation Resource Management

The outdoor recreation policies for the nation, including the Defense Department, are stated in 16 U.S.C. 406*l*. There it is declared that ". . . all American people of present and future generations (should) be assured adequate outdoor recreation resources and that . . . all levels of government . . . (shall) take prompt and coordinated action to the extent practicable without diminishing or affecting their respective powers and functions to conserve, develop, and utilize such resources for the benefit and enjoyment of the American people."

Accordingly, Department of Defense Directive 5500.5, provides:

1. Public access to military installations for the use and enjoyment of the public in compliance with the policies of the United States will be granted, except where a specific finding has been made that the overriding military mission requires a temporary or permanent suspension of such use. When all public access must be withheld, the reasons must be substantiated by a statement incorporated in the cooperative agreement required between represen-

[21] Now the U.S. Fish and Wildlife Service.

[22] Air Force Manual 126-1, Ch. 3, pp. 3-4.

[23] *Ibid.*, Ch. 3, p. 3.

[24] Marine Corps Order P11000. 8A, Ch. 2, p. 12.

tatives of the Military Departments, the State natural resources authorities, and the U.S. Fish and Wildlife Service.

2. Provision shall be made, within manageable quotas, for controlled public access to installations when such can be granted without bonafide impairment of the military mission. In granting access privileges to persons other than those assigned to or living on military installations, manageable quotas will vary, depending on the amount of suitable land and water area available. Opportunities for recreational purposes must be equitably distributed by impartial selection procedures, such as drawings or lots, or first-come-first served basis.[25]

While all services must coordinate outdoor recreation with other aspects of their natural resource management programs, only the Air Force requires its installations to prepare a formal five-year outdoor recreation plan as an appendix to the overall management plan. To promote the establishment of a common framework for effective management of outdoor recreation resources, the Air Force has modified and adopted the uniform system of recreation resource classification proposed by the Outdoor Recreation Resource Review Committee. (For further discussion of the Committee and its proposed uniform system of recreation resource classification, see section 6.2 and section 6.8, above.) Under this system, suitable land and water areas are zoned and managed for specific recreation activities under the principles of multiple-use management:

a. Class I—General Outdoor Recreation Areas are existing recreation areas and areas with suitable characteristics to accommodate intensive recreation activities such as camping and various winter and water sports. Such areas will primarily be managed for intensive recreation use.

b. Class II—Natural Environment Areas are areas which are capable of supporting dispersed recreation activities in conjunction with other uses such as hunting, fishing, bird watching, driving for pleasure, hiking, sight-seeing, climbing, and riding.

c. Class III—Special Interest Areas are areas containing features which are of archaeological, botanical, geological, historical, or of scenic importance. These areas will be managed exclusively for the preservation and protection of the value identified. These features include:

1. Archaeological Areas. Sites containing remains of past societies or early settlement of present societies.
2. Botanical Areas. Sites containing individual specimens, groups, or communities of plants which are significant because of form, color, occurrence, location, life history, arrangement, rarity, or other features.
3. Geological Areas. Areas of outstanding formation or historical features of the earth's development.
4. Historical Areas. Sites containing interesting details of the life and activities of early settlers in America; it may commemorate a specific historic event, a period of history, or be unique or illustrative.
5. Scenic Areas. Individual areas of outstanding natural beauty and scenic splendor which require special management to preserve these qualities.[26]

Though the non-consumptive use of fish and wildlife is emphasized, fishing, hunting, and trappings are permitted. Army Regulation 420-74:

> a. Fishing, hunting, and trapping will be authorized and controlled by the installation commander, in accordance with locally published post and station regulations promulgated in accordance with applicable Federal, State, local laws, Army regulations, and the cooperative plan.
>
> b. Restrictions on the use by civilian sportsmen of areas under military jurisdiction will be kept to the minimum deemed necessary by the local commander to insure safety, security, protection of Government property, and efficient accomplishment of his mission.[27]

[25] *Ibid.*, p. 7.

[26] Air Force Manual 126-1, Ch. 4, pp. 1-2.

[27] Army Regulations 420-74, p. 24.

In compliance with 10 U.S.C. 2671, hunting, fishing, and trapping at each military installation within the United States must be in accordance with the fish and game laws of the state in which it is located.

Under the provisions of the Sikes Act the base commander is authorized, when agreeable with signatories of the cooperative agreement, to issue a special permit for fishing, hunting or trapping and to charge a nominal fee for the permit. This permit is in addition to the state licenses and Federal stamps required. Fees collected in this manner may only be used to accomplish the objectives stipulated in the approved fish and wildlife management plan. Since Congress has never appropriated the money authorized in the Sikes Act, fees collected under this authority provide program funds.

Secretary of Defense Conservation Award

To encourage improvement of Defense's natural resource activities, the Secretary of Defense annually presents an award to the installation which conducted the most outstanding conservation program over a three-year period preceding the award. The Assistant Secretary of Defense for Installation and Logistics chairs, and the Assistant Secretary of Defense for Health and Environment acts as vice-chairman, of a selection committee composed of civilian conservation leaders to judge and recommend the winning installation to the Secretary of Defense.[28]

Recent winners of the Award include:

1974	Barksdale Air Force Base, Louisiana
1973	Fort Campbell, Kentucky
1972	Marine Corps Base Camp Lejeune, North Carolina
1971	Marine Corps Base Camp, Pendleton, California
1970	Tyndall Air Force Base, Florida
1969	Fort Pickett, Virginia

[28]Department of Defense Directive 5500.5, p. 8.

7.3 *The Army Corps of Engineers: Natural resource management program*

The U.S. Army Corps of Engineers serves as the engineering department of the Federal government, and as such is responsible for research, engineering and construction of projects on military and nonmilitary lands and waters. The civil or public works of the Corps, most of which are not carried out on military lands, include projects for flood control and navigation; power development and distribution; reclamation and irrigation; and the maintenance and improvement of harbor and port facilities.

As of 1974, there were 7,801,244.5 acres of land and water under the control of the Civil Directorate of the Corps.[29] In terms of actual and potential value for public outdoor recreation and fish and wildlife enhancement, the Coastal Zone Resources Corporation, a private contractor, went so far as to say in its recent study that ". . . existing Corps Water Resource Development Projects constitute a nation-wide system of resource units comparable to the National Park System, the National Forest System, and the National Wildlife Refuge System."[30] It can certainly be argued that this is an overstatement, but it cannot be denied that Corps projects contain significant natural values in abundance. These resources (as opposed to certain *actions* by the Corps affecting the environment) have not received attention by those concerned with natural areas.

The management policies and programs

[29]General Services Administration, *Inventory Report on Real Property Owned by the United States Throughout the World as of June 30, 1974,* Appendix 1, Tables 2 and 7, pp. 44-45 and 61. As of 1973, Water Resource Development Projects comprised 259 reservoirs, 140 locks, seven canals and one floodway, a total of 407 projects in 42 states.

[30]Coastal Zone Resources Corporation, *Study of Land Use for Recreation and Fish and Wildlife Enhancement,* submitted to Office, Chief of Engineers, U.S. Army Corps of Engineers, May, 1975, Ch. 1, p. 31.

of the Corps derive from a number of sources: (a) The Act of Congress authorizing construction of a given project; (b) those statutes which deal generally with resource management, some of which apply only to the Corps; and (c) the Corps' own Engineering Regulations which derive from and expand on the above.

From these sources the Corps derives the broad legal authority, and in most cases, the obligation to manage its Water Resource Development Projects for multiple purposes and sustained benefits.

Four objectives governing Corps planning, development, and management of its projects are stated in Engineering Regulation 1120-2-400, "Investigations, Planning and Development of Water Resources: Recreation Resources Planning," November 1, 1971: "(1) *to preserve* unique and important ecological, aesthetic, and cultural values of our national heritage; (2) *to conserve* and use wisely the natural resources of our Nation for the benefit of present and future generations; (3) *to enhance,* maintain, and restore the natural and man-made environment in terms of its productivity, variety, spaciousness, beauty, and other measures of quality, and (4) *to create* new opportunities for the American people to use and enjoy their environment."[31]

The planning process by which land on Water Resource Development Projects is acquired for and allocated to the different uses, is undertaken pursuant to the following broad guidelines:

a. *Comprehensive Planning.* Planning of water resources projects will be comprehensive in scope and will be concerned with effective conservation, protection, development, use, enhancement, and management of land resources in the broad public interest. Planning for the preservation, development, and management of recreation resources will be achieved as an integral part of multiple-purpose water resources project formulation.

b. *Continuing Planning Process.* Recreation resources planning is a continuing process and progresses through a series of steps from the generalized scope of the pre-authorization investigation through detailed preparation of the Master Plan, including post-authorization studies, and reevaluation and updating of the Master Plan on a periodic basis for the life of the project.

c. *Optimum Benefits.* Land and water areas of Civil Works projects will be planned, developed, administered, and managed so as to obtain optimum sustained benefits from conservation, enhancement, preservation, and use of their natural and developed resources in accordance with applicable laws and policies of Congress and the policies and guidelines issued by the Chief of Engineers.

d. *Coordinated Planning.* In formulating water resource projects, consideration given to the need for recreation development and the protection and enhancement of the environment including fish and wildlife will be comparable to that given other purposes of water resources development. Recreation development will be accomplished as an integral part of a coordinated overall plan encompassing all other existing and contemplated Federal, State and local public recreational developments within the region from which most recreation users are expected to originate. Lands sufficient to meet the expected needs for public recreation over the life of the project will be acquired in accordance with current acquisition policy.[32]

The land use classifications which appears in the master plan required for every project include the following:

(a) *Project Operations.* Lands acquired and allocated to provide the safe, efficient operation of the project for those authorized purposes other than recreation and fish and wildlife. In all cases this will include, but is not limited to, the land on which project operational structures are located.

(b) *Operations: Recreation-Intensive Use.* Lands acquired for project operations and allocated for use as developed public use areas

[31] Engineering Regulation 1120-2-400, "Investigations, Planning and Development of Water Resources: Recreation Resources Planning," November 1, 1971, p. 1.

[32] *Ibid.,* pp. 1-2.

for intensive recreational activities by the visiting public, including areas for concession and quasi-public development.

(c) *Operations: Recreation-Low Density Use.* Lands acquired for project operations and allocated for low density recreation activities by the visiting public as required as open space between intensive recreational developments or between an intensive recreational development and land which by virtue of use, is incompatible with the recreational development and would detract from the quality of the public use. Such incompatible land may be located either on the project or adjacent to the project. Land required for ecological workshops and forums, hiking trails, primitive camping, or similar low density recreational use available for a significant role in shaping public understanding of the environment will be under this allocation.

(d) *Operations: Natural Area.* Land acquired for project operations and allocated for preservation of scientific, ecological, historical, archeological or visual values. Lands managed to protect rare and endangered species of flora or fauna will be allocated as natural areas. Normally limited or no development is contemplated on land in this allocation. Narrow bands of project land located between the normal recreation pool and the project boundary generally fall within this category. Project operational land may be a dual allocation. No agricultural uses are permitted on this land.

(e) *Operations: Wildlife Management.* Lands acquired for project operations and allocated as habitat for fish and wildlife or for propagation of such species. Such lands should be continuously available for low density recreational activities.

(f) *Operations: Reserve Forest Land.* Lands acquired for project operations and allocated for vegetation control to support management objectives not compatible with sustained yield based on established harvest rotation. Timber will be harvested only when required to achieve other management objectives such as wildlife habitat improvement. Forest improvement measures may be paramount on this land such as timber planting or vegetation manipulation for erosion control. Such lands should be continuously available for low density recreational activities.

(g) *Operations: Intensive Forest Management.* Lands acquired for project operations and allocated for multiple purpose low density recreational use, and/or wildlife use, and for the maximum yield of timber or other forest products. This allocation will generally be applied to relatively large tracts of sufficient volume to support a viable timber management program.

(h) *Recreation Lands.* Lands acquired specifically for recreation purposes and allocated for any recreation use. No agricultural uses are permitted on these lands except on an interim basis for terrain adaptable for maintenance of open space and/or scenic values.

(i) *Fish and Wildlife Lands.* Lands acquired specifically for fish and wildlife mitigation and enhancement purposes, and allocated for the respective use.[33]

Table 4 shows all Corps land broken down by land use classification and managing entity, as of June 1974.[34]

Forest Management

As the above table shows, only a very small percentage of Corps-held forest is intensively managed for timber. This is despite 16 U.S.C. 580m which declares it to be United States policy that reservoir areas connected with water resource projects be developed to ensure a dependable timber supply, as well as for recreation, conservation and other beneficial uses. Indeed, the Corps' forest policy set out in Engineering Regulation 1130-2-400, "Project Operation: Recreation-Resource Management of Civil Works Water Resource Projects," May 28, 1971, shows sensitivity to the principle of preservation of the forest resource, and even more strikingly, an awareness of the ecological benefits of "establishing and maintaining a diversity of plant species of different ages." The armed services also take note of the need to develop and maintain "a desirable biological balance"[35] in

[33] *Ibid.*, pp. 7A-7B.

[34] Corps of Engineers, "Recreation-Resource Management System", June 12, 1974.

[35] Department of Defense Directive 5500.5, p. 5.

Table 4

Corps Land by Land Use Classification and Managing Entity[36]

	Corps	Other Federal Agencies	States	Local Public Agencies	Private Parties	Total Acres
Project Operations	1,158,829	128,182	105,456	20,065	43,602	1,456,134
Recreation-Intensive Use	241,723	19,611	106,606	36,020	14,516	418,476
Recreation Low-Density Use	1,057,220	32,097	154,602	11,509	11,247	1,266,675
Natural Area	170,763	3,000	16,945	511	193	191,412
Wildlife Management	634,172	623,575	1,110,041	64,450	0	2,432,238
Reserve Forest Land	552,874	51,561	100,290	5,111	0	709,836
Intensive Forest Management	9,191	12,370	15,503	27,713	0	64,777
Total Acres	3,824,772	870,396	1,609,443	165,379	69,558	6,539,548

forests, but specific regulations on forest management seem far more concerned with "systematic harvesting to ensure optimum sustained production of forest values."[37] The relevant Corps policy is as follows:

> It is the policy of the Secretary of the Army and the Chief of Engineers that the objectives of the forest management program are to increase the value of reservoir lands for recreation and wildlife, and to promote natural ecological conditions by following accepted conservation practices. Where the preservation of natural conditions or other non-commercial objectives are the paramount consideration, there is no justification for using cultural practices such as thinning, pruning and release cutting for stand improvement appropriate to commercial production forestry. The removal of vegetation, living or dead, will be done only with sound justification such as urgent disease control, urgent insect pest control, fire hazard reduction, removal for construction of recreational facilities, or specific essential uses. Consideration should be given to establishing and maintaining a diversity of plant species of different ages where practicable to minimize the possibility of complete loss by natural causes. . . . Areas containing forest of significant biological or scientific value will be appropriately protected.[38]

Fish and Wildlife Management[39]

When not inconsistent with the primary purposes of a project, the Corps is required to make adequate provision for the conser-

[36] These figures do not include acres of water surface.

[37] Marine Corps Order P11000.8A, Ch. 2, pp. 10-11.

[38] Engineering Regulation 1130-2-400, "Project Operation: Recreation-Resource Management of Civil Works Water Resource Projects," May 28, 1971, pp. 9-10.

[39] See 16 U.S.C. 663d and c; 16 U.S.C. 662a; 33 U.S.C. 540, and other sections cited below. See also Technical Appendices 7(c) and (d).

vation, maintenance, and management of wildlife resources. All planning for the development or modification of a project is coordinated with the U.S. Fish and Wildlife Service. The Corps may acquire lands, waters, and interests therein, for wildlife conservation in connection with a particular project subject to the same Congressional authorization requirements as other project purposes. Such areas are to be utilized in accordance with a general plan approved jointly by the Secretary of the Army, the Secretary of the Interior, and the head of the state agency exercising administration over wildlife resources in the state in which the project is situated. Activities at any Corps Water Resource Development Project are governed by rules and regulations promulgated by the Secretary of the Army. In no case may a use be permitted which would be inconsistent with the laws for the protection of fish and game of the state in which the project is situated (16 U.S.C. 460d).

Lands and waters with actual or potential value for fish and wildlife are made available without cost for administration (a) to the U.S. Fish and Wildlife Service to be managed as part of the National Wildlife Refuge System, where the particular properties have values in carrying out the national migratory bird management program; or (b) to the state fish and game commission if the management of the properties relates to the conservation of wildlife other than migratory birds (16 U.S.C. 6636).

Corps fish and wildlife management Policy in Engineering Regulation 1130-2-400 repeats the statutory policy and contains this interesting provision:

> The proper management of fish and wildlife involves more than the management of game species although game management is an important function of the management program. Wildlife observation, study and photography activities should be considered on an equal plane with hunting and fishing activities.

Areas with fish and wildlife enhancement potential will normally enjoy a minimal degree of development, absent an agreement by a non-Federal public body to maintain and operate a given area. However, lands which potentially could be developed by state agencies are held in anticipation of such an agreement for at least ten years after the initial operation of the project (16 U.S.C. 460*l*-14 (b)). The Corps makes every effort to get other agencies to assume administration costs. The lessee or licensee, of a fish and wildlife area may be authorized by the Secretary of the Army to cut timber and harvest crops as is necessary for the beneficial use of the area, and may collect and utilize the proceeds of any resulting sales for the development, conservation, maintenance, and utilization of the land (16 U.S.C. 460d).[40]

Recreation[41]

The Chief of the Army Corps of Engineers is authorized to construct, maintain, and operate public park and recreational facilities at water resource projects under the control of the Department of the Army. Additionally, whenever a project can serve both the water-resource purpose for which it was proposed and the enhancement of recreational opportunities, the recreational potential will also be developed in accordance with the various statutory constraints.

All planning for the development of recreational facilities at a given project is to be coordinated with existing and planned Federal, state, or local facilities and to the extent feasible should be consistent with the Statewide Comprehensive Outdoor Recreation Plan sponsored by the U.S. Bureau of Outdoor Recreation (16 U.S.C. 460*l*-17).

Unless an area is designated to be in-

---

[40] Coastal Zone Resources Corporation, *Study of Land Use for Recreation and Fish and Wildlife Enhancement,* Ch. 1, p. 7.

[41] See generally 16 U.S.C. 460d and 460l. See Technical Appendix 7(c).

cluded with a National Recreation Area, a National Forest, or some other Federally sponsored program, or a non-Federal public body agrees to administer a completed facility and to assume the costs of one half the construction and all the operation and maintenance, the Corps since 1965 may develop only minimal recreational facilities which are required for public health and safety. There are, as a result, two levels of recreation development which are considered by the Corps in project planning: one anticipating full participation by a non-Federal agency; the other anticipating a lack of non-Federal participation.

Non-Federal public bodies can receive financial support from the Land and Water Conservation Fund to help defray the costs of project planning, land acquisition, and the development of Federal lands which are under lease to states. Although the Fund is also available for numerous Federal recreational programs, the Corps does not participate.

Lakeshore Management

Prior to December 13, 1974, when Engineering Regulation 1130-2-406, "Project Operation: Lakeshore Management at Civil Works Projects" was issued, the Corps tended to grant private-use permits for use of Corps land almost at a matter of course. The shores of many Corps impoundments were becoming crowded with floating private recreation facilities. Land speculators added to the problem by buying land adjoining the buffer of public property that rings Corps lakes, subdividing it into hundreds of lots, each with its own private-use permit. Such a permit increased the value of the private land by allowing the developer or lot buyer to install a floating boathouse or similar facility, assuring private access that often effectively blocked public access to the lake.[42]

The new regulation seeks to assure public access protect desirable environmental characteristics of Corps lakes, and restore shorelines where degradation has occurred through private exclusive use. Engineering Regulation 1130-2-406:

> a. It is the policy of the Chief of Engineers to manage and protect the shorelines of all lakes under its jurisdiction to properly establish and maintain acceptable fish and wildlife habitat, aesthetic quality and natural environmental conditions and to promote the safe and healthful use of these shorelines for recreational purposes by all of the American people. Ready access to and from these shorelines of the general public shall be provided in accordance with the Flood Control Act of 1944, S.4, as amended, 16 U.S.C. s.460d. For projects where Corps real estate interest is limited to easement title only, management action will be appropriate to assure the safety of the public who use the lake waters. It is the objective of the Corps to manage private exclusive use of public property to the degree necessary to gain maximum benefits to the general public. Such action will consider all forms of benefits such as: recreation, aesthetics and fish and wildlife.
>
> b. It is the policy of the Chief of Engineers that private exclusive use will not be permitted on new lakes or on lakes where no private facilities or uses exist as of the date of this regulation. Such use will be permitted only to honor any past commitments which have been made.[43]

As part of the Lakeshore Management Plan the entire lakeshore of the project is allocated within the allocation classification below and depicted on a map. In addition, District Engineers are authorized to add specific constraints and identify areas having other unique characteristics. Special note should be taken of item (4) here:

> (1) *Limited Development Areas.* Limited development areas are those areas where private exclusive use privileges and facilities may be permitted consistent with Appendix A and

[42] Bill Vogt, "Conservation Trails," *Outdoor Life,* Vol. 155, No. 3, March 1975.

[43] Engineering Regulation 1130-2-406 "Project Operation: Lakeshore Management at Civil Works Project," December 13, 1974, p. 1.

paragraph 8 of this section. When vegetation modification on these lands is accomplished by chemical means the program will be consistent with the current Federal regulations as to herbicide registration and application rates.

(2) *Public Recreation Areas.* On shorelines within or proximate to designated or developed recreation areas, private floating recreation facilities are not permitted. The extent of the term, proximate, will depend on the terrain, road system and similar factors. Commercial concessionaire facilities are permitted in these areas. An adequate buffer area within this allocation type will be established to protect the concession operation from invasion by private exclusive use facilities. Modification of land form or vegetative characteristics is not permitted by individuals in these areas.

(3) *Protected Lakeshore Areas.* Protected lakeshore areas are designated primarily to protect aesthetic, environmental, fish and wildlife values in accordance with the policies of the National Environmental Policy Act of 1969 (P.L. 91-190). Lakeshores may also be designated in this category for physical protection reasons, such as heavy siltation, rapid dewatering or exposure to high winds and currents. Land access and boating are permitted along these lakeshores, provided aesthetic, environmental and natural resource values are not damaged or destroyed, but no private floating recreation facilities may be moored in these areas. Modification of land form or vegetative communities by individuals in Protected Lakeshore Areas will be permitted only after due consideration of the effects of such action on environmental and physical characteristics of the area.

(4) *Prohibited Access Areas.* These lakeshore areas are allocated for protection of ecosystems or the physical safety of the recreation visitors; for example, unique fish spawning beds, certain hazardous locations, and areas located near dams or spillways. Mooring of private floating recreation facilities and modification of land form and vegetative communities are not permitted in these areas.[44]

Sensitive Wildlife Information System

Since enactment of Federal and state environmental laws protecting endangered and threatened plant and animal species, the Corps has begun to recognize, at least on paper,[45] that its activities must be evaluated in terms of their effects upon those species and their habitats.[46] Legally protected species, however, form only one group of the environmentally sensitive species that are endangered in the wider sense as evidenced by shrinking regional or national populations. Because of the mass of data required to evaluate the impact of nationwide activities on environmentally sensitive wildlife in general and endangered species in particular, the Corps felt that a computerized information system was needed to provide users with a means of storing and retrieving data on sensitive plan and animal species.

The Sensitive Wildlife Information System being developed by the U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi, will supposedly allow a planner with access to a teletype with an audio coupler and telephone anywhere in the United States to obtain a listing of the animals that range in a designated locale an up-to-date narrative summary of the known habits and habitat requirements of the species.

Narrative summaries of the known animal habits and plant and animal habitat requirements of each species are synopsized in information categories that are almost identical to those shown in Technical Appendix 7(i).

The information retrieval program for the Sensitive Wildlife Information System is intended to permit the user to retrieve a

[44] *Ibid.*, pp. 3-4.

[45] See Waterways Experiment Station, Corps of Engineers, "Transmittal of Proposal for Further Development of the Sensitive Wildlife Information System," Memorandum, July 23, 1975.

[46] Corps inventory activities in compliance with the Endangered Species Act of 1973 appear to have been initiated by a June 19, 1974 memorandum from Deputy Assistant Secretary of Defense for Installations and Housing, Edward J. Sheridan, quoting section seven of the Act and its prohibition on all Federal agencies adversely affecting endangered species.

graphic display of range information in the form of a computer-plotted map. Whatever information can be expressed graphically can be placed in the computer files for retrieval in map form; for example, locations of confirmed sightings, known nesting areas, release site, flyways, etc.

With this kind of information system, the project planner can be readily appraised of the possible presence of important animal populations in a proposed project area, and can begin to assess the possible effects of the project on the suitability of the land area as habitat for those species. Thus he has a basis for considering the safety of those species as an integral part of the project plans. The Corps note that the information available in a narrative is not intended to provide definitive data on a species; it is intended to supply the *basic* information on that species and a good bibliography to enable pursuit of more detailed information.

Until now, preference has been given to those animal species that are considered rare or endangered or that are protected by law, but the file format is designed so that any species of animal and plant can be included as required. Narratives for approximately 60 sensitive birds and mammals are presently in the system.

The Corps, which has so far borne the costs of developing the system, hopes to continue development in accordance with guidelines emerging from a meeting on 25 June 1975 of an interagency Ad Hoc Committee for Development of a Sensitive Plant and Animal Information System. Funding of the proposal is being sought from the following:

- Corps of Engineers
- Bureau of Land Management
- Fish and Wildlife Service, Office of Biological Services
- Fish and Wildlife Service, Office of Endangered Species and International Activities
- Forest Service
- Soil Conservation Service
- U.S. Army Training and Doctrine Command
- Federal Highway Administration

The ultimate objective of the work is to bring the system to a fully operational state and transfer it to the Office of Biological Services of the Department of the Interior.

7.4 *Other systems and programs*

National Wildlife Refuge System[47]

A number of Refuges in the national system lie in whole or in part on Defense-held land. Conversely, Defense may make use of lands held by the U.S. Fish and Wildlife Service. This situation may arise in two basic ways.

First, pursuant to the Fish and Wildlife Coordination Act of 1934 (16 U.S.C. 661-666c), the U.S. Fish and Wildlife Service may obtain without cost the management rights to those lands on Corps Water Resource Development Projects which have value in carrying out the national migratory bird management program. These lands, which become part of the Refuge System, are referred to as Coordination Act Lands. Title to these lands will normally remain in the Corps. While no hard and fast rules can be stated, title to these lands may pass to the U.S. Fish and Wildlife Service where they were acquired by the Corps as "mitigation lands," *i.e.,* lands acquired specifically to replace land lost to fish and wildlife as a result of project construction and operation, and where they have value for migratory birds and endangered species.

Second, military and refuge uses may coexist on the same land as a result of a "reservation" of public land. This may occur either pursuant to an Executive Order which withdraws land for military purposes and then subjects it to refuge uses; or pursuant to a dual withdrawal of public land by Defense and the U.S. Fish and Wildlife Service, approved by the Sec-

[47] For further information on the National Wildlife Refuge System see Chapter Three.

retary of the Interior.[48] These lands will normally be held by Defense.

National Wildlife Refuges situated in whole or in part on Defense land are:

Choctaw	Alabama	Corps
Eufaula	Alabama	Corps
Aleutian Islands	Alaska	Military
Nunivals	Alaska	Military
Cabeza Prieta	Arizona	Military
Kofa	Arizona	Military
Mark Twain	Ill., Mo., Iowa	Corps
Upper Mississippi	Iowa, Minn., Wis., Ill.	Corps
Flint Hills	Kansas	Corps
Charles M. Russell	Montana	Corps
V. L. Bend	Montana	Corps
Desert	Nevada	Military
Killcohook	New Jersey	Corps
Bosque del Apache	New Mexico	Military
San Andreas	New Mexico	Military
Audubon	North Dakota	Corps
Salt Plains	Oklahoma	Corps
Sequoyah	Oklahoma	Corps
Tishomingo	Oklahoma	Corps
Umatilla	Oregon	Corps
Pocasse	South Dakota	Corps
Cross Creeks	Tennessee	Corps
Hagerman	Texas	Corps
McNary	Washington	Corps

National Forest System[49]

A number of Defense installations and projects use lands lying within the boundaries of National Forests. Memoranda of Understanding between the Secretary of Agriculture and the Secretaries of the Armed Service concerning occupancy and use of National Forest land, appear in the *Forest Service Manual,* Amendment No. 123, November 1964, section 1533.11 (Department of the Air Force, September 12, 1951), section 1533.21 (Department of the Army [Corps], August 13, 1964), section 1533.22 (Department of the Army, July 3, 1951), section 1533.31 (Department of the Navy, February 19, 1952). Authority to enter into sub-agreements pursuant to these master agreements is given to the Chief of the Forest Service and to the Regional Foresters and is found in the *Forest Service Manual,* section 2741 *et seq.,* amendment no. 65, November, 1959. These agreements between individual installations and regional offices of the Forest Service cover specific uses permitted, practices agreed upon to mitigate adverse impacts, and other guidelines.

There are at present approximately 150 agreements between the armed services and the Forest Service covering roughly six million acres of land. Of this acreage only 150,000 acres would involve an exclusive or continuous type of use. The remaining 4,850,000 acres involve intermittent or seasonal uses, such as training maneuvers, and have no fixed military improvements.

National Park System[50]

Pursuant to 16 U.S.C. 459h, providing for the establishment of the Gulf Islands National Seashore, the Navy has transferred, without consideration, a tract of land in the Pensacola Naval Air Station, Florida, to the National Park Service for administrative jurisdiction for the purposes of the seashore.

National Natural Landmark Program[51]

A number of National Natural Landmarks lie in whole or in part on Defense-held land.

Tijuana River Estuary, California	Navy (in part)
Bug Creek Fossil Area, Montana	Corps (in part)
Hell Creek Fossil Area, Montana	Corps (in part)

[48]See Technical Appendix 4(b) for a general discussion of withdrawals.

[49]For further information on the National Forest System see Chapter Five.

[50]For further information on the National Park System see Chapter Two.

[51]For further information on the National Natural Landmarks Program see Chapter Twelve.

Timber Mountain Caldera, Nevada	Air Force (in part)
Miramar Mounds, California	Navy
Henderson Sloughs, Kentucky	Corps (in part)
McCurtain County, Wilderness Area, Oklahoma	Corps (in part)
Arnold Engineering Development, Center N.A., Tennessee	Air Force
Kickapoo River Natural Area, Wisconsin	Corps (in part)
Chippewa River Bottoms, Wisconsin	Corps (in part)
Amboy Crater, California	Marines (in part)

Research Natural Area Program[52]

Only four areas on Defense-held land have been submitted for inclusion in the *Directory of Research Natural Areas.* These are:

Patterson Natural Area, 700 acres
Air Force Eglin Air Force Base
Okaloosa County, Florida

Matagorda Isles Natural Area
Air Force Matagorda Air Force Range
Calhoun County, Texas

Sinking Pond Upland Swamp Natural Area, 42 acres, Tennessee

Goose Pond Upland Swamp Natural Area, 26 acres
Air Force Arnold Engineering Development Center
Coffee County, Tennessee

The Navy has proposed one Research Natural Area. This site, comprising approximately 280 acres, is located at the Naval Air Station, Miramar, California.

National Trails System[53]

The Department of Defense has two National Trails, both Recreation (as opposed to scenic) Trails, within its jurisdiction. Both are held by the Corps. One is the Lake Washington Ship Canal Waterside Trail in the state of Washington; the trail is 1,200 feet long. The other is Sugarloaf Mountain Nature Trail in the state of Arkansas; this trail is one mile long.

7.5 *Structure and funding*

Responsibility for implementing Defense conservation and natural resource management programs and policies is placed on personnel at all levels of command.

> . . . Intelligent and sympathetic understanding of natural resources, natural beauty, *environmental quality,* and recreation problems *and opportunities,* and the relationship and responsibility at all Department of Defense echelons to such problems, must be an important and identifiable function of command management.[54]

Primary responsibility for the administration of programs and the implementation of policies concerning conservation and natural resource management lies with the Assistant Secretary of Defense for Installations and Logistics. His duties in this area include the following:

1. Assuring effective coordination with other elements of the Office of the Secretary of Defense and with other Federal agencies involving conservation and natural resources matters.
2. Assuring appropriate compliance with the policies concerning conservation and natural resources matters by the various Department of Defense elements.
3. Providing a designee to chair the Defense Natural Resources Group in its activities.
4. Establishing policies, criteria, and standards relating to the Secretary of Defense Conservation Award Program. Providing designee as chairman of the Selection Committee for the Secretary of Defense Natural Resources Conservation Award.
5. Promulgating the details of program management and the development of appro-

[52]For further information on the Research Natural Area Program see Chapter Eleven.

[53]The National Trails System is explained in Chapter Ten.

[54]Defense Directive 5500.5, p. 3. Italicized words are part of the revised draft which awaits final approval.

priate Defense Instructions involving conservation and natural resources matters.

6. Providing management guidance to operating elements within Defense on conservation and natural resources matters.[55]

The Assistant Secretary of Defense for Health and Environment is responsible for advising on the environmental aspects in the management of conservation and natural resource programs and for:

1. Designating the vice-chairman of the Defense Natural Resources Group.
2. Assisting the Assistant Secretary of Defense for Installations and Logistics in establishing the policies, criteria and standards relating to the Secretary of Defense Conservation Award and providing a designee as Vice-Chairman of the Selection Committee for the Secretary of Defense Natural Resources Conservation Award.[56]

The Secretaries of the military departments are charged with responsibility for:

1. Designating appropriate staff members to serve on the Defense Natural Resources Group.
2. Assuring that commanders of installations have progressive conservation and natural resources programs and have an active installation Conservation Beautification Committee appointed to provide advice on the program.
3. Requiring an established system for annual technical program inspections.[57]

The Defense Natural Resources Group is the coordinating committee for conservation and natural resource management policy. It is composed of the Assistant Secretaries of Defense for Installations and Logistics (chairman) and for Health and Environment (vice-chairman), and representatives of the Secretaries of the Army, Navy and Air Force. In addition to the principal representative having authority and responsibility to make decisions, each military department appoints such technical specialists as necessary fully to participate in their functional areas of responsibility. It is the duty of the committee to:

1. Facilitate the interservice utilization of personnel assigned throughout the Defense who possess the differing skills of the several disciplines in natural resources management.
2. Provide technical support to the Assistant Secretary of Defense for Installations and Logistics in the various natural resources disciplines.
3. Plan and direct a biennial Defense Natural Resources Conference.
4. Develop, propose and review natural resources policies, including natural beauty, and collaborate, as applicable, on the resolution of conservation problems.
5. Act in an advisory capacity on the Research Natural Area program.
6. Assist in the planning and execution of the annual Conservation Award Program.[58]

At the field level, responsibility for the physical operations of the installation is delegated by the commanding officer to the facilities engineer and his staff. Marine Corps Order P11000.8A directs the commanding officer of installations having active or potential natural resource programs to assign single responsibility for the program to a natural resources and environmental affairs officer.

> This position should be the point of contact for information regarding all matters related to the management of renewable natural resources and environmental affairs, including pollution abatement. It shall be the responsibility of the natural resources and environmental affairs officer to supervise the preparation of the activity's Natural Resources Management Plan; coordinate efforts of outside agencies assisting in the management of natural resources and other environmental assets, and guide and coordinate all activity efforts involving land utilization, maintenance, and repair and will include those activities for accomplishment by authorized social groups participating in the environmental

[55] Draft of revision updating Defense Directive 5500.5, Section X, pp. 12-13.

[56] *Ibid,* pp. 13-14.

[57] *Ibid.*

[58] *Ibid,* Section VIII, pp. 11-12.

program. The natural resources and environmental affairs officer shall have a professional conservation or environmental engineering background and shall be cognizant of Marine Corps program policies and the interrelationship of the technical disciplines.[59]

Installation commanders are also instructed to appoint a Conservation and Beautification Committee charged with responsibility for:

1. Assuring continuous planning and balanced application of the natural resource programs, and
2. Planning, promoting and fostering objectives for natural beauty both on-base and in cooperation with local communities.[60]

The composition of this committee may include the commanding officer, the natural resource management and engineer personnel, environmental protection, law enforcement, operations, safety, legal, medical, special services, veterinarians and others, including local citizens, who with their expertise, could contribute to the development and implementation of an integrated conservation and beautification plan. Local civilian conservation groups, whenever feasible, should be invited to attend committee meetings as guests.

Natural resource personnel at the installation level are assisted by agents of the U.S. Fish and Wildlife Service pursuant to the cooperative agreements authorized by the Sikes Act and by the volunteer efforts of local conservation groups and the installation Rod and Gun Clubs.

At the Corps, chief responsibility at the headquarters level for ongoing natural resource management programs lies in the Construction-Operations Division, though other functional divisions and officers also have natural resource responsibilities and personnel. The field operations of the Corps is handled through the eleven districts and 38 divisions among which the country is divided. Responsibility at the project level for natural resource management rests on the project manager and his staff except in those instances where management has been assumed by the U.S. Fish and Wildlife Service or state agencies.

The military services and the Corps are responsible for funding their natural resource management programs. Installation commanders and project managers are responsible for the preparation of budget estimates and requests for funding.

Natural resource management programs receive a budgeted share of an installation's Operations and Maintenance funds. These are appropriated by Congress for the physical operations of military installations. Other sources of funds include user permit fees collected by the installation pursuant to authority contained in the Sikes Act. All these figures are kept on the installation level, and it has proven impossible to collect them into a meaningful total. Not even a very rough estimate of appropriated funds devoted to military natural resource programs in fiscal year 1974, including the value of volunteer efforts, can be made. In fiscal year 1975 special permit fees totaled approximately $650,000. It is impossible to determine what portion of these funds were expended for the protection of natural areas.

In Fiscal Year 1975, the Corps expended approximately $120,000 for fish and wildlife management. This total does not include funds devoted to these purposes by the U.S. Fish and Wildlife Service or the states where they have assumed management responsibilities.

7.6 *Protection*

It should be clear from the foregoing sections that it is not the primary objective of the Department of Defense natural resource management program to create protected natural areas.

[59] Marine Corps Order P11000.8A, Ch. 1, p. 2.

[60] Draft of revision updating Defense Directive 5500.5, Section VI, p. 10.

The multiple-use sustained-yield concept which underlies the military program, emphasizing commercial forestry wherever viable, a range of recreation uses, and fish and wildlife management geared in significant measure to the enhancement of game species, is a thing apart from the natural preserve concept. The military mission, which on the one hand creates the need for much of the open space, whether as training area, buffer area, flyway, impact area, etc., also militates against the natural area approach. It is worth noting as well, however, that much Defense land which was beyond the natural area category, showing the signs of varying degrees of adverse human impact, and in need of remedial management, has been restored by Defense resource management programs.

Basically, the same can be said for the Corps program. Being the product of massive human intervention in the environment, the Corps Water Resource Development Projects by their very nature consist to a large degree of altered and non-natural areas.

For all this, natural areas do exist on Defense-held land. On military installations they are typically located in those areas which tend to be the least managed—marsh, desert, grassland, non-commercial forest land. The chief problem in identifying them stems from the fact that no Defense-wide inventory has been made, and that, in most cases, they are not designated as such. In fact, a land use classification for this type of area does not appear in the natural resource management manuals of the armed services.[61] The danger is that since some areas are inadequately identified, inappropriate activities or development will be authorized for these lands, perhaps through sheer inadvertance, when other less unique or sensitive areas are available.[62]

Where, on an *ad hoc* basis, areas have been recognized at the installation level for their special value, their inclusion in the fish and wildlife plan prepared in cooperation with the U.S. Fish and Wildlife Service serves to enhance their chances of preservation. For while the cooperative agreements normally contain clauses allowing the installation commander to terminate or modify the agreement, in whole or in part, at any time when in his opinion the installation's mission or other national security requirements render termination or modification a necessity this provision is construed as referring to a war-time emergency. Any such action would certainly be reviewable at the Pentagon level. And any such exercise of discretion could not be arbitrary or capricious.

The likelihood that these areas will be preserved is further enhanced by their designation as National Natural Landmarks, or their inclusion in National Wildlife Refuges. The surest sign of the military's recognition of the special value of these lands and, at the same time, the greatest moral commitment on their part to preserve them would be their nomination by Defense as Research Natural Areas.

The absence of action on the part of the military to designate natural areas may be a reflection, not of a lack of concern for the environment, but of a certain lack of appreciation for the uniqueness of natural areas. Characteristic of this attitude is the view that if one or two good examples of a given biosystem are preserved elsewhere that designation, for example as a Research Natural Area, is unnecessary. Natural areas are not seen as the scarce and unrenewable resources that they are. There seems to be an abhorrence for the dedication of re-

[61] Air Force recognized "Natural Environment Areas" are recreational in nature, but some "Special Interest Areas" amount to natural areas, it must be noted. See section 7.2, above.

[62] It must also be noted that if the procedure outlined in Table 3, above, for preparation of resource management plans is followed, "unique habitat" and certain other natural categories would be recognized.

sources to a non-productive use. Involved here may be a certain misunderstanding of the multiple use concept which does recognize that the highest and most beneficial use of certain land is as natural preserve.

The military's apparent reluctance formally to designate natural areas may also stem from two additional sources: first, the fear of having land considered underutilized or superfluous by the General Services Administration; and second, the fear of inviting citizen environmental litigation.

Pursuant to the Federal Property and Administrative Services Act of 1949, 40 U.S.C. 471-475, the Department of Defense, like all other Federal land-holding agencies, is required to inventory its property from time to time to determine what properties are excess and to turn them over to the General Services Administration for disposition in accordance with the statute and the regulations promulgated by that agency. The General Services Administration also has survey powers (though limited personnel in view of the task) to recommend which Federal lands are not being utilized, are underutilized, or are not being put to optimum use (Executive Orders 11508 and 11724). The military's strong avowal that lands are held primarily for military purposes must be seen as a response to this risk of loss. And Defense has lost lands through this process of "excessing and surplusing." From a logical standpoint it should be clear to both Defense and the General Services Administration that the designation of lands on the basis of their most outstanding characteristic, that is, as natural area, does not necessarily diminish their military function, where that function is, for example, serving as buffer area or flyway.

The military may also be reticient in identifying natural areas for fear of being limited in the possible range of permitted uses through citizen environmental suits brought under the National Environmental Policy Act of 1969.[63]

This problem of inventory and designation does not exist on Corps lands where natural area is one of that agency's land use classifications, and where the U.S. Fish and Wildlife Service has the option, under the Fish and Wildlife Coordination Act, 16 U.S.C. 661-666c, of assuming management of the most valuable lands. The greatest controversy as regards to the Corps has always been as to the need for many of the projects in the first place, and the irreversible environmental impact involved in construction and operation, and not as to its natural resource management program once the projects have been completed.

The above statements should not be taken as a criticism of much of the valuable work which has been done by Defense in the field of natural resources management, often by dedicated volunteers. Many acres of degraded land have been reforested and protected from the destructive efforts of soil erosion. Threatened and endangered species have been reintroduced or enhanced in their habitats. The survival of migratory birds has been promoted by the provision of open space and food sources, in areas where open space has become a precious and disappearing commodity. These are positive contributions regardless of one's perspective on natural area.

The National Environmental Policy Act of 1969[64]

The foremost existing guaranty of sound administrative decision-making, by the Department of Defense and all other Federal agencies, based on reasoned and scientific consideration of environmental impacts, alternatives, and implications of proposed projects and activities is the National En-

---

[63] See section 13.3, below.

