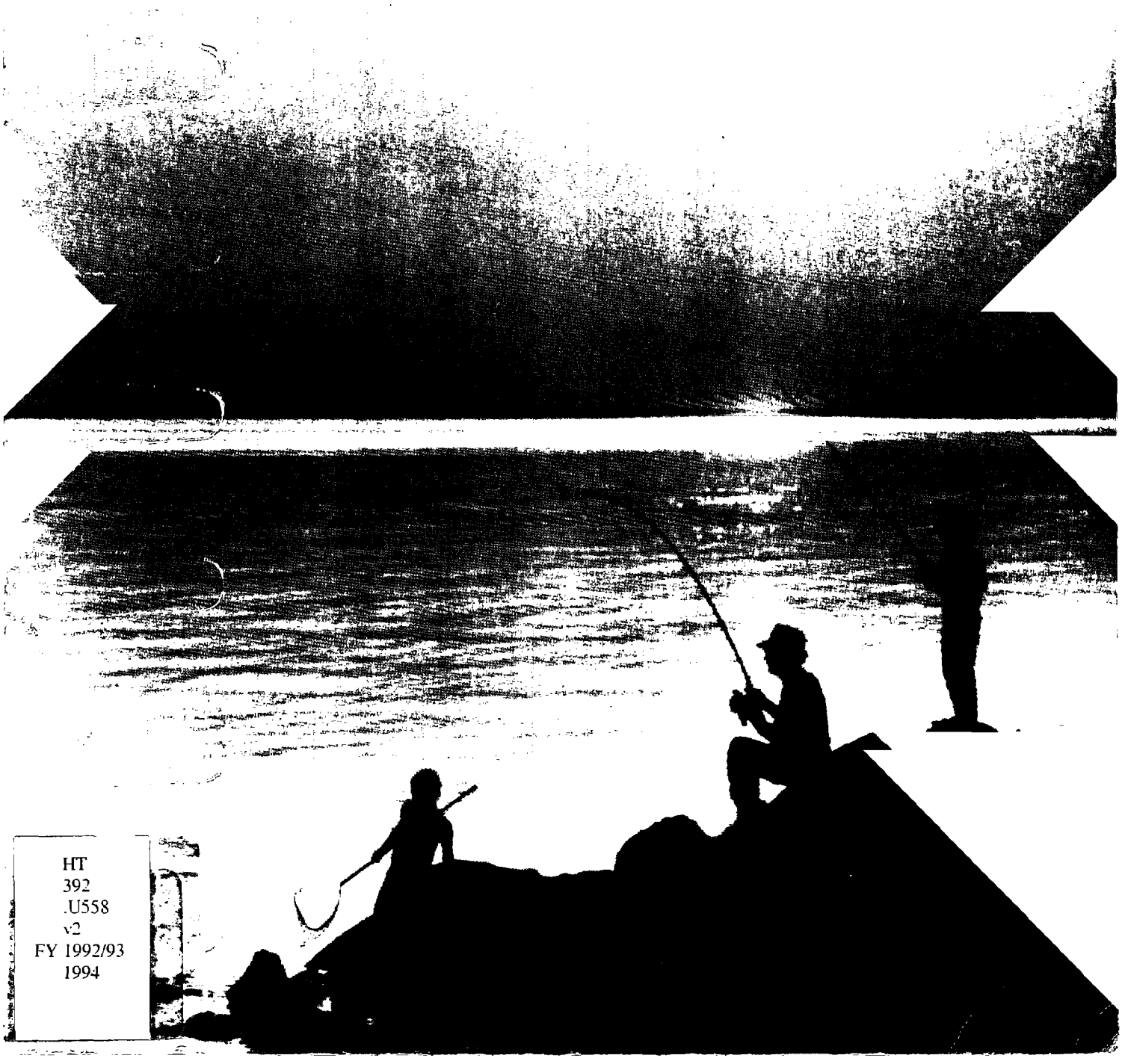
1992-1993
Biennial Report to Congress on the Administration of the Coastal Zone Management Act
Volume II
April 1994



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UNITED STATES DEPARTMENT OF COMMERCE
The Under Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

March 1, 1994

The President
President of the Senate
Speaker of the House of Representatives

Sirs:

I am pleased to submit the Biennial Report of the Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration, pursuant to Section 316 of the Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1451, et seq.) for Fiscal Years 1992 and 1993. The report discusses the progress made during these years in administering the coastal zone management and estuarine research reserve programs and the challenges encountered.

Sincerely,

D. James Baker

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THE ADMINISTRATOR

About This Document

The Biennial Report to Congress is a status report on implementation of the national Coastal Zone Management Program (CZM) and National Estuarine Research Reserve System (NERRS) under the Coastal Zone Management Act of 1972 (CZMA). Covered in the report are the major accomplishments in program administration, particularly in implementing the Coastal Zone Act Reauthorization Amendments of 1990, and problems encountered for the two preceding years. The CZMA requires that the National Oceanic and Atmospheric Administration submit this report to Congress no later than April 1. Reporting requirements are set forth in Section 316 of the CZMA.

The first of the report's two volumes is a national overview of programs under the CZMA and highlights efforts in implementing the programs for the preceding fiscal years. It will give a brief history of the Coastal Zone Management Program and National Estuarine Research Reserve System and NOAA's vision for the future of both programs. Volume I also identifies NOAA's interest through the CZMA in other environmental programs legislated and authorized by Congress, several of which are now facing re-authorization.

Volume II provides a more detailed discussion of the program areas highlighted in the National Overview, including case examples, especially in areas implemented under the 1990 Amendments. Volume II also contains a section covering the status and accomplishments of each state coastal management program and estuarine research reserve site. The section is organized by state, and contains summaries for state coastal management programs and reserve sites located within that state. Volume II also contains appendices summarizing the status of coastal management programs and estuarine reserves, allocation of funds, and regulations issued during the biennium.

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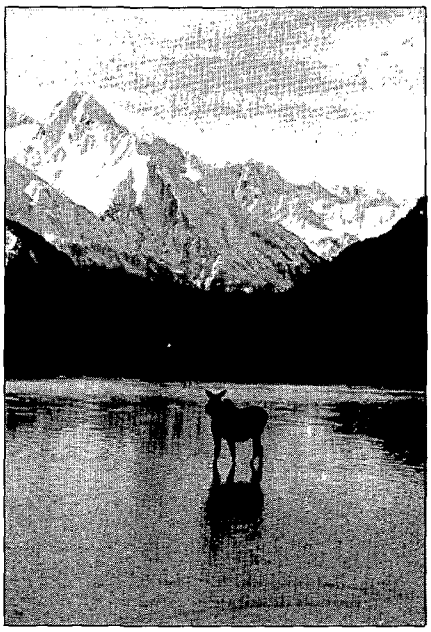
I. Credits

The Coastal Zone Management Act (CZMA) of 1972 established a national program to plan for and wisely manage development of the nation's coastal land and water resources. Recognizing the national interest in wise management of the nation's coastal resources, the CZMA created a voluntary federal-state-local partnership dedicated to comprehensive management of these finite and fragile resources. Administered by the National Oceanic and Atmospheric Administration (NOAA), the CZMA operates principally through implementation of federally approved state coastal zone management (CZM) programs that seek to balance the protection and sustainable use of resources in the U.S. coastal zone.

In implementing the CZMA, NOAA administers funds, and provides policy guidance and technical assistance to states to help them establish and maintain coastal management programs. NOAA provides continuous oversight of the federally approved CZM programs to ensure that states and territories comply with CZMA goals and objectives. At the national level, NOAA works to ensure coordination and integration of the CZM programs with other federal agency programs that have compatible goals.

Since 1974, with the approval of the first state CZM program in Washington, 24 coastal states and five island territories have developed federally approved CZM programs. Together, these programs protect 94 percent of the Nation's 95,000 miles of coastline, bordering three oceans and the Great Lakes. Of the seven eligible states and territories without programs, five — Georgia, Minnesota, Ohio, Texas, and Indiana — are either developing or considering developing CZM programs.



Although the CZMA provides flexibility to states in developing their programs, the Act's guidelines require that all state programs will further the national policy of effective management, beneficial use, protection and development of the coastal zone. In developing programs, states must address national objectives:

- protection of natural resources;
- management of coastal development to protect life and property from coastal hazards;
- priority consideration for coastal dependent uses and energy facility siting;
- public shorefront access;
- assistance in redevelopment of urban waterfronts and ports;
- coordination and simplification of administrative procedures to ensure expedited governmental decisionmaking for management of coastal resources;
- consultation and coordination with federal agencies;
- public participation in coastal decisionmaking;
- comprehensive planning, conservation and management of living marine resources; and
- study and develop plans for addressing the adverse effects upon the coastal zone of land subsidence and sea level rise.

The 29 state and territory programs taking part in the national Coastal Zone Management (CZM) Program depict the nation's great diversity. Beyond obvious differences in size, region and extent of coastal development, each state and territory faces different political and social climates. As a result, states develop CZM programs that address their individual needs, while considering the broader national interest. For example, some states, such as California, South Carolina and Louisiana, passed comprehensive

legislation as a framework for coastal management. Other states, including Florida, New York and Virginia, networked existing, single-purpose laws into a comprehensive umbrella for coastal management. These programs continue to evolve as priorities change and as better information and technical capabilities become available.

Since 1974, the federal government has invested over $700 million in coastal zone management. On average, the 29 CZM programs share approximately $35 million annually in federal funds. These federal funds, which are matched in part by state dollars, are used by states to implement their CZM programs. The funds are allocated to states by a formula which takes into account shoreline mileage and coastal population.

Despite continuing challenges, increased responsibilities and shrinking budgets, the 29 CZM programs have made substantial progress in responding to threats to coastal resources. Significant progress has been made by states in restoring lost wetlands and mitigating damaged wetlands. Coastal states have played a positive role in reducing the risk to life and property from coastal storms. States work to deter development in highly vulnerable areas of the shoreline through adoption of such measures as setback requirements. Currently, 13 states have some form of setback requirement for coastal development.

State CZM programs have also made significant contributions to improving coastal water quality and tackling shoreline erosion problems. In addition, states have made great strides in promoting water dependent uses of the coast, such as ports and marinas, commercial fisheries and recreation, and in enhancing public access to the shoreline.

Despite these strides, the job of coastal management is far from complete. In 1990, Congress strengthened and modernized the law to address new and emerging issues, specifically the problem of nonpoint source pollution. The Coastal Zone Act Reauthorization Amendments (CZARA) of 1990 created a new Coastal Nonpoint Source Pollution Control Program under section 6217 which requires states to develop programs controlling the sources of nonpoint pollution and significantly impact coastal waters. In a coordinated effort, NOAA and EPA take joint responsibility for administering the coastal nonpoint source pollution program. At the state level, CZM agencies and water quality agencies work together to develop and implement the programs.

Responding to growing concerns about the declining health of the nation's coastal resources, including increased population growth along the nation's coasts and intense competition for use of coastal resources, Congress created a new Coastal Zone Enhancement Program under section 309 of CZARA. The new program gives states and territories the opportunity to compete for additional Federal funds to strengthen their coastal management programs in several areas, including wetlands protection, cumulative and secondary impacts of coastal growth, increased opportunities for public access and natural hazards management.

The 1990 Amendments also gave NOAA new authority to impose interim sanctions on states and territories that fail to adhere to federally approved programs. During the biennium, NOAA developed a process for invoking interim sanctions. CZARA also strengthened the Federal consistency provisions under section 307 and clarified through a new requirement that the public should be able to participate in consistency determinations of both federal and state activities.

Highlights of NOAA's efforts to implement these new provisions over the past two years are described in the following pages. These descriptions are organized on a section-by-section basis.

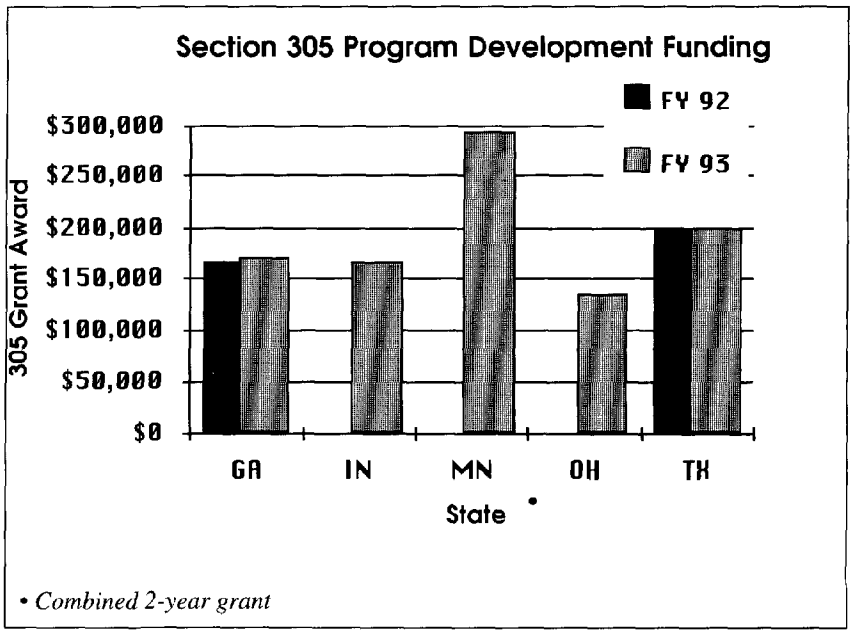
In 1990, Congress restored funding opportunities under section 305 of the Coastal Zone Management Act for non-participating states to develop coastal management programs for federal approval. Section 305 authorizes grants and specified requirements to assist and guide states in the development of coastal zone management programs.

Between 1974 and 1986, 29 of 36 eligible states and territories developed coastal zone management programs that OCRM approved. Six states — Georgia, Illinois, Indiana, Minnesota, Ohio and Texas — and the Pacific Trust Territory of Palau currently do not have federally approved coastal management programs. Each of the states, except Palau, participated in the program development process in the 1970's, but withdrew of the process for various reasons. Factors generally included the lack of state authorities to meet federal approval and local opposition.

Beginning in 1993, NOAA determined that five states which had expressed renewed interest in developing CZM programs — Texas, Georgia, Minnesota, Ohio, and Indiana — were eligible to apply for the newly reinstated section 305 program development funds. NOAA reviewed formal requests from the governors of these states to develop coastal zone management (CZM) programs under the Coastal Zone Management Act and reviewed each states' coastal management laws and regulations before awarding funds. During fiscal years 1992 and 1993, annual program development awards under section 305 ranged from $70,000 to $200,000. States receiving program development funds must match federal dollars with state funding at a four to one ratio.

The states are currently working with NOAA to develop approvable programs over the next two years. Ohio, Texas, and Georgia, now in their second year of program development, are closest to completing the process. NOAAA recently published a notice of intent to issue a draft environmental impact statement on the Ohio program document— a major step toward public review and program approval. Most recently, Minnesota and Indiana began to develop coastal management programs in the fall of 1993.

Under the Coastal Zone Act Reauthorization Amendments of 1990, Congress limited each state's eligibility for program development grants to two years. This could become an issue for some states in the later stages of program development if two years does not prove sufficient time to create an approvable program. Another issue is the requirement to develop an approvable state Coastal Nonpoint Pollution Control Program under section 6217 of the CZMA at the same time as the state is developing its core CZM program. It is very difficult to develop both programs simultaneously given the tight schedule for completing each. Furthermore, states developing CZM programs do not have access to program development funding under section 6217, even though states are subject to the same requirements as approved state programs.

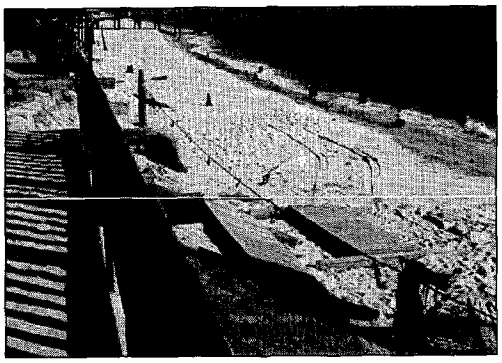


• *Combined 2-year grant*

State-by-state CZM program development activities

Georgia

Since 1979, when Georgia withdrew its original request for federal approval of a state coastal management program, the state has pursued stricter environmental legislation and amended several key authorities. Georgia strengthened the Coastal Marshlands Protection Act and later passed the Shore Protection Act, which together regulate activities in Georgia's extensive coastal marshes, bottom lands, beaches, and dunes.



Georgia applied for program development funds under section 305 to again pursue development of a CZM program. The state received $165,000 in federal funding for fiscal year 1992 and $170,000 in FY 1993. In January 1992, Governor Zell Miller designated the Department of Natural Resources (DNR) as Georgia's lead agency for program development, with CZM staff housed in DNR's Coastal Resources Division (CRD).

Georgia's program will rely on a combination of direct CRD permitting authority and CRD's authority to certify that other activities within the coastal zone are undertaken in accordance with the resource policies of the CZM program. The resource policies, to be approved as DNR regulations, specify how activities within the coastal zone must be undertaken to minimize impacts on coastal resources.

Georgia's coastal zone management staff have completed all of the first year program development tasks, including an outline of the coastal zone management program document and the first draft of the program's resource policies and proposed Coastal Management Act. Georgia established an advisory committee of private citizens and state and local officials working closely with staff to develop the program's goals and objectives. Georgia expects to have developed an acceptable program by Fall 1996.

Indiana

Indiana began developing a comprehensive coastal management program in the 1970's and early 1980's but was unable to pass legislation necessary to support a CZM program. After 20 years, the state has again expressed an interest in developing a program under the CZMA. Interest in renewing CZM program development efforts was sparked in 1991 when the Department of Natural Resources, the lead agency for program development, funded a study entitled *"Toward a Management Plan for Indiana's Shoreline of Lake Michigan."* This eventually prompted DNR to apply for funding in 1993. Having received its first one-year grant for program development ($166,000) in October, 1993, Indiana is in the earliest stage of developing a program.

The state has significant authorities to address issues related to submerged lands, but may need to strengthen its authority with regard to wetlands and shoreline development, particularly to prevent damage to shoreline structures from erosion. With some older, industrialized areas along the shoreline and a new state-approved riverboat gambling industry, Indiana faces some interesting challenges regarding how to manage its urban shorelines.

Minnesota

Minnesota's effort in the 1970's to develop a coastal zone management program for its Lake Superior shoreline ceased due to concerns by local governments and citizens that the federal government would gain undue influence over local activities and decision-making. This, in part, was a direct reponse to the U.S. government's acquisition of the Boundary Waters Canoe Area in northeastern Minnesota.

Minnesota's current efforts to develop a coastal zone management program is predicated on strong local involvement. Early indications are that the state will network many of existing authorities, relying heavily on city, county and township local programs. The North Shore Management Board, a joint powers board of local governments created in 1987, will play a key role in developing local area plans and strategies for environmental protection.

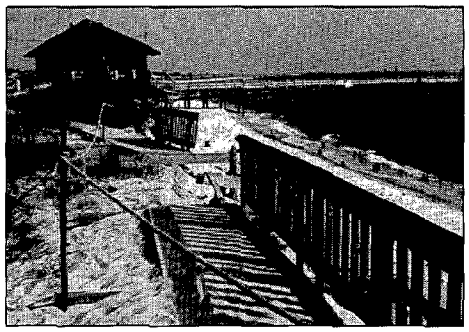
Minnesota's Department of Natural Resources, the lead agency for program development, received a combined two-year section 305 grant totalling $294,000 on Aug. 1, 1993.

Ohio

Ohio continued to develop a coastal zone management program during the 1980's, even when federal funds were not available. When the CZARA restored program development funds in 1990, Ohio applied for a section 305 grant to complete its program, which is based on existing state laws and state coastal management legislation passed in 1988, which includes a new coastal hazards management provision.

Now in its second year of program development, implementation of the state's hazard program remains the largest issue facing Ohio. The hazard program requires the Department of Natural Resources (DNR), lead agency for both program development and implementation, to designate an erosion hazard area along the Lake Erie shoreline. The DNR expended tremoundous time and money to determine and map, at large scale, an appropriate erosion hazard area. DNR is now completing draft regulations to implement Ohio's hazards program.

NOAA and Ohio plan to issue a joint Program Document/ Draft Environmental Impact Statement (P/DEIS) in 1994. Release of the P/DEIS will coincide with Ohio's issuance of draft hazard maps and draft rules for the hazards program, so that all will become available for public comment at the same time.



Texas

Texas tried several times in the 1970's and 1980's to develop a CZM program, without success. The General Land Office, the lead agency, completed several draft program documents, but the documents failed to meet federal requirements for program approval or were not submitted by the state. The state's renewed effort began with the passage of Senate Bill 1053, comprehensive coastal legislation, which established a Coastal Coordination Council, an interagency board chaired by the General Land Office and charged with adopting goals and policies of the coastal management plan and with reviewing actions that may adversely affect coastal natural resource areas. Texas will rely on a networked approach to implement the Council's new policies utilizing existing state authorities.

Substantial efforts have been expended over the past two years in developing management policies and procedures to implement SB 1053.

Two key issues remain for developing an approvable coastal management program in Texas. The state needs to fill the gap in protection of privately owned wetlands, which are not now specifically protected under Texas authorities. Texas also needs to clarify how it will coordinate program implementation between various independent and quasi-independent state agencies, many of which are not directly under the Governor's control.

Texas, in the second year of program development, completed a working draft of its program document. The state is scheduled to release a draft document for public hearing in Spring 1994 with final approval of a Texas CZM progam slated for late 1994.

The Coastal Zone Act Reauthorization Amendments of 1990 added two new requirements to section 306 of the CZMA. The first provision, under 306(d)(14), requires that coastal management programs provide for public participation in permitting processes and consistency determinations for federal activities reviewable under section 307 of the CZMA. The second provision, under 306(d)(15), requires that coastal management programs contain a mechanism to ensure that state agencies adhere to the program. During the biennium, OCRM developed policy guidance for state coastal management programs to implement these new provisions.

Section 306(d)(14)

Existing NOAA regulations largely address the new requirements for public participation under section 306(d)(14). For example, states are already required to provide for public participation in state permitting processes and state review of consistency certifications for federally licensed and permitted activities. Therefore, the new requirement applies to state review of federal agency consistency determinations for direct federal activities under section 307(c)(1) of the CZMA.

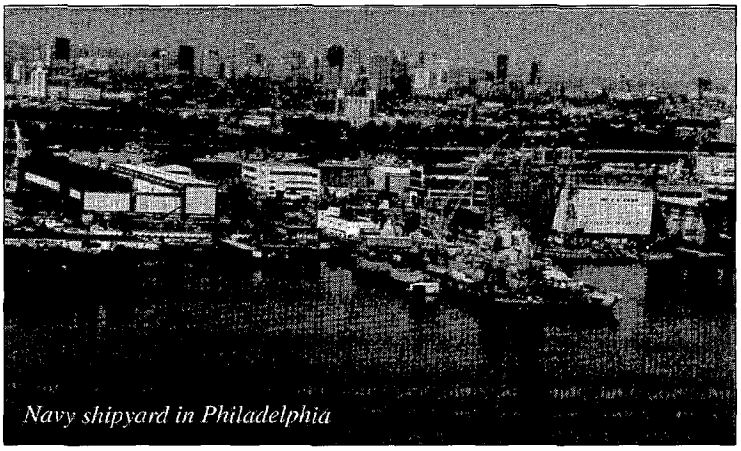
During the biennium, NOAA determined that the majority of coastal management programs do not provide for public participation in consistency determinations under section 307(c)(1). As a result, NOAA instructed all states and territories to develop a procedure for incorporating public participation into its consistency review procedures and submit the procedure to NOAA as a program change. NOAA developed policy guidance outlining what will constitute acceptable public participation procedures.

Section 306(d)(15)

Section 306(d)(15) requires that each state coastal management program provide a mechanism to ensure that all state agencies adhere to the program. Under NOAA regulations, state CZM programs are already required to have mechanisms in place to ensure that state agencies comply with the goals and policies of their approved programs.

In implementing section 306(d)(15), NOAA documented existing state authorities and mechanisms to determine whether the mechanisms remain viable and are working. This information, which was sent to the states for review and comment, will help NOAA gain an overall understanding of the status and effectiveness of existing mechanisms, what mechanisms are appropriate under the various program structures, and what problems or concerns may be addressed through policy guidance. NOAA will continue to assess each state's compliance with section 306(d)(15) during the routine evaluation process under section 312 of the CZMA, which requires a continuing review of state programs.

When Congress passed the CZMA, it recognized that the federal government was a major contributor to environmental problems in the coastal zone, but could also be part of the solution. Section 307 of the CZMA requires that federal activities (including private activities requiring federal permits and licenses and federal financial assistance to states and local governments) be consistent with a state's federally approved coastal management program. The intent of the federal consistency provision is to foster a state/federal partnership in the wise management of coastal land and water uses and natural resources by early consultation, coordination, and negotiation between states, federal agencies, and applicants for federal approvals and funding, and adherence to state CZM program enforceable policies.


Navy shipyard in Philadelphia

While the federal consistency provision has been effective in ensuring compliance with the state coastal management programs and resolving conflicts between federal agencies and states, its full potential has not been realized because of controversy in its application and attempts to either circumvent or minimally meet the consistency requirements. Thus, Congress passed, in part to clarify the scope of the consistency provision, the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA).

Specifically, CZARA overturned the Supreme Court's decision in *Secretary of the Interior v. California*, 464 U.S. 312 (1984), making outer continental shelf oil and gas lease sales subject to the requirements of CZMA section 307(c)(1). The new language also clarifies that all federal activities, whether within or outside the coastal zone, are subject to the federal consistency requirements of the CZMA if an activity can be reasonably expected to affect any land or water use or natural resource of a state's coastal zone. The language codifies NOAA's existing regulations, which require that the geographic scope of federal consistency be based on the effect of a federal activity on coastal uses and resources, not on the location of the activity. While these changes have improved the effectiveness of the federal consistency provision, federal agencies still are often unaware of, or minimize or dispute their consistency responsibilities. In addition, while some states are proficient in their use of consistency, other states are either disinterested or unwilling to apply consistency in a more active and consistent manner.

