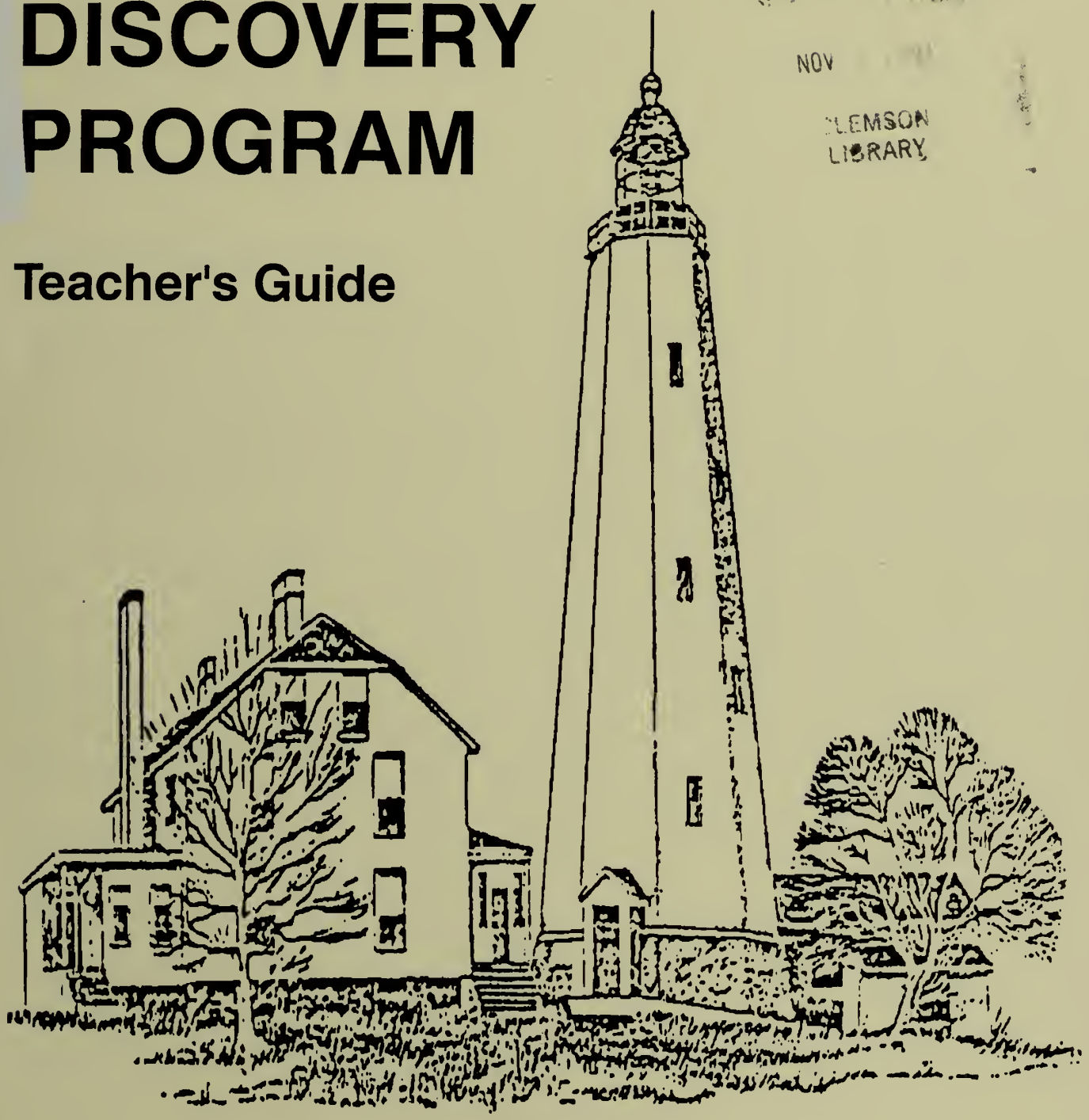
SANDY HOOK DISCOVERY PROGRAM

Teacher's Guide



GATEWAY NATIONAL RECREATION AREA

Table of Contents

Introduction 2

The Resource 3

General Policies 4

Program Schedule 5

Lessons 9

I. Pre-Site Activities 10

II. On-Site Activities 12

III. Post-Site Activities 13

IV. Fort Hancock 14

Activities 15

Glossary 24

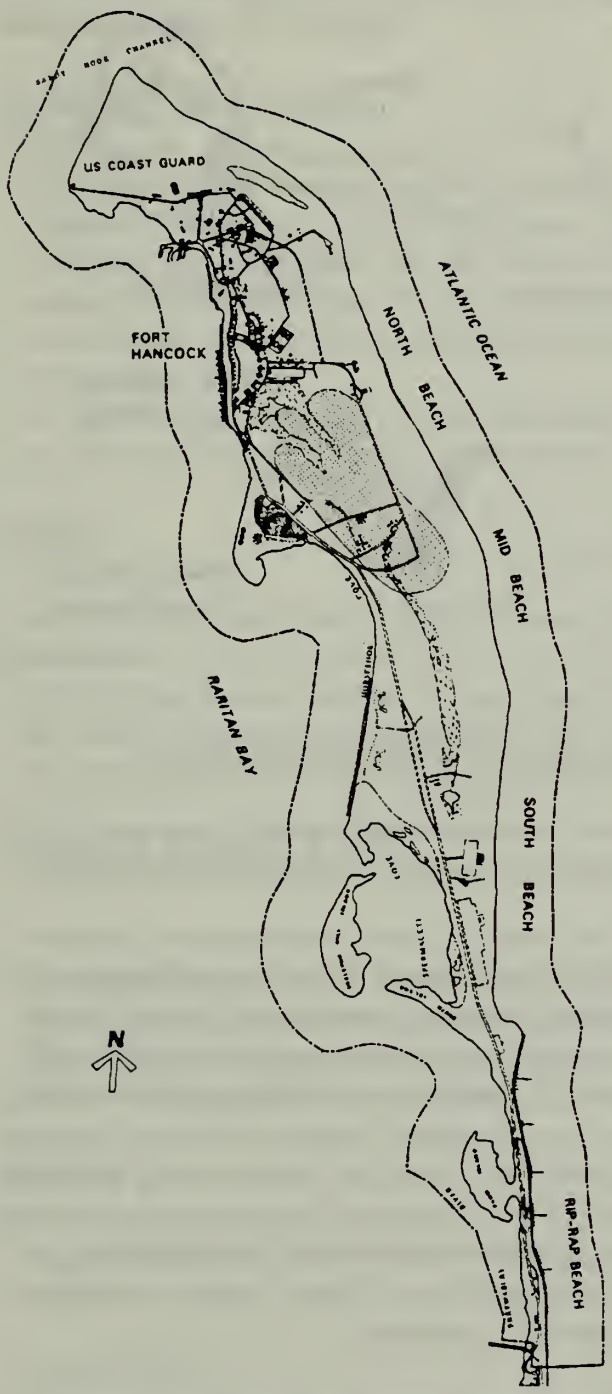
Resource List 26

Forms 27

Clothing and Equipment List 33

Student Workbook and Daily Journal 34

Introduction



The Sandy Hook Discovery Program was established in 1984 to enable students in New Jersey to experience the excitement of discovery in their natural environment and to give them a scientific understanding of the plant-food-waste cycle in which marine life, and all life, takes part. Stress is place on the natural, cultural, and aesthetic components of the Sandy Hook marine environment and on exploring the similarities and differences in the urban environment.

Through participation in hands-on activities, students will explore the natural and cultural resources of Sandy Hook to reinforce concepts presented in the classroom and to further the development of an environmental ethic. The curriculum for the program demonstrates an interactive educational style. Lessons have been divided into pre-site, on-site, and post-site activities. All objectives are designed to enhance the childrens' personal, social, and educational skills. This program can provide a semester-long focus for class activities.

The on-site phase of this program, by itself, is insufficient. It must be complemented by "pre-site" preparation and conditioning and "post-site" follow-up and action to achieve the overall goals. This manual has been written to assist you with this task. As you read through the manual, please remember that this program is inter-disciplinary. Your entire school curriculum, not just the science component, can be woven into the objectives and activities. This learning experience is a partnership between you, the teacher, and the National Park Service staff. We welcome your ideas and comments concerning

the program. It is our hope that after your trip you and your students will have developed a deeper appreciation and knowledge of natural and cultural resources and will have understood that we are all involved in the stewardship of these resources. Sandy Hook, New Jersey is one of the two arms of land which form the gateway to the great ports of New York and New Jersey. This seven mile peninsula is managed by the National Park Service as a unit of Gateway National Recreation Area, and is visited by more than two million people each year for its superb ocean bathing and fishing opportunities. In addition, it is potentially one of the richest educational resources in the metropolitan region.

