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ANNOTATED BIBLIOGRAPHY OF DOCUMENTS RELATED TO ESTUARINE AND MARINE SANCTUARIES

Beverly L. Laird and
Martha A. Patton



Special Report in Applied Marine Science
and Ocean Engineering No. 49

VIRGINIA INSTITUTE OF MARINE SCIENCE
Gloucester Point, Virginia 23062

MARCH 1974

ANNOTATED BIBLIOGRAPHY OF DOCUMENTS RELATED TO
ESTUARINE AND MARINE SANCTUARIES

by

Beverly L. Laird

and

Martha A. Patton

Special Report in Applied Marine Science
and Ocean Engineering No. 49
of the
Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

William J. Hargis, Jr.
Director
March 1974

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GUIDE TO USERS

Entries are made alphabetically by author, where known, or by agency. In the case of state agency reports, references can be found under the name of the state. For federal agencies, entries are listed with the major agency; for example, the "Bureau of Outdoor Recreation" and "National Park Service" are both listed under "U. S. Department of Interior." Congressional hearings are listed under "U. S. Senate" or "U. S. House of Representatives."

INTRODUCTION

In November, 1973, a three-day symposium, sponsored by the Virginia Institute of Marine Science, was convened in Washington, D. C. The purpose of the conference was to review background on sanctuaries and develop conceptual and policy alternatives for the implementation of the Coastal Zone Management Act of 1972 (P.L. 92-583), authorizing establishment of estuarine sanctuaries, and the Marine Protection, Research, and Sanctuaries Act of 1972 (P.L. 92-532), authorizing the establishment of marine sanctuaries.

This annotated bibliography, which was developed for use as background information for the conference, includes all relevant material from *Documents Related to Management of the Coastal Zone: An Annotated Bibliography* (Laird, et al., 1973) and from numerous newsletters, conservation magazines, and journals. This bibliography has been updated to include materials which were brought to our attention by conference participants. It is hoped that this work will assist in implementation and operation of the above mentioned laws.

This report is available for a mailing and handling fee of \$2.00 from:

Office of Special Programs
Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

ANNOTATED BIBLIOGRAPHY

- Anderson, Richard O. 1973. "Editorial: Structure and Function of AFS--
What Might Be Better?" *The Newsletter of the American
Fisheries Society* 17(82): 1.

The American Fisheries Society promotes scientific research and effective management of aquatic ecosystems and organisms for optimum use and benefit of the public. It supports programs which maintain or enhance the quality and achieve the values from fishes and other aquatic organisms and the aquatic environments at the international, national, regional, and local levels.

- Anonymous. May 1969. "Estuarine Lab at U.N.H.," *New England Marine Resources Information* 1, p. 4.

News of Jackson Estuarine Laboratory of the University of New Hampshire, the first research laboratory to emphasize the word "estuarine" in its name.

- Anonymous. 1971. "Editorial: Essential Inviolability of National Parks and 'Equivalent Reserves'," *Biological Conservation* 3(2): 83.

The editor discusses the conflict between conservation and development. He contends that for those areas which are set aside by national laws for public or scientific use in perpetuity, there should never be any question of violation of any sort. Any serious change should be considered only through mutual agreement following wide public debate.

- Anonymous. July 21, 1972. "The Drive to Save America's Shorelines," *U. S. News and World Report*, pp. 38-40.

Efforts by conservationists with strong backing from government agencies to preserve undeveloped U. S. shoreline are evaluated.

- Anonymous. 1972. "The Coastal Management Problem," Annual Report for Year 1, New York State Sea Grant Program, State University of New York and Cornell University, pp. 17-26.

Descriptions of several Sea Grant supported projects which are dealing with the physical and chemical processes of the land and sea along the coast and the resources of the New York region.

Anonymous. 1972. "Sierra Club Commentary News View: Study Group Proposes National Park Changes," *Sierra Club Bulletin* 57(9): 16.

Sierra Club study group recommended that the national park system be managed with a return to the goal of preserving those areas in their natural state as opposed to recent tendencies to redesign the parks into manmade resorts and playgrounds.

Anonymous. March 1973. "Nature Conservancy Acquires 1,135 Acres," *Virginian Pilot*, Norfolk, Virginia.

Newspaper article reporting Nature Conservancy acquisition of additional 1,135 acres of Hog Island off Virginia's Eastern Shore.

Armstrong, J. M. and E. H. Bradley, Jr. 1972. "Status of State Coastal Zone Management Program," *Marine Technology Society Journal* 6(5): 7-16.

This article summarized an extensive review of several types of coastal management programs, and the authors briefly discussed the types of shoreland management programs which have been instituted in coastal states. These programs fall into three major categories: 1) acquisition programs, 2) programs involving the institution of a permit system to regulate activities in wetland areas, and 3) programs involving the institution of a system of restrictive orders placed on wetlands areas to limit the uses which can take place there. The advantages and disadvantages of each type of program are briefly presented.

Atlantic Waterfowl Council. 1968. *Evaluation of Atlantic Coast Estuarine Zone*, Conference Proceedings, Marine Resources Committee, Atlantic Waterfowl Council, Princeton, New Jersey.

Agreement was reached at the conference that as much area of coastal wetlands as possible should be retained by direct ownership to preserve the options, both now and in the future. Estuarine research is incomplete, and since zoning was felt to be ineffective, the areas should be held as they now exist until suitable management knowledge is attained.

Australian Conservation Foundation. 1969. "Conservation of the Great Barrier Reef of Australia," *Biological Conservation* 1(3): 249-250.

Describes the victory of conservationists over a proposal to mine dead coral from the Great Barrier Reef of Australia.

Batkins, John F. and Forrest R. White (eds.). 1971. "A Multidisciplinary Land-Use Study in Virginia Beach, Virginia: Methodology and Recommendations," Old Dominion University Research Foundation, Norfolk, Virginia.

Preservation may not be justified where unique organisms and unique biological communities are not present.

Bauer, E. A. 1972. "Hawaiian Islands National Wildlife Refuge," *Sea Frontiers* 18(6): 346-356.

Describes the wildlife (particularly birds, seals, and turtles) which can be found on the islands of the Hawaiian Islands National Wildlife Refuge.

Bennett, D. W. 1973. "Whose Beach This Is I Think I Know," *Underwater Naturalist* 8(1): 23.

Commenting on the controversy over public rights to beach access, the Littoral Society feels that there must be a half-way point between outright beach bans and unregulated beach destruction.

Bissel, H. D. April 1972. "Coastal Zone Planning in California," *Shore and Beach* 40.

The article discusses the Comprehensive Ocean Area Plan (COAP) of California. COAP has suggested several criteria for use of coastal zone resources: 1) the proposed use must allow adequate protection of unique sites which should be preserved for scientific, educational, or other public purposes, 2) the proposed use must be substantially dependent on the coastal zone for its existence, 3) the use must allow optional uses for future generations unless benefits justify its loss, 4) the proposed use must not detract from but should enhance or protect environmental quality and scenic amenities, 5) the proposed use must be determined to be of substantial public benefit if it would interfere with maintenance of ecological stability and preservation, and 6) the proposed use should be expected to yield greater long-term public benefits than any alternative use.'

Bivens, John Jr. 1968. Discussion in *Evaluation of Atlantic Coast Estuarine Zone*, Conference Proceedings, Marine Resources Committee, Atlantic Waterfowl Council, Princeton, New Jersey.

The author discusses the conflicts between conservation and development. He discusses various methods to protect areas which have been designated for protection and conservation. He concludes that the best way to protect valuable areas is through ownership.

Blair, W. Frank. 1972. "Compromises between Wilderness Preservation and Water Resources Development," in *Conflicts in Water Resources Planning* (E. F. Gloyna and W. S. Butcher, eds.), University of Texas, Austin, pp. 103-106.

Aesthetic values is the area of possibly the greatest disagreement between developers' and conservationists' seemingly incompatible uses. The author contends that we must preserve samples of ecological diversity throughout the world because 1) we own it to future generations, 2) they are needed for use as baselines against which we can judge the effects of man in other areas, and 3) they are needed for use as "gene banks".

Bodovitz, Joseph E. 1971. "The San Francisco Bay Story," in *Citizens Program for the Chesapeake Bay*, Conference Proceedings, University of Maryland, College Park, pp. 29-34.

A recognition that both conservation and development are going to be required in the physical environment is needed. The San Francisco Bay Conservation and Development Commission is pioneering in answering the questions of allocation, siting, responsibility, and criteria. The author concludes that the Bay should be regarded as the most valuable natural asset of the entire region since it benefits not only the residents of the Bay area but all of California and the nation.

Borissoff, Vladimir A. 1971. "Soviet System of Protected Natural Areas," *National Parks and Conservation Magazine* 45(6): 8-14.

Presents the two main categories of nature protection in the Soviet Union. They are 1) State Nature Reserves, or *zapovedniks*, and 2) Natural Preserves, or *zakazniks*. *Zapovedniks* are territories forever withdrawn from economic or commercial use for scientific, cultural, and educational purposes. *Zakazniks* are areas where part of the natural resources may be used for economic purposes but only for a limited time and only to the extent that such use does not harm protected objects.

Brady, D. K., et al. 1969. "Future Use of the Chesapeake Bay for Cooling Thermal Discharges," Seminar Report: Water, Sciences and Management Program, Department of Geography and Environmental Engineering, Johns Hopkins University, Baltimore, Maryland.

Unless conditions are preserved in the great Atlantic estuaries as "fish nurseries", changes can be expected, perhaps deterioration, in fish fauna important to the entire West Atlantic.

Brasher, Nugent, Jr. 1973. "Platforms in the Gulf," *Salt Water Sportsman* 34(3): 38-39, 60-65.

Author presents the advantages of oil platforms in the Gulf off of Louisiana since they attract fish and marine growth such as coral.

Brown, Horace H. 1970. "Coastal Zone Planning in Connecticut," in *Proceedings of New England Coastal Zone Management Conference*, pp. 139-156.

It is the considered judgment of the State of Connecticut that acquisition is the best means of protecting the best of the remaining tidal wetlands. Under the provisions of Connecticut's wetlands protection law, the Department of Agriculture and Natural Resources is preparing an inventory of all tidal wetlands as defined in the law, mapping these areas, holding public hearings on each section, and finally designating them as tidal wetlands in accordance with the Act.

