

natural and cultural resource management program
an addendum to the general management plan
september 1980

CHANNEL ISLANDS

NATIONAL PARK / CALIFORNIA




**NATURAL AND CULTURAL RESOURCE
MANAGEMENT PROGRAM**

**AN ADDENDUM TO THE
GENERAL MANAGEMENT PLAN
FOR
CHANNEL ISLANDS NATIONAL PARK**

Prepared by

**Channel Islands National Park
National Park Service
U.S. Department of the Interior**

September 1980



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CULTURAL AND NATURAL RESOURCES PROJECT PROGRAMMING

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INTRODUCTION

The Management Program is the action document which implements the natural and cultural resource management components of the General Management Plan and consists of the following.

1. Project Statements that serve as "blueprints" for proposed actions.
2. A Project Programming Sheet listing each project and indicating:
 - its relative park priority
 - funding and manpower estimates
 - a time sequence for a five-year period.

Project Statements are listed in numerical order by Project Number and include only those which have been written at this time. Others will be added as they are prepared.

While the General Management Plan is concerned with a long term action program, the Management Program addresses the next five years. The program presented here begins with Fiscal Year 1981. Each subsequent year the Management Program will be revised and updated for a new five-year period as work is completed, priorities change, and new projects are proposed. Park priorities compete with regional and national priorities for funding and may not be funded in the order indicated in the programming sheet.

CULTURAL AND NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Channel Islands National Monument, Western Region.
2. PROJECT NAME AND NUMBER: Impact and Mitigation of Visitor Use of the Intertidal Zone at Frenchy's Cove, Anacapa Island. (CHIS-N3).
3. STATEMENT OF PROBLEM: Preliminary studies have indicated that visitor use of the intertidal zone at Frenchy's Cove has resulted in a negative impact to this area. Species diversity and abundance appear to have been reduced due to trampling and rock turning. Further study is required to document seasonal fluctuations and to eliminate other factors from the impacts associated with visitor use. Once this is accomplished, visitor management techniques need to be tested and evaluated. Successful management techniques should then be implemented to allow for recovery and long term perpetuation of these valuable resources.
4. WHAT HAS BEEN DONE: From 1975-1978, Bureau of Land Management intertidal studies were completed at various island and mainland sites to describe baseline conditions for oil and gas development activities. These studies incidentally noted that potential impact to the study area was resulting from visitor activities. In 1978, preliminary National Park Service funded a portion of the BLM studies which documented that visitation was potentially causing a negative impact to the intertidal zone. No work has been completed or proposed since the return of marine resource management to the State Department of Fish and Game.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: Initiate cooperative studies between the California Department of Fish and Game and National Park Service designed to document and alleviate impact to this fragile zone. Previously established study sites would be supplemented with transects in additional locations in order to assess areas both free from and subject to human use, varied habitat factors and seasonality. Varied visitor control measures designed to mitigate human impact would be tested over a significant period of time. Recommendations regarding the success and costs/benefits of designs would be made.

Year one would involve reevaluation of previously established sites and positioning of new transects. Sampling of these sites would continue in year two. Designs for mitigation through visitor control would be initiated this year. Work in year three would evaluate effectiveness of those various measures. Work in year four and five would monitor the success of implemented final recommendations.
6. LENGTH OF TIME NEEDED: Five years.
7. WHAT WILL HAPPEN IF NOT IMPLEMENTED: Impact to the intertidal zone will continue. The quality of visitor experience will continue to decline, perception of the quality of the island ecosystem will approach that of the heavily impacted mainland coast. The value of national parks and State Ecological Reserves as sanctuaries from over use will be questioned. Without information gathered in this study, managers will not be able to make recommendations for the best method to protect the intertidal zone through visitor control.

8. ALTERNATIVES: a. No action. b. Wait for the State Department of Fish and Game to initiate studies. Since this agency has not traditionally concerned itself with methods to mitigate human impact from trampling in tidepools, funding is probably not imminent. c. Recommend that the State close the area to visitation to allow recovery. This would significantly lessen the quality of visitor experience on Anacapa.
9. PERSONNEL: Contracted research personnel. Department of Fish and Game and National Park Service biologists to provide limited sampling assistance in order to gain insight into the problem and potential solutions. Logistical support to be provided by both agencies.
10. ADMINISTRATION AND LOGISTICS:

	1st	2nd	3rd	4th	5th
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Personal Services

Other than Personal
Services

GRAND TOTAL	30,000	37,000	25,000	36,000	27,500
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Funds Available in Park Base

Funds Requested from Region*	15,000	16,500	12,500	18,000	13,750
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*This is one-half total cost, providing matching funds are granted by the State.

<u>On Form</u>	<u>Date Submitted</u>
10-237 <input type="checkbox"/>	_____
10-238 <input type="checkbox"/>	_____
10-250 <input type="checkbox"/>	_____
10-451 <input type="checkbox"/>	_____

11. REFERENCES AND CONTACTS:

Dr. Paul Dayton, Scripps Institute of Oceanograph, LaJolla, CA
 Dr. Mark Littler, University of California, Irvine, CA
 Dr. Joy Zedler, San Diego State University, San Diego, CA
 Littler, Mark M. 1978. Assessments of Visitor Impact on Spatial Variations
 in the Distributional Abundance of Rocky Intertidal Organisms on Anacapa Island
 CA, prepared for National Park Service, Denver Service Center, CX-8000-8-0010.

