

Research and Interpretation of Marine Areas of the U. S. National Park Service

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THE NATIONAL PARK SERVICE is actively concerned with the preservation, conservation and interpretation of typical ocean and seashore areas within the United States. A number of national parks and monuments contain such marine areas.

Colorful coral gardens are located in the Dry Tortugas of Fort Jefferson National Monument and off the shores of the Virgin Islands National Park. A variety of coastlines are represented at Acadia National Park, Maine; Cape Hatteras National Seashore Recreation Area, North Carolina; Everglades National Park, Florida; San Juan National Historic Site, Puerto Rico; Glacier Bay National Monument, Alaska; Hawaii National Park; Olympic National Park, Washington; Virgin Islands National Park and Channel Islands National Monument, California.

Specific biological and physical features and scenic attractions of each make them unique and representative examples of the Nation's marine and seashore resources. In several other national historic sites and national monuments, the marine features are of secondary significance. Additional areas are currently being investigated for possible addition to the system. Each proposed area must fill a definite need and must be considered of national significance.

The National Park Service has conducted surveys along the Atlantic, Gulf and Pacific Coasts to determine the current status of the "vanishing shorelines." These investigations have classified the use of each portion of the coast, the significance of each section of unoccupied beach and inshore areas and the potential for their recreational and scientific use. Unexploited shorelines are disappearing at an astounding rate while the recreational requirements of a growing nation are expanding. Needs for preservation by federal, state, county and city governments of superlative and suitable areas are recognized.

The National Park Service is obligated to protect and preserve the areas within national parks and monuments and the features therein for the use and the enjoyment of the people. The biological features are maintained under conditions as nearly undisturbed and natural as possible.

Animal and plant forms are rigidly protected. Hunting is not permitted. Sport and commercial fishing activities in marine waters are allowed under restrictions which will protect the basic natural marine environments and fishes.

In addition to sport fishing by hook and line, skin-diving, underwater photography and exploring, fish watching, nature study, boating, swimming, sun bathing, and picnicking are other recreational activities enjoyed. Spear fishing and the collecting of plant, animal, or mineral specimens are not permitted in marine areas of the National Park System except for authorized scientific purposes.

It is vital to determine the extent of permissible recreational activities and areas in which each can be conducted. Adequate research of the marine and shoreline environments is necessary to make such determinations.

Investigations may show that the coral gardens and other marine habitats in

certain waters within the parks and monuments are in such a delicate balance that the elimination or restriction of recreational activities may be necessary in order to preserve these habitats. These would be considered as marine area sanctuaries. Considerable international interest in underwater parks is being developed.

Recent popular books, articles, movies and television programs have created nationwide enthusiasm and interest in the oceans and their inhabitants. Tens of thousands of Americans have donned fins and faceplates and gone beneath the surface to see for themselves; some have been content to learn from the study and experiences of others. The use of SCUBA (self-contained underwater breathing apparatus) equipment is rapidly becoming popular in these activities.

Visitors to our marine national parks and monuments are fascinated by these subjects and are requesting more and accurate information about the underwater world and life along the seashores.

Through interpretive services and research, the National Park Service is attempting to meet the current demands and is making plans for measures to fulfill future requirements. This is part of Mission 66, the ten-year program to develop and staff the entire System so that the needs of a much greater number of visitors may be met. At the same time the wilderness, scenic, scientific and historic resources entrusted to it must be fully safeguarded.

Along the shorelines of the Ocean Strip in Olympic National Park, and along the coasts of Acadia and Virgin Islands National Parks and Cape Hatteras National Seashore, park naturalists lead visitors on conducted seashore trips. On such treks, the story of the sea is unfolded and the life forms are identified and their ecological relationships are explained.

The marine-life story is further interpreted through illustrated talks, campground programs, and museum exhibits in several of these parks.

Planning for marine interpretation is just beginning. Initial ideas for underwater viewing methods and devices, marine museum exhibits, conducted services and popular publications are being developed.

Among these ideas are: underwater trails through representative marine gardens along which visitors could walk in the shallow waters and observe the undersea features through face plates or viewing boxes; open moats which extend along the shore or out into the water, where viewing would be through portholes; piers or docks which contain glass bottom wells extending over reef and shoreline areas so that visitors can observe beneath surface.

Other services being considered include conducted underwater trips, and boat trips using glass-bottom or glass-sided vessels. Underwater closed television circuits and audio pickups to transmit underwater scenes and noises may help bridge the barrier between terrestrial man and life in the sea.

Additional museum exhibits featuring the marine and shoreline stories are being designed. Although the Service prefers the entirely natural display of living things, aquaria may be the answer in some situations.

Popular publications and illustrated check lists will further assist the visitor in acquiring a greater understanding and appreciation of the marine life.

Research now being conducted and needed is directed toward providing information necessary for the formulation of regulations which will protect fish populations and marine habitats, for increased knowledge of the life histories and ecology of the marine forms, for accurate interpretive planning, and for actual interpretation of the marine resources.

Some research is sponsored by the Service through its appropriations but much research is done in cooperation with other federal and state agencies, educational institutions and independent investigators.

Some Service sponsored research is conducted by park personnel and other projects are conducted through contracts with qualified research institutions. Aside from financial participation, the Service is frequently in the position of being able to assist in other ways such as by providing housing, laboratory and storage space, transportation, and various services.

The National Park Service welcomes and encourages cooperative research not only on marine subjects but also on other phases of biology, geology, archaeology and history. Most parks afford ideal conditions for such study under conditions which have a minimum amount of disturbance by adverse land and water uses. Research activities can be expanded to fulfill the desires for basic information and the needs of the National Park Service.