Already it is the day-trip destination for thousands of school children each year who study the marine life of its marshlands, dunes, holly forest, and wildlife that ranges from eastern painted turtles to osprey.

Because of its commanding geographical position, Sandy Hook is also an extremely valuable site for the study of history. The Sandy Hook Lighthouse, the oldest operating lighthouse in the United States was built in 1764 to help guide ships through the treacherous port entrance. The United States Life Saving Service, established by Congress in 1848 to further protect the shipping that was making the New York/New Jersey ports commercially great, left relics here. Fort Hancock, the 19th Century fort, was built here to keep potential enemies at a distance from the city. Weaponry from the muzzle loading cannon to the Nike and Ajax missiles was emphasized here and Sandy Hook was the U.S. Army's proving ground for new weapons from 1874 to 1919. The importance of these historic resources has led Sandy Hook to be declared a National Historic Landmark.

Taken together, Sandy Hook's educational features are of enormous value. In a world which will need increasingly wise management of its ocean resources, a basic knowledge of marine life is important for both the citizen and the specialist who may earn a living from marine-related work. The marshland and terrestrial systems of Sandy Hook can be both an ecological laboratory and a wide-application lesson in the value and beauty of natural open

GENERAL POLICIES

Your trip to Sandy Hook will be an enjoyable and educational experience for all if the following regulations are followed.

Teacher Instructions

-No smoking is allowed except in the teacher lounge.
-Coffee pot in lounge should be off when leaving the Center.
-Teachers are responsible for the conduct of the students at all times. Activities should be planned for periods when the Rangers are not present.
-If there is an emergency, the ranger station phone number (872-0115), extension 208, is on the office door.
-No child will be released from the program without the approval of the program supervisor. (Proper identification will be required.)

Wings

-Review the fire exits and signs with each student. Make sure he/she understands the procedure.
-Each group is responsible for the upkeep of the wing.
-No eating or drinking is permitted in the wings.
-Bathrooms are under the management of teachers.

Teacher Activity Time

-At least one chaperone must be assigned to monitor children playing outdoors.
-Use only the yard space around the building and note the residence yards.
-Do not enter Coast Guard property (fenced area) across the street.
-When taking a groups outside the Center, keep children out of the road.
-Kitchen must be cleaned after use.