Buchinger, Maria. 1968. "International Cooperation in Natural Area Preservation," *Bioscience* 18(5): 388-392.

Details the recommendations by the section on ecology and conservation of the Conference on Neotropical Botany, July 1962, regarding preservation of natural areas. The author concludes that if an area is worth saving, all necessary steps for its protection must be taken. Superfluous justifications are not needed because arguments for establishing a network of natural areas are strong enough to stand alone.

Butcher, Russell D. 1973. "A New Approach to Conservation in Maine," *National Parks and Conservation Magazine* 47(6): 13-15.

The use of conservation easements, a legal device by which landowners may establish environmental safeguards for their property which continuing to own it, is beginning to supplement other conservation programs in Maine. The owner benefits from tax incentives, and his property continues to provide tax revenues in support of the local economy, unlike lands in a state or national park or wildlife refuge. It is hoped that the Maine program will be followed where it may not always be possible or desirable to purchase lands outright for parks and nature reserves.

Cain, Stanley A. 1968. "Natural Area Preservation: National Urgency," *Bioscience* 18(5): 399-401.

The author emphasizes that the value of a natural area definition and a system of natural area classification depends strictly on a given purpose. Natural area preserves exist which can be studied and enjoyed provided they are not too heavily visited and provided the research is not manipulative. There remains a need for a system of natural areas devoted to research needs or "outdoor laboratories".

California Advisory Commission on Marine and Coastal Resources. 1971. *The Monterey Bay Pilot Planning Project: An Experiment in Decision-Making in Coastal Zone Planning*, Conference Proceedings, 11th Meeting, California.

Four types of resource areas were recommended for mandatory zoning: Resource-Use Area 1 would include geographical areas that have value as species habitats or educational and scientific research preserves. Resource-Use Area 2 would include unique recreational and aesthetic opportunities. Resource-Use Area 3 would include areas with high recreational value capable of supporting greater development which would enhance that value. Resource-Use Area 4 would be any areas of scenic or recreational value that may be partially developed for low density residential and light ocean or recreational-related commerce. The Research and Education Working Group recommended broad reserves to include three categories of use: observation only, with no modifications except development of access; moderate consumption of the reserve with carefully controlled collection by advanced university classes; and manipulative use of the reserve.

California, Orange County. November 1971. "Something Worth Preserving: A Statement of the Need to Enact the San Diego and Orange County Marine Sanctuary Act," Testimony presented before the U. S. Senate and U. S. House of Representatives Committees, Washington, D. C.

The purpose of the testimony was to urge the passage of the "San Diego and Orange County Marine Sanctuary Act", The legislation was intended to prohibit granting of leases by the Federal government for the exploration or extraction of oil, gas, or other minerals on Federal tidelands of Orange County and San Diego. The testimony defines a Marine Life Refuge as an area of the coast, usually encompassing several tide pool areas, protected by state legislation. The legislation would prohibit the taking or disturbing of marine animals and plant life, as well as the natural rocks and soil itself.

California, University of. 1972. "Natural Land and Water Reserves System Information Sheet," University-Wide Natural Land and Water Reserves System, University of California.

The programs of the Natural Land and Water Reserves System (NLWRS) are outlined. Type of protection varies with type of area being preserved. Reserves are available for scientific and educational use but recreational and other non-educational use is not permitted.

Caspers, Hubert. 1967. "Estuaries: Analysis of Definitions and Biological Considerations," in *Estuaries* (George H. Lauff, ed.), American Association for the Advancement of Science, Washington, D. C., pp. 6-8.

Analysis of definitions of estuaries.

Chace, Burton W. 1971. "Let's Find a Way to Expedite Beach Preservation and Development," *Shore and Beach* 39(1): 7-9.

Chace discusses the conflicts which arose concerning the development of Point Dune beach in northern California. He appeals to planners to begin thinking of ways in which shoreline development can be processed at a more rapid pace, especially for recreation.

Chapman, V. J. 1969. "Conservation of Island Ecosystems in the South-West Pacific," *Biological Conservation* 1(2): 159-165.

An account is given of the present situation in respect to conservation areas in New Zealand and its offshore islands, the Kermadec Islands, Norfolk Island, Niue Island, the Fiji Islands, Cook Islands, Tongu Islands, and the Samoan Islands. A table is given with details of the 42 New Zealand offshore islands or groups of islands that are considered to be of major importance.

Clapper, Louis S. 1973. "Report to National Wildlife Federation Members, Washington Scene: Parks and People," *National Wildlife* 11(3): 32A.

Discusses policy questions now being considered in the Department of Interior and Congress regarding natural areas. The National Wildlife Federation is of the opinion that unique and dedicated areas, such as wildlife refuges, should be accorded maximum "hard core" protection, with any incompatible developments barred completely or moved to outside regions.

Clement, Roland. 1968. Discussion in *Evaluation of Atlantic Coast Estuarine Zone*, Conference Proceedings, Marine Resources Committee, Atlantic Waterfowl Council, Princeton, New Jersey.

Discussion of public attitudes toward wetlands.

Cliff, Edward P. 1971. "Our Research Natural Areas," *American Forests*, pp. 36-38, 53-54.

This article discusses the U. S. Forest Service's function of administering the National Wilderness Preservation System. A Forest Service RNA (Research Natural Area) is a portion of a National Forest or Grassland set aside and protected either because it is typical of a forest or range condition, or because it is unique. The RNA's provide scientists with benchmarks against which to compare disturbed or managed lands, and also provide gene pools and study areas for natural scientists.

Coastal Zone Resources Corporation. 1970. "A Plan for the North Carolina Estuary Study," The North Carolina Department of Conservation and Development, Division of Commercial and Sport Fisheries.

The North Carolina Wildlife Resources Commission is charged with managing, restoring, developing, cultivating, preserving, protecting, and regulating the wildlife resources of the state. The Commission maintains that it will be necessary to prepare a graphic biological inventory of the estuarine region and recommends that maps be prepared showing public and private wildlife management areas, important small game hunting areas, distribution of big game species, important areas for migratory waterfowl, and habitats of rare and endangered species as well as maps showing locations of important resident fish populations, areas essential to anadromous and migratory marine species, and areas important for production of mollusks and crustaceans.

Commission on Marine Science, Engineering and Resources. 1969. *Our Nation and the Sea*. USGPO, Washington, D. C.

The Commission recommended that representative coastal and estuarine sites be established as natural preserves for conduct of baseline studies. Special attention to recreation was advocated, especially to accommodate more than local interests. Marine sanctuaries or preserves were recommended to protect and manage endangered areas. The Commission recommended that two marine preserves be established on each coast to be reserved for ecological baseline studies.

Connecticut College. 1961. "Connecticut's Coastal Marshes, A Vanishing Resource," *Connecticut Arboretum Bulletin* 12.

The value of salt marshes as scientific research areas, sources of food, protection from erosion and habitat for wildlife is discussed along with the geologic aspects of Connecticut's coastal marshes. Steps such as acquisition, zoning, control legislation, and public education are advocated for preservation of the marshes.

Connell, D. W. 1972. "New Marine Park Legislation in Australia," *Biological Conservation* 4(4): 302-303.

The article discusses the creation of six marine national parks or "aquatic reserves" off the Australian coast in the State of South Australia.

Copeland, B. J., H. T. Odum, and D. C. Cooper. 1972. "Water Quality for Preservation of Estuarine Ecology," in *Conflicts in Water Resources Planning*, Center for Research on Water Resources, Texas University, Austin, pp. 107-126.

Estuaries are important for 1) their use by valuable commercial and sport fishes and invertebrates, 2) production of available protein for man, and 3) for recreation and industry. The problem of water quality necessary for preservation of the ecology of estuaries is discussed.

Council on Environmental Quality. 1970. *Environmental Quality--The First Annual Report*. USGPO, Washington, D. C.

The Council made the following specific recommendations in its first annual report: 1) National Wilderness areas should be designated as quickly as possible, 2) the National Park Service should accelerate its control systems experiments to prevent overcrowding and traffic congestion in the National Parks, 3) greater emphasis should be given through existing programs to acquire small parks and natural areas near cities, and 4) additional areas of special ecological significance should be protected and the Federal Government should identify and establish a national registry for research natural areas.

Council on Environmental Quality. 1970. *Ocean Dumping: A National Policy*. A Report to the President, Washington, D. C.

In relation to ocean dumping, the Council recommended that high priority be given to protection of the most biologically-active areas of the marine environment, the estuaries and nearshore shallows, where many organisms breed or spawn. Also, marine research preserves should be established to protect representative marine ecosystems for research and to serve as ecological baselines.

Council on Environmental Quality. 1971. *Environmental Quality--The Second Annual Report*. USGPO, Washington, D. C.

The 1971 annual report discussed various federal, state, and local actions for preservation of valuable areas and for provision of recreational areas. The Council felt that most states and localities need to accelerate acquisition of park areas and to make them more accessible to urban society. Private activity was led by the 5 largest national environmental organizations: the National Wildlife Federation, the National Audubon Society, the Sierra Club, the Izaak Walton League of America, and the Wilderness Society.

Council on Environmental Quality. 1972. *Environmental Quality--The Third Annual Report*. USGPO, Washington, D. C.

The 1972 annual report specifically recommended conservation of genetic resources and suggested that this is one of the main justifications for establishment of marine and estuarine sanctuaries. Relevant state activities were discussed. To the purposes of preservation and recreation has been added education. The goal to make the parks available to all conflicts with the goal of preserving the parks in a pristine state. The Council noted that citizen advisers to federal groups have suggested that preservation rather than recreation be the central focus of the National Park Service in the next hundred years.

Dasmann, Raymond F. 1966. "Man in North America," in *Future Environments of North America* (F. F. Darling and J. P. Milton, eds.), The Natural History Press, Garden City, New York, pp. 326-334.

The author traces the development of present-day attitudes toward the concept of wilderness areas and preservation.

Delaware Governor's Task Force on Marine and Coastal Affairs. February 1971. "Coastal Zone Management for Delaware," Dover, Delaware.

The Task Force recommended that the state require an environmental impact statement with associated public hearings of all major development projects. Outdoor recreation was recognized as an already existing major desirable activity, but felt that since these activities have not been compatible with most kinds of heavy industry or with over-commercialization of recreational pursuits, land use controls would be necessary to encourage high quality recreation and fisheries and to discourage the industries and commerce that adversely affect the environment. Adequate land and water use controls should include zoning, a system of permits, strengthened subaqueous land laws, cease and desist authority, and required environmental impact statements on all major public and private construction projects. Areas for acquisition have been designated by the Delaware Comprehensive Outdoor Recreation Plan and are identified in the report.