[64] For further information on the National Environmental Policy Act of 1969 see Chapter Thirteen.

vironmental Policy Act of 1969, 42 U.S.C. 432 *et seq.* Defense responsibilities and procedures taken in compliance with this landmark Act of Congress are reiterated and amplified in Defense Directives No. 5100.50, "Protection and Enhancement of Environmental Quality," May 24, 1973, and No. 6050.1, "Environmental Considerations in Department of Defense Actions," March 19, 1974. Policy and objectives in this matter are outlined as follows:

A. It is the continuing policy of the Department of Defense, as a trustee of the environment, to demonstrate leadership and carry out its mission of national security in a manner consistent with national environmental policies and host country environmental standards, laws and policies. All practical means and measures will be used to minimize or avoid adverse environmental consequences and in attaining the objectives of:

   1. Providing a safe, healthful, productive and esthetically and culturally pleasing surrounding.
   2. Attaining the widest range of beneficial uses of the environment without degradation, risk of health, safety or undesirable and unintended consequences.
   3. Preserving important historic, cultural, and natural aspects of our national heritage and maintaining where possible an environment which supports diversity and variety of individual choice.
   4. Achieving a balance between resource use and development within the sustained carrying capacity of the ecosystem involved.
   5. Enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources.

B. Toward this end, Department of Defense Components shall:

   1. Assess at the earliest practical stage in the planning process and in all instances prior to the first significant point of decision, the environmental consequences of proposed actions.
   2. Review those continuing actions initiated prior to enactment of P.L. 91-190 for which the environmental consequences have not been assessed and ensure that any of the remaining actions are consistent with the provisions of this Directive.
   3. Utilize a systematic interdisciplinary approach in planning and decision making.
   4. Concurrently consider along with the economic and technical considerations the unquantifiable environmental amenities and values in planning and decision making.
   5. Prepare and process under the criteria contained in enclosures 1 and 2 ("Major Actions Significantly Affecting the Quality of the Human Environment," and "Preparation and Processing of Environmental Statements") a detailed environmental impact statement on every recommendation or report on proposals for legislation and other major defense actions which are expected to be environmentally controversial or could cause a significant effect on the quality of the human environment.
   6. Study, develop, and describe appropriate alternatives to the recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.
   7. Recognize the worldwide and long-range character of environmental problems and, where consistent with national security requirements and the foreign policy of the U.S., lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of the world human environment.
   8. Make available advice and information useful in restoring, maintaining and enhancing the quality of the environment.
   9. Utilize ecological information in planning and developing resource oriented projects.

10. Assist the Council on Environmental Quality as required by Presidential Statement of Preparation of Environmental Impact Statements (Council on Environmental Quality, August 1, 1973).

11. Refrain from taking any significant implementing on administrative action until 90 days has elapsed after filing the draft environmental statement and 30 days has elapsed after filing the final statement, except as provided in enclosure 2, section VIII.[65]

In furtherance of the policies outlined in these directives the various services have issued their own manuals.

Department of the Army:
Army Regulation 200-1, "Environmental Quality: Handbook for Environmental Impact Analysis," April, 1975 (see Technical Appendix 7(e).

Army Corps of Engineers:
ER 1005-2-507, "Planning: Preparation and Coordination of Environmental Statements," April 15, 1974.[66]

Department of the Navy
OPNAV Instruction 6240.2D
SECNAV Instruction 6240.6D, "Department of the Navy Environmental Protection Program," January 31, 1975 (applicable to Marine Corps). OPNAV.

Marine Corps:
MC Order P11000.8A, "Real Property Facilities Manual, Vol. V, Environmental Management," April 7, 1975.

Department of the Air Force:
Air Force Regulation 19-1, "Pollution Abatement and Environmental Quality," February 20, 1974.

[65] Department of Defense Directive No. 6050.1, "Environmental Considerations in Department of Defense Actions," March 19, 1974, pp. 2-3.

[66] The Corps is not bound by Directives 5100.50 and 6050.1, but the document relevant to Corps preparation of environmental impact statements is listed here for convenience.

7.7 *Illustrative examples:*

(a) Fort Ord, California

Ford Ord is located on the California coast at Monterey Bay.

Acreage: Total acreage is 28,038. No natural area figure is available.

Topographical features: The terrain within Fort Ord's boundaries begins with about four miles of ocean frontage. Continuing inland, the sandy beaches make way for lush, rolling hills, still with sandy soils. Further east, where the Paso Robles soils (sandy loam with a heavy clay layer below) have developed, more open grasslands are evident.

The Salinas River, which is the longest underground river in the United States, runs along the north and northeast side of Fort Ord. Toro Creek, which flows into the Salinas River only after heavy rains and for a short period, is located along the southeast boundary.

Fauna and flora: Mammals at Fort Ord include badger *(Taxidea taxus)*, long-tailed weasel *(Mustela frenata)*, striped skunk *(Mephitis mephitis)* and spotted skunk *(Spilogale putorius)*, coyote *(Canis latrans)*, gray fox *(Urocyon cinereoargenteus)*, and bobcat *(Lynx rufus)*. Muskrat *(Ondatra zebethica)* have been introduced.

Birds include California quail *(Lophortyx californicus)* and mourning dove *(Zenaidura macrouna)*.

Ford Ord has several freshwater marshes. The vegetation along the ocean frontage consists of dune grasses, native ice plants, and other particular beach plant species. Progressing inland, brushlands and oak glades, which have adapted to sandy soils and cool, damp weather, take over. The principal brush species are ceanothus *(Ceanothus* sp.) and various manzanitas *(Arctostaphylos* sp.). The oak glade vegetation consists primarily of coast live oak *(Quercus wislizenii)* with an understory of bracken ferns *(Pteridium aquiliorum)* and poison oak *(Rhus toxicodendron)*. Further

east, in the grasslands, there are bromes *(Bromus* spp.), wild oats *(Danthonia),* and annual rye grasses *(Elymus* spp.) as well as such forbs as bur clover *(Medicago* sp.) and filarees *(Trodium* sp.).

Fort Ord contains shrubs and herbs which now survive in sandy habitats only near Monterey Bay. These species are closely related to plants elsewhere in California, but they have been isolated in the Monterey region so long that they differ significantly from their relatives. The Monterey region has been a hotbed of plant evolution, and Fort Ord has important examples of the resulting plants, particularly manzanita shrubs. As the limited areas of sandy soils adjacent to Fort Ord are urbanized, the Fort Ord plant reserves become not only important examples, they become the only examples for several endangered species. To recognize and preserve these rare native plants, Fort Ord, in conjunction with the Native Plant Society, selected eight small reserves on post where typical species exist in an undisturbed environment. Every effort will be made to preserve these sites from further encroachment by man.

Fresh water marsh habitats have been deemed critical wildlife areas by the California Department of Fish and Game. In pristine times there were three and one-half million acres of this marsh habitat, but since the arrival of civilized man these areas have been drained or otherwise restructured so that today only one-half million acres are left.

These marsh habitats are used by water-associated animals, principally birds, and are the primary wintering areas for birds of the Pacific Flyway.

Management: In 1963 a cooperative agreement was entered into with the California Department of Fish and Game and the U.S. Fish and Wildlife Service. Agreements have also been signed with the U.S. Forest Service for fire control during major fires, and with the Soil Conservation Service.

1974 marked the first year since 1969 that hunting was allowed on Fort Ord. 16,000 acres are available for hunting.

Contact:
Commander, Fort Ord
Fort Ord, California 93941

(b) Naval Petroleum Reserve No. 1 (Elk Hills Oil Field), California

Elk Hills is located in the arid central valley of California, 25 miles west of the city of Bakersfield.

The mission of the reserve is to ensure a maximum supply of crude oil in the event of a national emergency. Elk Hills is the third largest oil field in the United States.

The installation supports a military and civilian population of 117.

Acreage: Total acreage of Naval Petroleum Reserve No. 1 is 46,095. To date, 36,779 acres are officially managed for their natural values.

Topographical features: The oil field and its oil handling facilities are located on the mile long by five mile wide rolling hills known as Elk Hills, named for the Elk herds which once roamed the base of the hills feeding in the tule marshes of the adjacent Kern River. There are no streams nor ponded fresh water on the Reserve.

Fauna and flora: Wildlife at Elk Hills include the rare San Joaquin kit fox *(Vulpes macrotis mutica),* desert cottontail *(Sylvilagus auduboni),* badger *(Taxidea taxus),* ground squirrel *(Citellus beecheyi),* black-tailed jackrabbit *(Lepus californicus),* deer mouse *(Peromyscus maniculatus),* giant kangaroo rat *(Dipodomys ingens),* long-tailed weasel *(Mustela frenata),* San Joaquin kangaroo rat *(Dipodomys nitradoides),* southern grasshopper mouse *(Onychomys torridus).* Reptiles include blunt-nosed Leopard lizard *(Crotaphytus wisliyenii silus),* desert horned lizard *(Phrynosoma platyrhinos),* gopher snake *(Pituophis melanoleucus),* race snake *(Coluber constrictor),* side-blotched lizard *(Uta stansburiana),* southern pacific rattlesnake *(Crotalus viridis helleri),* western fence

lizard *(Sceloporus occidentalis)*, western whiptail *(Cnemidophorus tigris)*.

Migratory and resident birds at Elk Hills include: American goldfinch *(Spinus tristis)*, Anna's hummingbird *(Calypte anna)*, ash-throated flycatcher *(Myiarchus cinerascens)*, burrowing owl *(Speotyto cunicularia)*, California thrasher *(Toxostoma redivivum)*, calliope hummingbird *(Stellula calliope)*, golden eagle *(Aquila chrysaetos)*, great-horned owl *(Bubo virginanus)*, hermit thrush *(Hylochichla guttata)*, horned lark *(Eremophila alpestris)*, Lawrence's goldfinch *(Spinus lawrencei)*, Le Conte's thrasher *(Toxostoma lecontei)*, lesser goldfinch *(Spinus psaltria)*, lesser nighthawk *(Chordeiles acutipennis)*, loggerhead shrike *(Lanius ludovicianus)*, long-eared owl *(Asio otus)*, marsh hawk *(Circus cyaneus)*, mountain plover *(Eupoda montana)*, phainopepla *(Phainopepla ritens)*, poor-will *(Phalaenoptilus nuttallii)*, prairie falcon *(Falco mexicanus)*, red-shouldered hawk *(Buteo lineatus)*, roadrunner *(Geococcyx californianus)*, rufous-crowned sparrow *(Aimophila ruficeps)*, rufous hummingbird *(Selasphorus rufus)*, Say's phoebe *(Sayornis saya)*, short-eared owl *(Asio flammeus)*, western bluebird *(Sialia mexicana)*, western tanager *(Piranga ludoviciana)*, Wilson's warbler *(Wilsonia pusila)*.

Plants found in abundance at Elk Hills include annual fescue, *(Festuca* sp.), bladderpod *(Isomeris arborea)*, cheese bush *(Hymenoclea salsola)*, fiddleneck *(Amsinckia tessellata)*, filaree *(Erodium* sp.), gilia *(Linanthus* sp.), locoweed *(Astragalus* sp.) and peppergrass *(Lepidium flavum)*.

Management: A cooperative agreement between the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the U.S. Navy, to assist each other in preparing and carrying out a well-balanced wildlife program for Naval Petroleum Reserve No. 1, was signed in June 1963. 36,779 acres of the installation's total of 46,095 are officially included in the natural resources program. The private inholdings of Standard Oil Company of California making up this acreage difference are not formally included in the program, however, in actuality are essentially a part of the program. A present, ten areas have been established as wildlife watering and feeding locations. As a result game birds and other wildlife have been observed in all of these watered areas.

In recent years livestock grazing has been prohibited on the Reserve, which has resulted in the growth of numerous young native shrubs and grasses and improvement in vigor of many of the old existing bushy plants.

Though wildife losses in oil waste have not recently been noted on the Reserve, the few remaining oil sumps have received added insurance against wildlife entry by the installation of reflective scare devices. Essentially all sumps now have such protection. The filling of the arsenic disposal pit removed another potential hazard to wildlife and humans. The use of this toxic chemical on the Reserve was completely eliminated during 1970.

Because of the safety hazard to operating personnel and possible damage to critical oil field equipment, hunting with rifles or shotguns is prohibited. However archer-only jack rabbit hunts have been held on a selected 3,000-acre remote portion of the Reserve.

The Reserve is closed to the general public for property security reasons; however, special requests by local groups are often granted.

As agricultural development continues to reduce natural habitat in the San Joaquin Valley, the Reserve lands are becoming increasingly important to the preservation of the rare and endangered San Joaquin kit fox. Poaching is minimal on the Reserve, and the preservation and enhancement of natural habitat there may be the key to the continued existence of this and other wildlife species in the area.

Contact:
Office of Naval Petroleum and
Oil Shale Reserves
Room 550

Crystal Plaza Building #6
Washington, D.C. 20360

(c) Arnold Engineering Development Center Natural Areas, Tennessee

Since these areas are National Natural Landmarks, it will be sufficient simply to reproduce the Landmark Brief maintained by that program's staff:

1. *Site:* Arnold Engineering Development Center Natural Areas, Coffee County, Tennessee

2. *Description:* Two outstanding wetland areas located only 3 miles apart occur on the Arnold Engineering Development Center. The two wetlands are strikingly different in character—one is essentially a swamp forest while the other is an open marsh.

   The 218-acres tract contains Sinking Pond, which is actually a series of connected limestone sinkholes. Some of the sinkholes contain water up to 15 feet deep during the winter, but are usually dry during the summer. The water is derived principally from overland drainage. The sinkholes contain a swamp forest dominated by willow oak *(Quercus phellos),* and red maple *(Acer rubrum).* Some of the apparently virgin, old-growth trees in the center of the swamp forest are impressive in size, such as one overcup oak *(Quercus lyrata)* with a 56-inch dbh. Water tupelo *(Nyssa aquatica)* occurring here is one of several species that are generally restricted to the Coastal Plain, and are disjunct by 50 to 100 miles from their main distribution. The adjacent second-growth, flat, dry upland forest buffers the swamp forest and is dominated by southern red oak *(Quercus falcata),* the largest dbh values being only about 24 inches.

   The second tract, 152 acres in area, contains Goose Pond which consists of an open marsh surrounded by a forested buffer zone. In the marsh are at least seven distinct vegetation zones containing at least 28 vascular plant taxa. In the deepest water is a low cover of floating aquatic pickerelweed *(Pontederia cordata).* This community is surrounded by a seemingly open-water circle, actually containing a zone of grassy arrowhead *(Sagittaria* sp.). Beside this is the dominant maiden-cane *(Panicum* sp.) community in which are scattered many nearly pure stands of three-way sedge *(Dulichium arundinaceum)* and spike rush *(Eleocharis* sp.). The maiden-cane community occupies about half of the marsh with a percent cover from 48 to 95 percent. The buffer zone consists of second-growth white oak *(Quercus alba)* dominated forest typical of this region. A red maple *(Acer rubrum)* and sweetgum *(Liquidambar styraciflua)* transition zone is situated between the marsh and the white oak forest.

   Both wetlands are characteristic of the Highland Rim Section of the Interior Low Plateaus physiographic province. Coffee County and adjacent areas have been recognized as a distinct floristic region in Tennessee by some scientists and has been referred to as the "Barrens of the Southeastern Rim Floristic Region." The 218-acre Sinking Pond tract is 4½ miles south-southeast of Manchester while the 152-acre Goose Pond tract is 7 miles southeast of Manchester.

3. *Owner:* U.S. Government; administered by the U.S. Air Force as part of the Arnold Engineering Development Center operated by the Arnold Research Organization.

4. *Proposed by:* Drs. Richard H. Goodwin and William A. Niering in the Inland Wetlands of the United States theme study.

5. *Significance:* The center of the 218-acre Sinking Pond tract contains an apparently virgin swamp forest. Virgin timber stands of any vegetation type are extremely rare in the State of Tennessee. The 152-acre Goose Pond tract is a pristine example of an open marsh with an ample buffer zone. Such pristine examples of marsh vegetation have become very uncommon in the State of Tennessee. Both tracts are floristically significant because of the presence of several disjunct plant species whose distribution is generally confined to the Coastal Plain province.

6. *Land use:* These two tracts are currently designated in the Arnold Engineering Development Center land use statement as natural areas and are so monumented and

managed. Hunting is the dominant land use.

7. *Dangers to integrity:* Continuity of designation as a natural area is subject to periodic administrative review.
8. *Special conditions:* A power transmission line passes through Goose Pond.
9. *Studied by:* Dr. H. R. DeSelm, Department of Botany, University of Tennessee, Knoxville, Tennessee, September 1974.

(d) Marine Corps Air Station, Kaneohe Bay, Oahu, Hawaii

The station is located on the Mokapu Peninsula, on the eastern coast of Oahu, Hawaii. The station supports a military and civilian population of 7,667.

Acreage: Total acreage is 2,950.89 of which 397.69 is water surface.

Topographical features: The installation has 6.12 miles of coastal shoreline. There are mud flats and marsh areas, and a volcanic crater.

Fauna and flora: Seabirds include red-footed booby *(Sula sula)*, brown booby *(Sula leucogaster)*, blue-faced booby *(Sula dactylatra)*, great frigate bird *(Fregata minor)*, Hawaiian noddy tern *(Anous tenuirostris)*, common noddy tern *(Anous stolidus pileatus)*, sooty tern *(Sterna fuscata)*, gray-backed tern *(Sterna lunata)*, wedge-tailed shearwater *(Puffinus pacificus chlorohynchus)*, Christmas shearwater *(Puffinus nativitatus)*, Bulwer's petrel *(Bulweria bulweri)*.

Marsh and shorebirds include black-crowned night-heron *(Nycticorax nycticorax)*, sanderling *(Croecethia alba)*, wandering tattler *(Heteroscelus incanum)*, golden plover *(Pluvialis dominica)*, ruddy turnstone *(Arenaria interpres)*, bristle-thighed curlew *(Numenius tahitiensis)*.

Passerine birds, all introduced, include common mynah *(Acridosheres tristis tristis)*, Brazilian cardinal *(Paroaria coronata)*, American cardinal *(Richmondena cardinalis)*, English sparrow *(Passer domesticus)*, house finch *(Carpodacus mexicanus)*, rice bird *(Lonchura punctulata)*, Japanese white-eyed *(Zosterops japonica)*, mockingbird *(Mimus polyglottos)*. Migrant waterfowl from continental North America include pintail ducks *(Anas acuta)*, shoveller ducks *(Spatula clypeata)*, buffleheads *(Bucephala albeola)*.

The only endangered species on the Station is the Hawaiian stilt *(Himantopus himantopus knudseni)*, discussed below.

Management: A cooperative agreement with the Hawaii Department of Land and Natural Resources (Division of Fish and Game) and the U.S. Fish and Wildlife Service was signed in 1970.

The entire Station is a bird and game sanctuary and further protection has been provided by the establishment of two wildlife refuges: the Nuupia Ponds area and the Ulupau Crater area, established to help protect the unique species of birds which nest at or seasonally migrate to the Station.

Nuupia Pond Wildlife Refuge—443 acres

The Nuupia Ponds area is the primary area of the world for the nesting and breeding of the Hawaiian stilt, an endangered bird species. In June 1971 the first five Hawaiian stilt nests in the Nuupia Ponds area since 1964 were sighted. Since then more than 55 stilts have been sighted each year and the Nuupia Ponds area is considered to have the highest density nesting of stilts in the world. Other species of birds sighted are the black-crowned night heron *(Nycticorax nycticorax hoactli)*, cattle egret *(Bubulcus ibis)*, and Hawaiian coot *(Fulica americana alai)*, as well as the migratory birds from the continental North America.

Early in 1974 an additional endangered species was introduced to the Air Station—the loloa *(Anas wyvilliana)* (Hawaiian duck). Once found on all the major islands, except Lanai, the loloa has disappeared from all the islands except Kauai and Oahu, where a few remain. The 25 ducks that were released are adapting very well.

The Nuupia Ponds area is managed primarily as a wildlife refuge; however,

multiple use of the land has proven desirable since it was found that certain vehicle operations in this area enhance the Hawaiian stilt habitat. These tracked vehicles are scheduled for training and post maintenance testing in these areas during February and March of each year to develop nesting areas just prior to the April-August nesting season. The amphibious vehicles are driven through the marshlands in a criss-cross pattern and the subsequent tracks fill with water. The small islands that are formed enable the Hawaiian stilt to lay their eggs in an area less accessible to the considerable number of mongooses in the area. The mongoose population is controlled by the Rod and Gun Club.

Ulupau Crater Wildlife Refuge—31 acres

The Ulupau Crater Wildlife Refuge area houses the only land accessible colony of Red-footed boobies *(Sula sula)* on Oahu, and one of two such colonies in the State of Hawaii. It is estimated that there are about 2,000 Red-footed boobies in the colony. Once again the multiple-use land concept is apparent as the weapons range is in the same area as the booby colony. The boobies are apparently totally unaffected by the sound of weapons firing and impacting. They appear to be hardly even startled, hence these two uses of the area seem to be compatible.

Several improvements have been made in the Refuge area. Observation sites and firebreaks have been cleared to prevent bush fires from entering the colony area. Wildlife Refuge boundary signs have been erected and brush clearing operations are conducted by the Rod and Gun Club on a continuing basis.

Birds on Moku Manu island, lying less than one mile away, may be clearly viewed from the Ulupau Crater Wildlife Refuge. The island is a nesting area for at least 11 species of birds including the boobies, the great frigatebird *(Fregata minor palmerstoni)*, four species of terns, two shearwater species, and Bulwer's petrels *(Bulweria bulwerii)*.

Ulupau Marine Holding Tank Site

The Ulupau Marine Organism Holding Tank Facility (a flow-through sea-water system) has been constructed on the north side of Mokapu Peninsula by the Naval Undersea Center. The laboratory will investigate the functional and structural responses of marine organisms (contained in 12 holding tanks supplied continuously with low-nutrient oceanic seawater) when controlled amounts of silt, heavy metals, or other subtances are added. The Ulupau seawater system is almost identical to the University of Hawaii Marine Laboratory system on Coconut Island which has been operating for about five years under funding from the Environmental Protection Agency. The major difference is that the Coconut Island system uses high-nutrient bay water.

No hunting is permitted at the station.

Contact:

Commanding Officer
Marine Corps Air Station
(Kaneohe Bay, Hawaii)
FPO San Francisco 96615

(e) Barksdale Air Force Base, Louisiana

The base, a unit of the Strategic Air Command, is in the vicinity of Bossier City and Shreveport, in northwestern Louisiana. The base supports a military and civilian population of 23,030.

Acreage: Total acreage of the installation is 21,954. There are five man-made lakes consisting of 774 acres, eight wetland areas covering 800 acres, and 16,698 acres of forest.

Topographical features: Barksdale Air Force Base's 7,712 acres of Red River flood plain lands were originally seasonal wetlands, flooded by Red River overflow during the winter and spring. Drainage and flood control of the lower Mississippi River System, of which Red River is a part, has destroyed almost all of this unique ecosys-

tem. Restoration work of Barksdale Air Force Base has put approximately 800 acres back into seasonal wetlands. Secondary drainage ditches in the hardwood forest have been blocked with culverts which are closed each fall to catch the winter rains. The water is retained within the wetland area until late May of the following year. In the event of a dry winter without sufficient rainfall to flood the wetlands a 16 inch tractor powered pump is moved into the area and water is pumped from Red Chute Bayou or Flat River into the wetlands.

The base has three streams with a total length of 18 miles. There are 8,984 acres of hilly land covered with pine hardwood forest.

Wildlife at the base is commonplace: white-tailed deer *(Odocoileus virginianus)*, eastern cottontail *(Sylvilagus floridanus)* and swamp rabbit *(Sylvilagus aquaticus)*, grey squirrel *(Sciurus carolinensis)*, and fox squirrel *(S. niger)*. Birds include eastern wild turkey *(Meleagris gallopavo)*, bobwhite quail *(Colinus virgianus)*, eastern mourning dove *(Zenaidura macroura)*, woodcock *(Philohela minor)*, coot *(Fulica americana)*, and all species of ducks that use the Mississippi Flyway. Fish include large mouth bass *(Micropterus salmoides)*; black and white crappie *(Pomoxis nigromaculatus* and *(P. annularis)*; various catfish *(Ictalurus* spp.); garfish *(Lepisosteus* sp); bowfin *(Amia calva)*; shad *(Alosa* spp.) and buffalo fish *(Ictiobus* sp.).

Management: Barksdale has a cooperative agreement with the Louisiana Wildlife and Fisheries Commission and the U.S. Fish and Wildlife Service. An agreement has also been made with the Soil Conservation Service.

The Barksdale natural resource conservation program has been built around restoring and protecting the natural environment with special emphasis on providing facilities for people to enjoy the natural resources. Through this program, there has been great progress in restoring the natural wetlands on the base. Bottomland hardwoods are being planted and protected, lakes restored, drainage and flood plains modified to protect streams, forest management intensified, pollution control increased.

Non-game species of wildlife and non-commercial species of plants are given equal consideration in management and protection as game species and commercial timber. Habitat improvement work such as prescribed burning, disking, timber thinning, etc., actually benefits more species of non-game birds and animals than game species. Soil disturbance increases seed production of annual plants and increases insect populations that are available to small birds.

There was before wildlife management commenced, a remnant alligator *(Alligator mississipiensis)* population on Barksdale. A program has been initiated to enlarge this population. 75 alligators were restocked in waters of the base. Each alligator was sexed, measured and marked before release. A joint study of these marked alligators is being carried out between the U.S. Fish and Wildlife Service and Barksdale Air Force Base. The purpose is to gather information to better protect and manage alligator populations.

A refuge has been established at Barksdale to prevent too great a kill or harassment of all water associated birds.

Mast (nut) producing bottomland hardwoods are very important food producers for squirrel, deer, ducks, turkey and quail. The long range forestry plans insure these oak *(Quercus* spp.) and pecan *(Carya illinoensis)* trees are favored over non-mast producers in management. Over 40,000 oak and pecan trees have been planted and plans call for planting at least 200,000 more during the next ten years.

To better understand wildlife food habits, a study of all vascular plants is being made of the area known as the East Reservation. This study consists of collecting, identifying and preserving specimens for present as well as future reference. These specimens are housed in the newly formed

Base Herbarium located in the Forest Management Building. Duplicate specimens are also being sent to the University of North Carolina and U.S. National Herbarium in Washington, D.C., in the event one collection is destroyed.

Many new range records of plants have been found and a manual of the vascular plants of Barksdale Air Force Base is in preparation which will describe and identify these and other species growing on the reservation.

Contact:

Headquarters USAF/PREV
Pentagon
Washington, D.C. 20330

(f) Perry Lake, Kansas

Perry Lake is situated on the Delaware River about two miles northwest of Perry, Kansas, in Jefferson County.

Construction of the project by the Corps was authorized under the Flood Control Act of 1954 as a unit of the Missouri River comprehensive plan for flood protection of the Kansas River and tributaries. The dam was completed in 1967. Actual multipurpose regulations of the project began in 1969. Interior roads and initial recreation facilities were completed in 1970.

Area: Total area of the project is approximately 29,312 acres, including normal water surface of 12,203 acres and flood area of 25,342 acres.

Topographical features: The topography of Perry Lake, like much of northern Kansas, consists of rolling uplands, eroded valleys, and meandering streams. The Delaware River flows in a southerly direction with tributaries entering from the east and west.

Fauna and flora features: Mammals at Perry Lake include mink *(Mustela vison)*, muskrat *(Ondatra zibethica)*, and the fox squirrel *(Sciurus niger)*. The Perry Lake Area is in the high density portion of the Kansas deer range. Mammals considered rare in Kansas that probably are found in the Perry Lake area are the eastern chipmunk *(Tamias striatus)*, woodchuck *(Marmota monax)*, Franklin's ground squirrel *(Citellus franklini)*, southern flying squirrel *(Glaucomys volans)*, southern bog lemming *(Synaptomys cooperi)*, spotted skunk *(Spilogale putorius)*, and the bobcat *(Lynx rufus)*.

Common amphibians found in the Perry Lake area include the spotted salamander *(Ambystoma maculatum)*, mudpuppy *(Necturus maculosus)*, plains spadefoot toad *(Scaphiopus bombifrona)*, bullfrog *(Rana catesbeiana)*, and leopard frog *(Rana pipiens)*. Common reptiles of the area include the snapping turtle *(Chelydra serpentina)*, ornate box turtle *(Terrapene ornata ornata)*, smooth soft-shelled turtle *(Trionyx muticus)*, collared lizard *(Crotaphytus collaris)*, common five-lined skink *(Eumeces fasciatus)*, Western slender glass lizard *(Ophesaurus a. attenuatus)*, prairie ring-necked snake *(Diadophis punctatus arnyi)*, eastern hog-nosed snake *(Heterodon platyrhinos)*, smooth green snake *(Opheodrys vernalis)*, racer *(Coluber constrictor)*, rat snake *(Elaphe obsoleta)*, bullsnake *(Pituophis melanoleucus sayi)*, speckled kingsnake *(Lampropeltis getulus holbrooki)*, common water snake *(Natrix sipedon)*, common garter snake *(Thamnophis sirtalis)*, plains garter snake *(T. radix)* and the copperhead *(Agkistrodon contortrix)*. Amphibians and reptiles considered rare in Kansas that may be found at the project include the crayfish frog *(Rana areolata areolata)*, spring peeper *(Hyla crucifer)*, green frog *(Rana clamitans metanota)*, pickerel frog *(Rana palustris)*, and smooth earth snake *(Haldea valeriae)*.

Bobwhite quail *(Colinus virginianus)* is the most abundant upland game bird in the area, followed by the mourning dove *(Zenaidura macroura)* and ring-necked pheasant *(Phasianus colchicus)*. Various species of waterfowl use the Perry Lake area. Dabbling ducks, like mallard *(Anas platyrhynchos)*, blue- *(Anas discors)* and green-winged teal *(Anas carolinensis)*, shoveler *(Spatula clypeata)*, and gadwall *(Anas strepera)*, are the most commonly harvested ducks in this region of Kansas. Geese

are attracted to the lake during both spring and fall migrations. Numerous songbirds nest in the area or use it during migration periods. Great blue herons *(Ardea herodius)* nest in small numbers in the upper reaches of the lake. The project is within the ranges of the southern bald eagle *(Haliaeetus l. leucocephalus)* and peregrine falcon *(Falco peregrinus)*, both of which are listed by the U.S. Department of the Interior as endangered or threatened species. Other birds considered threatened in Kansas that may be found in forested areas of the Perry Lake project include the hooded warbler *(Wilsonia citrina)*, prairie warbler *(Dendroica discolor)*, worm-eating warbler *(Helmitheros vermivorus)*, blue-winged warbler *(Vermivora pinus)*, Cerulean warbler *(Dendroica cerulea)*, yellow-throated warbler *(Dendroica dominica)*, whippoorwill *(Caprimulgus vociferus)*, red-shouldered hawk *(Buteo lineatus)*, osprey *(Pandion haliaetus)*, and the merlin *(Falco columbarius)*.

Principal fish of Perry Lake include large-mouth bass *(Micropterus salmoides)*, channel catfish *(Ictalurus punctatus)*, walleye *(Stizostedion vitreum)*, black bullhead *(Ictalurus melas)*, yellow bullhead *(I. natalis)*, bluegill *(Lepomis macrocherus)*, green sunfish *(L. cyanellus)*, sunfish hybrids, black crappie *(Pomoxis nigromaculatus)*, white crappie *(P. annularis)*, yellow perch *(Perca flavescens)*, warmouth bass *(Chaenobryttus gulosus)*, and white bass *(Roccus chrysops)*. Other fish of the lake include carpsuckers *(Carpeodes* spp.), buffalo *(Ictiobus* spp.), darters *(Etheostoma* spp.), and other members of the minnow family. Gizzard shad *(Dorosoma cepedianum)* is the main forage fish found in the lake.

Woodlands are of the oak-hickory type. Scattered eastern red cedar *(Juniperus virginiana)* trees are also found in the uplands. Black walnut *(Juglans nigra)*, northern red oak *(Quercus rubra)*, bur oak *(Q. macrocarpa)*, hackberry *(Celtis occidentalis)*, bitternut hickory *(Carya cordiformis)* and shellbark hickory *(C. ovata)* are common trees in the area. Common understory plants are dogwood *(Cornus drummondii)*, mulberry *(Morus rubra)*, sumac *(Rhus* sp.), greenbriar *(Smilax* sp.), gooseberry *(Ribes* sp.), bittersweet *(Celastrus scandens)*, and wild grape *(Vitis* sp.). Many introduced species of pines and other conifers and hardwoods are found around old homestead and town sites on project lands.

Perry Lake is located in the original tallgrass prairie region of Kansas. Little of the project area can be classified as prairie

Management:

Land Use Allocations at Perry Lake

	Corps	Other Federal Agencies	States	Local Public Agencies	Private Parties
Project—Operations	290	0	0	0	0
Recreation—Intensive Use	5,130	0	1,247	314	534
Recreation Low-Density Use	8,185	0	428	0	0
Natural Area	0	0	0	0	0
Wildlife Management	0	0	10,984	0	0
Reserve Forest Land	0	0	0	0	0
Intensive Forest Management	0	0	0	0	0

since most of the land has been converted either to cropland or "tame" pastureland containing bromegrass *(Bromus* sp.), fescue, *(Festuca* sp.), orchard grass *(Dactylis glomerata),* and other cool season grasses. While grass and forb types vary according to topography and past land use, predominant native grasses still found in the area include big and little bluestem *(Andropogon gerardi* and *A. scoparius),* Indian grass *(Sorghastrum nutans),* switch grass *(Panicum virgatum),* prairie dropseed *(Sporobolus* sp.), and various forbs and deep-rooted legumes. Invasion by other plants, such as coralberry *(Symphoricarpos orbiculatus),* blackberry *(Rubus* sp.), vervain *(Verbena* sp.), windmill grass, and numerous annuals has occurred since project operations began.

Perry Lake was constructed for flood protection, future water supply and recreation purposes. Recreation uses include hunting in prescribed areas, fishing, boating, swimming, picnicking, sightseeing, and camping. Visitors for 1974 numbered 1,572,600.

About 7,223 acres of project lands are leased for grazing, hay production, and restricted agricultural uses. In most cases these areas are in low intensity use recreation areas.

The primary responsibility for fish and wildlife management and enforcement activities on project lands has been assumed by the Kansas Forestry, Fish and Game Commission. The Commission's primary objective is to provide public hunting and fishing at the project. A total of 10,984 acres of land at the upper end of the lake is licensed to the Commission for fish and wildlife management purposes. These lands were licensed to the Commission following recommendations of the U.S. Fish and Wildlife Service and the Commission in compliance with provisions of the Fish and Wildlife Coordination Act. Crop manipulation and diversification are important aspects of the Commission's management program. About 4,812 acres of cropland are leased to local farmers. Unharvested crops from these leases are left near woody and herbaceous vegetation to provide both food and cover for wildlife. Large agricultural tracts are divided by seeding 100-foot-wide strips of a mixture of native bluestem grasses and Korean Lespedeza. Two marsh areas for waterfowl management purposes have been developed by plugging existing drainage ditches with dikes equipped with stoplog structures. The Commission's fish management program for the lake has included an intensive stocking program and enforcement of state fishing regulations. Northern pike, walleye, largemouth bass, bluegill, channel catfish, black crappie, and white bass have been stocked in the lake.

Wildlife needs are also recognized on Corps-managed lands in the vegetative management and forestation plans and the agricultural leasing program. A wildlife management plan for Corps-managed lands is being prepared and will be coordinated with the state wildlife program.

The Kansas State Forester has been involved in a vegetative management program at Perry Lake since 1967. The program is a three-party agreement between the Corps, U.S. Forest Service, and the Kansas State Forester. The plan was prepared by the Kansas State Forester for the public use areas maintained by the Corps. The overall objectives of the program are to establish, improve and maintain trees, shrubs, and grasses in public use areas in the interest of improved public recreation and multiple-use benefits such as erosion control and wildlife habitat. The improvement of existing vegetation, including thinning, pruning, tree surgery, and grass seeding was given high priority. Selective afforestation and landscaping of capital improvements also received high priority.

Sixty acres of timberland at Perry Lake have been designated as a National Environmental Study Area. It is used by surrounding area school districts to further their outdoor education programs.

Project lands have been leased for intensive recreation purposes to the Kansas State Parks Board. The 1,247-acre Jefferson State Park features swimming and camping along with recreation facilities similar to those on Corps-managed lands. The Board has also leased 428 acres of low intensity recreation land for future state park development. This land, designated as the Delaware State Park, will be developed as state funds become available.

About 848 acres of project lands are leased for intensive recreation purposes to six quasi-public organizations which function in the public interest and provide a recreational or educational service on a non-exclusive basis, and to one municipality, the City of Ozawkie. All plans for development and operation of these areas are subject to the approval of the Corps.

Contact:

Project Manager
Perry Lake
Box 62
Perry, Kansas 66073

(g) Henderson Sloughs, Kentucky

The Corps of Engineers is a partial owner of this National Natural Landmark. The Landmark Brief on the area is reproduced here (with scientific names added for the tree species mentioned):

1. *Site:* Henderson Sloughs, Henderson and Union Counties, Kentucky.
2. *Description:* This 4,300-acre wetland ecosystem is characterized by slight ridges dissected by long narrow fingers of submerged land forming the sloughs. Within the swampy areas, various hardwoods are associated with dense stands of bald cypress *(Taxodium distichum)*. Black oak *(Quercus velutina)*, white oak *(Q. alba)*, pin oak *(Q. palustris)*, shagbark hickory *(Carya ovata)*, elm *(Ulmus* sp.), red maple *(Acer rubrum)*, white ash *(Fraxinus americana)*, and hackberry *(Celtis occidentalis)* are found on the elevated areas while pin oak *(Q. palustris)*, cottonwood *(Populus deltoides)*, silver maple *(Acer saccharinum)*, sweetgum *(Liquidambar styraciflua)*, and river birch *(Betula nigra)* occur in the sloughs. The presence of bald cypress in this area approaches the northern and eastern distribution of this species along the Mississippi Embayment region. Old fields and meadows provide habitat for deer while the wetlands are important habitat for waterfowl and other water birds. This is one of the last refuges for the swamp rabbit in Kentucky. Historically, the Henderson Slough area is known as the home of John James Audubon and it was in such slough areas that he gathered specimens and data for many of his paintings. The site is located approximately 4 miles northeast of Uniontown.
3. *Owner:* U.S. Government, U.S. Army Corps of Engineers; the Commonwealth of Kentucky, Department of Fish and Wildlife Resources.
4. *Proposed by:* Drs. Richard H. Goodwin and William A. Niering in the Inland Wetlands of the United States theme study.
5. *Significance:* This site represents a diminishing wetland ecological system that was once prevalent along the lower section of the Ohio River. It is one of the largest wetlands remaining in the State of Kentucky and represents an important habitat for waterfowl and other wildlife. The accessibility and size of the proposed site enhances its educational and scientific potential.
6. *Land use:* The site is used as a game management area which allows for some hunting and fishing, as managed under the jurisdiction of the State Department of Fish and Wildlife Resources. The acquisition of much of the area by the Corps of Engineers is to insure that large acreages inundated by natural flooding will remain uninhabited by man. Mineral rights are controlled by outside interests and there are numerous active oil wells within the site and adjoining areas. Limited farming operations are conducted by the Department of Fish and Wildlife Resources to provide adequate food supplies for wildlife in the area.
7. *Dangers to integrity:* Perhaps the greatest danger within the proposed site is the potential for spillage of saltwater and oil from

the oil wells and supply lines active in the area; however, the use of the wells are now under supervision of the State. Extensive spillage has occurred outside the proposed tract but damage within the site thus far has been minimal. Some logging may continue on areas adjacent to the boundaries.

8. *pecial conditions:* The Corps of Engineers has plans to turn over its holdings to be managed by the State Department of Fish and Wildlife Resources.
9. *Studied by:* Dr. Joe E. Winstead and Dr. Kenneth A. Nicely, Department of Biology, Western Kentucky University, Bowling Green, Kentucky, April 1974.

B. Information and Bibliography

7.8 Key information contacts

Director for Real Property and Natural Resources
Room 30761, Pentagon
Washington, D.C. 20301
(202) 697-7227

Army:

Department of the Army
Office of Engineers
Natural Resources Branch, DAEN-FEB-N
Washington, D.C. 20314
(202) 693-6968

Corps:

Recreation Resource Management Branch
DAEN-CWO-R
Forrestal Building
Washington, D.C. 20314
(202) 693-7177

Navy:

Commander Naval Facilities Engineering Command
200 Stovall Street
Alexandria, Virginia 22332
(703) 325-0486

Marines:

Headquarters Marine Corps
Installations and Logistics Department
Facilities and Services Division
Code L.F.F.
Washington, D.C. 20380
(202) 694-1425

Air Force:

Headquarters USAF/PREV
Pentagon
Washington, D.C. 20330
(202) 697-2039

7.9 Bibliography

Army Corps of Engineers: Engineering Regulation 1105-2-507. "Planning: Preparation and Coordination of Environmental Statements." April 15, 1974.

Army Corps of Engineers: Engineering Regulation 1120-2-400. "Investigations, Planning, and Development of Water Resources: Recreation Resources Planning." November 1, 1971.

Army Corps of Engineers: Engineering Regulation 1130-2-400. "Project Operation: Recreation-Resource Management of Civil Works Water Resource Projects." May 28, 1971.

Army Corps of Engineers: Engineering Regulation 1130-2-406. "Project Operation: Lakeshore Management at Civil Works Projects." December 13, 1974.

Coastal Zone Resources Corporation. *Study of Land Use for Recreation and Fish and Wildlife Enhancement.* Washington, D.C.: Office, Chief of Engineers, U.S. Army Corps of Engineers, May, 1975.

Department of the Air Force: Air Force Regulation 19-1. "Pollution Abatement and Environmental Quality." February 20, 1974.

Department of the Air Force: Air Force Manual 126-1. "Conservation and Management of Natural Resources." February 22, 1972.

Department of the Army: Army Regulation 200-1. "Environmental Quality: Handbook for Environmental Impact Analysis." April, 1975.

Department of the Army: Army Regulation 420-74. "Natural Resources—Land, Forest, and Wildlife Management." June, 1966.

Department of Defense Directive 5100.50. "Protection and Enhancement of Environmental Quality." May 24, 1973.

Department of Defense Directive 5500.5. "Natural Resources—Conservation and Management." May 24, 1965.

Department of Defense Directive 6050-1. "Environmental Consideration in Department of Defense Actions." March 19, 1974.

Department of the Navy: Secretary of the Navy Instruction 6240.6D. "Department of the Navy Environmental Protection Program." January 31, 1975. (Applicable to Marine Corps.) Naval Operations Instruction 6240.3D. April 24, 1975.

General Services Administration. "Inventory Report on Real Property Owned by the United States Throughout the World as of June 30, 1974." Washington, D.C.: GPO 0-574-021, 1975.

Marine Corps: Marine Corps Order P11000.8A. "Real Property Facilities Manual, Vol. V, Environmental Management." April 7, 1975.

Marine Corps: Marine Corps Order 110015.4. "Conservation of Endangered Species." January 28, 1975.

U.S. Army Engineer Waterways Experiment Station. *Technical Report M-74-6: A User-Accessed Computer Information System for Environmentally Sensitive Wildlife.* Vicksburg, Mississippi: Mobility and Environmental Systems Laboratory, Corps of Engineers, 3 Vols., June, 1974.

7.10 List of technical appendices

(a) "Conservation and Management of Natural Resources" in *Air Force Manual.* Department of the Air Force. Washington, D.C.: AFM 126-1, February 22, 1972.

(b) "Natural Resources—Conservation and Management." Department of Defense. Washington, D.C.: Directive 5500.5, May 24, 1965.

(c) Federal Water Project Recreation Act (16 U.S.C. 460*l*-133ff.).

(d) Fish and Wildlife Coordination Act of March 10, 1934, as Amended (16 U.S.C. 661 ff.).

(e) *Environmental Quality: Handbook for Environmental Impact Analysis.* Headquarters, Department of the Army. Washington, D.C.: Department of the Army Pamphlet No. 200-1, April, 1975.

(f) Military Installations Having Cooperative Agreements Under the Sikes Act (unpublished list).