12. DATE OF PROJECT STATEMENT SUBMISSION: August 1980.

CULTURAL AND NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Channel Islands National Monument, Western Region.
2. PROJECT NAME AND NUMBER: Black Rat (Rattus rattus) Eradication Program on Anacapa Island (CHIS N-5).
3. STATEMENT OF PROBLEM: The black rat, an Old World species, has inhabited Anacapa Island for several years. It is potentially undesirable for several reasons, including its possible role as: a disease carrier; a destroyer of property; a serious competitor with the native deer mouse; a predator on various species of birds and their eggs, on intertidal organisms, and on native plants; and an unsettling presence to monument personnel and visitors alike. Little concrete information on the actual impact of the rat on the island ecosystem has been gathered, but policy and good sense dictate that an attempt should be made to eradicate or at least control this species on Anacapa Island.
4. WHAT HAS BEEN DONE: Basic studies were made in the early 1970s concerning the Anacapa black rat, primarily from the point of view of eradication, by Rod Hiemstra from the County of Ventura, but were not carried through to implementation. The 1979 Natural Resources Study by the Santa Barbara Museum of Natural History addressed the black rat and resulted in the design of a proposed eradication program for this animal on Anacapa Island. Throughout the years, a small number of rats has been eliminated by trapping, particularly around the buildings.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: Initially, the plan designed in the Museum study referred to above will be accepted, but before its implementation on the island, both field and laboratory studies will be undertaken concerning the impacts of the eradication program on the other island resources, particularly the secondary effects of the anti-coagulant poison "Pival" on predatory birds. As a result of this study, changes in design of the actual eradication project may be made. The project will be conducted first only on East Anacapa and results, as well as impact, will be continually monitored. With refinements made at that time, the program will then be undertaken on Middle and West Anacapa Islands. Should it prove impossible to totally eliminate the rat from Anacapa, annual control measures will be designed, and funds for their yearly implementation will be sought.
6. LENGTH OF TIME NEEDED: Four years.
7. WHAT WILL HAPPEN IF NOT UNDERTAKEN: The black rat will remain a common and important member of the Anacapa ecosystem, a condition unacceptable under NPS policy. The rat will continue to play an unknown but possibly detrimental role with many other biota of the island. In addition, the rat will remain destructive to human facilities and supplies on the island, as well as a potential vector of dangerous diseases.
8. WHAT ARE THE ALTERNATIVES: a. No action. b. Attempt to proceed with the actual eradication program without addressing the possible impacts. It is unlikely that, without the initial studies, enough information is present to satisfy NEPA documentation. c. Separate the impact studies from the actual eradication program in order to fund these two phases of the rat projects from separate sources, and proceed at the present time only with the impact studies.

9. PERSONNEL: Scientific personnel (NPS or contract) for the impact study. Contract pest eradication expertise, aided by NPS personnel, required for the actual eradication program, along with continuing scientific consultation, to monitor.
10. ADMINISTRATION AND LOGISTICS:

	1st	<u>Year in Program Sequence</u>			5th
		2nd	3rd	4th	
Personal Services	20,000	20,000	17,000	17,000	
Other than Personal Services	<u>10,000</u>	<u>10,000</u>	<u>7,500</u>	<u>7,500</u>	<u> </u>
GRAND TOTAL	30,000	30,000	25,5000	24,500	
Funds Available in Park Base	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
Funds Requested from Regional Office	30,000	30,000	24,500	24,500	

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11. REFERENCES AND CONTACTS:

Collins, Paul W. 1979. Vertebrate zoology: the biology of introduced black rats on Anacapa and San Miguel Islands. Pages 14.1-14.49 in D. W. Power, ed. Natural Resources Study of the Channel Islands National Monument, California, National Park Service, Denver Service Center Contract No. CX-2000-8-0040.

Hiemstra, Rod. 1979. A program for control of the black rat on Anacapa Island. Pages 16.1-16.28 in D. W. Power, ed. Natural Resources Study of the Channel Islands National Monument, California, National Park Service Center Contract No. CX-2000-8-0040.

12. DATE OF PROJECT STATEMENT SUBMISSION: August 1980

CULTURAL AND NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Channel Islands National Monument, Western Region.
2. PROJECT NAME AND NUMBER: Exotic Plant Eradication Feasibility (CHIS N-6).
3. STATEMENT OF PROBLEM: A management goal for natural areas in the National Park System is to eliminate all exotic biota, when feasible. The RMP identifies several species of exotic plants which, by virtue of small numbers or restricted island range, will be relatively easy to eliminate. Others, such as various annual grasses, or the crystalline iceplant (Mesembryanthemum crystallinum), will be much more difficult, and may prove impossible, to eliminate. It is these plants, however, which provide greatest competition with native species, and it is their widespread presence which most alters the aura of the islands. But without further work to indicate the actual extent of their influence on the islands, and an inquiry made as to the possible detrimental effects of eradication, it cannot be unequivocally stated that total removal of all the exotic plants would be in the best interest of the islands' ecosystems. Moreover, experimentation must be made of the various types of eradication methods available.
4. WHAT HAS BEEN DONE: The Natural Resources Study by the Santa Barbara Museum of Natural History (1979) studied vegetation on the islands, including updating of plant lists, the historic fluctuations in plant communities, the formulation of community maps, and the establishment of transects to monitor changes in these communities. General suggestions to minimize the impacts of exotic vegetation were included as part of the study.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: Existing information will be gathered regarding exotic plant eradication experiments and techniques, as well as specific life history studies of those plants identified as target species. Field studies will be undertaken to ascertain the true extent of these exotics' influence on native plants, animals, and on the relationship between these biological, chemical, and manual controls, will be tested on sample plots, and results will be discussed, with respect to effectiveness, cost, ease, and detrimental and/or positive resulting conditions. A report discussing all the above items will be prepared, and will include alternative levels of control if total elimination proves unfeasible.
6. LENGTH OF TIME NEEDED: Three years.
7. WHAT WILL HAPPEN IF NOT UNDERTAKEN: Management will not know what methods of exotic plant eradication are most effective or least destructive, or even how important from an ecological viewpoint it is to remove the plants. Management will not have at its disposal a discussion of various alternatives, other than total elimination or doing nothing.

8. WHAT ARE THE ALTERNATIVES: a. No action. b. Attempt to actively manage the islands' vegetation without the information which would result from the study.
9. PERSONNEL: Contract research personnel, aided by monument personnel.
10. ADMINISTRATION AND LOGISTICS:

<u>Funding</u>	<u>Year in Program Sequence</u>				
	1st	2nd	3rd	4th	5th
Personal Services	13,500	13,500	13,500	_____	_____
Other than Personal Services	<u>8,000</u>	<u>8,000</u>	<u>8,000</u>	_____	_____
GRAND TOTAL	21,500	21,500	21,500		
Funds Available in Park Base	<u>0</u>	<u>0</u>	<u>0</u>		
Funds Requested from Regional Office	21,500	21,500	21,500	_____	_____
<u>On Form</u>	<u>Date Submitted</u>				
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10-238 <input type="checkbox"/>	_____				
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11. REFERENCES AND CONTACTS:

Hochberg, M., S. Junak, Dr. R. Philbrick, and Dr. S. Timbrook. 1979. Botany. Pages 5.1-5.85, in Dr. Power, ed., Natural Resources Study, Channel Islands National Monument, California. National Park Service, Denver Service Center Contract No. CX-2000-8-0040.