De Sylva, Donald P. 1971. "Recreation for the Future in the Coastal Environment," Rosenstiel School of Marine and Atmospheric Science, University of Miami, Florida.

The author indicates that it is the job of the biologists to supply data to politicians and voters and to help determine which areas should best be used for a given recreational or industrial use, or which areas should be left as preserves and nursery grounds.

Dow, Robert L. 1968. Discussion in *Evaluation of Atlantic Coast Estuarine Zone*, Conference Proceedings, Marine Resources Committee, Atlantic Waterfowl Council, Princeton, New Jersey.

Such negative factors as cost of estuary repairs, loss of intangible values such as education and study, aesthetic, mental and emotional health, and recreation, the loss of future aquacultural values and cost of restoring species must be considered when evaluating the effects of estuarine alteration.

Ducsik, Dennis W. 1971. "The Crisis in Shoreline Recreation Lands," in *Papers on National Land Use Policy Issues*, prepared for the Committee on Interior and Insular Affairs, U. S. Senate, 92nd Congress, USGPO, Washington, D. C., pp. 107-144.

The author points to several reasons for the critical status of shoreline resources, including attitudes, lack of cooperation and coordination among governmental agencies.

Ducsik, Dennis W. 1972. "The Crisis in Shoreline Recreation," in *Power, Pollution, and Public Policy* (D. W. Ducsik, ed.), Massachusetts Institute of Technology, National Sea Grant Program, Cambridge, pp. 90-186.

A new framework for long-term coastal zone management is proposed that places the prime responsibility for shoreline regulation in the hands of the states. At the same time, a strong federal involvement is necessary to coordinate efforts of the individual states and resolve conflicts and to establish uniform objectives and guidelines to assist the states in decision making in the absence of the private market discipline.

Eaton, Richard O. 1971. "Editorial: Philosophy of the American Shore and Beach Preservation Association," *Shore and Beach* 39(1): 4.

The Association regards beach preservation as their job, and expresses interest in people more than in anything else. The editor feels that the critical issue is what people are willing to accept in terms of personal comfort versus questionable comfort for posterity. Opposition to the "hysterical" approach to preservation is expressed and the Association advocates an approach which follows the interests of humanity.

Eichhorn, Noel D. 1966. "The Special Role of National Parks," in *Future Environments of North America* (F. F. Darling and J. P. Milton, eds.), The Natural History Press, Garden City, New York, pp. 335-341.

Description of the rationale behind the establishment of national parks. National parks are not recreation areas in the usual sense because they are meant to be seen and enjoyed but left unaltered by man. The author feels that "housekeeping functions", i.e. residential areas for park personnel, maintenance buildings, etc., should be located near but outside of the park boundaries to reduce their impacts on the parks.

Erz, Wolfgang. 1973. "West German National Park to Be Established in the Wadden Sea," *Biological Conservation* 5(1): 74-75.

Establishment of a 1,400 sq. km. area just south of the West German border in the "Waddensea" as a National Park. The status of National Park will prevent the area from being used as a military firing range and will protect it from the impacts to be expected from growing tourism on the coast.

Farragut, Paul R. 1969. "Chesapeake Bay: Shoreline Utilization in the Baltimore Region," Regional Planning Council, Baltimore, Maryland.

The study concerns itself with the present and potential use of the regional shoreline. Where it is found that present public use of the shoreline is inadequate, possibilities of increasing public use are investigated. The study found lack of access by the population at large to be the major problem characterizing land use of the Chesapeake Bay shoreline. A program of high quality education for young people oriented toward natural resource appreciation was recommended.

Federal Committee on Research Natural Areas. 1968. "A Directory of Research Natural Areas," USGPO, Washington, D. C. (and 1972 Supplement).

Description of more than 300 natural areas set aside on Federal lands for scientific and educational purposes.

Federal Water Pollution Control Administration. 1969. *The National Estuarine Pollution Study*. A Report to Congress, Washington, D. C.

One of the stated 5-year goals was to improve methods of preventing deterioration of important estuarine habitats, and prevent adverse effects of water-use projects and oil and mineral exploration. The report named opening more shoreline to the public as a major need, and suggested ways to make marine recreational resources serve more people, including 1) opening up relatively inaccessible or remote beaches as "sail in" day or overnight camping opportunities, and 2) developing underwater parks and use submerged viewing devices for those who do not wish to swim underwater.

Fischer, D. W. 1971. "Southern Rhode Island Coastal Zone Attitudes: Attitudes of Property Owners in the Southern Rhode Island Coastal Zone and Their Impact on the Coastal Environment," Sea Grant Occasional Paper 71-002, University of Rhode Island, Kingston.

In a survey of owner attitudes, Fischer found that most owners felt that conservation-oriented uses are the typical and best uses of marshlands. The residents there the longest opposed filling and dredging. Marsh protection, land use planning, and zoning are more strongly supported by high income groups than by low income groups.

Fisher, A. C., J. V. Krutilla, and C. J. Cicchitti. 1972. "The Economics of Environmental Preservation: A Theoretical and Empirical Analysis," *The American Economic Review* 62(4): 605-619.

A modeling technique is presented for allocation of natural environments between the two broad alternatives of preservation and development.

Florida Coastal Coordinating Council. 1971. "Escarosa: A Preliminary Study of Coastal Zone Management Problems in Escambia and Santa Rosa Counties, Florida," Tallahassee, Florida.

The report discusses the implications of the newly created Gulf Islands National Seashore system, which includes undeveloped portions of Santa Rosa Island and Perdido Key. Local residents are strongly in favor of preservation of the beaches. The Council points out that planning efforts cannot be restricted to the immediate coastal area and discusses future options for the area. The state's establishment of an aquatic preserve system is also discussed.

Florida Interagency Advisory Committee on Submerged Land Management. 1968. "Bulkhead Line Review and Recommendations for Brevard (and other) Counties," Report No. 1, Tallahassee.

The Committee recommended a continuation of the moratorium on submerged land sales and dredge-fill permits in certain areas and recommended that the Ragged Keys be included in the boundary of the Biscayne National Monument. A 10,000 acre offshore preserve was established by the Trustees of the Internal Improvement Fund in Estero Bay behind Fort Myers Beach in 1966. This action set a precedent which the Committee plans to follow in recommending additional aquatic areas for an expanded system of statewide preserves independent of or associated with existing state parks.

Fogg, F. F. 1964. "Salt Marshes of New Hampshire, Its Past, Present, and Future Evaluation," New Hampshire Fish and Game Department.

A history of the New Hampshire salt marshes is given along with a description of the natural resources therein. It is recommended that the salt marshes be placed in public ownership so they may be preserved for future generations and for species preservation.

Foster, Charles H. W. 1968. "Action by State Departments of Conservation," *Bioscience* 18(5): 418-420.

It is the author's opinion that state departments of conservation, while playing a large part in the natural area movement, will tend to play a supporting rather than leading role. He points to the tendency of public administrators to be conservative and short-range in outlook and attributes this to their public accountability. The assistance and advice of competent scientists would greatly benefit administrators in planning future projects.

Franklin, Jerry F., Robert E. Jenkins, and Robert M. Romancier. 1972. "Research Natural Areas: Contributors to Environmental Quality Programs," *Journal of Environmental Quality* 1(2): 133-139.

Research programs on environmental quality will require studies of conditions in natural environments. The Research Natural Area concept, which will provide for this research, and history and scope of present programs are outlined.

Franklin, J. F. and J. M. Trappe. 1968. "Natural Areas," *Journal of Forestry* 66: 456-461.

Advocate adequate, representative natural areas for study in scientific forestry.

Fraser, Stephen, 1972. "A National Seashore Proves a Mixed Blessing for Its Surrounding County," *City* 6(1): 36-44.

Discussion of problems arising from the establishment of Point Reyes National Seashore in Marin County, California. Problems include despoliation of wilderness areas, interference with wildlife habitats, automobile congestion, increased police and other public safety needs, a declining county property tax base, and tourism run rampant. The National Park Service and the citizens of Marin County are attempting to find solutions to these unanticipated problems.

Goodwin, Richard H. 1968. "The Role of Private Agencies in Natural Area Preservation," *Bioscience* 18(5): 393-395.

The author discusses the advantages and disadvantages of preservation of natural areas by private agencies.

Graham, Edward H. 1965. "A World Network of Research Reserves," *New Scientist*, pp. 127-129.

The author reviews the work of the International Union for Conservation of Nature and Natural Resources and other international groups in preserving rare and endangered species and habitats. The author advocates the maintenance of at least one research reserve in each of the world's major ecosystems. He also calls for an educational program to inform the public and political leaders of the need for reserves and the potential benefits of research. He emphasizes the urgency involved in systematic acquisition of lands especially in the preservation of marshlands, estuaries and islands.

Grice, Frank. 1970. "Estuarine and Coastal Management in Massachusetts," *Proceedings of the New England Coastal Zone Management Conference*, pp. 147-149.

Discusses the Commonwealth of Massachusetts' comprehensive program designed to inventory, categorize, protect, develop, and manage estuarine and coastal areas.

Hargis, William J., Jr. 1972. "Solution to Conflict in the Coastal Zone," in *Coastal Zone Pollution Management* (B. L. Edge, ed.), Conference Proceedings, Southeast Region Environmental Protection Agency and College of Engineering, Clemson University, South Carolina.

The author advocates the establishment of a National Coastal Zone Program and in a review of the pertinent literature indicates that development of such a Program has been urged by several groups, including the National Governor's Conference, the National Legislative Conference, the Commission of Marine Science, Engineering, and Resources, and the Coastal States Organization. Within such a management system, the states can delegate responsibility as needed, within reasonable Federal guidelines.

Hawaii Department of Planning and Economic Development. 1969. "Hawaii and the Sea," Report to the Governor's Task Force on Oceanography, Honolulu.

The specific recommendation of the study group related to sanctuaries was that the program of establishing underwater parks and preserves be expanded to include Maui, Molokai, and Kauai. Certain areas should be upgraded from conservation areas to underwater parks and the state should establish marine conservation areas in the counties of Maui and Kauai that can be developed into underwater parks.