Forms

The forms marked with an asterisk (*) must be sent to the Center at least one week before the trip.

-Parental letter
-Behavior contract
-Class list*

PROGRAM SCHEDULE

Day #1

10:00 a.m.	Arrive at Sandy Hook, Building #102
10:00 - 11:00	Orientation: Center policies and procedures, room assignments and check-in.
11:00 - 12:00	Interdependence/Cooperative Challenge Games
12:00 - 1:00	Lunch (*Bag lunches are suggested for Day #I) Fire Drill
1:00 - 3:15	Critical Zone/Beach Exploration
3:15 - 3:30	Wrap-up of Day #1 Introduce Day #2
3:30 - 4:30	Free Time: Structured play time with a teacher or parent, additional time for unpacking. (Students may visit the mini-bookstore from 3:30 to 4 p.m.)
4:30 - 5:30	Dinner Preparation
5:30 - 6:00	Dinner
6:00 - 7:00	Dinner Clean-up
7:00 - 8:30	Teacher time: Consult the manual for activity ideas; students can use this time to record their experience in a journal. The movie, The Great Horseshoe Crab Field Trip, should be shown to the students in preparation of Day #2 activities.
8:30 - 8:45	Evening snacks
9:00 p.m.	LIGHTS OUT!!!

Day #2

7:00 a.m.	Breakfast preparation begins
8:30 a.m.	Breakfast clean-up must be completed
8:45 - 11:30	Exploration of the Dunes and Upland Forest
11:30 - 1:00	Lunch (including preparation and clean-up) Recycling, "What can we do?"
1:00 - 3:15	Exploration of the Salt Marsh
3:15 - 3:30	Wrap-up of Day #2 Assignment for Day #3
3:30 - 4:30	Lab time
4:30 - 5:30	Dinner preparation
5:30 - 6:00	Dinner
6:00 - 7:00	Dinner Clean-up
7:00 - 8:30	Teacher time: Work on assignment for Day #3
8:30 - 8:45	Evening snacks
9:00 p.m.	LIGHTS OUT!!

Day #3

7:00 a.m.	Breakfast preparation begins Clean-up of dorm rooms
8:30	Breakfast clean-up must be completed
8:30 - 9:00	Finish clean-up, pack and store all equipment, clothes and gear downstairs/room checkout.
9:30 - 11:00	Culminating activities: Design-A-Park and Beach Craft
11:00 - 11:30	Lunch preparation
11:30 - 12:00	Lunch
12:00 - 12:30	Clean-up
12:30 p.m.	Depart for school

LESSONS

The following pages include the program lessons which are divided into pre-site, on-site and post-site activities. The pre-site activities (vocabulary review, etc.) should be done in the classroom before your field trip. Other subjects (mathematics, art, english, social studies, etc.) should be infused into the program curriculum to achieve the maximum benefits. The on-site activities will be conducted under the guidance of a National Park Ranger during your field trip. Program follow up is extremely important. Select one or more of the suggested post-site activities for the classroom after your trip to reinforce concepts learned during the program and to help students understand the relationship between the natural and home/school environment.

PRE-SITE ACTIVITIES

I. Interdependence

To promote positive group interaction and foster better relationships in the classroom and the community; to understand the importance of interdependence in our society and the natural world; and to realize that natural and human communities are dependent on non-living resources.

Vocabulary

Review the words listed below before your trip:

a. organism
b. habitat
c. population
d. ecosystem
e. barrier beach
f. community
g. interdependence
h. energy
i. ecology
j. greenhouse effect
l. consumer
m. producer
n. decomposer
o. steward
p. National Park Service

1. Discuss the word habitat and make a chart listing all the different habitats within your school community.

2. Make individual or class lists of abiotic and biotic factors impacting the survival of an individual and a population.

3. Determine some limiting factors for our society. Use hypothetical situations involving shortages of one or more resources and explore the urban environment for dependency on inorganic materials. Start with the school building.

4. Have the students diagram an energy chart for themselves. Discuss the role of plants in the base of the energy pyramid.

5. Determine the components of your social community and discuss one problem in the community and possible approaches to solving the problem.

II. Natural Resources

The Ocean Beach/Upland

To understand the inter-relationships of organisms in the ocean and on the beach and our dependence on them; the importance of diversity within a community; special adaptations possessed by organisms found in this habitat; the human impact on these resources and future implications for barrier beach complexes; to understand the concept of succession and the interactive forces in nature, concentrating on the level of diversity and adaptation, human impact and dependence, and the food chain.

Vocabulary

a. sand dune
b. current
c. barrier beach
d. canopy
e. vine
f. succession
g. hook
h. sandspit
i. sandbar
j. salt-spray horizon
k. lichen
l. high tide
m. low tide
n. wave
o. shrub
p. soil

2. Post the Gateway map in the classroom and have the students write a short paragraph on the geologic formation of Sandy Hook. You can also plot your route to Sandy Hook and discuss distance (mileage) and direction (N, NE, W, etc.).

3. Develop a human key featuring adaptations needed to live in certain climates and areas of the world.

4. Draw a picture of the ocean and beach, perhaps a mural on the classroom wall. Then place pictures of animals and plants (drawn or cut-out) in their respective habitats.

5. Have the students select a tree near the school, determine its age and keep a record of its changes from winter to spring.

6. Make a chart of the different types of vegetation found near the school (tree, shrub, vine, etc.) and the how each one reproduces.