(g) Sample Cooperative Agreement.

(h) Sikes Act ("Conservation Programs on Military Reservations," 16 U.S.C. 670a ff.).

(i) System of Sensitive Wildlife Information: FORMAT.

PART THREE

FEDERAL INTER-AGENCY NATURAL AREA SYSTEMS

Chapter Eight:

National Wilderness Preservation System

A. Objectives and Program

8.1 Overall objectives of the System

The National Wilderness Preservation System, established by Act of Congress on September 3, 1964,[1] has as its major objective "to secure for the American people of present and future generations the benefits of an enduring resource of wilderness." It constitutes a systematic statutory program establishing the clear policy that wilderness is a public good that deserves protection. The System is composed of Federally-owned lands designated by Congress as "Wilderness areas." These areas—all presently within the National Park System, the National Forest System, and the National Wildlife Refuge System—are to be administered in such a way that they will remain in an undisturbed condition.[2]

Section 2(a) of the Act states the objectives of the System:

> In order to assure that an increasing population accompanied by expanding settlement and growing mechanization does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness. For this purpose there is hereby established a National Wilderness Preservation System to be composed of Federally owned areas designated by Congress as "wilderness areas", and these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness; and no Federal lands shall be designated as "wilderness areas" except as provided for in this Act or by a subsequent Act.[3]

Subsequent Acts of Congress have not changed these objectives and have generally simply added areas to the System. The Act commonly referred to as "the Eastern Wilderness Act," P.L. 93-622, passed January 3, 1975, however, served in effect to establish the principle that certain areas in the East, although not "untrammeled by man," may be designated as Wilderness Areas. In fact, the Act designated sixteen areas within National Forest lands east of the 100th meridian as wilderness.[4]

8.2 Entry into the System

In order to qualify for wilderness designation, an area must come within the following definition:

> A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this chapter an area of undeveloped Federal land retaining its primitive character and influ-

[1] P.L. 88-577, 16 U.S.C. 1131-1136, commonly referred to as "the Wilderness Act."

[2] The Wilderness Act mentions by name only the three systems referred to here. It does not exclude other administrative units, such as the Bureau of Land Management, from proposing to Congress that areas administered by them be made part of the Wilderness System.

[3] 16 U.S.C. 1131(a).

[4] Also in the recent Act is a provision for the designation of 17 "Wilderness Study Areas." These National Forest areas are to be reviewed as to their suitability or non-suitability for wilderness designation in a process similar to that of the 1964 Act except that reviews are to be completed within five years after the enactment of the Act. Additional wilderness study areas may be designated subsequent to those provided for in the 1975 Act with a 10 year deadline for the arrival of the recommendation to Congress. The study areas are to be managed to maintain their existing wilderness character and potential for future wilderness designation until Congress has acted or until a study report lies before three Congresses with no action.

ence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.[5]

All National Forest areas classified at least 30 days before the effective date (September 4, 1964) of the Wilderness Act as "wilderness," "wild," or "canoe" were immediately declared by the Act as being wilderness.[6] There were in fact 54 such areas. Other lands, including National Forest Primitive Areas, National Wildlife Refuges and Game Ranges and lands in the National Park System, were to be reviewed as to their suitability or nonsuitability for possible designation with the following ten years.[7] The Secretaries of Agriculture and the Interior were directed to review areas within their respective jurisdiction, and make recommendations to the President.

The process for addition of additional units to the System is summarized in the following outline:

1. The unit is studied by the agency (Forest Service, National Park Service, U.S. Fish and Wildlife Service), and the agency head makes a preliminary proposal;
2. Public notice of the proposal including the announcement of public hearings is put in the *Federal Register* and local newspapers. These notices invite the public to attend the hearings and to express their views on the proposal. This is done at least 30 days before the public hearing or hearings;
3. Interested Federal agencies, state governors and the county governing boards are informed of the proposal and invited to give their comments. This is to be done at least 30 days prior to the hearing;
4. The hearing is held in the affected area (if the area is in two separate states, one hearing is held in each state);
5. The agency analyzes the results of the hearing, reassesses its proposal, and forwards a report and final proposal to the Department Secretary;
6. The Department Secretary reviews the draft recommendation and forwards it to the President;
7. The President then reviews the agency recommendation and forwards it to the President of the Senate and the Speaker of the House of Representatives in the form of a request for legislation. Accompanying the request are maps with a definition of boundaries.

The following is a National Park Service example of the consideration taken into account by an agency—in addition to the four basic requirements in the definition section of the Act—when reviewing a recommendation for wilderness designation:

Management Considerations

An area will not be excluded from a wilderness recommendation solely because established or proposed management practices require the use of tools, equipment, or structures if those practices are necessary for the health and safety of wilderness travelers or protection of the wilderness area.

Grazing and Stock Driveways

Lands wili not be excluded from a wilderness recommendation solely because of prior rights or privileges, such as grazing and stock driveways, provided these operations do not involve the routine use of motorized or mechanical equipment and do not involve development and structures to such an extent that the human imprint is substantially noticeable.

Historic Features

Historic features are not ordinarily included in wilderness. However, archaeological ruins and miscellaneous structures of historic significance occur in undeveloped portions of a number of parks. Such features may be included in a recommended wilderness when their use and the requirements for mainte-

[5] 16 U.S.C. 1131(c).
[6] 16 U.S.C. 1132(a).
[7] 16 U.S.C. 1132(b).

nance and rehabilitation can be performed in accordance with wilderness management policies. Maintenance of the landscape so as to retain identify of historic travel routes, fields, etc., may not be undertaken.

Potential Wilderness Additions

When non-qualifying lands are surrounded by or adjacent to an area proposed for wilderness designation and such lands will within a determinable time qualify and be available Federal land, a special provision should be included in the legislative proposal giving the Secretary of the Interior the authority to designate such lands as wilderness at such time he determines it qualifies.

Mining or Prospecting

Any recommendation that lands presently subject to mineral entry be designated wilderness will only be made subject to revocation of the mineral entry provision.

Utility Lines

Lands containing above-ground utility lines are not included in recommended wilderness. Areas containing underground utility lines may be included if the area otherwise qualifies as wilderness and the maintenance of the utility line does not require mechanized and motorized equipment.[8]

8.3 Protection

An important provision for the protection of wilderness is contained in section 4(b):

> Except as otherwise provided in this Act, each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character. Except as otherwise provided in this Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation and historical use.[9]

Certain uses are specifically prohibited by section 4(c):[10]

> Except as specifically provided for in this Act, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and, except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.

These are strong legislative protections, establishing a high degree of integrity for the Wilderness System. There are, however, provisions in the Act for uses incompatible with wilderness objectives where one category of lands is concerned—National Forests. Provision for mining and mineral leasing activities on such lands until midnight December 31, 1983, is made, and even after this date existing claims may be mined:

> Notwithstanding any other provisions of this chapter, until midnight December 31, 1983, the United States mining laws and all laws pertaining to mineral leasing shall, to the same extent as applicable prior to September 3, 1964, extend to those national forest lands designated by this chapter as "wilderness areas"; subject, however, to such reasonable regulations governing ingress and egress as may be prescribed by the Secretary of Agriculture consistent with the use of the land for mineral location and development and exploration, drilling, and production, and use of land for transmission lines, waterlines, telephone lines, or facilities necessary in exploring, drilling, producing, mining, and processing operations, including where essential the use of mechanized ground or air equipment and restoration as near as practicable of the surface of the land disturbed in performing prospecting, location, and, in oil and gas leasing, discovery work, exploration, drilling, and

[8] U.S. Department of the Interior, National Park Service, *Management Policies* (April 1975), p. VI-3.

[9] 16 U.S.C. 1133(b).

[10] 16 U.S.C. 1133(c).

production, as soon as they have served their purpose. Mining locations lying within the boundaries of said wilderness areas shall be held and used solely for mining or processing operations and uses reasonably incident thereto; and hereafter, subject to valid existing rights, all patents issued under the mining laws of the United States affecting national forest lands designated by this chapter as wilderness areas shall convey title to the mineral deposits within the claim, together with the right to cut and use so much of the mature timber therefrom as may be needed in the extraction, removal, and beneficiation of the mineral deposits, if needed timber is not otherwise reasonably available, and if the timber is cut under sound principles of forest management as defined by the national forest rules and regulations, but each such patent shall reserve to the United States all title in or to the surface of the lands and products thereof, and no use of the surface of the claim or the resources therefrom not reasonably required for carrying on mining or prospecting shall be allowed except as otherwise expressly provided in this chapter: *Provided,* That, unless hereafter specifically authorized, no patent within wilderness areas designated by this chapter shall issue after December 31, 1983, except for the valid claims existing on or before December 31, 1983. Mining claims located after September 3, 1964, within the boundaries of wilderness areas designated by this chapter shall create no rights in excess of those rights which may be patented under the provisions of this subsection. Mineral leases, permits, and licenses covering lands within national forest wilderness areas designated by this chapter shall contain such reasonable stipulations as may be prescribed by the Secretary of Agriculture for the protection of the wilderness character of the land consistent with the use of the land for the purposes for which they are leased, permitted, or licensed. Subject to valid rights then existing, effective January 1, 1984, the minerals in lands designated by this chapter as wilderness areas are withdrawn from all forms of appropriation under the mining laws and from disposition under all laws pertaining to mineral leasing and all amendments thereto.[11]

[11] 16 U.S.C. 1133(d)(3).

Provision is also made for private mineral prospecting in National Forest Wilderness Areas where "compatible with the preservation of the wilderness environment," and the Geological Survey and the Bureau of Mines are directed to undertake a planned, recurrent mineral survey of such areas.[12] Also, in accordance with the following sections, the construction of water projects and the grazing of livestock is allowed:

> Within wilderness areas in the national forests designated by this chapter, (1) the President may, within a specific area and in accordance with such regulations as he may deem desirable, authorize prospecting for water resources, the establishment and maintenance of reservoirs, water-conservation works, power projects, transmission lines, and other facilities needed in the public interest, including the road construction and maintenance essential to development and use thereof, upon his determination that such use or uses in the specific area will better serve the interests of the United States and the people thereof than will its denial; and (2) the grazing of livestock, where established prior to September 3, 1964, shall be permitted to continue subject to such reasonable regulations as are deemed necessary by the Secretary of Agriculture.[13]

Finally, where state-owned or privately-owned land is completely surrounded by National Forest Wilderness, the owner has the right of adequate access to the land. This state-owned or privately-owned land can also be exchanged for equally valuable Federally-owned land within the same state. Private owners of valid mining claims are also assured of ingress and egress.[14]

8.4 Management

The department and agency which had jurisdiction over the area prior to its designation as wilderness continues to adminis-

[12] *Ibid.*

[13] 16 U.S.C. 1133(d)(4).

[14] 16 U.S.C. 1134(a)(b).

ter the area after it has been declared wilderness. Therefore, each agency has its own administrative management policies and guidelines for Wilderness Areas under its jurisdiction.

On June 1, 1966, the Secretary of Agriculture issued wilderness guidelines for the Forest Service to follow. He directed them to prepare an individual plan for each of the original 54 Wilderness Areas incorporated into the System and for later additions.[15] The plans were to be based on the following basic management principle:

> National Forest Wilderness resources shall be managed to promote, perpetuate, and, where necessary, restore the wilderness character of the land and its specific values of solitude, physical and mental challenge, scientific study, inspiration, and primitive recreation.[16]

Toward that end, National Forest Wilderness is administered with respect to these three objectives:

a. Natural ecological succession will be allowed to operate freely to the extent feasible;
b. Wilderness will be made available for human use to the optimum extent consistent with the maintenance of primitive conditions;
c. In resolving conflicts in resource use, wilderness values will be dominant to the extent not limited by the Wilderness Act, subsequent establishing legislation, or the regulations in this part.[17]

Chapter VI of the National Park Service's *Management Policies* concerns itself with wilderness preservation and management. The basic management policy directive states that:

> The National Park Service will preserve an enduring resource of wilderness in the National Park System as part of the National Wilderness Preservation System, to be managed for the use and enjoyment of wilderness values without impairment of the wilderness resources.

Management Policies also establishes a wilderness review process. Taken into consideration in the wilderness review process for National Park System lands are areas that at one time have been logged, farmed, or grazed. In situations where such uses have impaired wilderness quality, management is to be directed toward the restoration of its wilderness character.[18]

Management Policies spells out use limitations on the following: overnight use, day use, commercial services, caches, research, refuse disposal, and hydrometerological devices.

In the management of wilderness the National Park Service is to use "the minimum tool necessary to successfully, safely and economically accomplish its management objectives."[19] Economic factors are to be considered the least important of the three criteria when establishing the minimum tool. The tool or equipment that least degrades the wilderness should be chosen. "Facilities are permitted only as necessary to meet the minimum requirements for the administration of the wilderness area."[20]

With regards to wilderness uses, *Management Policies* states that:

> The visitor must accept wilderness largely on its own terms. Modern conveniences are not provided for the comfort of the visitor; and the risks of wilderness travel, of possible dangers from accidents, wildlife, and natural phenomena must be accepted as part of the wilderness experience.[21]

Units of the National Wilderness Preservation System within the National Wildlife Refuge System are discussed in the *Code of Federal Regulations*. Concerning the rela-

---

[15] Frome, Michael. *The Forest Service*, Praeger Publishers, New York, 1971, p. 100.

[16] *Code of Federal Regulations*, Title 36, section 293.2.

[17] *Code of Federal Regulations*, Title 36, section 293.2.

[18] U.S. Department of the Interior, National Park Service, *Management Policies* (April 1975), p. VI-2. See section 2.6 above, for further considerations into account by the Park Service in the review process.

[19] U.S. Department of the Interior, National Park Service, *Management Policies*, p. VI-6.

[20] *Ibid.*

[21] *Ibid.*, p. VI-4.

tionship between the two systems, the Regulations read as follows:

> . . . The establishment of each wilderness unit is within and supplemental to the purposes for which a specific unit of the National Wildlife Refuge System was established and is administered. Each wilderness shall be administered for such other purposes for which the National Wildlife Refuge was established and shall also be administered to preserve its wilderness character.[22]

Management policies on Wilderness Areas within National Wildlife Refuges include the following:

Section 35.6 Public use.

Public uses of a wilderness unit will be in accordance with the purposes for which the individual national wildlife refuge was established and is administered and laws and regulation governing public uses within the National Wildlife Refuge System.

(a) When public uses are authorized within a wilderness unit, the Refuge Management may regulate such use. Regulating will include limiting the numbers of persons allowed in the wilderness at a given time, imposing restrictions on time, seasons, kinds and location of public uses, requiring a permit or reservation to visit the area, and similar actions.

(b) All persons entering a wilderness unit will be required to remove such materials as they carry in.

(c) Informational signs for the convenience of visitors will not be permitted in a wilderness unit; however, rustic directional signs for visitor safety may be installed in locations appropriate to a wilderness setting.

(d) Limited public use facilities and improvements may be provided as necessary for the protection of the refuge and wilderness and for public safety. Facilities and improvements will not be provided for the comfort and convenience of wilderness visitors.

(e) Public services and temporary structures generally offered by packers, outfitters, and guides for realizing the recreational or other wilderness purposes of a wilderness may be permitted. Temporary installations and structures which existed for these subsistence purposes under valid special use permit or easement when the wilderness was established may be continued if their use is necessary to administer the refuge for the purposes for which it was established and for wilderness purposes. The number, nature, and extent of such temporary structures and services will be controlled through regulations and special use permits issued by the Refuge Manager so as to provide maximum protection of wilderness resources and values.

(f) Hunting and fishing in a refuge wilderness be in accordance with Federal and State regulations including special regulations for the specific wildlife refuge. Hunting or fishing which requires motorized equipment will not be permitted except as provided in Section 35.5 (a) and (b).

Section 35.7 Control of wildfires, insects, pest plants, and disease.

To the extent necessary, the Director shall prescribe measures to control wildfires, insects, pest plants, and disease to prevent unacceptable loss of wilderness resources and values, loss of life, and damage to property.

Section 34.8 Forest management.

Forest management activities in a wilderness unit will be directed toward allowing natural ecological processes to operate freely. Commercial harvesting of timber shall not be permitted except where necessary to control attacks in insects or disease as prescribed in Section 35.7.

Section 35.9 Livestock grazing.

(a) The grazing of livestock, where established prior to the date of legislation which designates a wilderness unit, may be permitted to continue subject to Part 29 of this subchapter and in accordance with special provisions which may be prescribed for individual units. Numbers of permitted livestock will not be more liberal than those utilizing a wilderness prior to establishment and may be more restrictive. . . .

Section 35.10 Controlled burning.

Controlled burning will be permitted on wilderness units when such burning will contribute to the maintenance of the wilderness resource and values in the unit; however, any fire in a wilderness area that poses a threat to resources or facilities outside the unit will be controlled and extinguished.

Section 35.11 Scientific uses.

Recognizing the scientific value of wilder-

[22] Title 50, Chapter 1, section 35.2(a).

ness, research data gathering and similar scientific uses will be encouraged. . . .

Section 35.12 Water rights.

Nothing in the regulations in this part constitutes an expressed or implied claim or denial on the part of the Department of the Interior as to exemption from State water laws.

Section 35.13 Access to State and private lands.

Rights of States or persons, and their successors in interest, whose land is surrounded by a wilderness unit, will be recognized to assure adequate access to that land. . . .

Section 35.14 Special regulations.

(a) Special regulations will be issued by the Director for individual wilderness units within the National Wildlife Refuge System as established by Public Law. These special regulations will supplement the provisions of this part.

(b) Special regulations may contain administrative and public uses as recognized in the:

(1) Legislative Record of the establishing Act.
(2) Committee Reports of the Congress.
(3) Department and Executive Reports to the Congress.
(4) Other provisions.

(c) Such special regulations shall be published in Subpart B of this part after a wilderness has been established by Public Law and shall become effective upon publication in the *Federal Register* (12-31,71).[23]

8.5 *Present status of the System*

The effect of the 1964 Wilderness Act was to designate 54 areas totaling over 9 million acres as units in the National Wilderness Preservation System. All 54 were within National Forests. With the enactment of what is commonly referred to the Eastern Wilderness Act in 1974 (the Act became effective January 4, 1975), 16 National Forest areas in the East, encompassing 206,988 acres in 13 states, were added to the System. Also with this Act came the direction to the U.S. Forest Service to study 17 additional areas, totaling 125,000 acres within the next five years.

Also in 1974, Congress passed a wilderness measure specifically pertaining to National Forests and National Wildlife Refuges. The measure added four primitive areas in National Forests (604,500 acres) to the Wilderness System, 12 new National Wildlife Refuge units (111,337 acres), and a 4,719-acre addition to the existing Moosehorn Wilderness (Maine).

With the designation of Farallon (California) and Okefenokee (Georgia), both Wildlife Refuge areas, earlier in 1974, designations by the 93rd Congress came to a total of 1,064,547 acres in 18 new units.

Since the passage of the 1964 Act, and its effective designation of 54 acres, Congress has added to the Wilderness System 76 areas totaling more than three million acres in the National Forest, National Park and National Wildlife Refuge Systems. As of December 31, 1974, the agency totals were as follows:

National Forests	85 areas/11.6 million acres
National Parks	4 areas/0.201 million acres
National Wildlife Refuges	41 areas/0.576 million acres

These 130 wilderness areas make up over 12 million acres in the System at this date.

8.6 *Illustrative examples:*

(a) Bob Marshall Wilderness, Montana

This 950,000 acre Wilderness, larger than the state of Rhode Island, lies within the Flathead and the Lewis and Clark National Forests in Montana. It was named for Bob Marshall, an early Forest Service proponent of wilderness and prime mover in organizing the Wilderness Society. This Wilderness Area offers rugged peaks, alpine lakes, and mountain valleys with meandering rivers and open meadows.

[23] *Code of Federal Regulations,* Title 50, Chapter 1, sections 35.6-35.14.

Acreage: There are 950,000 acres in the Bob Marshall Wilderness.

Elevation: Elevations range from 4,000 feet along the valley floors to more than 9,000 feet near the Continental Divide.

Geological features: The Continental Divide extends for more than 60 miles through the Wilderness. Along the Divide, layers of rock have been subjected to tremendous stresses from within the earth. Deposited sediment has been folded, broken, and elevated to form great faults. The 1,000-foot high "Chinese Wall" along the Continental Divide is a cuesta face or scarp. Cambrian limestone in these cliffs are from 500 to 600 million years old.

The mountains, elevated from an old sea bottom, were built of sedimentary rocks composed of sands, mud, shells of animals, and limey deposits of animals. Glaciers traveled downward toward lower elevations, leaving U-shaped troughs. Since the ice melted from the valleys 12 million years ago, streams have again started cutting small, sheer-walled canyons in the valley floors.

Flora and fauna: Engelmann spruce *(Picea engelmannii)* grown in the cool mountain canyons, and along lakesides and streams. Lodgepole pine *(Pinus contorta),* deriving its name from the use Indians made of the tree in building lodges, often reach 100 feet. At high elevations there is subalpine larch *(Larix lyallii)* near timberline. Short, twisted whitebark pine *(Pinus albicaulis)* and limber pine *(P. flexilis)* grow on rocky, exposed sites. Ponderosa pine *(P. ponderosa)* is typical of the foothills and therefore is seldom found above 5,000 feet. Western larch *(Larix occidentalis)* and Douglas fir *(Pseudotsuga menziesii)* often grow up to 150 feet in height.

Deciduous trees in Bob Marshall are mountain ash *(Sorbus sitchensis),* chokecherry *(Prunus virginiana),* aspen *(Populus tremuloides),* water birch *(Betula occidentalis),* paper birch *(B. papyrifera),* thinleaf alder *(Alnus tenuifolia),* and Rocky Mountain maple *(Acer glabrum).*

The areas provides habitat for elk *(Cervus canadensis),* mule deer *(Odocoileus hemionus),* black bear *(Ursus americanus),* bighorn sheep *(Ovis canadensis),* and mountain goats *(Oreamnos americanus).* The grizzly bear *(Ursus horribilis),* listed as a "threatened" species and the gray wolf *(Canis lupus),* an "endangered" species, live here. Other wildlife present are moose *(Alces alces),* badger *(Taxidea taxus),* porcupine *(Erethizon dorsatum),* hoary marmot *(Marmota caligata),* golden-mantled ground squirrel *(Citellus lateralis),* bobcat *(Lynx rufus),* Canada lynx *(Lynx canadensis),* cougar *(Felis concolor),* marten *(Martis americana),* and wolverine *(Gulo luscus).*

Uses: Recreation opportunities include hiking, horseback riding, photography, fishing, ski touring, snowshoeing, mountain climbing and big game hunting (Montana's Fish and Game Department establishes hunting and fishing seasons, issues requires permits, and establishes catch and bag limits).

Designation: Secretary of Agriculture Henry A. Wallace designated this area as a Forest Service administered wilderness on August 16, 1940. It was formed by combining three National Forest Primitive Areas. With the passage of the Wilderness Act in 1964, the Bob Marshall Wilderness automatically became part of the National Wilderness Preservation System.

Withdrawal Status: Effective January 1, 1984, and subject to mining rights established before that date, lands designated as wilderness are withdrawn from all forms of appropriation under the mining and mineral leasing laws, see section 4 of the Wilderness Act. The Bob Marshall Wilderness Management Plan of 1972 stated that the area is considered to be lacking in valuable minerals.

Protections afforded: Within the Bob Marshall are 40.5 miles of the South Fork and 14 miles of the Middle Fork of the Flathead River that have been designated for study under the Wild and Scenic Rivers Act. The Forest Service has now completed the study

and recommended it for inclusion in the System. If these areas are included, further protection would be afforded these areas within the Wilderness Area. The Wild and Scenic Rivers Act states that where portions of the System are within the National Wilderness Preservation System, and there are conflicts in laws and regulations, "the more restrictive provision shall apply."[24]

Management: Within the 1972 Bob Marshall Wilderness Management Plan are portions of the Multiple-Use Management Guides for the Northern Region of the Forest Service. These guides provide overall management direction and coordinating requirements. The following are the management guides for Forest Service Wilderness in the Northern Region of the Forest Service which includes the Bob Marshall:

1. (Wildernesses will be managed primarily) to perpetuate and provide benefits from their wilderness resource.
2. Research and administrative studies shall be carried out to determine the past and present adverse effect of man on the wilderness resource. Within the authority of the Wilderness Act, work diligently to restore the "primeval character and influence" of the Region's Wildernesses where this has been lost or eroded.
3. Plant and animal communities will be given full opportunity to develop naturally. Normal management concepts of game species, predators, beneficial or harmful insects or diseases, good forage vs. unpalatable, etc., which are valid for other National Forest lands and resources, are not valid for the Region's Wildernesses.
4. The role of man in the Region's Wildernesses shall be that of "a visitor who does not remain." His influence shall be controlled to the extent necessary to insure that the remaining evidence of this activities is "substantially unnoticeable."
5. Recognized that the National Wilderness Preservation System is a "system" to provide the components of the wilderness resource named in the Act, and that individual areas will vary in quantity and quality of these components.
6. Sustain rare and endangered species native to a given Wilderness.
7. Acquire all private lands within the Wilderness boundaries.
8. Through control of and cooperation with miners, protect wilderness values insofar as possible in their prospecting for and developing (of) mineral resources.[25]

Contact:
Forest Supervisor
Flathead National Forest
Box 147
Kalispell, Montana 59901

(b) Dolly Sods Wilderness, West Virginia

Dolly Sods lies within a very high portion of the Allegheny Plateau in the highlands of northeastern West Virginia. Its distinctive flora, reminiscent of areas much further north, makes it worthy of the protective status of a Wilderness Area. The area is named for the pioneer Dohle (Dolly) family which formerly owned and utilized "the sods," of grazing land.

Acreage: It consists of 10,215 acres, much of which is north of Forest Road 19 and west of Forest Road 75 in Tucker, Randolph, and Pendleton counties.

Elevation: Dolly Sods lies within a high portion of the Allegheny Plateau, averaging approximately 4,000 feet in elevation.

Geology: All of the area is drained by Red Creek, a tributary of the Dry Fork-Cheat River-Ohio River system. The eastern boundary is formed by cliffs of sandstone and conglomerate at the edge of the Rohrbaugh Plains. The central portion is deeply cut by the canyons of Red Creek and its main branches.

Flora and fauna: Much of Dolly Sods was burned and/or cut over at one time, but northern hardwood *(Acer-Betula-Tsuga-Fagus)* and red spruce *(Picea rubens)* forests are slowly reclaiming the land. This makes

[24] 16 U.S.C. 1281(b).

[25] U.S. Forest Service, Bob Marshall Wilderness Management Plan, 1972, p. 32.

the area interesting to botanists studying the states of ecological succession. The "huckleberry plain," an area of open, rocky, high ridges, contain a variety of heath shrubs including blueberry and cranberry *(Vaccinium* spp.), mountain laurel *(Kalmia latifolia)* and rhododendron *(Rhododendron maximum)*. The *Sphagnum* bogs make the area reminiscent of the Arctic tundra.

The Dolly Sods' wide spectrum of habitats supports a variety of wildlife. On the high plains are many white-tailed deer *(Odocoileus virginianus)* and snowshoe hares *(Lepus americanus)*. Other species include ruffed grouse *(Bonasa umbellus)*, wild turkey *(Meleagris gallopavo)*, and black bear *(Ursus americanus)*. In the watershed of Red Creek are numerous beaver. Their ponds, dams, lodges, trails and canals are fascinating features to hikers.

Uses: The area is generally useful for passive recreation consistent with a primitive area, although some grazing and hunting and fishing are allowed.

Protections afforded: The area has the benefit of the protections of both the Wilderness Act and the administrative "scenic" classification.

Management: Permits are required for entry into the Dolly Sods Wilderness Area. They may be obtained from any of the six Forest Service ranger stations or the Forest Supervisor's office in Elkins, West Virginia. The reason for the permit system is to determine the actual extent of use of the area by collecting data (number in party, expected date and duration of entry, location of entry and exit). This data will help in deciding the best management plans for the area. If the area is found to be overused it is likely that more restrictions will be developed and enforced including a limit on the number of visitors permitted in the area at one time.[26]

Since the Dolly Sods area has had an extensive history of human use, the Forest Service is attempting to speed up the restoration process. Such practices include pulling culverts out of the roads, removing fences from cow pastures, and allowing wildlife clearings (once used as a management tool) to be reclaimed.[27]

Designation: Much of Dolly Sods is classified a "scenic area."[28] Such an administrative classification did not satisfy many citizen groups including the West Virginia Highlands Conservancy, so they pushed for passage of the Eastern Wilderness Act. Dolly Sods was one of the 16 areas classified as wilderness by the Act.

Contact:
District Ranger
Monongahela National Forest
Petersburg, West Virginia 26847

(c) Okefenokee Wilderness, Georgia

The Okefenokee Wilderness is a part of the Okefenokee National Wildlife Refuge in extreme southeast Georgia. The Okefenokee Swamp is one of the largest and most primitive swamps in America. Its forests of moss-draped cypress and its slow-moving waters make it a unique area suitable for the protection wilderness designation affords.

Acreage: The Wilderness Area comprises 353,981 acres of the 379,000 acres of refuge lands (almost 90%).

Elevation: The range in elevation at the upper margin of the swamp, or the "swampline," is from 128 feet above sea level to 103 feet.

Geological features: The swamp is a vast peat bog filling a huge saucer-shaped sandy depression that was once part of the ocean floor. The water in the swamp moves slowly

[26] Personal interview with District Ranger Whitney Lerer, Monogahela National Forest, Petersburg, West Virginia, June 30, 1975.

[27] Personal interview with District Ranger Whitney Lerer, Monongahela National Forest, Petersburg, West Virginia, June 30, 1975.

[28] National Forest Scenic Area is one type of classification used by the Forest Service under its general rubric, "Special Interest Areas." See section 5.3, above, for an explanation of this classification.

toward the Suwannee River on the southwest side and the historic St. Mary's River on the southeast.

Flora and fauna: Eighty percent of Okefenokee is covered with swamp forests of cypress *(Taxodium distichum)*, gum *(Nyssa aquatica)* and bay *(Persea borbonia)*. Interspersed with these are a rich variety of swamp shrubs and vines. Also within the swamp are "prairies," in reality vast expanses of marsh and water. At one time these areas were forested, but periods of severe drought caused fires which burned out the surface layers of peat, thus creating these open areas. Throughout the prairies are islands called "houses" of various sizes covered with trees and shrubs.

There are more than 225 species of birds in the swamp including various egrets, heron and ibis and anhingas *(Anhinga anhinga)* and other waterbirds. Among several species of threatened wildlife which find refuge here are the osprey *(Pandion haliaetus)* and the Florida sandhill crane *(Grus canadensis pratensis)*. Black bears *(Ursus americanus)*, otters *(Lutra canadensis)*, raccoons *(Procyon lotor)*, white-tailed deer *(Odocoileus virginianus)*, and fox squirrels *(Sciurus niger)* make up a large percent of the swamp's mammalian population. Probably the most characteristic animal in Okefenokee is the American alligator *(Alligator mississippiensis)*.

Uses: The visitor may partake in such recreational activities as hiking, bird-watching, camping (allowed only in the established campground), and sport fishing (in accordance with Georgia State laws). Boating with outboard motors not in excess of ten horsepower is also permitted.

Designation: The bill designating the Okefenokee Wilderness was signed into law on October 1, 1974 (P.L. 93-429).

Additional protection: In addition to the protection given Okefenokee by its wilderness classification, the swamp also has National Natural Landmark status.[29] The Landmark site coincides with the 343,850 acres of the proposed Okefenokee Wilderness prior to the area's final designation. It should also be noted that within the Wilderness Area are seven Research Natural Areas.[30]

Management: The management of Okefenokee has changed very little since the establishment of the area as a National Wildlife Refuge in 1937 by Executive Order 7593. The Executive Order establishing the refuge declared that the area should be reserved and set aside as a refuge and breeding ground for migratory birds and other wildlife. This afforded significant protection to the swamp, so that when designated a Wilderness Area, the management policies remained virtually unchanged.

Contact:

Refuge Manager
Okefenokee National Wildlife Refuge
P.O. Box 117
Waycross, Georgia 31501

(d) Lassen Volcanic Wilderness, California

Lassen Volcanic Wilderness lies at the southern extremity of the Cascade Range in northern California. Lassen Peake and the 16 other major volcanoes of the Cascades are a segment of a ring of volcanoes that circle the Pacific Ocean, known collectively as "The Pacific Circle of Fire."

Northwest of the park lies the Klamath Mountains. To the west lies the Sacramento Valley. Just south of the park begin the Sierra Nevada Mountains and to the east lies the Modoc Plateau and then the Great Basin. Lassen is therefore a place of intermingling of plant and animal species. This, plus its interesting geological history, makes it a unique area suitable for wilderness classification.

Acreage: There are 78,982 acres of wilderness status within Lassen Volcanic National Park.

[29] See Chapter Twelve.

[30] See Chapter Eleven.

Elevation: Elevation ranges from 5,200 feet to 10,457 feet.

Geological features: Lassen has undergone an extensive history of volcanic activity. All rock now exposed is volcanic, but this has not always been the case. For hundreds of millions of years the region had undergone repeated uplifting to form mountains which soon became worn down due to submergence under encroaching seas. About 70 million years ago, the entire western portion of the continent became subject to profound earth movements. During millions of years the rocks of the crusts were folded and fractured and the seas were driven away. This relieved pressure on the hot material beneath the earth's crust and permitted lava to rise to the surface. Thus began the long history of volcanic activity which can now be witnessed in the many volcanic peaks throughout the park. The highest of these peaks is Lassen Peak, 10,457 feet in elevation.

Fauna and flora: Although Lassen is primarily known for its geology, over 700 plant species and a host of animals inhabit the park. The variety and distribution of these is greatly influenced by Lassen's geological history which has combined other factors to create the multitude of habitats which permit this wealth of wildlife. Four of Merriam's life zones are found in the park.

Within the Transition zone (up to 6,500 feet) are such tree species as knobcone pine *(Pinus attenuata),* white fir *(Abies concolor),* incense cedar *(Libocedrus decurrens),* sugar pine *(Pinus lambertiana),* and Douglas-fir *(Pseudotsuga menziesii).* Flowers present are snowplant, Brown's peony, whiskerbrush linanthus and Kellogia. Animals present are sagebrush lizard *(Sceloporus graciosus),* Northern alligator lizard *(Gerrhonotus coeruleus),* Western skink *(Eumeces skiltonianus),* bald eagle *(Haliaeetus leucocephalus),* silverhaired bat *(Lasionycteris noctivagans)* and cougar *(Felis concolor).*

Within the Canadian zone (6,500-8,000 feet) are such tree species as red fir *(Abies magnifica),* lodgepole pine *(Pinus contorta),* Jeffrey pine *(P. jeffreyi),* and aspen *(Populus tremuloides).* Birds include goshawk *(Accipiter gentilis),* Williamson's sapsucker *(Sphyrapicus thyroideus)* and Hammond's flycatcher *(Empidonax hammondii).*

Trees of the Headsonian zone (8,000-9,000 feet) include mountain hemlock *(Tsuga mertensiana)* and whitebark pine *(Pinus albicaulis).* The three-toed woodpecker *(Picoides arcticus)* is also present in this zone.

In the Alpine zone (above 9,000 feet) no trees can exist. Much of this zone is covered with snow nine or ten months of the year. There are intense winds and wide daily fluctuations in temperatures. As a result, plants here generally have hairy leaves and a low or creeping growth form.

Uses: The primary uses of Lassen Volcanic Wilderness are hiking, camping, fishing, horseback riding, bird-watching, cross-country skiing, and snowshoeing. The wilderness is also utilized for scientific research.

Designation: On October 19, 1972, Congress enacted Public Law 92-510 which designated 78,982 of the 106,000 acres of the park as wilderness.

Protections afforded: The Wilderness is protected through use restrictions in relation to carrying capacity. Carrying capacity is controlled by limiting the number of overnight stays at designated and undesignated campsites, number of parking spaces at trailheads and access to the Wilderness by stationing seasonal personnel to control entry at major trailheads.

A Backcountry Patrol Technician stationed within the Wilderness is responsible for enforcing all park regulations and policies.

Management: The overall management responsibility for Lassen Volcanic Wilderness is "to protect and maintain the resources and to provide a quality experience

for the visitor.[31] Restoration of the wilderness character is being conducted through allowing certain roads to revert to foot trails.

Controlling the carrying capacity is achieved through the issuance of permits before entrance into the Wilderness. Lassen National Forest and Lassen Volcanic National Park share wilderness permits. If hikers are traveling from one to the other, the issuing station sends a copy to the other agency.

Contact:

Chief Park Ranger
Lassen Volcanic National Park
Mineral, California 96063

B. Authority, Structure and Funding

8.7 History and legislative background

The concept of wilderness has long played a part in the history of the United States. The early settlers viewed the wild lands around them and thought of how these lands could be subdued and exploited. But there were a few who saw the need for wilderness preservation. Among them were artists such as George Catlin, John James Audubon, Alexander Wilson and Thomas Cole, and authors such as Ralph Waldo Emerson, James Fenimore Cooper, Mark Twain and Walt Whitman.

> In wildness is the preservation of the world. . . . Our life would stagnate if it were not for the unexplored forests and meadows which surround it.

These were words written by Henry David Thoreau, who perhaps was one of the most influential people in making known the value of wilderness. Thoreau was concerned about the good of the human psyche and professed that we need the "tonic" of wilderness.

John Muir was another ardent proponent of wilderness. A very influential person, he helped form public opinion throughout the nation in his books, magazine articles and speeches. Yosemite National Park was established in 1890 with the help of Muir's influence. He founded the Sierra Club in 1892.[32]

The first step by the Federal government to preserve the American Wilderness was taken in 1864 when President Abraham Lincoln ceded Yosemite Valley to California as a state park under the stipulation that the giant Sequoia trees would never be cut down. The first National Park, Yellowstone was established in 1872 after an extensive public interest lobbying campaign.[33]

The first "wilderness area" was established by the U.S. Forest Service on June 3, 1924, when Aldo Leopold, one of the giants of the conservation movement in the U.S., at that time an assistant U.S. district (now called "regional") forester in New Mexico, persuaded his supervisors to set aside 750,000 acres at the head of the Gila River as a sanctuary. It was to be protected against all forms of commercial exploitation including logging, mining and road building. This area later became one of the original 54 official Wilderness Areas under the Wilderness Act of 1964. William Greeley, Chief of the Forest Service who approved the Gila designation, encouraged other regional foresters to designate other areas as wilderness. He initiated the designation of National Forest "primitive areas," which, although not permanently protected against commercial exploitation, were given crucial interim protection.[34]

---

[31] Department of the Interior, National Park Service, *Lassen Volcanic National Park Backcountry Management Plan,* 1975.

[32] The Sierra Club is a private, non-profit, conservation organization that works "to restore the quality of the natural environment and to maintain the integrity of ecosystems."

[33] The National Park Service was not created until 1916. See Chapter Two on the National Park Service.

[34] For a discussion of Forest Service Primitive Areas, see section 8.8.

Robert Marshall, Director of Recreation and Lands for the Forest Service and defender of wild lands was instrumental in forming The Wilderness Society.[35] Marshall's contributions and further developments within the Forest Service have been summed up as follows:

> Marshall's primary achievement came in 1939 when the Forest Service issued a new set of regulations establishing a procedure for expansion of wilderness areas and excluding developments which had been permissible under the "primitive area" designation. These new regulations provided that the Secretary of Agriculture could designate wilderness areas of 100,000 acres or more and "wild areas" of between 5,000 and 100,000 acres. They would be protected from all commercial activities except livestock grazing and mining (under the 1872 Mining Act, which took precedence). Many of the former primitive areas were then redesignated as wilderness or wild areas. After Marshall died in 1939, the rate of establishment of new wilderness areas dropped off.[36]

With the rise of the economy after World War II, the Forest Service was pressured to make more timber sales and to take other actions. The nation's unspoiled areas were thus gradually opened up at an increasing rate to livestock grazing, mining and oil drilling.

The idea of a national wilderness preservation system protected by Federal law was first proposed at the Sierra Club's Second Biennial Wilderness Conference at San Francisco in 1951 by Howard Zahniser, Executive Director of The Wilderness Society. Zahniser wrote a large portion of the first comprehensive wilderness bill which was introduced in the Senate by Hubert H. Humphrey and in the House by John P. Saylor. Between 1957 and 1964 several other bills were introduced, and 18 hearings were held. In 1961 the Senate passed a wilderness bill but the House voted to defer consideration of a similar bill indefinitely. The main stumbling block to passage was the question of what the status of mining claims in National Forests were to be.

Finally, the effect of public support expressed in newspapers, editorials, congressional hearings and many letters from private individuals and the ultimate support of the land-managing agencies succeeded in getting Congress to act positively. On April 10, 1963, a wilderness bill was passed by the Senate, and on July 30, 1964, the House passed a similar measure. Differences were then ironed out between the House and Senate. In August the final version of the bill was cleared and on September 3, 1964, President Lyndon Johnson signed the Wilderness Act into law.[37]

8.8 Administrative structure and personnel

Within each of the agencies charged with obligations imposed by the Wilderness Act are divisions which deal directly with wilderness. In most all cases wilderness is not the sole concern of these divisions. In addition to these divisions, all of which have their headquarters in Washington, D.C., the agencies maintain field personnel. The Washington offices are mainly concerned with establishing wilderness policy directives, and the personnel in the field are charged with carrying out these directives.

Forest Service Wilderness is dealt with in three major staff divisions. The Legislative Affairs Staff is concerned with legislation for designating Wilderness Areas. It is here that the legislative reports on wilderness-designating proposals are processed and transmitted to the Office of Management and Budget through the Department of Agriculture.

---

[35] The Wilderness Society, a membership organization, is a private, educational, non-profit, national conservation group formed in 1935 to secure the preservation of wilderness in the public interest.

[36] Hamer, John. "Wilderness Preservation," *Editorial Research Reports* (Congressional Quarterly), 1975, p. 394.

[37] See generally, *Battle for Wilderness* by Michael Frome (Praeger Publishers, 1974).

The Recreation Management Staff is responsible for wilderness studies and for the preparation of wilderness study reports. Once a Wilderness Area is designated, its management is the responsibility of this staff unit.

The third staff unit involved is Forest Environmental Research. It is through this unit that research on wilderness is conducted. An interesting point to note here is that this division does wilderness research, the results of which are used by the other agencies administering wilderness.

In the field, wilderness studies are conducted under the auspices of the Regional Forester. Management of the designated wilderness is the responsibility of the Forest Supervisor.

Within the Forest Service Legislative Affairs Staff are three full-time employees who deal with wilderness. There are also three within the Recreation Management Staff. Close to 40 individuals in the regional offices are involved with some aspect of the wilderness studies, and approximately 400 are concerned with wilderness management in the field. It must again be realized that the staff units of the Forest Service as well as the staff units of the other two agencies administering wilderness are not concerned only with wilderness. Therefore, only a percentage of an employee's time is spent toward furthering the goals of wilderness preservation.

Within the Park Service there are primarily two divisions which deal with wilderness. The Division of Legislation has the responsibility for conducting wilderness studies required by the Wilderness Act and coordinating the field hearings held before an area is designated. The division follows the status of the wilderness until legislation is enacted designating the area. Once a wilderness area is designated it becomes the concern of the Division of Natural Resources. This division is responsible for managing the Wilderness Area to achieve not only the objectives of the Wilderness Act, but also to achieve the purposes for which the park containing the wilderness was established.

The field personnel are responsible for composing the management plan for the particular Wilderness Area. This plan must be approved by the Park Superintendent who also has the duty of managing the park for the protection of visitors and resources, one of which is the wilderness resource.

In the Park Service are two people involved with wilderness in the Division of Legislation and one in the Division of Natural Resources. At the Denver Service Center three planners are concerned with wilderness areas in the Park System. There is also a varying number of people in the field who do work related to wilderness preservation.