Hawaii, University of. 1971. "Effort to Save Rare Reef Ecosystem," *Sea Grant Newsletter*, University of Hawaii, 1(3).

Efforts of the Natural Area Reserves Commission to educate the marine science community concerning the fragile ecosystem in Ahihi Bay.

Hawaii, University of. 1973. "Hearing Set on Wildlife Refuge," *Sea Grant Newsletter*, University of Hawaii 3(4): 3.

Public hearing to consider action on a proposal to designate a major part of the leeward Hawaiian Archipelago as a Wilderness Area within the National Wilderness Preservation System.

Hawaii, University of. 1973. "Na Ala Hele," *Sea Grant Newsletter*, University of Hawaii 3(5): 6-7.

Information about Trails for Walking, a statewide trail complex in Hawaii.

Hawaii, University of. 1973. "Experts to Explain Eco-Concepts," *Sea Grant Newsletter*, University of Hawaii 3(6): 1, 5.

Announcement of open symposium concerning natural areas, wilderness areas, and ecological reserve areas in Hawaii, the U. S., and the Pacific Basin.

Hawaii, University of. 1973. "Kinau Is Hawaii's First Natural Area Reserve," *Sea Grant Newsletter*, University of Hawaii 3(7): 5.

Announcement of establishment of the Ahihi-Kinau Natural Area Reserve on Maui.

Hay, Edwards. 1972. "Natural Areas for Scientific Study," *Pacific Discovery* 25(3): 1-9.

Discusses activities of the Natural Land and Water Reserve System (NLWRS) of the University of California. Committee members make choices for inclusion to the system based on six criteria: 1) amount of disturbance the land has already undergone, 2) its accessibility, 3) variability of biota, 4) urgency of the need for protection, 5) availability of the land, and 6) feasibility for the University to protect and care for the land.

Hendee, John C. and George H. Stankey. 1973. "Biocentricity in Wilderness Management," *Bioscience* 23(9): 535-538.

Advantages and disadvantages of the biocentric approach to wilderness management. Authors call for scientific, professional, and political debate to develop a deliberate philosophy to guide wilderness management.

Hodgdon, A. R. 1969. "The New Hampshire Natural Preserves Forum, U.S.A.," *Biological Conservation* 1(4): 337-338.

The author discusses the efforts of the New Hampshire Natural Preserves Forum in centralizing and focusing the various interests with conservation. The Forum is loosely organized, serving as a catalyst for a more coordinated group effort. Such coordinating agencies may prove useful in other areas where a concerted action for setting aside land or conservation is called for.

Hunt, Naomi. 1972. "State Parks and the National Park Service," *Parks and Recreation* 7: 12-17.

Discusses the necessary balance between preservation and use and presents three specific examples of mutual cooperation between state and federal government.

Jenkins, Robert E. and W. Brian Bedford. 1973. "The Use of Natural Areas to Establish Environmental Baselines," *Biological Conservation* 5(3): 168-174.

Before wise decisions can be made in environmental management, an understanding of ecosystem functioning and reaction to change is needed. Baseline information from undisturbed ecosystems must be obtained in order to obtain this information. The authors express a need for a comprehensive natural area system to preserve, manage, and catalog for use, the full range of natural area types.

Johns, Will. 1969. "Estuaries: America's Most Vulnerable Frontiers," National Wildlife Federation, Washington, D. C.

Author discusses the difference between natural, dynamic change of an estuary produced as a result of its link with the sea and the permanent change which man is causing in estuaries. He states that above all else, remaining estuarine areas must be left in their natural condition.

Johnson, Stephen P. 1972. "Conservation Frontier of the Pacific," *National Parks and Conservation Magazine* 46(4): 13-17.

This article is the first of a three-part series dealing with the possibility of establishing a major nature reserve in the Palauan Islands of the Pacific Trust Territory.

Johnson, Stephen P. 1972. "Palau: Exploring the Limestone Island," *National Parks and Conservation Magazine* 46(7): 4-8.

Explores the natural history and scenic beauty of the Palauan Islands, with particular attention to the unique or endangered species of plants and animals of the region and to the existing nature reserve in the Limestone Islands.

Johnson, P. 1972. "Palau and a Seventy Islands Tropical Park," *National Parks and Conservation Magazine* 46(8): 9-13.

Johnson outlines the social and political obstacles to the establishment of a major island park or reserve and recommends ways to reduce these obstructions.

Jones, Fred L. 1967. "Coastal Parks in California," *Shore and Beach* 35(1): 29-30.

The author, Director of California's Department of Parks and Recreation, discusses the department's interest in California's coastal recreation resources. Critical problems encountered by the program, including flood control, water conservation, and beach improvement, are discussed. Jones points out the need for a system of coastal preserves which will save outstanding examples of shoreline and underwater fauna and flora.

Karr, Malcolm H. and Glen L. Wilfert. 1971. "Effects of Institutional Constraints and Resources Planning on Growth in and near Estuaries," *Proceedings of the Technical Conference on Estuaries of the Pacific Northwest*, Circular No. 42, Engineering Experiment Station, Oregon State University, Corvallis, pp. 312-324.

To illustrate the fact that states have been searching for better management practices, the authors examine various legislation for shoreland management under consideration in the State of Washington.

Kelly, Lines F. 1972. "Citizen Participation in Protecting Bay Wetlands," *Chesapeake Report*, Chesapeake Bay Foundation, Inc.

The report describes the value of the Bay wetlands, the threats to them, and the Maryland and Virginia statutes for their protection. The author explains how citizens can obtain information and act to help preserve specific wetlands by submitting letters of opposition and oral statements at public hearings.

Kemsley, William. 1973. "We're Loving Our Wilderness to Death," *Audubon* 75(3): 111-113.

Kemsley advocates a new code of ethics for backpackers to help stem the destruction of the backcountry and gives managerial measures which have been tried across the country.

Ketchum, Bostwick H. (ed.). 1972. *The Water's Edge: Critical Problems of the Coastal Zone*, Conference Proceedings, Massachusetts Institute of Technology Press, Cambridge.

Coastal Zone Workshop cosponsored by Institute of Ecology and Woods Hole Oceanographic Institution. Workshop recommends the creation of a national system of Coastal Area Preserves for the permanent protection of the basic genetic stocks of plants and animals which constitute ecosystems. The Coastal Area Preserves should be severely restricted in use with other coastal areas developed for recreational uses. Purposes for the establishment of Coastal Area Preserves include 1) provision of natural habitats which will assure species diversity and stability, 2) compensation for overexploitation of resources, 3) nursery grounds, 4) species populations and communities for restocking other areas, 5) areas for research to obtain baseline data. The preserves could be divided into regions, the innermost would be nonaccess, the outermost would permit hiking, camping, and other light recreation. The Workshop also recommends preservation of selected areas for aesthetic and future enjoyment purposes, and preservation for educational and future research purposes.

King, Warren. 1971. "Hawaii: Haven for Endangered Species?" *National Parks and Conservation Magazine* 45(10); 9-13.

Historical development of Hawaii and its effect on the ecosystem and actions for preservation of Hawaii's endangered species.

Kolata, Gina B. 1974. "Theoretical Ecology: Beginnings of a Predictive Science," *Science* 183: 400-401.

Discusses systems analysis with theoretical ecological models and the use of descriptive studies to confirm and extend these models. Discusses ecologists' suggested precautions to minimize extinctions in national parks.

Krieger, Martin H. 1973. "What's Wrong with Plastic Trees?" *Science* 179: 446-455.

Krieger presents rationales for preserving rare natural environments and includes arguments involving economic, societal, and political factors. He predicts that with some ingenuity, a transformation of our attitudes toward preservation of the environment will take place soon and we will recognize the aesthetic and social values of the environment, not just their economic utility.

Lindsey, Alton A. 1968. "Role of the Individual Ecologist in Natural Area Preservation," *Bioscience* 18(5): 421-424.

The author discusses the professional role of ecologists as it relates to 1) the acquisition, administration, and uses of natural areas, 2) education about preservation of natural areas, 3) politics of preservation, and 4) membership in citizen preservation organizations as well as organizations which might support preservation of natural areas.

Lindsey, A. A., D. V. Schmelz, and S. A. Nichols. 1970. *Natural Areas in Indiana and Their Preservation*. Purdue University, Lafayette, Indiana.

The book presents background information about the establishment of the Indiana Preserves System. Natural areas are classified according to their primary interest and potential as 1) scientific, 2) perceptive-recreational, 3) educational and school, and 4) scenic-aesthetic.

Long, E. John. 1961. "Underseas Park Dedicated," *Sea Frontiers* 7(1): 11.

Establishment of the "world's first completely underseas park" in Florida, the John Pennekamp Coral Reef Preserve.

Loucks, Orie L. 1968. "Scientific Areas in Wisconsin: Fifteen Years in Review," *Bioscience* 18(5): 396-398.

The Wisconsin Program of Scientific Areas is presented as a model for other programs. The history of the program's development is traced and problems encountered are discussed.

Louisiana Advisory Commission on Coastal and Marine Resources. 1972. "Louisiana Government and the Coastal Zone-1972," Louisiana Advisory Commission on Coastal and Marine Resources, Baton Rouge.

The establishment of the Louisiana Advisory Commission on Coastal and Marine Resources is discussed. The purposes and objectives of the Commission are concerned with alleviating the serious conflicts between conservationists and area landowners as to ultimate disposition and use of the coastal area.

Louisiana Advisory Commission on Coastal and Marine Resources. 1973. "Wetlands '73: Toward Coastal Zone Management in Louisiana," Annual Report, Baton Rouge, Louisiana.

The Commission includes consideration of the value of undisturbed wetlands in the cost-benefit analysis for proposed projects as a necessary element in coastal zone management.

Lyman, Henry. 1968. Discussion in *Evaluation of Atlantic Coast Estuarine Zone*, Conference Proceedings, Marine Resources Committee, Atlantic Waterfowl Council, Princeton, New Jersey.

A major argument for industrial and real estate development of estuarine marsh areas is that it will broaden the tax base of local communities. The author discusses ways to reward the owner of such marsh land so he will not be "tempted by the quick dollar." He feels that the establishment of a marine estuary authority may be the answer.

Lynch, M. P., B. L. Laird, and T. F. Smolen (eds.). 1974. *Marine and Estuarine Sanctuaries*, Conference Proceedings, National Workshop on Sanctuaries, SSR No. 70, Virginia Institute of Marine Science, Gloucester Point, Virginia.