II. Natural Resources

The Salt Marsh

To recognize the importance of salt marshes in terms of productivity and food chains; the organisms inhabiting the marsh and their special adaptations; the concept of succession as it relates to the marsh and the consequences of human intervention.

Vocabulary

a. saltmarsh
b. estuary/bay
c. tide
d. decomposer
e. plankton
f. brackish
g. fish
h. consumer
i. food chain
j. producer

1. Have the students write about the life history of a inhabitant of the saltmarsh.

2. Explore the community and determine how various businesses and services fit into the categories of producer, consumer, and decomposer.

ON-SITE ACTIVITIES

I. Interdependence

1. Students will be assigned to a specific discovery group and will join in cooperative challenge games in which cooperation and coordination are stressed.

2. Sandy Hook's natural communities will be explored via walks along the ocean, dune, and uplands concentrating on the interaction of living and non-living components.

3. Students will participate in activities designed to sharpen their skills of observation of land (beach) and atmospheric conditions (weather) and how these factors impact life on Sandy Hook.

II. Natural Resources

The Ocean Beach/Uplands

1. During the cooperative games activity, students and teachers will discuss the producer, consumer, and decomposer concept.

2. Students will visit the ocean and beach at Sandy Hook and participate in hands-on discovery activities such as scavenger hunts and dune building.

3. Students will briefly visit the "Critical Zone" to view sand replenishment and dune stabilization and to learn how environmental problems are analyzed and resource management actions determined by studying and combining alternative solutions.

4. Students will visit the uplands which includes cedar, holly, and shadbush to determine the signs of succession and the components of the forest food chain.

5. Comparisons will be made between the ocean/beach/upland complex

III. Natural Resources

The Salt Marsh

1. Students will investigate the saltmarsh at Sandy Hook focusing on the producers, consumers, decomposers, the impact of the tides, energy production, impacts caused by pollution, and the importance of the saltmarsh to human beings.

2. Students will participate in a seining activity, weather and tide conditions permitting, to discover the inhabitants of the marsh, their special adaptations, and the impact of the tides on the organisms.

3. Students will learn how to identify the plants and animals of the marsh by using identification keys.

4. Weather and time permitting, students will collect water samples from the bay and ocean and for comparison and analysis back at the lab. Students will learn to identify plankton using microscopes back at the lab.

POST-SITE ACTIVITIES

I. Interdependence

1. Write a letter or develop a presentation about the trip to Sandy Hook for a class gathering or school assembly.

2. Discuss the community problem selected by the class before their trip and see if the students would handle it differently. Focus on the importance of cooperation within and among community groups.

3. Discuss how students can personally reduce their consumption of nonrenewable resources and how they can participate in recycling projects. Start a small recycling center in the classroom.

4. Trace your local water supply from its source to its disposal. If possible, visit the local sewage treatment plant.

5. Make small cardboard houses with roofs of various materials. Record the temperature differences as you change the roof material. Make a greenhouse model and research the "greenhouse effect" on the earth's climate.

6. Make a chart noting the changes in the environment, weather, etc. and compare your findings with the news media and TV broadcasts (i.e. weather reports).

II. Natural Resources

The Ocean Beach/Upland

1. Draw a picture of Sandy Hook in the year 2000. Imagine what would happen to Sandy Hook after an intense coastal storm. Discuss the geologic changes.

2. Have the students research current topics in oceanography. For example: careers, organizations, ocean dumping, research facilities (Woods Hole, Scripps, etc.) and famous scientists/naturalists (Rachael Carson, Jacques Cousteau, etc.)

3. Create ocean art/poetry collages from magazines/books or create your own work!

4. Make a list of the different plants and animals found in the uplands.

III. Natural Resources

The Salt Marsh

1. Have each student draw his/her own food chain and make a class chart showing the similarities and differences.

2. Make a tide clock for the classroom and keep a daily chart to record the tides and note tidal patterns.

3. Identify foods and other products dependent on the salt marsh.

FORT HANCOCK

Suggested activities for teacher-led activity time

Pre-Site Activities

Vocabulary

a. fortification
b. proving grounds
c. battery
d. mortar
e. magazine
f. projectile

1. Establish a timeline in the classroom showing major changes that have occurred to the surrounding land and community. Discuss the history of New Jersey and the United States. Include national and international events.

2. Draw a map of Sandy Hook including the adjacent land masses and bodies of water. Plot a boat course into New York Harbor. Focus on problems encountered by vessels making the journey in the 1880's and the present.

On-Site Activities

1. Compare the various buildings on the hook and discuss the function, design and location.

2. Take a walk to the lighthouse and discuss the importance, function, and present location.

Post-Site Activities

1. Create a map for your school community. Discuss the reasons for change and the possibilities for the future.

ACTIVITIES

This section includes additional activities for pre-site, on-site and post-site work. They can easily be duplicated for use with your students during the teacher activity time or in the classroom.

EXPLORATIONS

In our country there are three different areas where people live. There is the URBAN or city environment. There is the RURAL or farm environment. And between these two, there are small communities that surround the cities. There are called the SUBURBAN environment.

From recent newspaper or television news reports, select an event that happened in each area (rural, urban, and suburban) that will change the history of the people in the area. Select one event that will make the future better for the people, and another which will make their future worse. Some of the natural events that you may select from are a heat wave, a hurricane, or a storm.

Make a chart on your answer sheet and fill in your answers like this:

ENVIRONMENT	EVENT	EFFECT
Urban		
Rural		
Suburban		

PROBLEMS

How have big events within your environment affected your life?