Vivette, Dr. N., Department of Botany, University of California, Berkeley, CA.

12. DATE OF PROJECT STATEMENT SUBMISSION: August 1980

NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Channel Islands National Monument, Western Region
2. PROJECT NAME AND NUMBER: Status of the Island Night Lizard (Xantusia riversiana) on Santa Barbara Island (CHIS N-13)
3. STATEMENT OF PROBLEM: The island night lizard is listed as "threatened" under the Endangered Species Act of 1973. As such, the National Park Service is legally obligated to have sufficient knowledge of this species so that management actions on Santa Barbara Island will not be detrimental to its status or that of its favored habitat. A field study of the Santa Barbara Island night lizard will result in specific knowledge of its biology, distribution, numbers, and requirements on this island.
4. WHAT HAS BEEN DONE: A field survey of the Santa Barbara Island night lizard was conducted in 1977 by contractors for the California Department of Fish and Game; lack of field time and the use of an island vegetational map of questionable accuracy resulted in population estimates and ranges of unreliable quality. More nearly complete and supposedly more reliable surveys were accomplished by the same contractor for the Department of Fish and Game on the island night lizard populations for the two nearby islands of San Clemente and San Nicolas. In 1979, the Santa Barbara Museum of Natural History published information on the island night lizard as part of its contract with the National Park Service; since much of this report relied on the Fish and Game study, its limitations were acknowledged.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: Initial work will concentrate on impacts to the lizard from proposed rabbit eradication. Subsequently, a field study, to include but not be limited to information on the lizards' life cycle, food habits, distribution, numbers, and ecological requirements, will be conducted; a population monitoring system will be recommended. Because of the species' status, permission will be obtained from the Office of Endangered Species of the U. S. Fish and Wildlife Service prior to such work.
6. LENGTH OF TIME NEEDED: Two years.
7. WHAT WILL HAPPEN IF NOT UNDERTAKEN: Management will not have basic information about this animal necessary to insure that actions on Santa Barbara Island do not adversely affect the status of this species; such a position would put the park in conflict with mandates of the Endangered Species Act of 1973.
8. WHAT ARE THE ALTERNATIVES: No action.
9. PERSONNEL: NPS scientists or contract research personnel.

10. ADMINISTRATION AND LOGISTICS:

<u>Funding</u>	<u>Year in Program Sequence</u>				
	1st	2nd	3rd	4th	5th
Personal Services	12,000	12,000	12,000		
Other Than Personal Services	<u>5,000</u>	<u>4,000</u>	<u> </u>	<u> </u>	<u> </u>
GRAND TOTAL	17,000	16,000	12,000		
Funds Available in Park Base	<u>0</u>	<u>0</u>			
Funds Requested from Regional Office	17,000	16,000	12,000		

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10-238 <input type="checkbox"/>	_____
10-250 <input type="checkbox"/>	_____
10-451 <input type="checkbox"/>	_____

11. REFERENCES AND CONTACTS:

Fellers, Gary. Western Regional Office, National Park Service,
San Francisco, CA.

Wilson, Roger L. 1978. A Biological Assessment of the Island Night Lizard. California Department of Fish and Game Contract No. S-1401.

Woodhouse, Charles D. 1979. Vertebrate zoology: the island night lizard on Santa Barbara Island. Pages 8.1-8.9 in D. W. Power, ed. Natural Resources Study of the Channel Islands National Monument, California. National Park Service, Denver Service Center Contract No. CX-2000-8-0040.

12. DATE OF PROJECT STATEMENT SUBMISSION: August 1980

CULTURAL AND NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Channel Islands National Monument, Western Region.
2. PROJECT NAME AND NUMBER: Santa Barbara Island European Rabbit Eradication Program (CHIS N-17).
3. STATEMENT OF PROBLEM: European rabbits (Oryctolagus) were most recently introduced onto Santa Barbara Island in the 1940s. Since that time, they have been effective grazers on island vegetation and are thought to have been particularly detrimental to certain species of native plants, including Dudleya traskiae, Endangered under the Endangered Species Act of 1973. In conjunction with aggressive exotic plants and with accidental fire, rabbits have contributed to continuation of unnatural biological conditions on the island. This restriction of native habitat has resulted in scarcity of several species of animals and plants, and the extermination of one endemic subspecies of land bird; in addition, the same conditions have probably encouraged accelerated erosion on the island. Resource managers and scientists have for years identified the continued presence of the European rabbits to be Santa Barbara Island's major problem.
4. WHAT HAS BEEN DONE: In the early 1950s, the rabbit population on Santa Barbara Island exploded. A rabbit control program was initiated in 1954 and continued until 1958; this program included both poisoning (strychine) and shooting. Since that time, the NPS has, to varying degrees, conducted control programs, primarily shooting. Superficial conditions as well as casual biological observations were recorded during many of these years. In 1976, rabbit exclosures were built around two Coreopsis gigantea patches, but no further work was accomplished before their removal the next year.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: Research will be conducted on Santa Barbara Island rabbit biology including but not limited to social behavior and periods of reproduction. Laboratory and field work will be undertaken to assess impacts of such eradication methods as poisoning, gassing, snaring, burrow destruction, and shooting by groups of people, on other biota of the island, especially special status species. Results of these studies will be the basis of formulation of an actual elimination program (originally conceived to be a multi-disciplinary approach beginning with Myxoma virus, followed by strychnine poisoning and shooting, for, it is hoped, 100 percent elimination); this program will be carried out after necessary permits have been obtained. Continuous monitoring of impacts will be carried on concurrent with the elimination program, which will be stopped and reevaluated if a problem develops. All dead rabbits found on the island will be collected and disposed of.
6. LENGTH OF TIME NEEDED: Three years.
7. WHAT WILL HAPPEN IF PROJECT NOT UNDERTAKEN: Rabbits will continue to be an exotic species destructive to native vegetation on Santa Barbara Island, since they cannot be eliminated by the present shooting program. If only the

physical reduction program is intensified, without attendant studies, sufficient knowledge will not be available to insure that other island resources will not be adversely affected, or to address requirements of the Endangered Species Act or NEPA: for such reason, necessary permission may not be forthcoming to see the project through to successful completion.