Proceedings of a three-day national workshop on marine and estuaries sanctuaries, including legal, economic, political, scientific, and land-use aspects of sanctuary problems.

Malin, H. Martin, Jr. 1971. "Master Plan for Hilton Head Island," *Environmental Science and Technology* 5(4): 308-309.

Study undertaken by a private firm, the Hilton Head Company, to develop a long-range land use program to ensure orderly development of its holdings without sacrificing the ecological integrity of an unspoiled estuary. The Island is located in Port Royal Sound Estuary, South Carolina.

Marsh, John S. 1971. "Marine Parks: An Annotated Bibliography,"
Council of Planning Librarians, Exchange Bibliography,
Monticello, Illinois.

Bibliography includes 63 entries and is intended to aid in
promoting, planning, and managing marine reserves.

Massachusetts Division of Marine Fisheries. 1965-1971. "Monograph
Series: A Study of the Marine Resources of Various Areas in
Massachusetts, Department of Natural Resources, Massachusetts.

Monograph series contains ten separate reports about the
marine resources of Massachusetts. Various specific areas
are recommended for preservation.

Mathes, Ruth. 1971. "Shoreline Use," in *Citizens Program for the
Chesapeake Bay*, Conference Proceedings, University of
Maryland, College Park, pp. 73-74.

Committee report expressed agreement that unique Bay resources
should be preserved even at the cost of curbing economic de-
velopment and other private uses. There was consensus that
the seafood industry ought to be encouraged to expand and
that recreational uses of the shoreline should be encouraged,
with limitations. Wilderness areas should be designated for
absolute preservation and probably bought with public funds
to assure their preservation.

Mathias, Mildred E. 1970. "Natural Land and Water Reserves System of
the University of California," *Biological Conservation*,
pp. 304-305.

Discusses the establishment of the Natural Land and Water Re-
serves System. The NLWRS was chartered by the University of
California to establish and maintain a series of natural area
reserves throughout the state, the primary use to be teaching
and research.

McEachern, J. and E. L. Towle. 1972. "Resource Management Programs for
Oceanic Islands," *Transactions of the 37th North American Wild-
life and Natural Resources Conference*, pp. 145-159.

Islands (oceanic) are viewed as finite, closed systems which
are fragile and vulnerable. It is suggested that island
growth be controlled by recasting the growth ethic into an
equilibrium, no-growth mold.

Mecca, Christyna E. 1970. "Georgia Coastal Islands Studied as Recreation Resource," *The Marine Newsletter* 1(5): 3.

The coastal islands of Georgia, their location, undeveloped potential, and scenic and climatic qualities are discussed. The Conservation Foundation expressed interest in helping explore the ways in which the coastal islands and marshes can be developed for recreation without destroying environmental quality and ecological balance.

Moir, William H. 1972. "Natural Areas," *Science* 177: 396-400.

While harboring valuable species, natural areas also serve as baselines in evaluating change. Moir discusses definitions of natural areas by the U. S. International Biological Programme, the government of the U.S.S.R., the Illinois Nature Preserves System Act, and the Society of American Foresters. The major conflict in establishing natural areas is usually the contradictory goals of utilization and preservation.

Moss, Larry E. 1973. "A Park in the Western Sea," *Sierra Club Bulletin* 58(7): 5-8.

Discusses the future of Southern California's unique Channel Islands.

Myers, Norman. 1972. "National Parks in Savannah Africa," *Science* 178: 1255-1263.

The rationale and justification for National Parks in Africa are discussed along with the relationship of such parks to the surrounding environment.

Nassau-Suffolk Regional Planning Board. 1966. "The Status and Potential of the Marine Environment," Oceanographic Committee, Hauppauge, Long Island, New York.

Intensive demand on available land in Nassau and Suffolk counties has increased the burden on the choice between provision for new families and protection of natural resources. This report discusses this conflict and makes recommendations for policy.

National Council on Marine Resources and Engineering Development. 1969. *Marine Science Affairs--A Year of Broadened Participation*. Report to the President, Washington, D. C.

First of the *Marine Science Affairs* series to devote an entire chapter to preservation of the marine environment. The Council stressed preservation but not with the intention of maintaining "primeval purity". The activities of the National Park Service and the National Wildlife Refuge System relative to the coastal areas were reviewed. The Council pointed out the international concern which is developing over perpetuation of unique underwater resources for scientific purposes and for underwater visitor observation. Countries are listed which have created or planned underwater parks and preserves.

National Parks and Conservation Association. 1971. "Wildlife Refuge Overrun by Dune Buggies," *National Parks and Conservation Magazine* 45(7): 31-32.

Article discusses the problems encountered at Back Bay Wildlife Refuge in Virginia Beach, Virginia, caused by the use of the beach area as a highway to certain isolated areas along the coastline. The article points out that planners should be farsighted enough to make rules to eliminate such activity before it becomes a problem.

National Parks and Conservation Association. 1971. "Point Reyes Wilderness Plan," *National Parks and Conservation Magazine* 45(9): 29.

The article discusses a proposal by the NPCA for a master and wilderness plan for Point Reyes National Seashore in California. The plan recommends banning private automobiles from the seashore and substituting public transit, and putting campgrounds outside the seashore boundary and in the hands of private owners.

National Parks and Conservation Association. 1971. "Planning at Point Reyes," *National Parks and Conservation Magazine* 45(11): 28.

Discusses the plans for wilderness area at Point Reyes National Seashore in California, including provisions for visitors, parking, shuttlebuses, etc.

National Parks and Conservation Association. 1972. "Channel Islands Monument," *National Parks and Conservation Magazine* 46(4): 28.

Discusses conflict over allowing commercial fishing in waters of the Channel Islands National Monument, California.

National Parks and Conservation Association. 1972. "Gulf Islands Seashore," *National Parks and Conservation Magazine* 46(5): 32.

NPCA views on establishment of the Gulf Islands National Seashore off the coasts of Florida and Mississippi.

National Parks and Conservation Association. 1972. "Padre Island Lease," *National Parks and Conservation Magazine* 46(5): 32-33.

Problems of leased private properties and squatter cabins on islands in the Padre Island National Seashore.

National Parks and Conservation Association. 1972. "NPCA at Work: Cape Cod Parking Lot," *National Parks and Conservation Magazine* 46(6): 28.

NPCA discusses the menace of the private automobile to the integrity of park system units as demonstrated at Cape Cod Seashore in Massachusetts.

National Parks and Conservation Association. 1972. "NPCA at Work: Cumberland Island," *National Parks and Conservation Magazine* 46(6): 31.

NPCA's attitudes about the management of Cumberland Island National Seashore (Georgia). The Association advocates restriction of private automobiles and provision of alternative means to move people through the area.

National Parks and Conservation Association. 1972. "On Golden Gate NRA," *National Parks and Conservation Magazine* 46(7): 30.

Discusses the testimony given by the NPCA advocating the establishment of Golden Gate National Recreational Area in the San Francisco Bay region. The Association suggested a comprehensive transportation study, strengthening of protective language, and transferring of jurisdiction to the Department of Interior.

National Parks and Conservation Association. 1972. "Seashore Proposal," *National Parks and Conservation Magazine* 46(7): 30.

Recommendation by the NPCA that Cumberland Island National Seashore be added to the National Park Service and managed as a natural rather than recreational area.

National Parks and Conservation Association. 1972. "At Cape Cod Seashore," *National Parks and Conservation Magazine* 46(10): 26.

Management problems of Cape Cod National Seashore are discussed, including organized activities which are not oriented toward the purposes of the seashore (in this case, a rock concert), and extension of the runway of Provincetown Airport which would put the runway on national seashore lands.

National Parks and Conservation Association. 1972. "Golden Gate," *National Parks and Conservation Magazine* 46(12): 32.

NPCA testimony regarding establishment of Golden Gate Recreation Area in the San Francisco Bay region.

National Parks and Conservation Association. 1973. "Refuge Wilderness," *National Parks and Conservation Magazine* 47(6): 31.

NPCA testimony regarding wilderness designation of lands in Brigantine National Wildlife Refuge in New Jersey.

New York State Sea Grant Program. 1973. *Managing Our Coastal Zone*. Conference Proceedings, New York State Sea Grant Program, Albany, New York.

Report summarizes conference proceedings and workshop discussions on conservation and utilization of resources, the problems of preservation of unique areas, provision of recreation, preparation and coordination of coastal zone plans, the coast as a public trust, and inter- and intra-governmental planning.

Norris, Kenneth S. 1968. "California's Natural Land and Water Reserve System," *Bioscience* 18(5): 415-417.

Report on the Natural Land and Water Reserve System of the University of California. Emphasis is placed on the "incalculable value" of ecological diversity as a scientific resource.

Olson, Stephen B. and Malcolm J. Grant. 1973. "Rhode Island's Barrier Beaches," The Coastal Resources Center, University of Rhode Island, Kingston, Rhode Island.

The report lists conservation of unique or fragile natural features, valuable wildlife habitats, and scenic open space as one of the most desirable uses of limited barrier islands. They point out that free public access need not be provided as a condition of public purpose. Scenic control, elimination of undesirable conditions, and preservation of valuable resources all justify acquisition without requiring access. The report discusses various funding agencies whose objectives include erosion control, conservation, preservation of open space and recreational development.

Ovington, J. D. 1966. "Experimental Ecology and Habitat Conservation," in *Future Environments of North America* (F. F. Darling and J. P. Milton, eds.), The Natural History Press, Garden City, New York, pp. 76-86.

Increased mobility and leisure time have caused an increase in public use and appreciation of relatively undisturbed land and these greater demands have created an increasing sense of urgency to set aside natural lands and areas to preserve species of natural communities threatened with extinction or modification. The article contains a "management map" for a nature preserve, indicating how varying types of use could exist in the same reserve.

Owen, J. S. 1972. "Some Thoughts on Management in Natural Parks," *Biological Conservation* 4(4): 241-246.

Consists of a discussion of management aims, principles, and policies within National Parks. Guidelines for management of National Parks are presented.

Peterken, G. F. 1968. "International Selection of Areas for Reserves," *Biological Conservation* 1(1): 55-61.