List some of the big events you remember, the environment in which they occurred, and the important result, on your answer sheet-like this:

HAPPENING	ENVIRONMENT	RESULT
A big storm	Our home	A flood - We moved to a new house and I met new friends

---

QUESTIONS

I. In your Science class you may have learned some facts about water. You store some of those facts in your memory that you can draw upon when you wish. What would be your history of a glass of water?

2. How have human beings used history to better live in their environment? How have they improved their environment in the following three categories?

A. Transportation? B. Food? C. Shelter?

INVESTIGATING THE GREEN WORLD

We will visit a forest of green plants that we call "The Green World." If we look and listen in the forest carefully, we will hear many sounds. These sounds tell us that there are other things in the Green World, such as insects, birds and other animals. If we look carefully, we might see living things or clues of their presence.

All organisms, plants and animals can be divided into three groups:

Group 1 - **The Producers:** these are living things that make up their own food. As you know, green plants are producers.

Group 2 -**The Consumers:** These are living things that cannot make their own food and have to eat foods made by the producers. Plants that are not green, and animals, are consumers. Animals that eat other animals are called predator consumers or carnivores. Animals that eat plants are called plant consumers or Herbivores. Animals that eat both plants and animals are called omnivores. Some consumers eat dead plants and animals. These are called scavengers.

Group 3 - **The Decomposers:** These are the plants and animals that return minerals to the soil by using animal wastes and dead organisms as a food source. Bacteria, mushrooms and other fungi are decomposers. They are very important organisms in an ecosystem because through their feeding activities, they release minerals that are used as nutrients (Fertilizers) by the Green Plants.

THE FOOD CHAIN INSTRUCTION SHEET

Look at the drawings on the Food Chain page. With careful thinking you can see that the foods, animals, plants and the sun may be related.

For example:

Draw a pencil line connecting the jar of honey to the bee, then to the flower, and then to the sun.

You have just completed a path. Scientists call such a path the Food Chain. Start at the drawing of man and with your pencil make your own food chain ending with the sun.

I. Give a reason why plants and animals are important to each other:

_____

2. How important is the sun to all forms of life found on our planet?

_____

3. Why are plants and animals important to us?

_____

4. Which organisms are producers in the Food Chain?

_____

5. Which organisms are consumers in the Food Chain?

_____

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FEEDING RELATIONS

We find that the relationship of who eats whom in nature is a complicated one. The producers make the food and the consumers eat those foods or animals available. Let us look at the various animals in a marsh and indicate the food relations by arrows.

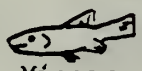

Fiddler Crab


Owl


Marsh Crab


Meadow Lark


Marsh Snail


Minnow

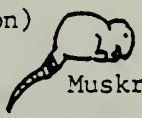

Marsh Insect


Heron


Red-winged Blackbird


Dragonfly


Plants (Vegetation)


Muskrat


Black Duck


Mosquito


Mice

Directions: Draw an arrow from an animal or plant that is eaten or consumer to the animal that eats it.

For example: The herons and the owls eat mice. An arrow should go from the mice to the heron and another arrow from the mice to the owl.

For each animal or plant above, you should have at least one arrow. If you decide one animal eats three things, then by all means have three arrows.

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OCEAN FOOD CHAINS

Plants and animals in the ocean are also dependent upon each other for food. When a small fish is eaten by a larger one, some of the energy stored by the smaller fish is passed on to the larger one. The small fish, in turn, feeds upon even tinier ones, or on decomposed plant material for its food and energy.

The tiniest plants and animals in the ocean are microscopic organisms called plankton. They are the beginning in an ocean food chain. The plant plankton (phytoplankton) is eaten by the animal plankton (zooplankton.)

Instructions: Draw a line connecting the animal and its food supply to show a Marsh-Type Ocean Food Chain.

PLANT PLANKTON
(Phytoplankton)

BLUE CLAW CRAB

MUMMICHOG

ANIMAL PLANKTON
(Zooplankton)

RACCOON

I. Where does the plant plankton (Phytoplankton) obtain its energy or food supply? (Hint: Think about where the land plants get their energy.)

_____

_____

2. In addition to the sun, the plant plankton needs nutrients from the water. What type of organism helps break down dead material and thereby replaces the nutrients in the Food Chain?