8. WHAT ARE THE ALTERNATIVES: a. No additional action. b. Renew strong elimination campaign without attendant impact studies, though such actions possible without these studies are unlikely to result in rabbit elimination. c. Initiate impact studies without commitment to follow through with elimination attempts.
9. PERSONNEL: Scientific personnel (NPS or contract) for the impact study. Contract pest eradication expertise, aided by NPS personnel, required for the actual eradication programs, along with continuing scientific consultation, to monitor.

10. ADMINISTRATION AND LOGISTICS:

	<u>Year in Program Sequence</u>				
	1st	2nd	3rd	4th	5th
Personal Services	23,000	24,000	15,000		
Other than Personal Services	<u>7,000</u>	<u>10,000</u>	<u>7,000</u>	_____	_____
GRAND TOTAL	30,000	34,000	22,000		
Funds Available in Park Base	<u>0</u>	<u>0</u>	<u>0</u>		
Funds Requested from Regional Office	30,000	34,000	22,000		

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10-238 <input type="checkbox"/>	_____
10-250 <input type="checkbox"/>	_____
10-451 <input type="checkbox"/>	_____

11. REFERENCES AND CONTACTS:

Weisbrod, Dr. A. R. Endangered Species Coordinator, National Park Service, Washington, D. C.

Woodhouse, Dr. Charles D. 1979. Vertebrate zoology: the European rabbit on Santa Barbara Island. Pages 13.1-13.31 in D. W. Power, ed. Natural Resources Study of the Channel Islands National Monument, California. National Park Service, Denver Service Center Contract No. CX-2000-8-0040.

12. DATE OF PROJECT STATEMENT SUBMISSION: August 1980

CULTURAL AND NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Channel Islands National Monument, Western Region
2. PROJECT NAME AND NUMBER: Historical-Archaeological Site Survey of Channel Islands National Monument (CHIS C-2).
3. STATEMENT OF PROBLEM: Though both an archaeological and a historical survey of the monument islands has been accomplished, no thorough on-ground surveys have been made of either historical or historical-archaeological sites on the monument islands. There is knowledge that such sites are present, but since very little actual information is known, these sites and their attendant resources are being lost through susceptibility to vandalism, weathering, and misguided management practices.
4. WHAT HAS BEEN DONE: In September 1978, an archaeological survey (by Greenwood) of known sites on Anacapa, San Miguel, and Santa Barbara Islands was completed; though its purpose was to address the archaeological potential of the islands, as well as to check known sites, several historical-archaeological areas were peripherally noted. In May 1979, a historical resource study (by Roberts) of the monument was completed; while it told the historical story of the monument, this study was not designed to study sites. Much of what is known regarding the occurrence and location of sites if found in the "Channel Islands Photographic Survey" (by Morgan); this project encompassed primarily historical sites of all the Channel Islands, and the combination of current and historical photographs, background information and, in many cases, historic site diagrams, makes this a particularly valuable reference source. Still, none of these reports offers a complete and scientifically accurate description of even the majority of the sites in the monument.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: Based upon literature search and upon personal interviews, develop a list of potential historical sites and tentative locations. Perform surveys of these sites, completing site forms for each. Collects objects in immediate danger of loss, and other items of special significance upon consultation with monument and regional NPS personnel. Develop a final report in which will be included site forms, historical background of each site, and recommendations for each site's management.
6. LENGTH OF TIME NEEDED: Two years.
7. WHAT WILL HAPPEN IF NOT UNDERTAKEN: Information on these cultural resources will be incomplete, if available at all, and in no case in a form useful to management. Without such information, management will not know the extent of a valuable and non-renewable resource, and unable to provide for its protection.
8. WHAT ARE THE ALTERNATIVES: a. No action. b. Rely on existing information as a basis for management decisions.

9. PERSONNEL: Contract scientists.

10. ADMINISTRATION AND LOGISTICS:

<u>Funding</u>	<u>Year in Program Sequence</u>				
	1st	2nd	3rd	4th	5th
Personal Services	30,000	25,000			
Other than Personal Services	<u>10,000</u>	<u>7,000</u>	_____	_____	_____
GRAND TOTAL	40,000	32,000			
Funds Available in Park Base	<u>0</u>	<u>0</u>			
Funds Requested from Regional Office	40,000	32,000			

<u>On Form</u>	<u>Date Submitted</u>
10-237 <input type="checkbox"/>	_____
10-238 <input type="checkbox"/>	_____
10-250 <input type="checkbox"/>	_____
10-451 <input type="checkbox"/>	_____

11. REFERENCES AND CONTACTS:

Greenwood, Robert S. 1978. Archeological Survey and Investigation, Channel Islands National Monument, California, National Park Service, Denver Service Center Contract No. CX-2000-7-0063

Morgan, Ronnie P. 1979. Channel Islands Photographic Survey, Santa Barbara (CA) Museum of Natural History.

Roberts, Lois W. 1979. Historic Resource Study, Channel Islands National Monument and San Miguel Island, California, National Park Service, Denver Service Center Contract No. CX-2000-7-0065.