National Wildlife Refuge Wilderness is dealt with in the Office of Legislative Services of the Fish and Wildlife Service, much the same way as the Park Service Division of Legislation handles Park Service Wilderness, although there is a closer working relationship between the Office of Legislative Services and the Division of National Wildlife Refuges in drafting the bills for establishment of the Wilderness Areas. In the field, the refuge manager is responsible for collecting the information that goes into the study of potential wilderness as well as the management of the area once it is included in the Wilderness System.

The Fish and Wildlife Service Office of Legislative Services has four persons involved with wilderness; the Division of Wildlife Refuges has five. In the field there are approximately 75 service employees who manage wilderness.

8.9 Funding

With respect to funding for purposes set forth in the Wilderness Act, section 2(b) states:

> No appropriation shall be available for the payment of expenses or salaries for the administration of the National Wilderness Pres-

ervation System as a separate unit nor shall any appropriations be available for additional personnel stated as being required solely for the purpose of managing or administering areas solely because they are included within the National Wilderness Preservation System.

Therefore, money for Wilderness Areas must be provided for in the managing agency's budget. For instance, the Secretary of Agriculture is authorized to acquire private inholdings with funds appropriated to the Department by Congress.

The Eastern Wilderness Bill authorizes an amount not to exceed $5,000,000 to be appropriated for acquisition of inholdings and an amount not to exceed $1,700,000 for conducting the review process of wilderness study areas. None of this money was in fact appropriated as of July 9, 1975.

C. Information and Bibliography

8.10 Key information contacts

The Forest Service:

Director
Recreation Management
The Forest Service
U.S. Department of Agriculture
Washington, D.C. 20250
(202) 447-2956

Deputy Chief
Programs and Legislation
The Forest Service
U.S. Department of Agriculture
Washington, D.C. 20250
(202) 447-6663

National Park Service:

Supervisory Park Planner
Division of Legislative Coordination and Support
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5735

Resource Management Specialist
Division of Natural Resources
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-6000

Fish and Wildlife Service:

Director
Division of Wildlife Refuges
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-3923

Chief
Branch of Planning
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-2691

Wilderness Planner
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-2691

Refuge Manager
Okefenokee National Wildlife Refuge
Fish and Wildlife Service
U.S. Department of the Interior
Washington, D.C. 20240
(912) 283-2580

The Wilderness Society:

Special Consultant to the Executive Director
The Wilderness Society
1901 Pennsylvania Ave., N.W.
Washington, D.C. 20006
(202) 293-2732

Secretary to the Executive Director
The Wilderness Society
1901 Pennsylvania Ave., N.W.
Washington, D.C. 20006
(202) 293-2732

8.11 Bibliography

Anderson, Clinton P. "The Wilderness Act, A Constructive Measure" in *The Living Wilderness.* Spring-Summer, 1964.

Aspinal, Wayne N. "Underlying Principles of Wilderness Legislation as I See Them" in *The Living Wilderness.* Spring-Summer, 1964.

Baldwin, Donald. *The Quiet Revolution: Grass Roots of Today's Wilderness Preservation Movement.* Boulder, Colorado: Pruett Pub. Co., 1972.

Burke, Hubert. "Wilderness Engenders New Management Traditions" in *The Living Wilderness.* Summer, 1969.

Burton, Ian and Robert W. Kates (eds.). *Readings in Resource Management and Conservation.* Chicago: University of Chicago Press, 1965.

DeFelice, Vincent N. "Wilderness is for Using" in *American Forests.* June, 1975.

Douglas, William O. *A Wilderness Bill of Rights.* Boston: Little, Brown and Company, 1965.

Fish and Wildlife Service. "Okefenokee Wilderness Proposal." Washington, D.C.: Department of the Interior, March, 1967.

The Forest Service. "Search for Solitude." Washington, D.C.: U.S. Department of Agriculture, 1970.

Frome, Michael. *Battle for the Wilderness.* New York: Praeger Publishers, 1974.

Frome, Michael. *The Forest Service.* New York: Praeger Publishers, 1974.

Gilligan, James P. *The Development of Policy and Administration of Forest Service Primitive and Wilderness Areas in the Western United States,* (Doctoral Dissertation). Ann Arbor: University of Michigan, 1954.

Hamer, John. "Wilderness Preservation" in *Editorial Research Reports.* Vol. 1, No. 20, May 30, 1975.

"A Handbook on the Wilderness Act," *The Living Wilderness.* Special Issue. Spring-Summer, 1964.

Nash, Roderick. *Wilderness and the American Mind.* New Haven: Yale Univ. Press, rev. ed., 1973.

The Nature Conservancy. *The Preservation of Natural Diversity: A Survey and Recommendations.* Arlington, Virginia: The Nature Conservancy, 1975.

Saylor, John P. "What the Wilderness Act Does" in *The Living Wilderness.* Spring-Summer, 1964.

Schwartz, William (ed.). *Voice for the Wilderness.* New York: Ballantine Books, 1969.

Sumner, David. "Wilderness and the Mining Law" in *The Living Wilderness.* Spring, 1973.

West Virginia Highland Conservancy. *Dolly Sods: Wilderness Proposal, Management Suggestions, and Trail Guide.* Webster Springs, W. Va.: West Virginia Highland Conservancy, July, 1971.

"The Wilderness System," *The Living Wilderness.* Special Issue. Winter, 1974-1975.

8.12 List of technical appendices

(a) The Wilderness Act (16 U.S.C. 1131-1136).

(b) "The Wilderness System: Chart 1—The National Wilderness Preservation System" in *The Living Wilderness.* Washington, D.C.: The Wilderness Society, Winter 1974-1975.

(c) "Example of a Wilderness Permit." U.S. Department of the Interior, National Park Service. Washington, D.C.: OMB (40-R 3857), RS-2300-32, rev. January, 1975.

Chapter Nine:

National Wild and Scenic Rivers System

A. Objectives and Program

9.1 Overall objectives of the System

The objectives of the Wild and Scenic Rivers System are stated in the legislation creating the System as follows:

> It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreation, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the river of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing conditions to protect the water quality of such rivers and to fulfill other vital national conservation purposes.[1]
>
> The purpose of this chapter is to implement this policy by instituting a national wild and scenic rivers system, by designating the initial components of that system, and by prescribing the methods by which and standards according to which additional components may be added to the system from time to time.[2]

A river in this System is classified, designated and administered as "wild," "scenic" or "recreational." The definitions of these classifications are as follows:

(1) Wild river areas—Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
(2) Scenic river areas—Those rivers or sections of rivers that are free of impoundments, with shorelines, or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
(3) Recreational river areas—Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.[3]

9.2 Entry into the System

The legislation creating the System designated eight rivers as initial components of the System:[4]

(1) Clearwater River, Middle Fork: Idaho
(2) Eleven Point, River: Missouri
(3) Feather River: California
(4) Rio Grande River: New Mexico
(5) Rogue River: Oregon
(6) Saint Croix River: Minnesota and Wisconsin
(7) Salmon River, Middle Fork: Idaho
(8) Wolf River: Wisconsin

Within one year of the legislation's passage, the agency administering the river was to establish detailed boundaries determining which of the three classifications best fits the river or its various segments, and prepare a plan for necessary developments consistent with the appropriate classification. All of this information was to be published in the *Federal Register* and was not effective until ninety days after it was forwarded to the President of the Senate and the Speaker of the House of Representatives.[5] Twenty-seven other rivers were specifically named as "potential additions" to the System.[6]

The Wild and Scenic Rivers Act also established a procedure by which other rivers may enter the System. The governor(s) of the state(s) through which a river flows may apply to the Secretary of the Interior for the river's inclusion into the system. The river

[1] 16 U.S.C. 1271.
[2] 16 U.S.C. 1272.
[3] 16 U.S.C. 1273.
[4] 16 U.S.C. 1274(a).
[5] 16 U.S.C. 1274(b).
[6] 16 U.S.C. 1276. This provision is further discussed below.

must have already been designated as wild, scenic or recreational by or pursuant to any act of the state legislature and is to be permanently administered as such by an agency or political subdivision of the state(s) without expense to the United States. The Secretary of the Interior then approves or rejects the river's inclusion.[7]

The following is the process for adding new rivers to the System that are administered by either the Secretary of the Interior, the Secretary of Agriculture, or both. The process begins with studies of potential additions:

> Sec. 4. (a) The Secretary of the Interior or, where national forest lands are involved, the Secretary of Agriculture or, in appropriate cases, the two Secretaries jointly shall study and submit to the President reports on the suitability or nonsuitability for addition to the national wild and scenic rivers system of rivers which are designated herein or hereafter by the Congress as potential additions to such system. The President shall report to the Congress his recommendations and proposals with respect to the designation of each such river or section thereof under this Act. Such studies shall be completed and such reports shall be made to the Congress with respect to all rivers named in subparagraphs 5(a)(1) through (27) of this Act no later than October 2, 1978. In conducting these studies the Secretary of the Interior and the Secretary of Agriculture shall give priority to those rivers (i) with respect to which there is the greatest likelihood of developments which, if undertaken, would render the rivers unsuitable for inclusion in the national wild and scenic rivers systems, and (ii) which possess the greatest proportion of private lands within their areas. Every such study and plan shall be coordinated with any water resources planning involving the same river which is being conducted pursuant to the Water Resources Planning Act (42 U.S.C. 1962 *et seq.*).[8]

The proposal resulting from the study process:

> . . . shall be accompanied by a report, including maps and illustrations, showing among other things the area included within the proposal; the characteristics which make the area a worthy addition to the system; the current status of landownership and use in the area; the reasonably foreseeable potential uses of the land and water which would be enhanced, foreclosed, or curtailed if the area were included in the national wild and scenic rivers system; the Federal agency (which in the case of a river which is wholly or substantially within a national forest, shall be the Department of Agriculture) by which it is proposed the area be administered; the extent to which it is proposed that administration, including the costs thereof, be shared by State and local agencies; and the estimated cost to the United States of acquiring necessary lands and interests in land and of administering the area as a component of the system. Each such report shall be printed as a Senate or House document.[9]

Inter-departmental consultation and consultation with other affected parties is specifically called for:

> Before submitting any such report to the President and the Congress, copies of the proposed report shall, unless it was prepared jointly by the Secretary of the Interior and the Secretary of Agriculture, be submitted by the Secretary of the Interior to the Secretary of Agriculture or by the Secretary of Agriculture to the Secretary of the Interior, as the case may be, and to the Secretary of the Army, the Chairman of the Federal Power Commission, the head of any other affected Federal department or agency and, unless the lands proposed to be included in the area are already owned by the United States or have already been authorized for acquisition by Act of Congress, the Governor of the State or States in which they are located or an officer designated by the Governor to receive the same. Any recommendations or comments on the proposal which the said officials furnish the Secretary or Secretaries who prepared the report within ninety days of the date on which the report is submitted to them, together with the Secretary's or Secretaries' comments

[7] 16 U.S.C. 1273(a).

[8] Section 4(a), P.L. 93-621 (January 3, 1975) amending the first paragraph of 16 U.S.C. 1275(a).

[9] *Ibid.*

thereon, shall be included with the transmittal to the President and the Congress.[10]

Finally, where a state legislature has already designated a river as wild scenic or recreation, the following requirement is imposed on the Secretary of the Interior:

> Before approving or disapproving for inclusion in the national wild and scenic rivers system any river designated as a wild, scenic or recreational river by or pursuant to an act of a State legislature, the Secretary of the Interior shall submit the proposal to the Secretary of Agriculture, the Secretary of the Army, the Chairman of the Federal Power Commission, and the head of any other affected Federal department or agency and shall evaluate and give due weight to any recommendations or comments which the said officials furnish him within ninety days of the date on which it is submitted to them. If he approves the proposed inclusion, he shall publish notice thereof in the Federal Register.[11]

As has been mentioned, twenty-seven rivers (or segments of rivers) were designated by the establishing legislation for potential addition to the National Wild and Scenic Rivers System. The Secretaries of the Interior and Agriculture were to study those which fell within their respective jurisdictions to determine whether or not they should be included in the System. Within ten years of the date of the legislation, these studies are to be completed and reports made to the President and Congress. Priority is to be given to those rivers where there is the greatest likelihood of developments which, if undertaken, would render the river unsuitable for inclusion. There is to be close cooperation in these river studies between the Federal agencies and the affected states. If the state requests, the rivers shall be studied jointly. The degree of state participation in the preservation and administration of the river, if included in the System, should be determined.[12]

A river or related lands owned by an Indian tribe or a political subdivision of a state cannot be added to the national system without the consent of the appropriate governing body, unless this body is not following "a plan for management and protection of the lands which the Secretary finds protects the land and assures its use for purposes consistent with this chapter."[13]

All Federal agencies involved in planning for the use and development of water and related land resources are to give consideration to potential Wild, Scenic and Recreational Rivers.[14] Such potential additions are to be considered and discussed in all river basin and project plan reports submitted to Congress.

To gain entry into the System, the Wild and Scenic Rivers Act provides that rivers must be in a free-flowing natural condition, *i.e.,* a flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes which are without impoundment, diversion, straightening, riprapping or other modification of the waterway. However, low dams, diversion works, and other minor structures will not automatically preclude the river unit from being included in the National Wild and Scenic Rivers System, providing such structures do not unreasonably diminish the free-flowing nature of the stream and the scenic, scientific, geological, historical, cultural, recreational, and fish and wildlife values present in the area.[15]

The river or river unit must be long enough to provide a meaningful wilderness, scenic or recreation experience. Generally, any unit included in the System

---

[10] 16 U.S.C. 1275(b).

[11] 16 U.S.C. 1275(c).

[12] 16 U.S.C. 1275(a).

[13] 16 U.S.C. 1277.

[14] 16 U.S.C. 1276(c). See section 10.8 below on Administrative structure and personnel, for a breakdown on the Federal agencies involved.

[15] U.S. Department of the Interior and U.S. Department of Agriculture, "Guidelines for Evaluating Wild, Scenic and Recreational Rivers Areas," 1970, pp. 3-4.

should be at least 25 miles long. However, a shorter river or segment that possesses outstanding qualifications may be included in the System. There should be sufficient volume of water during normal years to permit, during the recreation season, full enjoyment of water-related outdoor recreation activities generally associated with comparable rivers. In the event the existing supply of water is inadequate, it would be necessary to show that additional water can be provided reasonably and economically without unreasonably diminishing the scenic, recreational, and fish and wildlife values of the area. The river and its environment should be outstandingly remarkable and, although they may reflect substantial evidence of man's activity, should be generally pleasing to the eye. The river should be of high quality water or capable of restoration to that condition. A concept of nondegradation whereby existing high water quality will be maintained to the maximum extent feasible will be followed in all river areas included in the national system.[16]

9.3 Protection

The Act mandates that:

> Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its esthetic, scenic, historic, archeologic, and scientific features.[17]

This general legislative protection is supplemented by certain specific protective requirements. For example, where water resources projects are concerned, some absolute prohibitions are set forth:

> The Federal Power Commission shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act, as amended (16 U.S.C. 7912 *et seq.*), on or directly affecting any river which is designated in section 1274 of this title as a component of the national wild and scenic rivers system or which is hereafter designated for inclusion in that system, and no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration. Nothing contained in the foregoing sentence, however, shall preclude licensing of, or assistance to, developments below or above a wild, scenic or recreational river area or on any stream tributary thereto which will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area on October 2, 1968.[18]

Similar prohibitions apply for a ten year period following October 2, 1968 (or three years if Congress designates a river a "potential addition" to the System), with respect to the 27 potential additions named in the legislation, unless the study called for concludes the river should not be added to the System.[19] The 29 potential additions named in P.L. 93-621 (January 3, 1975) were protected until a specific date—October 2, 1979.

The Act also effects withdrawal from appropriation under the public land laws:

(a) All public lands within the authorized boundaries of any component of the national wild and scenic rivers system which

---

[16] *Ibid.*

[17] 16 U.S.C. 1281(a). Subsection (b) provides that if an area also falls under the Wilderness System, the Park System, or the Refuge System, the protections afforded those Systems shall serve to supplement the integrity of the area.

[18] 16 U.S.C. 1278(a). Departments and agencies are also prohibited from requesting authorizations from Congress for certain water projects without advising of possible conflict with the System.

[19] 16 U.S.C. 1278(b).

is designated in section 1274 of this title or which is designated after October 2, 1968, for inclusion in that system are hereby withdrawn from entry, sale, or other disposition under the public land laws of the United States.

(b) All public lands which constitute the bed or bank, or are within one-quarter mile of the bank, of any river which is listed in section 1276(a) of this title, are hereby withdrawn from entry, sale, or other disposition under the public land laws of the United States for the periods specified in section 1278(b) of this title.[20]

The Act does not close off existing mining and mineral leasing claims in designated areas. It does, however, provide that activities on claims not perfected before the effective date of the Act shall be regulated by the Secretary of the Interior or the Secretary of Agriculture in keeping with the purposes of the System. Specifically, the regulations are to "provide safeguards against pollution of the river involved and unnecessary impairment of the scenery within the component (of the System) in question."[21]

9.4 Management

There are different management objectives for "wild," "scenic," and "recreational rivers." The administration of a Wild River gives primary emphasis to protecting the values which make it outstandingly remarkable, while providing river-related outdoor recreation opportunities in a primitive setting.

To achieve these objectives in Wild River areas, it is necessary to:

1. Restrict or prohibit motorized land travel, except where such uses are not in conflict with the purposes of the Act.
2. Acquire and remove detracting habitations and other non-harmonious improvements.
3. Locate major public-use areas, such as large campgrounds, interpretive centers or administrative headquarters, outside the wild river area. Simple comfort and convenience facilities, such as fireplaces, shelters, and toilets, may be provided for recreation users as necessary to provide an enjoyable experience, protect popular sites, and meet the management objectives. Such facilities will be of design and location which harmonize with the surroundings.
4. Prohibit improvements or new structures unless they are clearly in keeping with the overall objectives of the wild river area classification and management. The design for any permitted construction must be in conformance with the approved management plan for that area. Additional habitations or substantial additions to existing habitations will not be permitted.
5. Implement management practices which might include construction of minor structures for such purposes as improvement of fish and game habitat; grazing; protection from fire, insects, or disease; rehabilitation or stabilization of damaged resources, provided the area will remain natural appearing and the practices or structures will harmonize with the environment. Such things as trail bridges, an occasional fence, natural-appearing water diversions, ditches, flow measurement or other water management devices, and similar facilities may be permitted if they are unobtrusive and do not have a significant direct and adverse effect on the natural character of the area.[22]

A Scenic River area is to be managed so as to provide outdoor recreation opportunities in a near natural setting. The basic distinctions between a "wild" and a "scenic" river area are (1) degree of development, (2) type of land use, and (3) road accessibil-

[20] 16 U.S.C. 1279.

[21] 16 U.S.C. 1280(a). Certain other safeguards are also provided.

[22] U.S. Department of the Interior and U.S. Department of Agriculture, "Guidelines for Evaluating Wild, Scenic and Recreational River Areas," 1970, pp. 7-8.

ity. In general, a wide range of agricultural, water management, silvicultural and other practices could be compatible with the primary objectives of a Scenic River area, providing such practices are carried on in such a way that there is no substantial adverse effect on the river and its immediate environment. The same considerations enumerated for Wild River areas should be considered where Scenic Rivers are concerned except that motorized vehicles may in some cases be appropriate and that development of larger scale public-use facilities within the river area, such as moderate size campgrounds and public information centers would be compatible if such structures are consistent with the management plans for a particular area.[23]

Management of Recreational River areas is to be designed to protect and enhance existing recreational values. The primary objectives should be to provide opportunities for engaging in recreation activities dependent on or enhanced by the largely free-flowing nature of the river. Campgrounds and picnic areas may be established in close proximity to the river, although recreational river classification does not require extensive recreational developments. Recreational facilities may still be kept to a minimum, with visitor services provided outside the river area.[24]

The role of states in the administration of Wild and Scenic Rivers is discussed in sections 1281(e) and 1284. Section 1281(e) provides for cooperative Federal-state agreements.

> (e) The Federal agency charged with the administration of any component of the national wild and scenic rivers system may enter into written cooperative agreements with the Governor of a State, the head of any State agency, or the appropriate official of a political subdivision of a State for State or local governmental participation in the administration of the component. The States and their political subdivisions shall be encouraged to cooperate in the planning and administration of components of the system which include or adjoin State- or county-owned lands.

Section 1284 contains a number of provisions regarding the jurisdiction of the states to regulate designated rivers. The only important provision for present purposes appears in subsection (a):

> (a) Nothing in this chapter shall affect the jurisdiction or responsibilities of the States with respect to fish and wildlife. Hunting and fishing shall be permitted on lands and waters administered as parts of the system under applicable State and Federal laws and regulations unless, in the case of hunting, those lands or waters are within a national park or monument. The administering Secretary may, however, designate zones where, and establish periods when, no hunting is permitted for reasons of public safety, administration, or public use and enjoyment and shall issue appropriate regulations after consultation with the wildlife agency of the State or States affected.

9.5 Current status of the System

There are at present 13 rivers which are part of the National Wild and Scenic Rivers System. This includes the eight designated by the original Act and five subsequent additions, the Little Miami in Ohio, the Lower Saint Croix in Minnesota and Wisconsin, the Allagash in Maine, the Chattooga in North Carolina, South Carolina, and Georgia, and the Little Beaver in Ohio.[25] The subsequent additions (with the exception of the Allagash) have been from the list of 27 potential additions named in section 1276 of 16 U.S.C.

The totals for rivers administered by the Park Service, Bureau of Land Manage-

[23] *Ibid.*, p. 10.

[24] *Ibid.*, p. 11.

[25] As of October 17, 1975, the bill designating the Little Beaver had not yet been signed by the Secretary of the Interior; however, his signature is imminent.

ment, Forest Service and states are as follows:

Park Service—3
Bureau of Land Management—2 (jointly administered with Forest Service)
Forest Service—7 (2 jointly administered with Bureau of Land Management)
State—4 (1 will be jointly administered with the Park Service)

Total mileage figures for the 13 rivers presently in the System are as follows:

Wild River	411 miles
Scenic River	337 miles
Recreational River	335 miles
Total	1,083 miles

Of the 27 original potential additions or "study rivers," seven have been reported upon to Congress. Most of the remaining 20 are to be completed by October 2, 1978. An amendment in December, 1974, added 29 additional study rivers, studies for which are just getting under way, except for the Dolores River in Colorado which has a deadline of January 3, 1976, for the transmittal of a final report to Congress. The rest of the study rivers are to be reported on by October 2, 1979.

9.6 Illustrative examples:

(a) Salmon River, Middle Fork, Idaho

The Middle Fork of the Salmon Wild and Scenic River in central Idaho is well known nationally for the deep, emerald-hued pools of the river, alternating with swift currents and white-water rapids; the scenic mountainous background; the abundant wildlife; and the feeling of solitude the visitor can find in this remote area. The river flows through the Boise, Challis, Payette, and Salmon National Forests.

Acreage classified:
Wild River—31,617 acres
Scenic River—421 acres
Total—32,038 acres

Length of river:
Wild River—103.4 miles
Scenic River—.6 mile
Total—104 miles

Geological features: The Middle Fork of the Salmon River flows through one of the deepest gorges in North America. The river is born at the confluence of Marsh and Bear Valley Creeks, some 20 miles northwest of Stanley, Idaho, and plunges northeasterly 104 miles to join the main Salmon River. Near this junction is the steep-walled "Impassible Canyon," 4,000 feet deep. Natural geologic erosion can be seen in this and many of the other steep slopes. Alluvial fans at the mouths of canyons and narrow terraces along the edge of the river provide limited flats within the canyon.

Flora and fauna: It is interesting to note how the climate and vegetation change with elevation. Near the headwaters, at 6,400 feet, Douglas fir *(Pseudotsuga menziesii),* lodgepole pine *(Pinus contorta),* and Engelmann spruce *(Picea engelmannii)* form a forest canopy which is broken by lush meadows and open south-facing slopes. Cool summer temperatures and heavy winter snows also favor lupine *(Lupinus* sp.), penstemon *(Penstemon* sp)., wild geranium *(Geranium viscosissimum),* and bunch grasses *(Agropyron* sp.) in this higher country.

Temperatures warm and precipitation lessens down-river. Ponderosa pine *(Pinus ponderosa)* replaces Douglas fir, and steep slopes support mountain mahogany *(Cercocarpus ledifolius),* and other plants and shrubs adapted to the heat and drought. In the deep lower canyon, the summer sun raises temperatures into the 90° Fahrenheit range. Towering cumulus clouds often appear in midafternoon, bringing thundershower activity and lightning storms.

Light snow-pack is normal in winter, attracting wildlife from high country to spend the winter. Bighorn sheep *(Ovis canadensis),* mountain goat *(Oreamnos americanus),* cougar *(Felis concolor),* elk *(Cervis canadensis),* mule deer *(Odocoileus hemionus),* and black bear *(Ursus americanus)* are the

larger wildlife species. A variety of fur bearers and smaller mammals also live near the river. Cougar and bobcat *(Lynx rufus)* fill a key niche in the natural ecology of the Middle Fork by limiting big game populations.

Blue *(Dendragapus obscurus)*, ruffed *(Bonasa umbellus)*, and spruce grouse *(Canachites canadensis)* are native game birds. Chukar *(Alectorus graeca)* and Hungarian partridge *(Perdix perdix)* have been introduced and are seen in the lower canyon. Most common of the many species of small birds are the dipper *(Cinclus mexicanus)*, belted kingfisher *(Megaceryle alcyon)*, western tanager *(Piranga ludoviciana)*, and Idaho's State bird, the mountain bluebird *(Sialia currucoides)*.

Rattlesnakes *(Crotalus viridis)* are the most prominent reptile, particularly in the lower elevations.

Nearly one-third of the migrating chinook salmon in the Salmon River drainage spawn in the Middle Fork and its tributaries. The steelhead, an ocean-going trout, migrates up the river during fall and winter to spawn each spring. The native cutthroat *(Salmo clarki)*, Dolly Varden *(Salvelinus malma)*, and rainbow trout *(S. gairdneri)* are major fishing attractions.

Uses: The Middle Fork of the Salmon offers outstanding opportunities in white-water float boating, fishing, and general enjoyment of the backcountry river canyon.

Many people are flown into various nearby landing fields to fish for salmon and steelhead trout or to hunt for mule deer, elk, bighorn sheep, and mountain goats. Big game animals are plentiful.

Designation: In 1931, one and one-quarter million acres of the area surrounding the river were established administratively by the Forest Service as a Primitive Area. The river was designated as part of the Wild and Scenic Rivers System with the passage of the Act establishing that System in 1968. The Primitive Area has been studied and a portion recommended for wilderness classification in accordance with the Wilderness Act of 1964. That portion of the wild river within the Idaho Primitive Area is subject to the provisions of both the Wild and Scenic Rivers Act and the Wilderness Act. In case of conflict, the more restrictive provisions apply.

Withdrawal status: The Wild and Scenic Rivers Act withdraws from further mineral entry the bed of the Wild River, its banks, and the land within one-quarter mile on each side of the river. The Scenic River area is not withdrawn by the Act but was withdrawn administratively on January 20, 1971.[26]

Protections afforded: See Section 9.3 of this Chapter. Further protection was given the area by a subsequent operating plan in 1972. It called for limits on size and number of boat parties, assignment of campspots, and the use of a permit system for entry into the area.

Management: Objectives of the Forest Service in administering the water resource in the Wild and Scenic River include maintaining or restoring satisfactory conditions in the watersheds; maintaining riverbanks in essentially primitive conditions; providing exceptional opportunities for river-oriented recreation; and keeping the waters of the Middle Fork in an unpolluted, free-flowing condition, with no new impoundment, diversion, straightening, riprapping, or other modification.

Contact:

Assistant Director for Recreation, or
Branch Chief, Wilderness and Wild
and Scenic Rivers
Division of Recreation
Intermountain Region
Federal Office Building
324-25th Street
Ogden, Utah 84401

(b) Rio Grande National and Wild Scenic River, New Mexico

One of the country's great rivers, the Rio Grande, rises in the Rocky Mountains in

[26] See Section 9.3, above.

south-central Colorado and courses 1,900 miles to the Gulf of Mexico, passing through New Mexico and Texas. For the most part, the Wild and Scenic River segment is administered by the Bureau of Land Management; a small portion is managed by the Forest Service. The wild river area is free of impoundments and generally inaccessible except by foot trails, with shorelines essentially primitive and waters unpolluted. A small portion is classified as a scenic river because it is easily accessible by car.

Acreage classified:
Wild River—15,622 acres
Recreational River—1,258 acres
Total—16,880 acres

Length of river: The segment of the Rio Grande classified a National Wild and Scenic River is 52.75 miles in length. 44.15 miles is under Bureau of Land Management administration and 8.6 miles is managed by the Forest Service.

Geological features: Four miles north of the Colorado-New Mexico border, the Rio Grande enters a deep gorge bisecting the lava-capped basin. This entrenchment continues south for 70 miles before entering the Velarde Valley near the village of Embrido. The Rio Grande trough was formed by complex geological processes involving uplift, faulting, and a series of overlapping amdesite-basalt lava flows.

Width and depth of the Rio Grande are relatively uniform, being slightly shallower to the north. The Red River flows into the Rio Grande 18 miles northwest of Taos. Since this lower four-mile portion of the Red River is deeply entrenched and has characteristics similar to those found in the Rio Grande, it was included within the Wild River Area.

The average gradient of the Rio Grande within the Wild River Area is 22 feet per mile. Total fall in the area is 1,500 feet. Gradients range from 12 per mile to 150 feet per mile. Maximum drop in the canyon lies between the junctions of the Red River and a point 12 miles upstream. This 12-mile section has a total fall of 650 feet.

Flora and fauna: Waterfowl occur in restricted numbers within the wild river area. Mallard, teal and merganser are the most common species; they are found both on the river and in natural pot holes and stock water ponds along the rim of the canyon.

Non-game fish species include white sucker *(Catostomus commersoni),* Rio Grande sucker *(C. plebius),* river carpsucker *(Carpiodes carpio),* longnose dace and flathead chub *(Rhinichthys cataractae).*

Non-game species include numerous varieties of song bird, raptors, mammalian predators and rodents. The occasional occurrence of the mountain lion *(Felis concolor)* is of interest.

One thousand deer are estimated to reside within these boundaries. Antelope habitat, extending from the western boundary, supports a herd of 750 antelopes.

Protection: See Section 9.3 of this Chapter. Further protection is provided by the operating plan described below.

Designation: The Wild and Scenic Rivers Act designated this portion of the Rio Grande as part of the original System. In January, 1970, a wild river operating plan put forward by the Bureau of Outdoor Recreation for the Rio Grande was approved by Congress. The prompt adoption of the plan was made possible partly by previous planning and an accumulation of field work by state and Federal agencies within New Mexico.

Management: In its plan for the river, the Bureau of Land Management proposes to allow multiple Wild River uses provided neither their short-range or long-range impacts lessen the esthetic and scenic values for which the river was designated as "wild."

The second objective stated is correlation among agencies, both state and Federal, to insure that each Wild River component is administered to serve the same end—preservation and enhancement of the wild river values.

Recreation development and opportunities are provided that do not impair wild river qualities. Facilities are limited to simple campgrounds, picnic areas, and supporting facilities. The use of motorized equipment and aircraft within the boundaries is prohibited.

The Forest Service's plan for its portion of the river states that the area is considered a Special Management Zone within the Multiple Use Plan for the Questa Ranger District, Carson National Forest. It is managed to preserve the rivers in their natural, primitive condition. All public use of the area and the resources it contains are regulated and managed to this end.

Contact:
Division of Recreation,
Bureau of Land Management
Santa Fe, New Mexico 87501

B. Authority, Structure and Funding

9.7 *History and legislative background*

The inception of the idea that special attention should be given to the decreasing number of American rivers that are still largely in their natural state dates back at least as far as 1960.[27] That year the National Park Service, in response to an inquiry from the Select Committee on National Water Resources of the Senate, recommended that "certain streams be preserved in their free-flowing condition because their natural scenic, scientific, esthetic and recreational values outweigh their value for water development and control purposes" and that a study be made to determine what streams in addition to the four listed in the report—the Allagash, the Current, the Eleven Point, and the Rogue—possessed such values as these.[28] These recommendations were reinforced by the Outdoor Recreation Resources Review Commission.[29]

Various actions taken after these recommendations may be construed as being forerunners of the present Wild and Scenic Rivers Act: the enactment of Public Law 88-492 creating the Ozark National Scenic Riverways, Missouri; the designation of the Allagash in Maine as a "wilderness waterway" by the state legislature; the action of the State of Wisconsin, with the help of the Land and Water Conservation Fund, in acquiring land along part of the Wolf River and setting it aside for permanent preservation; and the enactment of Public Law 86-605 and Public Law 89-616 calling for studies of the potential of the Hudson and Connecticut Rivers.

In 1963, the Secretaries of Agriculture and the Interior compiled a list of 650 rivers or sections thereof which appeared to have special qualities worthy of saving. Sixty-seven were selected by the Secretaries to be reviewed by interagency field teams. They were chosen with primary emphasis on geography and type of river. Indepth studies were then undertaken on 22 river areas which seemed to best represent the type of river deserving national recognition. These studies became the basis for the drafting, and later, for support of the Wild and Scenic River Act.

The Wild and Scenic Rivers Bill was first introduced in 1965 by Senator Church of Idaho, passed by the Senate in 1966, but not taken up by the House before adjournment. The Bill was reintroduced in the Senate as S.119 on January 11, 1967, and was passed by the Senate later the same year. On the House side, Congressman

[27] 1968 *U.S. Code and Congressional Administrative News,* pp. 3801 *et seq.* (containing the legislative history of the Wild and Scenic Rivers Act).

[28] Water Recreation Needs in the United States, 1960-2000 (Committee Print No. 7, 1960), p. 2.

[29] Created by Congress in 1958 to determine and plan for the nation's future outdoor recreation requirements. See Chapter Six, above, for a full discussion of the Commission's actions and reports.

Saylor of Pennsylvania introduced a similar bill, H.R. 18260 on July 1, 1968; but the House, rather than passing Saylor's bill and sending it on to the Senate, decided to pass the Senate bill, amending it to include some of the language of the House bill. In Conference[30] the members of the Conference Committee, amalgamated both versions into a bill that was then passed speedily by both Houses of Congress. On October 2, 1968, this bill became Public Law 90-542.

Following the Act's passage in 1968, the mechanism to coordinate the program was set up by the Departments of the Interior and Agriculture. In order to interpret and implement the program, an interagency steering committee was set up. The Bureau of Outdoor Recreation has the staff leadership role on this committee.

9.8 Administrative structure and personnel

There are many Federal agencies and divisions within these agencies involved in some way with the Wild and Scenic Rivers System.

Within the Department of the Interior several agencies are involved in the review and study processes. They are:

- Bureau of Outdoor Recreation
- National Park Service
- Bureau of Land Management
- Fish and Wildlife Service
- Geological Survey
- Bureau of Reclamation
- Bureau of Mines
- Bureau of Indian Affairs

Two of the agencies are currently involved in the administration of Wild and Scenic Rivers—National Park Service and Bureau of Land Management. Three divisions within the Park Service are involved: Legislation, Development (involved in the planning stage); and Parks System Management (involved in operations).

The Bureau of Land Management has four divisions concerned with Wild and Scenic Rivers. The Recreation Division is in charge of administration of the rivers, and to a large extent, the study of potential additions to the System. The Lands and Realty Division is concerned with special withdrawals and other legal matters, and to a lesser extent, the study of potential additions. The Division of Access is concerned with access and transportation rights-of-way and acquisition; the Division of Budget and Program Development is also involved in acquisition.

The Bureau of Outdoor Recreation is involved in the planning and review process for the Wild and Scenic Rivers System. The staff units involved are: Resource Areas Studies (involved in the study of potential rivers); Division of Federal Land Acquisition (involved with the Federal portion of the Land and Water Conservation Fund); the Division of State Programs (have an expressed interest in their state's Wild and Scenic Rivers); the Office of Environmental Affairs (involved with environmental review process); and the Division of Water Resources (plays a role in certain specific instances on an *ad hoc* basis).

The following are those agencies within the Department of Agriculture involved in the Wild Scenic Rivers System:

- Forest Service
- Soil Conservation Service
- Economic Research Service
- Rural Electrification Administration
- Farmers Home Administration
- Agricultural Stabilization Conservation Service
- Agricultural Research Service

Of these, the Forest Service is far the most involved and has been delegated the Secretary of Agriculture's responsibilities under the Act. The other agencies are only concerned with specific rivers in which their particular interests lie.

Within the Forest Service are three staff units concerned with the System. Watershed and Minerals Area Management has

[30] See *Conference Report—H.R. 1917* for the results of the Conference deliberation.

the primary responsibility for the river studies; Recreation is involved in the administration of the designated rivers; and Area Planning and Development assures that state and private forestry concerns are recognized in river studies and management plans.

Other Federal agencies involved in some capacity are:

Federal Power Commission
Army Corps of Engineers
Federal Energy Administration
Environmental Protection Agency
Tennessee Valley Authority
Nuclear Regulatory Commission
Council on Environmental Quality
Water Resources Council
Federal Highway Administration
National Oceanographic and Atmospheric Administration.

9.9 Funding

The original Act authorized to be appropriated sums necessary, but not more than $17 million, for the acquisition of lands and interests in land for the eight rivers immediately designated. An amendment (P.L. 93-279) was subsequently passed increasing the amount to $37,600,000.[31]

Two rivers added by Congress after the passage of the Act are the Lower St. Croix and the Chattooga. Some $7,275,000 was originally authorized for acquisition and development of the Lower St. Croix (a figure later amended upwards to $19 million); and for the Chattooga, $2 million for acquisition and $809,000 for development (P.L. 93-279).

Third and fourth rivers, the Little Miami in Ohio and the Allagash in Maine, were added to the System by the second of the methods outlined above in section 9.2, the method by which proposals emanating from state governments are acted upon by the Secretary of the Interior.

No money was authorized for the study rivers in the original Act. On January 3, 1975, P.L. 93-621 added 29 additional rivers for study and authorized $2,175,000 for the task.

C. Information and Bibliography

9.10 Key information contacts

Assistant Director
Watershed and Minerals Area Management
The Forest Service
U.S. Department of Agriculture
Washington, D.C. 20250
(202) 235-8163

Chief
Division of Resource Areas Studies
Bureau of Outdoor Recreation
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5772

Wilderness Consultant
The Wilderness Society
1901 Pennsylvania Avenue, N.W.
Washington, D.C. 20006
(202) 293-2732

Acting Director
American Rivers Conservation Council
324 C Street, S.E.
Washington, D.C. 20003
(202) 547-6500

---

[31] The amendment specifically provided:

Sec. 16. (a) There are hereby authorized to be appropriated, including such sums as have heretofore been appropriated, the following amounts for land acquisition for each of the rivers described in section 3(a) of this Act: Clearwater, Middle Fork, Idaho, $2,909,800; Eleven Point, Missouri, $4,906,500; Feather, Middle Fork, California, $3,935,700; Rio Grande, New Mexico, $253,000; Rogue, Oregon, $12,447,200; St. Croix, Minnesota and Wisconsin, $11,768,550; Salmon, Middle Fork, Idaho, $1,237,100; and Wolf, Wisconsin, $142,150.

(b) The authority to make the appropriations authorized in this section shall expire on June 30, 1979.

9.11 Bibliography

Bureau of Land Management, "The Plan for the Rio Grande National Wild and Scenic River." Washington, D.C.: U.S. Department of the Interior, 1969.

Bureau of Outdoor Recreation and U.S. Forest Service. "Wild and Scenic Rivers." Washington, D.C.: U.S. Government Printing Office, 1970.

Douglas, William O. *A Wilderness Bill of Rights.* Boston: Little, Brown and Company, 1965.

The Forest Service. "River Plan for the Middle Fork Salmon Wild and Scenic River." Washington, D.C.: U.S. Department of Agriculture.

Frome, Michael. *Battle for Wilderness.* New York: Praeger Publishers, 1974.

Gillette, Elizabeth (ed.). *Action for Wilderness.* San Francisco: Sierra Club, 1972.

Tarlock, A. Dan and Roger Tippy. "The Wild and Scenic Rivers Act of 1968." *Cornell Law Review.* Vol. 55, pp. 707-739 (1970).

9.12 List of technical appendices

(a) "Guidelines for Evaluating Wild, Scenic and Recreational River Areas Proposed for Inclusion in the National Wild and Scenic Rivers System under Section 2, Public Law 90-542." U.S. Department of the Interior and U.S. Department of Agriculture Forest Service. Washington, D.C.: GPO 864-100, February, 1970.

(b) National Wild and Scenic Rivers System, as Authorized by P.L. 90-542, as Amended (map). U.S. Department of the Interior, Bureau of Outdoor Recreation. Washington, D.C.: September, 1975.

(c) Wild and Scenic Rivers Act as Amended through P.L. 93-621, January 3, 1975.

Chapter Ten:

National Trails System

A. Objectives and Program

10.1 Overall objectives of the System

The National Trails System Act of October 2, 1968, 16 U.S.C. 1241-1249, established the following policy for a national system of trails:

> In order to provide for the ever-increasing outdoor recreation needs of an expanding population and in order to promote public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas of the Nation, trails should be established (i) primarily, near the urban areas of the Nation, and (ii) secondarily within established scenic areas more remotely located. The purpose of this Act is to provide the means for attaining these objectives by instituting a national system of recreation and scenic trails, by designating the Appalachian Trail and the Pacific Crest Trail as the initial components of that system, and by prescribing the methods by which and standards according to which, additional components may be added to the system.[1]

The National Trails System Act created three types of trails: National Recreation Trails, National Scenic Trails and connecting or side trails. National Recreation Trails provide for a variety of outdoor recreation uses in or near urban areas. They may be designated by the Secretary of the Interior or by the Secretary of Agriculture where lands administered by him are involved. National Scenic Trails are long distance trails that provide for maximum outdoor recreation potential and for the conservation and enjoyment of nationally significant scenic, historic, natural, or cultural qualities of the area. They may be designated only by the Congress. Connecting or side trails provide access to or connect National Recreation or Scenic Trails and may become part of the trail to which they are joined.[2]

[1] 16 U.S.C. 1241.

[2] "National Recreation Trails: Information and Application Procedure," U.S. Department of the Interior, Bureau of Outdoor Recreation, 1973, p. 1.

10.2 Entry into the System

The National Trails System Act directed the Secretaries of the Interior and Agriculture to encourage states and local governments, as well as private interests, to establish National Recreation Trails on lands in or near urban areas, and directed the Secretary of Housing and Urban Development to encourage the planning of Recreation Trails in connection with urban recreation and transportation planning.

Where lands included in the right-of-way of a trail are not Federally-held, such land or interests in such land may be acquired by written cooperative agreement, donation, purchase with donated or appropriated funds, or exchange, provided that not more than 25 acres in any one mile may be acquired by condemnation.

> (a) The Secretary of the Interior, or the Secretary of Agriculture where lands administered by him are involved, may establish and designate national recreation trails, with the consent of the Federal agency, State, or political subdivision having jurisdiction over the lands involved, upon finding that—
>
> (i) such trails are reasonably accessible to urban areas, and, or
>
> (ii) such trails meet the criteria established in this chapter and such supplementary criteria as he may prescribe.
>
> (b) As provided in this section, trails within park, forest, and other recreation areas administered by the Secretary of the Interior or the Secretary of Agriculture or in other federally administered areas may be established and designated as "National Recreation Trails" by the appropriate Secretary and, when no Federal land acquisition is involved—
>
> (i) trails in or reasonably accessible to urban areas may be designated as "National Recreation Trails" by the Secretary of the Interior with the consent of the States, their political subdivisions, or other appropriate administering agencies, and
>
> (ii) trails within park, forest, and other recreation areas owned or adminis-

tered by States may be designated as "National Recreation Trails" by the Secretary of the Interior with the consent of the State.