_____

_____

3. In the Food Chain you made, what would happen to the crab if for some reason all the zooplankton were killed?:

_____

_____

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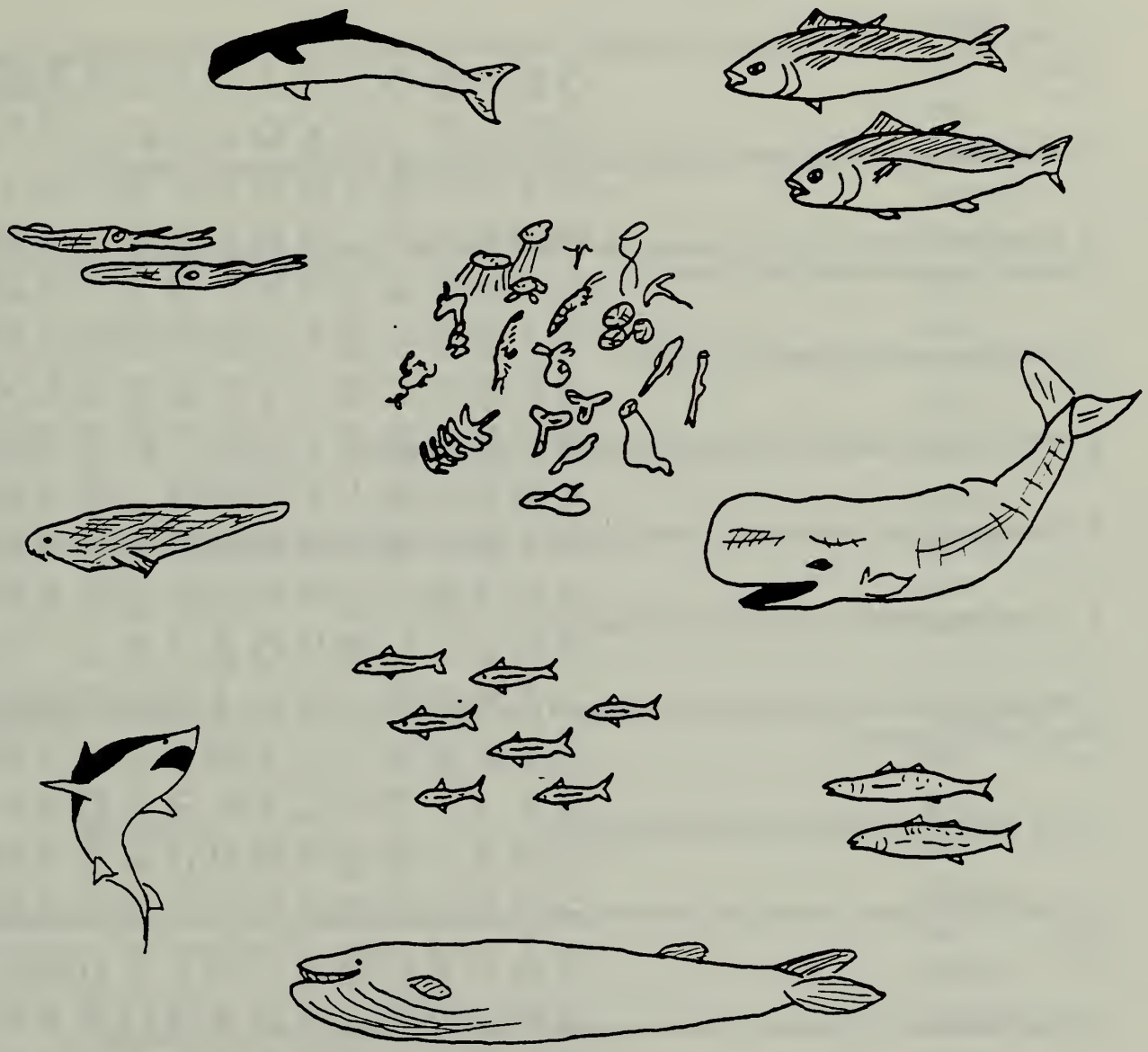
OCEAN FEEDING RELATIONS

We find that the relationship of who eats whom in nature is a complicated one The producers make the food and the consumers eat those foods or animals available. Let us look at the various animals in the ocean and indicated the food relations by arrows.



Directions: Draw an arrow from an animal or plant that is eaten or consumer to the animal that eats it.

For example, the minnows eat plankton, larger fish (eat smaller fish), squid or what eat plankton directly and so on.

For each animal above, you should have at least one arrow. If you decide one animal eats three things, then by all means have three arrows.

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VIEW OF THE SALT MARSH

1. What are the uses of the tidal marsh?

2. What type of birds did you see in the marsh? Can you describe any of them? Did any of them make noise?

3. What two essential ingredients do plants contribute to animals in the tidal marsh complex?

4. Fiddler crabs are the most obvious animals in the salt marsh. During high and low tides, their color changes. Why is this good for the crabs

5. How did the garbage get into the marsh?

6. While walking through the salt marsh, what sounds do you hear?

7. Seasons change the salt marsh. What changes do you think take place in the fall? The spring?

8. Do you see evidence of man here in the marsh?

9. You have looked at a tide pool on the salt marsh trail. Why do you think tide pools form? What happens when the tide goes out?

10. The grass bordering the cove provides a good _____ for young fish.

11. Birds with long legs that frequent the salt marsh are called wading birds. Why is it a benefit to have long legs.?

12. What happens to the plants in the salt marsh when the tides come in? When the tides go out?

13. What happens to the animals that live in the salt marsh during the winter.?

14. What new things did you discover in the salt marsh?

15. What would destroying the marshes by draining and filling them do. Would this be good or bad? Why?

SALT MARSH HUNT

You have explored the world of the salt marsh. Now see if you can find the following words of the salt marsh!

N G Z N U I I L S I O G U S C
I F P Y H S U G X S I V H F W
I I R I K J Y A B F A O G I H
V U N I P A R R E T R R N W W
I C L Y L E Y V S E A D G I A
C S C W T F O X T A I L S I T
I X J X R B T Y F C L A M S E
M B P Z G I S C Y B U H X X R
D A V G L R A P J I B C S S X
V R V G O D L W K G E V A I U
F C A U U S T H G C I W E E F
E F I L A L E O N B U I S B H
C M M Q M N L L P I P D V T I
S D H A U S W L L I A N S Y Q
Z V S D F E P Y O H T I L L N
L W R L A D U O F B P L E K O
X H A S W I F O U S O S S Y R
C W M H T T O F K M N V S A E
N D A R O D A U P U R R U H H
K S P L T J A Z S Q E T M U R

GRASS
IVY
GULL
CLAMS
MUSSEL
CRAB
DUCK
SALT
FOXTAIL
DUNE
SNAIL
TIDES
MARSH
FISH
HERON
HOLLY
TERRAPIN
BAY
SUN
HAY
FOOD
LIFE
BIRDS
SHORE
WIND
SEA
WATER

Glossary

Barrier Beach: Offshore bar. This term refers to a single elongate sand ridge rising slightly above the high-tide level and extending generally parallel with the coast, but separated from it by a lagoon.