Over the past two years, OCRM has placed greater emphasis on outreach to states and federal agencies to promote the benefits of federal consistency and to assist states and federal agencies in fulfilling their consistency responsibilities. This outreach includes a full-time Federal Consistency Coordinator to work with the states and federal agencies on the use of consistency in general and on specific conflicts that arise; Federal Consistency Bulletins which document significant state consistency issues, NOAA coordination with federal agencies, NOAA policy guidance and projects, and Secretarial appeal decisions; development of a Federal Consistency Manual (in production); and possible future workshops for states and federal agencies.

The following sections (1) highlight both the success of federal consistency and areas of conflict and (2) summarize decisions issued by the Secretary of Commerce on appeals of state objec-

tions to federal permit or license activities and OCS plans.

MAJOR ISSUES DURING THE BIENNIUM

Lake Gaston: Reviewing Activities in Another State

The City of Virginia Beach, Virginia, is seeking to withdraw up to 60 million gallons of water per day from Lake Gaston, which straddles the North Carolina - Virginia border. Lake Gaston was created by a dam operated by the Virginia Electric Power Company (VEPCO). In September 1991, North Carolina formally objected to the proposed water withdrawal which requires amendment of VEPCO's Federal Energy Regulatory Commission license. VEPCO requested the Secretary of Commerce to override North Carolina's objection. On December 3, 1992, former Secretary Franklin terminated the appeal, based on advice from the Department of Justice (Justice) that one state may not object to a federally permitted activity which occurs entirely within another state. On February 3, 1993, the State of North Carolina requested that Secretary Brown reconsider former Secretary Franklin's decision. On February 10, 1993, Virginia Beach requested that Secretary Brown let the previous decision stand.

Because the Justice opinion on interstate consistency has such important implications for the reach of the CZMA, Department of Commerce General Counsel, on April 12, 1993, requested that Justice review its opinion. On June 29, 1993, Justice informed Secretary Brown that its position had not changed. The Secretary, on July 30, 1993, informed all parties that, based on Justice's review, the Secretary declines to reconsider Secretary Franklin's decision. In August 1993, North Carolina sued the Secretary of Commerce on several counts associated with Secretary Franklin's and Secretary Brown's decisions. In December 1993, Justice advised NOAA that Justice reconsidered its earlier advice and withdrew its former opinion on interstate consistency. The Secretary of Commerce fully accepted NOAA's recommendation that, in the absence of a Justice opinion, the Department of Commerce should revert to the original NOAA interpretation of section 307 of the CZMA.

In the Lake Gaston case, North Carolina challenged an activity in Virginia under section 307 of the CZMA.

Pennsylvania, the Corps, & Nationwide Permits

The Pennsylvania Department of Environmental Resources (DER) and the U.S. Army Corps of Engineers (Corps) agreed to a settlement in Pennsylvania's legal challenges to the Corps' Clean Water Act section 404 nationwide permit (NWP) regulations. Pennsylvania had disagreed with the Corps' consistency determination for the NWP regulations, after the Corps treated proposed State NWP conditions as a denial of State water quality and CZMA consistency certification. Pennsylvania, on March 20, 1992, then brought suit against the Corps' promulgation of the final NWP regulations. However, Pennsylvania and the Corps settled the issue by agreeing that the State has six months to review an applicant's CZMA consistency certification, as provided for in NOAA's federal consistency regulations. Further, the State may establish conditions for Pennsylvania's concurrence with an applicant's consistency certification. The Corps will include such conditions in any applicable permit authorization. If the Corps does not include the conditions, the Corps will consider the State's conditioned concurrence as an objection and will not authorize the activity unless the permittee chooses to comply voluntarily with all conditions in the conditioned concurrence or the State withdraws the conditions considered to have been objected to by the Corps.

New York and GSA/ U.S. Marshals Service Land Disposal

When the General Services Administration (GSA) and the U.S. Marshals Service set out to dispose of a parcel of land that was seized by the U.S. Marshals Service, the State of New York requested to review the land sale for consistency with the New York

Coastal Management Program. GSA asserted that GSA's "broker" activities for the disposal of the land is exempted from CZMA consistency requirements by federal drug statutes, that acting as a "broker" is not a federal activity under 15 C.F.R. § 930.31(a), and that a consistency determination is unnecessary when selling federal surplus real property where the sale is "environmentally neutral."

NOAA maintained that consistency is applicable to such land transfers. After negotiations failed, the State sued to enjoin GSA from finalizing the sale on the grounds that GSA failed to comply with federal consistency. On April 5, 1993 the United States District Court, Northern District for New York, denied preliminary injunctive relief, finding in part that the State's injury would not be irreparable because the State's policies may still be enforced against the private landowner through the State's police power and eminent domain. While the Court confirmed that GSA activities are subject to consistency, the Court found that the State did not show how GSA's failure to observe procedural dictates of the CZMA damaged coastal environs since there was no change in the present use of the land. The property was conveyed by GSA and the Marshals Service to the new property owner. The State has decided not to further pursue the litigation, but has requested that Secretary Brown and Attorney General Reno require that federal agencies adhere to the letter and intent of the CZMA federal consistency provision.

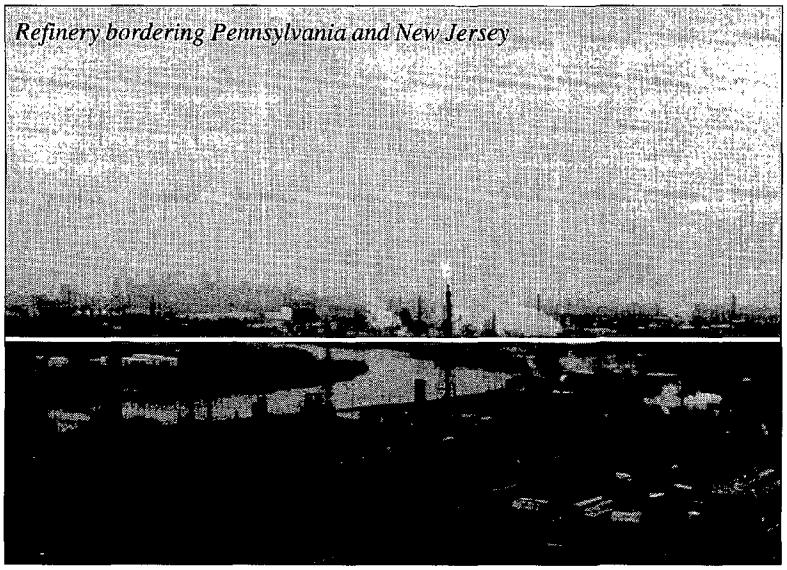
Hawaii, American Samoa, and Guam and Japanese Plutonium Shipments

Beginning in November 1992, Japan began shipping plutonium to Japan from Europe through the Pacific Ocean (the plutonium is fuel from U.S. reactors that has been processed in France for further use). Japan will use the plutonium in an experimental "breeder" reactor, a new type of nuclear power plant that produces additional plutonium while generating power. Hawaii, American Samoa, and Guam requested that the U.S. Department of State (DOS) provide them with a consistency determination for DOS activities related to the transportation plan and the shipment. The state and territories maintained that U.S. involvement was a federal activity under the CZMA section 307(c)(1). The state and territories were concerned that adequate safeguards were not in place to protect the coastal and ocean environment.

When the GSA and the U.S. Marshals Service set out to dispose of seized land, NOAA maintained that consistency was applicable.

DOS requested OCRM review of DOS's response to the state's and territories' request for a consistency determination. OCRM confirmed that Japan is responsible for the plutonium shipment, Japan is responsible for establishing and executing the transportation plan, and that the shipment and plan are not being undertaken by or on behalf of the United States. Therefore, OCRM concurred with DOS that DOS involvement was not a direct federal activity under CZMA section 307(c)(1). OCRM also found that DOS's approval of the transportation plan was a federally licensed or permitted activity. However, because of the governmental character of Japan's actions in this case, Japan was not an entity "existing under the laws of any state," and was therefore not an applicant for such approval pursuant to 15 C.F.R. § 930.52. OCRM also advised DOS to work with the state and territories to resolve the coastal programs' substantive concerns.

Hawaii also requested that the Nuclear Regulatory Commission (NRC) and the U.S. Coast Guard submit consistency determinations for possible actions related to the plutonium shipment. The NRC replied that there were no proposed NRC activities or approvals related to Japan's plutonium shipment. Hawaii was also concerned with possible Coast Guard emergency actions. OCRM informed the Coast Guard that the CZMA and NOAA regulations do not specifically address emergency actions, but that consistency did apply, and that any Coast Guard actions should be consistent to the maximum extent practicable. OCRM made several sug-


Refinery bordering Pennsylvania and New Jersey

gestions to address the State's concerns, but the Coast Guard did not address the suggestions.

California and the Transportation Corridor Agencies

The Transportation Corridor Agencies (TCA), a consortium of local governments, proposed to build several new public toll roads in Orange County, California. One of the proposed toll roads, the San Joaquin Hills project, is located both within and outside of California's coastal zone.

The major issues raised by this project were the applicability of federal consistency to projects outside of the coastal zone and the application of the geographic scope requirements found at 15 C.F.R. § 950.53. Both the Corps and TCA requested OCRM's opinion on the federal consistency requirements for the project. OCRM reiterated its position that the applicability of federal consistency is based on effects, not location. Following its review of the project, the CCC voted to concur with the applicant's certification that the project was consistent with the California Coastal Management Program.

Massachusetts, EPA and Ocean Dump Site Designation

The Marine Protection, Research and Sanctuaries Act (MPRSA) section 102, requires that EPA formally designate federally operated marine disposal sites. EPA recently designated the Massachusetts Bay Disposal Site (MBDS), after EPA included provisions that Massachusetts asserted were necessary in order to be consistent with the Massachusetts Coastal Zone Management Program (MCZMP). The MBDS, formerly known as the Foul Area Disposal Site, has been used for disposal of dredged materials for several decades and received an interim designation until the completion and acceptance of the Environmental Impact Statement (EIS). The MCZMP worked closely with EPA during the preparation of the EIS and concurred that the list of criteria for site designation was appropriate. The site has been used for disposal of low-level radioactive wastes (discontinued in late 1972), and disposal of contaminated dredged materials. However, recent permits have not allowed projects to dispose of contaminated sediments at the MBDS (e.g., the Third Harbor Tunnel sediments which have been disposed at upland sites).

The MCZMP negotiated a written agreement with EPA requiring that only clean materials would be deposited at the MBDS. EPA consented to prepare a record of decision (ROD) that states that the designation allows only marine dredged materials deemed clean by toxicological testing. The MCZMP has also stressed that this federal consistency approval is only for the site selection and stipulates the deposition of only clean material. Any and all uses of the site will also be subject to individual federal consistency review, which should assure that only clean material is being deposited there.

However, the Corps district questioned EPA's approval. The Corps asserted the ROD was not noticed properly and apparently EPA will re-notice the ROD. The Corps is also questioning EPA's authority to agree, at the site designation stage, to state-requested and EPA approved provisions regarding use of the site. The Corps maintains that use of a site can only be authorized by the

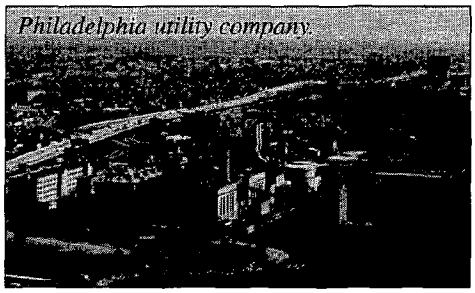
Corps under MPRSA section 103 and that the Corps strongly objects to the section 103 type conditions agreed to by the State and EPA under the section 102 process. The Corps does agree that a state has the right, under consistency provisions, to raise those type of issues when a disposal is proposed under section 103. OCRM expressed concern with the Corps' view since the 1990 amendments to the CZMA allow a state to review future reasonably foreseeable cumulative effects of activities at an initial stage of an activity. This issue is ongoing and will undoubtedly involve further discussions among the State, EPA, Corps, and OCRM.

Massachusetts, New Hampshire and Interstate Consistency

Another Massachusetts consistency review involved a project wholly within another state, but potentially affecting Massachusetts' coastal resources and uses. In September 1992, the MCZMP concurred with a federal consistency certification for the proposed Seabrook, New Hampshire wastewater treatment facility, ending a two year effort to secure the right to review a project in an adjacent state. (This issue was settled prior to the Lake Gaston decision regarding interstate consistency).

The facility's discharge pipe will run through the town's heavily developed barrier beach and discharge approximately 2,100 feet offshore in 30 feet of water (low tide). All construction activities will occur on the New Hampshire side of the line, with the pipe discharging approximately 1,000 feet north of the border. Prevailing currents flow southeast towards the Massachusetts town of Salisbury and the popular Salisbury Beach recreation area.

The Town of Seabrook and the Corps objected to a Massachusetts review. With OCRM's and EPA's backing, the MCZMP moved forward with the review and the Corps agreed to delay issuing its authorizations until after a decision was made on issuance of an EPA discharge.


Philadelphia utility company.

With significant cooperation from EPA, two matters were resolved that made it possible for the MCZMP to issue a finding of consistency for the project: 1) consensus was reached on a closure line around the outfall incorporating only shellfish beds in New Hampshire waters: and 2) the Town of Seabrook was required to put into place an expanded regime of outfall monitoring and an elaborate notification system for alerting Salisbury officials and residents if failure occurs in any aspect of plant operation such that shellfish harvesting or swimmers would be temporarily at risk. EPA has committed to the MCZMP that if monitoring indicated that the closure zone needs to be extended into Massachusetts waters, they will reopen the permit and require relocation of the outfall.

Massachusetts and GSA Land Acquisition

Another Massachusetts consistency review involved concurrence with a project on federally owned land. The U.S. General Services Administration (GSA) acquired a 4.56-acre portion of the prized Fan Pier site on Boston's waterfront, for the purpose of developing a new Federal Courthouse. Clearing the way for this federal action was a decision by the MCZMP, on November 23, 1992, to concur with a determination by GSA that both the proposed acquisition and development of the land were consistent with the enforceable policies of the MCZMP. Such consolidation of consistency determinations made sense in this case because it involved the preparation of an EIS for the project site plan and building design and then evaluated the extent of conformance with relevant state and local standards for waterfront development, especially those embodied in the tidelands licensing regulations under the state's Public Waterfront Act.

In terms of promoting federal accountability to state coastal

management plans, this "one-stop" approach is clearly desirable in that it allows all potential effects of the project to be identified before the federal government invests substantial funds. It also allowed GSA to adhere to a relatively tight schedule by avoiding a potential legal clash and avoided unnecessary delay and duplication of effort.

Delaware, EPA, and Superfund

The Delaware Coastal Management Program (DCMP) reviewed clean-up activities, under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), at the DuPont-Newport Superfund site in Delaware. EPA Region III questioned whether CZMA federal consistency is applicable to "on-site" activities for Superfund sites. EPA guidance defines "on-site" as the areal extent of contamination and suitable areas in very close proximity to contamination. EPA asserts that on-site activities need only meet the substantive requirements of other federal law before a final EPA decision is issued. This means that for on-site activities EPA will make a determination of consistency, but will not submit the determination under federal consistency review procedures and timeframes. OCRM disagreed with this position finding no language in CERCLA that would supersede any CZMA requirements, substantive or administrative. Further, the 1990 changes to the CZMA make it clear that no federal activity is exempt from the consistency requirements. OCRM and EPA have not yet resolved this issue.

EPA Region III did submit, to the DCMP, a consistency determination for on-site activities at the DuPont-Newport site. They based their submission on their determination that the CZMA was a relevant and appropriate requirement for this particular site. The DCMP responded with several concerns and requested that EPA revise their consistency determination to address these concerns and additional DCMP policies. DCMP is also requesting the standard federal consistency review period.

EPA Region III questioned whether CZMA federal consistency is applicable to "on-site" activities for Superfund sites. OCRM and EPA have not yet resolved this issue.

Connecticut, the Coast Guard, and Security Zones

In the Spring of 1992, while investigating recent enforcement actions against Connecticut fishermen by security personnel of General Dynamics Electric Boat Division, the State discovered that the Coast Guard never submitted a consistency determination for Security Zone B, New London Harbor (established in July 1973 and expanded in 1984). After several discussions and the exchange of correspondence among the State, Coast Guard, and OCRM, OCRM informed the Coast Guard and the State that the establishment of such security zones is not exempt from consistency, but that the consistency regulations do not provide for after-the-fact consistency determinations. OCRM recommended that the State and the Coast Guard attempt to come to an agreement regarding the current dispute outside of consistency mechanisms, and that the Coast Guard provide consistency determinations for future security zones or changes to security zones.

The Coast Guard's response to Connecticut's inquiry into establishing and modifying this zone implied that the establishment of such security zones may be exempted, at the Coast Guard's discretion, from the consistency requirements. OCRM informed the Coast Guard that such an interpretation is incorrect given the plain language of the CZMA that all federal activities are subject to consistency if they affect any land or water use or natural resource of a state coastal zone.

OCRM recommended that the State and the Coast Guard attempt to come to an agreement regarding the current dispute outside of consistency mechanisms.

New Jersey and Ocean Disposal of Dredged Material Containing Dioxin

On May 26, 1993, after three years of negotiations between federal agencies, commercial port and shipping interests and environmental groups, the Army Corps of Engineers (Corps) approved a controversial permit for the Port Authority of New York and New Jersey to dredge 450,000 cubic yards of dioxin-tainted sediment near a former Agent Orange factory, and dump them six miles off Sandy Hook, New Jersey, in what is called the "Mud Dump." The portion of the Passaic River, in New Jersey, where the dredging will occur has been listed as a Superfund site on the National Priorities List. The Mud Dump is located near an important commercial and recreational fishing area, which also hosts three endangered species each of whales and sea turtles. The permit is the first of an anticipated 40 Corps permits for dredging in the New York/New Jersey harbor. While not all of the future dredge spoils will contain as high a level of dioxin contamination, issuance of this permit and the states' response set an important precedent.

In January 1993, New Jersey issued a Waterfront Development Permit and Section 401 Water Quality Certification for the maintenance dredging project, and found the dredging project to be consistent with New Jersey's Coastal Management Program (NJCMP). The State's concurrence for the dumping activity at the Mud Dump was presumed. Both states were under pressure from the environmental community and NOAA to address dumping of dioxin-contaminated dredge materials through federal consistency reviews on dredging and dumping activities off the coast of New Jersey.

Addressing dioxin-tainted sediment dumping has proven difficult for states in part due to the lack of federally approved standards for ocean disposal of dioxin contaminated sediment. For the purposes of this project, the Corps and EPA reached an agreement on proposed interim guidelines for a dioxin management approach for the sediments to be disposed of at the Mud Dump.

In an effort to make federal and state agencies address environmental concerns regarding ocean disposal of dioxin contaminated dredge materials, a coalition of environmental groups, including the Coast Alliance, Clean Ocean Action, the Natural Resources Defense Council, the Environmental Defense Fund, and others sent a letter to Rep. Gerry Studds, Chairman of the House Merchant Marine and Fisheries Committee chastising New Jersey and New York for not using the federal consistency provision as a means to review the dumping.

Both states were under pressure from the environmental community and NOAA to address dumping of dioxin-contaminated dredge materials through federal consistency reviews....

The State plans to block ocean dumping of such sediments after Dec. 31, 1995, if the federal government does not adopt scientific-based standards for disposing of dredge material contaminated with dioxin. In addition, subsequent to the Port Authority dredging permit, the NJCMP has successfully negotiated a Navy dredging project using federal consistency as a tool to require additional testing for dioxin levels.

Maine, the Corps, and Mitigation

The State of Maine has several Corps projects requiring mitigation under Maine's CMP. The Corps District, instead of complying with the State CMP policies, has informed the State that such mitigation requirements are a local or State responsibility, and that if the State requires the Corps to provide the mitigation, then the Corps cannot undertake the project. The Maine CMP, the Governor, and the State's Congressional delegation have all discussed the issue with the Corps. However, at this time, the State and local governments must pay mitigation costs.

NOAA discussed the issue with Corps Headquarters in Washington, and the Corps indicated that its policy is to mitigate all

that its policy is to mitigate all damages to the extent justified and allowed under its regulations and appropriations law. However, if a state wishes to impose mitigation requirements that go beyond Corps requirements, or Congress has not otherwise authorized the Corps to fund the mitigation, then the Corps cannot undertake the project. If there are important interstate or national defense issues, the Corps may do the project regardless of state concerns or objections.

California and the Closure of Fort Ord

The Corps is in the process of closing Fort Ord and reviewing alternatives for re-use of the site. Fort Ord is a large military base adjacent to Monterey Bay. The Corps issued a draft environmental impact statement (DEIS), which contained a draft consistency determination. The Corps District also informed the State that the record of decision (ROD) would be issued prior to submitting a final consistency determination stating that the ROD was not the final agency action. California notified the Corps prior and subsequent to the issuance of the DEIS of the need to make a final consistency determination before publishing the ROD, or the State would treat the draft consistency determination as final. In addition, the Corps intended to release the ROD before the State's 45-day review period (on the draft determination) was completed. As a result of the State's letters and coordination between NOAA and Corps headquarters, the Corps District office delayed issuance of the ROD, but still expects to issue the ROD before the State completes its consistency review. However, the State may go along with this so long as the Corps assures the State that it will provided additional consistency determinations for later phases of the closing of Fort Ord.

Secretary Brown declined to reconsider a decision by the previous administration, in the State of Florida vs. Chevron U.S.A., Inc.

Secretary's Decision in a Request to Reconsider an OCS Decision

On January 8, 1993, former Secretary Franklin issued a decision in the consistency appeal of Chevron U.S.A., Inc. (Chevron) from an objection by the State of Florida. On February 26, 1993, the Assistant General Counsel, Office of the Governor of the State of Florida, requested that Secretary Brown reconsider former Secretary Franklin's decision. Secretary Brown's response, dated March 23, 1993, declined to reconsider former Secretary Franklin's decision. Secretary Brown stated that the Chevron appeal was decided on the merits and based on a completely developed record, which was weighed in light of the applicable law and regulations.

SECRETARIAL APPEAL DECISIONS

Under CZMA § 307(c)(3), a state's consistency objection precludes a federal agency from issuing a permit for an activity at issue unless, upon appeal by the applicant, the Secretary of Commerce finds that the activity is either consistent with the objectives of the CZMA (Ground I) or necessary in the interest of national security (Ground II). If the requirements of either Ground I or Ground II are met, the Secretary must override the state's objection. In 1992 and 1993, the Secretary issued the following consistency appeal decisions.

Florida - Appeal of Chevron, (Chevron Destin Dome Decision), January 8, 1993

Chevron U.S.A., Inc. and others acquired an interest in Destin Dome Block 97 in 1985 as a result of a successful bid in Outer Continental Shelf (OCS) Lease Sale 94. Chevron is the operator of the lease, which is located about 29 miles from Perdido Key, Florida. In November of 1990, Chevron submitted a Plan of Exploration (POE) for Block 97 to the Minerals Management Service of the Department of the Interior. Chevron proposes to drill an exploratory well to assess natural gas reserves, using water-based drilling fluids. The State of Florida objected to Chevron's POE to conduct drilling activities on Destin Dome Block 97, citing in its ob-

jection, among other things, the state's coastal management plan (CMP) policies protecting and preserving potentially affected coastal resources. On appeal, the Secretary of Commerce found that the Appellant's proposed project satisfied all four elements of 15 C.F.R. § 930.121 and was therefore consistent with the objectives or purposes of the CZMA. Although inconsistent with the state's CMP, Chevron's proposed exploration may be permitted by federal agencies.

Florida - Appeal of Mobil, (Mobil Pulley Ridge Decision), January 7, 1993

Mobil Exploration & Producing U.S. Inc. is the operator of Pulley Ridge Block 799, acquired in Outer Continental Shelf (OCS) Lease Sale 79, and located about 59 miles northwest of the Dry Tortugas islands, 75 miles from the nearest Florida mainland (near Cape Romano), and 120 miles west-northwest of Key West, Florida. In May of 1988, Mobil submitted a Plan of Exploration (POE) for Block 799 to the Minerals Management Service of the Department of the Interior. Mobil proposes to drill four exploratory wells to assess the hydrocarbon potential of the lease block. The State of Florida objected to Mobil's POE to conduct drilling activities on Pulley Ridge Block 799, citing in its objection, among other things, the state's coastal management plan (CMP) policies protecting and preserving potentially affected coastal habitats and resources. Florida also stated that Mobil failed to provide sufficient information and analyses to demonstrate that all of its proposed activities, associated facilities and effects are consistent with the provisions of the state's coastal management plan. On appeal, the Secretary of Commerce found that Mobil failed to satisfy Ground I in that the proposed POE's adverse effects on the coastal zone outweigh its national interest benefits. The Secretary also found that there will be no significant impairment to a national defense or other national security interest if Mobil's project is not allowed to go forward as proposed. Because Mobil's proposed project did not meet the requirements of either Ground I or Ground II, the Secretary declined to override the state's objection.

Secretary of Commerce declined to override the Florida objection to a proposal by Mobil Exploration & Producing U.S. Inc. to drill four exploratory wells off the coast of Key West.

Florida - Appeal of Unocal, (Unocal Pulley Ridge Decision), January 7, 1993

Union Exploration Partners, LTD., with Texaco Inc., acquired an interest in Pulley Ridge Blocks 629 and 630 as a result of a successful bid in Outer Continental Shelf (OCS) Lease Sale 79. The lease blocks are located about 170 miles south west of Tampa Bay, 135 miles southwest of Fort Myers, and about 44 miles northwest of the Dry Tortugas, Florida. In February of 1988, Union submitted a Plan of Exploration (POE) for Blocks 629 and 630 to the Minerals Management Service of the Department of the Interior. Union proposes to drill up to three exploratory wells to assess the hydrocarbon potential of the two lease blocks. The State of Florida objected to Union's POE to conduct drilling activities on Pulley Ridge Blocks 629 and 630, citing in its objection, among other things, the state's coastal management plan (CMP) policies protecting and preserving potentially affected coastal habitats and resources. On appeal, the Secretary of Commerce found that Union failed to satisfy Ground I in that the proposed POE's adverse effects on the coastal zone outweigh its national interest benefits. The Secretary also found that there will be no significant impairment to a national defense or other national security interest if Union's project is not allowed to go forward as proposed. Because Union's proposed project did not meet the requirements of either Ground I or Ground II, the Secretary declined to override the state's objection.