Sites selected internationally to be reserves for research purposes fall into two main groups: 1) representative sites, which in sum should include one or more examples of every type of ecosystem, and 2) special sites, containing a feature of some outstanding interest. International selection may supplement and enhance national selections, but it cannot replace them.

Polunin, N. V. C. 1969. "Coral Reefs, Aquaria, and Conservation," *Biological Conservation* 1(4): 278-279.

The author discusses threats to coral reefs and accompanying marine life. He presents information on the problems involved in using aquaria for conservation purposes.

Pritchard, Donald W. 1967. "What Is an Estuary: Physical Viewpoint," in *Estuaries* (George H. Lauff, ed.), American Association for the Advancement of Science, Washington, D. C., pp. 3-5.

Discusses problems of defining an estuary and presents a definition with four classifications.

Randall, John E. 1969. "Conservation in the Sea: A Survey of Marine Parks," *Oryx* 10(1): 31-38.

Increasing popularity of underwater swimming, fishing, and coral collecting make it urgent that we protect marine life. Marine parks are usually tourist attractions and care must be taken that a balance is achieved, with some areas reserved for tourists and others as sanctuaries where scientific studies can also be made.

Randall, J. E. and C. Ray. 1958. "Bahamian Land-and-Sea Park," *Sea Frontiers* 4(2): 72-80.

Discusses the physical and biological attributes of the Exuma Cays as well as justification for the establishment of such marine and terrestrial parks.

Randall, J. E. and R. E. Schroeder. 1962. "New Underwater Park," *Sea Frontiers* 8(1): 8-17.

News about the establishment of Buck Island (St. Croix, Virgin Islands) National Park which includes a barrier reef.

Ray, G. Carleton. n.d. "The Problem of Marine Parks," in *World National Parks, Progress, and Opportunities* (Richard van Osten, ed.), Hayez, Brussels, pp. 47-50.

Problems of establishment and management of small marine parks revolve around access, fishing rights, rights of innocent passage, the effects of man's presence, and policing. Marine Parks are also subject to adjacent land use patterns, but the most difficult are those problems which are ecological.

Ray, Carleton. 1961. "Marine Preserves for Ecological Research," *Transactions of the 16th North American Wildlife and Natural Resources Conference*, pp. 323-328.

The author maintains that more emphasis should be placed on the value of ecological preserves as study areas and as reservoirs of source material. Three types of nature preserves have been mentioned for land management, and they have obvious underwater and marine counterparts: 1) undisturbed habitats closed to the public, 2) semi-natural or deliberately managed habitats, and 3) areas for recreation or other public purposes.

Ray, Carleton. 1965. "La Création de Parcs Marins, Une Nécessité," *Actualités Marines* 9(1): 19-24.

Presents arguments in favor of establishing marine parks and discusses some of the technical difficulties of marine parks. Recommends establishment of parks. (In French.)

Ray, Carleton. 1968. "Marine Parks for Tanzania," *The Conservation Foundation and New York Zoological Society*, 47 pp.

Presents the results of a survey of the Coast of Tanzania. The author recommends establishment of Marine Parks, in some cases to be buffered by Marine Reserves. Control Research Areas would enable ecosystem research and attract visiting scientists. Major emphasis would be on preservation of the ecosystem and its productivity and planning would preclude the influx of large numbers of tourists. Ray recommends the engagement of a knowledgeable marine park planner by the Tanzania National Parks and recommends a detailed survey to delineate precise boundaries and establishment of use-areas. Integration of conservation, tourism, and fisheries is also advocated.

Ray, G. Carleton and Kenneth S. Norris. 1972. "Managing Marine Environments," *Transactions of the 37th North American Wildlife and Natural Resources Conference*, pp. 190-203.

Problems of marine ecosystem management are discussed and two models for marine regional management are presented. The authors claim that the "protectionist" philosophy neither recognizes international realities nor ecosystem ecology. They advocate regional management on the international level, which would bring old treaty arrangements together under a broader cooperation.

Ray, Carleton and Alexander Sprunt IV. 1971. "Parks and Conservation in the Turks and Caicos Islands," The Johns Hopkins University, Baltimore, Maryland.

A report on the ecology of the Turks and Caicos with particular emphasis upon the impact of development upon the natural environment.

Reinhart, Johanna M. 1973. "Coastal Zone Management Act," *The Newsletter of the American Fisheries Society* 18(80): 4.

The Newsletter refers to the Coastal Zone Management Act of 1972 as "probably the most significant piece of legislation in oceanography since the founding of the National Oceanic and Atmospheric Administration in 1970." The article briefly reviews the general provisions of the Act.

Robinson, G. A. 1969. "The Tsitsikama Coastal National Park, South Africa," *Biological Conservation* 2(1): 72-73.

Information about the Tsitsikama National Park. The Park has jurisdiction over half a mile of sea, extending seaward from the low-water mark, in which it allows no commercial exploitation. It is hoped the limits will be extended in the future.

Rock, Maxine A. 1973. "Cumberland Island: Sandy Treasure of the Golden Isles," *National Parks and Conservation Magazine* 47(8): 4-7.

Discusses the history and establishment of the recent national seashore, Georgia's Cumberland Island.

San Francisco Bay Conservation and Development Commission. 1969. "San Francisco Bay Plan," San Francisco, California.

The San Francisco Bay Plan is a plan for the multiple use development of San Francisco Bay. Specific preservation recommendations include the following: prime wildlife refuges around the Bay should be maintained and major additions should be made to the existing system. Specific habitats that are needed to prevent the extinction of any species, or to maintain or increase species that would provide substantial public benefits should be protected.

Sawbridge, David F. 1970. "Pacific Shores--Doomed?" Commentary on Symposium of the Western Society of Naturalists held at Corvallis, Oregon, December 1968. *Biological Conservation* 2(2): 152.

Proposed recommendations for improved management of American Pacific beach environments included establishment of habitat reserves before some types are lost entirely.

Scheffey, A. J. W. and W. J. Duddleson. 1969. "Conservation Commissions in Massachusetts: With a Supplementary Report on the Emergence of Conservation Commissions in Six Other Northeast States," Conservation Foundation, Washington, D. C., and the New England Conservation Services Center, Lincoln, Massachusetts.

The emergence of local conservation commissions, throughout the Northeast is a significant phenomenon, both politically and as an expression of growing public concern. The growth of the movement is outlined within a broad historical perspective.

Scott, Vance H. 1973. "Who Will Save Never-Never Land?" *National Wildlife* 11(5): 40-46.

Efforts to have the Channel Islands of California designated as a National Park. However, the author expresses concern that tourists might destroy the fragile ecosystem.

Shands, William E. and Ruth Mathes. 1972. "The Future of the Chesapeake Bay," *Sierra Club Bulletin* 57(4): 4-10.

Authors suggest that political action is essential to the preparation and implementation of a public policy for the Bay, especially since the Bay lies in two states and covers such a large area. The San Francisco Bay Conservation and Development Commission is cited as a model. The establishment of Chesapeake Bay National Gateway Recreation Area would help coordinate state parks, national and state wildlife refuges, and historic areas of both states, the authors contend.

Sherwood, Arthur W. January 1972. "Annual Report to Members," *Chesapeake Report*.

The President of the Chesapeake Bay Foundation, Inc. listed two projects of the Foundation relevant to sanctuaries: 1) Natural Area Register, which includes a comprehensive survey of the Bay region to assemble an up-to-date inventory of remaining natural areas and nature preserves, and 2) Land Conservancy, which places valuable natural areas under trust as permanent nature preserves.

Smith, Anthony W. 1972. "Editorial: Tomorrow in the Parks," *National Parks and Conservation Magazine* 46(10): 2, 35.

Editor reviews and expresses approval of Conservation Foundation's report on National Parks for the future.

Smith, Anthony. 1973. "The Everglades," *National Parks and Conservation Magazine* 47(6): 2, 35.

Covers the history of environmental battles over the Everglades, conservation vs. development.

Sorensen, Jens C. 1971. "A Framework for Identification and Control of Resource Degradation and Conflict in the Multiple Use of the Coastal Zone," Department of Landscape Architecture, University of California, Berkeley.

The author mentions recreation and underwater parks as potential areas of conflict with other shoreline uses. He Presents a matrix indicating environmental alterations of shoreline recreation land use.

Spinner, George P. 1968. Discussion in *Evaluation of Atlantic Coast Estuarine Zone*, Conference Proceedings, Marine Resources Committee, Atlantic Waterfowl Council, Princeton, New Jersey.

States the two purposes of the Marine Resources Committee as 1) to collect all available data on marine resources as a basis of a coordinated plan for preservation of all high-value marine resource areas and 2) to raise funds to purchase and hold those areas on the acquisition list that are vulnerable to destruction in the foreseeable future.

Spinner, George P. 1969. "A Plan for the Marine Resources of the Atlantic Coastal Zone," Marine Resources Committee, American Geographical Society.

The purpose of the Spinner study was to collect all the available data on marine resources of the Atlantic and to put them in a form usable by planners and other decision makers, public and private. It was also intended to provide guidelines for use in selecting sites for various coastal zone uses. Programs, the status of each, and lists of preserved areas and active groups in the Atlantic coastal states are given. Spinner reviews land-use planning along the Atlantic coast and discusses the changing emphasis of preservation goals in conservation policy. The study also includes a list of areas which public and private conservation organizations suggested for inclusion in a proposed coastal wetland preservation program.

Sullivan, James J. 1972. "California's Ocean Related Needs," Institute of Marine Resources, University of California, Santa Barbara.

In personal interviews with eighty-four persons from various backgrounds, the author found that respondents named planning and management, recreation, and preservation and conservation as the major ocean related needs of the State of California. The respondents placed first priority on pollution, followed by recreation, land use planning and management, and conservation and preservation.

Tampa Bay Regional Planning Council. 1971. "Shoreline Resource Development: A Preliminary Report of Coastal Management and Land Planning for the Tampa Bay Region," St. Petersburg, Florida.

Focuses on the management and control of new land development on the shorelines and coastal wetlands around and near Tampa Bay.

Tamura, Tuyosi. "Marine Parks in Japan in the Past Ten Years," Marine Parks Center of Japan, Minatoku, Tokyo.

The author reviews the history of the establishment of the marine parks system in Japan. The marine parks are set up as recreational-type areas. Maps and plans for marine parks are included. The author clarifies his idea of marine parks, stating that the parks themselves are to be special nature reserves, with facilities for observation and tourism constructed in the sea or shore of the adjacent area.