Battery: Structure for mounting, protecting, and firing guns or mortar.

Bay: A recess in the shore or an inlet of a sea or lake between two capes or headlands, noted as large as a gulf, but larger than a cove.

Brackish: Slightly salty body of water.

Canopy: The uppermost spreading branch layer of a forest.

Community: A group of animals and plants living in a particular area in an interrelationship.

Current: The flowing of water, other liquid or gas. A large stream of ocean water moving continuously in about the same path, and distinguished from the water through which it flows mainly by temperature and salinity difference.

Dune: A mound, ridge, or hill of wind blown sand, either bare or covered with vegetation.

Energy: The ability to do work or produce motion. Earth's surface received much of its energy from the sun.

Estuary: Drainage channel adjacent to the sea in which the tide ebb and flows.

Fortification: Structure built to defend a place from enemy attack.

Habitat: The place where an animal or plant lives.

Hook: The end of a spit turned toward the shore, owing to a deflection of the current that built it, or to the opposing action of two or more currents.

Interdependence: Organisms depend on and need each other.

Lichen: Combination of an algae and a fungus.

Magazine: Rooms for the storage of primers, gun powder, and fuses.

Mortar: Cannon that fires projectiles steeply into the air to drop on attacking targets.

Organism: Any living individual whether plant or animal.

Sandspit: A narrow sand embankment, created by an excess of deposition of its seaward terminus, with its distal end, (the end away from the point of origin), terminating in open water.

Shrub: A perennial woody plant, smaller than a tree, having several stems arising from near the ground.

Soil: That earth material which has been so modified and acted upon by physical, chemical, and biological agents that it will support rooted plants.

Tide: A long period wave. The periodic rise and fall of oceans and bodies of water connecting them, caused chiefly by the attraction of the sun and the moon. Low tide: the minimum height reached by each falling tide. High tide: maximum height reached by each rising tide.

Vine: Stem of climbing plant found on dunes, trees and buildings. Stem supports leaves of plant allowing the plant to reach sunlight from thick undergrowth.

Wave: An oscillatory movement in a body of water manifested by an alternate rise and fall of the surface.

RESOURCE LIST

1. The Complete Family Nature Guide - - J.R. Worthley-Doubleday, 1976. Discusses a variety of habitats to explore from marshes to gardens to sidewalks to one's own home. There are a great many activities in the book which do not require collecting.

2. It's Going to Sting Me! A Coward's Guide to the Great Outdoors - R.Rood - Simon & Schuster, 1976. Dangerous and non-dangerous critters discussed. Your fears of the outdoors will be submerged in the wonders of observation. Very witty.

3. "The Curious Naturalist" - Massachusetts Audubon Society, Lincoln, MA 01773.

4. Manual of Outdoor Interpretation - J.J. Shamond - National Audubon Society - Nature Centers Division - 1130 Fifth Avenue, New York, New York 10028, $3.00. Philosophy and ideas with a section on urban interpretation.

5. Life and Death of the Salt Marsh - J & M. Teal - Ballantine Books (paperback). An excellent background text about these important natural areas.

6. City Critters - H.R. Russell - Wilkins Printers, Cortland, N.Y., 1968, rev. 1975. Excellent ideas for observations of nature in urban and suburban areas. Gives the idea that nature study is not confined to the "country."

7. Handbook of Nature Study - A.B. Comstock - Comstock Publishers Associates, Cornell University Press, Ithaca, N.Y., 1939, rev. 1970. A classic work. Ms. Comstock discusses many of our "modern" ideas, including the integration of environmental education with regular curricula.

8. Resources Guide to Environmental Education - New Jersey Department of Education, Division of Curriculum & Instruction, 225 W. State Street, Trenton, NJ, 08625. Lists books, periodicals, films, etc.

9. Man and His Environment - Publications - Sales Sections, NEA, 1202 16th St., N.W., Washington, D.C., 20036. Correlates the STRAND approach with other subjects in the curriculum.

10. Denver Urban Education Stories - Executive Director of Instructional Services, Denver Public Schools, Denver, CO. Their ideas can be adapted for use almost anywhere.

11. Coming to Our Senses - Education Committee, S.T.O.P., 2502 Saint Catherine St., West, Montreal 108, Quebec, Canada. Somewhat extreme, but has extensive reading lists.

12. The Indians of New Jersey: Dickin Among the Lenapes - M.R. Harrington - Rutgers University Press, New Brunswick, NJ, 1966

13. Fundamental of Ecology - Eugene Odum, W.W. Saunders Company, Philadelphia, 1971.

14. The Life of the Seashore - William H. Amos, McGraw Hill Book Company, 1966.

15. Shells From Cape Cod to Cape May - Morris K. Jacobson and William K. Emerson, Dover Publications, Inc., New York 1971.

16. 1,000 Questions Answered About the Seashore - Berrill, Dover Publications.

17. The Beaches are Moving, The Drowning of America's Shoreline - Wallace Kaufman and Orrin A. Pilkey, Jr., Duke University Press, N.C., 1983.

18. Barrier Island Handbook - - Stephen P. Leatherman, University of Maryland, Maryland, 1982.

FORMS

Sample forms are included for parent notification, required clothing and equipment, health, class list and a behavior contract. The class list must be sent to the Center at least one week before your trip.