12. DATE OF PROJECT STATEMENT SUBMISSION: August 1980

CULTURAL AND NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Channel Islands National Park, Western Region
2. PROJECT NAME AND NUMBER: Nidever Adobe Site Testing (CHIS C-3)
3. STATEMENT OF PROBLEM: The ruins of the adobe building built by George Nidever in the 1850s on San Miguel Island have been identified as a major resource in the San Miguel Island Archaeological District within the National Register of Historic Places. The Nidever Adobe is currently in imminent danger of total loss as a result of stream erosion, and decisions must be made regarding its future. Its importance indicates that stabilization should be attempted if this is both feasible and practical. If not, archaeological salvage, as well as recording by measured drawings and photographic survey should be undertaken.
4. WHAT HAS BEEN DONE: In September 1978, an archaeological survey (by Greenwood) of Anacapa, San Miguel, and Santa Barbara Islands was completed; though its purpose was to address the archaeological resources of the islands, the Nidever Adobe site was examined as well. Recommendation from this survey was that the site should be stabilized. In May 1979, a historical resource study (by Roberts) of the three islands was completed, with a recommendation that the adobe be preserved; this resulted in a nomination of the site to the National Register of Historic Places, though this was ultimately included in a broader nomination for the entire island.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: Survey of the Nidever Adobe site should be undertaken to address the potential of stabilization, from the viewpoints of possibility of success, environmental impact on the surrounding area, and cost effectiveness. Decision will be made in consultation with NPS cultural resource managers, regarding whether to stabilize this ruin. If so, plans will be developed to effect this protective action. If not, plans will be developed for archaeological salvage, recording, and monitoring. In both cases, the work will be implemented.
6. LENGTH OF TIME NEEDED: One year
7. WHAT WILL HAPPEN IF NOT UNDERTAKEN: Lack of sufficient information will preclude making an informed decision regarding advisability of stabilization. Without development of plans leading to either stabilization or salvage, a valuable cultural resource will be lost.
8. WHAT ARE THE ALTERNATIVES: a. No action, b. Proceed with survey without implementation of either salvage or stabilization, c. Decide to either stabilize or salvage ruin without sufficient consideration,
9. PERSONNEL: Professional archaeologist, crew.

10. ADMINISTRATION AND LOGISTICS:

<u>Funding</u>	<u>Year in Program Sequence</u>				
	1st	2nd	3rd	4th	5th
Personal Services	-	20,000	-	-	-
Other Than Personnel Services	-	<u>20,000</u>	-	-	-
GRAND TOTAL		\$40,000			
Funds Available in Park Base		0			
Funds Requested from Regional Office		\$40,000			

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10-250	_____
10-451	_____

11. REFERENCES AND CONTACTS:

Greenwood, Roberta S. 1978. Archaeological Survey and Investigation, Channel Islands National Monument, California, National Park Service, Denver Service Center Contract No. CX-2000-7-0063

Morgan, Ronnie P. 1979. Channel Islands Photographic Survey, Santa Barbara Museum of Natural History, California

Roberts, Lois W. 1979. Historic Resource Study, Channel Islands National Monument and San Miguel Island, California, National Park Service, Denver Service Center Contract No. CX-2000-7-0065.

12. DATE OF PROJECT STATEMENT SUBMISSION: August 1980

CULTURAL AND NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Channel Islands National Monument, Western Region
2. PROJECT NAME AND NUMBER: San Miguel Island Archaeological Site Survey (CHIS C-4).
3. STATEMENT OF PROBLEM: Of 548 archaeological sites known from San Miguel, only 159 were examined as a part of Roberta Greenwood's Archaeological Survey of the monument (1978). Her work yielded clarification of site records, additions of new records, much more complete and useful mapping of locations, and, as well, discovered and warned of several management problems (such as human remains eroding from some sites) needing active solution. Not revisited are still 388 known sites, and for this majority of the sites on the island no up-to-date information is known.
4. WHAT HAS BEEN DONE: Preliminary archeological site surveys on San Miguel Island were undertaken by Charles Rozaire in 1958, continuing through the early 1970s. As part of her NPS contract, Greenwood was asked to revisit 28 percent of Rozaire's sites, totalling 155 of the 543 known at that time. Greenwood found 154 of these sites, and identified five new ones, filling out site records on them all. Her report indicated that several sites which she examined had eroding human remains, and she formulated management recommendations addressing these and other problems. Her report composed the basis upon which the CHIS General Management Plan and Resource Management Plan were formulated regarding archeological resources.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: Using the same methods described by Greenwood (1978), remaining areas on San Miguel Island will be examined, site records updated, maps and numbering systems reconciled, and selected artifacts collected by means of a random sample method. New sites discovered will be recorded and mapped. A resulting report will include management recommendations and will prioritize sites for which future actions are necessary. All the above work will be undertaken in consultation with Native American representation.
6. LENGTH OF TIME NEEDED: Three years.
7. WHAT WILL HAPPEN IF NOT UNDERTAKEN: Current status of all known archeological sites in the monument will not be available to management, nor will the possibility of discovering new sites be available. Potential future management actions will be undertaken without complete knowledge of this non-renewable resource. As well, management will be unaware of site conditions for which corrective action should be taken.
8. WHAT ARE THE ALTERNATIVES: a. No Action. b. Fund a less than complete survey of the remaining sites.
9. PERSONNEL: Professional archeologist and field party.

10. ADMINISTRATION AND LOGISTICS:

<u>Funding</u>	<u>Year in Program Sequence</u>				<u>5th</u>
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	
Personal Services	20,000	20,000	20,000		
Other than Personal Services	<u>12,000</u>	<u>8,000</u>	<u>8,000</u>	<u> </u>	<u> </u>
GRAND TOTAL	32,000	28,000	28,000		
Funds Available in Park Base	<u>0</u>	<u>0</u>	<u>0</u>		
Funds Requested from Regional Office	32,000	28,000	28,000		
<u>On Form</u>		<u>Date Submitted</u>			
10-237	<input type="checkbox"/>				
10-238	<input type="checkbox"/>				
10-250	<input type="checkbox"/>				
10-451	<input type="checkbox"/>				

11. REFERENCES AND CONTACTS:

Greenwood, Roberta S. 1978. Archeological Survey and Investigation, Channel Islands National Monument, California, National Park Service, Denver Service Center Contract No. CX-2000-7-0063.

Kelly, Roger, Regional Archeologist, National Park Service, Western Regional Office, 450 Golden Gate Avenue, San Francisco, CA.