Tamura, Tuyosi. 1968. "The Marine Parks Center of Japan," *Biological Conservation* 1(1): 89-90.

Discussion of the establishment of the Marine Parks Center of Japan. The Center's main objectives are 1) to establish marine parks as part of the natural parks system, 2) to facilitate scientific work in these areas, 3) to have several marine parks facilities managed directly by the Center for conducting experiments on the conservation of marine life and to make all-round facilities available on land and sea and showing models of marine parks, 4) to inform the public through meetings and a marine parks journal, and 5) to communicate and cooperate with related groups in Japan and other countries.

Tamura, Tuyosi. 1969. "Japan's Initial Project for a Marine Parks Research Institute," *Biological Conservation* 2(1): 66-68.

Provides an "architectural" description of a proposed Marine Parks Research Institute. Japanese government has revised a part of their National Parks Law, opening the way for designation of marine park areas along the coasts of already existing national and quasi-national parks, which at present incorporate 1 km of the sea extending out from the beachline.

Teal, John M. 1971. "Overview--Ecological Problems of Coastal Land Use," in *Papers on National Land Use Policy Issues*, Prepared for the Committee on Interior and Insular Affairs, U. S. Senate, 92nd Congress, USGPO, Washington, D. C., pp. 161-163.

Since the coastal regions are such limited areas, the author states that a reasonable land use policy would be to restrict its use to those things which must be located there because, by their nature, cannot be located anywhere else.

Tell, William Jr. 1971. "Marine Sanctuaries: Balancing of Energy vs. Environmental Needs," *Natural Resources Lawyer* 6(1): 108-112.

Tell defines the proposed legislative mechanisms for creation of marine sanctuaries as an attempt to severely limit resource development or possibly totally restrict it. He is particularly concerned with balancing the energy needs of the country with the environmental needs.

Theusen, Gerald J. 1971. "A Study of Public Attitudes and Multiple Objective Decision Criteria for Water Pollution Control Projects," School of Industrial and Systems Engineering, Georgia Institute of Technology, Atlanta.

A systematic procedure for developing a multiple objective assessment structure is presented so that water quality can be incorporated into the planning process as a multivariate consideration. The primary emphasis of the study is to identify and quantify the non-monetary factors of water quality which have an impact on the public.

Train, Russell E. 1969. "The Rookery Bay Area Project, Florida,"
Biological Conservation 2(1): 64-65.

The article discusses the Rookery Bay demonstration project initiated by the Conservation Foundation, designed to develop and demonstrate ways of resolving some of the conflicts between development and preservation. The study set out to determine whether Rookery Bay's value as a natural resources conservation area could be protected when development occurred on adjacent privately-owned lands. The results indicated that preservation and development are compatible if natural resources management is carried on in an enlightened, systematic manner. The report contends that there can be profitable development of the lands around the sanctuary without damaging values which the sanctuary was created to preserve.

Travelers Research Corporation. 1969. "The Development of a Procedure and Knowledge Requirements for Marine Resource Planning," Marine Resources Council, Nassau-Suffolk Regional Planning Board.

This is part of a larger study which deals with the classification of marine resource problems of Nassau and Suffolk Counties. Adequacy of present information in various areas is discussed.

U. S. Department of Commerce. 1973. "Status of State Coastal Zone Management Efforts," Coastal Zone Management Task Force, National Oceanic and Atmospheric Administration, Rockville, Maryland.

A series of resumés summarizing the present status of state and territorial activities in the coastal zone.

U. S. Department of Interior. 1969. *Marine Resources Development--A National Opportunity*. Washington, D. C.

One of the Department's five year goals is to improve methods of preventing deterioration of important estuarine habitats, and to prevent adverse effects of water-use projects and oil and mineral exploration. The report named opening more shoreline to the public as a major need, and suggested ways to make marine recreational resources serve more people.

U. S. Department of Interior, Bureau of Outdoor Recreation. 1968. *Virginia's Barrier Islands*. Washington, D. C.

The report contains recommendations for preservation of the Virginia Barrier Islands for recreational use and aesthetic values only.

U. S. Department of Interior, Bureau of Outdoor Recreation. 1970.
Islands of America. Washington, D. C.

The report recommends two major goals: 1) public control of representative island areas sufficient to meet public recreation, scenic, wilderness, historic, and scientific needs, and 2) restoration and maintenance of the environmental quality of all American islands.

U. S. Department of Interior, Bureau of Sport Fisheries and Wildlife.
1970. *National Estuary Study*. USGPO, Washington, D. C.

In a section on "Estuarine Sanctuaries, Parks and Recreation Areas", needs for further allocation of lands for these purposes are pointed out. The greatest needs are for parks and recreation areas in the estuarine zone and on the Great Lakes that are readily accessible to cities and other population centers. Parks and outdoor recreation areas are also needed in pristine and wilderness settings. More research sanctuaries are needed to provide a more biophysically comprehensive range of study areas, and there is an urgent need for reservation and protection of habitats for endangered fish and wildlife species. Positionally, it was felt that the State is better able to reflect these broader interests, but that multi-level, coordinated management would be needed.

U. S. Department of Interior, Bureau of Sport Fisheries and Wildlife.
1973. "Directory of National Wildlife Refuges," Fish and Wildlife Service, Washington, D. C.

List of National Wildlife Refuges and those being established.

U. S. Department of Interior, National Park Service. 1968. *Administrative Policies for Recreation Areas of the National Park System*. USGPO, Washington, D. C.

Background and philosophy of administrative policies. Includes information on Congressional hearings and reports.

U. S. Department of Interior, National Park Service. 1968. *Administrative Policies for Historical Areas of the National Park System*. USGPO, Washington, D. C.

Background and philosophy on which administrative policies are based. Category of Historical Areas includes all national historic sites, monuments, and parks established for prehistoric as well as historic values.

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

Background and philosophy of administrative policies. Prescribes guidelines for the day-to-day management of natural areas.

U. S. Department of Interior, National Park Service. 1971. "Criteria for Parklands," Washington, D. C.

Criteria for selection of national parklands and national landmarks are presented.

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

Natural history themes, adequacy of representation in the National Park System and identification of gaps in the system are discussed in this report providing valuable guidelines for further evolution of the National Park System Plan.

U. S. Department of Interior, National Park Service. 1972. "National Parks and Landmarks," USGPO, Washington, D. C.

Lists all areas administered by the National Park Service and related properties.

U. S. Department of Interior, National Park Service. 1973. "A Strategy for Management of Marine and Lake Systems within the National Park System," USGPO, Washington, D. C.

A proper management strategy for protection of marine and lake systems is needed with attention to potential conflict between preservation and recreation.

U. S. House of Representatives. 1966. "Estuarine and Wetlands Legislation, Hearings," Subcommittee on Fisheries and Wildlife Conservation, Committee on Merchant Marine and Fisheries, 89th Congress, Serial No. 89-26, USGPO, Washington, D. C.

Includes a bill (H.R. 13447) to authorize the Secretary of Interior, with the states, to preserve, protect, develop, restore, and make accessible estuarine areas for sport and commercial fishing, wildlife conservation, recreation, and scenic beauty.

U. S. House of Representatives. 1967. "Estuarine Areas," Subcommittee on Fisheries and Wildlife Conservation, Committee on Merchant Marine and Fisheries, 90th Congress, Serial No. 90-3, USGPO, Washington, D. C.

Hearings on bills to authorize the preservation, protection, development, restoration of estuarine areas which are valuable for sport and commercial fishing, wildlife conservation, recreation, and scenic beauty.

U. S. House of Representatives. 1967. "Report on International Control of Oil Pollution," Committee on Merchant Marine and Fisheries, 90th Congress, Report No. 628, USGPO, Washington, D. C.

Report of congressional delegation attending the third extraordinary session of the Intergovernmental Maritime Consultative Organization, convened to discuss oil pollution of the sea.

U. S. House of Representatives. 1968. "Oceanography Legislation, Hearings," Subcommittee on Oceanography, Committee on Merchant Marine and Fisheries, 90th Congress, Serial No. 90-20, USGPO, Washington, D. C.

Includes hearings on establishment of marine sanctuaries.

U. S. House of Representatives. 1969. "Coastal Zone Management Conference, Hearings," Subcommittee on Oceanography, Committee on Merchant Marine and Fisheries, 91st Congress, Serial No. 91-14, USGPO, Washington, D. C.

Conference proceedings on coastal zone planning and management including panel reports on land use regulation, interstate and intrastate problems, federal and state roles in coastal zone management and research requirements.

U. S. House of Representatives. 1970. "Coastal Zone Management, Hearings," Subcommittee on Rivers and Harbors, Committee on Public Works, 91st Congress, Report No. 91-46, USGPO, Washington, D. C.

To amend the Federal Water Pollution Control Act to provide for the establishment of a national policy and comprehensive national program for management, beneficial use, protection, and development of the nation's estuarine and coastal zone.

- U. S. House of Representatives. 1970. "Protecting America's Estuaries: The San Francisco Bay and Delta," Subcommittee on Conservation and Natural Resources, Committee on Government Operations, 91st Congress, Report No. 1433, USGPO, Washington, D. C.

Report focusing on the estuarine system of the San Francisco Bay and Delta, concerned with the adequacy of Federal agency (and state and local) consideration to the effects of their activities on the nation's estuaries.

- U. S. House of Representatives. 1971. "Coastal Zone Management, Hearings," Subcommittee on Oceanography, Committee on Merchant Marine and Fisheries, 92nd Congress, Serial No. 92-16, USGPO, Washington, D. C.

Hearings on bills to provide for effective management of coastal and estuarine areas, assist the states in establishing coastal and estuarine zone management plans and programs, and establishing a national policy and program for management, beneficial use, protection, and development of the coastal and estuarine zones.

- U. S. House of Representatives. 1971. "Dumping of Waste Material, Hearings," Subcommittee on Fisheries and Wildlife Conservation, Committee on Merchant Marine and Fisheries, 91st Congress, Serial No. 91-39, USGPO, Washington, D. C.

Hearings on a series of bills designed to protect fish and wildlife resources.

- U. S. House of Representatives. 1971. "Marine Protection, Research, and Sanctuaries Act of 1971," Committee on Merchant Marine and Fisheries, 92nd Congress, Report No. 92-361, USGPO, Washington, D. C.