The Secretary also declined to override an objection by South Carolina to a citizen's proposal to fill and permanently alter a local wetland.

South Carolina - Appeal of Henry Crosby, (Crosby Decision), December 29, 1992

In February of 1989, Mr. Henry Crosby (Appellant) applied to the U.S. Army Corps of Engineers for a permit to place fill material in a wetland for the purpose of constructing an impoundment and installing a water control structure. The South Carolina Coastal Council objected to the Appellant's proposed project on the ground that it is inconsistent with the state's coastal management plan (CMP) policies providing for the protection of wildlife and fisheries resources from significant negative impacts and for the protection of freshwater wetlands from significant permanent alteration. On appeal, the Secretary of Commerce found that the Appellant's proposed project failed to satisfy 15 C.F.R. §930.121(b). The proposed project would permanently alter wetlands, thus causing loss of normal functions and values, while contributing minimally to the national interest. Because the Appellant failed to satisfy Ground I and did not plead Ground II, the Secretary declined to override the state's objection.

New York - Appeal of Robert E. Harris, (Harris Decision), December 2, 1992

In January of 1990, Robert Harris (Appellant) applied to the U.S. Army Corps of Engineers for a permit to construct a dock, including a floating pier with 18 slips, extending into the Hudson River in Rensselaer, New York. The New York State Department of State objected to the Appellant's proposed project on the ground that it is inconsistent with, among other things, the state's CMP policies of facilitating the siting of water dependent uses and facilities on or adjacent to coastal waters, and CMP policies on activities in historic areas. In its objection letter, the state identified an alternative of constructing a small dock with eight slips. On appeal, the Secretary of Commerce found that the Appellant's proposed project failed to satisfy 15 C.F.R. § 930.121(d) in that the state had identified a reasonable, available alternative that would be consistent with the state's CMP. Because the Appellant failed to satisfy Ground I and did not plead Ground II, the Secretary declined to override the state's objection.

South Carolina - Appeal of A. Elwood Chestnut, (Chestnut Decision), November 4, 1992

Mr. A. Elwood Chestnut (Appellant) owns farmland and adjacent freshwater wetlands near the town of Longs, Horry County, South Carolina. The Appellant applied to the U.S. Army Corps of Engineers for a permit to fill 0.7 acres of his wetland property and to impound another eight acres of his wetland property in order to create a livestock watering and irrigation pond. The South Carolina Coastal Council objected to the Appellant's proposed project on the ground that it is inconsistent with the state's coastal management plan (CMP) policies providing for the protection of wildlife and fisheries resources from significant negative impacts and for the protection of freshwater wetlands from significant permanent alteration. In its objection letter, the state identified an alternative of constructing a pond on the Appellant's upland property. On appeal, the Secretary of Commerce found that the Appellant's proposed project failed to satisfy 15 C.F.R. § 930.121(d) in that the state had identified a reasonable, available alternative that would be consistent with the state's CMP. Because the Appellant failed to satisfy Ground I and did not plead Ground II, the Secretary declined to override the state's objection.

South Carolina objected to a farmer's proposed project to fill part of his wetland property and impound another portion to create a livestock watering and irrigation pond. The state maintained that the project was inconsistent with South Carolina's coastal management plan.

New York - Appeal of Claire Pappas, (Pappas Decision), October 26, 1992

In June of 1989, Claire Pappas (Appellant) applied to the U.S. Army Corps of Engineers for a permit to construct a wood deck structure for dining over a canal as an addition to her seafood res-

taurant in Hemstead, New York. The New York State Department of State objected to the Appellant's proposed project on the ground that it is inconsistent with the state's CMP policies of facilitating the siting of water dependent uses and facilities on or adjacent to coastal waters. In its objection letter, the state identified alternatives of relocating the proposed deck to an upland area, making more efficient use of existing restaurant floor space, or adding space onto the existing restaurant structure. On appeal, the Secretary of Commerce found that the Appellant's proposed project failed to satisfy 15 C.F.R. § 930.121(d) in that the state had identified a reasonable, available alternative that would be consistent with the state's CMP. Because the Appellant failed to satisfy Ground I and did not plead Ground II, the Secretary declined to override the state's objection.

North Carolina - Appeal of Roger W. Fuller, (Fuller Decision), October 2, 1992

Roger W. Fuller (Appellant) owns an unimproved lot bordering one of the Boiling Spring Lakes, in Brunswick County, North Carolina. Historically, the lot has been subject to erosion and flooding. In March of 1989, the Appellant applied to the U.S. Army Corps of Engineers for a permit to dredge submerged fill adjacent to the property and fill a section of the property bordering the lake. The North Carolina Department of Natural Resources and Community Development objected to the Appellant's proposed project on the ground that it is inconsistent with the state's CMP policies of protecting areas classified as conservation areas and discouraging projects which require the filling or significant permanent alteration of productive freshwater marsh. On appeal, the Secretary of Commerce found that the Appellant's proposed project failed to satisfy 15 C.F.R. §930.121(b). The proposed project would eliminate emergent wetlands and associated wildlife habitat, while contributing minimally to the national interest. Because the Appellant failed to satisfy Ground I and did not plead Ground II, the Secretary declined to override the state's objection.

South Carolina - Appeal of Yeamans Hall Club, (Yeamans Hall Decision), August 1, 1992

In May of 1990, Yeamans Hall Club (Appellant) applied to the U.S. Army Corps of Engineers for a permit to place 5,200 cubic yards of fill into 0.23 acres of freshwater wetlands to create a dam across a small stream for the purpose of creating a six-acre pond on the Appellant's property in Hanihan, South Carolina. The construction of the dam would result in the flooding of an additional 2.5 acres of freshwater wetlands. The South Carolina Coastal Council objected to the Appellant's proposed project on the ground that it is inconsistent with the state's CMP policies of discouraging projects which require the filling or significant permanent alteration of productive freshwater marsh. In its objection letter, the state identified an alternative of constructing a lake on the Appellant's upland property. On appeal, the Secretary of Commerce found that the Appellant's proposed project failed to satisfy 15 C.F.R. § 930.121(d) in that the state had identified a reasonable, available alternative that would be consistent with the state's CMP. Because the Appellant failed to satisfy Ground I and did not plead Ground II, the Secretary declined to override the state's objection.

South Carolina - Appeal of Davis Heniford, (Heniford Decision), May 21, 1992

Davis Heniford (Appellant) applied to the U.S. Army Corps of Engineers for a permit to place about 7,000 cubic yards of fill into 2.5 acres of freshwater wetlands to construct a Food Lion grocery store, strip mall and adjacent parking lot, located in the town of Loris, Horry County, South Carolina. The South Carolina Coastal Council objected to the Appellant's proposed project

The Secretary also declined to override an objection by North Carolina to a property owner's proposal to dredge submerged fill and to fill another wetland because the proposed project would have eliminated emergent wetlands and wildlife habitat.

on the ground that it is inconsistent with the state's CMP policies of discouraging such projects when there are other feasible alternatives. In its objection letter, the state identified an alternative of using the available uplands on the Appellant's property. On appeal, the Secretary of Commerce found that the Appellant's proposed project failed to satisfy 15 C.F.R. § 930.121(b) and (d). The proposed project would eliminate wetlands and associated wildlife habitat, while contributing minimally to the national interest. Furthermore, the state had identified a reasonable, available alternative that would be consistent with the state's CMP. Because the Appellant failed to satisfy Ground I and did not plead Ground II, the Secretary declined to override the state's objection.

Puerto Rico - Appeal of the Asociación de Propietarios de Los Indios, (Los Indios Decision), February 19, 1992

The Asociación de Propietarios de Los Indios (Appellant), a committee of landowners located in the Los Indios Sector, Las Mareas Ward, Salinas, Puerto Rico, applied to the U.S. Army Corps of Engineers for after-the-fact permits to authorize already-completed or nearly-completed residential structures, landfills, piers and bulkheads, and to maintain a private road on their properties. The Puerto Rico Planning Board (PRPB) objected to the Appellant's project on the ground that it is in inconsistent with the PRPB's CMP policies of discouraging lateral expansion along the coast, discouraging utilization of lands with important natural resources for urban uses, and prohibiting land development and construction in areas affected by floods and wave surge. On appeal, the Secretary of Commerce found that the Appellant's project failed to satisfy 15 C.F.R. § 930.121(a) in that the project does not further one or more of the competing national objectives or purposes contained in CZMA §§ 302 or 303. The Secretary also found that the project is not necessary in the interest of national security. Because the Appellant failed to satisfy either Ground I or Ground II, the Secretary declined to override the PRPB's objection.

Puerto Rico used CZMA Federal Consistency to prevent a group of local land owners from acquiring "after the fact" permits for residences, landfills, piers and bulkheads in areas that held important natural resource value.

Puerto Rico - Appeal of Jorge L. Guerrero-Calderon (Guerrero-Calderon Decision), March 5, 1993

In August of 1988, Mr. Jorge L. Guerrero-Calderon (Appellant) applied to the U.S. Army Corps of Engineers for a permit to construct a 41-foot pier to facilitate convenient water access to his property located on Culebra Island, Puerto Rico. The Commonwealth of Puerto Rico objected to the Appellant's consistency certification for the proposed project on the ground that it is inconsistent with Puerto Rico's coastal management program policies providing for the protection of sea turtle habitat.

On appeal, the Secretary of Commerce found that the Appellant's proposed project failed to satisfy 15 C.F.R. §930.121(b). The proposed project will adversely affect the natural resources of the coastal zone by leading to more boating activity in the Tamarindo Bay area which could degrade sea turtle habitat and potentially harm endangered and threatened sea turtles feeding on seagrass in the vicinity. These adverse effects on the natural resources of the coastal zone are substantial enough to outweigh any minimal contribution of the project to the national interest. Because the Appellant failed to satisfy Ground I and did not plead Ground II, the Secretary declined to override Puerto Rico's objection.

Seven of the Secretary's 12 appeal decisions declined to override objections by states, reinforcing coastal management policies that protect wetland ecosystems.

The Coastal Zone Act Reauthorization Amendments of 1990 (CZARA), replaced the Coastal Energy Impact Fund with the Coastal Zone Management Fund, created by new section 308 of the CZMA. The CZM Fund, consisting of loan repayments from the Coastal Energy Impact Program, provides funding for a number of specified purposes: administration of the coastal zone management program, regional and interstate projects, demonstration projects for improving coastal zone management, emergency grants for unforeseen or disaster-related circumstances, awards recognizing excellence in coastal zone management, program development grants authorized by section 305, and investigation and application of the public trust doctrine through state coastal management programs.

Wisconsin coastal managers used CZM funds obtained through an enhancement grant to increase public access in Kenosha.

During the biennium, the CZM Fund, appropriated by Congress, funded the section 309 enhancement grant program at Congress' direction, section 306 state assistance grants, and section 305 program development grants.

In fiscal year 1992, the Fund primarily supported enhancement grants to approved state coastal management programs under section 309. Of the $6.0 million appropriated by Congress, $5.6 million funded enhancement grants. The other $0.4 million funded, in part, a state assistance grant to American Samoa. In fiscal year 1993, Congress authorized NOAA to spend $7.8 million from the CZM fund. The entire appropriation funded state assistance grants under section 306.

Looking to the future, the budget allocation for the CZM Fund in fiscal year 1994 rose dramatically from the previous two years, allowing NOAA to fund projects benefitting state coastal zone management programs and programs within the National Estuarine Research Reserve System. Of the total $7.8 million available in fiscal year 1994, $3.5 million will be used for program administration expenses, with the remainder devoted to the other purposes.

Though the figures are still preliminary, NOAA proposes to devote approximately 70 percent of the remaining $4.3 million for regional or interstate demonstration projects through grants to state CZM programs and estuarine research reserves. Approximately 20 percent will be used to further national objectives by providing support for national, international, and regional meetings having direct impact on programs created under the CZARA; funding national program assessment studies and ocean management studies; and developing a national plan for education and outreach. The remaining 10 percent will fund section 305 program development grants for states entering the coastal zone management program, as well as fund emergency grants to state coastal management agencies for response to hurricanes, floods, and other natural disasters.

Dramatic population growth along the U.S. coastlines brings new challenges to managing national coastal resources — challenges in protecting life and property from natural hazards; in settling conflicts between such competing needs as dredged material disposal, commercial development, recreational uses, national defense needs, and port development; and in protecting coastal wetlands and habitats while accommodating needed economic growth.

Targeting National Coastal Priorities

In 1990, to meet mounting public concern for the well-being of the nation's coastal resources, the Congress created a new program under section 309 of the Coastal Zone Management Act (CZMA) of 1972 to encourage states to address coastal issues of national significance. The new Coastal Zone Enhancement Program provides additional incentives for states to make program changes in any of eight national interest enhancement objectives.

Eight Enhancement Areas Under Section 309

- to protect, restore, or enhance the existing coastal wetlands base, or create new coastal wetlands;
- to prevent or significantly reduce threats to life and destruction of property by eliminating development or redevelopment in high hazard areas and managing development in other hazard areas;
- to increase opportunities for public access to coastal areas;
- to reduce marine debris in the coastal and ocean environment;
- to assess the cumulative and secondary impacts of population growth and urban development around the coast;
- to identify and develop plans to manage coastal areas with special needs;
- to plan wise use of ocean resources; and
- to help in placing energy facilities and government facilities along the coast.

The enhancement program encourages states to achieve these objectives by strengthening their coastal management programs with new laws, regulations, or other enforceable mechanisms to provide greater protection for coastal resources.

Identifying States' Priority Issues

In 1991, states put a great deal of effort into assessing the status of their coastal resources and determining how to improve the management of those resources. The states sought public input to help them identify the most pressing coastal issues facing their coasts and the best ways to tackle those issues. Many states used surveys, coastal commission or citizen advisory group meetings, which are open to the public, as well as information documents to aggressively solicit public input in identifying states' coastal enhancement priorities.

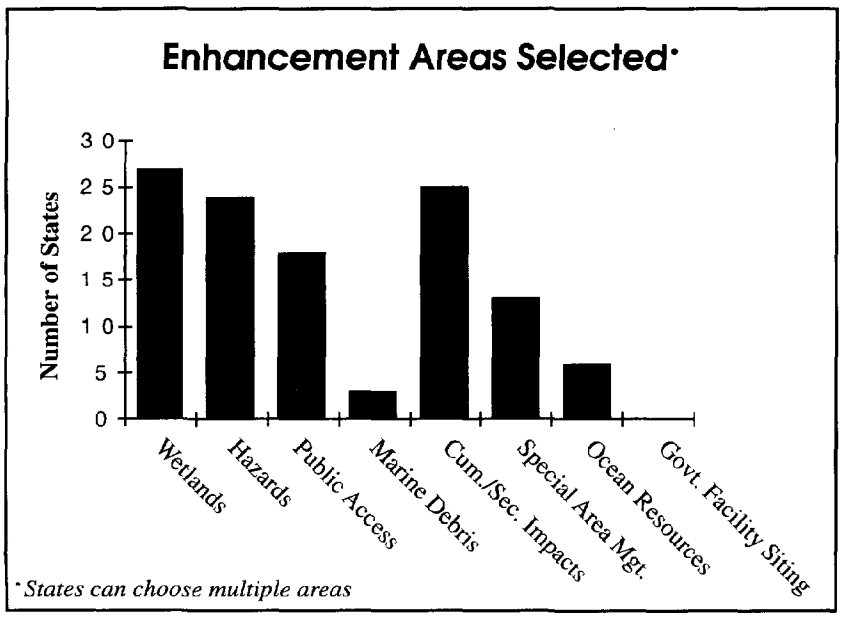
Each state developed an "assessment" based on the information collected during the scoping process. The assessments examined how the state is addressing each of the enhancement objectives, the significance of each ssue for the state, and the opportunities for the state to improve performance in the enhancement areas. States used the assessment to prioritize the improvements needed in state coastal management programs within the eight enhancement areas.

Coastal state participation in the effort was high; 27 of the eligible 29 coastal states and U.S. island territories submitted assessments in January 1992. Most states concentrated on four of the enhancement objectives, but did not rank them. The most frequently identified areas were: protecting coastal wetland resources; managing cumulative and secondary impacts of coastal growth; increasing opportunities for public access to the shore; and reducing threats to life and property from natural hazards. Of the 27 assessments submitted, OCRM approved 23 in fiscal year 1992. The four remaining states revised their assessments and received OCRM's approval in fiscal year 1993. By the end of fiscal year 1993, all eligible coastal states were participating in the section 309 enhancement grants program. A summary of individual state priorities by enhancement area can be found in the Appendix.

Developing a Multi-Year Strategy

After setting priority management issues within the eight enhancement areas, each state developed a multi-year strategy for achieving the goals set out in the assessment. In the strategy, each state identified program changes that would bring the state closer to its goals in the priority areas identified in the assessment. The states then worked to bring about these changes. States used their strategies in developing enhancement grant proposals for fiscal year 1992 and will continue to use them in subsequent years.

OCRM approved the 23 strategies submitted in fiscal year 1992 and assigned each a weighting factor to determine each state's funding. OCRM approved the remaining four state strategies in fiscal year 1993. Five states also revised their strategies and submitted the revisions to OCRM for ranking. OCRM reviewed the strategies and assigned new weighting factors. All together, the states' strategies showed a broad range of projects to achieve the enhancement objectives — a true reflection of the unique character of each state and each state's coastal program.



Allocating Enhancement Resources

Section 309(f) of the CZMA requires that between 10 percent and 20 percent of the amount appropriated for sections 306 and 306(a) be set aside each year to implement the new enhancement grants program. Figure 1 depicts the distribution of CZMA funding between sections 306, 305, and 309.

OCRM used two methods to allocate enhancement grant funds: a weighted formula approach based on an evaluation of each state's strategy, and an assessment of individual projects of special merit. The weighted formula funding gives states a predictable level of funding to undertake projects necessary to achieve the benchmarks listed in their strategies. Under the weighted formula approach, OCRM calculates weighted formula funding targets for each state by multiplying the state's coastal zone management award under section 306 by a "weighting factor" derived from OCRM's evaluation of the state's strategy. The most funding

awarded to a state using the weighted formula in FY92 and FY93 was $273,600, while $52,800 was the least amount. Figures for each state can be found in table F of the Appendix.

Allocating money for projects of special merit gives states an opportunity to be innovative and undertake projects that will demonstrate improvements in achieving coastal zone enhancement objectives. Enhancement projects will also provide models transferable to other states. States compete annually for funding to undertake projects of special merit; only the highest ranked projects are approved. The following table shows funding awarded for projects of special merit (PSM) in fiscal years 1992 and 1993, listed by enhancement area. The majority of PSM funding supported program enhancements in cumulative and secondary impacts and coastal hazards.

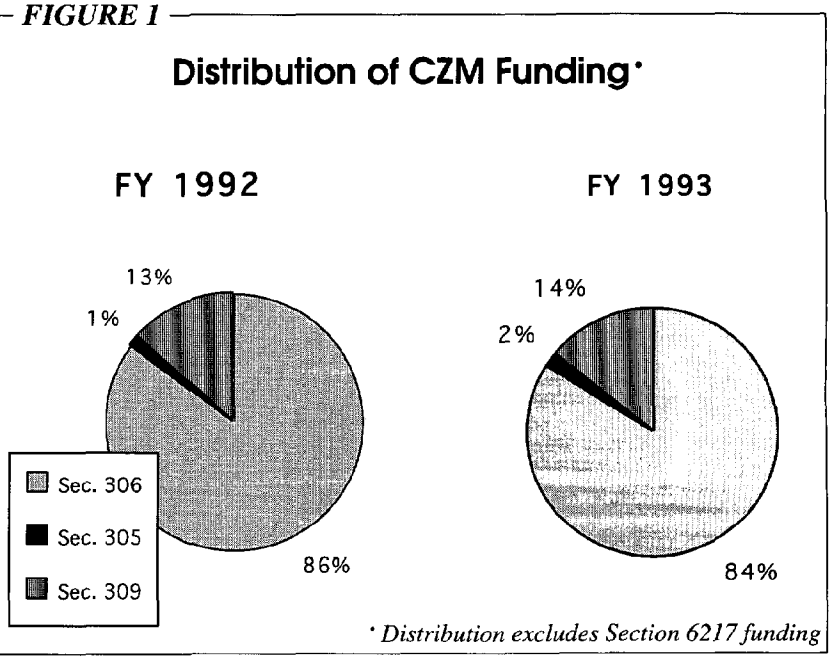
Of the $5,603,800 awarded in fiscal year 1992 for section 309, $2,226,000 was awarded to 27 of the 119 competing Projects of Special Merit. Of the $5,696,000 OCRM awarded in fiscal year 1993, $1,742,800 went to 17 of the 51 competing projects of special merit. The largest award in FY92 and FY93 to any one state was $215,000 and $201,000, respectively. For a summary of state funding under the weighted formula and for projects of special merit in FY92 and FY93, (See table F in the Appendix.)

Results of the Enhancement Program

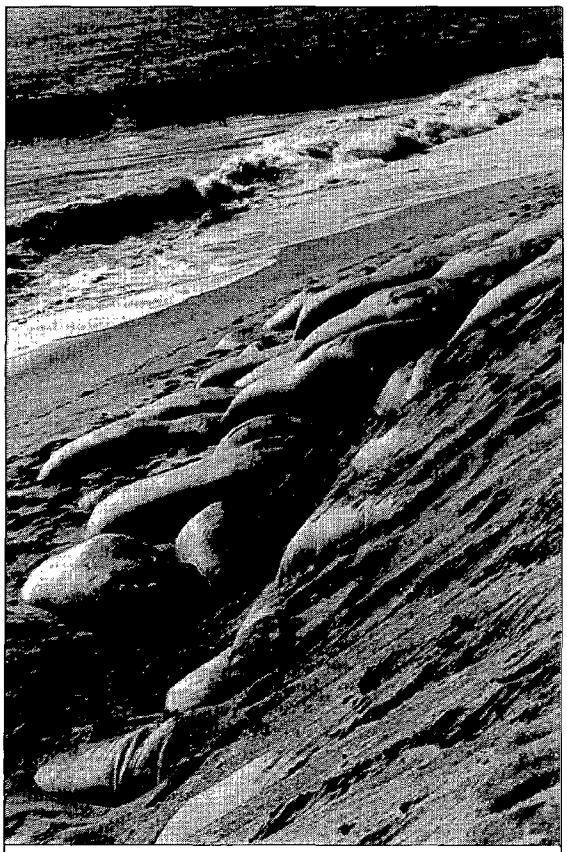
Coastal states and OCRM have put tremendous effort into implementing the enhancement grants program. For the first time since CZMA program approval regulations were issued in the late 1970's, OCRM provided national guidance on specific management objectives for each of the eight enhancement areas. States responded with detailed assessments of their priority needs for improvement and produced multi-year strategies to achieve the needed improvements. Several states used the assessment process to examine coastal management issues beyond the eight enhancement areas. Many states even used CZMA section 306 implementation funds to address issues identified in their assessments and strategies for which enhancement funds were not available.

Through the enhancement program, states reaped greater dividends than the actual sum of funding for the projects. The program enabled the states and OCRM to identify priority coastal management areas, provided an incentive for states to evaluate ways to improve their programs, and allowed the states to develop and implement a multi-year strategy to address the priority areas. The assessment process strengthened the public's role in coastal zone management and enabled states to set priorities which will guide their programs in future years. OCRM firmly believes that the enhancement program and the individual proposals funded in fiscal years 1992 and 1993 provide the foundation for substantial improvements in the way states manage coastal resources in the eight enhancement areas.

FIGURE 1



NOAA recognizes the growing need for technical assistance and information transfer to state and local governments to support coastal management efforts. NOAA's efforts take many shapes, ranging from conducting workshops and projects to producing technical bulletins and quarterly information "exchanges." OCRM provides technical assistance to states to enhance management-oriented research necessary to support CZM program development and implementation. In special area management planning, NOAA continued funding for the Charleston Harbor project — a project that will benefit coastal research in the areas of environmental impact assessment and sustainable development. In the area of coastal hazard mitigation, NOAA continues to assist states in developing and improving coastal hazard programs by collecting and disseminating maps and other technical information to the states, and through grants to states following coastal storms. A brief description of these projects follows.



In North Carolina, hazard mitigation means addressing coastal erosion.

Charleston Harbor Project

The purpose of the Charleston Harbor Project is to develop a Special Area Management Plan (SAMP) for the Charleston Harbor estuary area. Under the direction of the South Carolina Coastal Council, the project's overriding objective is to develop and implement growth management guidelines that will promote sustainable development around the estuary, while protecting the estuary's rich natural and cultural resources. Four primary goals guide this effort:

- to develop and implement a management plan to maintain and enhance the quality of the environment in the Charleston Harbor estuary;

- to maintain the range of uses of waters and natural resources of the Charleston Harbor estuary system;

- to develop a model for the sustainable development and management of estuarine resources; and

- to develop management programs to reduce/minimize nonpoint source pollution within the Charleston estuary drainage basin.

The Charleston Harbor Project is using a proactive approach to address potential problems before adverse impacts occur.

NOAA began funding project planning in 1990 and implementation in 1991. In the first year, the Project developed an organizational framework to coordinate the many participants and determine the status of the area's resources. *"A Physical and Ecological Characterization of the Charleston Harbor"* resulted from the initial efforts. In 1991, the Charleston Harbor Project began selecting and prioritizing research projects — giving priority to those that provided fundamental resource management information and/or provided information vital for future resource management projects.

In 1992, the project began characterizing important cultural

and living resources within the study area. Building on experience that water quality typically declines with increasing urban growth and that excessive nutrients cause this decline in water quality, the project identified nutrient enrichment as the primary water quality concern in the Harbor. The project identified toxic contamination as an important, but secondary water quality concern.

Charleston Harbor Project Funding included $1,500,000 in federal funds for 1992 and $960,000 for 1993.

Research studies in 1992 focused on nutrient loadings in the Harbor from point and nonpoint sources, nutrient dynamics in the surface water, nutrient loading rates from upland development patterns, and the efficiency with which current storm water best management practices (BMPs) manage nutrients. In addition, studies were conducted on the effect of contaminated sediments.

In 1993, the Charleston Harbor project continued to select research proposals designed to understand the relationships between land use changes, impacts to water quality, and impacts to living resources. The 1993 research projects have been chosen to work toward at least one of the following objectives: characterization of the watershed, development of management tools, and development of communication with local governments.