Criteria for National Recreation Trails are as follows:

1. Readiness—A trail must be ready for public use before it can be designated a national recreation trail;
2. Availability—A trail should be in or reasonably accessible to urban areas. "Reasonably accessible" is interpreted to mean availability for day use of within approximately two hours' travel of urban areas;
3. Length—Trail length may vary depending on use and purpose, but it must be continuous. It may be short, perhaps one-half mile in length (example: wheelchair trails for the handicapped, trails for the blind), or it may extend many miles and incorporate urban-rural characteristics (example: canal towpaths);
4. Location—It is not a prerequisite that a trail be scenic, although wherever possible the significant features of the surrounding area should be incorporated into the trail network. A national recreation trail should be located so as to be available to the greatest number of people. It may be located on varied terrain as long as the trail reasonably provides for public safety. Examples of possible trail locations are: stream valleys and their flood plains; utility rights-of-way such as natural gas lines and power lines; abandoned railroad or streetcar rights-of-way, easements for underground cables, areas around reservoirs, irrigation or transportation canals and laterals; levees, flood dikes, jetties, and breakwaters;
5. Design and Use—A national recreation trail must be designed according to accepted design and construction standards commensurate to the type use anticipated. A trail may be designed solely for hikers, horsemen, bicyclists, or motorcycle riders or where practicable, for a combination of uses;
6. Administration—Before a trail may receive national recreation status, the agency to administer the trail must provide proof that the trail will be available for public use for at least ten consecutive years after designation, plus supporting documents such as property titles, leases, easement agreements, etc.[3]

National Scenic Trails are authorized and designated only by Acts of Congress. These trails by their very nature must be worthy of national scenic designation. Their scenic, historical, natural, or cultural qualities must be superior to those of other trails in the country. Because of their special characteristics, National Scenic Trails should be capable of promoting interest and attracting visitors throughout the United States.[4] Criteria for National Scenic Trails are as follows:

Route Selection

The routes of national scenic trails should be so located as to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic and natural qualities and historic features in the areas through which they pass. Route selection and trail development should consider the need for protection of rare or fragile areas of vegetation, archeologic and historic sites, unique land forms, and the habitat of rare or endangered species.

In locating routes, consideration should be given to protection against present and future incompatible land uses. To protect the quality of the trail user's experience, national scenic trail routes should avoid, insofar as possible, man-made developments of a disruptive and distracting nature—such as highways, mining areas, power transmission lines, commercial and industrial operations and other activities which would detract from the enjoyment of the natural and scenic environment. Exceptions could be made for developments and activities which, with proper interpretation, could positively contribute to the trail user's experience by increasing his or her knowledge about the area through which the trail passes.

Trails of historic significance should adhere

[3] *Ibid.*, p. 4.

[4] "National Scenic and Recreation Trails," U.S. Department of the Interior, Bureau of Outdoor Recreation; and U.S. Department of Agriculture, Forest Service, 1975, p. 3.

as accurately as practicable to their primary historic route or routes and offer the highest potential for historic interpretation.

Access

National scenic trails should have adequate public access points at reasonable intervals to allow for trips of various lengths. Besides direct access which may be available via roads and highways, these trails should be accessible through establishment of connecting or side trails and through other existing trails.

Placement

National scenic trails should be primarily land-based.

Length

National scenic trails should be of sufficient length to encompass and provide appropriate access to the resources which are the basis for the trail's designation.

Continuity

National scenic trails should be continuous where feasible. Discontinuous portions may be designated, however, where no practicable or feasible interconnection exists.

Use

National scenic trails are designed for hiking and other compatible uses. The National Trails System Act prohibits the use of motorized equipment on these trails.

Congress has established two national scenic trails: the Appalachian Trail in the East and the Pacific Crest Trail in the West.[5]

10.3 Protection

National Recreation Trails may vary so widely in length, setting (urban or rural), permitted uses, and ownership (Federal, state, local, and private), that it is difficult to speak generally on the issue of protection. At a bare minimum it may be said that before a trail may receive national recreation status, the administering agency must provide proof that it will be available for public use for at least ten consecutive years, plus supporting documents such as property titles, leases, easement agreements, etc.

[5] *Ibid.*, pp. 4-7.

National Scenic Trails may also have a multiplicity of ownerships. Ownership of segments of the two existing trails roughly breaks down as follows:

Appalachian Trail	
U.S. Forest Service	719 miles
National Park Service	215 miles
Tennessee Valley Authority	3 miles
States	289 miles
Private	
cooperative agreement	200 miles
no formal agreement	605 miles
Pacific Crest Trail—	
U.S. Forest Service	1,856 miles
National Park Service	249 miles
Bureau of Land Management	204 miles
States	43 miles
Private	106 miles

Memoranda of Agreement have been entered into by the Secretaries of the Interior and of Agriculture concerning the policy of their respective agencies in regard to the two existing Scenic Trails, the Appalachian and the Pacific Crest.[6] These memoranda are basically agreements to agree, recognizing the primacy of the National Park Service as regards administration of the Appalachian Trail and of the U.S. Forest Service for the Pacific Crest Trail, and providing for the prevention of uses incompatible with the scenic character of the trails in the vicinity of Scenic Trail rights-of-way.

Where the lands included in a National Scenic Trail right-of-way are outside the exterior boundaries of Federally-administered areas, the states or local governments involved are encouraged to enter into written cooperative agreements with landowners and private organizations, or to acquire such lands or interests therein to provide the necessary right-of-way. Memoranda of Agreement are entered into by the participating state and the administering

[6] For Memorandum of Agreement between the National Park Service and the Forest Service concerning the Appalachian Trail, see Technical Appendix 10(a).

agency.[7] While the Act provides that the Federal government may enter into such cooperative agreements or acquire such lands or interests therein where the states or localities have not done so within two years of the publication of the nature of selection of the trail right-of-way in the *Federal Register*, no Federal funds have been forthcoming for this purpose. And the records in the several states and localities in this matter vary widely. As a result, certain segments of the Appalachian Trail are now, or will soon be in danger of subdivision development.

As regards the protection of non-Federal lands for trail purposes, mention must be made of the active role of the Appalachian Trail Conference and its constituent clubs which have acquired land or entered into cooperative agreements with private landowners.[8]

Where a right-of-way across private land is to be secured by cooperative agreement, the National Park Service has provided a suggested Right-of-Way Cooperative Agreement (see Technical Appendix 10(e)), containing some of the following protective features. The landowner agrees to secure consent prior to cutting any trees or building any structure within a distance of 100 feet on either side of the trail. He or she further agrees to give notice in writing if, at any time within 20 years from the date of the agreement, the lands involved are offered for sale to anyone, and to afford a period of 120 days from date of notification to purchase the trail right-of-way at the same price, proportionately, and on the same terms and conditions offered another party.

The trail receives another form of protection by the fact that after publication of the notice of right-of-way selection in the *Federal Register,* a substantial relocation of the trail may only be accomplished by Act of Congress. However, the Secretary charged with administration of a National Scenic Trail may relocate segments with the concurrence of the head of the Federal agency having jurisdiction over the lands involved, upon a determination that relocation is necessary to preserve the purposes for which the trail was established or the relocation is necessary to promote a sound land management program in accordance with established multiple-use principles. This would permit a temporary relocation of a trail segment for timber harvesting and during the reforestation period where a satisfactory alternative route existed.

In other respects, trail segments receive the same protection as is afforded the land through which it crosses by the Federal agency having jurisdiction.

10.4 Management

National Recreation Trails

Owing to the great variety of National Recreation Trails, it is difficult to speak generally on the subject of their management. They may range from urban to rural in setting; be designed to meet a range of traffic intensities and many modes of locomotion including foot, bicycle, motorcycle, wheelchair. For all National Recreation Trails, the trail administrator must submit a trail management plan covering such items as fire protection, maintenance, police surveillance rules and regulations, and other related matters. Although a trail's primary purpose should be for outdoor recreation use, other uses, such as power lines, sheep driveways, logging road operations, etc., may be permitted if they would not substantially interfere with the nature and purpose of the trail.[9]

---

[7] For suggested Memorandum of Agreement between National Park Service and (a state) concerning the Appalachian Trail, see Technical Appendix 10(d).

[8] For Memorandum of Agreement between the National Park Service and the Appalachian Trail Conference concerning the Appalachian Trail, see Technical Appendix 10(a).

[9] "National Recreation Trails: Information and Application Procedure," p. 4.

National Scenic Trails

Some of the salient features of right-of-way selection for the Appalachian Trail are applicable as well to the Pacific Crest Trail. These points, which will undoubtedly affect the planning of future trails, are illustrative of the values for which National Scenic Trails are managed:[10]

Generally, the trail should be kept at a high elevation because this is the original purpose. The ridges are less developed and allow more spectacular views. However, the trail need not go up every mountain just to gain maximum altitudes. Shortest route should not be the primary concern, nor even a major one, unless a more circuitous route gives a redundant hiking experience by looping through a low quality environment. Unusual geological and historic features as well as outstanding views should be considered in planning.

Views or interesting geology will almost always dictate the crest route. The choice must be made between a crestline ungraded trail with numerous ascents and descents and a non-crestline trail graded around minor summits providing more gentle and continuous ascents. Where there are no outstanding distant views, the latter may be preferred. On the other hand, the hiker may feel disappointment if the trail fails to lead to a major summit. Hikers will usually accept additional effort when so rewarded, but would prefer not to go repeatedly up and down for no obvious reason. An artful blending of crestline and non-crestline trail is excellent.

Advantage should be taken of lake or streamside locations. Care in keeping the water in view, at least intermittently, should be taken through selective thinning and clearing followed by frequent maintenance to preserve outstanding views.

Whenever possible, buffer zones of old growth timber should be left bordering the trail in logging areas. Land in timber or pastoral management on both sides of the trail is compatible.

When crossing watersheds used for domestic water supply is necessary, special precaution should be taken to avoid pollution. Established roads should be avoided as far as possible and number of road crossings minimized.

Manmade structures in use should be generally avoided. In urban, commercial, or industrial areas through which the trail now passes, a corridor with the least development should be sought. Whenever industrial structures, objectionable features, or activities are present which cannot be avoided, natural forms of screening should be employed. On the other hand, structures with historical and esthetic interest are an appropriate complement to the trail.

In urban areas, trails may follow river and canal banks, and abandoned railroad and street-car beds.

Trail sections following old roads which have become badly eroded should either be relocated or the erosion problem corrected.

Because the Appalachian Trail is meant to be, wherever possible, a footpath in a near-natural environment, there will be some rough spots and some difficult sections. To eliminate all sources of difficulty would be a mistake, for these constitute a source of sporting pleasure and signs should be erected to warn hikers of unusual difficulties or dangers.

(Normally) the trail should be located to:

—fit the land.

—give the feeling the land mass is below rather than above traveler;

—prevent monotony and provide seclusion by curving with the land rather than cutting across the land, and have a gently undulating grade as opposed to a long uniform grade;

—complement the current or planned use of the land, and harmonize with the environment;

—provide for maximum outdoor recreational potential, consistent with the carrying capacity of the resources;

—give consideration to the total cost of providing and maintaining the trail;

—avoid, if practicable, areas of unstable soil or geology.

* * * *

—display a great variety of natural beauty and expanses of scenery from a position of height;

—blend with the terrain by taking full advan-

[10] *Guidelines: Appalachian Trail, National Scenic Trail, Maine to Georgia,* U.S. Department of the Interior, National Park Service, September 1971, pp. 6-7.

tage of the natural topography and vegetation;
—present distant views by traversing ridge tops through sparsely timbered areas, and alongside natural openings;
—encounter a variety of vegetative types;
—provide occasional views of the mountain crest, when the trail is located a considerable distance from the crest;
—provide the most impressive approach to special scenic attractions.

National Scenic Trails are designed for hiking and other compatible uses. The National Trails System Act prohibits the use of motorized equipment on these trails. For other specifics of management as practiced by the many managing entities along the length of the two existing Scenic Trails, see section 10.6 Illustrative examples.

10.5 Present status of the System

As of August, 1975, there were 67 National Recreation Trails ranging in length from 0.25 to 67 miles. They are located on abandoned railroad rights-of-way, old logging roads, park and forest lands, and islands. They accommodate hikers, bicyclists, skiers, horseback riders, blind persons, persons in wheelchairs and motorized vehicle enthusiasts such as snowmobilers—though not all at one time. Ownership and administration represent a full range of interests —Federal, state and local governments, quasi-public organizations, and the private sector.[11] Nine of the trails are on Federal land and are managed by their respective land-holding agencies: Bureau of Land Management, four; U.S. Army Corps of Engineers, two; U.S. Forest Service, two; National Park Service, one.

Table I National Recreation Trails[12]

Legend: B–bicycle; F–foot; H–horse; M–motorized, general; SM–snowmobile; WC–wheelchair.

Alaska: PINNELL MOUNTAIN TRAIL (24 miles) F, Bureau of Land Management, USDI

Washington: LAKE WASHINGTON BICYCLE PATH (3.2 miles) B-F, City of Seattle, Department of Parks and Recreation

Washington: LAKE WASHINGTON SHIP CANAL WATERSIDE TRAIL (1,200 feet) F, U.S. Army Corps of Engineers

Washington: FRED CLEATOR INTERPRETIVE TRAIL (1.3 miles) F, Washington State Parks and Recreation Commission

Oregon: TILLAMOOK HEAD TRAIL (6 miles) F, Oregon State Highway Division, State Parks and Recreation Branch

California: KING RANGE TRAIL (10 miles in 2 segments) F-H, M, Bureau of Land Management, USDI

California: SOUTH YUBA TRAIL (6 miles) F-H, Bureau of Land Management, USDI

California: EAST BAY SKYLINE TRAIL (14 miles) F-H, East Bay Regional Park District

California: GABRIELINO TRAIL (28 miles) F-H, Forest Service, USDA

Arizona: SOUTH MOUNTAIN PARK TRAIL (14 miles) B-F-H, Phoenix Parks and Recreation Department

Colorado: HIGHLINE CANAL TRAIL (18 miles) B-F-H, South Suburban Metropolitan Recreation and Park District, Denver

New Mexico: ORGAN MOUNTAIN TRAIL (8.7 miles) F-H, Bureau of Land Management, USDI

South Dakota: BEAR BUTTE TRAIL (3.5 miles) F, South Dakota Department of Game, Fish and Parks, Division of Parks and Recreation

South Dakota: SUNDAY GULCH TRAIL (4 miles) F, South Dakota Department of Game, Fish and Parks, Division of Parks and Recreation

South Dakota: TRAIL OF SPIRITS (0.5 mile) F, South Dakota Department of Game, Fish and Parks, Division of Parks and Recreation

Nebraska: FONTENELLE FOREST TRAIL (3.9 miles) F, Fontenelle Forest Association

Texas: GREER ISLAND NATURE TRAIL (3 miles) F, City of Fort Worth Park and Recreation Department

Arkansas: SUGAR LOAF MOUNTAIN NATURE TRAIL (1 mile) F, U.S. Army Corps of Engineers

Wisconsin: ELROY-SPARTA TRAIL (30 miles) B-F-SM, Wisconsin Department of Natural Resources, Bureau of Parks and Recreation

Wisconsin: ICE AGE TRAIL (25 miles) F-SM,

[11] "National Recreation Trails: Information and Application Procedure," p. 3

[12] *Ibid.*, pp. 17-18, and August, 1975, update of list.

Wisconsin Department of Natural Resources, Bureau of Parks and Recreation

Illinois: THE ILLINOIS PRAIRIE PATH (12.5 miles) B-F-H, The Illinois Prairie Path, Inc.

Kentucky: LONG CREEK TRAIL (0.25 mile) F-WC, Tennessee Valley Authority

Tennessee: LAUREL-SNOW TRAIL (8 miles) F, Bowaters Southern Paper Corporation

Georgia: STONE MOUNTAIN TRAIL (6.51 miles) F, Stone Mountain Memorial Park Association

District of Columbia: FORT CIRCLE PARKS TRAIL (19.5 miles total) B-F, National Park Service, USDI

Pennsylvania: FAIRMOUNT PARK BIKE PATH (8.25 miles) B-F, City of Philadelphia, Fairmount Park Commission

New Jersey: PALISADES LONG PATH (11 miles) F, Palisades Interstate Park Commission

New Jersey: PALISADES SHORE TRAIL (11.25 miles) F, Palisades Interstate Park Commission

New York: HARRIMAN LONG PATH (16 miles) F, Palisades Interstate Park Commission

Oregon: WILLAMETTE RIVER TRAIL (1.7 miles) F-B-WC, Eugene Parks and Recreation Department

Colorado: HIGHLINE CANAL TRAIL (13 miles) F-B-H, Aurora Parks and Recreation Department

Texas: CARGILL LONG PARK TRAIL (2.5 miles) F-B, Longview Parks and Recreation Department

Michigan: BELLE ISLE BICYCLE TRAIL (0.9 mile) B, Detroit Parks and Recreation Department

Wisconsin: LAKE PARK BICYCLE TRAIL (3.1 miles) B, Milwaukee City Parks Commission

Wisconsin: WARNIMONT PARK BICYCLE TRAIL (1.5 miles) Milwaukee City Parks Commission

Tennessee: NORTH RIDGE TRAIL (7.5 miles) F, City of Oak Ridge

Mississippi: SHOCKALOE TRAIL (23.0 miles) F-H, Forest Service

Tennessee: HONEY CREEK TRAIL (5 miles) F, Bowaters Southern Paper Corporation

Tennessee: VIRGIN FALLS TRAIL (8 miles) F, Bowaters Southern Paper Corporation

Tennessee: HONEYSUCKLE TRAIL (.5 mile), Tennessee State Parks Department

Missouri: ELEPHANT ROCKS BRAILLE TRAIL (1.0 mile) F-WC, Missouri State Park Board

California: PENITENCIA CREEK TRAIL (5.5 miles) F-H, San Jose Park and Recreation Department

Arizona: SQUAW PEAK TRAIL (1.2 miles) F-H, City of Phoenix Parks and Recreation Department

Arizona: NORTH MOUNTAIN TRAIL (0.9 mile) F-H, City of Phoenix Parks and Recreation Department

California: JEDEDIAH SMITH TRAIL (26 miles) B-F-H, Sacramento County Parks and Recreation Department

California: CALIFORNIA AQUEDUCT BIKEWAY (67 miles) B-F, California Department of Water Resources

Maryland: TOUCH OF NATURE TRAIL (0.3 mile) Braille, Maryland Park Service

Ohio: HARRIET L. KEELER WOODLAND TRAIL (0.5 mile) F-WC-Braille, Cleveland Metropolitan Park Distict

California: YORK TRAIL (3.5 miles) F-H, City of Oakland, Office of Parks and Recreation

Arizona: HUNTER TRAIL (2.3 miles), F, Arizona State Parks Board

Wisconsin: SUGAR RIVER STATE TRAIL (23 miles) B-F-SM, Wisconsin Department of Natural Resources, Bureau of Parks and Recreation

North Carolina: BOB'S CREEK TRAIL (8 miles) F, Bowaters Carolina Corporation

West Virginia: THE GENTLE TRAIL (0.4 mile) F, The Huntington Galleries

Iowa: SAC AND FOX TRAIL (5 miles) F-H-B, Cedar Rapids Park Department

Arkansas: CEDAR CREEK SELF-GUIDING TRAIL (1.5 miles) F, Arkansas Park Division

Arkansas: SEVEN HOLLOWS TRAIL (3.5 miles) F, Arkansas Park Division

Oklahoma: RED STICK TRAIL (1.5 miles) F, Oklahoma City Parks and Recreation Department

Pennsylvania: WISSAHICKON TRAIL (5.4 miles) F-H-B, Fairmount Park Commission

California: TWENTY MULE TEAM TRAIL (12 miles) F-H-B, California City Park and Recreation Department

Washington: DISCOVERY PARK LOOP TRAIL (2.8 miles) F-B, Seattle Parks and Recreation Department

California: TORO RIDING AND HIKING

TRAILS (6 miles) F-H, Monterey County Parks Department

Oregon: WILDWOOD PARK TRAIL (14 miles) F-H, Portland Park Bureau

Wisconsin: AHNAPEE STATE PARK TRAIL (15 miles) F-B-SM, Wisconsin Department of Natural Resources

Pennsylvania: FLOUR SAK BATTLE BICENTENNIAL TRAIL (1 mile) F, Pennsylvania Historical and Museum Commission

Rhode Island: CLIFF WALK (3.5 miles) F, City of Newport

Ohio: ROCKY RIVER BICYCLE TRAIL (5 miles) B, Cleveland Metroparks

Minnesota: CONGDON CREEK PARK TRAIL (.75 mile) F,S, Duluth Parks and Recreation Department

Congress already has established two National Scenic Trails: the Appalachian Trail in the East and the Pacific Crest Trail in the West.

In the National Trails System Act Congress designated 14 other routes for study and possible inclusion in the National Trails System. Following are descriptions of those routes and their current status:[13]

(1) Continental Divide Trail, a 3100-mile trail extending from near the Mexican border in southwestern New Mexico northward generally along the Continental Divide to the Canadian border in Glacier National Park. Under review by the Office of Management and Budget prior to transmittal to the President and Congress.

(2) Potomac Heritage Trail, an 825-mile trail extending generally from the mouth of the Potomac River to its sources in Pennsylvania and West Virginia, including the 170-mile Chesapeake and Ohio Canal towpath. Presently before Congress.

(3) Old Cattle Trails of the Southwest from the vicinity of San Antonio, Texas, approximately 800 miles through Oklahoma via Baxter Springs and Chetopa, Kansas, to Fort Scott, Kansas, including the Chisholm Trail, from the vicinity of San Antonio or Cuero, Texas, approximately 800 miles north through Oklahoma to Abilene, Kansas. Found not to qualify. Report transmitted.

(4) Lewis and Clark Trail, from Wood River, Illinois, to the Pacific Ocean in Oregon, following both the outbound and inbound routes of the Lewis and Clark Expedition. Report reviewed by Federal departments and the states and in final revision stages prior to transmittal.

(5) Natchez Trace, from Nashville, Tennessee, approximately 600 miles to Natchez, Mississippi. Study still underway.

(6) North Country Trail, from the Appalachian Trail in Vermont, approximately 3,200 miles through the States of New York, Pennsylvania, Ohio, Michigan, Wisconsin, and Minnesota to the Lewis and Clark Trail in North Dakota. Ready for transmittal to the Office of Management and Budget prior to transmittal to the President and Congress.

(7) Kittanning Trail from Shirleysburg in Huntingdon County, Pennsylvania, to Kittanning, Armstrong County, Pennsylvania. Study completed; final report being prepared.

(8) Oregon Trail, from Independence, Missouri, approximately 2,000 miles to near Fort Vancouver, Washington. Report reviewed prior to transmittal by Federal departments and the states and in final revision stage.

(9) Santa Fe Trail, from Independence, Missouri, approximately 800 miles to Santa Fe, New Mexico. Report in final revision stage prior to transmittal.

(10) Long Trail, extending 255 miles from the Massachusetts border northward through Vermont to the Canadian border. Report recommends no Federal action.

(11) Mormon Trail, extending from Nauvoo, Illinois, to Salt Lake City, Utah, through the States of Iowa, Nebraska, and Wyoming. Study still underway.

(12) Gold Rush Trails in Alaska. Study still underway.

(13) Mormon Battalion Trail, extending 2,000 miles from Mount Pisgah, Iowa, through Kansas, Colorado, New Mexico, and Arizona to Los Angeles, California. Found not to qualify. Report transmitted.

(14) El Camino Real from St. Augustine to Fort Carolina National Memorial, Florida, approximately three miles along the southern boundary of the St. Johns River. Study still underway.

---

[13] "National Scenic and Recreation Trails," pp. 18-20.

A map of the National Scenic Trails, existing and proposed, appears as Technical Appendix 10(b).

10.6 Illustrative examples:

(a) The Appalachian National Scenic Trail

> Remote for detachment, narrow for chosen company, winding for leisure, lonely for contemplation, the Trail leads not merely north and south but upward the body, mind and soul of man.
>
> Harold Allen

Beginning at Mount Katahdin in Baxter State Park, Maine, the Appalachian Trail extends southward for approximately 2,000 miles to its terminus at Springer Mountain, Georgia. Its route generally is situated on the crest of the Appalachian Mountain System through mostly primitive country in the states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, West Virginia, Virginia, North Carolina, Tennessee and Georgia.

The trail passes within the boundaries of eight National Forests: White and Green Mountain National Forests in the Forest Service's eastern region, George Washington, Jefferson, Cherokee, Pisgah, Nantahala, and Chattahoochie National Forests in the southern region. The trail also passes through six areas of the National Park System: the Delaware Watergap National Recreation Area, Shenandoah National Park, Blue Ridge Parkway, Great Smoky Mountains National Park, Chesapeake and Ohio Canal National Historical Park, and Harper's Ferry National Historical Park. Three miles of Federal ownership of the trail are on Tennessee Valley Authority lands in Tennessee and North Carolina.[14]

The Secretary of the Interior is primarily responsible for the administration of the trail, in consultation with the Secretary of Agriculture. In this capacity the National Park Service, acting for the Secretary of the Interior, exercises overall responsibility for the trail. In the interest of effectively fulfilling this responsibility the Service has appointed a project manager under the Regional Director, North Atlantic Region. The Project Manager coordinates Appalachian Trail activities for its full length, working closely with Park Managers, National Forest Supervisors, National Park Service and Forest Service Regional Offices, the fourteen states, and the Appalachian Trail Conference.

The Project Manager works in close cooperation with the Appalachian Trail Advisory Council, seeking its advice from time to time on matters relating to the trail, including selection of rights-of-way, standards for establishing and maintaining trail markers, and administration both within and outside Federally-administered areas.

The Appalachian Trail Advisory Council is responsible for: (1) providing advice on policies and procedures for the administration of the trail; (2) providing administrative expertise for the resolution of particular problems; and (3) serving as a consultant to the Park Service on matters pertaining to the trail. Membership of the Council may not exceed 35 in number and members serve (under the Federal Advisory Committee Act) for two years. Its membership consists of representatives of: (1) the Federal agencies administering lands through which the trail route passes; (2) each state through which the trail route passes; (3) private organizations and landowners and users who have an established and recognized interest in the trail. One additional requirement is that the Appalachian Trail Conference representation on the Council be sufficient to represent the various sections of the country through which the trail passes.[15]

Federal agencies holding land along the trail right-of-way are responsible for managing those segments which pass through

[14] *Guidelines: Appalachian Trail, National Scenic Trail, Maine to Georgia,* pp. 10-11.

[15] *Ibid.*, pp. 27-28.

their land. The Memorandum of Agreement between the National Park Service and the U.S. Forest Service (see Technical Appendix 10(a) provides for the designation of protective zones from a minimum of 100 feet on each side of the trail to any greater width necessary to assure maximum retention of the outdoor recreation experience. The Forest Service continues to acquire private inholdings on its lands.

The states and their localities develop, maintain and administer segments of the trail which they have acquired. They are encouraged to protect trail right-of-way through either outright purchase or by entering into cooperative agreements with landowners. They are also encouraged to enact land use controls that will restrict development in the vicinity of the trail. Even along some segments relatively far-removed from metropolitan areas the threat of vacation home subdivision is imminent.

The Appalachian Trail Conference and clubs continue to share responsibility for the maintenance of all sections of the Appalachian Trail, both public and private, and to assist in the protection of the right-of-way by acquisition or by entering into cooperative agreements with landowners. The Conference and clubs also furnish guidebooks and other information about the trail, and educate hikers as to proper use of the trail.

The Appalachian Trail is managed for hiking, camping, picnicking, sightseeing, climbing, and other leisure time activities available to foot travelers.

Travel by horseback is permitted along some areas. The use of bicycles, motorbikes, snowmobiles and all-terrain vehicles is prohibited on Federal segments.[16]

A system of open shelters has been developed to the point that in most areas they occur at ten-mile intervals, although there is a recent trend to eliminate shelters in locations where overuse has rendered them unmanageable. Overnight camping, along most segments, is prohibited except in designated areas. Campers are encouraged to stop off the trailside.

The activities of foot travelers present problems in land management that are difficult to cope with such as human waste disposal, litter and debris, trampling and vegetative damage. Unburnable debris must be carried out by the foot travelers to central disposal areas accessible by vehicle or other means. Garbage dumps within this zone are undesirable.

Overuse has become a problem at certain segments. In response to this, there is a growing tendency to downplay trailhead signs in these areas, and to publicize other equally scenic trails in the vicinity.

Vandalism is also a problem, some shelters having been burnt and signs destroyed. Trail markers fall prey to souvenir hunters. New techniques of marking the trail should help eliminate that problem.

Owing to the segmented nature of management, regulations concerning such practices as camping, hunting, making fires, bringing pets, bicycling, and horseback riding are not uniform throughout the length of the trail.

(b) The Pacific Crest National Scenic Trail

The Pacific Crest Trail, a trail of approximately 2,400 miles, extends southward from the Canadian border, generally along the mountain ranges of Washington, Oregon and California, to the Mexican border. The trail follows the ridges of the Cascades and the Sierra Nevadas amid spectacular mountain formations and awesome vistas. In high country resplendent in scenic beauty, the hiker encounters glacial moraines and icefields, lava flows and basalt columns, alpine forests and deserts, wilderness, wildlife, and trout streams galore.[17]

Approximately 80 percent of the trail is

[16] *Ibid.*, pp. 32-33.

[17] "National Scenic and Recreation Trails," pp. 13-18.

on Federal lands including 23 National Forests and seven National Parks, 18 National Forest Wildernesses, nine Bureau of Land Management Districts, as well as state and private lands. The relatively small amount of private mileage consists largely of short stretches of private lands lying within or between authorized boundaries of the large National Forests and National Parks.

The Secretary of Agriculture is primarily responsible for the administration of the Pacific Crest Trail in consultation with the Secretary of the Interior. In this capacity the U.S. Forest Service, acting for the Secretary of Agriculture, exercises overall responsibility for the trail.

The Pacific Crest Trail Advisory Council is similarly constituted and empowered as its Appalachian Trail counterpart.

Private lands may be protected either by cooperative agreement or acquisition, except that the Pacific Crest Trail is specifically excepted from the Congressional grant of authority to use the power of eminent domain for the acquisition of Scenic Trail right-of-way. This means that if a landowner will not make his land available, an alternative route may have to be selected.

Only 852 miles of the trail exist up to standard satisfactory condition; 674 miles are in need of reconstruction, and 911 are still uncut or not officially part of the trail.

The trail is managed for hiking and travel by horseback. Use of motor vehicles on Scenic Trails is prohibited by statute.

Camping is permitted on most segments of the trail. It is requested that campers make camp 100 feet off the trailside. No shelters or lean-to's exist in California. There are some in Washington and Oregon.

B. Authority, Structure and Funding

10.7 History and legislative background

The concept of preserving a system of trails had its origin in the private sector.

As early as 1921, Benton MacKaye, forester and philosopher, presented his plan for a trail in an article, "The Appalachian Trail—An Experiment in Regional Planning," in the October 1921 issue of the *Journal of the American Institute of Architects.* In that article Mr. MacKaye proposed the trail as a sort of backbone, linking wilderness areas suitable for recreation and readily accessible to dwellers in the metropolitan areas along the Atlantic Seaboard. By that time only four existing trail networks had been constructed in New Hampshire, Vermont and New York with the help of volunteer hiking associations.

Approximately 350 miles of these trail networks were usable for MacKaye's super-trail proposal. Hiking clubs in New York City were the first to undertake actual work on the Appalachian Trail, the first section of which was opened and marked during 1922 in the Palisades Interstate Park.[18] Through the efforts of the Appalachian Trail Conference, founded in 1925, and its constituent clubs, the Appalachian Trail was initially completed in 1937 when the last two miles were opened on Mt. Sugarloaf in Maine. The southern terminus was then Mt. Ogelthorpe, Georgia. Major changes since then in Maine, Pennsylvania, Virginia, Tennessee, North Carolina, and Georgia have resulted in a stabilized trail route through scenic and more isolated regions.[19]

Public involvement with the Appalachian Trail came in 1938 when the National Park Service and the U.S. Forest Service entered into a Memorandum of Agreement expressing their intention to cooperate with each other, with the Appalachian Trail Conference, and with the states and their

---

[18] *Trails for America: Report on the Nationwide Trail Study,* Department of the Interior, Bureau of Outdoor Recreation, (U.S. Government Printing Office: 19660-239-538).

[19] "The Appalachian Trail: A Footpath Through the Wilderness . . . ," publication No. 17, The Appalachian Trail Conference (Washington, D.C., 1972).

localities for the development, protection, and perpetuation of the trail.

As early as 1920, the Forest Service began surveys of trails along sections of the Cascade and Sierra Nevada ranges. The idea of an esthetically pleasing route for foot and horseback travelers extending the full length of the crest from Canada to Mexico was conceived by Clinton C. Clark of Pasadena, California, and first proposed in 1932. Soon after, the Pacific Crest Trail Conference was organized to seek recognition of the concept and promote actual construction. By 1937, the Pacific Crest Trail was continuously passable for 2,313 miles, from border to border. The portion in Washington is known as the Cascade Crest Trail. Through Oregon's Cascades, the trail is known as the Oregon Skyline Trail. The several segments in California are known as the Lava Crest Trail, Tahoe-Yosemite Trail, the John Muir Trail, Sierra Trail, and the Desert Crest Trail.

In its national recreation survey of 1960, the Outdoor Recreation Resources Commission (see section 6.2 for a discussion of the Commission) predicted that walking for pleasure would increase from 566 million occasions of participation in 1960 to 1,569 million by the year 2000, a 277 per cent increase; and that hiking would jump 368 per cent, from 34 million to 125 million.[20]

Legislation for the creation of a national system of trails was first introduced in 1945. The National Trails System Act, 10 U.S.C. 1241-1249, became law on October 2, 1968.

10.8 Administrative structure and personnel

The Department of the Interior and the Department of Agriculture cooperate in the administration of the national trails program.

The Secretary of Agriculture has delegated the responsibility for National Recreation Trails on land administered by him to the Forest Service. The Secretary of the Interior has delegated to the Bureau of Outdoor Recreation responsibility for the National Recreation Trails program on all other lands, including non-Federal.[21]

The Secretary of the Interior who is primarily responsible for the administration of the Appalachian National Scenic Trail, has delegated this function to the National Park Service. For the Pacific Crest Trail this coordinating function has been delegated by the Secretary of Agriculture to the Forest Service.

10.9 Funding

The Bureau of Outdoor Recreation encourages state and local trails efforts by providing financial assistance through the Land and Water Conservation Fund program. Matching Federal grants enable state and local governments to acquire and develop outdoor recreation areas and facilities, including trails that are in accord with the state comprehensive outdoor recreation plans. Grants are made to states through designated State Liaison Officers. Fund grants available for individual Recreation Trails, as well as for state and local segments of Scenic Trails, have ranged from $750 to $425,000.

For Fiscal Year 1976, National Park Service operating funds for the Appalachian Trail are $67,000, including $28,000 in contracts with the Appalachian Trail Conference. U.S. Forest Service operating funds for the Pacific Crest Trail and the portion of the Appalachian Trail in National Forests are included in funds provided for broad recreation areas and are not separately reported.

---

[20] *Trails for America: Report on the Nationwide Trail Study,* U.S. Department of the Interior, Bureau of Outdoor Recreation, pp. 20-21.

[21] "National Recreation Trails: Information and Application Procedure," p. 1.

C. Information and Bibliography

10.10 Key information contacts

Division of Resource Area Studies
Bureau of Outdoor Recreation
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5772

Pacific Crest Trail
U.S. Forest Service, Region Five
630 Sansome Street
San Francisco, California 94111
(415) 556-4737

Project Manager
Appalachian Trail
c/o Boston National Historical Park
Charlestown Navy Yard
Boston, Massachusetts 02129
(617) 242-1730

10.11 Bibliography

Bureau of Outdoor Recreation. "National Recreation Trails." Washington, D.C.: U.S. Department of the Interior, January, 1975

Bureau of Outdoor Recreation. "National Recreation Trails: Information and Application Procedure." Washington, D.C.: U.S. Department of the Interior, GPO 0-508-475, 1973.

Bureau of Outdoor Recreation. *Trails for America: Report on the Nationwide Trail Study.* Washington, D.C.: U.S. Department of the Interior, GPO 0-239-538, 1966.

Bureau of Outdoor Recreation and the Forest Service. "National Scenic and Recreation Trails." Washington, D.C.: U.S. Department of the Interior and U.S. Department of Agriculture, GPO 0-381-128, 1970.

The Forest Service. *The Pacific Crest Trail: Guide for Location, Design and Management.* Washington, D.C.: U.S. Department of Agriculture, GPO 914-218, May, 1971.

10.12 List of technical appendices

(a) "Memorandum of Agreement between The National Park Service, Department of the Interior and The Forest Service, U.S. Department of Agriculture concerning The Appalachian National Scenic Trail." Washington, D.C.: 1970, and, "Memorandum of Agreement between The National Park Service, Department of the Interior and The Appalachian Trail Conference concerning The Appalachian National Scenic Trail." Washington, D.C.: 1970, from *Guidelines: Appalachian Trail, National Scenic Trail, Maine to Georgia,* Appalachian National Scenic Trail Advisory Council, September, 1971.

(b) National Trails System, National Scenic Trails (map). U.S. Department of the Interior, Bureau of Outdoor Recreation. Washington, D.C.: February, 1974.

(c) National Trails System Act (P.L. 90-543).

(d) "Suggested Memorandum of Agreement between The National Park Service, Department of the Interior and The State of _____ concerning The Appalachian National Scenic Trail." Washington, D.C.: Department of the Interior, from *Guidelines: Appalachian Trail, National Scenic Trail, Maine to Georgia,* Appalachian National Scenic Trail Advisory Council, September, 1971.

(e) "Suggested Appalachian National Scenic Trail Right-of-Way Cooperative Agreement," from *Guidelines: Appalachian Trail, National Scenic Trail, Maine to Georgia,* Appalachian National Scenic Trail Advisory Council, September, 1971.

PART FOUR

FEDERAL INTER-AGENCY NATURAL AREA PROGRAMS

Chapter Eleven:

Federal Committee on Ecological Reserves

(Formerly the Federal Committee on Research Natural Areas)

A. Federal Committee Purposes and Objectives

11.1 Purposes and functions

The Federal Committee on Ecological Reserves, formerly the Federal Committee on Research Natural Areas (and referred to here simply as "the Federal Committee"), is an inter-agency group made up of representatives from the major Federal landholding agencies and observers from private conservation organizations. Its members are full-time employees of their respective agencies who meet periodically to discuss and further the objectives of the Federal Committee within their own agencies' programs (see sections 11.3, 11.4, and 11.5). The Federal Committee has no legislative basis nor authority, no direct Federal or Congressional funds, and does not operate on an annual budget. It is officially recognized as neither an independent Federal agency of the executive branch, nor a part of any other government agency. It is, however, recognized by the agencies which contribute to its membership as an autonomous environmental body which has, through its members, influenced and initiated natural area programs within the Federal government since its creation in 1966.

Recognizing the nationwide and international need to maintain areas in natural and near-natural conditions, and the need to have available such areas for baseline research and scientific manipulation, the Federal Committee originally established itself to:

> . . . inventory natural areas which have been established on Federal lands, compile a directory of Research Natural Areas, and pinpoint gaps. In cooperation with other public and private groups, the Committee hopes to develop a well-rounded system of Research Natural Areas in the United States, and to contribute to a world system. . . .[1]

The work of the Federal Committee has, and continues to, encourage the identification and designation of significant natural areas within most of the larger Federal landholding agencies, as well as inventorying the established areas of these agencies. Although the Committee itself was inactive between 1972 and 1974, the term, definition, and concept of a Research Natural Area has been incorporated into administrative manuals, *The Code of Federal Regulations,* and compendia of memoranda of a number of the agencies (see section 11.3, below). The concept has also influenced other natural area programs, such as the Bureau of Land Management's Outstanding Natural Area program.

The Committee restated its purposes more forcefully in its 1975 charter:[2]

> Today there is clearly a critical need for leadership in planning and coordinating these activities. A coherent national plan is needed so that the numbers and kinds of areas needed for an adequate system of ecological reserves are identified. Relevant activities in the numerous Federal agencies need to be coordinated both within the Federal establishment and with State and private endeavors. Emphasis on comprehensive land planning and environmental impact assessment makes the activity and need for leadership urgent. Planners need responsible and coordinated information on what sites require protection as critical scientific facilities.
>
> For these reasons creation of a permanent Federal Committee on Ecological Reserves is considered essential. It is to provide the leadership for a coherent national program on ecological reserves which can come only at the Federal level. The responsibilities of agencies to lands and natural area programs under their jurisdiction remain unchanged; management of lands and execution of programs remain their domain. The Committee's purpose is to supplement and assist agencies in fulfilling their missions as well as to provide an overall Federal focus.

---

[1] Federal Committee on Research Natural Areas, *A Directory of Research Natural Areas on Federal Lands of the United States of America;* 1968, p. 2. (Hereinafter cited as the *1968 Directory*.)

[2] "Charter of the Federal Committee on Ecological Reserves," *Federal Register,* Vol. 40, No. 30, p. 8127, February 25, 1975.

> It is important to realize that the goal of this program is not simply provision of areas for research. The objectives are in fact, contributions to national environmental goals as stated in NEPA better land planning, and improved resource management.

The Charter, as it appears in the *Federal Register,* has been reproduced as Technical Appendix 11(b).

In 1968 the Federal Committee published a directory listing the Research Natural Areas reported to have been established by its Federal agency members. The Directory is frequently referred to in this chapter and excerpts have been reproduced in section 11.6. In 1972, an Amendment to the directory was put out in limited edition to update the 1968 material.

During the early 1970's, although the Federal Committee as a group was relatively inactive, its various members continued to establish Research Natural Areas.

Some members of the Federal Committee, pursuant to an agreement with the General Services Administration, conducted on *ad hoc* basis a survey of Federal lands which were being excessed by the Federal government, in order to determine if any of these lands might qualify as Research Natural Areas. This exercise is slated to continue under the current revival of the Federal Committee but on an organized and more comprehensive basis.

11.2 Definitions and objectives

The original definitions and objectives of the Federal Committee used the term "Research Natural Areas." The Committee was named the Federal Committee on Research Natural Areas until 1974 when it broadened its outlook to accommodate other scientific and administrative activities. The Committee now uses the term "Ecological Reserves." The change was intended to include not only Research Natural Areas managed for preservation, but also Experimental Ecological Areas which can be manipulated.

The *1968 Directory* provides this definition and set of objectives for a Research Natural Area:[3]

> A research natural area, as used in this listing, is an area where natural processes are allowed to predominate and which is preserved for the primary purposes of research and education. These areas may include: a) Typical or unusual faunistic and/or floristic types, associations, or other biotic phenomena. b) Characteristic or outstanding geologic, pedologic, or aquatic features and processes.
>
> Research Natural Areas have these objectives:
>
> 1. To assist in the preservation of examples of all significant natural ecosystems for comparison with those influenced by man;
> 2. To provide educational and research areas for scientists to study the ecology, successional trends, and other aspects of the natural environment;
> 3. To serve as gene pools and preserves for rare and endangered species of plants and animals.

In 1972, the Federal Committee revised its definition of the term "Research Natural Area" in its new "Standards and Policies" to allow for scientific experimental manipulation:

> A Research Natural Area is a physical and biological unit where natural conditions are maintained insofar as possible and which is reserved for the primary purpose of research and education. These conditions are achieved by allowing ordinary physical and biological processes to operate without human intervention. However, under specific circumstances, on certain areas, deliberate manipulation intended to maintain the unique features that the Research Natural Area was established to protect may be utilized.[4]

The objectives[5] were also broadened in the "Standards and Policies" document:

---

[3] *Op. cit.,* p. 2.