Rozaire, Charles E. 1978. A Report on the Archeological Investigations of Three California Islands: Santa Barbara, Anacapa, and San Miguel. National Park Service, Western Regional Office Purchase Order No. PX-8000-60916.

12. DATE OF PROJECT STATEMENT SUBMISSION: August 1980

CULTURAL AND NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Channel Islands National Monument, Western Region.
2. PROJECT NAME AND NUMBER: Monitoring of Vegetation Transects on Monument Islands (CHIS RM-10).
3. STATEMENT OF PROBLEM: The vegetation on monument islands within the past 150 years, has, within the past 150 years, been altered from its rich mosaic of native species to large areas composed entirely of a few exotic species. The land and the vegetation have been influenced by a chronology of events including farming, grazing, fires, erosion, and more recently recreational visitation with its attendant campgrounds and trails. It is unknown whether native vegetation is becoming more abundant as a result of recent control of most of these actions, or whether the exotic vegetation, combined with selective predation on native plants by exotic mammals and with present use practices on the islands, is now so firmly entrenched that it continues to increase at the expense of native plants. To help answer these questions, plant cover transects were established in 1978 on all three islands, but they must be read at intervals in order to maintain the inherent value of their establishment.
4. WHAT HAS BEEN DONE: In 1968, ten plant transects were established on San Miguel Island; they were read again in 1972. In 1978, as part of the Natural Resources Study (Santa Barbara Museum, 1979), transects were established on Anacapa, San Miguel, and Santa Barbara Islands; in addition, the old San Miguel transects were relocated and reread. Several of the transects from all the islands were again sampled in 1979.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: Existing transects will be prioritized according to their importance in adding to data regarding visitor use impacts, increases or decreases in exotic vegetation, changes in species composition within communities, recolonization of denuded areas, and discovery of any new conditions. Transects in areas of human impact in formerly denuded areas being recolonized on San Miguel, and along the interfaces of Coreopsis gigantea and introduced Mesembryanthemum crystallinum on Santa Barbara will be monitored annually. Other transects will be read less frequently. Transects will be read according to the instructions submitted by the Santa Barbara Botanic Garden (letter from Philbrick to Cornell dated 27 July 1979). Reports will be prepared, identifying changes or developing problems.
6. LENGTH OF TIME NEEDED: Continuing
7. WHAT WILL HAPPEN IF NOT UNDERTAKEN: The opportunity present in having monitoring transects already established will be wasted. Moreover, the information which could be gathered by such monitoring will not be available to management.
8. WHAT ARE THE ALTERNATIVES: a. No action. b. Read transects on less frequent basis.
9. PERSONNEL: NPS resource managers or scientists, or contract personnel from Santa Barbara Botanic Garden.

10. ADMINISTRATION AND LOGISTICS:

<u>Funding</u>	<u>Year in Program Sequence</u>				
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>5th</u>
Personal Services	10,000	7,000	7,000	7,000	7,000
Other than Personal Services	<u>3,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>
GRAND TOTAL	13,000	8,000	8,000	8,000	8,000
Funds Available in Park Base	0	0	0	0	0
Funds Requested from Regional Office	13,000	8,000	8,000	8,000	8,000

<u>On Form</u>	<u>Date Submitted</u>
10-237 <input type="checkbox"/>	_____
10-238 <input type="checkbox"/>	_____
10-250 <input type="checkbox"/>	_____
10-451 <input type="checkbox"/>	_____

11. REFERENCES AND CONTACTS:

Hochberg, M., S. Junak, Dr. R. Philbrick, and Dr. S. Timbrook. 1979. Botany. Pages 5.1-5.85, in Dr. D. Power, ed., Natural Resources Study, Channel Islands National Monument, California. National Park Service, Denver Service Center Contract No. CX-20008-0040.

Philbrick, Dr. R. 1972. The Plants of Santa Barbara Island, California. in Madroño 21(5), pt. 2, 1972.

12. DATE OF PROJECT STATEMENT SUBMISSION: August 1980

CULTURAL AND NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Channel Islands National Monument, Western Region.
2. PROJECT NAME AND NUMBER: Pinniped Census/Monitoring of Anacapa and Santa Barbara Islands (CHIS RM-11).
3. STATEMENT OF THE PROBLEM: Resources management requires ongoing information regarding the status and health of breeding pinniped populations occurring within the monument boundaries. This information provides a basis for annual comparisons used to evaluate the impact of Service programs and visitation, non-Service potentially disruptive activities (e.g., oil and gas development, sonic booms, etc.), and marine resource utilization as regulated by the State of California.

Continued National Marine Fisheries Service studies are scheduled by NMFS on San Miguel Island in 1980; however, no research is planned for Santa Barbara and Anacapa Islands. Currently, population trends of the California sea lion on Anacapa and the harbor seal on Anacapa and Santa Barbara Islands are very poorly understood. In order to provide information needed to monitor population trends and assess the degree of human impact, a research program is proposed.

4. WHAT HAS BEEN DONE: This information has been obtained from various federal, state and educational institutions on an intermittent basis. Data for San Miguel Island populations has been provided by the NMFS since 1969 and by investigators from the University of California at Santa Cruz from 1968-1978. As part of baseline data collection for Outer Continental Shelf Lease Sale #48, the Bureau of Land Management funded studies of pinniped population dynamics on the Channel Islands from 1975-1978. This was the first overall study of the Channel Islands populations designed to be thorough and annually consistent. An independent researcher was supported by the NPS for a brief period in 1979 to study California sea lions on Santa Barbara Island. Other than incidental field observations by a planning team biologist, no information was obtained regarding elephant seals or harbor seals on Santa Barbara Island or any pinniped species on Anacapa Island in 1979. No population studies have been proposed for 1980.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: Pinniped population estimates and pup production would be assessed both by aerial survey and direct observation. Tri-annual aerial surveys would be made in order to document maximum numbers of elephant seals, harbor seals, California sea lion pups and/or other species present. Ground counts will be taken at both islands several days before, during and after each aerial survey in order to correlate values and to ensure the accuracy of overflight data. The general health of species will be evaluated by observation of behavior, estimates of premature births and/or other causes of mortality.
6. LENGTH OF TIME NEEDED: Ten weeks/year. Project duration is indefinite. This program is to continue until appropriate agencies (NMFS, CF & G) initiate studies on an ongoing basis.