The information gathered through research projects conducted in the past two years, ongoing projects, and new projects beginning in the next year or two, will contribute to a management plan for the greater Charleston Harbor area. As a model for the sustainable development and management of estuarine resources, the Charleston Harbor project will provide useful information for other state CZM programs.

Coastal Hazard Mitigation

The CZMA declares a national policy for minimizing the loss of life and property caused by inappropriate development in areas prone to erosion and flooding. NOAA seeks to achieve this goal through state coastal management programs, and has placed increasing emphasis on improvements in this area through the Coastal Zone Enhancements Program. NOAA assists states with technical assistance in the area of coastal hazards through various activities, including participation on mitigation teams, information sharing, and in limited cases, by using discretionary funding to conduct post-storm research for use in coastal hazard planning efforts.

For example, in 1993, NOAA was able to award funding to Hawaii to complete its storm assessment and mitigation efforts following Hurricane Iniki. This project included a review of the factors that caused overwash and affected the coral reefs and the 100-year flood

The CZMA encourages states to restrict development in hazard prone areas, such as eroding shorelines like this one, and to direct permitted construction behind natural barriers, such as dunes.

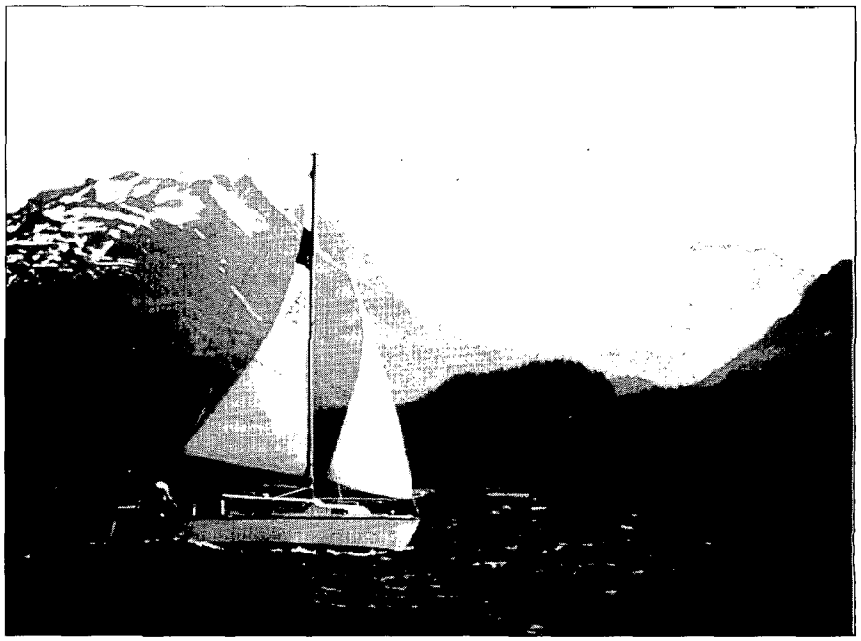
zone in five populated locations on Kauai.

NOAA assists state efforts in coastal hazards planning and mitigation by working with the Federal Emergency Management Agency (FEMA) on post-hazard mitigation teams, and exercising its responsibilities with other federal agencies. Interagency Hazard Mitigation Teams identify and evaluate areas having significant hazards; review existing land use regulations, building codes/construction standards, communications and utility networks, and existing hazard mitigation programs and authorities; recommend actions to prevent flooding and damage from future storm events; and coordinate actions to implement the team's recommendations. CRM staff participated with FEMA on Interagency Hazard Mitigation Teams in Hawaii following Hurricane Iniki in September 1992 and in New York following the December 1991 storm.

Information Sharing

As part of the agency's day-to-day operation, NOAA provides states with technical information that is valuable in creating and strengthening coastal hazards programs. In the course of developing nautical charts and other map products, NOAA creates products that states can use to identify and map shoreline change and coastal resources, such as natural protective features, development patterns, and other information necessary for state and federal agencies to respond to coastal hazards. NOAA is currently engaged in two pilot projects, in California and Massachusetts, to assess ways that NOAA mapping products can be used by states for management purposes.

During the biennium, OCRM produced a technical bulletin on the Coastal Zone Enhancements Program, highlighting the ongoing work of states in confronting pressing coastal issues. In addition, OCRM produced several editions of the Information Exchange, a quarterly document spotlighting the latest in policy and science developments from NOAA and other federal agencies and featuring ongoing efforts of states to better manage coastal resources.



NOAA's OCRM also provides technical assistance through the Coastal Zone Information Center (CZIC). Established in 1974, the center houses a unique collection of information about the nation's coasts and the various approaches to managing coastal resources. The collection includes over 4,000 state CZM work products and over 25,000 books, documents, periodicals, maps and atlases on ocean and coastal related topics. NOAA staff, university researchers, teachers, and the general public use CZIC's collection and services.

Over the next several years, NOAA expects to expand its technical assistance progams and services for state management efforts.

The program evaluation process — a fundamental management tool of the Coastal Zone Management Act — is the primary means by which NOAA assures the continued adherence of the 29 federally approved state coastal zone management (CZM) programs and 22 designated National Estuarine Research Reserves (NERRs) to CZMA programmatic requirements. The Coastal Zone Act Reauthorization Amendments of 1990 strengthened NOAA's ability under the section 312 evaluation process to ensure that all state CZM and NERR programs are adhering to the national programs, particularly by authorizing the use of interim sanctions. By placing a state or site on interim sanctions, NOAA may withhold program funding until all necessary actions have been completed to bring the program into adherence with the CZMA.

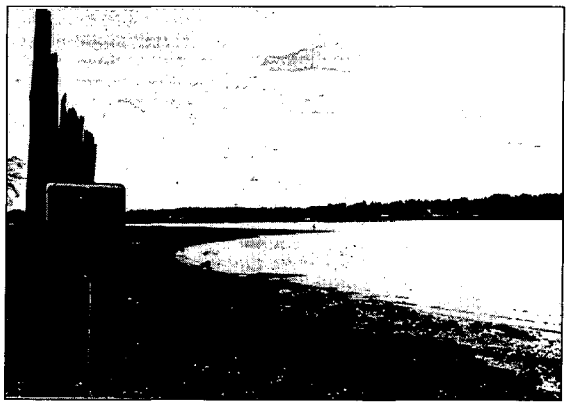
With a final rule issued July 14, 1992, NOAA revised its regulations for conducting reviews of performance under section 312 of the CZMA to incorporate changes from the 1990 amendments. Those changes served to:

- *increase opportunities for public participation* in reviews of state CZM programs and estuarine reserves;
- *provide timelines* for completing final evaluation findings; and
- provide procedures and performance indicators for *new interim sanction* provisions.

NOAA's regulations now require a 45-day advance notice of public meeting(s) on evaluations; written responses in the findings document to all written comments received on the evaluation; and completion of the final evaluation findings within 120 days of the last evaluation public meeting in the state. The regulations provide a flexible and phased approach for invoking the new interim sanctions. Also, recognizing the flexibility given to states under the CZMA in meeting the goals of the Act, NOAA's regulations provide "indicators of non-adherence" for both CZM programs and estuarine reserves, rather than rigid nationwide performance standards.

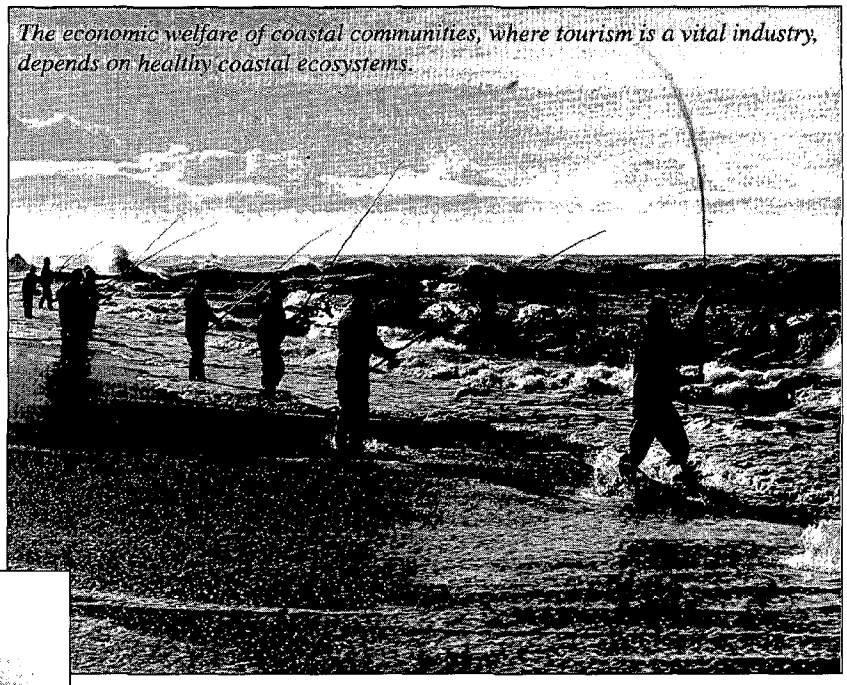
Interim Sanctions

The use of interim sanctions provisions gives NOAA a tool to require states or reserves to correct partial non-adherence problems, short of terminating state coastal management programs or de-designating reserves. NOAA's flexible approach is based on mandatory recommendations (called Necessary Actions) during section 312 evaluations to correct adherence-related prob-



lems, and, if warranted, a finding that a state or reserve is "not fully adhering" to its approved CZM program or reserve management plan.

Before making such a finding, NOAA regulations require that the state be given ample notice and opportunity to rebut the finding. In the case of a final finding that the program is "not fully adhering," the regulations allow NOAA to either invoke interim sanctions immediately or to provide a period of time to accomplish specific tasks that would correct the problems before NOAA decides whether to invoke interim sanctions.



The economic welfare of coastal communities, where tourism is a vital industry, depends on healthy coastal ecosystems.

Interim Sanctions in Practice:

In the three years since the provision authorizing interim sanctions has been in effect, NOAA has placed one estuarine reserve, Waimanu Valley (HI), on interim sanctions, and four state CZM programs and three estuarine reserves on work programs to correct adherence problems. One state CZM program, Florida, has completed all of the actions necessary to return to full adherence, and has substantially strengthened its program in this process. However the State of Hawaii has recently requested that the Waimanu Valley National Estuarine Research Reserve be withdrawn from the system (see page 101 for additional information on this request).

In September, 1993, the Coastal Ocean Policy Roundtable (COPR), an informal group of external experts on coastal zone management, issued a report on the Section 312 evaluation process. The report makes 10 recommendations for improving the evaluation process, streamlining CZMA reporting requirements, developing on-the-ground performance measures, and using information from evaluations for educational and technical assistance purposes. NOAA proposes to implement the COPR recommendations on a priority basis, reflecting available staff resources and the need for further policy and legal review of some of the recommendations.

AWARDS PROGRAM —
Recognizing Excellence in Coastal Zone Management

In 1992, the Nation celebrated 20 years of ocean and coastal resource management under the National Coastal Zone Management Program, the National Estuarine Research Reserve System and the National Marine Sanctuary Program. These programs allow NOAA to work closely with states, U.S. island territories, and local governments to confront pressing ocean and coastal issues.

To celebrate the anniversary, NOAA sponsored an awards program, created under the 1990 Coastal Zone Act Reauthorization Amendments, to honor people and government agencies across the country who dedicated countless hours and energy striking a balance between protection and development along the Nation's 95,000 miles of coastline.

On Sept. 29, 1992, NOAA hosted the "First Awards for Excellence in Coastal, Marine, and Estuarine Management" to celebrate the work of 17 leaders across the country. The agency also honored, posthumously, House Merchant Marine and Fisheries Chairman Walter B. Jones. A "Coastal Steward of the Year" award honored Sarah Chasis, a senior attorney at the Natural Resources Defense Council and a cofounder of the Coast Alliance. Chasis was honored for two decades of work fighting for coastal resource protection, primarily as a leader of the national effort to solve the problem of nonpoint source pollution of coastal waters.

NOAA also selected award recipients in five other categories. The South Carolina Coastal Council received an award for "Excellence in Coastal Zone Management." The Council is recognized as a national leader in progressive coastal zone management programs. The award cited South Carolina's aggressive beachfront management program that uses science to justify building away from the shoreline, an innovative storm water protection program to reduce pollution in coastal waters, and a model freshwater wetland permit program that addresses the concerns of environmentalists and developers.

An award for "Excellence in Estuarine Reserve Management" went to Gary Lytton of the Rookery Bay National Estuarine Research Reserve in Naples, Florida. In just over two years, Lytton transformed a relatively inactive site into one of the country's premier national estuarine research reserves. In addition to developing an education program that reaches over 11,000 people each year, Lytton rallied support for the reserve and implemented numerous resource management activities, such as replanting mangroves and rescuing injured manatees.

Billy Causey of the Florida Keys National Marine Sanctuary received an award for "Excellence in Marine Sanctuary Management" for his extraordinary energy and ingenuity in reef damage assessment, environmental monitoring, research project identification and education at the Florida Keys sanctuary.

NOAA also presented awards to five local government agencies for significant and innovative implementation of coastal zone management principles. The Town of Brunswick, Maine, Planning Department was recognized for its precedent-setting zoning code that incorporated sophisti-

cated water quality management for the Waquoit Bay watershed. Jim Stadler, city clerk for Kewaunee, Wisconsin, was honored for his 12-year effort to revitalize Kewaunee's deteriorating waterfront and for publishing *Revitalization of a Small City Waterfront: Focus on Finances.* John Patton of Santa Barbara, California, was honored for his work on the onshore impacts of offshore oil development. Also honored for their coastal programs were Sebastian Inlet Tax District of Indialantic, Florida, — the state's first local government to develop and implement a comprehesive, long-range, coastal management plan and comply with Florida's beach management act — and the City of Newburgh's Community Development Agency in New York for developing model land use plans for the state on capital projects along the coast, protecting critical natural or cultural resources, and revitalizing deteriorated waterfronts.

NOAA also honored five graduate students for new or improved approaches in coastal zone management study. The student recipients were E. Laurence Libelo of the College of William and Mary in Virginia for his work monitoring ground water pollution around Chesapeake Bay; Helen Talge of the University of South Florida for her research on how recreational divers affect fragile coral reefs, and Joan Boomsma of the Florida Institute of Technology for her work on sampling and identifying marine debris. Graduate student David Jansen of the University of Washington was also honored for his studies on public access and efforts to educate decision-makers on the public trust doctrine, as well as Ilka Feller of Georgetown University in Washington, D.C., for developing a teacher training program in coastal education geared specifically at educating the citizens of Belize.

Specials awards were also presented to Barbara Fegan of South Wellfleet, Massachusetts, the founder of the annual Coastweeks celebration, for her volunteer work; the Laudholm Trust in Wells, Maine, a philanthropic organization, for raising $3.3 million for the Wells National Estuarine Research Reserve in Maine, and Texaco Exploration and Production Co., Inc., of New Orleans, Louisiana, for its cooperative efforts in the creation of the Flower Garden Banks National Marine Sanctuary in the Gulf of Mexico.

Over 300 people attended the awards ceremony, which took place at the Smithsonian Institution's National Museum of Natural History. The reception that followed the program gave attendees to the opportunity to exchange ideas and discuss the projects honored during the ceremony. OCRM plans to begin work on the next awards program in the near future.

Award Recipients

Coastal Steward of the Year
Sarah Chasis, Natural Resources Defense Council

Excellence in Coastal Zone Management
The South Carolina Coastal Council

Excellence in Estuarine Reserve Management
Gary Lytton, Rookery Bay National Estuarine Research Reserve

Excellence in Marine Sanctuary Management
Billy Causey, Florida Keys National Marine Sanctuary

Excellence in Coastal and Marine Graduate Study
E. Laurence Libelo, College of William and Mary
Helen Talge, University of South Florida
Joan Boomsma, Florida Institute of Technology
David Jansen, University of Washington
Ilka Feller, Georgetown University

Excellence in Local Government
Amy Naylor, Planning Department, Brunswick, Maine
Jim Stalder, City Clerk, Kewaunee, Wisconsin
Bob McKenna Community Development Agency, Newburgh, NY
John Patton, Resource Management Department, Santa Barbara County, California
Richard Giteles, Sebastian Inlet Tax District Commission, Indialantic, Florida

Administrator's Awards for Coastal Leadership
Barbara Fegan, League of Women Voters
Laudholm Trust
Texaco Exploration and Production, Inc.

The National Estuarine Research Reserve System (NERRS) protects hundreds of thousands of acres of estuarine waters, marshes, shorelines, and adjacent wetlands throughout the country. Incredibly rich and diverse, estuaries are among the most productive natural places on earth. Ecologists have found that estuaries produce more food per acre than the best midwestern farmland. The estuaries also help maintain water quality, prevent erosion, provide flood control, serve as fish and wildlife habitat, and provide recreational opportunities.

The NERRS program, established by Congress in 1972 through section 315 of the Coastal Zone Management Act, was designed to establish and manage a national system of estuarine research reserves through federal-state cooperation. The objectives of the reserves are to: provide opportunities for long-term estuarine research and monitoring by serving as natural field laboratories; provide opportunities for estuarine education and interpretation; provide a basis for more informed coastal management decisions; and promote public appreciation of estuarine ecosystems and their relationships to the environment as a whole.

Reserve sites are chosen to reflect regional differences between ecosystems throughout the United States, using a biogeographic classification scheme developed by NOAA to reflect regional variations in the nation's coastal zone. A goal of the System is to have at least one site representing each of the 27 biogeographic regions and subregions. There are now 23 approved sites in the National Estuarine Research Reserve System.

Coastal states, with financial assistance through federally funded matching grants, own, implement and administer National Estuarine Research Reserve sites. Each site develops and implements research and monitoring programs, education and outreach programs, and builds and operates visitor centers, interpretive facilities, and other facilities that are appropriate for bringing the public and researchers to the site.

RESEARCH AND MONITORING PROGRAMS

Research — facilitating the study of estuarine systems

The NERRS provides research funds on a competitive basis to any public or private university, qualified public or private institution, individual, coastal state or U.S. territory to conduct research within the reserves. Research funds support management-related research that will enhance scientific understanding of estuarine environments within the reserve system, provide information needed by reserve managers and coastal zone management program decision makers, and improve public awareness of estuaries and estuarine management issues.

NOAA awarded 12 competitive research grants in fiscal year (FY) 1992, focusing on several different estuarine issues. NOAA along with the National Science Foundation and the U.S. Evironmental Protection Agency, also continued to support a Land Margin Ecosystem Research (LMER) project in Waquoit Bay to study nutrient transport through the watershed.

Beginnning in FY 1993, NOAA instituted a system of focused research objectives. NOAA chose as the primary research objective for a 10-year period the study of natural and human-induced change in the ecology of estuarine and estuarine-like ecosystems within the reserve system. Within the overall objective, NOAA identified five two-year research priority categories to serve as foci for awarding grants under the competitive research program over this ten-year period.

The first of the two-year research priorities, nonpoint source pollution, began in FY 1993. NOAA awarded ten competitive research awards that focused on nonpoint source pollution. In the last year of the LMER project, NOAA also granted two awards to stimulate research in reserve sites that had not received competitive funding in the previous two years. These awards, given to Weeks Bay (AL) and Wells (ME) NERRs were designed to initiate small projects that would generate cooperative work between the Reserve and a local University or research institution.

Work began in fiscal year 1992, and continued in FY93, to synthesize all research funded by NOAA in the reserves. The final document, scheduled for completion early in FY94, summarizes all research projects funded by NOAA since the inception of the research program in 1985. The document will be updated to incorporate new research. A comprehensive listing of research funded by other agencies at NERRS sites will be added in the future. With this document, managers and researchers will be able to easily reference work that has been done in areas of interest.

Monitoring — discovering long-term trends in the estuaries

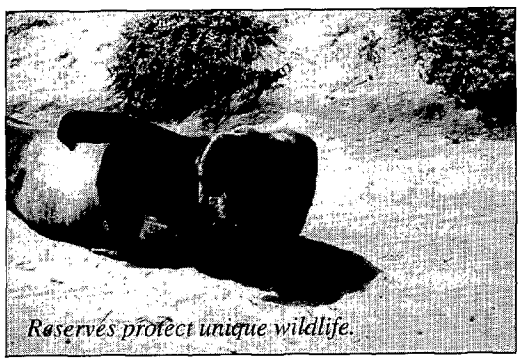
NOAA awards each reserve funds to conduct a phased monitoring program, in three stages. These are:

- ecological characterizations to build an accurate baseline of information on the sites' most important resources;

- preparation of site profiles that describe the resources, management issues, and long-term plans for monitoring; and,

- the implementation of a monitoring program that will provide long-term data on key resources, regularly analyze and publish findings, and provide a mechanism to evaluate program effectiveness in addressing the long-term needs of estuarine resource management.

In FY92, various sites sponsored monitoring projects specific to their management problems and data needs. In fiscal year 1993, NOAA encouraged all sites to begin work on site profiles if they had not already done so. To date, site profiles are complete for Tijuana River and Great Bay NERRs. NOAA also continued to work with the reserves to develop standardized monitoring protocols for all sites. By standardizing the monitoring process, researchers and managers could draw from a long-term database that tracked spatial and temporal changes across the entire NERRS system.



Reserves protect unique wildlife.

EDUCATION AND OUTREACH EFFORTS

Striving toward leadership in estuarine education

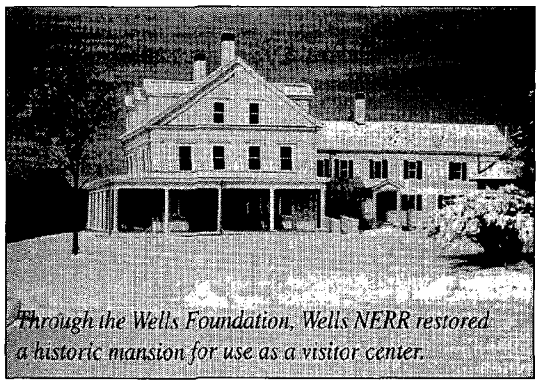
The mission of the NERRS education program is to design and implement a comprehensive program of education and interpretation to strengthen understanding, appreciation, and stewardship of estuaries and their associated coastal habitats. With a goal of developing a program of excellence in estuarine education on a national and international level, the NERRS is involved in a wide variety of activities which seek to provide information to coastal decision makers and the public.

One of the most ambitious of these programs is the Kids Network, a cooperative effort with the National Geographic Society, coordinated for the reserve system by the Great Bay NERR in New Hampshire. Using an education award, the NERRS sponsors 75 schools across the country to participate in the Kids Network. Through KidsNet, fourth-, fifth-, and sixth-graders sample estuarine water at any of the 16 participating reserves, and exchange infor-

mation, observations and formulate and test hypotheses using an on-line system designed by National Geographic. The system allows students to question the estuarine environment and explore the answers, through hands-on research and peer interaction.

During this biennium, individual reserves have achieved significant accomplishments in estuarine education. In Washington, the Padilla Bay NERR earned the excellence award from the National Association of Environmental Communicators for its high school education program. The North Carolina NERR released *Sound Ideas: Elementary Project Estuary*, a teachers guide that encourages teachers and students to actively learn about estuaries. In Southern California, Tijuana River NERR promotes a bilingual curriculum on coastal ecology with field trip materials, a poster, and video. Education coordinators from Ohio's Old Woman Creek NERR and New York's Hudson River NERR initiated a cooperative education project with the National Aeronautic and Space Administration and Cornell University to incorporate remote sensing techniques and skills into education programs. In conjunction with this project, the NERRS has provided the first in-service training for all education coordinators in the system.

The National Estuarine Research Reserves continue to attract hundreds of thousands of visitors each year to participate in guided interpretive tours, educational classes and "hands on" training in estuarine ecology and conservation issues. Exhibits, internships, lecture series, teacher workshops, volunteer programs, conferences, and printed materials at the sites are aimed at providing timely and accurate information about estuaries and other fragile coastal resources.



Through the Wells Foundation, Wells NERR restored a historic mansion for use as a visitor center.

In 1993, the NERRS education coordinators initiated a strategic planning process to define the long term education mission and objectives for the NERRS program. Recognizing the value of developing strategic education plans that complement one another, NERRS education coordinators and National Marine Sanctuary education coordinators have been working together to strengthen both program plans. The joint meetings also provided an opportunity to meet for the first time and share experiences and education program ideas.

The reserves continue to create and deliver current, high-quality, and innovative education programs. Through a sound strategic planning process and a continued commitment to excellence, the reserves are being recognized as leaders in the field of estuarine education.

PROPOSED NATIONAL ESTUARINE RESEARCH RESERVES

Four sites are currently working to become part of the National Estuarine Research Reserve System: San Francisco Bay (CA), Mullica River-Great Bay (NJ), St. Lawrence River (NY), and East Coast Florida.

The road to designation

States may receive federal funds to work through the National Estuarine Research Reserve's designation process — a process that consists of site selection, preparation of a draft environmental impact statement/ draft management plan, and research studies to characterize the site(s). To receive federal funds for site selection, a state must present NOAA with a description of the process that will be used to select the proposed site and how the site fits into the NERRS scheme of representing all coastal biogeographic regions throughout the nation; an identification of the agencies that will select and manage the sites; and a description of how public participation will be incorporated into the site selection process.

During this process, a state must demonstrate that the proposed site represents an estuarine ecosystem that has been minimally affected by human activity. The state must also choose boundaries for the site that encompass key land and water areas of the natural system to approximate an ecological unit, so that the state can conserve the estuary's natural function for long-term research purposes. Two sites, St. Lawrence River in New York, and East Coast Florida, are working on the first phase toward designation.

After NOAA has approved the proposed site, the state may request funds to develop the draft management plan and collect information for preparing a draft environmental impact statement. The Draft Environmental Impact Statement/Draft Management Plan should contain the reserve's goals and objectives, management issues, and strategies for meeting those goals and objectives; an administrative framework; a research and monitoring plan; an education/interpretive plan; a public access plan; a construction plan; an acquisition plan; and a restoration plan, if applicable, and other necessary documentation.

Two sites, San Francisco Bay and Mullica River, have been formally nominated by the Governors of California and New Jersey, respectively. Both sites are now preparing a Draft Management Plan/Draft Environmental Impact Statement.