[4] "Standards and Policy Guidelines for Research Natural Areas," (unpublished Federal Committee on Research Natural Areas document) 1972, section 1.1, p. 1.

[5] *Ibid.,* section 1.3, p. 2.

1. To preserve adequate examples of all ecosystems and of physical or biological phenomena;
2. To provide research and educational opportunities for scientists in the observation and study of the environment;
3. To preserve the full range of genetic diversity for native plants and animals;
4. To provide a basis for organized research and exchange of information on Research Natural Areas.

The evolution toward accepting manipulation of ecologically valuable areas went further in 1975, when the Federal Committee, having replaced Research Natural Areas for Ecological Reserves in its name, established its Charter which states:

> The Committee will be concerned with *Ecological Reserves* which are those areas dedicated primarily or exclusively to scientific research and education on ecological and environmental problems including: *Research Natural Areas,* where natural processes are allowed to dominate and any management is to preserve a given ecosystem or feature; and *Experimental Ecological Areas* where various kinds of experiments or management practices can be carried out and studied on wildland ecosystems in order to provide new scientific knowledge of those systems or as a demonstration.[6]

The broad overall objectives[7] were also revised to read:

1. To insure creation and maintenance of an adequate national system of natural and experimental areas for environmental and ecological research including identification, designation, and protection of the essential areas. Included here are major responsibility for working with Federal land agencies on those system components which are Federal lands and leadership and encouragement with regard to components in state, local and private lands;
2. To insure development of permanent data retrieval systems on the location of the areas and the ecological and environmental data available for each to service: a) the research and development community who need such areas; b) the land planning agencies at Federal, state and local levels: and c) decision makers and agencies in the environmental area;
3. To encourage development of research programs, particularly, collection of baseline ecological and environmental data on these key national research sites and their use for long-term monitoring;
4. To encourage a broad array of educational uses of ecological reserves of types and intensities compatible with the other objectives and functions of a specific reserve.
5. To lead in developing the structures for coordinating Federal activities with those of State and local governments and academic groups and private organizations concerned with scientific reserves and experimental areas.

The Federal Committee's immediate and long-range objectives appear in its 1975 Charter (see Technical Appendix 11(b)).

It should be stressed that the definitions and objectives of the Federal Committee, at any stage, have served as general guidelines for the Federal agencies which have established these areas, and have been modified by the different agencies to fit their own administrative and/or scientific designs rather than adopted wholesale. The gradual broadening of the Federal Committee's outlook can be interpreted as a realistic step toward responding to these existing programs.

B. Research Natural Areas (Ecological Reserves)

11.3 Establishment process and administrative authority

Each agency participating in the Federal Committee has different processes for establishing, or designating, Research Natural Areas or Ecological Reserves, some

[6] "Charter of the Federal Committee on Ecological Reserves," Vol. 40, No. 30, February 25, 1975. Emphasis on original.

[7] *Ibid.*

more complex than others, each employing a different perspective on management and protection.

The Forest Service currently has 117 of these areas.[8] The Forest Service was the first Federal agency to designate Research Natural Areas—dating back to 1927 when an area in New Mexico was established. Selection and establishment of Research Natural Areas on National Forest lands may be initiated by the Research or National Forest Systems Staffs of the Forest Service. The responsibility for proposing an area's establishment belongs to Forest Supervisors and research project leaders. Every area recommended must be documented by an establishment report and approved by the Chief of the Forest Service. The Forest Supervisor, District Ranger and Research Project Leader receive copies of approved establishment reports for the Research Natural Areas within their area of responsibility. The copies given the Washington office are filed with the Timber Management Research Staff, which monitors the Forest Service's Research Natural Area program.

The Forest Service's definition of a Research Natural Area is basically the same as that used by the Federal Committee.

The *Forest Service Manual* suggests, as a general guide, that areas considered for designation should as Research Natural Areas

> . . . show evidence of no major disturbance by man, such as timber cutting, for at least the past 50 years. On rare occasions, however, in a valuable plant community that should be preserved, the most suitable area that approaches these conditions should be selected. Certain valuable second-growth timber types may also be preserved as research natural areas if sufficient need can be shown.[9]

Forest Service's Research Natural Areas should be large enough to provide essentially unmodified conditions in their interior portions—usually over 300 acres (however, exceptions are made in some outstanding cases).

This agency's authority to classify, designate, and manage Research Natural Areas is in Title 36, section 251.23, of the *Code of Federal Regulations:*

> DESIGNATION OF AREAS
> Section 251.23 Experimental areas and research natural areas.
>
> The Chief of the Forest Service shall establish and permanently record a series of areas on National Forest land to be known as experimental forests or experimental ranges, sufficient in number and size to provide adequately for the research necessary to serve as a basis for the management of forest and range land in each forest region. Also, when appropriate, the Chief shall establish a series a research natural areas, sufficient in number and size to illustrate adequately or typify for research or educational purposes, the important forest and range types in each forest region, as well as other plant communities that have special or unique characteristics of scientific interest and importance. Research Natural Areas will be retained in a virgin or unmodified condition except where measures are required to maintain a plant community which the area is intended to represent. Within areas designated by this regulation, occupancy under a special-use permit shall not be allowed, nor the construction of permanent improvements permitted except improvements required in connection with their experimental use, unless authorized by the Chief of the Forest Service.
> (30 Stat. 35, amended, 16 U.S.C. 551) (31 F.R. 5072, March 29, 1966)

The Fish and Wildlife Service currently has 172 Research Natural Areas[10] established within its Refuge System. The Refuges staffs are engaged in a continuing inventorying and checking process built into the management program which includes the identification of Research Natural Area

[8] Figure as of July 15, 1975. See Technical Appendix 11(g).

[9] *Forest Service Manual,* 4063.1.

[10] Figure as of July 1, 1975. See Technical Appendix 11(h).

sites and endangered or threatened species of fauna and flora.

Since 1971 the Refuges field management program has operated with a rating (or incentive) system based on 105 objectives. "Refuge Benefit Units" are assigned to the management activities and initiatives involved at a Refuge. One of these objectives is the identification and designation of Research Natural Areas. The criteria to identify and establish an area come from the Federal Committee.[11]

The establishment procedure calls for the Refuge manager to send information on a recommended site to the regional office for approval; the recommendation then goes on to the Division of Refuges in the Washington office, and finally to the Director of the Fish and Wildlife Service for review, approval and designation.

Nothing regarding Research Natural Areas appears in the Fish and Wildlife volume of the *Code of Federal Regulations.* However, the *Objectives Handbook of the National Wildlife Refuge System* recognizes as the eighth of its 18 priority-ranked "output objectives":

> To establish and preserve in a natural state selected areas for reference observation, scientific study, and/or specialized public use, and in which the major ecological communities in the system are represented.[12]

The 14th ranked objective of the Refuge System is:

> To seek out, identify, designate, preserve, and appropriately use sites and objects on refuges that are recognized to have esthetic, historic, geologic, archeologic or scientific values.[12]

The Bureau of Land Management process for establishment of Research Natural Areas is a part of the agency's on-going mission to put all lands under its administration into its Multiple-Use Planning System (see Chapter Four, section 4.4). Since 1970,[13] when a Research Natural Area has been identified through this system, it is also withdrawn from one or more of the public land laws under which the Bureau operates in order to eliminate other uses for the area. This is also true in most cases for Forest Service Research Natural Areas. The withdrawal process is usually lengthy and complex, factors which probably contribute to the small number of established Research Natural Areas on the Bureau's land. There are about 20. Withdrawal, however, is the strongest action which can be taken to insure that the area will be managed according to its objectives. (See Chapter Four, section 4.5.) The area is then designated, an action which affords no legal protection but further cements the Bureau to the commitment to manage the area accordingly.

The Bureau is authorized by the *Code of Federal Regulations* to establish and maintain Research Natural Areas:

> Section 6225.0-5 Definition
>
> The following types of areas may be established and maintained for the primary purpose of research and education. Scientists and educators are encouraged to use research natural areas in a manner that is nondestructive and consistent with the purpose for which the area is established. The general public may be excluded or restricted where necessary to protect studies or preserve research natural areas. Lands having the following characteristics may qualify:
>
> (1) Typical or unusual faunistic or floristic types, association, or other biotic phenomena, or
>
> (2) Characteristic or outstanding geologic, pedologic, or aquatic features or processes.[14]

The National Park Service, like the Forest Service, was in the forefront of activ-

[11] See Section 3.3, above.

[12] *Objectives Handbook of the National Wildlife Refuge System,* U.S. Fish and Wildlife Service, February 1970.

[13] Prior to 1970, Bureau lands were classified for uses under the 1964 Classification and Multiple Use Act.

[14] *Code of Federal Regulations,* Title 43, subpart 6225.0-5.

ity in the early days of the Federal Committee (see section 11.6, below). The Park Service developed directives on the establishment, management and protection of Research Natural Areas in its *Handbook* during 1968 when the Federal Committee's *Directory* was being assembled.

Justification for the existence of the program within the Park Service, however, comes from the overall statement of the Park Service's organic Act (16 U.S.C. 1) and from a legacy of specially designated scientific research areas dating back as early as the 1930's. At present the Service has 62 Research Natural Areas covering over 266,000 acres.

The Park Service organic Act of 1916 states the purpose of National Parks:

> . . . which purpose is to conserve the scenery and the natural historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

History of the Park Service's overall management philosophy and particular policies is reflected in a 1963 internal memorandum on research areas from the Park Service Director to all field offices which is excerpted below[15]:

> The Service early recognized the importance of specially designated scientific research areas, and during the period 1932 to 1940 established twenty-eight research reserves, which were shown on the master plans of ten national parks. Some of these received the use for which they were intended. However, research had not at that time secured recognition and support on the national level that it has today; therefore many of these research resources remained "on the shelf," awaiting a more favorable period for their utilization.
>
> With increasing national interest in the unique potentialities of the parks for research purposes we can anticipate additional discoveries of valuable new scientific areas, and greater recognition and use of the older designated ones. Therefore, the time appears ripe for further attention on the part of the Service to its responsibilities in this field.
>
> Accordingly I wish to reaffirm and strengthen the policy of the National Park Service in designating special areas which have been demonstrated by competent professional authority to contain scientific values of such a rare and unique character as to justify preservation of these characteristics as the paramount values of the areas in question.
>
> When such a determination of paramount scientific value has been made for a given area, it shall be so designated on the master plan of the park in which it is situated and also in the management program. No increased development or conflicting use shall then be introduced or permitted unless and until it is conclusively demonstrated that the proposed introduction will have no ecologically significant adverse effect on the area so designated. . . . Areas so designated will be known as *scientific reserves.* This will avoid confusion with the old but now dormant research reserves, and will more accurately reflect their purpose. While such areas will be available for research, the primary purpose is to protect a recognized feature or features of special scientific importance. . . .
>
> Most, though not necessarily all, areas set aside as scientific reserves will lie within the wilderness areas as they will be designated in the Master Plans. Wilderness areas are themselves subject to a high degree of protection, and the scientific reserve idea is not intended to lessen that degree of preservation, nor to overlap or duplicate the wilderness concept. Certain conditions must prevail before the special designation as a scientific reserve is needed, or can be justified. These are as follows:
>
> 1. There must be clear evidence of the existence of a species or an environmental association of unique quality or character and of recognized scientific value. Such qualities and values should be definitely known to exist, preferably as the result of creditable research or scientific investigation in the area.
> 2. The values should be of such fragile character and degree of vulnerability as to

[15] Internal memorandum from Conrad F. Wirth, Director of the National Park Service, to all field offices, April 15, 1963.

require a protection beyond that applicable to the surrounding parts of the park.

The Park Service Handbook referred to above is no longer in general use; however, Chapter nine of the Handbook dealing with Research Natural Areas remains the most complete document dealing with all aspects of the Park Service's Research Natural Area program.

The selection process is described as follows:[16]

1. Superintendents are responsible for proposing the establishment of Research Natural Areas.
2. Any National Park Service employee may suggest, through proper channels, a Research Natural Area for consideration.
3. The Director or his authorized representative will review suggestions and approve those which qualify.
4. Research Natural Areas should be of such size and extent that they afford an adequate degree of protection and preservation for the type or feature being preserved.
5. A Research Natural Area should, when practicable, be buffered by other lands that are relatively unmodified. Therefore, normally should not be designated on a park boundary or at any place in close proximity to a disturbed environment. Reasonable accessibility should be considered.

The Energy Research and Development Agency[17] has 12 major landholdings totaling more than two million acres; all have major facilities on them. This agency has designated two Research Natural Areas: Rolling Springs on the Savannah River site in South Carolina; and the Arid Lands Ecology Reserve at Hanford, Washington, designated in 1963 and 1968. The policy is to give these two areas the maximum protection which can be afforded by an agency and to insure that the land surrounding the Research Natural Areas will be used in such a manner as to keep the ecological integrity of these areas intact.[18]

The Energy Research and Development Agency also has unofficial but identified natural areas. Each of the 12 sites is divided into units of different size for a wide variety of research and control purposes. Several hundred control areas have been designated as Research Reference Areas for preservation in their existing state because of their natural as well as their "control" value; others are manipulated to meet experimental needs. Different criteria are used to determine whether a site will be designated for preservation or manipulation. For manipulated sites, similar sites are sought for comparable control areas which may be of different sizes.

The preceding five major landholding agencies whose lands contain most of the Research Natural Areas are augmented in the Federal Committee by 14 other Federal agencies, some of which hold land, others of which serve as funding sources and/or technical advisors.

Recognition, support and involvement of these agencies varies considerably from one to another. Only one of the 14 remaining member agencies, the Soil Conservation Service of the Department of Agriculture, has a written policy statement regarding Research Natural Areas.

For the last few years Soil Conservation Service employees have, in piecemeal fashion, been identifying natural areas during their field work and notifying other Federal, state or private entities which have particular authority or interest in seeing to their protection. In this way the Service has contributed to the establishment of Re-

[16] *Handbook,* National Park Service, Chapter 9, p. 2, Release No. 3, May 1968. The Park Service anticipates that it will issue new criteria and guidelines for the selection and designation of research natural areas in the near future.

[17] In October, 1974, a government reorganization incorporated the Atomic Energy Commission into this new Federal agency.

[18] Source: Staff, Office of Biomedical and Environmental Research and Safety Program, Energy Research and Development Agency, October 1975.

search Natural Areas and sites of recognized conservation value.

In November 1972 the Soil Conservation Service Administrator issued a memorandum on "Natural Areas Policy and Procedure."[19] The policy of the Service is "to recognize natural areas, which are so dedicated, as a land use (category)."[20] Designation may be formal "as provided for under Federal regulations for areas of Federal land to be administered as natural areas, or by foundations or conservation organizations specifically created to acquire and maintain natural areas." Designation may also be informal, "in the case of private land owners who designate a specific area as a natural area and manage it accordingly."[21]

Natural areas are defined as:

> Land or water units where natural conditions are maintained insofar as possible. Natural conditions usually result from allowing ordinary physical and biological processes to operate with a minimum of human intervention. Manipulations may be required on natural areas to maintain or restore features that the areas were established to protect.[22]

The purpose for establishing and maintaining natural areas include:

1. Furthering science and education;
2. Monitoring the environment;
3. Providing recreation attractions;
4. Preserving unique values;
5. Serving as a genetic base for native plants and animals.[23]

The Council on Environmental Quality, established "to formulate and recommend national policies to promote the improvement of the quality of the environment," was created under Title II of the National Environmental Policy Act of 1969.[24] Among its duties and responsibilities imposed by the Act are:

> . . . to develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation;
>
> . . . to make and furnish such studies, reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

The Council submits to the President an annual report on the "state and condition of the environment." These reports, the first of which was published in 1970, address many issues, many of which relate both directly and indirectly to the maintenance of natural diversity, including the protection of wetlands and endangered species, land use, and pollution.

The reports have made at least two specific references to natural area and related issues. The first, which appeared in the 1972 report, was in reference to a Presidential proposal that the nations of the world come to an agreement on the need for recognition and protection of their unique natural, historical or cultural areas which are of value to all and which would constitute a World Heritage Trust.[25] In 1974 the Council cited the need to establish Ecological Reserves and noted the establishment of an interagency program to develop a National System of Ecological Reserves.[26]

The Council and the National Science Foundation were jointly responsible for the re-establishment of the Federal Committee on Ecological Reserves in 1974.

---

[19] Memorandum by Department of Agriculture Soil Conservation Service Administrator, Kenneth Grant, "Natural Areas Policy and Procedure," November 1972.

[20] *Ibid.*

[21] *Ibid.*

[22] *Ibid.*

[23] *Ibid.*

[24] 42 U.S.C. 4331 *et seq.*

[25] Council on Environmental Quality, *Third Annual Report of the Council on Environmental Quality,* U.S. Government Printing Office (Washington, D.C.: 1972), p. 98.

[26] Council on Environmental Quality, *Fifth Annual Report of the Council on Environmental Quality,* U.S. Government Printing Office (Washington, D.C.: 1974), p. 204.

Mention should be made of the Council on Environmental Quality's present and potential role in the development of policy and programs dealing with Ecological Reserves and natural areas. For instance Council reports, both annual and special, are carefully examined by members of Congress and thus have the potential of initiating independent legislative activity, with or without specific legislative proposals to Congress by the Administration.

The National Science Foundation has been active in funding programs related to the development of comprehensive research, data collection and analysis of Research Natural Areas and Ecological Reserves. The National Science Foundation currently funds The Institute of Ecology's work on comprehensive analysis of needs and prospects for Experimental Ecological Reserves. A National Science Foundation grant is being made in 1975 to The Nature Conservancy to develop the data center which will be the repository for Research Natural Area and Ecological Reserves information.

11.4 Protection

There is no direct legislative protection afforded to a Research Natural Area, by virtue of its designation as such, regardless of which agency makes the designation.

Any landholding agency can establish or disestablish a Research Natural Area through its own administrative process; there is no legislation involved in these activities (see section 11.3). Particular administrative management techniques which provide protection for Research Natural Areas are discussed in section 11.5.

For example, the Park Service, in response to the Federal Committee's 1975 request that each member agency submit an updated list of its eligible areas for the forthcoming edition of the *Directory*, issued the following directives to its Regional Directors:[27]

> I am forwarding for your perusal, the Research Natural Area listings for the National Park Service. These should be carefully scrutinized by park staff for correctness, and more importantly, whether the designated areas fulfill the objectives of being areas dedicated and managed principally for scientific research and monitoring, as well as where natural processes are allowed to dominate. In short, park staff should recognize Research Natural Areas as entities where ecological research and monitoring are encouraged, but are regulated and managed in a manner to prevent research project conflicts, and that study area resources are protected and preserved to insure maintenance of ecosystem structure and function in a natural condition.
>
> We would encourage the parks to carefully evaluate existing areas presently designated as Research Natural Areas. Areas that do not fulfill the objectives cited briefly above, or are not in conformance with the enclosed "Standards and Policy Guidelines for NPS Natural Areas," should be discontinued.

Note the change in policy between this 1975 directive and the 1963 memorandum from Conrad Wirth discussed above in section 11.3. The present directive says that areas are to be managed "principally" for scientific research, language which did not appear in the 1963 memorandum.

The exception to this is the Bureau of Land Management's procedure which requires the "withdrawal" of land from some or all of the applicable public land laws which otherwise apply to the Bureau's public domain lands. While withdrawal is an administrative procedure, used at the discretion of the Secretary of the Interior, it involves a complicated process since it abrogates Congressional legislation on special pieces of land, thereby serving to eliminate conflicting uses once the land has been

[27] Internal National Park Service memorandum from the Director to all Regional Directors, and the Director of the Capital Parks, May 23, 1975, pp. 1 and 2.

classified for specific uses. Research Natural Areas and other natural area programs of the Bureau must be withdrawn before they can be designated. The Forest Service, through the Department of the Interior, and the Fish and Wildlife Service, may and do also withdraw areas to decrease the likelihood of their being put to other uses, particularly mining of locatable minerals. For detailed discussion of withdrawal, see Chapter Four, section 4.5.

Under the 1969 National Environmental Policy Act,[28] any Federal agency undertaking a major action effecting the environment must file an environmental impact statement considering all of the relevant factors regarding the current status of the area and the impact of its action of the area. In such a case, an environmental impact statement must take into account a formally established, *i.e.,* designated, Research Natural Area, even though one Federal agency may challenge another on its justifications for establishing an area.

The 1973 Endangered Species Act,[29] as amended, is another Congressional Act which can afford protection to a Research Natural Area, providing that endangered or threatened species of animals or plants are found within the Area. According to section 7 of this Act:

> The Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act. All other Federal departments and agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of this Act and by taking such action necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of such endangered species and threatened species or result in the destruction or modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with the affected States, to be critical.

11.5 Management

Forest Service management objectives for Research Natural Areas as specified in the *Forest Service Manual:*

> A research natural area must be protected against activities which directly or indirectly modify ecological process if the area is to be of value for observation and research on plant and animal succession, habitat requirements of species, insect and fungus depredations, soil microbiology, phenology, and related phenomena. Logging activities and uncontrolled grazing by domestic livestock are not permitted. The criterion for management of research natural areas is for protection against unnatural encroachments.[30]

Protection of experimental areas and Research Natural Areas are treated in the Forest Service section of the *Code of Federal Regulations* which states that:

> Research Natural Areas will be retained in a virgin or unmodified condition except where measures are required to maintain a plant community which the area is intended to represent. Within areas designated by this regulation, occupancy under a special-use permit shall not be allowed nor the construction of permanent improvements permitted except improvements required in connection with their experimental use, unless authorized by the Chief of the Forest Service.[31]

No physical improvements such as roads, trails, fences or buildings are permitted although temporary research facilities are allowed if approved by the Forest Service Station Director. Fires are to be extinguished as quickly as possible, but no cleanup or reforestation should be undertaken. Unless there is a threat of infestation or infection to adjacent forests there is no control of insects or diseases.

---

[28] 42 U.S.C. 4321.

[29] 16 U.S.C. 1531-1543.

[30] *Forest Service Manual* 4063.4.

[31] *Code of Federal Regulations,* Title 36, Section 251.23.

Use restrictions are included in the management plan for national forest Research Natural Areas. Public uses which contribute to the modification of a Research Natural Area are discouraged and uses which may seriously impair research or education value are prohibited. Scientists and educators are encouraged to use Research Natural Areas. Their research is to be essentially nondestructive in nature.

Management practices necessary to preserve some representation of the vegetation for which the natural area was originally created may be authorized by the Station Director. Only the already tried and reliable practices are to be undertaken, and then only where the vegetative type would otherwise be lost without management. Where management practices are necessary a portion of natural areas should be kept untreated as a "green check."[32]

The Fish and Wildlife Service manages its Research Natural Areas in accordance with the Federal Committee's objectives (see Chapter Three, section 3.3). The following summary, although not taken directly from an official Fish and Wildlife Service document, essentially defines the management of Fish and Wildlife natural areas as well as Research Natural Areas:

1. Natural Areas should be of such size and extent that they afford an adequate degree of protection and preservation for the type or feature being preserved. Although no arbitrary acreage figure can be laid down for the size of a Natural Area, it is generally difficult to maintain essentially unmodified conditions in areas smaller than 25 acres unless they are buffered by scenic or other areas that are maintained in a relatively unmodified condition;
2. Studies within a Natural Area will be restricted to approved and responsible research projects which do not materially alter the ecosystem or the natural values for which the area was selected. Visitation by ecologists, botanists, zoologists, or other competent scientists will be permitted. Educational or interpretive visits will be permitted on a group basis on selected Natural Areas when suitable advance arrangements have been made to assure proper supervision;
3. A Natural Area must be protected against activities which directly or indirectly modify natural ecological processes or alter the type or feature which is being preserved. Manipulative practices such as grazing, prescribed burning, timber cutting and the use of chemicals for plant, insect and disease control are not permitted unless such are necessary to maintain the type or process for which the Natural Area was established or unless necessary to prevent the spread of insects or disease to adjacent areas;
4. It is not contemplated that Natural Areas will be for general public use. However, it is recognized that some public entry is unavoidable. Project leaders should attempt to discourage public entry in such a manner as to cause as little attention as possible to be directed to the area;
5. Natural area boundaries need not be fenced unless necessary for protection against livestock or excessive unauthorized human use. Signs which would tend to attract sightseers, recreationists, and casual visitors should be avoided. However, if roads or trails pass along the boundary or through the Natural Area, limited posting may be needed to protect the area;
6. Generally speaking, no permanent physical improvements such as roads, fences or buildings should be permitted within a Natural Area. Temporary facilities needed for research, such as instrument or personnel shelters, may be installed with the approval of the office which granted permission for the research activity. Except as essential for control of wildfire no buildings or roads should be constructed at the boundaries of a Natural Area;
7. Normally, wildfires within a Natural Area should be extinguished as quickly as possible, but no cleanup, fire hazard reduction, reforestation or revegetation should be undertaken. Insect or disease-killed trees and plants are a part of the Natural Area and should not be felled or removed.

[32] *Forest Service Manual* 4063.48.

Bureau of Land Management Research Natural Areas are managed in accordance with the following natural area policy statements from the *Code of Federal Regulations:*

Policy

Where appropriate the Bureau shall establish and record areas of sufficient number and size to provide adequately for scientific study, research, recreational use and demonstration purposes. These will include:

(a) The preservation of scenic values, natural wonders and examples of significant natural ecosystems.
(b) Research and educational areas for scientists to study the ecology, successional trends, and other aspects of the natural environment.
(c) Preserves for rare and endangered species of plants and animals.[33]

Use of natural areas.

No person shall use, occupy, construct or maintain improvements in natural areas in a manner inconsistent with the purpose for which the area is established; nor shall he use, occupy, construct or maintain improvements unless permitted by law or authorized by the regulations of this subpart.[34]

National Park Service management of Research Natural Areas requires management techniques and "protection that will not allow any activity which may directly or indirectly modify natural types, features or ecological processes."[35] Management guidelines provided in the *Handbook* for Research Natural Areas are:

The Research Natural Area should be used for any bona fide research or educational purpose that does not alter the natural character of the area;

No fire control of any natural (lightning) fires should be permitted;

No wildlife, forest or range management practices may be carried out without approval from the Director;

Overnight use may be allowed by special permit from the Superintendent *only* when a research project demands 24-hour attention;

The construction of any road, trail or permanent structure within or immediately adjacent to the area should be prohibited.

The Park Service uses several current *Code of Federal Regulations* sections as authorities for Research Natural Area management practices.[36] Among these are:

Section 2.6—*Closing of Areas*

The Superintendent may establish a reasonable schedule of visiting hours for all or portions of a park area and close or restrict the public use of all or any portion of a park area, when necessary for the protection of the area or the safety and welfare of persons or property by the posting of appropriate signs indicating the extent and scope of closure. All persons shall observe and abide by the officially posted signs designating closed areas and visiting hours.[37]

Section 2.20—*Preservation of public property, natural features, curiosities, and resources.*

(a) In natural and historical areas:

1. The possession, destruction, injury, defacement, removal or disturbance in any manner of any building, sign, equipment, monument, statue, marker, or other structure, or of any animal or plant matter and direct or indirect products thereof including but not limited to petrified wood, flower, cone or other fruit, egg, nest, or nesting site, or of any soil, rock, mineral formation, phenomenon of crystallization, artifact, relic, historic or prehistoric feature, or of any other public property of any kind, is prohibited, except as otherwise provided in this section or in special regulations for a park area.
2. The gathering or possession for personal consumption or use, of only such fruits and berries as the Superintendent may designate is permitted. All such fruits and berries shall be picked only by hand. The gathering or collecting of such objects for the purpose of sale is prohibited.
3. The possession or use of any mineral or

[33] *Code of Federal Regulations,* Title 43, Chapter II, Section 6225.0-6.

[34] *Ibid.,* Section 6225.1.

[35] *Handbook,* National Park Service, Chapter 9, No. 3, May 1968.

[36] *Handbook,* National Park Service, Chapter 9, No. 3, May 1968, p. 1.

[37] *Code of Federal Regulations,* Title 36, Section 2.6.

metal detecting device is prohibited: *Provided,* that possession of such a device within a motor vehicle is permitted if the device is broken down or packed in such a way as to prevent its use while in the park areas; *Provided further,* that the provisions of this section shall not apply to (i) fathometers, radar equipment and electronic equipment used primarily for the navigation and safe operation of boats and aircraft, and (ii) mineral or metal detecting devices used in pursuit of authorized mining activities.[38]

Section 2.25—*Scientific specimens.*

Unless specifically permitted by other regulations in this Part or in special regulations, the collection of plants, rocks, minerals, animal life, or other natural objects is permitted only in accordance with written permits obtained in advance from the Superintendent.

(a) No permits will be issued to individuals or associations to collect specimens for personal use, but only to persons officially representing reputable scientific or educational institutions in procuring specimens for research, group study or museum display.

(b) Permits will be issued only on condition that the specimens taken will become part of a permanent public museum or herbarium collection, or will in some suitable way be made permanently available to the public.

(c) No permits may be granted for the collection of specimens the removal of which would disturb the remaining natural features or mar their appearance.

(d) Permits to secure rare natural objects will be granted by the Director only upon proof of special need for scientific use and of the fact that such objects cannot be secured elsewhere.[39]

The Energy Research and Development Agency[40] which has two Research Natural Areas maintains the management policies of giving the areas the maximum protection which can be afforded by an agency and insuring that the land surrounding the areas will be used in such a manner as to keep the ecological integrity of the reserved areas intact.[41]

11.6 Illustrative examples

The following illustrative examples are taken from the 1968 *Directory of Research Natural Areas*[42] prepared by the Federal Committee. The format is that used in the *Directory.*

The Introduction[43] of the *Directory* has been reproduced in order to assist the reader in understanding terms and references.

Introduction

"In the past two to three decades scientists and educators have become increasingly concerned about the rapid disappearance of plant and animal communities, geologic and soil features, and fresh- and salt-water bodies that are relatively free of the influence of man. In this day of pollution, cultivation, and population build-up, these areas become all the more important as baselines against which man-caused changes can be compared.

"Among the public and private organizations that have taken steps to preserve natural areas for science and education are several Federal agencies, several of the States, many universities and colleges, The Nature Conservancy, National Audubon Society, Wilderness Society, The Society of American Foresters, and American Society of Range Management. At various times, directories or catalogs of natural areas have

[38] *Ibid.,* Section 2.20.

[39] *Ibid.,* Section 2.25.

[40] In October, 1974, a government reorganization incorporated the Atomic Energy Commission into this new Federal agency.

[41] Interview with Staff, Office of Biomedical and Environmental Research and Safety Program Energy Research and Development Agency, October 1975.

[42] *A Directory of Research Natural Areas on the Federal Lands of the United States of America,* Federal Committee on Research Natural Areas, U.S. Government Printing Office, Washington, D.C., 1968.

[43] *Ibid.,* pp. 2-3.

been prepared by these and other sponsoring groups.

"United States participation in the International Biological Program gives further impetus to this work because concern for preservation of undisturbed examples of the environment is now worldwide.

Federal Committee on Research Natural Areas

"In line with United States participation in the International Biological Program, the Department of the Interior initiated the establishment of the Federal Committee on Research Natural Areas in February 1966. The Committee includes representatives of the Forest Service, U.S. Department of Agriculture; and Bureau of Land Management, Bureau of Sport Fisheries and Wildlife, and National Park Service, U.S. Department of the Interior, together with liaison representation from the U.S. Department of Defense, Atomic Energy Commission, and Tennessee Valley Authority. These agencies administer most of the Federal lands upon which natural science research potential exists.

"The Federal Government holds title to slightly more than one-third of the total acreage of the United States with the largest part in Alaska and the West. These lands are administered by several agencies for a variety of objectives. Many, and perhaps most, of the biotic, geologic, pedologic, and aquatic types of the United States occur on these lands and present nearly unlimited potential for natural science research.

"The purpose of the Federal Committee on Research Natural Areas is to inventory natural areas which have been established on Federal lands, compile a directory of Research Natural Areas, and pinpoint gaps. In cooperation with other public and private groups, the Committee hopes to develop a well-rounded system of research natural areas in the United States, and to contribute to a world-system of research natural areas. The Committee also hopes that this directory will inform students and researchers throughout the world of research opportunities on these lands and will encourage their use.

"Suggestions to improve the directory and the system of research natural areas are welcome. Please address: Federal Committee on Research Natural Areas, Washington, D.C. 20240.

Definition of Research Natural Areas

"A research natural area, as used in this listing, is an area where natural processes are allowed to predominate and which is preserved for the primary purposes of research and education. These areas may include: a.) Typical or unusual faunistic and/or floristic types, associations, or other biotic phenomena. b.) Characteristic or outstanding geologic, pedologic, or aquatic features and processes.

"Research natural areas have these objectives:

1. To assist in the preservation of examples of all significant natural ecosystems for comparison with those influenced by man.
2. To provide educational and research areas for scientists to study the ecology, successional trends, and other aspects of the natural environment.
3. To serve as gene pools and preserves for rare and endangered species of plants and animals.

"Research natural areas on Federal land may be as small as a few acres and as large as several thousand acres, depending on the ecosystem they represent. They generally are surrounded or buffered by other Federal land. The areas may be protected from encroachment by fences or signs, but normally the unobtrusive character of natural areas offers adequate protection. Research on natural areas must be essentially nondestructive and reasonably consistent with the purpose and character of the surrounding land. Studies that require manipulation of the environment normally are done elsewhere.

"Scientists and educators are encouraged by participating Federal agencies to use re-

search natural areas. Restrictions are applied only to preserve the natural values of the area and to protect the research projects already underway. Information about individual research areas and their availability may be obtained from the office listed for each area.

"The areas listed in this directory have been designated research natural areas by the administering agency. The procedures and practices of individual agencies vary somewhat in keeping with their respective regulations and statutory responsibilities. Nevertheless, the various Federal agencies follow similar policies and practices in protecting and managing the areas. The administering agency normally requires a written permit or agreement to protect the work of the investigator and the character of the research natural area.

Classification of Natural Areas

"The Committee reviewed a number of land classification systems to find a scheme which would characterize the scientific features of all natural areas. Such a classification system would make it possible to survey natural areas and determine the types missing from a complete system. It also would facilitate location of specific types by students and researchers.

"The Committee did not find any natural area classification completely satisfactory for its purpose. Each of those reviewed was developed for purposes which tend to restrict its application. In order to accomplish this initial listing of research natural areas, the Committee compiled the list of types on pages 89 to 104 from the references on page 129. This list may not be universally accepted but hopefully it will contribute to the development of a research natural area classification scheme which will be accepted and applied by scientists and students around the world.

"In the Natural Area Type List SAF-1 through SAF-106 are forest cover types of Eastern North America and SAF-201 through SAF-250 of Western North America (107 through 200 now are unassigned). These types are listed and described in *Forest Cover Types of North America (Exclusive of Mexico).*

"Type numbers prefixed by the letter K are from A. W. Küchler's *Potential Natural Vegetation of the Conterminous United States.* K-33 through K-92 are grass types, shrub types, or combinations of grass and shrub types. The remainder of Küchler's types are not used in this list because they are trees which are covered under SAF types.

"Other vegetative types (OVT) include those not provided for either in the SAF or Küchler systems.

"Zoological types are identified by the letter Z prefix. These 17 types are simply taxonomic groupings of animals.

"Geologic types are identified by the letter G prefix. Types G-1 through G-15 are land forms. G-16 through G-28 cover rocks and minerals and follow the classification used in *Field Guide to Rocks and Minerals.* The groupings of paleontological types, G-29 through G-32, are supplied by the Committee.

"Aquatic types, identified by the prefix A follow the types in Theme IV of *Themes for Survey and Evaluation of Natural Areas,* developed by the National Park Service and available upon request from the Committee on Research Natural Areas. Types A-34 (Lake Shorelines) and A-35 (Offshore Marine Features) were added by the Committee.

"Pedologic types, S-1 through S-34, are from the Soil Conservation Service's listing of Great Soil Groups found in *Land Resource Regions and Major Land Resource Areas of the United States.*

"The Natural Area Type List is the guide to arrangement of areas in this directory. The type symbols (SAF-201, etc.) have no significance beyond being a means of cross reference between the type list, the directory and the source materials. To the right of each type name there are listed the reference numbers of the areas in which the type

is represented. Boldface means the type is primary in the area.

"Besides being a guide to the listing of areas, the Natural Area Type List provides an inventory of the types so far represented in the register. It is notable that many types in the list are not represented at all in the present edition. One objective of the Committee is to identify adequate examples of each recognized type. No doubt it will be necessary to go outside Federal lands to find some of these and future editions of the directory may include areas in ownership other than Federal.

Directory of Research Natural Areas

"In the directory, the areas are arranged in order of the primary type and alphabetically by area name within each type. Each area is assigned a sequential number from 1 to 336. This number, which appears to the left of the area name, is the reference used in the type list beginning on page 89, the State list of areas on pages 105, 106, and the indices to common and scientific names beginning on page 107.

"To the right of the area name the total size of the area is given in acres. Sizes of the primary and other important types listed may or may not be given. Since the types often overlap the totals of acreages of types, where given, will not necessarily equal the size of the area.

"The areas are not described in the directory, but their general character may be judged from the topography and the types listed for each. Further information may be obtained from the officer named as the information contact for each area."

SAF-40 Post Oak-Black Oak
26. Kentucky Woodlands Natural Area No. 2[44] 35 acres

Agency: Tennessee Valley Authority
Field Unit: Land Between the Lakes
State: Kentucky; *County:* Trigg
Primary Type: SAF-40 Post Oak-Black Oak (aver. age 94 years), 35 acres
Elevation: 530-580 feet
Topography: Rolling
For information contact: Director, Land Between the Lakes, Tennessee Valley Authority, Box 27, Golden Pond, Kentucky 42231.

K-75 Nebraska Sandhills Prairie
214. Valentine Natural Area No. 1[45] 530 acres

Agency: Bureau of Sport Fisheries and Wildlife
Field Unit: Valentine National Wildlife Refuge
State: Nebraska; *County:* Cherry
Primary Type: K-75 Nebraska Sandhills Prairie, 530 acres
Other important types: Z-16 Birds (prairie chicken), 530 acres. G-10 Works of Erosion (sandhills and blowouts), 530 acres.
Elevation: 2,923-3,130 feet
Topography: Narrow, flat bench along lakeshore; mostly rolling to steeply rolling and rugged sandhills.
For information contact: Refuge Manager, Valentine National Wildlife Refuge, Valentine, Nebraska 69201.

SAF-239 Pinyon-Juniper
149. Telescope Peak Natural Area[46] 480 acres

Agency: National Park Service
Field Unit: Death Valley National Monument
State: California; *County:* Inyo
Primary Type: SAF-239 Pinyon-Juniper, 400 acres
Other important types: Z-17 Mammals (mule deer, Nelsons bighorn sheep, feral burro, mountain lion, bobcat, kit fox, gray fox and coyote). G-17 Sedimentary (sedimentary and meta sedimentary Pre-Cambrian quartzite, limestones and dolomites).
Elevation: 6,480-8,560 feet
Topography: Mountainous
For information contact: Superintendent, Death Valley National Monument, Death Valley, California 92328.

---

[44] *Ibid.*, p. 57.

[45] *Ibid.*, p. 41.

[46] *Ibid.*, p. 17.

SAF-202 Mountain Hemlock-Subalpine Fir
56. Olallie Ridge Natural Area[47]

720 acres

Agency: U.S. Forest Service
Field Unit: Willamette National Forest
State: Oregon; *County:* Lane
Primary Type: SAF-205 Mountain Hemlock-Subalpine Fir, 321 acres
Other Important Types: K-52 Alpine Meadows and Barren, 290 acres. SAF 229 Pacific Douglas-Fir, 82 acres. SAF-211 White Fir, 23 acres. Z-17 Mammals (blacktail deer, bear). G-13 Volcanoes and Associated Works (old or western Cascades). G-16 Igneous (extrusive rock types, especially andesite). A-15 Springs.
Elevation: 4,800-5,660 feet
Topography: Steep mountain slopes
For information contact: Director, Pacific Northwest Forest Experiment Station, 6th Avenue, Box 3141, Portland, Oregon 97208.

SAF-82 Loblolly Pine-Hardwood
40. Boiling Springs Natural Area[48]

10 acres

Agency: Atomic Energy Commission
Field Unit: Savannah River Operations Office
State: South Carolina; *County:* Barnwell
Primary Type: SAF-82 Loblolly Pine-Hardwood
Elevation: 100 feet
Topography: Flat
For information contact: Savannah River Operation Office, Box A, Aiken, South Carolina 29801.

C. Federal Committee Background and Infrastructure

11.7 History

On February 8, 1965, the President of the United States sent a "Special Message to the Congress on Conservation and Restoration of Natural Beauty."[49] Although technically concerned with the concept of natural beauty, the message in fact dealt generally with problems of the environment. The problems dealt with ranged from the effects of urbanization on preservation of the countryside to the evils of water and air pollution. The President's message contained not only a statement of the problem of protecting the environment, but also specific steps that he had taken to solve the problem. Among these steps was a directive to advance scientific understanding of the natural environment:

> I have also asked the Director of the Office of Science and Technology and the Director of the Bureau of the Budget to recommend the best way in which the Federal government may direct efforts toward advancing our scientific understanding of natural plant and animal communities and their interaction with man and his activities.[50]

This directive and the general momentum generated by the President's message were part of the motive force behind the creation and continuation of the Federal Committee on Research Natural Areas. The directive was not formally responded to until January 24, 1968, when the Director of the Bureau of the Budget (the Bureau is now the Office of Management and Budget) and the Director of the Office of Science and Technology (the Office is now abolished) transmitted to the President a memorandum and report entitled "Advancing Scientific Understanding of Natural Communities." This report recommended that "A series of land and water research reserves—established in such a fashion as to provide protection for extended periods of time—is essential. The series should include examples of all important natural ecosystems, some available only for observation; others for manipulation."[51] And it noted that a joint effort of the Agriculture and Interior Departments (with cooperation from the Atomic Energy

[47] *Ibid.*, p. 13.
[48] *Ibid.*, p. 10.
[49] Reprinted as Item 54 in *Public Papers of the Presidents, Lyndon B. Johnson, 1965* (Washington, D.C.).
[50] *Ibid.*
[51] *Ibid.*, p. 3.

Commission and the Department of Defense) had already resulted in "designation on Federal Lands of 336 areas that are available for observational studies."[52] Later the memorandum reiterated that a committee on natural areas should be formed "as a point of contact within the Federal establishment," and it again noted that an "informal group" of representatives from the Agriculture and Interior Departments was currently developing reference information on natural areas.[53] The informal group referred to here is the Federal Committee on Research Natural Areas.

Another motivating force, probably a more important one, behind the formation and functioning of the Federal Committee was the International Biological Program.

The International Biological Program (IBP) grew out of mounting scientific concern throughout the world for the major problems confronting mankind today—the rapidly increasing population, food shortages and environmental destruction. As early as 1959, scientists began discussing the possibilities of organizing an international program dealing with increasing food supplies and keeping the earth a fit place in which to live. In July of 1964, the IBP was voted into reality by the International Council of Scientific Unions, which set up a Special Committee for the IBP. Based on the theme of "The Biological Basis of Productivity and Human Welfare," the program was divided into two stages: planning (1964 to June 1967) and operational (July of 1967 through June of 1972—later extended to 1974). Possibilities of United States participation in the IBP were explored by an *ad hoc* committee of the National Research Council of the National Academy of Sciences which, upon the recommendations of this group, organized the U.S. National Committee for the IBP in 1965 with Roger Revelle of Harvard University as chairman.