7. WHAT WILL HAPPEN IF NOT UNDERTAKEN: Population levels, fluctuations, and in some cases, locations of hauling/breeding areas will continue to be undocumented. Without this information, managers will be unable to make annual comparisons over time and/or will remain unaware of changes in pinniped distribution and abundance. Without these evaluations, managers will not be able to devise strategies designed to mitigate or prevent impacts to this resource. Because visitation and resource utilization around these islands are high and currently increasing, significant potential exists for these disturbances.
8. WHAT ARE THE ALTERNATIVES: a. No action. b. Encourage other agencies to initiate studies. c. Rely on non-scientific, unquantifiable observations from island based park rangers.
9. PERSONNEL: CPSU or staff marine biologist (.2MY), resource management specialist (.1 MY), two seasonal biotechnicians (.5 MY).
10. ADMINISTRATION AND LOGISTICS:

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>As Needed</u>
Personal Services	16,200	17,100	18,000	
Other than Personal Services	<u>9,500</u>	<u>3,400</u>	<u>3,500</u>	
GRAND TOTAL	25,700	20,500	21,500	
Funds Available in Park Base	5,200	5,400	5,700	
Funds Requested from Regional Office	20,500	15,100	15,800	
<u>On Form</u>	<u>Date Submitted</u>			
10-237	<input type="text"/>			
10-238	<input type="text"/>			
10-250	<input type="text"/>			
10-451	<input type="text"/>			

11. REFERENCES AND CONTACTS:

Mr. George Antonelis, National Marine Fisheries Service, Seattle, Washington
 Mr. Robert L. DeLong, National Marine Fisheries Service, Seattle, Washington
 Ms. Carolyn Heath, University of California, Santa Cruz
 Dr. Burney Le Boeuf, University of California, Santa Cruz
 Dr. Charles D. Woodhouse, Santa Barbara Museum of Natural History

12. DATE OF PROJECT STATEMENT SUBMISSION: August 1980

CULTURAL AND NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Channel Islands National Monument, Western Region
2. PROJECT NAME AND NUMBER: Visitation and Human Disturbance to Pinniped and Seabird Activities (CHIS RM-13)
3. STATEMENT OF THE PROBLEM: Disturbance to pinnipeds and breeding seabirds on monument islands results from both island based and offshore visitor activities. Because the islands have extensive coastlines and the National Park Service has a limited staff, disturbance cannot always be prevented. At the present time, no documentation exists that quantifies the frequency and end result of various degrees of disturbance caused by monument visitors and staff activities. This information is essential to devise plans for mitigation or elimination of disturbance. With the knowledge of disturbance thresholds, recommendations to other agencies can be made, if necessary, to lower the incidence of disturbance to pinnipeds and seabirds.
4. WHAT HAS BEEN DONE: A video-tape monitoring program to study the effects of sonic booms to pinniped populations was initiated at Point Bennett, San Miguel Island, by the U. S. Air Force, Space Shuttle Program in 1978. Because of the low incidence of visitation to this island, further study in an area characterized by frequent human use needs to be undertaken. No other quantifiable disturbance studies have been implemented or are proposed.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: Activity patterns and disturbance to pinnipeds and seabirds will be monitored by video-tape sampling stations on Anacapa Island during the months of heaviest visitation and breeding and nesting periods. Periodic on-site observations will be made to supplement recorded data. Tapes will be analyzed to document and classify the type and intensity of disturbance and to assess the long term implications of those activities. Based on the data collected, recommendations for distances between visitors, staff and pinnipeds and seabirds will be made for appropriate areas and activities.
6. LENGTH OF TIME NEEDED: Six months
7. WHAT WILL HAPPEN IF NOT UNDERTAKEN: Management will continue to lack hard data on which to base recommendations for visitor use and to provide to the State for establishment of regulations within Ecological Reserves. Management will continue to be unaware that disturbance is occurring in some locales. Locally marginal breeding populations may become extirpated.
8. WHAT ARE THE ALTERNATIVES: a. No action. b. Combine this study with other natural resource pinniped studies.

9. PERSONNEL: Contracted research technicians and equipment. Park Rangers to assist and to provide logistical support.

10. ADMINISTRATION AND LOGISTICS:

	<u>1st</u>
Personal Services	13,000
Other than Personal Services	<u>7,000</u>
Grand Total	20,000
Funds Available in Park Base	3,800
Funds Requested from Regional Office	16,200

<u>On Form</u>	<u>Date Submitted</u>
10-237 <input type="checkbox"/>	_____
10-238 <input type="checkbox"/>	_____
10-250 <input type="checkbox"/>	_____
10-451 <input type="checkbox"/>	_____

11. REFERENCES AND CONTACTS:

Mr. George Antonelis, NMFS, National Marine Mammal Lab, Seattle, WA
Dr. Joseph Jehl, Hubbs Sea World Research Institute
Mr. Brent Stewart, Hubbs Sea World Research Institute