Proposed Sites — First Phase Toward Development

St. Lawrence River: The St. Lawrence River is part of the Eastern Great Lakes biogeographic province connecting the Great Lakes to the Atlantic Ocean. The St. Lawrence Eastern Ontario Commission is examining sites along a 36-mile stretch of the river between Waddington and Massena for incorporation into a National Estuarine Research Reserve. The Commission is currently working with the New York Power Authority, which owns the land, the Department of Environmental Conservation, Office of Parks, Recreation and Historic Preservation, New York Department of State, U.S. Fish and Wildlife Service, St. Lawrence County Planning Board and the St. Lawrence Aquarium and Ecological Center, Inc. New York state received a $10,000 site selection award from NOAA in 1989 to examine potential sites.

The Commission is now favoring an area that encompasses 5895 acres of habitat along the river, which is used by bald eagles and osprey. St. Lawrence River also provides a favorable habitat for muskellunge, lake sturgeon and walleye — important recreational and ecological species. The proposed St. Lawrence Aquarium and Ecological Center could offer excellent visitor centers, laboratories, and auditoria for NERR involvement.

The state has completed the data collection phase and base and resource overlay maps for the area. Before proceeding with development of the draft management plan and environmental impact statement, New York state must submit a nomination package by the Governor to be approved by NOAA.

East Coast Florida: The Florida Department of Environmental Protection's Bureau of Sanctuaries and Reserves (Bureau) has received a site selection award from NOAA to investigate areas along the east coast of Florida that would be suitable for designation as a National Estua

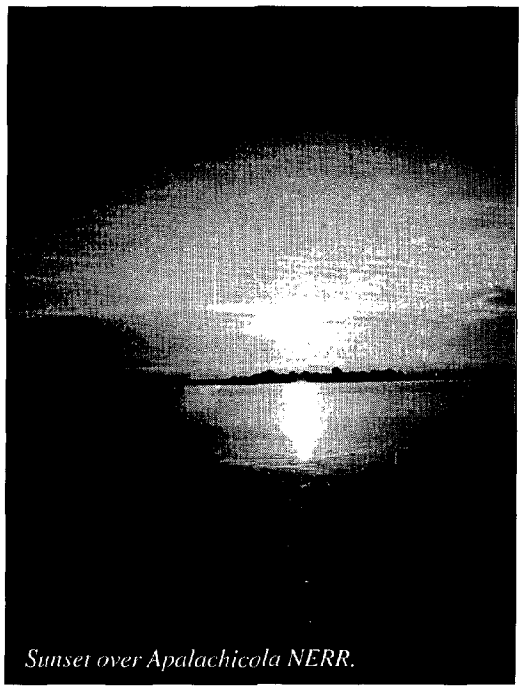
Kayakers enjoy a day in the sun at the North Carolina NERR

rine Research Reserve. The state established a site selection committee with representatives from the Florida Department of Education, the Governor's office, the Florida State University Marine Lab, the Rookery Bay and Apalachicola National Estuarine Research Reserves, the Florida Coastal Zone Management Office, the Bureau, and NOAA's Office of Ocean and Coastal Resource Management. Staff have collected data, visited sites and conducted numerous public meetings in the areas under consideration — Indian River Lagoon, Tolomato/Guana and Matanzas area, Mosquito Lagoon, and Banana River. The Governor of Florida is expected to submit an official nomination package by the end of December 1993.

Proposed sites that have been formally nominated:

San Francisco Bay: On May 21, 1993 California Governor Pete Wilson formally nominated sites within the San Francisco Bay to be included in the National Estuarine Research Reserve System. The nomination package for the proposed San Francisco Bay National Estuarine Research Reserve identifies a multi-component reserve, consisting of six salt and tidal brackish marshes: *South Bay:* Bair Island Ecological Reserve; *Central Bay*: Corte Madera Marsh Ecological Reserve; *San Pablo Bay:* China Camp State Park; *Petaluma:* Petaluma Marsh Wildlife Area; *Suisun Marsh:* Rush Ranch, Peytonia Ecological Reserve, and Hill Slough Wildlife Area; and *Delta:* Browns Island and Lower Sherman Island.

California proposes that San Francisco State University will manage the San Francisco Bay NERR. The University houses a number of internationally known scholars in the fields of aquatic and conservation biology, geochemistry and geographic information systems. San Francisco State University also operates the Romberg Tiburon Center for Environmental Studies, a field center for research on San Francisco Bay and its environment.



Sunset over Apalachicola NERR.

NOAA has reviewed the proposed San Francisco Bay NERR site selection document and is preparing a response indicating which components the state should pursue. Upon receiving NOAA's response, San Francisco State University will begin collecting information on the approved sites, hold public meetings, and prepare a draft management plan and environmental impact statement. NOAA awarded a cooperative agreement totaling $75,000 to begin this step toward designation.

Mullica River-Great Bay (NJ): In July 1993, New Jersey Governor Florio nominated the Mullica River- Great Bay estuary to become a National Estuarine Research Reserve. The site, located in southern New Jersey, is regarded as one of the least-disturbed settings in the densely populated urban corridor of the northeastern United States. The proposed reserve encompasses 114,047 acres, which would make it second in size only to the Apalachicola reserve in Florida. The Mullica River-Great Bay site incorporates a great diversity of terrestrial, wetland, and aquatic habitats, ranging from protected state forests to barrier islands.

Governor Florio assigned administrative responsibilities for developing the site to the State Department of Environmental Protection and Energy's Office of Land and Water Planning and day-to-day management responsibilities to Rutgers University's Insti-

NERRS review panel supplies independent evaluation

In January 1993, NOAA's Assistant Administrator for the National Ocean Service set up a panel of experts, chaired by Robert Knecht of the University of Delaware, to conduct an independent review of the National Estuarine Research Reserve System (NERRS). From this review, the Panel was asked to recommend ways to enhance the program's position in providing critical research, education, and information to policy makers responsible for managing and protecting the nation's coasts.

Panel members interviewed representatives from NOAA and visited the Apalachicola Reserve in Florida and the Weeks Bay Reserve in Alabama. The Panel also sought input for the review from reserve and coastal zone management program managers, through questionnaires sent to each.

After providing the reserves and OCRM with an opportunity to comment on the draft, the Panel issued their final report in November 1993. The Panel recognized the National Estuarine Research Reserve System as a winning combination of research, education, and long-term protection. The Panel also recognized the opportunities to improve the program. The NERRS Review Panel recommended that OCRM do the following:

- *Define a national dimension for the reserve system;*
- *Use reserves for resource-related research* (nonpoint source, exotics, remediation, etc.);
- *Evaluate the possibility of incorporating existing federal lands into the reserve system,* an effort toward completing the national system of estuarine research reserves;
- *Increase links with coastal zone management programs* to give the reserves more long-term protection from external threats;
- *Increase coordination among federal agencies;*
- *Improve internal and external education, information-transfer, and outreach efforts;*
- *Improve staff development;*
- *Improve technical assistance;*
- *Revise the NERRS funding cycle;*
- *Establish a NERRS program office within OCRM;*
- *Work with citizen groups and non-governmental organizations;*
- *Expand international links;*
- *Address the issue of minimum size of multi-component reserves;* and
- *Develop a business plan for the NERRS program.*

OCRM will take these recommendations into account in the upcoming year. This report will be addressed by OCRM and the NERR managers at future joint meetings.

tute of Marine and Coastal Sciences.

Upon reviewing the proposal, NOAA requested specific information on the following site selection issues: a description of the process used to solicit public views on project; the site's contribution to the biogeographical and typological balance of the system; the site's ecological characteristics; assurances that the site's boundaries approximate an ecological unit; the site's suitability for long-term research; the site's compatibility with existing and potential land and water uses and approved coastal and estuarine management plans; and the value of the site for education and interpretive efforts.

Once NOAA/ OCRM has received and reviewed the additional information, the state of New Jersey can begin work on the next phase of designation—developing the Draft Environmental Impact Statement and Draft Management Plan (DEIS/DMP) for the site.

COASTAL NONPOINT SOURCE POLLUTION — Working Toward a Solution

Since the passage of the Clean Water Act in 1972, great strides have been made in reducing water pollution in the United States. Much of this progress has been realized through improvements to wastewater treatment plants and industrial discharges, involving substantial investment in new treatment and control technology. While results of this focus on "point sources" (discrete pipes or outfalls) can be seen in measurable water quality improvement, there remain significant areas of water resource impairment due to "nonpoint sources" (diffuse sources or runoff pollution).

Nonpoint source pollution is not easily identified as a discrete discharge from a pipe or factory outfall. Instead, this pollution results from rainwater and melting snow running over lawns, parking lots and farm fields, through city streets and forests, picking up and carrying pollution into rivers, estuaries, and coastal waters. In coastal areas of the U.S., nonpoint source pollution is generated by several major categories of activities: agriculture (crops and livestock), forestry (timber harvesting), urban (cities, roads and new home construction), marinas (boat storage and service facilities), and hydromodification (construction of dams and channelization). Pollutants from these activities include sediment (soil particles), nutrients (nitrogen and phosphorus), and chemicals (pesticides, oil, salts, and metals).

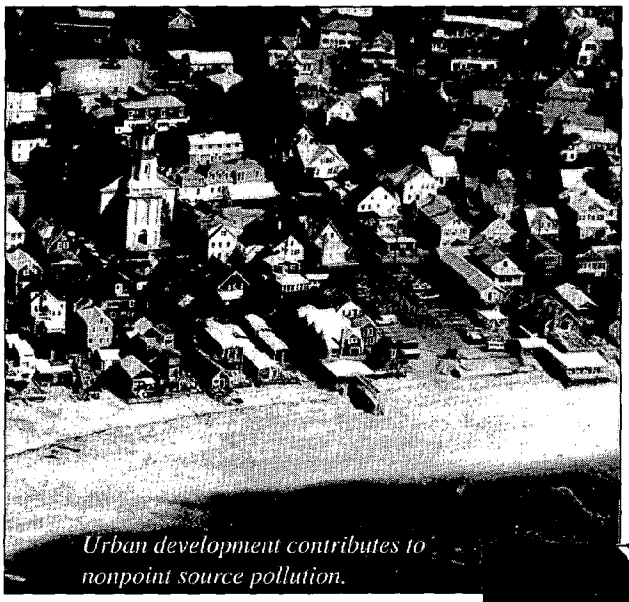
Comprehensive Programs to Address Coastal Nonpoint Pollution

Recognizing the need to address the impact of nonpoint source pollution on coastal resources, Congress expanded the Coastal Zone Management Act in 1990 to include a new section 6217 entitled "*Protecting Coastal Waters.*" Section 6217 requires that states with existing coastal zone management programs develop Coastal Nonpoint Pollution Control Programs. These coastal nonpoint programs are to be developed by July 1995.

Guidance Published Under Section 6217(g)

As part of the ongoing coordination in the cooperative administration of section 6217, OCRM worked with the Environmental Protection Agency (EPA) on the publication of two guidance documents — one on management measures and another discussing program development. As required by section 6217(g) of the statute, EPA, in consultation with NOAA and other federal agencies, developed *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters.* Among the nonpoint sources covered in this technical guidance are: agriculture, forestry, urban runoff, hydromodification, and marinas. The document also addresses the use of wetlands in controlling the impact of runoff. Working groups composed of individuals from state and federal agencies with particular expertise in each category developed the technical guidance. OCRM staff participated in all of the work groups and co-chaired many.

In addition to the guidance required by section 6217(g) of the CZMA, NOAA and EPA published *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance* to assist states in creating coastal nonpoint pollution control programs under section 6217. This program guidance provides the basic structure for coastal nonpoint programs and describes NOAA and EPA expectations for the state programs. Each state must submit its proposed program for federal approval. NOAA and EPA have supplemented this guidance with additional policy guidance as states raise issues on 6217 program development.

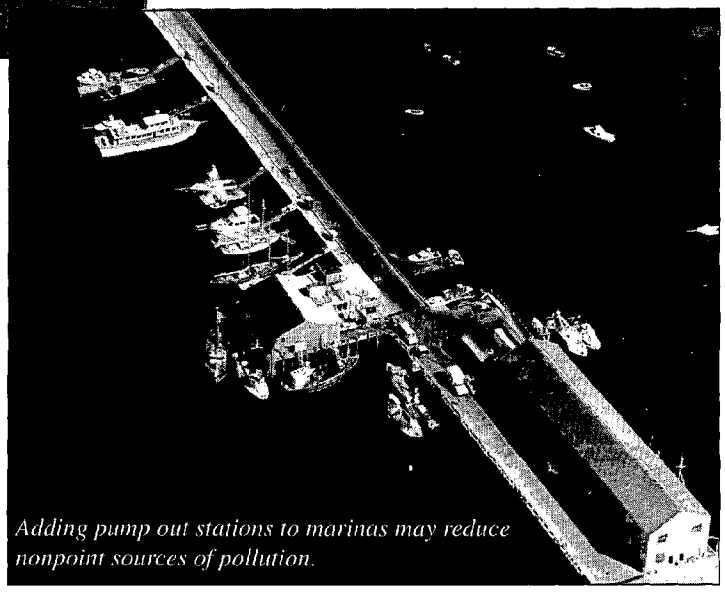


Urban development contributes to nonpoint source pollution.

Technical Assistance

NOAA and EPA have placed a high priority on technical assistance to the states as they develop their coastal nonpoint pollution control programs. During 1993, NOAA and EPA conducted seven regional workshops for the 29 states and territories developing coastal nonpoint programs. Workshops took place in: Alexandria, VA; Cromwell, CT; Chicago, IL; Seattle, WA; Atlanta, GA; Honolulu, HI; and New Orleans, LA. These workshops provided an opportunity for additional dialogue on the technical and program guidance in the context of regional issues. The workshop series also presented an opportunity for the states to identify needs for technical assistance from the federal agencies.

Other technical assistance efforts included the production of a public education brochure on the coastal nonpoint program, which was distributed along with other nonpoint source education materials, to state coastal zone and water quality agencies.



Adding pump out stations to marinas may reduce nonpoint sources of pollution.

Threshold Reviews

Development of an effective coastal nonpoint program represents a major challenge to the 29 states and territories. In order to assist the states and help them target their limited resources, NOAA and EPA offered to conduct early reviews of state proposals. This threshold review process is part of a continuing dialogue between the states and the federal agencies designed to assist the states to meet the federal requirements in a timely manner. The first threshold review was conducted for South Carolina in November 1993. NOAA believes that a majority of the states will avail themselves of this opportunity during fiscal year 1994.

The need to foster progress and advance the state of knowledge in coastal and ocean management practices are key to NOAA's mission. As the principal federal agency charged with protecting the Nation's valuable coastal and ocean resources, NOAA takes an active role in sharing information on new concepts and research developments with state and local governments and other federal agencies that must make critical decisions about the use and care of these valuable, finite resources. NOAA also facilitates dialogue with the coastal and ocean community at large — policymakers, managers, scientists, planners, engineers, educators, business leaders and environmentalists — as a way of identifying workable solutions to the problems plaguing ocean and coastal resources.

For the past 15 years, NOAA has taken a lead role in organizing the Coastal Zone Conference series, an international forum on ocean and coastal issues. Begun in 1978, the conference brings together individuals from all disciplines around the globe to focus on ways to achieve long-term economic and environmental health for the world's oceans and coasts. More than 30 groups co-sponsor the biennial event, which serves as an important link for scientists studying coastal and ocean issues with public policymakers and planners confronting such issues of coastal restoration, pollution, resource use and the impact of coastal storms.

• NOAA served as co-chair of Coastal Zone 93 (CZ 93), which took place July 19-23, 1993, in New Orleans, Louisiana. This event, the eighth in the conference series, was built around the theme "Healing the Coast," which reflected a worldwide effort and commitment to protect, wisely use and enhance coastal and ocean resources. Some of the issues debated at CZ 93 included coastal nonpoint source pollution and mitigation techniques, ecosystem management, wetlands policies, offshore oil and gas activities, coastal erosion, coastal hazards planning, and global climate change and sea level rise.

Children "treasure hunt" at the North Carolina NERR as part of an education project that demonstrates which creatures call an estuary home.

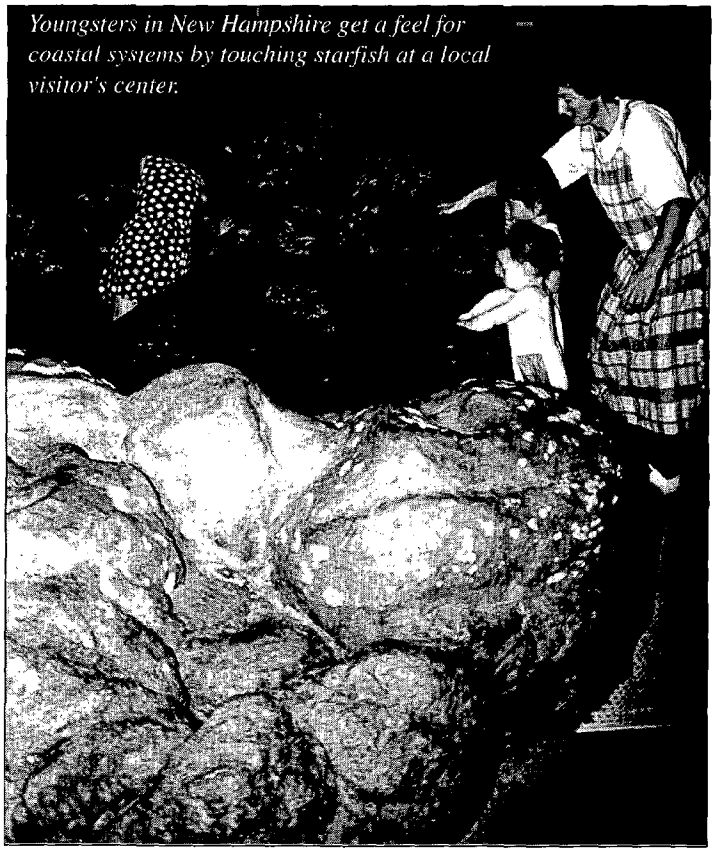
NOAA's participation in CZ 93 was wide ranging — from developing the plenary program and technical sessions to presenting papers and co-chairing sessions to exhibiting new technologies and research developments. During CZ 93, NOAA spotlighted its ongoing efforts to deal with a myriad of coastal and ocean problems. Specifically, NOAA shared its experiences with developing and implementing a new coastal nonpoint source pollution control program under the Coastal Zone Management Act. Other NOAA sessions explored the lessons learned from such coastal disasters as Hurricanes Andrew and Iniki and Typhoon Omar and how partnerships between government and private industry can minimize risks from these natural disasters; the value of partnerships in protecting valuable coastal ecosystems, such as the coral reef tract that encompasses the Florida Keys National Marine Sanctuary; and the critical role of education in enhancing resource protection.

Recognizing the value of this exchange, NOAA will continue to play a major role in the conference series. The agency believes that it is through integrated, interdisciplinary efforts such as this that strategies will result which can be responsive to today's issues. The conference series provides flexibility in meeting an ever-changing suite of problems, as well as a forum for generating long-range, innovative programs to address the complex issues of the coming decades.

Involving the Public

The public plays a critical role in the fight to preserve ocean and coastal resources for future generations. In the early 1980s, NOAA and coastal states launched a national celebration of the coasts with the goal of heightening awareness of the sensitive nature of these resources. What began as a national coastal cleanup day has grown to a three-week celebration devoted to exploring the beauty, diversity and value of coastal habitats. This annual celebration, called "Coastweeks," now spans the last two weeks in September and the first week of October.

The annual celebration begins with Estuaries Day, a day set aside to show coastal users and the general public the importance of estuaries, those valuable, yet fragile areas where rivers meet the sea. Since much of the nation's shipping and fishing industries rely on healthy estuaries, organizers hope that this day-long celebration will provide citizens with a greater understanding of the link between a healthy coast and a healthy economy.



Youngsters in New Hampshire get a feel for coastal systems by touching starfish at a local visitor's center.

In celebration of the day-long observance, a wide range of bay and coastal activities, from guided boat tours to nature walks to teacher workshops, are sponsored by National Estuarine Research Reserves around the country. The three-week-long celebration that follows Estuaries Day enables citizens to take a close look at the health and conservation of coastal resources that are vital to the environment and economy of our nation. The celebration, which varies from state to state, has a common thread — to bring families, individuals, fishermen, teachers, scientists, elected officials, industry and all people interested in the environment together to focus national attention on the nation's vital coastal resources.

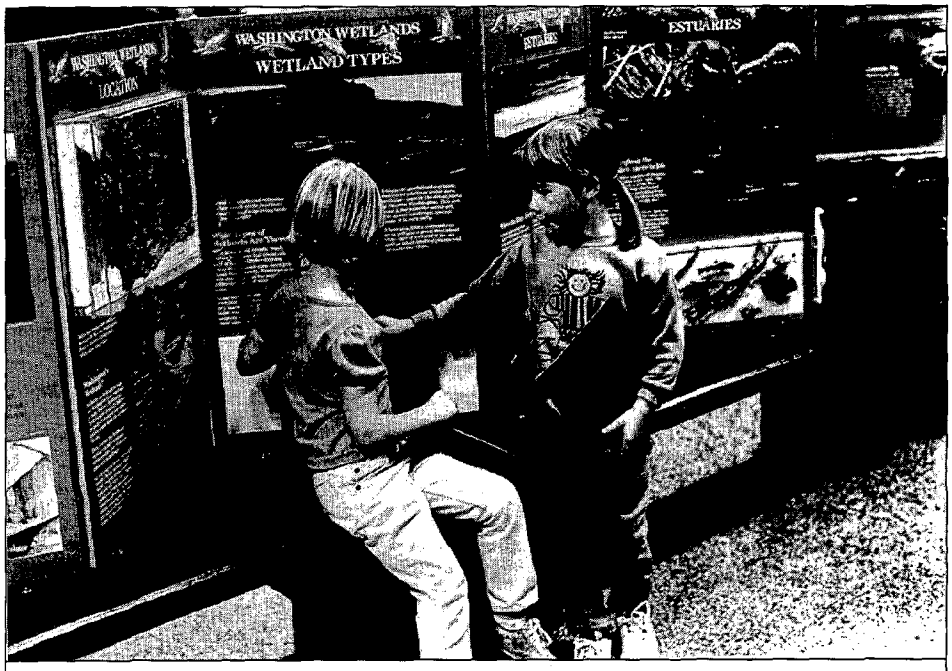
A major activity of Coastweeks celebrations are annual beach cleanups, where ardent volunteers scour the nation's beaches to collect costly, unsightly and sometimes deadly trash. This activity has spilled into the international community, which now annually honors September 18 as International Coastal Cleanup

Day. In 1992, over 160,000 people from 36 countries scanned their coastlines and grabbed over 3.5 million pounds of trash — with over two million pounds collected in the United States by some 134,000 volunteers in 53 coastal communities. The volunteers report on data cards the types of trash they find. This information is then used by coastal resource educators to target education programs toward particular coastal user groups. Data collected has also be useful in recommending federal and state legislation to reduce marine debris and ocean dumping.

Other activities celebrating Coastweeks around the country include underwater cleanups, seminars, outings, library and museum exhibits, fairs, art contests, and seafood festivals. In the Gulf of Mexico, states used the 1993 celebration to kick off a five-state campaign called the Boaters' & Anglers' Pledge. The program educates boaters and anglers about marine debris, how they may have contributed to the problem in the past and how they can become part of the solution. Through the program, boaters and anglers can also pledge to cleanup waterways and coasts and to prevent more debris from entering waterways.

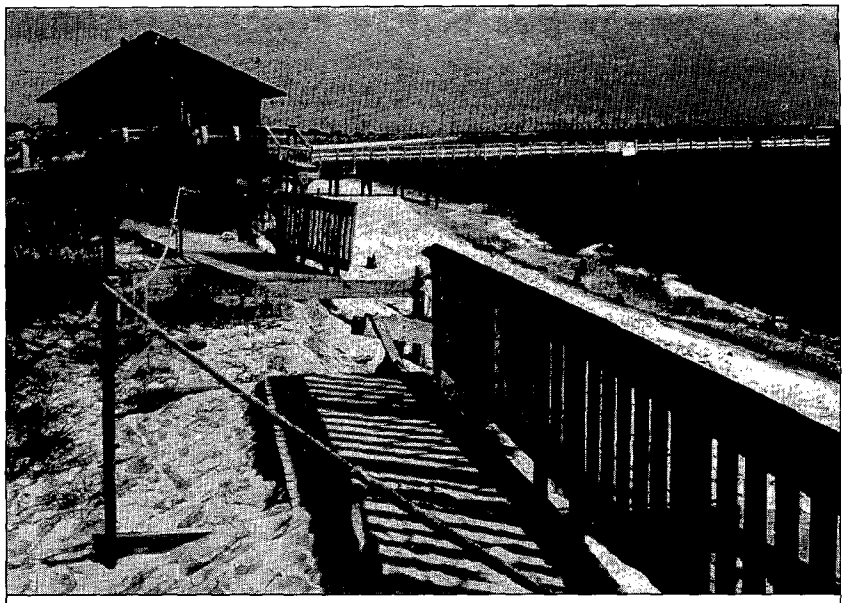
Other states, such as New Hampshire, use Coastweeks to heighten awareness for adopt-a-shore or adopt-a-beach programs. These programs ask citizens and businesses to select portions of the beach or shoreline for monitoring and year-round cleanup. These volunteer monitoring efforts provide valuable information for coastal managers on the uses of the coast, where problems may occur and which users may benefit most from environmental education programs.

The activities that characterize Coastweeks provide a valuable tool for bringing multiple coastal management issues — from illegal dumping and nonpoint source pollution to the cost of marine debris and the impact of coastal storms — into the national spotlight. Coastweeks organizers and coastal managers hope that this national celebration spawns a tale of care and appreciation for the coast.



Many people learn about coastal management issues during exhibits and local fairs like this one in Washington and the one above in Florida.

The Coastal Zone Management Act directs NOAA to ensure that state coastal zone management programs manage coastal development both to minimize the loss of life and property from storms, beach erosion, and other geologic hazards, and to preserve natural features that buffer the impact of these processes — features such as beaches, dunes, wetlands, and barrier islands.



Hazards mitigation controls shoreline development in order to save lives and property from the damage of coastal storms and other coastal problems, such as beach erosion.