The question of whether or how the U.S. would participate in the IBP led directly to formation of the "informal group" referred to in the memorandum to the President discussed above. The story of the actual creation of the Federal Committee on Research Natural Areas has been told in a September 2, 1975 letter of Dr. George Sprugel to The Nature Conservancy:

> . . . I believe, Dr. Stanley A. Cain, while Assistant Secretary for Fish, Wildlife and Parks in the Department of Interior, was also a member of an NRC[54] Committee to examine the feasibility of U.S. participation in the IBP. Sometime in late 1965, I think, he called me (Chief Scientist, National Park Service) to his office and described the Natural Areas Program being discussed as an existing part of the European IBP and a potential part of the prospective US/IBP. Further, he asked me to find out what Interior had in the way of sites specifically identified and managed as natural areas for research purposes. I rounded up and chaired an informal committee of representatives of the land-holding agencies in Interior in early 1966 to discuss the problem. We learned that Interior had no such specifically identified natural areas but decided (with Cain's backing) to do something about it. Soon we expanded the informal committee to include representatives of *all* Federal land-holding agencies and, with the aid of some ad hoc consultants, went about the business described in the introduction to *Research Natural Areas, 1968,* relative to defining and categorizing natural areas. After completion of the tedious process of obtaining formal agreement to these and management guidelines by all agencies concerned, each agency began a move to identify and designate such areas within its system. These efforts were coordinated by the informal committee that continued to meet monthly or more frequently if the situation required it.

The 1966 work of the Committee is confirmed in *From Sea to Shining Sea: A Report on the American Environment—Our Natural Heritage,* published by the President's

[52] *Ibid.*

[53] *Ibid.*, p. 16.

[54] The National Research Council, a part of the National Academy of Sciences.

Council on Recreation and Natural Beauty in 1968. At page 191, it is said: "In 1966, an interagency Federal Committee on Research Natural Areas developed objectives, definitions, a classification system, and minimum criteria for the selection, management, and protection of natural areas on Federal lands."

The publication, *Research Natural Areas, 1968,*[55] referred to in Dr. Sprugel's letter, contains an introduction which comments generally on the reasons why the Committee came into existence:

> In the past two to three decades scientists and educators have become increasingly concerned about the rapid disappearance of plant and animal communities, geologic and soil features, and fresh- and salt-water bodies that are relatively free of the influence of man. In this day of pollution, cultivation, and population build-up, these areas become all the more important as baselines against which man-caused changes can be compared.
>
> Among the public and private organizations that have taken steps to preserve natural areas for science and education are several Federal agencies, several of the States, many universities and colleges, The Nature Conservancy, National Audubon Society, Wilderness Society, the Society of American Foresters, and American Society of Range Management. At various times, directories or catalogs of natural areas have been prepared by these and other sponsoring groups.
>
> United States participation in the International Biological Program gives further impetus to this work because concern for preservation of undisturbed examples of the environment is now worldwide.

Specifically, as to the early organization of the Committee, the introduction says:

> In line with United States participation in the International Biological Program, the Department of the Interior initiated the establishment of the Federal Committee on Research Natural Areas in February 1966. The Committee includes representatives of the Forest Service, U.S. Department of Agriculture; and Bureau of Land Management, Bureau of Sport Fisheries and Wildlife, and National Park Service, U.S. Department of the Interior, together with liaison representation from the U.S. Department of Defense, Atomic Energy Commission, and Tennessee Valley Authority. These agencies administer most of the Federal lands upon which natural science research potential exists.

The history of the Committee between 1968 and the present is one of, at best, sporadic and somewhat confused activity. The main reason for this, aside from the perpetual problems of lack of staff and funding, is that the natural home for the Committee, the Office of Science and Technology in the Executive Office of the President, was abolished in the early 1970's. Attempts were made to obtain sponsorship of the Committee by the Council on Environmental Quality, but these failed. Ultimately, the National Science Foundation, which had said that it "would be willing to initiate a contract or grant for the design of a data storage system and the development of criteria for the evaluation of natural research areas,"[56] assumed responsibility in a general way for the Committee's activities through its Ecology and Systematic Biology Section. Various individuals from various Federal agencies (mainly the National Park Service and the Forest Service) have chaired the Committee since its inception. Presently, the Committee is headed by Dr. Paul Risser at the National Science Foundation and Dr. Lee Talbot of the Council on Environmental Quality.

11.8 Administrative structure and membership

The Federal Committee on Ecological Reserves (successor to the Federal Commit-

[55] An "Addendum to the 1968 Directory of Research Natural Areas" was published by the Committee in November of 1972. Further updating is in progress, but has yet to appear as of October 1, 1975.

[56] Letter from Dr. Leland J. Haworth, Director of the National Science Foundation, to Dr. Lee DuBridge, Director of the Office of Science and Technology, April 15, 1969.

tee on Research Natural Areas) is headquartered in Washington, D.C. and was established under the aegis of the National Science Foundation[57] and the Council on Environmental Quality.[58] It is not recognized as an agency in its own right nor is it part of any other Federal agency.[59]

There are 19 Federal agencies represented by their own regular employees who serve as members on the Committee. There is no paid staff. Many of the agencies also have alternate members. For a complete list of the individual members and alternates, see attachment to this section. There are also ten private organizations which are represented by observers.

Not all of these member Federal agencies hold land; some function as funding sources and scientific and technical advisors to other agencies, state and local governments, and private groups and individuals. The following Federal agencies are represented on the Federal Committee:

- Agricultural Research Service, Department of Agriculture
- Bureau of Land Management, Department of the Interior
- Bureau of Outdoor Recreation, Department of the Interior
- Cooperative State Research Service, Department of Agriculture
- Council on Environmental Quality
- Department of Defense
- Department of Transportation
- Energy Research and Development Administration
- Environmental Protection Agency
- Fish and Wildlife Service, Department of the Interior
- Forest Service, Department of Agriculture
- General Services Administration
- Geological Survey, Department of the Interior
- National Oceanic and Atmospheric Administration, Department of Commerce
- National Park Service, Department of the Interior
- National Science Foundation
- Office of Land Use and Water Planning, Department of the Interior
- Smithsonian Institution
- Soil Conservation Service, Department of Agriculture

The ten private organizations which participate as non-voting observers at Federal Committee meetings are:

- American Institute of Biological Sciences
- American Society of Range Management
- Conservation Foundation
- National Audubon Society
- National Parks and Conservation Assn.
- National Wildlife Federation
- Society of American Foresters
- The Institute of Ecology
- The Nature Conservancy
- Wildlife Society

There are no regional subcommittees of the Federal Committee, *per se*. However, there are Forest Service Research Natural Area Committees around the country, an inter-agency Pacific Northwest Natural Area Committee based in Oregon, and state Research Natural Area and Natural Area Preserves committees in Montana, Oregon, Idaho and Washington, all of which are affiliated in varying degrees with the Federal Committee.

---

[57]The National Science Foundation is a quasi-governmental organization established by Congress by the National Science Foundation Act of 1950 to further scientific research and activities through grants and funding, information exchange dissemination, and its own research efforts.

[58]The Council on Environmental Quality was established by the 1969 Environmental Policy Act to formulate and recommend national policies to promote the improvement of the quality of the environment. See Section 11.3.

[59]The Federal Committee is not listed in the *United States Government Manual,* the official Federal handbook.

Attachment to section 11.8
Members—Federal Committee on Ecological Reserves
(as of July 7, 1975)

Dr. Angus A. Hanson
Agricultural Research Service
Department of Agriculture
Room 227, Building 003
Agriculture Research Center West
Beltsville, Maryland 20705
Phone: 344-3078

Dr. Ronald Hoffman
Division of Environmental and Planning Coordination
Bureau of Land Management
Department of the Interior
Washington, D.C. 20240
Phone: 755-0138

Mr. Robert L. Eastman
Chief, Division of Resource Area Studies
Bureau of Outdoor Recreation
Department of the Interior
Washington, D.C. 20240
Phone: 343-5772

Dr. J. D. Sullivan
Assistant Administrator
Cooperative State Research Service
Department of Agriculture
Washington, D.C. 20250
Phone: 447-6736

Dr. Lee Talbot, Co-Chairperson
Senior Scientist
Council on Environmental Quality
722 Jackson Place, N.W.
Washington, D.C. 20006
Phone: 382-1254

Mr. Henry R. Smith or Mr. Edward Johnson
Deputy Assistant Secretary of Defense (Environmental Quality)
Department of Defense
Washington, D.C. 20301
Phone: 697-3668

Mr. Martin Convisser
Director of Office of Environmental Affairs
Department of Transportation
Washington, D.C. 20590
Phone: 426-4357

Dr. James L. Liverman or Dr. William Osburn
Assistant General Manager for Biomedical and Environmental Research and Safety Program
Energy Research and Development Administration
Washington, D.C. 20545
Phone: 937-4155

Dr. Herbert L. Wiser
Deputy Assistant Administrator for Environmental Sciences
Office of Research and Development (RD-651)
Environmental Protection Agency
Washington, D.C. 20460
Phone: 755-0468

Mr. James Gillette
Wilderness Planner
Branch of Planning, Division of Refuges
Fish and Wildlife Service
Department of the Interior
Washington, D.C. 20240
Phone: 343-2691

Dr. Robert Buckman
Associate Deputy Chief for Research
Forest Service
Department of Agriculture
Washington, D.C. 20250
Phone: 447-4507 or 235-8200

Mr. Walter Moreland
Assistant Commissioner for Real Property
General Services Administration
Washington, D.C. 20405
Phone: 343-4681

Dr. Philip E. Greeson
Quality of Water Branch
Water Resources Division
U.S. Geological Survey
National Center NS 412
Reston, Virginia 22092
Phone: (703) 860-6834

Dr. Robert Kifer
Acting Senior Scientist
Office of Coastal Zone Management
National Oceanic and Atmospheric Administration
Department of Commerce
Washington, D.C. 20235
Phone: 634-4241

Dr. Theodore W. Sudia
Chief Scientist, or

Mr. Lee Purkerson
National Park Service
Department of the Interior
Washington, D.C. 20240
Phone: 343-5181 or 523-5051

Dr. P. G. Risser, Co-Chairperson
Program Director, Ecosystem Studies
National Science Foundation
1800 G Street, N.W.
Washington, D.C. 20240
Phone: 632-5854

Mr. Charles Meyer
Office of Land Use and Water Planning
Department of the Interior
Washington, D.C. 20240
Phone: 343-7453

Dr. James F. Lynch
Director
Chesapeake Bay Center for Environmental Studies
Smithsonian Institute
Route 4, Box 622
Edgewater, Maryland 21037
Phone: (301) 261-4192

Dr. Robert E. Williams
Assistant to the Administrator for Environmental Development
Soil Conservation Service
Department of Agriculture
Washington, D.C. 20250
Phone: 447-7706

11.9 Funding

The Federal Committee has never had a legislatively authorized source of funds nor has it maintained a budget on a regular basis. It has never had a paid staff or headquarters of its own. It has operated exclusively with the time, services, and facilities donated by the employees of member and affiliated agencies.

One exception was the funding of the Federal Committee's *1968 Directory on Research Natural Areas,* when several thousand dollars[60] were contributed by agencies of the Department of the Interior and the Department of Agriculture to finance its printing. This money came out of various places in the respective agencies' budgets as one-time allocations.

Current efforts to publish a revised directory have raised questions about funding sources for this new project. To date each member agency has been asked to look into its budget for contributions to enable the Federal Committee to hire a temporary staff and cover the costs of publishing.

D. Information and Bibliography

11.10 Key information contacts

Dr. John L. Buckley
Office of Research and Development RD-672
Environmental Protection Agency
Washington, D.C. 20460
(202) 755-2600

Dr. Robert E. Buckman
Associate Deputy Chief
Research Forest Service
U.S. Department of Agriculture
Washington, D.C. 20250
(202) 447-4507

Professor Stanley Cain
Environmental Studies
University of California Santa Cruz
Santa Cruz, California 95060
(408) 429-4408

Capt. C. Kenny Dale
3513 Pine Road
Portsmouth, Virginia 23703
(804) 484-8730

Dr. Jerry F. Franklin
Chief Ecologist
Forestry Sciences Laboratory
Forest Service
3200 Jefferson Way
Corvallis, Oregon 97331
(503) 752-4211

Dr. Robert E. Jenkins, Jr.
Vice President for Science Programs

[60]Dr. John Buckley, a former member during the period that the *Directory* came out, estimates the total cost actually spent on the *Directory* to be between $3,000 and $5,000.

The Nature Conservancy
1800 North Kent Street - Suite 800
Arlington, Virginia 22209
(703) 841-5320

Dr. Ronald R. King
Deputy Director for Science
Office of Environmental Affairs
OESENP, Room 7822
U.S. Department of State
Washington, D.C. 20520
(202) 632-8002

Dr. Robert J. Linn
Adjunct Professor of Biological Sciences
Michigan Technological University
Houghton, Michigan 49931
(906) 487-2478

Program Director
Ecosystems Studies
National Science Foundation
1800 G Street, N.W.
Washington, D.C. 20240
(202) 632-5854

Dr. Robert M. Romancier
Assistant Director of Continuing Research
Forestry Sciences Laboratory
Forest Service
3200 Jefferson Way
Corvallis, Oregon 97331
(503) 752-4211

Dr. George Sprugel, Jr.
Chief
State Natural History Survey Division
179 Natural Resources Building
Urbana, Illinois 61801
(217) 333-6830

Dr. Lee M. Talbot
Assistant to the Chairman for International and Scientific Affairs
Council on Environmental Quality
722 Jackson Place, N.W.
Washington, D.C. 20006
(202) 382-1254

11.11 Bibliography

American Association for the Advancement of Science, Council Study Committee on Natural Areas as Research Facilities. *Natural Areas as Research Facilities,* (mimeographed). November 4, 1963.

Federal Committee on Ecological Reserves. "Charter of the Federal Committee on Ecological Reserves." *Federal Register,* Vol. 40, No. 30, February 25, 1975.

Federal Committee on Ecological Reserves. Memoranda and minutes of Federal Committee on Ecological Reserves meetings, (unpublished). Washington, D.C.: October, 1974 through April, 1975.

Federal Committee on Research Natural Areas. *A Directory of Research Natural Areas on Federal Lands of the United States of America.* Washington, D.C.: U.S. Government Printing Office, 1968.

Federal Committee on Research Natural Areas. "Addendum to the 1968 Director of Research Natural Areas," (unpublished). Washington, D.C.: November, 1972.

Federal Committee on Research Natural Areas. "Standards and Guidelines for Research Natural Areas," (unpublished). Washington, D.C.: 1972.

Fish and Wildlife Service. "Research Natural Areas on U.S. Fish and Wildlife Service Lands," (unpublished). Washington, D.C.: U.S. Department of the Interior, July 1, 1975.

Johnson, Lyndon B. "Special Message to the Congress on Conservation and Restoration of Natural Beauty" in *Public Papers of the Presidents.* Washington, D.C.: Item 54, February 8, 1965.

The Nature Conservancy. *The Preservation of Natural Diversity: A Survey and Recommendations.* Arlington, Virginia: The Nature Conservancy, 1975.

Office of Science and Technology and Bureau of the Budget. "Advancing Scientific Understanding of Natural Communities," (unpublished). Washington, D.C.: 1968.

Office of the Federal Register, National Archives and Record Service, and General Services Administration. *Code of Federal Regulations.* Washington, D.C.: U.S. Government Printing Office, 1974.

11.12 List of technical appendices

(a) "Advancing Scientific Understanding of Natural Communities," (Memorandum for the President). Office of Science and Technology. Washington, D.C.: Office of Science and Technology, January 24, 1968.

(b) "Charter of the Federal Committee on Ecological Reserves." *Federal Register,* Vol. 40, No. 38, February 25, 1975, p. 8127.

(c) "The Harvey Monroe Hall Research Natural Area" in *National Parks and Conservation Magazine.* Louise Parker. Vol. 46, No. 7, July, 1972.

(d) National Park Service Natural Research Areas, (list) 1975.

(e) "Natural Area Programs" in *Journal of Forestry.* Robert M. Romancier. Washington, D.C.: U.S. Department of Agriculture, Vol. 72, No. 1, January, 1974, pp. 37-42.

(f) "Research Natural Areas: Contributors to Environmental Quality Programs" in *Journal of Environmental Quality.* Jerry Franklin, *et al.* Madison, Wisconsin: Vol. 1, No. 2, April-June, 1972, pp. 133-139.

(g) Research Natural Areas of the Forest Service, U.S. Department of Agriculture, (list) 1975.

(h) Research Natural Areas on U.S. Fish and Wildlife Service Lands, (list) July 1, 1975.

(i) "Standards and Policy Guidelines for NPS Research Natural Areas." Federal Committee on Research Natural Areas. Washington, D.C.: 1972.

Chapter Twelve:

National Natural Landmarks Program

A. Objectives and Program

12.1 Objective of the program

The National Natural Landmarks Program is a program housed within the National Park Service of the Department of the Interior engaged in designating natural areas which are of national significance. Areas already under National Park Service authority are not considered for designation, but all other areas within the United States are. Designation takes the form of entry on the National Registry of Natural Landmarks.

The objective of the program is not stated in legislation since the program was administratively created. The objective is, however, stated in the *Federal Register* each time revisions of the National Registry appear there. For example, the list was revised in 1975 with this accompanying statement:

> *Program Objective*—The objective of the Natural Landmarks Program is to assist in the preservation of a variety of significant natural areas which, when considered together, will illustrate the diversity of the country's natural history. This objective is attained through identification of sites eligible for inclusion in the national registry. Natural landmark registration is voluntary and does not change ownership.
>
> Inclusion in the national registry is intended to (1) encourage the preservation of sites illustrating the geological and ecological character of the United States, (2) enhance the educational and scientific value of sites thus preserved, (3) strengthen cultural appreciation of natural history, and (4) foster a wider interest and concern in the conservation of the Nation's natural heritage.[1]

A *Handbook*[2] for the program was prepared in 1966 and added to last in 1971. The *Handbook* is no longer considered to be authoritative on all aspects of the program, under a general policy adopted recently by the National Park Service which deemphasizes the role of handbooks, but it still contains much worthwhile information on the program.

12.2 Designation process

A site may be considered for landmark designation regardless of its ownership, unless, as has been explained, the site is already under Park Service jurisdiction. If, after study by the National Park Service, the site is determined to be qualified, it is proposed to the Secretary of the Interior's Advisory Board on National Parks, Historic Sites, Buildings and Monuments for recommendation. Upon the Advisory Board's recommendation, the Secretary may accept the recommendation and announce that the site is eligible for registration. This announcement, generally made through a press release and letter to appropriate members of Congress, amounts in fact, according to the program's staff, to creation of "Natural Landmark status" for the site.[3]

To provide a logical and scientific basis for the selection of Natural Landmarks, the

---

[1] *Federal Register,* Vol. 40, No. 87, Monday, May 5, 1975 at p. 19504. This revision is reprinted in Technical Appendix 12(a). See also Technical Appendix 12(c).

[2] United States Department of the Interior, National Parks Service, National Registry of Natural Landmarks *Handbook,* 1966, Chapter 1, p. 1 (hereafter cited as *Handbook*).

[3] At the same time a letter is sent to the site owner inviting him (or her) to sign an enclosed agreement to preserve, insofar as possible, the significant natural values the site contains. In signing the agreement, the owner commits himself voluntarily to manage the site to prevent destruction of its natural values and to permit reasonable access for the realization of educational and scientific purposes. When the signed letter is received in the Washington Office the site is officially *registered* as a National Natural Landmark, (*Handbook* Chapter 2, p. 1 and Chapter 5, p. 10) and an appropriate certificate and plaque are sent to the owner. The agreement between the owner and the Secretary may be terminated by either party upon notification, and the owner is to return the certificate and remove the plaque from display. (*Handbook,* Chapter 2, p. 1.) Termination of the agreement by the owner, however, does not automatically remove the site from the registry.

National Park Service has developed a list of natural history "themes." These themes are broad categories of ecological and geological phenomena. Regional study teams, usually consisting of leading ecologists and geologists at nearby universities under contract to the Park Service, strive to classify and describe all the significant natural history phenomena within a physiographic province and also make recommendations as to which sites appear to be of Natural Landmark caliber (potential Natural Landmarks) as a result of this broadbush inventory. Natural region theme studies thus constitute an overview of specific natural regions (physiographic provinces) as well as the first phase of research into particular sites.[4] A map of the natural regions identified by the program appears as Technical Appendix 12(e).

The themes used by the program have most recently been listed as follows:[5]

Landforms of the Present

Plains, plateaus, mesas
Cuestas and hogbacks
Mountain systems
Works of volcanism
Hot water phenomena
Sculpture of the land
Eolian landforms
River systems and lakes
The work of glaciers
Seashores, lakeshores, islands
Coral islands, reefs, atolls
Earthquake phenomena
Caves and springs
Meteor impact sites

Geological History of the Earth

Precambrian
Cambrian—Early Silurian
Late Silurian—Devonian
Mississippian—Triassic
Permian—Cretaceous
Paleocene—Eocene
Oligocene—Recent

Land Ecosystems

Tundra
Boreal forest
Pacific forest
Dry coniferous forest and woodland
Eastern deciduous forest
Grassland
Chaparral
Deserts
Tropical ecosystems

Aquatic Ecosystems

Marine environments
Estuaries
Streams
Underground ecosystems
Lakes and ponds

Each recommended potential Natural Landmark must later receive a more thorough onsite evaluation, generally by another university scientist, to further clarify whether the site appears to meet "national significance" standards, *i.e.,* whether the site possesses exceptional value or quality in illustrating or interpreting the natural heritage of the Nation and is an essentially unspoiled example of natural history. The onsite evaluation report is reviewed within the Park Service, and if the site is considered qualified, it is presented to the Advisory Board, which may then recommend it to the Secretary.

Some examples of the kinds of areas which could qualify for study and for actual designation are listed by the Landmarks Program in the September 5, 1973 *Federal Register* (at p. 23982):

1. Outstanding geological formations or features significantly illustrating geologic processes.

2. Significant fossil evidence of the development of life on earth.

3. An ecological community significantly illustrating characteristics of a physiographic province or a biome.

4. A biota of relative stability maintaining

[4]See also Technical Appendices 12(b) and (d). The ongoing work of inventorying the 33 physiographic provinces has not been completed. These studies, and their relationship to the *National Park System Plan,* are further discussed in section 2.3.

[5]*Federal Register,* Vol. 40, No. 87, Monday, May 5, 1975 at p. 19504.

itself under prevailing natural conditions, such as a climatic climax community.

5. An ecological community significantly illustrating the process of succession and restoration to natural condition following disruptive change.

6. A habitat supporting a vanishing, rare, or restricted species.

7. A relict flora or fauna persisting from an earlier period.

8. A seasonal haven for concentrations of native animals, or a vantage point for observing concentrated populations, such as a constricted migration route.

9. A site containing significant evidence illustrating important scientific discoveries.

10. Examples of the scenic grandeur of our natural heritage.

The *Handbook* (Chapter 3, p. 1) stresses that a site need not necessarily be unique since the object of the program is also to designate "areas which contain outstanding typical . . . illustrations of the Nation's natural history."

Contracts for on-site evaluation usually involve the evaluation of several areas representative of the same theme so that a certain amount of comparative study can be made which will aid the evaluator in the decision-making process concerning which sites may be of national significance. The contracted evaluators are given the initial descriptions of sites derived from the natural region theme study. Additionally, they are given a copy of "Guidelines for Evaluators of Potential Natural Landmarks," a paper drawn up by the Natural Landmarks program staff which describes what is desired in each evaluation report.

The following is excerpted from the Guidelines:

> The evaluator's findings should be based, as appropriate, upon a literature search, correspondence, interviews with knowledgeable people, and always firsthand observation of the site.
>
> Each evaluator's observations and judgments are the products of his professional background and experience. He should strive to base his conclusions and recommendations on actual conditions making them as objective as possible. His report will be the basis for decision by people who will probably never see the site. Opinions of the evaluator and other authorities are welcomed, but these should be distinguished from statements of fact.

An evaluation report should contain, according to the Guidelines, the following elements:

> *General Background:* Identify the evaluator including name, degrees, title, organization connection, if any, and present phone number. Name the theme study that recommended the site for evaluation. Tell when and how your evaluation was made, including major sources of information, collaborators, and visits to the site. If the site is commonly known by other names, include them here.
>
> *Location.* Give State and county or city with bearing and distance from a readily identified map location. Include street or road directions for reaching the site. Give the Section, Township, and Range location of the site. If the site is located in a region not covered by the Public Land Surveys, use the latitude and longitude method of locating the site.
>
> *Size:* Express the size of the landmark site in acres. If an instrument survey has been completed and the acreage quoted is that of an ownership tract, please state so. If the acreage quoted is an approximation, please state so. In all cases, the acreage figure will be checked later by planimeter.
>
> If the area proposed for designation is a portion of a natural area or a larger administrative unit (such as a State park) this should be explained and size of the larger unit also given.
>
> *Boundaries:* Discuss the rationale for selecting the boundary chosen.
>
> Explain the method used to arrive at the final selected boundary.
>
> Accurately draw the boundary of the proposed landmark on a U.S. Geological Survey topographic map (7½′ or 15′ series). Other maps showing more detail than USGS topographic maps are welcome, in addition to the topographic map. Recent aerial photos are a welcome addition to the topographic maps, and may be an extremely useful tool for the evaluator, but are not required.

After the landmark boundary has been drawn, describe this boundary in narrative form in as much detail as considered necessary, using distances and bearings if appropriate.

Since acquisition or other legal action is not involved in landmark designation, an instrument survey of the proposed landmark boundary is not required. What is required is a boundary which includes an adequate illustration or representation of the significant values upon which the recommendation is based, plus a buffer zone sufficient to protect those values if it is thought needed and practical.

The boundary selected should be the most appropriate natural boundary which includes adequate representation of all significant features on the site; established property lines and the number of ownership parcels should be a secondary consideration. However, registration is greatly simplified when few ownership parcels are involved; therefore, the best ecological boundary should be chosen with as few different ownerships involved as necessary.

Ownership: Indicate whether the ownership is institutional, public, private, corporation, etc., and identify all landowners within the landmark boundary, providing the number of ownerships does not exceed 7.

If the number of owners exceeds 7, only the dominant landowners should be mentioned. Rather than listing all the remaining owners, an indication should be made as to their approximate number and the approximate size distribution of their holdings. If the land is publicly owned, give the name of the agency that administers the site.

Describe contact with the owner or owners if they were few in number, or if no contact was made explain why. State owners' attitudes toward landmark status for the site.

If available, supply maps or plats showing the exact ownership boundaries of the land where more than one owner is involved.

Correspondent: Give the name and address of the owner(s) of each site (having 7 or less owners). It is very important that you give current addresses because each owner is contacted by mail to invite him to apply for landmark registration. Also, if relevant, give the name and address of the responsible administrative official or the owner's representative at the site.

Land Use and Integrity: This should be a concise discussion of present uses and activities practiced on the landmark site, both uses which seem to conform to landmark objectives and those that detract from the naturalness of the area. Also, mention probable or projected future land use.

In this section, point out all unnatural situations, disturbances or intrusions that detract from the site being a "true, accurate, essentially unspoiled example." Mention any past or present human manipulations of the ecosystem, e.g., water level manipulation such as diking or ditching in marshes, and indicate whether such practices are expected to continue.

Threats to the Area: Discuss existing and potential influences which might cause destruction or deterioration of values which justify landmark status. If such threats exist, give an opinion as to their imminence.

Description of Natural Values: Describe the overall natural features of the site in sufficient detail to give an understanding of its general character. Also, describe the specific natural values of significance in enough detail as to adequately substantiate the area's significance in relation to other similar sites of the same theme known to the evaluator. Be sure to mention the ecological and geological type category of the site as given in the theme study.

Only those species, associations or individual features which are significant or serve to characterize the site need be mentioned. For ecological site evaluations, be sure to identify species present using the most widely used or accepted common name as well as the scientific name (this is especially in reference to plant species).

This section of the report is the basic focus of the whole evaluation and demands professional expertise in describing the natural values and significance. The evaluator's knowledge of his own specialty—plant ecology, geomorphology, paleontology, etc., is utilized in this description.

Significance Statement: This section contains the basis for determining national significance. The statement should summarize the

more elaborate "Description of Natural Values" section, and it should state why the site is or is not considered to be nationally significant. This is the most important statement in the evaluation report and it should be carefully constructed to support the evaluator's recommendation and the Secretary of the Interior's action if he designates the site a natural landmark. It may be as concise or lengthy as necessary to convey an accurate impression of the significance of the area. Statements of comparison between the site being evaluated and other comparable sites (including existing landmarks) in the State, region, Nation or other geographically defined area other than strictly local are greatly encouraged. The discussion is basically an attempt to describe or establish the uniqueness of the site, and is the most difficult and challenging part of the evaluation.

Significance Sources: In this section we would like to know the names of persons consulted, if any, who concur or helped develop the final national significance statement. The concurrence of several individuals with a strong scientific background and reputation in a discipline associated with the study of the particular themes present at the site adds more authority to the final national significance statement. Any publications in scientific or popular journals on this area that assist in establishing significance might also be mentioned here.

Publicity Sensitivity: Indicate here if you believe the site could be placed in serious jeopardy from publicity associated with possible designation as a natural landmark; e.g., fossil sites, noncommercial caves, endangered species sites, etc. Also, indicate the probable outcomes of publicity associated with this particular site.

If you believe that a landmark site may be endangered through publicity, the Park Service will probably not publicize the site (should it become a landmark), but still include it in the National Registry of Natural Landmarks published periodically in the "Federal Register."

Recommendation: One of two recommendations should be made. These are (1) In my opinion, the site appears to be nationally significant and I recommend that it be designated a natural landmark; or (2) In my opinion, the site does not appear to be nationally significant and I recommend that it not be designated a natural landmark.

The recommendation should be based solely on the existing condition of the site's natural value and integrity. Other considerations such as the attitude of the owner or owners toward landmark status, number of ownerships involved, impending encroachments, land use, political considerations, etc., should be stressed elsewhere in the report and should not influence the evaluator's final recommendation.

Signatures: Original and two copies (original and three copies if BLM, FWS, or FS sites are involved) should be signed by the evaluator with one space for approval by the NPS Regional Director or his delegate. Each signature should be followed by a space for the date.

Enclosures: A set of the following enclosures should accompany each copy. Each individual copy of the report should be forwarded in its own binder.

1. USGS 7½′ (1:24,000), 15′ (1:62,500) or 1:250,000 topographic maps with proposed landmark boundary indicated. An original map should be submitted with each report.
2. Vicinity map, such as a highway map, with site location indicated.
3. Photocopies of deeds or county land record maps, where appropriate, to explain the boundaries and ownerships involved.
4. Literature cited in evaluation report.
5. Include approximately six or more 35-mm color slides with the original copy of the report. One set of approximately six 3½″x5″ or larger color prints made from these slides should be included with each copy of the report, including the original. Each print should be described, relating the photo to the location on the site and its significance relative to natural values. Great care should be exercised in taking high quality, descriptive photos as they will be utilized later in slide presentations to the Secretary of the Interior's Advisory Board on National Parks, Historic Sites, Buildings and Monuments.

   **Be sure to include photos of unnatural conditions and intrusions on the site, in addition to photos illustrating positive values. These photos illustrating nega-

tive influences are important in decisions regarding recommendation of the site for inclusion in the National Registry of Natural Landmarks.

6. Any other documents that support or clarify the report. (Species lists compiled from previous research at a site are a welcome addition.)
7. Natural landmark brief, if the site is recommended by the evaluator. This is a 1 or 2 page synopsis of the report.

At the semiannual meetings of the Department of the Interior's Advisory Board on National Parks, Historic Sites, Buildings, and Monuments,[6] the Natural Landmarks Program staff presents the proposals for Natural Landmarks which have been culled from various on-site evaluation reports. The proposals are presented to the Natural Areas Committee of the Board. The Natural Areas Committee reports its findings on each site to the full meeting of the Advisory Board. Board action may be: (1) to recommend that the site qualifies for Natural Landmark designation, (2) to defer recommendation pending further study, or (3) to recommend that the site does not qualify for Natural Landmark designation. After the Advisory Board has recommended to the Secretary that a site qualifies for Natural Landmark designation, the Secretary may accept, as has been explained, the recommendation and announce the designation of the site through a press release and letters to interested Members of Congress.

Finally, it should be mentioned that the National Registry of Natural Landmarks parallels the National Register of Historic Places. The difference between the two registers is that the National Register of Historic Places includes, in addition to National Historic Landmarks, historic areas administered by the National Park Service and historic places of state and local significance. The requirement of national significance in the Natural Landmarks Program is emphasized by the fact that should the natural integrity of a site deteriorate from either natural and man-made causes, to the extent that national significance is lost, the site will be removed from the National Registry of Natural Landmarks.

12.3 Protection

The National Natural Landmarks Program is an administratively created program within the National Park Service. The program was created in the early 1960's by interpreting a general declaration of national policy to preserve "objects of national significance," a declaration contained in the Historic Sites Act of 1935 (16 U.S.C. 461). The administrative program and objectives described to this point, all revolving around maintenance of the National Registry of Natural Landmarks, do not contain specific regulations preventing adverse uses for areas on the registry.

There is thus no legislation and there are no administrative procedures affording specific protections for Natural Landmarks. Official recognition of such landmarks is in fact the only direct protection afforded. This protection must not, however, be underestimated. The singling out of an area because of its natural area virtues calls to public attention what otherwise might be an unnoticed and carelessly used site and facilitates the sanction that public opinion may exert should the owner or others seek to destroy the area. The act of public recognition may also affect the owner specifically. The owner may take pride in owning something officially recognized as of national significance, and this in turn may make the owner reluctant to convert the site to a use depriving the property of Landmark recognition.[7]

There are also certain indirect protec-

[6]Authorized by the Act of August 21, 1935 (16 U.S.C. 463), the Board consists of 11 nonsalaried members appointed by the Secretary of the Interior who are competent in various relevant fields.

[7]See The Nature Conservancy, *The Preservation of Natural Diversity: A Survey and Recommendations* (1975), Appendix 1 for a general discussion of this issue.

tions. Under the National Environmental Policy Act of 1969 (42 U.S.C 4321 *et seq.*), Federal agencies undertaking "major Federal actions" must file and consider in all phases of their decisionmaking statements which detail the effect of such actions on the environment. The fact that such an action will impact upon a National Natural Landmark is something any adequate statement must note, and realization of this fact may alter the action in question. In this sense an indirect protection is afforded. Section 7 of the Endangered Species Act[8] provides a more direct protection should the Landmark, or part of it, be considered critical habitat for an endangered species: section 7 specifically prohibits all Federal agencies from undertaking any action which would further endanger that species.

12.4 Management

Formally, registration as a Natural Landmark constitutes an agreement between the Secretary of the Interior and the landowner to preserve, insofar as possible, the significant natural values contained in the site. In applying for Landmark registration the owner agrees to manage the site so as to prevent the destruction or deterioration of the values upon which Landmark designation is based, and to permit reasonable access for realization of educational and scientific purposes.[9] He relinquishes none of his rights and privileges as to use of land. Neither does the Department of the Interior gain any possessory interest in lands so designated.

The Department of the Interior then presents to the owner an appropriate certificate and bronze plaque indicating the site is a Registered Natural Landmark. Through the National Park Service the Department can provide consultative assistance in protecting and interpreting the natural values of the site.

The agreement may be terminated by either party upon notification of the other. It should be noted, however, that termination of the agreement does not serve by itself to remove the Landmark from the registry or to eliminate its "Natural Landmark status."[10]

Administration and preservation of a Landmark continues to be solely the owner's responsibility. The owner must maintain the integrity of the site to retain Landmark status. For this reason the appropriate regional office of the National Park Service may send a representative to the site to advise the owner on matters of landmark preservation, maintenance, and interpretation to the public. The Park Service is not authorized to spend funds for the preservation or administration of a Landmark, but advisory assistance to owners is authorized.

Advisory activities described in the program's *Handbook* contain this practical information (at Chapter 6, p. 6):

> The most effective liaison is established through personal and informal relationship between a Service representative and the site owner. Every effort should be made to give the owner the feeling that the Service has a sincere interest in preserving the values for which the site is designated a landmark and wants to assist in doing this. Visits to the sites should be made in this spirit rather than as inspections, but it should be determined that landmark standards are being maintained.
>
> In some cases this liaison responsibility may be assigned to a nearby park superintendent or naturalist who maintains contact with the owner. If this is not practicable, other arrangements should be made that assure at least biennial visits.

And the *Handbook* notes (at Chapter 3, p. 3):

> Natural Landmarks will be managed in such a way as to pose no threat to the perpetu-

[8] 16 U.S.C. 1531 *et seq.* Other laws, *e.g.*, the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq.*), also may provide this sort of direct protection in certain cases.

[9] The Landmarks Staff maintains that the access provision is often waived.

[10] See section 12.2 for use of this phrase.

ation of the feature or species designated. Other uses of the site will be permitted, insofar as such uses do not materially interfere with the purposes of landmark designation.

12.5 Illustrative examples

Since the "Natural Landmark Briefs" prepared by the Landmarks Program are condensations of on-site evaluation reports, prepared primarily to brief the Advisory Board, for the purposes of illustration here it is necessary simply to reproduce more or less at random several of these exactly as they appear in the files of the Program:

(a) Canaan Valley, West Virginia

1. *Site:* Canaan Valley, Tucker County, West Virginia
2. *Description:* Canaan Valley lies just west of the Allegheny Front and is approximately 13 miles long, trending northeast-southwest, and varying from 2 to 4 miles in width. Its watershed includes about 35,000 acres. The valley itself is at about 3,200 feet elevation; the surrounding mountains reach above 4,000 feet with Cabin Mountain on the east, Brown Mountain and Dobbin Ridge on the north, and Brown and Canaan Mountains on the west. It is perhaps the highest large valley east of the Rocky Mountains. The Blackwater River and its tributaries meander through the center of the valley. The landmark tract embraces the northern 8 miles of this valley, about 15,400 acres. The valley contains vegetation that was common in the Central Eastern United States during the Pleistocene, hence the valley now harbors many northern boreal relict species. Similar vegetation is generally found nearly 500 miles farther north. The valley has many vegetation types including dry mountain rock talus slopes, ericaceous shrub areas, beech-birch-maple forests, alder and poplar thickets, and finally wetter balsam fir swamps and sphagum bog areas, interspersed with large acreages of muskeg. The plant and animal species occurring here are not restricted to this location nor are they extremely rare, as other boreal relicts of much smaller size do exist elsewhere in the State. Because of the existence of agricultural and grazing lands, roads, scattered housing developments, recreational facilities and other types of cultural intrusions, the southern half of the valley has been excluded from the landmark boundaries. The northern half of the valley, the landmark tract, has remained very natural and is somewhat inaccessible during much of the year. The center of the landmark area is 5 miles due east of Davis.
3. *Owner:* Allegheny Power System (Monongahela Power Company, Potomac Edison Power Company, and West Penn Power Company) are the major owners. However, at least three other property owners are involved.
4. *Proposed by:* Drs. Richard H. Goodwin and William A. Niering in the Inland Wetlands of the United States theme study.
5. *Significance:* The great diversity of habitats found in Canaan Valley make it a splendid "museum" of Pleistocene time. It contains an aggregation of habitats found in few areas in the Eastern United States. It is unique as a northern boreal relict community occurring at this latitude by virtue of its size, elevation and diversity.
6. *Land use:* The use of the landmark tract comprising the northern half of the valley has been restricted to fishing, hunting and hiking since the original timber was removed years ago. Land use in the surrounding area involves farming and grazing lands and some residential development, particularly in the southern half of the valley. Canaan Valley State Park, also in the southern portion of the valley, was created in 1968 for intensive recreational pursuits and is continuing to be developed. The Weiss Knob ski area at the southeast end of the valley has incurred much recreational use.
7. *Dangers to integrity:* (a) The Allegheny Power System proposes to flood 7,000 acres of the central valley by a dam at the Davis outlet of the valley, the lake waters to be used for power generation and rec-

reational use. This lake would inundate most of the landmark area.

(b) The Western Maryland Railroad is reputed to own the coal rights to some 13,000 acres in the northern end of the valley. They reputedly plan to remove the coal prior to the formation of Blackwater Lake, as proposed by the Allegheny Power System.

(c) Continued housing development in the south end of the valley will put continued recreational pressure on the landmark. The northern end will also undoubtedly suffer from pollution and siltation to some extent. Development of Canaan Valley State Park will likewise produce some pressures at the northern end of the valley.

8. *Special conditions:* A railroad meanders and loops through a large portion of the northern Canaan Valley. A secondary road also meanders through a large sector. A few scattered houses exist; nevertheless, intrusions are minimal and the north end still is strikingly natural.
9. *Studied by:* Dr. Jesse F. Clovis, Professor of Biology, West Virginia University, Morgantown, West Virginia, September 1974.

(b) The Malaspina Glacier, Alaska

1. *Site:* The Malaspina Glacier, Alaska
2. *Description:* This outstanding example of a piedmont glacier is described and illustrated in many modern geology and physiography texts and so is world famous. It is located on the Gulf of Alaska about 25 miles west of Yakutat. The glacier covers about 1,035 square miles. The natural landmark includes about 1,500 square miles between Disenchantment Bay on the east and Icy Bay on the west. Its southern boundary is the Gulf of Alaska and its northern boundary follows the Pacific Escarpment of the St. Elias Range.
3. *Owner:* Federal Government; administered by District Manager, Anchorage District Office, Bureau of Land Management, 4700 E. 72nd Street, Anchorage, Alaska 99502.
4. *Proposed by:* Alaska Natural Landmarks Survey.
5. *Significance:* The largest glacier in North America and one of the largest outside the ice cap regions of the world. Provides classical examples of glacial mechanisms and fluctuations.
6. *Present condition:* No intrusion upon scientific integrity is known. It seldom is visited and there is no established usage at present.
7. *Special conditions:* Size and character makes the site relatively vulnerable. Oil field development could be damaging if undertaken.
8. *Studied by:* Dr. William E. Long, Assistant Professor of Geology, Alaska Methodist University in May 1968. Information supplied by Mr. Robert Hoekzema, Field Assistant, Standard Oil Company.

(c) Anza-Borrego Desert, California

1. *Site:* Anza-Borrego Desert State Park, San Diego, Imperial and Riverside Counties, California
2. *Description:* Anza-Borrego Desert State Park contains nearly 498,000 acres within the park boundaries; however, approximately 75,000 acres are privately owned inholdings. The unincorporated town of Borrego Springs in the northern sector constitutes a block of approximately 60,000 acres and has a resident population of approximately 15,000 people. This 60,000-acre tract is excluded from the presently authorized State park and is not considered part of the 75,000-acre inholdings mentioned above. Located within the Colorado Desert, the park contains extreme diversity including mountain ranges, canyons, valleys, desert washes, badlands topography, and flowing streams. Many of the remote canyons contain scenic waterfalls, colorful and majestic rock formations and palm oases containing the fan palm *Washingtonia filifera.* A great abundance and diversity of biotic desert communities are represented here. Outstanding geological features characteristic of the desert also occur here. The site is situated primarily in the eastern half of San Diego County.

3. *Owner:* The State of California is the largest landholder; however, within the park boundary are a multitude of municipal and private inholdings varying in size from a fraction of an acre to 70,000 acres.

4. *Proposed by:* South Pacific Border Natural Region theme study (geological themes) by Jere H. Lipps, James R. Correa and Gary Zumwalt of the Department of Geology and Institute of Ecology, University of California at Davis, Davis, California.

5. *Significance:* The site is the largest desert State park in the Nation. It contains some of the best examples of the various desert biotic communities in the Colorado desert. Five hundred species of plants, 137 species of birds, 70 mammals, 37 reptiles and 17 amphibians have been identified within the park boundaries. Although no single spectacular geological feature is present in the park, excellent examples of various desert geological phenomena are present. The site contains one of the finest examples of badlands topography in California. When the geological features are combined with the various biotic resources of the area, the park has outstanding scenic beauty. Important Pleistocene fossil deposits occur in the park; also present are some Indian archeological remains. Rare plants occur here including the unusual elephant tree *(Pachycormus discolor).* Threatened animal species occurring here include the peninsular bighorn sheep *(Ovis canadensis cermnobates).* Good representations of an unusual desert plant community, the fan palm oasis containing *Washingtonia filifera,* occur in certain canyons of the area. Over 700 individual palms are found in Borrego Palm Canyon alone.