12. DATE OF PROJECT STATEMENT SUBMISSION: August 1980

CULTURAL AND NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Channel Islands National Monument, Western Region.
2. PROJECT NAME AND NUMBER: Seabird Population Monitoring Program (CHIS RM 16).
3. STATEMENT OF PROBLEM: Unlike marine mammals, seabirds are not the sole responsibility of any one resource managing agency. Therefore, basic information regarding seabird population trends and resource needs is only available on a sporadic basis, occasionally provided by various independent investigators. In order to evaluate population changes and to understand casual mechanisms, it is necessary to collect basic data on an annually consistent, regular basis. Management will then be able to make necessary adjustments in visitor use patterns and interagency recommendations regarding fisheries resource allocation policies. These evaluations are necessary to ensure maintenance of healthy seabird populations.
4. WHAT HAS BEEN DONE: Seabird population status and identification of breeding sites was thoroughly examined during 1975-1978 through BLM-OCS baseline studies. Prior to this work no systematic or complete studies of seabirds in the Channel Islands had ever been completed. Since 1978, research has been limited to Western gull studies on Santa Barbara Island, California, brown pelican research on Anacapa Island, and sporadic limited censuses of various birds on Anacapa and San Miguel Islands conducted by the California Department of Fish and Game. These efforts are neither coordinated nor thorough enough for management purposes.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: A semiannual monitoring program is proposed for seabirds other than pelicans. Pelican research is proposed separately because of their special status as an "endangered" species. Intensive, on-site studies designed to document seabird numbers, hatching and fledging success would be conducted on a semiannual basis at representative colonies. Less intensive population estimates would be collected in the alternate years to provide bare minimum comparative data. Intensive programs would involve research personnel stationed on each monument island throughout the breeding season (April-July) to document the various components of breeding success. Alternating years would emphasize brief population estimating surveys to representative colonies, conducted at least twice during the breeding season.
6. LENGTH OF TIME NEEDED: Ongoing project,
7. WHAT WILL HAPPEN IF NOT IMPLEMENTED: Without this information, managers will be unaware of population fluctuations, the significance of those fluctuations and/or their casual mechanisms. Without these facts managers will not be able to make defensible recommendations for seabird protection for both inhouse activities or to other agencies managing related fisheries resources and other activities (e.g., oil and gas) that may influence seabird breeding success.

8. ALTERNATIVES: a. No action. b. Implement single-visit type studies on an annual basis. These studies would supplement needed data regarding parameters such as phenology and the success of hatching and fledging, necessary to identify the effects of environmental perturbations. A one time census could also allow for a collapse in reproductive success to go undocumented, resulting in a gross sampling error. c. Encourage the California Department of Fish and Game to implement seabird studies similar to those proposed. This is unlikely due to recent extreme funding restraints in the Department. d. Encourage the Bureau of Land Management to reinitiate seabird population studies as part of an ongoing responsibility to monitor resources subject to impact from ongoing oil development activities. This is unlikely due to present BLM research emphasis.
9. PERSONNEL: Contracted research personnel trained in seabird biology. Monument staff (Resource Management Specialist, Biologists, and Park Rangers) to provide logistical and limited field assistance, especially in years of low intensity field work.
10. ADMINISTRATION AND LOGISTICS:

	<u>1st</u>	<u>2nd</u>	Ongoing-Alternating Years
Personal Services	21,000	4,000	
Other than Personal Services	<u>13,200</u>	<u>11,000</u>	
Grand Total	34,200	15,000	
Funds Available in Park Base	2,450	1,800	
Funds Requested from Region	<u>31,750</u>	<u>13,200</u>	

<u>On Form</u>	<u>Date Submitted</u>
10-237 <input type="checkbox"/>	_____
10-238 <input type="checkbox"/>	_____
10-250 <input type="checkbox"/>	_____
10-451 <input type="checkbox"/>	_____

11. REFERENCES AND CONTACTS:

Dr. George Hunt, University of California, Irvine
 Mr. Paul Kelly, California Department of Fish and Game
 Mr. Robert Pitman, Independent Researcher

12. DATE OF PROJECT STATEMENT SUBMISSION: August 1980

CULTURAL AND NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Channel Islands National Monument, Western Region.
2. PROJECT NAME AND NUMBER: Monitoring of the San Miguel Island Caliche Concentration (CHIS RM-21)
3. STATEMENT OF PROBLEM: Large areas of calcified rhizoconcretions, or caliches, occur on San Miguel Island. These geological features, in many cases having formed around vegetation underground and now through erosion exposed at the surface, are quite fragile. Potential threats include an ever-increasing amount of visitation, and, more seriously, the possibly very strong sonic booms from the U. S. Air Force Space Shuttle program scheduled to overfly San Miguel on its launches and returns beginning in 1983. Before these caliche "forests" are damaged, their extent should be documented and a monitoring system established so that any change in the status of this resource can be detailed.
4. WHAT HAS BEEN DONE: The San Miguel Island caliches have been examined scientifically in years past, primarily by Dr. Donald Johnson of the University of Illinois. Dr. Johnson also addressed the recent status of the caliches, as well as having mapped the major concentrations of the "forests" as part of the Santa Barbara Museum of Natural History's 1979 Natural Resources Study for the NPS. Dr. Johnson is currently studying the potential impacts of the Space Shuttle sonic booms on the caliche "forests" under a contract with the U. S. Air Force.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: A thorough survey of the caliche concentrations should be undertaken, the most extensive areas outlined and the locations of the largest or in other respects most interesting individuals plotted; photographic stations should be established, as well as other means of monitoring, covering not only these areas, but also a wide variety of topographic conditions, as well as some areas of caliche most likely to be disturbed by direct human activity. Monitoring of these areas should occur on an annual basis, as well as directly before and after scheduled Space Shuttle launches.
6. LENGTH OF TIME NEEDED: Continuing
7. WHAT WILL HAPPEN IF NOT UNDERTAKEN: Management will not have baseline information regarding the present status of the caliche concentrations on San Miguel Island necessary to evaluate the potential future destruction of this resource; any future discussions with such agencies as the U. S. Air Force regarding such an issue would have to be based on hearsay and speculation.
8. WHAT ARE THE ALTERNATIVES: No action.
9. PERSONNEL: Scientific contract personnel to establish the monitoring program; NPS personnel to carry out the actual monitoring.

10. ADMINISTRATION AND LOGISTICS:

<u>Funding</u>	<u>Year in Program Sequence</u>				
	1st	2nd	3rd	4th	5th
Personal Services	10,000				
Other than Personal Services	<u>7,500</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>
GRAND TOTAL	17,500	1,000	1,000	1,000	1,000
Funds Available in Park Base	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Funds Requested from Regional Office	17,500	1,000	1,000	1,000	1,000

On Form

Date Submitted

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11. REFERENCES AND CONTACTS:

Johnson, Donald L., Department of Georgraphy, University of Illinois,
Urbana, Illinois 61801

12. DATE OF PROJECT STATEMENT SUBMISSION: August 1980.

MARCH 1980

[illegible]

As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

Publication services were provided by the graphics staff of the Denver Service Center. NPS 1549A