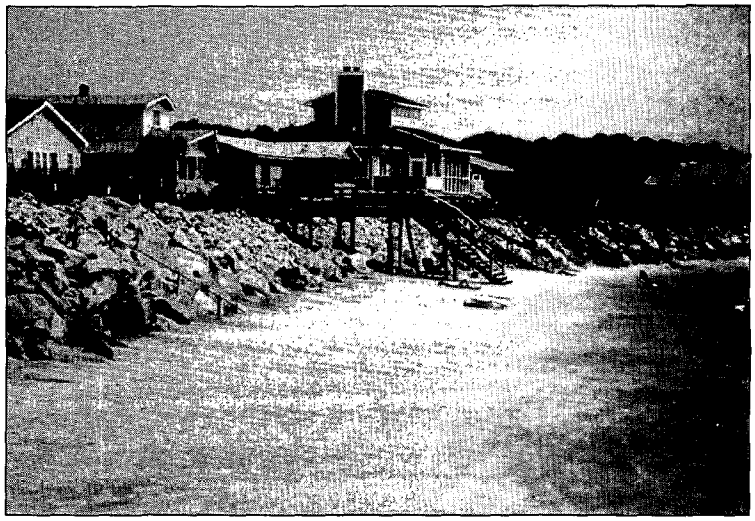
To implement the CZMA's coastal hazards mandate, coastal states have developed policies and programs to limit or control development in high hazard areas as part of their state coastal zone management programs. State efforts include comprehensive setback programs based on documented erosion rates, building codes specific to hazardous areas, post-disaster redevelopment plans, and planning activities that restrict development densities. Several states have been recognized as having developed strong hazards mitigation programs and authorities. South Carolina, for example, was distinguished with a national award for excellence in coastal zone management.

These state coastal hazard programs continue to evolve and continue to be strengthened, now with assistance through the section 309 enhancement grants program. Twenty-four states and territories — over 80 percent of all those eligible to receive enhancement grants — identified coastal hazards as a priority enhancement area and have initiated projects to improve performance in this area, ranging from policy formulation to technical data collection. American Samoa is developing hazard mitigation regulations for its coastal hazards program, to be implemented at the village level. Several states, including Maine and Oregon, are using the enhancement grants program to map hazard-prone areas, and in some cases, define setback policies. By undertaking these projects, states intend to minimize the amount and severity of damage caused when coastal storms strike and to reduce losses from long-term erosion, and to protect natural features such as dunes.

Both NOAA and the states have taken an active role in studying the impacts of coastal storms and using that knowledge to plan mitigation strategies. In March 1993, in response to Hurricane Bob in 1991 and the nor'easters of 1991 and 1992, Massachusetts hosted a workshop on coastal hazards and mitigation for eight states in the Northeast and Great Lakes region. Building on the success of the first workshop, South Carolina hosted a similar workshop in June 1993.

NOAA also assists states in assessing storm damage and developing post-storm mitigation strategies, particularly by working with the Federal Emergency Management Agency on Hazard Mitigation Survey Teams following hurricanes and other disastrous coastal storms. NOAA also par

ticipates on the Interagency Committee on Floodplain Management and the Community Rating System Task Force, which encourages improved floodplain management, including preserving floodplains in their natural state and non-structural solutions to coastal erosion problems.



South Carolina confronts challenge to beach act

In late 1991, the U.S. Supreme Court agreed to review *Lucas v. South Carolina Coastal Council* — a case that challenged the state's authority to regulate development along the shoreline. David Lucas sought reversal of a South Carolina State Supreme Court ruling that the state's Beachfront Management Act, administered by the South Carolina Coastal Council (SCCC) did not result in a taking of Lucas' property.

Lucas owned two lots located in an inlet erosion zone on Isle of Palms, SC, entirely seaward of the "no construction" line that the SCCC had designated under the Beachfront Management Act (BMA). Rapid shoreline change in inlet areas is not uncommon. Recognizing the special hazard inlet areas pose, the BMA required that the no-construction line be set at the most landward point of shoreline retreat over the previous 40 years. At various times since 1950, the Lucas lots have been completely underwater, within the surf zone, and well landward of mean high water. Most recently, in 1973, large tidal pools covered most of the lots.

The U.S. Supreme Court issued an opinion in May 1992 but did not find the BMA unconstitutional or find that there had been a taking. Instead, the Court remanded the case back to the State Supreme Court with instructions for reconsideration based on a line of inquiry for cases in which a regulation renders a property completely valueless. The new inquiry required an analysis of: the harm Lucas' use of the land may cause; the social value of developing the lots and the suitability of the lots in question for development; and how easily either Lucas or the SCCC could have prevented the harm development would cause. The Court summarized that to demonstrate there had been no taking of Lucas' property, the SCCC must show before the State Supreme Court that the state common law of nuisance and property contain background principles that would prohibit Lucas' proposed use of the land given the current circumstances in which the property is presently found. In making its ruling, the Court accepted without consideration the trial court's determination that the BMA rendered Lucas' property valueless.

On reconsideration, the State Supreme Court found that Lucas had suffered a temporary taking; the SCCC later settled out of court by paying Lucas for the lots and acquiring title.

Few courts have cited the Lucas case in subsequent taking decisions, perhaps because the decision provides little guidance as to how courts should approach taking cases generally. To date, the decision's primary effect on land use management programs nation wide appears to have been to make local and state officials reluctant to regulate some land uses out of concern they will face Lucas-like lawsuits. The decision also appears to have fueled the property rights movement's mistaken belief that any restriction of land uses constitutes a taking.

Alabama

- Alabama Coastal Area Management Program
- Weeks Bay National Estuarine Research Reserve

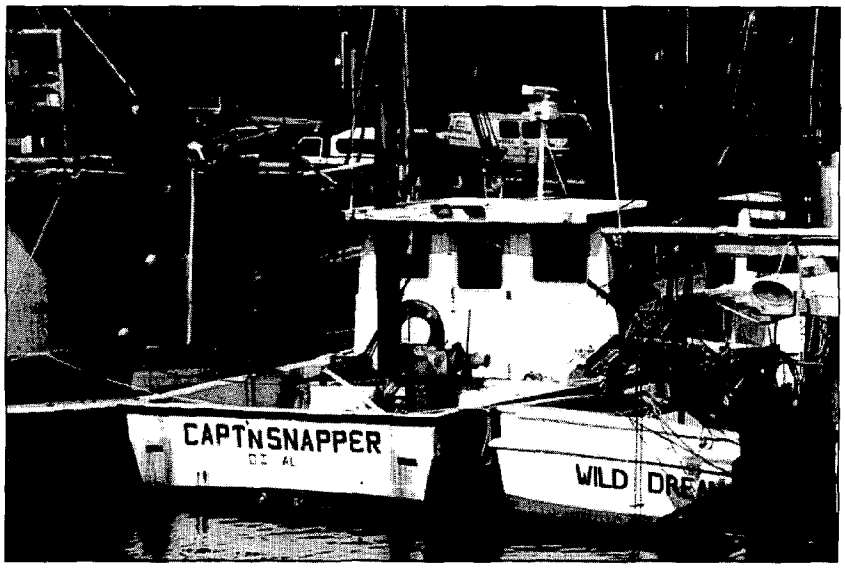
Weeks Bay NERR

Authority for the Alabama Coastal Area Management Program (ACAMP) is based primarily in Act 534, the Alabama Coastal Area Act of 1976, which mandated a comprehensive coastal management program and established a coastal zone boundary. The boundary encompasses all lands seaward of the 10-foot inland contour to the limit of the state's territorial waters, including coastal barrier islands. In 1982, the state legislature passed legislation which dissolved the Coastal Area Board and transferred its coastal management authority to a networked program consisting of a new Department of Environmental Management (ADEM) and the Department of Economic and Community Affairs (ADECA).

Under the revised structure, ADECA became the lead agency responsible for the administrative and planning functions of Alabama's coastal program. The 1982 law consolidated state environmental permitting functions within ADEM, giving the agency permitting authority for activities that directly affect the state's coastal zone. ADEM is also responsible for determining whether those state and federal actions that are not directly regulated are consistent with goals of the ACAMP.

PROGRAM ACCOMPLISHMENTS

Program Staffing: During the biennium, the ADECA coastal office in Fairhope was expanded to include two planners, a secretary, and a full-time public education and outreach coordinator. The ADEM field office in Mobile hired a Nonpoint Source Coordinator. With the additional staff, the ACAMP has become involved in more issues, including special area management planning for the degraded estuary in Orange Beach/ Ono Island/Cotton Bayou, preparing local zoning ordinances in Baldwin County, and assisting with the Gulf Shores Strategic Plan.



Alabama Coastal Foundation: In 1992 and 1993,the ACAMP worked with the Coastal States Organization to set up a coastal foundation dedicated to conserving the natural and economic resources of Alabama's coastal area. Established in the spring of 1993, the Alabama Coastal Foundation (ACF) is a membership organization designed to broaden citizen participation and increase the public's voice in coastal management. It is similar to the Chesapeake Bay Foundation set up for Virginia and Maryland. With an Executive Director in place, the ACF has begun outreach activities by providing public information to the forestry community on the Coastal Nonpoint Pollution Control Program created under section 6217 of the CZMA. The Foundation published its first newsletter in September 1993.

The Alabama Coastal Program earned federal approval on Sept. 25, 1979.

Technical Advisory Committee: Alabama's coastal program established a Technical Advisory Committee during 1992 in response to the findings of the Governor's Coastal Waters Initiative. ACF membership includes representatives of state and federal agencies with responsibilities for coastal resource management. At monthly meetings, committee members exchange information, serve in an advisory capacity for the ACAMP, and pro

Coastal program helps solve island resource problems

From the time the Alabama Coastal Area Management Program began working with the Town of Dauphin Island in 1988 (when it incorporated) until 1990, the town demonstrated little coordinated management of the natural, cultural, recreational, and educational resources of the island's east end. Historic structures were in physical decline, and the shoreline on some beaches was eroding at 50 feet per year. Numerous drownings occurred in the Mobile Pass tidal inlet; yet the local government did nothing to discourage swimming there. Also, government agencies offered few educational or interpretive programs for the public to promote responsible interaction with the coastal environment.

In response to these problems, the coastal programs office established a management task force, known as the East End Management Committee, to oversee the development of a comprehensive management plan for the east end of Dauphin Island. The Committee includes representatives from the agencies and local governments that own or manage land on the east end — all of whom expressed a strong interest in developing a resource management plan. Alabama's Department of Economic and Community Affairs (ADECA) funded the preparation of a comprehensive management plan.

The Economic Development Institute (EDI) of Auburn University prepared the plan using expertise in economics, planning, architecture, and public relations. The Institute worked with the East End task force to inventory existing facilities and needed repairs to those facilities; and analyze needs in the areas of beach access, interpretive and education programs, natural resource management, facilities and maintenance.

The Institute developed a draft master plan for the area and a blueprint for implementing this plan, which phased in a landscape plan, a facilities plan, a programs plan, and financing suggestions. Having identified sensitive areas, such as beaches and dunes, wetlands and flood zones, the group tailored the management plan to minimize adverse effects on these special areas.

This on-going work showed almost immediate results for the east end coastal environment. The Army Corps of Engineers is now undertaking a major erosion control project on the east end to slow the rate of erosion. Swimming has been banned on the east end to prevent loss of life. (No drownings have occurred in over a year.) Also, a public education facility called "Estuarium" that includes a restored marsh is now under construction on the east end.

vide interagency coordination. The Technical Advisory Committee was instrumental in developing the ACAMP's Assessment and Strategy for the section 309 Enhancement Grant Program and is working collectively to solve erosion problems on Dauphin Island.

Public Education and Awareness: Alabama has made major strides in public education and outreach during the biennium, including creating a Citizens' Water Quality Monitoring Program and the Alabama Coastal Foundation; cultivating a greater media presence; and increasing publications and activities for the public, such as the Mobile Bay Barometer, Alabama's COASTWEEKS celebration, and Boaters' Pledge.

SIGNIFICANT PROGRAM CHANGES

In July 1992, OCRM approved the revised Gulf Shores City Zoning Ordinance and the state's recertification of the delegation of local permitting authority to the City of Gulf Shores as a routine program implementation change. Among other things, the revised ordinance restricts structures permitted seaward of the Coastal Construction Line to sand fences and dune walkovers; increases consideration of wildlife, wildlife habitats, and cultural resources; adds a provision for public notice and hearings; and make more restrictive changes to the variance criteria and provisions.

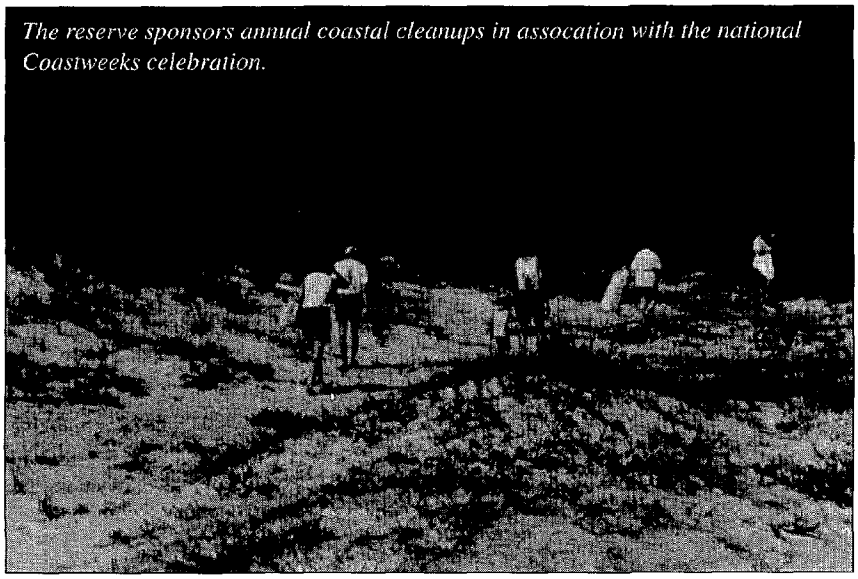
SUMMARY OF EVALUATION FINDINGS

No evaluation was conducted during the biennium. The next evaluation of Alabama's Coastal Zone Management Program is scheduled for early February 1994.

Alabama Program Funding

	306/306A	309	6217
FY92:	$533,700	$59,300	
FY93:	$589,333	$72,800	$45,000

Located along the eastern shore of Mobile Bay in Baldwin County, the Weeks Bay National Estuarine Research Reserve encompasses over 3,000 acres in and around Weeks Bay. This small, shallow estuary is surrounded by forested wetlands. Managed by Alabama's Department of Economic and Community Affairs (ADECA), the reserve serves as a nursery for shrimp and other commercially important fisheries.



The reserve sponsors annual coastal cleanups in assocation with the national Coastweeks celebration.

PROGRAM ACCOMPLISHMENTS

Program Staffing: During the biennium, the reserve filled four and a half positions: a manager, program assistant, secretary, interpretive coordinator, and part-time laborer.

Equipment: Weeks Bay managers acquired equipment to benefit educational and research programs at the reserve, including field sampling equipment, laboratory/analytical equipment, audio-visual equipment, two boats, and a truck.

Facilities and Property Acquisition: The reserve recently secured funding to construct a 3,000-foot boardwalk nature trail; to develop exhibits for the Interpretive Center, and to purchase additional lands for reserve protection. Funds came from a combination of private sources — over $60,000 through the Weeks Bay Foundation and $40,000 in other grants from federal and state agencies.

Management Plan: Weeks Bay staff revised the reserve's management plan, and submitted a draft to OCRM's Sanctuaries and Reserves Division for review and comment. The revised plan is intended to more specifically define management strategies than the previous version, giving the site a stronger focus.

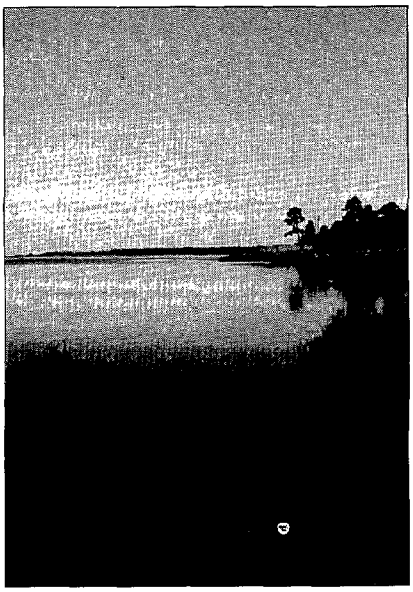
RESEARCH AND MONITORING PROGRAMS

Over the past two years, Weeks Bay staff worked to attract over $1 million in nonpoint source research and demonstration projects. The U.S. Environmental Protection Agency, for example, granted $450,000 to study pesticides in the sediments and water column of the Weeks Bay watershed and the effect of pesticides on the watershed's biota. EPA allocated another $700,000 to fund a series of watershed protection projects, granting $300,000 to the Baldwin Soil and Water Conservation District for a demonstration project on preventing pollution from entering the waterways, $40,000 to monitor water quality, $40,000 for a septic system project, and $19,000 to educate students on these issues.

Reserve staff also developed an impressive reference collection of biological specimens, historical artifacts, and literature

Although with 3,028 acres the reserve has already reached a 100% acquisition status, managers are evaluating this status and may add additional land for reserve protection.

related to the ecology and history of the area. The reserve also recently began a long-term water quality monitoring effort which will add to the reserve's information banks.



EDUCATION AND OUTREACH PROGRAMS

Staff members worked with Baldwin County's Board of Education to locate a science instructor at the site to help reserve staff with reserve education program. As part of the overall education strategy, the reserve develops exhibits, teaches visiting classes about the site, and offers numerous teacher training workshops. The reserve also participates in a National Geographic Program which ties local classroom curriculum to site visits to Weeks Bay.

Federal funding accounted for $139,000 of the reserve budget in FY92 and $209,000 in FY93.

In December 1993, the reserve opened an interpretive center, located halfway between Pensacola, Fla., and Mobile, Ala. The site also hired a coordinator to develop and implement the interpretive program.

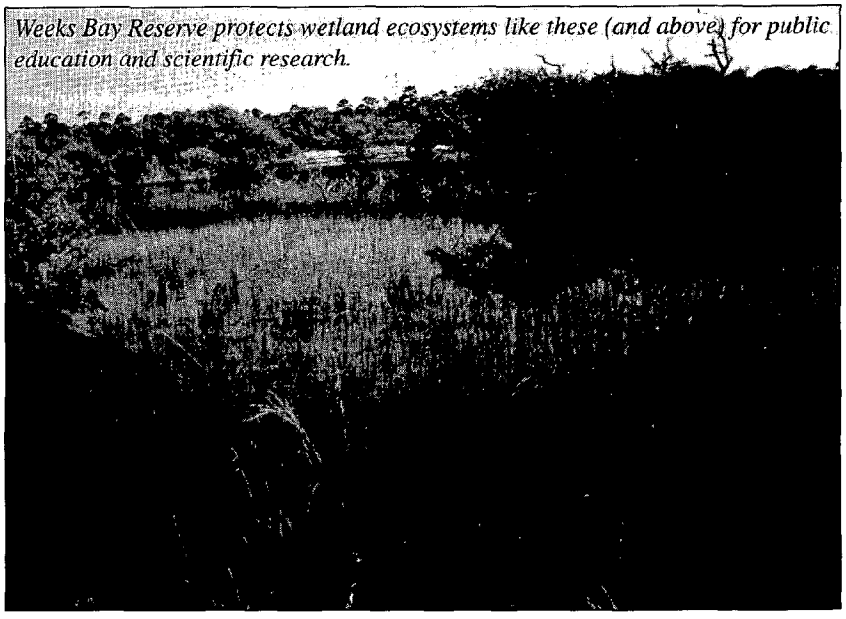
SUMMARY OF EVALUATION FINDINGS

The most recent evaluation findings for Weeks Bay were issued in July 1992. The evaluation found that the state was operating the reserve in a manner consistent with the goals of the National Estuarine Research Reserve System and was adhering to the federally approved management plan for the site.

As accomplishments, the findings noted that Alabama began constructing a Weeks Bay Interpretive Center; that the site was designated an Outstanding National Resource Waters, and with state help, community leaders established a Weeks Bay Foundation to provide private support for reserve activities.

The Weeks Bay Reserve was designated in 1986 in the Louisiana biogeographic region.

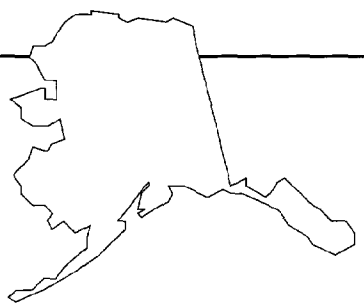
The findings recommended that Alabama secure state funding, hire an education coordinator, revise the reserve's management plan, and obtain boats and vehicles, and offered several administrative suggestions. Reserve managers immediately began working to implement these changes.



Weeks Bay Reserve protects wetland ecosystems like these (and above) for public education and scientific research.

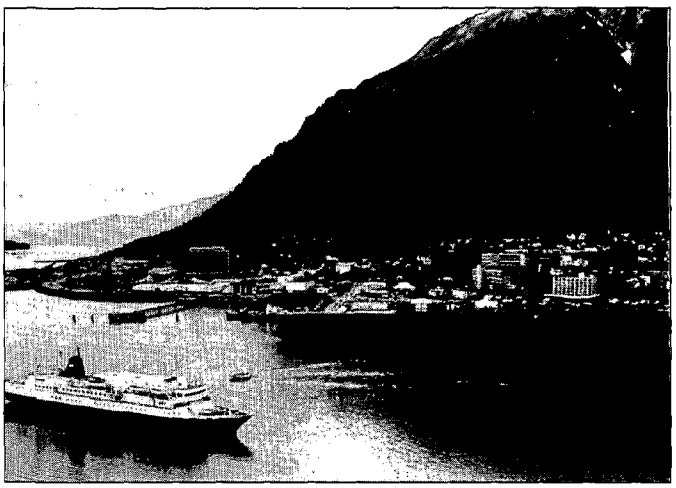
Alaska

- Alaska Coastal Management Program



In Alaska, the state's Coastal Management Act (ACMA) of 1977 provides the foundation for Alaska's Coastal Management Program (ACMP). The Act also created the Alaska Coastal Policy Council, which is composed of six state agency heads, the director of the Division of Governmental Coordination (DGC) and nine local government representatives. The DGC, a unit of the Office of the Governor, provides staff assistance to the council. Under the ACMP, local governments and specially organized coastal resource service areas develop locally specific district coastal management programs. The inland coastal zone boundary is based on biophysical relationships, and generally follows the 1,000-foot elevation contour. More specific boundaries are set during local plan development.

The ACMP is a networked program that binds state agencies to implement responsibilities in accordance with the coastal program's goals and policies. Agencies on this team include the Departments of Commerce and Economic Development (DCED), Community and Regional Affairs (DCRA), Environmental Conservation (DEC), Fish and Game (DFG), Natural Resources (DNR), Transportation and Public Facilities (DTPF), and the DGC. To insure consistency with coastal policies, the ACMP provides for coordinated review of projects within the coastal zone through the consistency review process.



The Alaska Coastal Zone Management Program received federal approval in July 1979.

PROGRAM ACCOMPLISHMENTS

Federal Consistency: Alaska received funding under the CZMA section 309 enhancement grants program for a project of special merit to reconcile timing and substantive differences between the federal outer continental shelf (OCS) oil and gas lease sale process and Alaska's consistency review process. The Division of Governmental Coordination, working with other state and local agencies and the U.S. Minerals Management Service (MMS), analyzed differences in timing and substance between the federal OCS leasing process and the state's consistency review process and prepared a report on these differences. To implement some of the report's recommendations, Alaska developed regulatory changes which are now under the state's internal review process.

Alaska anticipates that the report will lead to a memorandum of understanding between the state and MMS. This memorandum should lead to improved cooperation, provide a standardized process, and help insure that issues are addressed as early as possible in the review process.

Improved Government Operations: Under ACMP's coordinated permit review process, Division of Governmental Coordination publishes a list of permits: which have been categorically approved as being consistent with the ACMP ("A" List); generally consistent with the ACMP provided certain standard conditions are met ("B" List); and subject to the full review process ("C" List). During the biennium, DGC led an effort to update and revise the A-B-C List. Through annual revisions, the state maintains an accurate list thereby streamlining the permitting process.

Resource Protection: Alaska spent several years devel-

oping performance standards for gravel pits on the North Slope River floodplains to ensure that the mine sites are developed or restored in ways that provide fisheries habitats. Section 309 enhancement grant funds enabled Alaska to turn several years of research into changes to the coastal management program. Among the changes is a proposed addition to the "B" List, which would provide standard conditions on permits for mining activities to ensure uniform environmental practices. The state also developed model policy language covering gravel mine sites for the North Slope Borough local coastal management program.

Resource Protection/ Economic Development: To achieve and maintain a balance between subsistence activities, natural resources, economic development and recreational opportunities in the community of Unalaska, the Aleutians West Coastal Resource Service Area is developing a plan for this Area Meriting Special Attention (AMSA). Unalaska, located in the eastern portion of the Aleutian Islands chain, includes the Port of Dutch Harbor, among the country's top seafood landing and processing ports. The coastal district is concerned with protecting subsistence activities, natural resources and habitats, recreational opportunities, and improving impaired water quality, while providing vital infrastructure to support the seafood industry. The Aleutians West Coastal Resource Service Area completed the draft plan for public hearing. When final, the plan will provide a basis for reviewing the consistency of local, state, and federal decisions.

SIGNIFICANT PROGRAM CHANGES

During the biennium, OCRM approved new or revised district coastal programs for Juneau, Thorne Bay, Aleutians East, Sitka, and Haines. Of the thirty-six districts, thirty-four now have approved programs in place. OCRM also approved AMSA plans for the Point MacKenzie area of the Matanuska-Susitna Borough, Mitchell, Hood and Chaik-Whitewater Bays in S.E., Skagway Port and River, and Port Graham/ English Bay.

Several statutory and regulatory changes to Alaska's Coastal Management Act and regulations governing state forest practices were also approved. Furthermore, Alaska's Coastal Management Program added permits issued under the Resources Conservation and Recovery Act to its list of federal permits and activities that the state reviews for consistency with the coastal program.