Committee report on amendment to Marine Protection, Research, and Sanctuaries Act of 1972.

- U. S. House of Representatives. 1972. "Oceanography in the 91st Congress," Subcommittee on Oceanography, Committee on Merchant Marine and Fisheries, 92nd Congress, USGPO, Washington, D. C.

Covers major activities of the Subcommittee during the 91st Congress, including such policy issues as reorganization of federal marine agencies, coastal zone management, dumping of nerve gas and other problems of pollution of the marine environment.

U. S. House of Representatives. 1972. "Coastal Zone Management," Committee on Merchant Marine and Fisheries, 92nd Congress, Report No. 92-1049, USGPO, Washington, D. C.

Committee report on H.R. 14146, to establish national policy and program for management, use, protection, and development of the nation's land and water resources of the coastal zone.

U. S. House of Representatives. 1972. "Coastal Zone Management Act of 1972, Conference Report," 92nd Congress, Report No. 92-1544, USGPO, Washington, D. C.

Committee of conference decision on amendment of Coastal Zone Management Act of 1972.

U. S. House of Representatives. 1972. "Marine Protection, Research, and Sanctuaries Act of 1972, Conference Report," 92nd Congress, Report No. 92-1546, USGPO, Washington, D. C.

Conference report discussing resolution of House and Senate conflict over amendments to the Act.

U. S. House of Representatives. 1973. "Oceanography in the 92nd Congress," Subcommittee on Oceanography, Committee on Merchant Marine and Fisheries, 92nd Congress, USGPO, Washington, D. C.

Presents major activities of the Subcommittee on Oceanography in the 92nd Congress. Covers legislation considered by the 92nd Congress including the Marine Protection, Research, and Sanctuaries Act of 1972 and the Coastal Zone Management Act of 1972.

U. S. President's Council on Recreation and Natural Beauty. 1968. *From Sea to Shining Sea*. Report to the President, USGPO, Washington, D. C.

In a section covering water and waterways, the Council recommended enactment of legislation to authorize a national system of wild and scenic rivers and suggested that the states establish controls to protect the natural beauty of these rivers and prevent damaging land use. For protection of endangered species, the Council encouraged accelerated development of a coordinated nationwide system of natural areas.

U. S. President's Science Advisory Committee. 1966. *Effective Use of the Sea*. Panel on Oceanography, USGPO, Washington, D. C.

Includes recommendation that the federal government establish a system of wilderness preserves 1) to provide ecological baselines against which to compare modified areas, 2) to preserve major types of unmodified habitats for research and education in marine sciences, and 3) to provide continuing opportunities for marine wilderness recreation.

U. S. Senate. 1970. "Federal Oceanic and Atmospheric Organization, Hearings," Subcommittee on Oceanography, Committee on Commerce, 91st Congress, Serial No. 91-59, USGPO, Washington, D. C.

Hearings and testimony on five bills related to the coastal zone, including S. 2393 which provides for the Department of the Interior to conduct a study of the feasibility of establishing marine Preserves.

U. S. Senate. 1971. "Marine Sanctuaries in California, Hearings," Subcommittee on Minerals, Materials, and Fuels, Committee on Insular Affairs, 92nd Congress, USGPO, Washington, D. C.

Hearings on S. 1446-S. 1452, bills to create marine sanctuaries off the coast of California to suspend leasing activities over those lands.

U. S. Senate. 1971. "Oil Pollution of the Marine Environment--A Legal Bibliography," Committee on Public Works, 92nd Congress, Serial No. 92-1, USGPO, Washington, D. C.

Bibliographic entries on legal aspects of oil pollution by Carl Q. Christol, University of Southern California.

U. S. Senate. 1971. "Ocean Waste Disposal," Subcommittee on Oceans and Atmosphere, Committee on Commerce, 92nd Congress, Serial No. 92-11, USGPO, Washington, D. C.

Hearings on regulation of dumping of material in the oceans, coastal and other waters.

U. S. Senate. 1971. "Coastal Zone Management, Hearings," Subcommittee on Oceans and Atmosphere, Committee on Commerce, 92nd Congress, Serial No. 92-15, USGPO, Washington, D. C.

Hearings on S. 582 and S. 638, the former which includes provisions for the acquisition, development, and authorization of estuarine sanctuaries.

U. S. Senate. 1971. "Creation of a National Program for Coastal and Estuarine Zone Management," Committee on Commerce, 92nd Congress, Report No. 92-526, USGPO, Washington, D. C.

Report of the Senate Committee on Commerce on a bill to establish a national policy and develop a national program for the management, beneficial use, protection, and development of the land and water resources of the coastal and estuarine zones.

U. S. Senate. 1972. "Compilation of Federal Laws Relating to Conservation and Development of Our Nation's Fish and Wildlife Resources, Environmental Quality, and Oceanography," Committee on Commerce, 92nd Congress, USGPO, Washington, D. C.

Provides collection of enactments and all laws in force at one particular time, organized by major subject areas, relating to fish and wildlife, oceanography, and environmental planning.

U. S. Senate. 1972. "National Coastal Zone Management Act of 1972," Committee on Commerce, 92nd Congress, Report No. 92-753, USGPO, Washington, D. C.

Report of the Committee on Commerce and individual views recommending passage of the CZM bill.

U. S. Senate. 1973. "The Oceans and National Economic Development," Committee on Commerce, 93rd Congress, USGPO, Washington, D. C.

Presents the transcript and materials of the conference on "The Oceans and National Economic Development," sponsored by the National Oceanic and Atmospheric Administration, held in Seattle, Washington, July 1973.

Van Eck, Willem A. 1968. "Universities and Colleges: Attitudes and Actions," *Bioscience* 18(5): 402-406.

The author considers the attitudes and activities of colleges and universities with regard to preservation and management of natural areas. He found that the initiative to identify, acquire, and manage scientific areas has been primarily the concern of individuals or groups within college faculties, and that no national or regional pattern is easily discerned.

Vine, Peter J. 1972. "Coral Reef Conservation Around the Seychelles, Indian Ocean," *Biological Conservation* 4(4): 304-305.

Presents the Seychelles Government's conservation policies for use of the islands which include preservation, multi-use, and recreation.

Voss, Gilbert L. 1960. "First Underseas Park," *Sea Frontiers* 6(2): 87-94.

Discusses the establishment of the Key Largo Coral Reef Preserve.

Voss, Gilbert L. 1973. "Sickness and Death in Florida's Coral Reefs," *Natural History* 82(7): 41-47.

Discusses the dying coral reefs of the Florida Keys and the establishment of John Pennekamp Coral Reef State Park as an attempt to preserve the reefs.

Wallace, David. 1968. Discussion in *Evaluation of Atlantic Coast Estuarine Zone*, Conference Proceedings, Marine Resources Committee, Atlantic Waterfowl Council, Princeton, New Jersey.

Various techniques for preservation of wetlands are discussed including zoning, scenic easements and others. The author concludes that the best way is to buy the wetlands and place them in public ownership.

Wallen, I. E. 1970. "The Conservation of Marine Species and Areas," *Symposium on Hydrobiology, Bioresources of Shallow Water Environments*, pp. 52-60.

Preservation of the marine environment is far behind preservation of terrestrial natural areas. The author advocates selection of marine preserves as control areas to provide information on the natural state of specific areas, with a view to possible simulation, and as regions for repopulation and replenishment. A list of undisturbed Pacific oceanic islands has been proposed for international scientific supervision.

Wells, James R. 1970. "The Michigan Natural Areas Council," *Biological Conservation* 2(2): 144-146.

The Michigan Natural Areas Council was founded in 1952 and serves in an advisory role and as representative of Michigan in The Nature Conservancy. The Council's purpose is preservation for scientific study, use as nature study areas, and general public enjoyment. Categories of natural areas and criteria are discussed.

Wilburn, Bruce. 1968. Discussion in *Evaluation of Atlantic Coast Estuarine Zone*, Conference Proceedings, Marine Resources Committee, Atlantic Waterfowl Council, Princeton, New Jersey.

Objectives appropriate for the people living in a particular area should help determine the theoretical value for an estuary. Once the objectives are established and tested in the political arena, alternative uses of the estuary, consistent with the set of objectives could be formulated.

Wilder, Norman. 1968. Discussion in *Evaluation of Atlantic Coast Estuarine Zone*, Conference Proceedings, Marine Resources Committee, Atlantic Waterfowl Council, Princeton, New Jersey.

Wilder discusses the difficulty faced by small states such as Delaware in fighting for estuarine preservation. Pollution comes into the state from neighboring states, and much of the fishery stocks come in from the Atlantic Ocean. These factors inhibit management efforts at the state level. He concludes that we need to think in terms of larger management units than state, county, or local.

Wilder, Norman G. 1971. "Delaware Bay--Today and Tomorrow," in *Citizens Program for the Chesapeake Bay*, Conference Proceedings, University of Maryland, College Park, p. 19.

Wilder discusses the issues concerning the future of Delaware Bay, including protection and upgrading of the upper Bay and preservation of the balance of the southern end.

Wilford, J. N. February 20, 1972. "Corps of Engineers Caught Up in Battle of the Builders Against the Preserves," *The New York Times*.

Includes a short history of the Corps of Engineers, its position of power, and its present methods of operation, as well as signs of change.

Woodbury, Coleman. 1966. "The Role of the Regional Planner in Preserving Habitats and Scenic Values," in *Future Environments of North America* (F. F. Darling and J. P. Milton, eds.), The Natural History Press, Garden City, New York, pp. 568-587.

Discusses how regional planners can help in preserving species habitats and scenic values. He recommends early identification and means of protecting natural areas of museum quality.

Woolner, Frank. 1973. "Editorial: Management Opportunity," *Salt Water Sportsman* 34(4): 3.

The editor reports and comments on the Coastal Zone Management Act of 1972 which he feels will "bring order out of chaos along all our coasts." He points out that states that now have a comprehensive coastal zone management plan fully drafted will be the first in line to obtain funds and that citizens must maintain pressure on the federal government to insure that funds are made available.

Wycherley, P. R. 1969. "Conservation of Coral Reefs in West Malaysia," *Biological Conservation* 1(3): 259-260.

Discusses the threats to the coral reefs off the West Malaysian Peninsula. These are fishing with dynamite and skin and scuba diving shell collectors. The author expresses hope that proper government authorities will act to provide necessary legislation.