Dear Parents:

This year's resident Marine Environmental Education Program for the _____ grade class is planned for the Gateway National Recreation Area, Sandy Hook Unit in Highlands, N.J. The participating teachers include:

Accommodations are modern; students will be staying in small groups in a dormitory-type building.

While at Sandy Hook, students will be involved in a total marine environmental education experience which emphasizes marine life, ecology, and sensitivity to the environment.

I grant permission for my child, _____
to attend the N.P.S. Environmental Education program at Sandy Hook and to participate in all activities from _____ through _____.

I will not remove my child from the program without first notifying the Center Director or other designated National Park Service employee and the responsible teacher.

_____
(Parent or guardian signature)

Dear Parents:

Please complete the enclosed medical information regarding your child. If your child will require any medication while away from home, please send it with him or her. The medication will be collected by the supervising teacher before the students leave.

All medication should be in original containers, and properly labeled with your child's name, the name of the medication, the amount and times to be given, and the prescribing physician's name.

The policy of the Sandy Hook Discovery Program is to call the parent (or designate), before taking a child to the doctor or hospital. (Sandy Hook uses Monmouth Medical which is 14 miles away in Long Branch, NJ) Your signature in the lower right corner of the medical form will permit medical care in the event that you cannot be reach in an emergency.

Please complete and return this medical information no later than

_____ .

*NOTE: Medical examination is not necessary.

Behavior Contract for each child and parent to sign

I. Your assigned room will be your home for a few days. You are expected to treat it accordingly by readily and cheerfully accepting your share of the responsibilities. This includes, cleaning up your room as well as your dining area.

2. Any child who shows by his/her behavior that he/she cannot live harmoniously with others, endangers his/her own safety or that of his/her fellow students, or cannot accept regulations made for the welfare of all, will be required to call his/her parents, to come and remove him/her from the center.

3. If your parents need to contact you in an emergency, they may call (201) 872- 0115, extension 225 or 224, and we will relay the message.

4. Your "Lights out" time means, good-night, pleasant dreams. We have planned full days of activities and want you to be rested and ready.

5. Any property that is knowingly lost or damaged will be charged to the child responsible.

6. Collecting of any living things (plant or animal) is not permitted, unless it is supervised by an instructor or teacher for a specific class activity.

7. There will be no smoking allowed by any student whatsoever.

8. No radios will be allowed in the dormitory.

****

I promise to follow these rules and regulations during my stay at the Sandy Hook Environmental Center and participation in the Sandy Hook Discovery Program.

_____

(student's signature)

_____

(date)

_____

(parent's signature)

Center Health Form

This side to be filled in by parent.

Child's Name _____ Birth Date _____ Sex ____ Age____

Parent or Guardian _____ Phone _____

Home Address _____
(Street & Number (City) (State) (Zip Code)

If not available in an emergency, notify: _____ Phone: _____

Home Address _____
(Street & Number) (City) (State) (Zip Code)

HEALTH HISTORY: (Check - giving approximate dates)

Ear infections	Hay Fever	Chicken Pox
Rheumatic Fever	Ivy Poisoning, etc.	Measles
Convulsions	Insect Stings	German Measles
Diabetes	Penicillin	Mumps
Behavior	Other Drugs	Asthma

Operations or Serious Injuries (Dates)

Chronic or Recurring Illness

Other Diseases or Details of Above:

Any Specific activities to be encouraged?

Restricted?

IMPORTANT: Please notify the Center if this person is exposed to any communicable disease during the three weeks prior to camp attendance.

Allergies (Please include name of medication, if applicable)

Suggestions from Parents:

PARENT'S AUTHORIZATION: This health history is correct so far as I know, and the person herein described has permission to engate in all prescribed camp activities, except as noted by me and the examining physician. In the event I cannot be reached in an EMERGENCY, I hereby give permission to the physician selected by the camp director to hospitalize,secure proper treatment for, and to order injection, anaesthesic or surgery for my child as named above.

_____
(Signature) (Date)

Class List

Dates at the Sandy Hook Discovery Program _____

School Name _____ School District _____

Address _____ Teacher's Name _____

_____ Grade _____

Students attending the Sandy Hook Discovery Program

Name	Sex (to determine room assignments)
1_____	_____
2_____	_____
3_____	_____
4_____	_____
5_____	_____
6_____	_____
7_____	_____
8_____	_____
9_____	_____
10_____	_____
11_____	_____
12_____	_____
13_____	_____
14_____	_____
15_____	_____
16_____	_____

CLOTHING AND EQUIPMENT LIST

CLOTHING AND EQUIPMENT REQUIRED

Towels (2)
Soap in box
Toothpaste and toothbrush
Comb
Pajamas
Changes of underwear
4 pairs of socks
I-2 pairs of shorts (in season)
Windbreaker
Warm coat or jacket
Raincoat or poncho and rain hat
Thermal underwear (in season)
2-3 pairs of long pants
2 pairs of old shoes or boots
Sneakers
2 shirts
Sweater or sweatshirt
Gloves or mittens (in season)
Hat and scarf (in season)
Rubber boots or galoshes (in season)
Pens and pencils and notebook
Bedding (sleeping bag, sheets, etc.)

OPTIONAL EQUIPMENT

Money for sales items and phone calls
Camera and film
Binoculars
Insect repelent (in season)
Chapstick, sun screen
Rober and slippers
Facial tissue (kleenex)
Canteen
Magnifying glass

NOT PERMITTED

Food
Soda
Candy, Gum
Radio

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