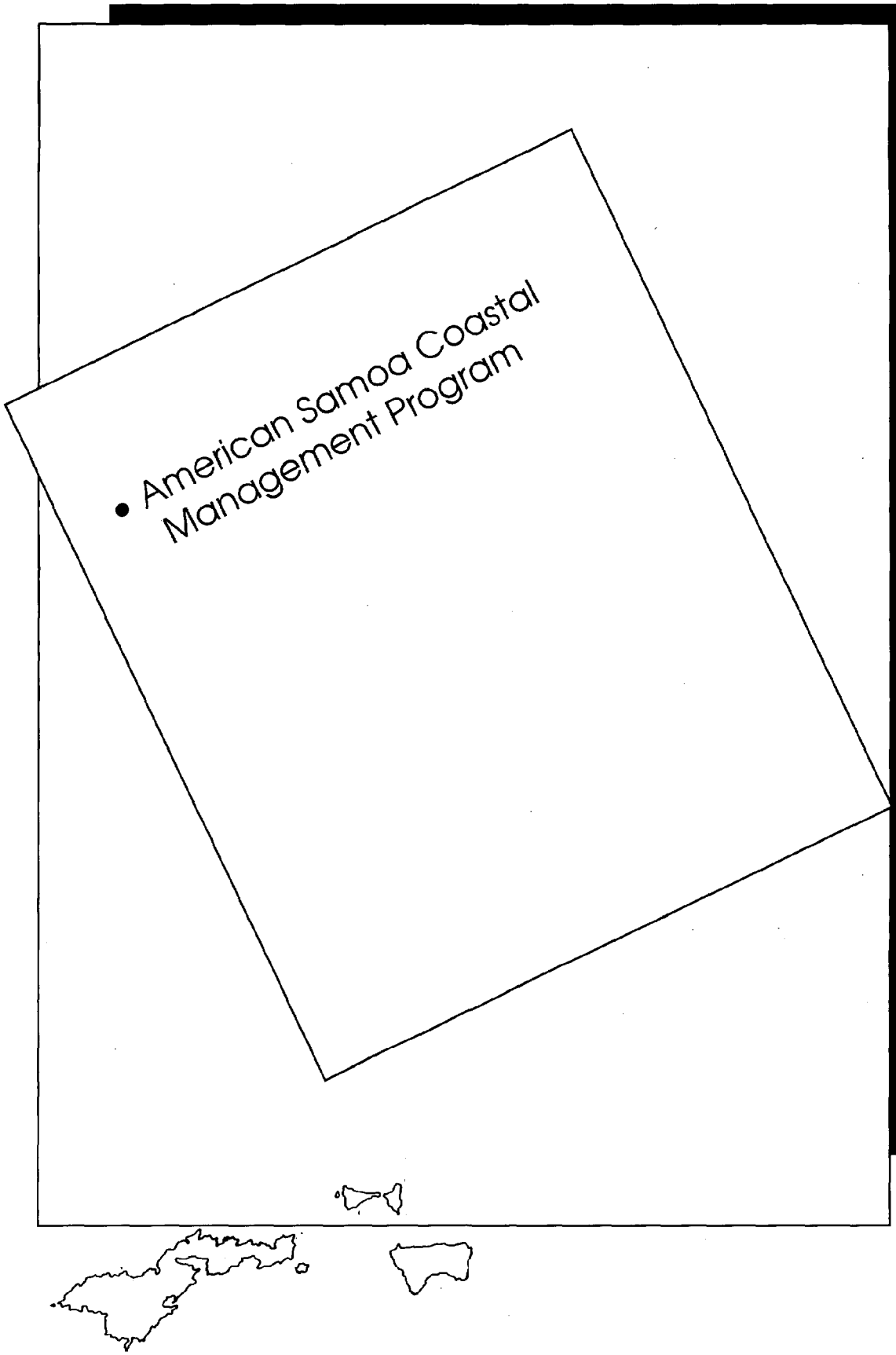
In FY92, the state operated with $2,014,000 in federal funds and in FY93 with $2,015,000.

SUMMARY OF EVALUATION FINDINGS

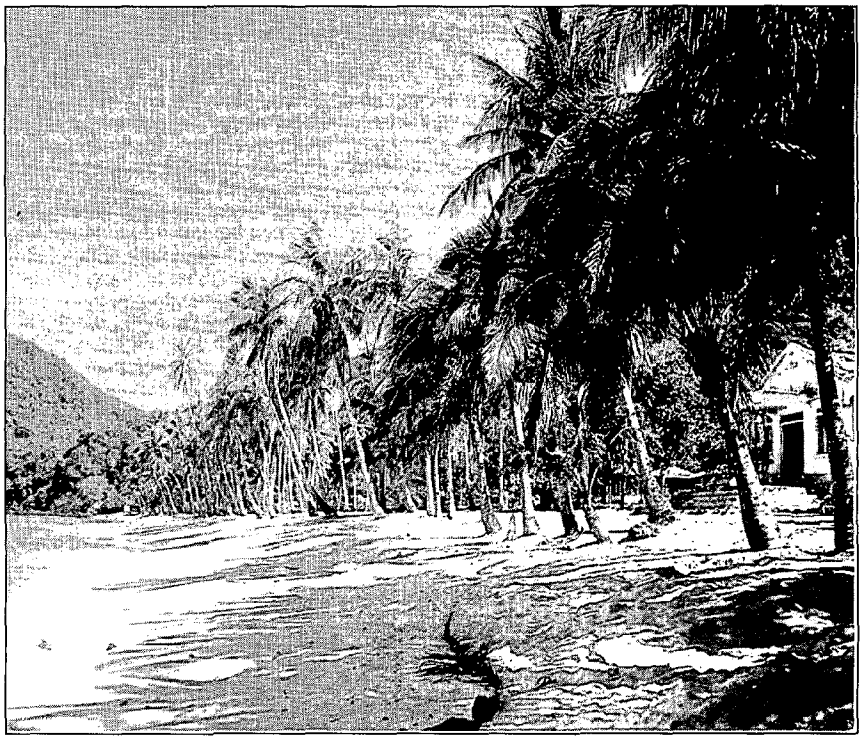
OCRM conducted an evaluation of Alaska's Coastal Management Program in September 1991. Final evaluation findings, issued in January 1992, identified as accomplishments the state's streamlined permit review procedures and focus on problem-solving; completing 33 out of 36 district coastal management programs and the initiative to revise old plans; interim guidelines for handling petitions brought before the Coastal Policy Council; revisions to the Forest Resources and Practices Act, and data-sharing and outreach efforts.

The findings also recommended the following actions to improve Alaska's program: promoting improved reporting of single agency project reviews; finalizing rules to handle petitions brought before the Coastal Policy Council; improving training of agency and district staff; increasing local participation in monitoring and enforcement efforts; and increasing the emphasis on public outreach and education.

American Samoa



American Samoa's coastal zone boundary encompasses all of the territory's land and water areas. Villages, which are governed by chiefs and councils, retain communal control of 92 percent of the territorial land area. As directed by the American Samoa Coastal Management Act of 1990 (the Act), all territorial agencies must conduct their activities consistent with the American Samoa Coastal Management Program (ASCMP). The program, originally authorized by an executive order, is now governed by the Act, which designates the Economic Development Planning Office (EDPO) as the lead agency for program funding and administration. The EDPO issues land use permits for all activities affecting the resources of the coastal zone through an interagency review process known as the Project Notification and Review System (PNRS). The PNRS board, which conducts interagency site visits and holds bi-monthly meetings, consists of representatives from eight territorial agencies.



PROGRAM ACCOMPLISHMENTS

Enabling Legislation and Administrative Rules: From the program's approval in 1980 until 1990, legal authority for the ASCMP rested in an executive order issued by the Governor. To replace the executive order, American Samoa's Fono (Legislature) passed enabling legislation for the program — the American Samoa Coastal Management Act in 1990. American Samoa is now nearing completion of administrative rules to implement the act, which are expected to be adopted by March 1994.

The territory's coastal program received $703,800 in federal funding support during FY92 and $607,800 during FY93.

Public Awareness: Environmental education recently became the focus of most environmental agencies on American Samoa. To maximize its resources, the ASCMP brings the efforts of a number of environmental agencies into its public awareness/education efforts. By working with other American Samoa Government agencies, the ASCMP has been able to reach more people more often throughout the year. The annual *Coastweeks (Vaiaso o Gataifale)* celebration is the island's most rigorous public awareness project with which the ASCMP is involved. Since 1987, American Samoa's first celebration of *Coastweeks*, the festival grew from one week to three weeks of fun educational activities spotlighting environmental issues and concerns. Other public awareness activities include: environmental activities in schools; an anti-littering campaign, sandmining enforcement; *O Lau Samoa*, a monthly television program on environmental issues; Pulenu'u workshops (for village mayors); and community presentations on ASCMP functions and activities.

Wetlands Protection: American Samoa's remaining wetlands, dominated by mangrove communities, are being threatened, primarily by filling for residential and commercial use, and by illegal dumping of solid waste. Because Western-style regulatory programs sometimes fail to have a major impact on the traditional village-based Samoan system of land management, the American Samoa Coastal Management Program, developed innovative programs that involve working with village councils to enlist their support in enforcing wetlands regulations. The goal of this effort is to develop village-based wetlands management and regulatory programs.

Solid Waste and Marine Debris: Working with other territorial agencies to address the territory's pressing marine debris problem, the ASCMP is developing new legislation to establish advance disposal fees for and restrictions on selected imports, an increase in fines for illegal dumping, and an enterprise fund to support municipal solid waste management. In addition to a vigorous public education campaign, ASCMP and the American Samoa Environmental Protection Agency are working with villages to develop village-based solid waste management, regulation, and enforcement programs. These initiatives have been funded through the section 309 enhancement grant program. American Samoa's Coastal Management Program is also using 306A resource management improvement grant funding to construct solid waste collection facilities in designated Special Management Areas where resources are at risk from illegal dumping. These facilities will provide an alternative to illegal dumping for residents of villages in mountainous areas that do not receive regular solid waste collection because their roads are too steep and narrow for collection vehicles to navigate.

The coastal program for the territory received federal approval in September 1980.

Coastal Hazards Protection: American Samoa is faced with acute risks from natural hazards—including hurricanes, landslides, shoreline erosion, tsunamis, and earthquakes. ASCMP will develop new regulations and procedures for hazard mitigation through its Coastal Hazard Assessment and Mitigation Project (CHAMP). The CHAMP's objective is to develop plans and regulations at both the village and territorial levels to mitigate against natural hazards.

Village Nonpoint Source Pollution Control Demonstration Projects: The ASCMP has developed demonstration projects in several island villages as part of the development of its section 6217 Coastal Nonpoint Pollution Control Program. These projects, developed in conjunction with the American Samoa Environmental Protection Agency, include demonstrations of appropriate methods of collecting waste oil, handling piggery waste, controlling soil and coastal erosion, and handling stormwater drainage.

SIGNIFICANT PROGRAM CHANGES

The American Samoa Coastal Management Program did not submit any program changes during the biennium.

SUMMARY OF EVALUATION FINDINGS

No evaluation of American Samoa's Coastal Management Program was conducted during the biennium. The next evaluation is scheduled for March 1994.

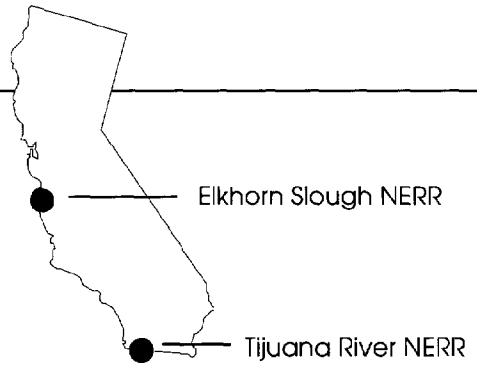
Coastal program lends a helping hand

The American Samoa Coastal Management Program is working to protect a 20-acre parcel of lowland rainforest, the last remnant of such an ecosystem left on the main island of Tutuila.

The forest is a critical site for both native plants and wildlife of American Samoa.

California

- California Coastal Management Program
- Elkhorn Slough National Estuarine Research Reserve
- Tijuana River National Estuarine Research Reserve

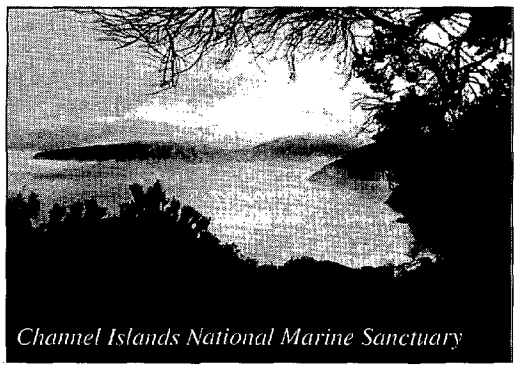


California's coastline is managed in two segments under the California Coastal Management Program (CCMP): the San Francisco Bay segment, which extends inland generally 100 feet from marshes and tidal waters around San Francisco Bay and is managed by the San Francisco Bay Conservation and Development Commission (BCDC), and the remainder of the coast which covers the vast majority of the state's shoreline and adjacent waters, and is managed by the California Coastal Commission (CCC).

The CCC administers the California Coastal Act of 1976 (the Act), as amended, which established a statewide commission to administer a coastal permit program and required that all coastal cities and counties prepare local coastal programs. The CCC also serves as the lead agency for program implementation under section 306 of the Coastal Zone Management Act. The coastal zone area governed by the Act extends approximately 1,000 yards inland from the mean high tide line and seaward three miles to the limit of the state's territorial sea. In areas of significant coastal resources the coastal zone boundary extends inland up to five miles. The Act sets forth policies on public access, recreation, marine environment, land resources, development and industrial development. The CCC is responsible for ensuring that all development activities affecting the coastal zone meet the Act's policies.

The state program was approved in two parts: the BCDC in February 1977 and the CCC in November 1977.

The BCDC operates under the McAteer-Petris Act, but is also responsible for implementing the Suisun Marsh Preservation Act in the Suisun Marsh area. Applicants proposing any development that involves filling, dredging, or substantial changes in shoreline use within the designated San Francisco Bay segment of the coastal zone must obtain a BCDC permit. BCDC also uses special area plans, developed in cooperation with local governments, to implement the San Francisco Bay Plan. Special area plans must be adopted by the BCDC as an amendment to the Bay Plan and by relevant local governments as amendments to their general plans.



Channel Islands National Marine Sanctuary

A third agency, the California Coastal Conservancy (Conservancy), is a non-regulatory segment of the program involved primarily with land acquisition, public access, and critical area restoration. The Conservancy, which operates under the Conservancy Act of 1976, as amended, is charged with protecting agricultural lands, providing opportunities for public access, land acquisition and resource protection, and undertaking restoration projects.

PROGRAM ACCOMPLISHMENTS

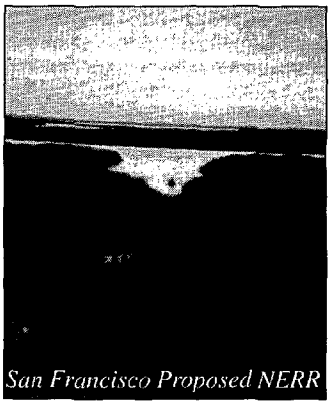
Resource Management: In 1986, the U.S. Environmental Protection Agency (EPA) designated the San Francisco Bay/Delta Estuary Project (SFEP) under the National Estuary Program. The SFEP is intended to achieve effective and cooperative management of the Bay/Delta System. BCDC played a major role in developing a final Comprehensive Conservation Plan (CCMP), which the SFEP submitted to EPA in the fall of 1993. BCDC is also a key player for implementing the plan's recommendations.

Natural Resources Protection: To address a serious problem of non-compliance with the Coastal Act, as well as other regulatory programs, the CCC created an enforcement task force for the Santa Monica Mountains area. The Santa Monica Mountains Task Force brings together federal, state and local agencies that regulate development activities, and coordinates the monitoring and enforcement activities of these agencies. The Task Force's goals are, among others, to: protect the area's

natural resources, coordinate enforcement efforts, and decrease illegal development activities. To help achieve these goals, the Task Force published the *"Santa Monica Mountains Enforcement Directory,"* which describes each agency's area of jurisdiction, violation activities of interest, investigative powers, cease and desist authority, and ability to impose penalties or require restoration. By sharing information and coordinating resources, the Task Force has been very successful in maximizing limited public resources to substantially improve its ability to detect and successfully resolve violations in one of the most threatened regions of the coast.

Resource Management/ Port Development: How to dispose of materials dredged from San Francisco Bay is a critical issue facing the region and the BCDC. Ports around the Bay rely on dredging to maintain existing channels and to develop new or deeper channels so that they can remain competitive. As current disposal sites within the Bay fill up, alternative sites for disposal must be identified so that the ports can continue to operate effectively. BCDC has taken a leadership role in promoting upland alternatives for dredge material disposal, including disposal sites and options to use dredged materials for beneficial wetlands creation. Over the past year, BCDC has identified approximately 100 sites around the Bay, and characterized each site according to its ability to accommodate dredged materials. In one innovative project, BCDC pulled together an arrangement to have dredged materials transported to an upland location for drying, and then moved to a landfill site to provide daily cover material.

The Conservancy has been the driving force behind another innovative project—recreating salt marsh habitat in the Sonoma Baylands. The Sonoma Baylands is a 322-acre site, now diked off from San Francisco Bay. The Conservancy's plan calls for adding three million cubic yards of dredged material to the site and breaching the dike to recreate salt marsh habitat. To date, the Conservancy has spent 2 million dollars on property acquisition and site design. The Sonoma Baylands project is a good example of how the Conservancy's efforts complement the regulatory functions of the CCMP.



San Francisco Proposed NERR

Public Outreach: California has been undergoing a dramatic change in demographics — minorities now make up 43 percent of the State's population, a ten percent increase over the past ten years. To continue to be effective, and to meet its mandate to provide the widest opportunity for public participation, the CCC realizes that it is imperative to connect with this constituency through outreach and education efforts, as well as to increase the representation of minorities among coastal managers. In an innovative project, the CCC has joined with a non-profit group, the Environmental Careers Organization, and developed the "Coast and Ocean Minority Intern Program." The program is designed to provide employment opportunities in with the CCC for minority college students and recent graduates.

SIGNIFICANT PROGRAM CHANGES

During the reporting period, OCRM approved changes resulting from the state Oil Spill Bill and several minor changes to the BCDC's regulations. BCDC also amended its findings and policies regarding dredging. Finally, OCRM approved LCP's for major portions of Orange and Mendocino counties.

SUMMARY OF EVALUATION FINDINGS

The last evaluation site visit was in June 1993. The draft findings are scheduled to be released in early 1994.

The state received $2,014,000 in federal 306 program administration funding in FY92 and $2,015,000 in FY93.

State launches coastal outreach program

To involve the public in coastal issues in a positive way, the California Coastal Commission developed an award-winning, multifaceted program of public education and outreach.

Called the Coastal Conservation Education Program, the project consists of

- a school Adopt-A-Beach *curriculum;*
- a Youth Group Guide adapted to the special needs of youth organizations, such as Campfire, Scouts, YMCA, YWCA, and 4H;
- a citizens organizations' *Adopt-A-Beach* manual with particular emphasis on broadening community involvement;
- a Beach Managers' Guide to the *Adopt-A-Beach* program structure;
- general public educational materials, such as public service announcements, feature articles, TV and radio appearances, and
- an education outreach program for schools and youth and citizen groups.

The program grew out of the annual coastal cleanup the Commission launched during Coastweeks '85, with 2,000 people pitching in to clean up over 100 sites all along the California coast. By Coastweeks '93, the number of volunteers had shot up to 50,000) and the number of cleanup sites more than quadrupled to well over 400.

In 1989, the Adopt-A-Beach Program, was expanded beyond a one day event to a year-round activity. Thousands of clean up volunteers have joined the Adopt-A-Beach Program to keep their adopted areas clean and free of marine debris all year long.

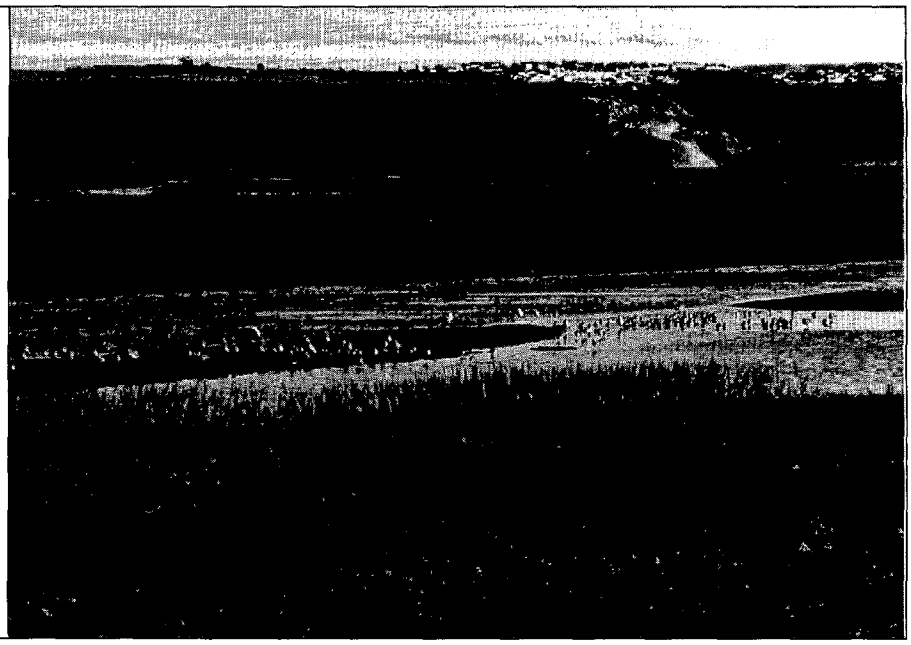
Along with these "hands on" events to raise public awareness and understanding of coastal pollution, and focus on what the public can do to prevent it, are the curricula and youth and citizens guides to facilitate learning about the coasts, and several award-winning posters, brochures and public service announcements (PSAs), which have been developed to promote the program. Among other honors, the Adopt-A-Beach PSA has received a JOEY (San Jose Convention and Visitors Bureau/San Jose Film and Video Commission Award of Excellence), an ADDY (Northern California Advertising Association award for the best Regional/National Campaign in Public Service Advertising), a Silver Apple (National Educational Film and Video Festival award for best PSA), a State Information Officers Council Award, a nomination for best PSA at the Sacramento Film Festival and a nomination for an EMMY.

The CCC organized a special celebration of the 20th Anniversary of Earth Day. As part of this celebration, the CCC worked with the media to focus special attention on one success story in the Los Angeles area. Students participating in the Venice High School Adopt-A-Beach program took what they learned at the beach (that "Recycling is a Solution to Pollution"), and applied that knowledge through initiation of a recycling program in their school. They then used the proceeds from the recycling program to purchase and preserve threatened rainforests in Costa Rica.

The emphasis on education continues with the expanison of the curriculum. Developed in conjunction with the Center for Marine Conservation, the Commission's new *Save Our Seas* curriculum now covers kindergarten through high school.

The CCC also identified alternative funding sources; for example, a public/private partnership provides finanical and promotional support for the Coastal Conservation Education Program. Private partners include Lucky Stores, Inc., Pepsi, Kraft General Foods, the American Plastics Council, the California State Parks Foundation, and the advertising firm of Foote, Cone and Belding, Inc. These sponsors were critical to the program in 1993, when the state's budget crisis almost ended it. They stepped in to provide the financial and promotional support that made statewide organizing possible.

The Coastal Conservation Education Program received national recognition when it was awarded first place in the 1991 'Keep America Beautiful" National Awards competition in the State/Federal Agency category and twice won national Take Pride in America awards. The program continues to develop in innovarive ways and increase its beneficial connections with educators and citizens interested in learning about coastal issues.



The Tijuana River National Estuarine Research Reserve provides a research base for California's decision makers looking at coastal issues, such as wetlands restoration and public access.

California adds public access with opening of the Pecho Coast Trail

The California Coastal Commission holds a long record of noteworthy achievement in securing increased public access to the California coast.

One of CCC's latest successes is opening the 3-1/2 mile long Pecho Coast Trail in San Luis Obispo County.

The opening in February 1993 culminated a 10-year planning and construction effort. The trail allows the public — for the first time — to enjoy a spectacular stretch of coast that had been privately owned and virtually closed to the public since the time of Spanish rule in California.

The Trail resulted from a condition placed by CCC on a coastal development permit requested by Pacific Gas & Electric (PG&E) in 1983 to expand the utility's nuclear facility located in San Luis Obispo County.

The condition required PG&E to dedicate a 3-1/2-mile lateral bluff trail for public use and to develop a detailed plan to provide public access compatible with the security needs of the nearby nuclear powerplant and without endangering the area's sensitive natural resources.

The most sensitive resource concern is protection of sea otters which pup on the area's small pocket beaches. This is a very *rare occurrence* attributable to the long history of minimal human disturbance.

The Accessway Management Plan resulting from this condition provides for public access limited to docent-led tours of no more than 15 people two times per week.

The Nature Conservancy, a national non-profit conservation organization, agreed to operate and maintain the Trail under a Memorandum of Understanding with CCC and PG&E.

A beautiful brochure has been produced to acquaint the public with the Trail. As a further permit condition, PG&E established a fund which paid for construction of the Trail and some operation and maintenance.

Efforts are underway to create a "Friends of the Pecho Coast Trail" organization to ensure the Trail's long-term maintenance.