Projects which are underway or are anticipated for the coming year are briefly described as follows:

EVERGLADES NATIONAL PARK

Marine Fisheries Research

Both commercial and sport fishing is permitted by law in Florida Bay and adjacent waters of the park. Under a contract with the National Park Service, the University of Miami Marine Laboratory is conducting research to determine fishing facilities, major fishing areas, estimates of total fishing pressure, catch, and catch per unit of effort, species and fishing methods.

Other phases of this study include a survey of the area, its physical and biological features. This detailed information is necessary for the formulation of fishing regulations which will protect the basic resource.

A three-year project to broaden the scope of the initial program is planned to start next year, pending necessary appropriations. The identification, life histories and other phases of biology of the fishes and other organisms in these waters will be given special emphasis in the proposed project.

Ecological Studies in Florida Bay and Other Coastal Brackish Waters

These inshore areas are of great significance to the valuable shrimp fishery out of Key West on the "Tortugas grounds." Studies of the juvenile and larval shrimp and the environment of the nursery grounds are being investigated by the University of Miami Marine Laboratory with the sponsorship of the Florida State Board of Conservation. In addition to the shrimp tagging program of the Laboratory, the U. S. Bureau of Commercial Fisheries has recently initiated a shrimp marking project in waters of the park.

The National Park Service has been able to assist with these projects by providing housing and other facilities for the research teams.

FORT JEFFERSON NATIONAL MONUMENT

Tortuga Marine Life Survey

Special emphasis on the marine ecology of the marine gardens of the Dry Tortugas will be given special attention in a National Park Service project programmed for next year if funds become available. Based upon past investigations and new studies, an overall type map of the marine communities will be constructed and check-lists and descriptive keys of the marine fishes, inverte-

brates and plants will be developed. This research will serve as the basis for planning the interpretive program.

VIRGIN ISLANDS NATIONAL PARK

Virgin Islands Cooperative Marine Research Project

With its colorful and accessible coral gardens, the waters off the Virgin Islands National Park on St. John Island provide an excellent opportunity for interpretation of the life on the coral reefs. Little information of the life in the inshore waters of this area is available upon which to base a satisfactory program of management, protection and interpretation. Sport fishing is a potentially important recreational activity.

Late this summer, initial work on a three-year program of cooperative investigation of these waters was started. The basic financing is being provided by the Virgin Islands Government with its portion of Federal Aid in Sport Fish Restoration funds which are administered by the Bureau of Sport Fisheries and Wildlife. The Governor has contracted with the University of Miami Marine Laboratory to carry on the actual investigative work. The National Park Service, with a donation from the Jackson Hole Preserve, Incorporated, is providing various facilities such as a work boat, housing, laboratory and storage space and other facilities and has undertaken the project planning and direction. Project Leader Dr. John Randall also will conduct related studies in the St. John Island area on the ecology of coral reef fishes. These studies are being sponsored by a grant from the National Science Foundation.

CHANNEL ISLANDS NATIONAL MONUMENT

Biological Inventory and Survey

Long Beach State College has started an inventory and survey of the biological features of the Channel Islands National Monument. This investigation will include studies of the marine environments and marine life.

OLYMPIC NATIONAL PARK

Intertidal Animal Research, Olympic Ocean Strip

This project, sponsored by the National Parks Association, will provide the National Park Service with information on the life of the shoreline area of the ocean strip. It will result in scientific collections for park use, information needed in museum and interpretive planning and material for a popular publication.

CAPE HATTERAS NATIONAL SEASHORE RECREATION AREA

A Study of the Distribution of the Marine Fauna of Sound and Oceanic Waters in the Vicinity of Cape Hatteras, North Carolina. Cape Hatteras has long been known as the major division point in the distribution of many marine organisms. Many West Indian species find their northern limits here and boreal species terminate their southern distributions in this locality. An investigation to determine the distribution of the two faunal groups present and their movements at different times of the year is being conducted. This work is being directed by Dr. I. E. Gray of Duke University and is financially supported by a grant from the National Science Foundation. National Park Service funds have been used to provide certain necessary facilities.

Information on the marine fauna and ecology will prove important in the

museum and interpretive programs within the area. Fishing is a major activity within this recreational area and fishermen will benefit from the project findings, also.

DISCUSSION

Caribbean and General Session

Discussion Leader: PAUL E. THOMPSON
Discussion Panel: ERNEST HESS, W. D. HEYDECKER
JOHN GEHRINGER, DURBIN TABB

The Recreational Potentials of the Marine Fisheries

DANIEL JANZEN

- Q. Tabb: Could you comment on the possible hazards of pesticides on marine fisheries?
- A. Janzen: This question of pesticides is bothering us more and more every day; in the last six months we have been getting very worried. You all know about the fire ant control program here in the South. That has focused attention on the problem. But we had an indication during the past two years that we were dealing with a sort of Frankenstein, such as we have in the case of radioactivity. Pesticides are accumulating in the bodies of warm blooded animals or in their food and it is having an effect on reproduction. What it is going to do to marine sports fisheries, I don't know, but I expect it will be very serious. The need for pesticide research is very great.
- Q. Hess: In your work do you come in conflict with commercial fisheries?
- A. Janzen: The philosophy of those supporting the commercial fishery program and those supporting the recreational program are quite different but the biology of the fish is the same. The habitat for both is the same, too, and the most important thing is to save that habitat.
- Q. Heydecker: Is it not time to make some effort to find a common basis for a comparison of the economic value of fish caught by anglers with the economic value of fish caught by commercial fishermen? Such value of the commercial fishery has been computed customarily on the basis of the market value of the fish when landed, but in the determination of the value of the sport fishery, all the ancilliary factors of expenditures by anglers for travel, lodging, meals, tackle and bait, etc., have been brought into the picture. Therefore, the comparisons have not been on the same basis. Would you consider this a useful area of research?