6. *Land use:* Over one million people visited Anza-Borrego Desert State Park in 1973, primarily for various recreational pursuits. In the 60,000-acre land block in the north-central part of the park containing the town of Borrego Springs, there is expanding business and residential development and some citrus agriculture.

   Generally, the incompatible land uses occurring on the numerous inholdings are limited to off-the-road vehicle use which cannot be regulated by the State, and occasional grazing. Small buildings, ranches, etc., occur on some inholdings.

   Four paved roads cross the park. A power line parallels State Route 78. Two developed campgrounds suitable for trailer campers occur in the park. Nine undeveloped campground, generally within close proximity to highways, have been provided.

   The park is used for teaching and research by numerous nearby colleges and universities

7. *Dangers to integrity:* The most threatening dangers are the result of commercial interests in the town of Borrego Springs. Developers are demanding more access roads to bring in more tourists, more vacation and permanent homes in the privately owned sector and the relaxing of park regulations to allow more use of vehicles in all desert areas. Because part of it passes through private lands, the Coyote Creek jeep trail has just recently been closed to public use and valuable water from the creek is being diverted for agricultural use. (The State of California is presently instigating a suit against this owner.) The State has also recently designated the Santa Rosa Mountains State Wilderness and Sheep Canyon Natural Preserve, both in the northern sector of the park; this action should help prevent the threat of future road development in this area.

   Off-the-road vehicles have denuded many areas of natural vegetation and left scars on the landscape that will take many years to correct. (The State of California has recently passed regulations closing many formerly popular areas to vehicular traffic and designating routes which can be used when passing through the park.) There are no blocks of land that can be used by off-the-road vehicles for strictly motorized thrill seeking recreational use; vehicles may only use paved or unpaved roads traveling to and from their destination.

   Sheep poaching has become a problem in recent years. This is especially harmful because the sheep population has been steadily declining from all causes. *Ovis canadensis cermnobates* is listed as a

"threatened" species by the Department of the Interior.

Protection and enforcement is the primary responsibility of the ranger staff.

8. *Special conditions:* The park boundaries have been expanded in the recent past to include additional acreage in Imperial and Riverside Counties. Many small inholdings are being added to the total park acreage through the efforts of an environmental group headed by the Desert Protective Council. In addition, inholdings have been acquired recently by the State through gifts and trades. There is promise of funds from a 1974 bond issue to allow the State to purchase inholdings.
9. *Studied by:* John F. Shrawder (retired), Department of Environmental Studies, California State University at Sacramento, Sacramento, California, in December 1969. An update onsite evaluation was conducted by Mr. Shrawder in January 1974, (April 1974).

B. Authority, Structure and Funding

12.6 History and legislative background

Efforts to establish a Natural Landmarks Program began late in 1961 within what was then called the Division of Natural History in the National Park Service. Then by memorandum of March 9, 1962, the Natural Landmarks Program was formally recommended to the Secretary of the Interior who gave his approval on May 18, 1962. The Advisory Board on National Parks, Historic Sites, Buildings and Monuments discussed the purpose and main elements of the Natural Landmarks Program at its 47th Meeting. A memorandum from the chairman of the Advisory Board to the Secretary of the Interior, dated October 17, 1962, contained this paragraph:

> The Advisory Board takes this opportunity to express its satisfaction with your action in approving the initiation of this program. The Board believes that, effectively carried out, it should have several beneficial effects. It should result in the preservation of significant landmarks that would otherwise be impaired or destroyed. It should gain public support for the role of the Federal Government in natural history conservation, and should encourage State and local governments in the same direction. It should be of widespread benefit to science. And it should play a real role in educating the public toward appreciation of the natural environment in which and by which it lives.[11]

On June 7, 1963, Assistant Secretary Carver requested budget clearance for the program from the Bureau of the Budget (now the Office of Management and Budget). The Director of the Bureau of the Budget, in his letter to the Secretary of the Interior dated July 11, 1963, wrote, "We believe there is much merit in your proposal to strengthen the cultural appreciation of America through the identification and preservation of natural scientific landmarks. An especially attractive feature of the proposal is the emphasis placed on local responsibility for the care of such sites."

The Nature Conservancy and the American Geological Institute assisted greatly both in formulating criteria and guidelines for selection of sites and in compiling a list of sites for initial consideration.

Guidelines were developed for evaluating sites. Four sites were recommended for registration in March and an additional three in November 1963. Mianus River Gorge in New York State became the first Registered Natural History Landmark on April 1, 1964, followed by Corkscrew Swamp Sanctuary, Florida; Rancho La Brea, California; Wissahickon Valley, Philadelphia, Pennsylvania; Elder Creek, California; Fontenelle Forest, Nebraska; and Bergen-Byron Swamp, New York.

To reduce confusion between the Natural History Landmarks Program and another program administered by the Park Service (the Historic Landmarks Program), the Secretary of the Interior on February

[11] *Handbook,* Chapter 1, p. 1.

26, 1965, approved the following change in titles: the National Registry of Natural History Landmarks became the National Registry of Natural Landmarks.

The authority for creating the program was derived from the general declaration of policy contained in the first section of the Historic Sites Act of 1935.[12] The first section of this Act, now 16 U.S.C. 461, reads as follows:

> It is declared that it is a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States.

The rationale behind the Natural Landmarks Program is that significant ecological and geological areas or features are objects of national significance.

12.7 Administrative structure and personnel

The National Natural Landmarks Program is administered by the National Park Service, which is within the Department of the Interior. Functionally, the program falls within the activities of the Office of the Chief Scientist of the Park Service.

Since almost all natural region theme studies and later on-site evaluations are done through contracts, mainly with experts at universities, the staff of the program is quite small. It consists of a Chief, Natural Landmarks and Theme Studies (sometimes referred to under the general rubric of "Park Planner" in Park Service Financial Plans); a botanist; a zoologist; a clerk; and a clerk-typist. There is also provision in the 1975 Financial Plan for a geologist to be employed by the Program on a full-time basis.[13]

The Program also makes use of certain general services (ranging from those provided by the Office of Information to those provided by the Office of the Chief Scientist, National Park Service) available within the Department of the Interior.

12.8 Funding

For fiscal year 1975, the funds available to the Program's operating functions were divided into two separate accounts, the Natural Landmarks Account (Account No. 411) and the National Park System Plan Account (Account No. 410). Since these accounts fund what is essentially one program, the figures from them will be combined here. The result is that for fiscal year 1975, the Program budgeted $400,100 for natural region theme study work done by contract—mainly, as has been noted, with experts in local universities in the vicinity of the physiographic province being studied. Another $116,000 was budgeted for follow-up on-site evaluations again undertaken on a contractual basis (through the Regional Offices of the Park Service). $107,000 was budgeted for staff.[14]

---

[12]The revision of the National Registry of Natural Landmarks beginning at p. 23982 of Vol. 38 of the *Federal Register* (September 5, 1973) starts with this sentence: "Pursuant to authority contained in the Act of August 21, 1935 (40 Stat. 666, 16 U.S.C. 461), the National Park Service, Department of the Interior, is administering and implementing a natural areas program, including the National Registry of Natural Landmarks." See also *Handbook,* Chapter 1, p. 1.

[13]National Park Service, Financial Plan—Operating Program, Detail of Personnel Compensation and Benefits for Account Numbers 410 and 411, Fiscal Year 1975.

[14]National Park Service, Financial Plan—Operating Program, Account Numbers 410 and 411, Fiscal Year 1975. Attachments to these plans indicate that the $400,100 was budgeted for natural region theme studies as follows:

Name of Natural History Theme Study (Account 410)	*Est. Cost*
Appalachian Ranges natural region	$ 55,000
Colorado Plateau natural region	55,000
Superior Upland natural region	30,000
Total	$140,000

Name of Natural History Theme Study (Account 411)

C. Analysis

12.9 Accomplishments and capabilities

It will be remembered that the 1962 memorandum from the Secretary of the Interior's Advisory Board contained this paragraph:

> The Advisory Board takes this opportunity to express its satisfaction with your action in approving the initiation of this program. The Board believes that, effectively carried out, it should have several beneficial effects. It should result in the preservation of significant landmarks that would otherwise be impaired or destroyed. It should gain public support for the role of the Federal Government in natural history conservation, and should encourage State and local governments in the same direction. It should be of widespread benefit to science. And it should play a real role in educating the public toward appreciation of the natural environment in which and by which it lives.[15]

These important goals have to some extent been accomplished by the Natural Landmarks Program, but much remains to be accomplished. The accomplishments lie mainly in the public support the Program has achieved and in its educational and scientific benefits. These have been greatly increased by the passage of the National Environmental Policy Act, since it mandates Federal agencies to take the environmental impact of their actions into account, and the National Registry of Natural Landmarks helps call attention to impacts on areas of national significance.

Beyond this, of the 33 natural regions identified by the Program, the following natural region theme studies have been completed thus far: the Atlantic Coastal Plain (ecological)[16], the Arctic Lowland, the Great Plains, the Wyoming Basin (geological), the Columbia Plateau (ecological), the Virgin Islands and the South Pacific Border. Natural region theme studies actively underway are: Great Basin, Gulf Coastal Plain, Piedmont, Puerto Rico, Hawaiian Islands, Appalachian Plateaus, Atlantic Coastal Plain (geological), North Pacific Border, Pacific Island Territories, Southern Blue Ridge portion of Appalachian Ranges (ecological), Wyoming Basin (ecological), and the Columbia Plateau (geological). The remainder should be finished by 1979. Three hundred ninety-six sites have been officially listed on the National Registry of Natural Landmarks thus far. Two to three thousand sites, it is estimated, will eventually be listed after the natural region theme studies and all field evaluations have been completed.[17]

The capabilities of the Program are limited mainly by two factors. First, not having an independent statutory basis with adequate built-in legal protection for National Natural Landmarks, the goal of achieving "preservation of significant landmarks that would otherwise be impaired or destroyed" can never be said to have been achieved. The threat of destruction is always present. Second, the Program has an exceedingly small staff, presently three full-time professionals, given its most important goals. This assessment of the limitations of the Pro-

Cascade Range natural region	$ 40,000
Chihuahuan Desert-Mexican Highland natural region	40,000
Interior Highlands natural region (ecological sites)	15,000
Interior Low Plateaus natural region (ecological sites)	20,100
Middle Rocky Mountains natural region	35,000
Northern Rocky Mountains natural region	35,000
Sierra Nevada natural region	40,000
Southern Rocky Mountains natural region	35,000
Total	$260,100

[15] *Handbook,* Chapter 1, p. 1; see section 12.6, above.

[16] Ecological and geological surveys of a physiographic province are often completed as separate studies. Sometimes, however, they are integrated into one study.

[17] A theme study data sheet from the program appears as Technical Appendix 12(d). A map of the physiographic provinces used by the program appears as Technical Appendix 12(e).

gram agrees essentially with that made by the Bureau of Outdoor Recreation in its first Nationwide Outdoor Recreation Plan:

> While the program represents an important step forward in preserving natural areas, the protection it affords frequently is inadequate and the incentives it provides insufficient. The greatest drawback is lack of funds for acquisition and for payment to landowners for maintenance and management. Equally important is the need for protection of a site's integrity through broad land use planning and regulation authorities.[18]

D. Information and Bibliography

12.10 Key information contacts

Science Program Specialist
Office of the Chief Scientist
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240[19]
(202) 523-5051

Chief Scientist
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240
(202) 343-5181

12.11 Bibliography

Everhart,William C., *The National Park Service.* New York: Praeger Publishers, 1972.

The Nature Conservancy. *The Preservation of Natural Diversity: A Survey and Recommendations.* Arlington, Virginia: The Nature Conservancy, 1975.

Office of the Federal Register. *Federal Register.* Vol. 38, p. 23982 and Vol. 40, p. 19503.

U.S. Department of the Interior. *National Registry of Natural Landmarks Handbook.* Washington, D.C.: U.S. Department of the Interior, 1966.

U.S. Department of the Interior, "Natural Landmark Briefs," (unpublished). Washington, D.C.: U.S. Department of the Interior.

12.12 List of technical appendices

(a) "National Registry of Natural Landmarks—Revision of List" in *Federal Register.* Vol. 40, No. 87, May 5, 1975, pp. 19503-19508.

(b) "National Registry of Natural Landmarks—Designation Procedures" in *Handbook.* U.S. Department of the Interior, National Park Service. Washington, D.C.: Chapter 5, Appendix 3, Form 10-4, March, 1971, pp. 1 and 2.

(c) Program Tables and List, as of September, 1975, (National Natural Landmarks).

(d) "Theme Study Data Sheet: Forty-Acre Rock." U.S. Department of the Interior, National Park Service, National Natural Landmark Staff. Washington, D.C.: U.S. Department of the Interior.

(e) Natural Regions (map).

---

[18] *Outdoor Recreation—A Legacy for America,* 1973, p. 39.

[19] Under certain proposed reorganizations, the National Landmarks Program may be transfered to the National Park Service, Denver Service Center in the near future.

PART FIVE

OTHER PROGRAMS

Chapter Thirteen:

Coastal Zone Management, Endangered Species, Environmental Policy

13.1 The Office of Coastal Zone Management

The Office of Coastal Zone Management of the National Oceanic and Atmospheric Administration (Department of Commerce) was created by the Coastal Zone Management Act of 1972 (P.L. 92-583; 16 U.S.C. 1451-1464).

Its objectives are taken from that Act (P.L. 92-583, section 303):

(a) To preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations;

(b) To encourage their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone giving full consideration to ecological, cultural, historic, and esthetic values as well as to needs for economic development;

(c) For all Federal agencies engaged in programs affecting the coastal zone to cooperate and participate with state and local governments and regional agencies in effectuating the purposes of this title; and

(d) To encourage the participation of the public of Federal, state, and local governments and of regional agencies in the development of coastal zone management programs.

In fiscal year (FY) 1975 the Office operated with a staff of 35 professionals and an administrative budget of about $800,000 (in addition to the annual Congressional appropriations for its programs).

The Office has no landholdings; its purpose is to administer three programs discussed below: (a) the Coastal Zone Management Program; (b) the Estuarine Sanctuaries Program; and (c) the Marine Sanctuaries Program.

(a) Coastal Zone Management Program

This provides the opportunity for a state to receive Federal funding by developing a state-wide comprehensive management plan for its coastal areas. Eligible are the 30 states which border on the Atlantic, Pacific and Arctic Oceans, the Gulf of Mexico, the Great Lakes, (Puerto Rico, the Virgin Islands, Guam and American Samoa are also eligible). Federal lands are excluded from consideration.

The purposes of the program (and of the Act) are to balance competing uses which have a direct and significant effect on ocean and Great Lakes coastal areas and to provide a vehicle for coordinating Federal, state and local government activity in coastal areas. The program has the potential for greatly affecting natural areas. It is possible for management plans produced under the program to protect such areas through regulation. Indeed, it can even be argued that the Act's concern with protecting the resources of the Coastal Zone "for this and succeeding generations" mandates the preservation of at least some natural areas. Public participation is encouraged by the Act, and states must make efforts to include public input, largely through hearings.

The program offers two types of grants. The initial grant under section 305 of the Act is to assist in the development of a management program for the land and water resources of a state's coastal zone. The Management program must include:

(1) an identification of the boundaries of the coastal zone subject to the management program;

(2) a definition of what shall constitute permissible land and water uses within the coastal zone which have a direct and significant impact on the coastal waters;

(3) an inventory and designation of areas of particular concern within the coastal zone;

(4) an identification of the means by which the state proposes to exert control over the land and water uses referred to in paragraph (2) of the subsection, including a listing of relevant constitutional provisions, legislative enactments, regulations, and judicial decisions;

(5) broad guidelines on priority of uses in particular areas, including specifically those uses of lowest priority;

(6) a description of the organizational structure proposed to implement the management program, including the responsibilities and interrelationships of local, areawide, state, regional and interstate agencies in the management process.

The grants cannot exceed 66⅔% of the costs of a state's program in any one year, and no state is eligible to receive more than three annual grants under the Act. Federal funds received from other sources cannot be used to match these "305 grants."

The state may allocate portions of the 305 grant to other agencies within the states, local governments, multi-state organizations, or private contractors. A coastal program also may be developed in geographical segments, as long as the state provides assurance that it eventually intends to bring the entire coastal zone under the management program.

The second grant is an administrative grant under section 306 of the Act, to be administered by the Office of Coastal Zone Management acting for the Secretary of Commerce once the Office has approved the state's management program developed under a 305 grant.

Prior to receiving approval of a management program and a 306 grant, a state must have:[1]

1. Coordinated its program with local, areawide, and interstate plans applicable to areas within the coastal zone;
2. Established an effective mechanism for continuing consultation and coordination between the management agency designated and local governments, interstate agencies, regional agencies and areawide agencies within the coastal zone to assure the full participation;
3. Held public hearings in the development of the management program;
4. Reviewed and approved by the Governor, the management program and any changes thereto;
5. Designated a single agency to receive and administer the grants for implementing the management program required under paragraph (1) of this subsection;
6. Shown that it has organized to implement the management program required;
7. Shown that it has the authorities necessary to implement the program, including the authority required under subsection (d) of this section;
8. Shown that the management program provides for adequate consideration of the national interest involved in the siting of facilities necessary to meet requirements which are other than local in nature;
9. Shown that the management program makes provision for procedures whereby specific areas may be designated for the purpose of preserving or restoring them for their conservation, recreation, ecological, or esthetic values.

The management program prior to approval and receipt of a 306 grant must also provide:[2]

(1) for any one or a combination of the following general techniques for control of land and water uses within the coastal zone;
   (A) State establishment of criteria and standards for local implementation, subject to administrative review and enforcement of compliance;
   (B) Direct sale land and water use planning and regulation; or
   (C) State administrative review for consistency with the management program of all development plans, projects, or land and water use regulations, including exceptions and variances thereto, proposed by any state or local authority or private developer, with power to approve or disapprove after public notice and an opportunity for hearings.
(2) for a method of assuring that local land and water use regulations within the coastal zone do not unreasonably restrict or exclude land and water used of regional benefit.

The Act specifies three optional types of controls: (1) direct state regulation; (2) local regulation consistent with state established

[1] The material has been paraphrased from section 306 of the Act.

[2] Direct quotation from section 306(e).

standards; or (3) local regulation subject to state review.

When the state program is developed, Federal approval is sought from the Secretary of Commerce. The Office of Coastal Zone Management, acting for the Secretary, judges whether the management process the state has developed meets the general goals of the Act. The pursuit of Federal approval is again a voluntary action by the state. To secure Federal approval, the Governor must have approved the program and the state must have developed the powers, arrangement and authorities necessary to implement it. This is encouraged through Section 306 program implementation grants. Substantially more funds are authorized by the Act for the annual implementation grants.

Neither the 305 nor the 306 grants can exceed 66⅔% of the costs of administering the state's management program, and no other Federal funds can be used to pay the state's share of the costs.

In FY 1975, $12 million was authorized by Congress for the Coastal Zone Management Program; about $10 million was for grants under section 305 and $2 million was for grants under section 306. In FY 1976, approximately $20 million has been requested for the entire program, but has not yet been appropriated.

There is now an amendment to the Act which has passed the Senate and is under consideration by the House. Among the revisions this amendment would make to the Act are:[3]

1. Increasing the Federal share of the section 305 grants to 80% from 66⅔%, and changing the limit from three to four years;
2. Increasing the 305 grants from $12 million to $20 million and the 306 grants from $3 million to $50 million;
3. Permitting a state to receive 306 grants while still receiving 305 grants for beach and energy facilities through 1978;
4. Establishing a revolving $250 million Coastal Energy Facility Impact Fund;
5. Providing $50 million for beach access acquisition and acquisition of islands;
6. Providing $10 million for research and state personnel training (including problems such as bridge siting);
7. Authorize and funding interstate compacts for regional problem-solving ($5 million).

Contact:

Assistant Administrator for
Coastal Zone Management
NOAA, U.S. Department of Commerce
Page One Building
3300 Whitehaven Street, N.W.
Washington, DC 20235

(b) Estuarine Sanctuaries Program

Authority for the Secretary of Commerce to establish the Estuarine Sanctuary Program comes from section 312 of the Coastal Zone Management Act (P.L. 92-583; 16 U.S.C. 1451-1464). This constitutes a third type of grant the Secretary is empowered to give under the Act. Section 312 (P.L. 92-583) provides:

> The Secretary, in accordance with the rules and regulations promulgated by him, is authorized to make available to a coastal state grants of up to 50% of the costs of acquisition, development, and operation of estuarine sanctuaries for the purpose of creating natural field laboratories to gather data and make studies of the coastal zone. The Federal share of the cost for each sanctuary shall not exceed $2,000,000. No Federal funds received pursuant to section 305 or section 306 shall be used for the purpose of this section.

Similar in some respects to the purposes and guidelines of the Coastal Zone Management Program, the Estuarine Sanctuary Program is an opportunity for coastal states, not a requirement, to receive some Federal funding for taking action to identify, acquire and/or manage fragile, valuable or outstanding areas in their coastal zones. "Estuarine sanctuary" is defined by the Act as:

[3] Source: Staff, Office of Coastal Zone Management, June 26, 1975.

> . . . a research area which may include any part or all of an estuary, adjoining transitional areas and adjacent uplands, consistent to the extent feasible a natural unit, set aside to provide scientists and students the opportunity to examine over a period of time the ecological relationships within the area.

The purposes of the Program are to provide up to 50% Federal matching grants to states to encourage them to protect a variety of coastal zone ecosystems for long term scientific and educational uses and to provide low-intensity recreational use and aesthetic value. These systems should be chosen to represent the ecological and regional differentiations of coastal areas. A coastal state is defined as any U.S. state bordering on the Atlantic, Pacific, or Arctic Oceans, the Gulf of Mexico, Long Island Sound, Great Lakes or Puerto Rico, the Virgin Islands, Guam, and American Samoa.

The Program began in FY 1974 with a one-time Congressional appropriation of $4 million. In FY 1975 no new funds were added, but there was a carry-over of $3.175 million from 1974. For FY 1976, $6 million have been requested; there remains a $1.35 million carry-over from the original appropriation in FY 1974.

The program was administered by one person during 1975.

To date there have been two estuarine sanctuaries established: one in Oregon and one in Georgia.

A coastal state wishing to participate in the Program must submit a plan to the Office of Coastal Zone Management through the state agency handling its Coastal Zone Management Program, taking into account the guidelines established by The National Oceanic and Atmospheric Administration. The plans must include descriptions of: intended research uses and benefits to the overall Coastal Zone Management program; proposed management techniques; existing and potential uses; assessment of environmental and socio-economic impacts of declaring an area a sanctuary; planned or anticipated land and water use; and controls for contiguous lands.

Estuarine sanctuaries established through this Program are not required to have legal protection, nor are they established in perpetuity through any requirement by the Federal government. Sanctuaries may be altered or turned over for other types of uses at the discretion of the state.

Contact:

Acting Senior Scientist for
Coastal Zone Management
NOAA, U.S. Department of Commerce
Page One Building
3300 Whitehaven Street, N.W.
Washington, DC 20245

(c) Marine Sanctuaries Program

The Marine Sanctuaries Program offers Federal recognition of a marine area through a designation process. No grants are involved. The program was established under Title III of the Marine Protection, Research and Sanctuaries Act of 1972 (P.L. 92-532; 16 U.S.C. 1431-1434), also known as the Ocean Dumping Bill.

The eligible areas and the purposes of designation are described in section 302(a) of the Act:

> The Secretary (of Commerce), after consultation with the Secretaries of State, Defense, the Interior, and Transportation, the Administrator, and the heads of other interested Federal agencies, and with the approval of the President, may designate as marine sanctuaries those areas of the ocean waters as far seaward as the outer edge of the Continental Shelf, as defined in the Convention of the Continental Shelf (15 U.S.T. 74; TIAS 5578), of other coastal waters where the tide ebbs and flows, or of the Great Lakes and their connecting waters, which he determines necessary for the purpose of preserving or restoring such areas for their conservation, recreational, ecological, or esthetic values. The consultation shall include an opportunity to review and comment on a specific proposed designation.

A marine sanctuary may include waters under the jurisdiction of a state (which extend seaward to the three-mile limit) or waters as far seaward as the outer edge of the Continental Shelf (up to, and including the 200 meter depth). The landward limits of a sanctuary may extend as far as the area where the tide ebbs and flows along a coast, which can include a river, bay or body of water which abuts the Atlantic, Pacific or Arctic Oceans, any of the Great Lakes or the Gulf of Mexico. The landward limits will be determined individually for each marine sanctuary.

This designation program was designed to provide recognition and additional specific protection to a marine area in whatever fashion is agreed upon by the state and Federal agencies involved in each sanctuary.

While certain Federal agencies (such as the U.S. Coast Guard) already have specific jurisdiction within the three-mile limit, the Act provides for the participation of other Federal agencies in the development of each sanctuary's regulations, and, depending on the regulations which are accepted by the state and Federal participants, the involvement of additional Federal agencies in the enforcement of the regulations inside the three-mile limit as well as within the waters described over the Continental Shelf.

This involvement of Federal agencies in waters (within the three-mile limit) otherwise primarily administered by the individual coastal states is further underscored by authorization of civil penalties not to exceed $50,000 for each violation of a regulation established for a designated area (section 303(a)), and by the inclusion of a designated area within the jurisdiction of the U.S. district courts.

The designation process involves consultation with the responsible officials of the state involved. A site can be nominated by a private party, a state or state agency, or a local government. Once a site has been nominated, a public hearing must be held in the area(s) most directly affected no sooner than thirty days after announcement in the *Federal Register.*

Designation outside the three-mile limit takes effect immediately after designation. For those portions within the three-mile limit, designation becomes effective 60 days after notice of designation is published in the *Federal Register,* unless, according to section 302(b) of the Act,

> . . . the Governor of any State involved shall, before the expiration of the sixty-day period, certify to the Secretary that the designation, or a specified portion thereof (within the three-mile limit), is unacceptable to his State, in which case the designated sanctuary shall not include the area certified as unacceptable until such time as the Governor withdraws his certification of unacceptability.

The Program was not designed to prohibit off-shore drilling within a sanctuary; a sanctuary proposal must state whether or not off-shore drilling would be permitted.

One marine sanctuary has been designated. On January 30, 1975, the site of the sunken ship the *Monitor* was designated. Although the ship lies outside North Carolina's three-mile limit, the Governor of that state nominated the site and participated in the designation process and the official dedication ceremony.

A second site is in the process of designation in Florida. This Key Largo site will be managed as a marine sanctuary for the recreational and aesthetic uses of its natural marine ecology values. The original proposal included waters within the state's three-mile limit which have since been eliminated from consideration because of conflicts with special regulations already in existence for a state park originally included within the site. Regulations for the new proposed site, which will not include areas inside Florida's three-mile limit, are being proposed by Florida state agencies and will be submitted later to Federal agencies involved. It is interesting to note here that jurisdiction is not reciprocal; the Act

does not provide for the delegation to states of surveillance or enforcement authority outside their three-mile limits.

A third site under discussion is Port Royal Sound in South Carolina.

While the Act authorized appropriations of up to $10 million for FY 1973, FY 1974, and FY 1975, the Program has received no Congressional funds since it began in FY 1973. It operated in FY 1975 on $65,000 allocated from the Office of Coastal Zone Management. One person administers the program with part-time assistance from Office of Coastal Zone Management staff.

Due to the absence of substantial funding and subsequent staff limitations, no comprehensive national inventory work of possible sanctuary sites has been conducted as envisioned in the early stages of the program.

Contact:

Acting Senior Scientist for
Coastal Zone Management
NOAA, U.S. Department of Commerce
Page One Building
3300 Whitehaven Street, N.W.
Washington, DC 20235

13.2 The Endangered Species Act[4]

Although endangered and threatened species constitute only a few of the variety of species that should be conserved in the United States, they are protected by specific Federal Legislation. The purpose of the Endangered Species Act of 1973 (16 U.S.C. 1531-1543) is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, (and) to provide a program for the conservation of such species and threatened species . . ." (section 1531). Thus the Act bears directly on the preservation of natural areas; indeed, this is the reason it has been repeatedly referred to in the Chapters preceding the present one.

Policy

Section 1531 of Title 16 declares, *inter alia:*

(1) various species of fish, wildlife, and plants in the United States have been rendered extinct as a consequence of economic growth and development untempered by adequate concern and conservation;
(2) other species of fish, wildlife, and plants have been so depleted in numbers that they are in danger of or threatened with extinction;
(3) these species of fish, wildlife, and plants are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people;
(4) encouraging the States and other interested parties through Federal financial assistance and a system of incentives, to develop and maintain conservation programs which meet national and international standards is a key to meeting the Nation's international commitments and to better safeguarding, for the benefit of all citizens, the Nation's heritage in fish and wildlife.

Definitions

Selected definitions from section 1532 indicate the biological scope of the Act. An important change in the 1973 Act (two prior Acts dealing with endangered species had been passed in the 1960's) was the addition of plants to fish and wildlife in the definition of "species".

(1) The term "species" includes any subspecies of fish or wildlife or plants and any other group of fish or wildlife of the same species or smaller taxa in common spatial arrangement that inter-breed when mature.
(2) The term "endangered species" means any species which is in danger of extinction throughout all or a significant portion of its range other than a species of the Class Insecta determined by the Secretary

[4] This section describes the Act. For description of and facts and figures on the Endangered Species Program, see Chapter Three and Technical Appendix 3(f).

to constitute a pest whose protection under the provisions of this Act would present an overwhelming and overriding risk to man.

(3) The term "threatened species" means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

(4) The term "plant" means any member of the plant kingdom, including seeds, roots and other parts thereof.

(5) The terms "conserve," "Conserving," and "conservation" mean to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Determination of Endangered Species and Threatened Species

Responsibility for determination of species status is not confined to the Secretary of the Interior but extends also to the Secretary of Commerce due to the Secretary of Commerce's responsibility under the 1972 Marine Mammal Protection Act and certain treaties and conventions on international trade and endangered species. In making determinations the appropriate Secretary is required in a rather vague mandate to consult with the affected states, generally interested persons and organization, and other countries. With respect to non-migratory species, however, the law requires formal notice in the *Federal Register* of the contemplated action, a comment period, and publication of comment summaries:

(a) General—(1) The Secretary shall by regulation determine whether any species is an endangered species or a threatened species because of any of the following factors:

(1) the present or threatened destruction, modification, or curtailment of its habitat or range;

(2) overutilization for commercial, sporting, scientific, or educational purposes;

(3) disease or predation;

(4) the inadequacy of existing regulatory mechanisms; or

(5) other natural or manmade factors affecting its continued existence

(b) Basis for Determination—(1) The Secretary shall make determinations required by subsection (a) of this section on the basis of the best scientific and commercial data available to him and after consultation, as appropriate, with the affected States, interested persons and organizations, other interested Federal agencies, and, in cooperation with the Secretary of State, with the country or countries in which the species concerned is normally found or whose citizens harvest such species on the high seas; except that in any case in which such determinations involve resident species of fish or wildlife, the Secretary of the Interior may not add such species to, or remove such species from, any list published pursuant to subsection (c) of this section, unless the Secretary has first—

(A) published notice in the Federal Register and notified the Governor of each State within which such species is then known to occur that such action is contemplated;

(B) allowed each such State 90 days after notification to submit its comments and recommendations, except to the extent that such period may be shortened by agreement between the Secretary and the Governor or Governors concerned; and

(C) published in the Federal Register a summary of all comments and recommendations received by him which relate to such proposed action . . . section 1533(b) (1)

Provision for public initiative and participation is made by requiring the Secretary to conduct a review of any proposed listing or delisting upon the petition of an in-

terested person, but only if "in his judgment" such person has presented evidence which warrants such review.

Listing endangered species in the *Federal Register* and revising the list is the responsibility of the Secretary of the Interior;

> The Secretary of the Interior shall publish in the Federal Register, and from time to time he may by regulation revise, a list of all species determined by him or the Secretary of Commerce to be endangered species and a list of all species determined by him or the Secretary of Commerce to be threatened species. Each list shall refer to the species contained therein by scientific and common name or names, if any, and shall specify with respect to each such species over what portion of its range it is endangered or threatened (section 1533(c)).

In recognition of the complexities attached to the addition of plants to the universe of species which were eligible for determination and protection, the Secretary of the Smithsonian Institution was directed to provide assistance in this connection;

> The Secretary of the Smithsonian Institution, in conjunction with other affected agencies, is authorized and directed to review (1) species of plants which are now or may become endangered or threatened and (2) methods of adequately conserving such species, and to report to Congress, within one year after the date of the enactment of this Act, the results of such review including recommendations for new legislation or the amendment of existing legislation. (section 1541)

A report listing endangered and threatened species of plants was published by the Smithsonian Institution late in 1974.[5]

Prohibitions

The second major operational element of the law is the list of acts affecting endangered species directly prohibited. The following is only part of the entire list contained in section 1537:

> (a)(1) Except as provided in sections 1535(g)(2) and 1539 of this title, with respect to any endangered species of fish or wildlife listed pursuant to section 1533 of this title it is unlawful for any person subject to the jurisdiction of the United States to—
>
> (A) import any such species into, or export any such species from the United States;
>
> (B) take any such species within the United States or the territorial sea of the United States;
>
> (C) take any such species upon the high seas;
>
> (D) possess, sell, deliver, carry, transport, or ship, by any means whatsoever, any such species taken in violation of subparagraphs (B) and (C);
>
> (E) deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of a commercial activity, any such species;
>
> (F) sell or offer for sale in interstate or foreign commerce any such species; or
>
> (G) violate any regulation pertaining to such species or to any threatened species of fish or wildlife listed pursuant to section 1533 of this title and promulgated by the Secretary pursuant to authority provided by this chapter.
>
> (2) Except as provided in section 1535(g)(2) and 1539 of this title, with respect to any endangered species of plants listed pursuant to section 1533 of this title, it is unlawful for any person subject to the jurisdiction of the United States to—
>
> (A) import any such species into, or export any such species from, the United States;
>
> (B) deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of a commercial activity, any such species;
>
> (C) sell or offer for sale in interstate or foreign commerce any such species; or
>
> (D) violate any regulation pertaining to such species or to any threatened species of plants listed pursuant to section 1533 of this title and promulgated by the Secretary pursuant to authority provided by this chapter.

Where threatened, as opposed to endangered, species are involved, the Secretary of Interior is empowered by section

[5] *Report on Endangered and Threatened Plant Species of the United States,* Smithsonian Institution, December 15, 1974.

1533(d) to issue regulations deemed "necessary and advisable for the conservation of such species."

Land Acquisition

The Act vests authority in the Secretary of Interior to acquire land for purposes of the Act in addition to any other land acquisition authority vested in him, as well as authorizing him to use the authority under other Acts. However, no new funds are authorized for land acquisition, nor is the funding level of the Land and Water Conservation Fund Act increased.[6]

> Program—The Secretary of the Interior shall establish and implement a program to conserve (A) fish or wildlife which are listed as endangered species or threatened species pursuant to section 1533 of this title or (B) plants which are concluded in Appendices to the Convention. To carry out such program, he—
>
> (1) shall utilize the land acquisition and other authority under the Fish and Wildlife Act of 1956, as amended, the Fish and Wildlife Coordination Act, as amended, and the Migratory Bird Conservation Act, as appropriate; and
>
> (2) is authorized to acquire by purchase, donation, or otherwise, lands, waters, or interest therein, and such authority shall be in addition to any other land acquisition authority vested in him. (section 1534(a))
>
> Acquisitions—Funds made available pursuant to the Land and Water Conservation Fund Act of 1965, as amended, may be used for the purpose of acquiring lands, waters, or interests therein under subsection (a) of this section. (section 1534(b))

The section concerning cooperation with a state requires consultation with the affected state before acquisition.

Interagency Cooperation

Although the language of the law requiring Federal agencies to insure that their actions do not adversely affect endangered or threatened species is quite strong, a possible weakness is that there is no administrative framework to ensure that agencies do in fact take into account the effect on endangered species of their actions.

> The Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this title. All other Federal departments and agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 1533 of this title and by taking such action necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of such endangered species and threatened species or result in the destruction or modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with the affected States, to be critical. (section 1536)

Cooperation with the states[7]

In addition to requiring consultation with the states in making determinations and before acquiring land, the statute provides for two kinds of agreements between the Secretary and individual state governments: management agreements for the administration and management of an area established for the conservation of endangered species or threatened species; and cooperative agreements to assist in the implementation of state programs. The Secretary is authorized to provide financial assistance to a state which has entered into a cooperative agreement "to assist in development of programs for the conservation of endangered and threatened species." The cooperative agreements must state the actions to be taken by the Secretary and the state; the benefits that are expected to be derived; and the estimated costs of the

[6] For a list of areas acquired for the protection of endangered species habitat, primary species, acreages and obligated funds, see 3.4, Table I.

[7] 16 U.S.C. 1535.

Program. The Federal share of Program costs cannot exceed two-thirds of the estimated costs, except when two or more states enter into a joint agreement in which case the Federal share may be increased to seventy-five percent.

In order for a state to be eligible for a cooperative agreement and financial assistance the state must have an "adequate and active" program meeting the following criteria:

> (1) Authority resides in the State agency to conserve resident species of fish or wildlife determined by the State agency or the Secretary to be endangered or threatened;
>
> (2) the State agency has established acceptable conservation programs, consistent with the purposes and policies of this Act, for all resident species of fish or wildlife in the State which are deemed by the Secretary to be endangered or threatened, and has furnished a copy of such plan and program together with all pertinent details, information, and data requested to the secretary;
>
> (3) the state agency is authorized to conduct investigations to determine the status and requirements for survival of resident species of fish and wildlife;
>
> (4) the State agency is authorized to establish programs, including the acquisition of land or aquatic habitat or interests therein, for the conservation of resident endangered species or threatened species; and
>
> (5) provision is made for public participation in designating resident species of fish or wildlife as endangered or threatened. (section 1535(c)).

The Act authorized the appropriation of up to $10,000,000 through June 30, 1977, for financial assistance to the states.

State programs and activities are subject to review at no greater than annual intervals.

International Cooperation[8]

The promotion of international cooperation under the Act takes five forms:

1. Financial assistance, used in the development and management of foreign programs using either foreign currencies accruing to the U.S. or funds appropriated to carry out functions and responsibilities under the Act;
2. Encouragement of foreign programs;
3. Assigning U.S. personnel to assist with foreign programs or conducting or providing financial assistance for educational training of foreign personnel;
4. Law enforcement and investigations and research abroad;
5. Implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (March 3, 1973), and the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere.

13.3 The National Environmental Policy Act

The National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) is a short but extremely important piece of environmental legislation. It does not create any sort of protected natural areas program, but it helps ensure that existing Federal programs will not be altered or impacted upon by outside activities without full appreciation of the consequences.

Objectives

> Section 2 states objectives of the Act:
>
> To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation. . . .

Section 101 (a) recognizes, *inter alia,* "the profound impact of man's activity on the interrelations of all components of the natural environment," and declares it to be "continuing policy" to create and maintain conditions under which man and nature can exist in productive harmony. . . ." In

[8] 16 U.S.C. 1537.

order to carry out this policy, 101 (b) pledges the Federal government, *inter alia,* to fulfill the responsibilities of each generation as trustee of the environment for succeeding generations, to assure safe, productive and pleasing surroundings, and to:

(4) preserve important historic, cultural, and *natural* aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice.[9]

Requirements

The major requirement imposed by the Act is that imposed by section 102 (2)(c). This imposes on all Federal agencies the duty to:

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—

(i) the environmental impact of the proposed action,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action,

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review process. . . .

[9] Emphasis added.

Summary Chart

(as of October 31, 1975)

Summary Chart

(as of October 31, 1975)

Agency	Total Acreage	Research Natural Areas Units/Acreage	National Natural Landmarks Units/Acreage	Wilderness Areas Units/Acreage
Bureau of Land Management	450,000,000 (approx.)	19/44,675.16[1]	35/2,356,320[2,6]	none
Department of Defense (including the Army Corps of Engineers)	30,735,829	4/768[11]	11/320,802[2,13]	none
Energy Research and Development Administration	2,000,000 (approx.)	2/75,000	1/263,680[4,6,13]	none
Fish and Wildlife Service	33,000,000[5] (approx.)	172/1,228,533	21/2,414,912[2,6]	41/575,620
Forest Service	187,283,128[7]	117/126,732	22/249,163[2,6]	85/11,522,194
National Park Service	27,788,724[9]	62/266,732	[10]	4/201,000

Agency	Wild and Scenic Rivers Units/Lengths in Miles	National Trails Units/Lengths in Miles	Other Agency Programs Units/Acreage	Name
Bureau of Land Management	2/91.15 miles[3]	5/216 miles	23/390,212.41	Outstanding Natural Areas
			11/234,003	Primitive Areas
			29/2,640,222	Recreation Lands
			3/74,353	Other (Natural Areas)
Department of Defense (including the Army Corps of Engineers	none	2/1.25 miles[14] (Recreational)	Various Department of Defense installations have identified and protected natural areas on an *ad hoc* basis, and not as part of any organized program. No acreage figures are available for these areas.	
Energy Research and Development Administration	none	none	no figures available	Research Reference Areas
Fish and Wildlife Service	none	none	29/6,439	Public Use Natural Areas
Forest Service	7/585.55 miles[8]	2/51 miles (Recreational)	19/3,407,634	Primitive Areas
		2/2,575 miles (Scenic)[12]	136/989,744	Special Interest Areas
National Park Service	3/243 miles	2/464 miles (Scenic)[12]	none (but 25,826,745 acres of total Park Service acreage is classified as "natural area")	

Summary Chart Footnotes

[1]Additional areas withdrawn simply as "natural areas" are not included in this figure, but are under "Other Agency Programs" on the chart.

[2]The acreage figure does not accurately reflect this agency's National Natural Landmarks program since other agencies jointly administer some of these areas. An acreage breakdown by agency on jointly administered Landmarks is often not available.

[3]These are jointly administered with the Forest Service. The mileage figure is for the portions administered by the Bureau of Land Management.

[4]This is jointly administered with the U.S. Air Force. An acreage breakdown by agency is not available.

[5]These are lands within the "National Wildlife Refuge System"; there are actually about 34,000,000 acres under the Fish and Wildlife Service's administration.

[6]This figure is from the National Natural Landmarks Staff of the National Park Service.

[7]This is the acreage held by the Forest Service within the National Forest System. Gross acreage of the National Forest System is 226,122,857 acres.

[8]Two of these Rivers are jointly administered with the Bureau of Land Management. The mileage figure is for the portions administered by the Forest Service.

[9]This is the acreage of Federal land administered by the National Park Service. Gross acreage as of June 30, 1975, administered by the National Park Service is 31,027,077 acres.

[10]Although the National Park Service administers the program, there are no National Natural Landmarks on Park Service lands.

[11]These four areas are administered by the U.S. Air Force.

[12]One of these, the Appalachian Trail, is jointly administered by the Park Service and the Forest Service. The other, the Pacific Crest Trail, is administered by the Park Service, the Forest Service and the Bureau of Land Management. The mileage figures given are for the first two agencies only. The Bureau's mileage for the Pacific Crest Trail—167 miles—is included in the Bureau's National Trails total mileage figure.

[13]This acreage figure includes a Landmark jointly administered between the U.S. Air Force and the Energy and Research Development Administration.

[14]These are administered by the Army Corps of Engineers.

INDEX

The subjects, authors, laws, etc., listed here are indexed by section number rather than by page number. If the subject, etc., is discussed in a footnote rather than the text of the section, this is indicated—for example, "2.1 fn."

Especially important references are italicized.

☆ U.S. GOVERNMENT PRINTING OFFICE : 1977 O—239-060

Clemson University
3 1604 004 718 492

DATE DUE

Demco, Inc. 38-293