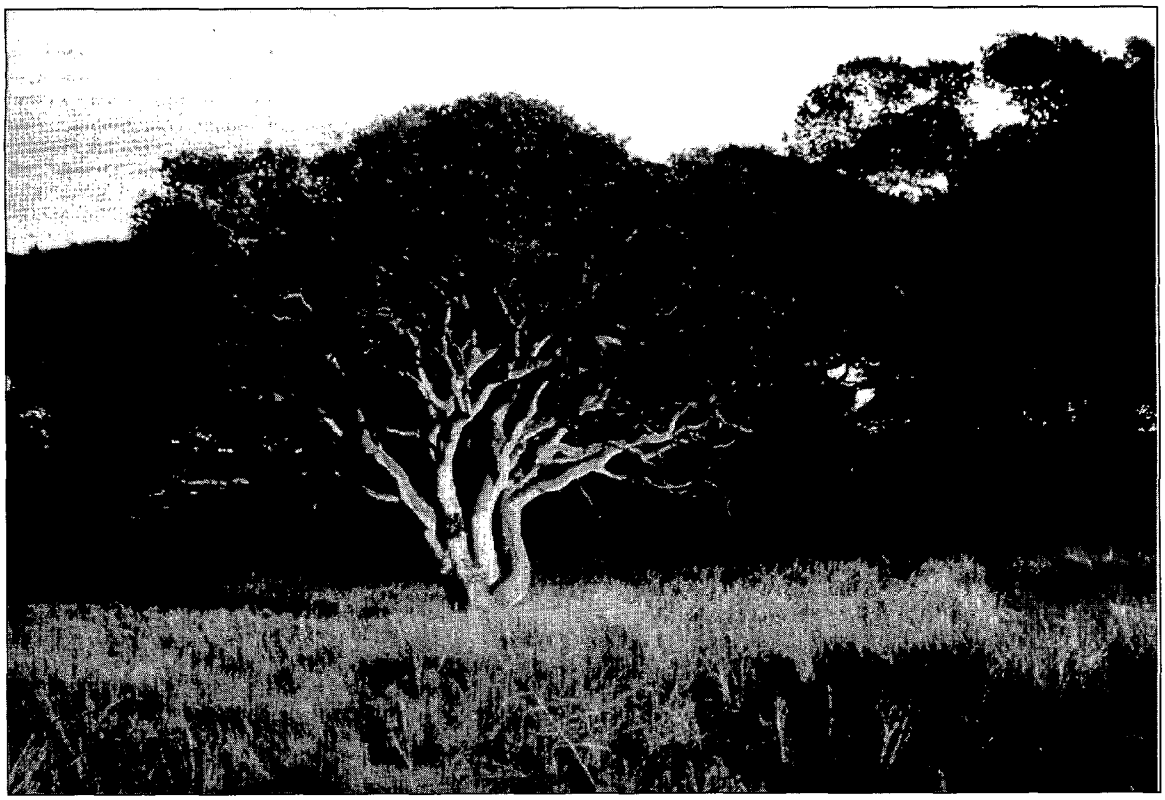
Elkhorn Slough, one of the last remaining relatively undisturbed coastal wetlands in California and the largest between San Francisco and Morro Bay, is located on the central coast at Moss Landing, north of Monterey. The Reserve encompasses approximately one-third of the slough and contains salt marsh, grasslands, woodlands, maritime chaparral, mud flats, freshwater ponds, and open water. These natural communities provide nursery areas for fish and are a critical stop along the Pacific flyway for migratory birds. Marine mammals resident in the reserve are harbor seals and sea otters. Bird populations consist primarily of migratory, water-associated species, with population peaks in fall and spring. Endangered birds, including the California brown pelican and peregrine falcon, also use the reserve. Portions of Elkhorn Slough, protected by the reserve, provide nursery grounds for many fish species, including the Pacific herring, starry flounder, and several species of shark.

Elkhorn Slough is managed by the California Department of Fish and Game, under a management plan approved by NOAA in 1985. Reserve staff includes a manager, research coordinator, education coordinator, volunteer coordinator, and clerical and maintenance staff. A research advisory committee assists the manager with decisions concerning various facets of the site's management including research, education, facilities development, and resource protection. The Elkhorn Slough Foundation, a non-profit support group, provides assistance and funding. The site is used primarily for visits by the general public, teacher-guided school groups, and special interest groups such as birdwatchers; education and research; and habitat restoration.

PROGRAM ACCOMPLISHMENTS

Habitat Restoration: Restoration efforts include replacing non-native eucalyptus trees with native live oaks; thousands of seedlings have already been planted. Additionally, exotic vegetation is being controlled in an effort to eliminate their spread and maximize native vegetation. Feral cats are also being trapped and removed to protect ground-nesting birds.

Facilities: Construction of a new administrative building, funded by NOAA and the state of California, began in August 1993, and is slated for completion in January 1994. The building is designed to take advantage of open space



near the visitor center and will be similar in style and color to existing structures. The 2,700 square-foot building will include offices for the staff, a computer work station, storage and work areas, and a meeting room. Staff will be moved from the visitor center, freeing space that will be dedicated to interpretive activities.

Stretching 1,385 acres, the reserve is now 92% complete.

Volunteers: Elkhorn Slough NERR has developed an exceptional volunteer network. Volunteers complete nine weeks of training in the history and ecology of the slough; the training course is held annually and volunteers are given opportunities to enrich their skills. Volunteers provide valuable assistance in virtually all aspects of the reserve's operation; they help in interpretive and research activities, maintaining trails, staffing the book store and visitor center, helping with computer operations, and serving as docents to lead trail walks. In the last two years, 105 active volunteers devoted over 13,000 hours to the reserve. Without the benefit of the time and effort of the volunteer network, the reserve would be unable to maintain the high level of visitation it enjoys.

Management Plan: A new management plan is being drafted for the Elkhorn Slough NERR. The plan is expected to be completed during 1994-1995.

RESEARCH AND MONITORING PROGRAMS

Several major research projects are underway at the reserve, including an innovative agroecology project conducted by the University of California at Santa Cruz. This project, centered around a series of pocket marshes on or adjacent to the reserve, will look at the impacts of strawberry cultivation on an estuarine environment and will result in recom

Elkhorn Slough NERR received $154,523 in federal funding in FY 1992 and $186,707 in FY 1993.

mended farming methods. A 10-year study of reproductive behavior in songbirds is also continuing. The reserve has developed an "Elkhorn Slough Bibliography" that provides resource managers, scientists, and educators with an overview of research in the slough.

EDUCATION AND OUTREACH PROGRAMS

Educational programs focus on training teachers to lead their classes through the reserve and providing curricula and equipment to the school groups; in the last two years, 19,000 students have participated. Plans have been completed and materials purchased for constructing a boardwalk allowing students access to a mudflat on the reserve. School children can then easily take mud samples for investigations in the laboratory and study this "lifeblood" of an estuarine ecosystem. The reserve, with the help of the Elkhorn Slough Foundation, has received a video microscope that enables visiting teachers to find items in samples using a microscope and then have them displayed simultaneously for the entire class on a television monitor. Outreach efforts include the annual celebration of Estuaries Day and use of a portable display at fairs and demonstrations.

SUMMARY OF EVALUATION FINDINGS

The last evaluation of Elkhorn Slough NERR, conducted in May 1992, showed that the California Department of Fish and Game was managing the reserve in a satisfactory manner.

Based on the findings of that report, the reserve is currently working on a new management plan and long-term staffing; increasing networking activities with the community on research; completing the administration building; conducting research on and discussing erosion issues; and coordinating research on nonpoint source pollution.

The final evaluation findings cited accomplishments in the commitment of the State to the reserve, the improved working relationship among the managing agencies of the reserve, the education program, the working relationship of the Research Advisory Committee, and the completion of the Elkhorn Slough Bibliography.

The Elkhorn Slough Reserve was designated in 1980 in the Central California biogeographic region.

Return of the birds

The Elkhorn Slough reserve has seen marked increases in nesting great blue herons, great egrets, and Caspian terns in recent years.

Herons began nesting at the reserve in 1985. That year, only one heron nest was spotted. Several years later, the herons were joined by egrets The total number of nests in 1993 grew to 88, with 27 heron nests and 61 egret nests.

This rookery has become a major breeding site for herons and egrets on the central California coast and is a favorite of slough visitors every spring.

A reserve trail brings birdwatchers well within good view of the rookery.

The Caspian tern rookery is located in a more remote portion of the reserve on an island constructed during a marsh restoration project in 1983.

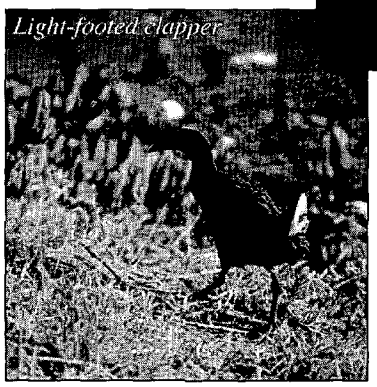
The terns were first discovered nesting in the area in 1991; by 1993 there were approximately 80 nests.

A graduate student recently selected the terns as the subject of her master's thesis, continuing detailed study of this fascinating rookery.

The reserve staff concluded that the restoration of the South Marsh at the reserve in 1983 expanded foraging areas and provided the necessary prey base for these growing nesting colonies.

The Tijuana River National Estuarine Research Reserve encompasses 2,531 acres of tidally flushed wetlands, riparian, and upland habitats extending immediately north of the U.S.-Mexico border in southern San Diego County.

As the southern most estuarine system on the West Coast, the reserve is one of the few remaining examples of relatively undisturbed, tidally flushed coastal wetlands in southern California. Tijuana River is one of about 30 such wetlands south of Point Conception.



Light-footed clapper

The estuary provides productive marsh habitat for invertebrates, fish, and birds including federal and state-listed endangered or threatened species, such as the light-footed clapper rail, California least tern, brown pelican, and peregrine falcon. An endangered plant, the salt marsh bird's beak, also flourishes in the area.

The reserve was designated in 1982 in the Californian biogeographic region.

California's Department of Parks (CDP) manages the Tijuana River Reserve, located within the jurisdictions of Imperial Beach and San Diego and near the City of Tijuana, Mexico. Responsibility for setting management policies lies with the Tijuana River National Estuarine Research Reserve Management Authority comprised of representatives from the lead agency, the California Department of Parks and Recreation, and from the U.S. Fish and Wildlife Service, City of San Diego, the City of Imperial Beach, San Diego County, the California Coastal Commission, and the California Coastal Conservancy. Education and volunteer programs are developed with assistance from Southwest Wetlands Interpretive Association, a non-profit agency cooperating with California's Department of Parks.

PROGRAM ACCOMPLISHMENTS

During FY92 and FY93 the reserve focused its efforts on completing four major projects. The artwork on the large topographic watershed map which spans the door into the visitor center was completed. A 15-minute video, "Timeless River", was produced. An enhancement plan received funding and a project manager was hired. Finally, a set of GIS maps of the reserve were produced based on 1986 aerial photography and data collected from fieldwork at the site.

RESEARCH AND MONITORING PROGRAMS

The reserve experienced substantial physical changes from severe winter flooding in 1992-93. Unusually heavy summer floods, caused by the draining of Barrett Reservoir to a safe level before the 1993-94 winter season, added to the changes. Flooding presented an opportunity for a new and heated round of discussions with residents of the river valley, the city and county of San Diego, and the International Border Water Commission. Monitoring programs have tracked the influence of hydrological disturbances on the Reserve and the recent diversion, before the flooding, of virtually all sewage flow from the estuary through a temporary connector to San Diego's treatment plant. Now the monitoring program is tracking the results of sustained freshwater flow.

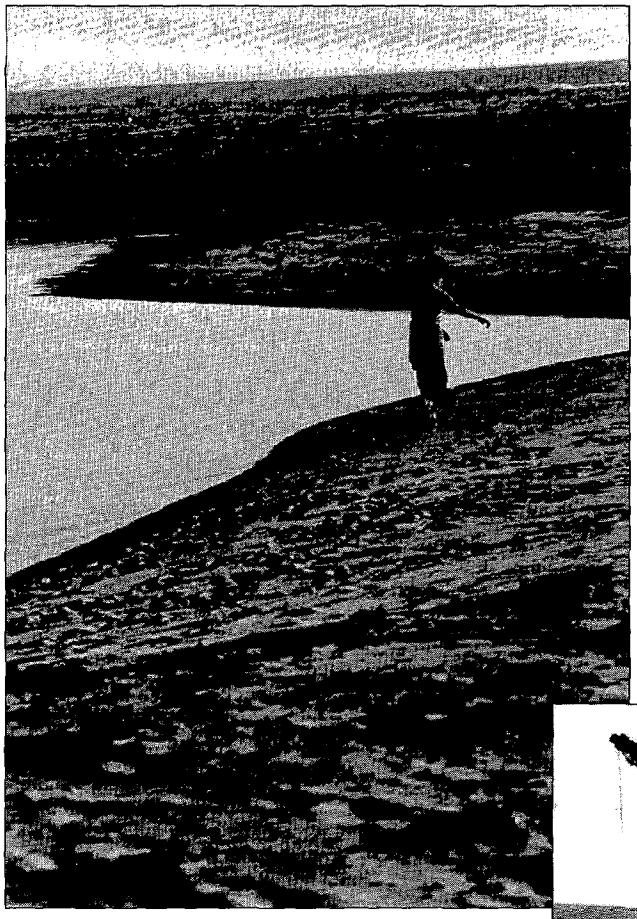
At 2,531 acres, the reserve has reached a100% complete acquisition status.

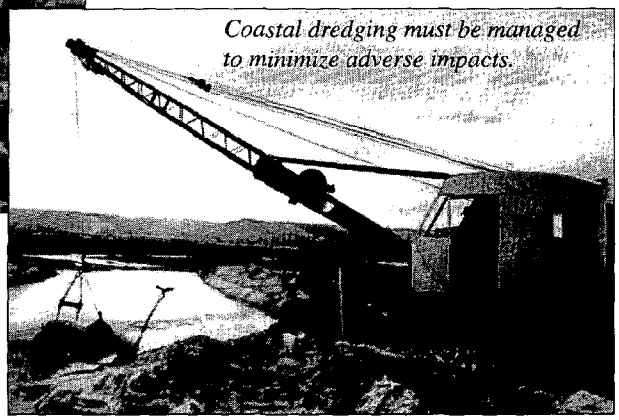
The Pacific Estuarine Research Laboratory, managed by the San Diego State University and located within the reserve, serves as a center for research and education programs. Research compares the value of constructed marshes versus natural marshes and seeks ways to improve restoration methods.

Research conducted with the U.S. Fish and Wildlife Service is also focusing on the problems associated with global climate change on a regional scale. Geographic Information Systems are being used to identify the affects of sea level rise on wetland plant communities using Tijuana River as a model. Further data on accretion and subsidence rates will be integrated into the GIS as part of regional studies to evaluate loss of regional and local biodiversity and predict future trends.

EDUCATION AND OUTREACH PROGRAMS

The reserve's education programs center around Marsh Awareness with Resources for Slough Habitats (M.A.R.S.H.) developed for fifth and sixth grade students. This ecologically based curriculum includes two award winning videotapes, posters, flash cards and extensive materials for field investigation. Before visiting the site, teachers must participate in a two day training course and prepare their students for at least two weeks in the classroom. Materials for workshops, offered year-round, have been produced in both English and Spanish. Over 500 teachers from San Diego and surrounding counties have received training through the M.A.R.S.H. and other training pro-





Coastal dredging must be managed to minimize adverse impacts.

grams. Reserve staff have begun to coordinate with the local school district in their Extended Year Program by offerering a new wetlands investigation class every three weeks. To complete this program, students must visit the reserve six times. A part-time, bilingual education specialist teaches nature classes after school and on weekends. Having a bilingual staff person enables the reserve to participate in teacher training workshops in Mexico-Ensenada through cooperation with pro esteros, a bi-national conservation organization, and Tijuana as a member of PROBEA (proyecto bioregional educacion ambiental). Tijuana River Reserve also participates in the National Geographic Kid's Network project.

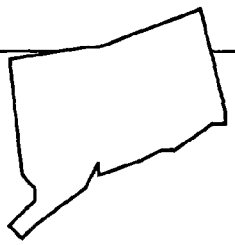
SUMMARY OF EVALUATION FINDINGS

NOAA issued final evaluation findings for the period of September 1989 through July, 1992. The Office of Ocean and Coastal Resource Management (OCRM) noted as accomplishments: construction of the visitor center, and development plans for an interpretive and exhibits program; completion of a restoration plan to restore intertidal habitats lost to sedimentation; milestone research on habitat restoration protocol for arid coastal wetlands, for salt marsh restoration in general, impacts and means of addressing urban waste water problems and the ecological functioning of coastal salt marshes; publication of an ecological profile; development of a five-acre native plant garden; acquisition of approximately 250 acres; and development of important curriculum documents, bilingual education documents, and sponsoring of teacher workshops. The OCRM identified concerns with: site administration; non-adherence to important elements of the management plan; ineffectiveness of the Management Authority; inadequate staffing; inadequate coordination of research issues with California Department of Parks and the Management Authority; and incomplete facilities development. The reserve is responding to OCRM's list of Necessary Actions and Program Suggestions.

In FY92, the reserve relied on $160,000 in federal funding, and in FY93, on $110,000.

Connecticut

- Connecticut Coastal Management Program



Connecticut's Department of Environmental Protection (DEP) is the state's lead agency for implementing the Connecticut Coastal Management Program. DEP's Office of Long Island Sound Programs (OLISP) administers Connecticut's Coastal Management Program. OLISP carries out coastal management at the state level through the permitting process for its core authorities. OLISP monitors coastal development activities and compliance with coastal permit requirements, and enforces the program.

Coastal management at the local (municipal) level in Connecticut is carried out through a municipal coastal site plan review process. OLISP staff provide technical assistance and oversight to the municipalities in reviewing coastal site plans and developing municipal coastal management plans and harbor management plans.

Connecticut has a two-tiered coastal management boundary. The inner tier, with stricter regulations covering most activities, extends landward to a 1,000 foot setback from either the mean high water mark, the inland boundary of tidal wetlands, or the inland limit of the coastal flood zone, whichever is farthest inland. Within the second tier, the state manages major state and federal activities that affect the coastal zone. This tier extends to the inland boundary of the coastal municipalities. The seaward boundary of the coastal program matches the state's jurisdiction in Long Island Sound.

PROGRAM ACCOMPLISHMENTS

Wetlands Protection and Restoration: Historically, one of the major causes of wetland degradation in Connecticut, before their protection in 1969, had been the construction of mosquito control drainage ditches. Connecticut's Office of Long Island Sound Programs, through the Connecticut Coastal Management Program, worked with the former Department of Health's Mosquito Control Unit to explore alternative techniques for mosquito control. The solution that has been adopted is open marsh water management, which recreates surface pools and ponds and reestablishes tidal flushing in the wetland. Doing so restores marsh habitat for mosquito larvae predators and leads to an improved, more natural tidal marsh condition. Roughly 15,000 acres of previously ditched tidal wetlands in Connecticut are now under open marsh water management and are slowly reverting to their natural state.

The Connecticut coastal program earned federal approval in September 1980.

A new wetlands restoration unit, with specialized staff and wetland equipment, was established within the Department of Environmental Protection at the initiative of OLISP staff. Both the staff and equipment came from the former Department of Health Services mosquito control unit, which was in danger of being disbanded due to budgetary constraints. Before that happened, OLISP got the unit transferred to DEP where they now devote all

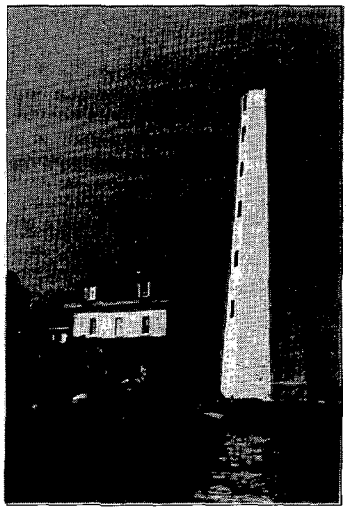
their effort to marsh restoration. Nearly 1,000 acres of tidal wetland have been restored in Connecticut during the past ten years, approximately 150 acres of which have been restored in the past two years.

Connecticut is the first state in the country to use funding from the federal Intermodal Surface Transportation Efficiency Act (ISTEA) for tidal wetland protection and restoration. As highway and railway improvements are made in the state, the state is accessing ISTEA funds to restore wetland sites that were impacted in the past by highway or railroad corridors or to mitigate sites that might be newly affected.

Public Access: OLISP has made a strong attempt during the last two years to provide public access through the permitting process by conditioning permits whenever feasible. In one case, for example, after reviewing a state Department of Transportation proposal to replace an existing bridge over the Quinnipiac River with a larger lift span bridge, OLISP placed conditions on the permits to require public access. The project, as revised, will provide a public fishing pier and a separate parking facility near the bridge. The original project proposal made no provision for public access.

The coastal program relied on $1,026,000 in federal funds in FY92 and $1,013,000 in FY93.

Harbor Management: Nineteen of Connecticut's coastal communities are now developing or implementing harbor management plans, as allowed for in Connecticut's Harbor Management Act of 1984. Nearly every town has different purposes for adopting these plans, but some common reasons are to see that moorings are allocated and administered efficiently and equitably, to manage dredging and dredge spoil disposal, to improve public



access, to balance the needs of recreational boating and local shellfishermen, to maintain the character of the harbors, to provide minimum standards for mooring tackle, and to improve water quality, among others. OLISP must review and approve each plan before a municipality can officially adopt one.

Federal Consistency: OLISP uses federal consistency aggressively to ensure that federal projects use coastal resources in beneficial ways. OLISP staff reviewed an application to the Federal Energy Regulatory Commission for relicensing the Greenville Dam and Tenth Street Hydropower Project on the Shetucket River in Norwich. While the application proposed a fish passage to allow anadromous fish to migrate, the application did not propose mitigation for adverse impacts on recreational boaters who use the Shetucket River. Through negotiations with the applicant, OLISP succeeded in getting a canoe portage installed for boaters, in addition to the fish passage.

Directed Research for Management: Using its Long Island Sound Research Fund, OLISP has sponsored a wide range of research that can be directly applied for managing the Sound's resources. One example is the recently completed study of the effect of transportation infrastructure on sedimentation in three of Connecticut's coves. The study arose from a concern that transportation restrictions, especially railroad embankments, had altered the quality and quantity of sediments in the three coves. The study concluded that transportation infrastructure was not the cause of changing long-term sedimentation rates, that upland development and sea level rise may be more important factors, and that there had been no change in sediment quality. This, the first scientific documentation on this matter, has potentially saved the state millions of dollars in transportation im

provements which would have had little impact on sedimentation rates or quality.

Elevated nitrogen levels, a critical issue for the water quality of Long Island Sound, is the subject of several management research studies. These projects include studies of nitrogen sources and movement within the Sound, and studies that have identified important watershed management goals for tributaries to the Sound.

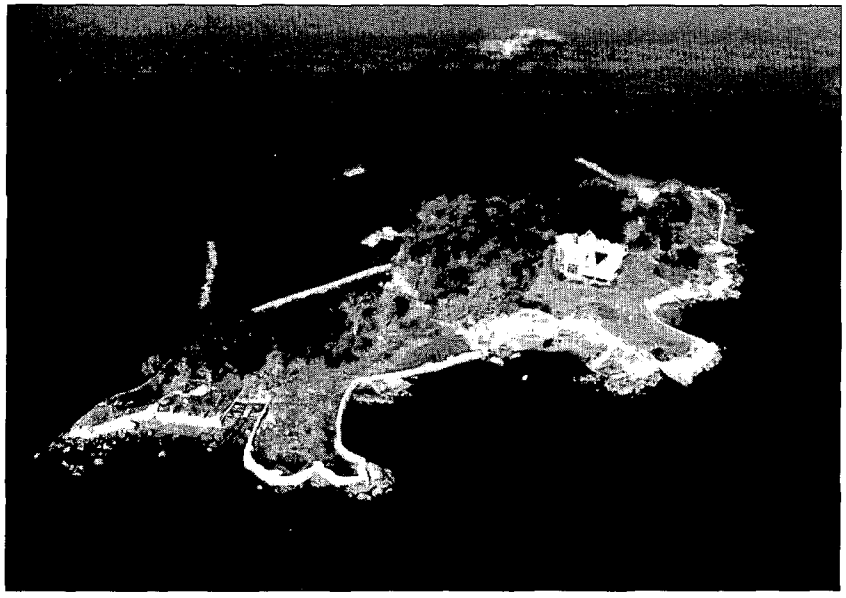
OLISP staff researched the historic distribution of eelgrass, a species of submerged aquatic vegetation, and discovered that eelgrass no longer grows in the central or western part of Long Island Sound— once part of its historic range. The Long Island Sound Research Fund is now sponsoring studies to establish baseline information on eelgrass and the species' water quality needs.

SIGNIFICANT PROGRAM CHANGES

During the biennium, OLISP incorporated its Long Island Sound license plate program into the Connecticut Coastal Management Program. To date the state has sold over 28,000 Long Island Sound plates, raising over $1.5 million for coastal management, including restoration projects in Long Island Sound, research, public access and public education.

SUMMARY OF EVALUATION FINDINGS

No evaluation of Connecticut's Coastal Management Program was conducted during the reporting period. The latest evaluation site visit took place Nov. 29 through Dec. 3, 1993.



Did you know?

- The Connecticut River is the only major river on the United States' east coast without a major port at its mouth. Approximately 70% of the freshwater discharged into the Long Island Sound comes from the Connecticut River.
- One-third of Connecticut's population, roughly 1 million people, live along its coast.
- Twenty-five million people, or 10% of the U.S. population, live within 50 miles of Long Island Sound.
- Over 6 million people a year visit beaches on Long Island Sound. However only 36% of Connecticut's coastline on Long Island Sound is sandy beach but almost 40% of that is under public ownership.
- Connecticut has implemented a $15 million no-net-increase in nitrogen policy which provides funding to retrofit 14 seage treatment plants from Greenwich to Branford to remove nitrogen from their effluent. As a result of these upgrades, the state expects a 25% reduction in nitrogen discharge from these plants, based on 1990 levels.
- Harbor seals have returned to Connecticut as a resident species in Long Island Sound for the first time in a quarter century.

Delaware

- Delaware Coastal Management Program
- Delaware National Estuarine Research Reserve

The entire state of Delaware, from its inland boundary to the limit of its territorial waters, has been designated as the coastal zone. Delaware's Coastal Management Program gives the Delaware Bay, Inland Bays, and ocean coasts special zoning protection from industrial development.

Delaware's Department of Natural Resources and Environmental Control (DNREC) implements the Delaware Coastal Management Program (DCMP) as a networked program under the Coastal Zone Act, the Beach Preservation Act, and various water quality and tidal wetlands protection programs. DNREC's Division of Soil and Water houses Delaware's Coastal Management Program.

Other programs tie into the state's efforts to manage its coast. Under EPA's National Estuary Program, the state is developing programs to address water quality and resource management issues in the Delaware Bay and the Delaware Inland Bays. DNREC's Inland Bays Recovery Initiative and other agency-wide programs focus on protecting the Inland Bays as well.

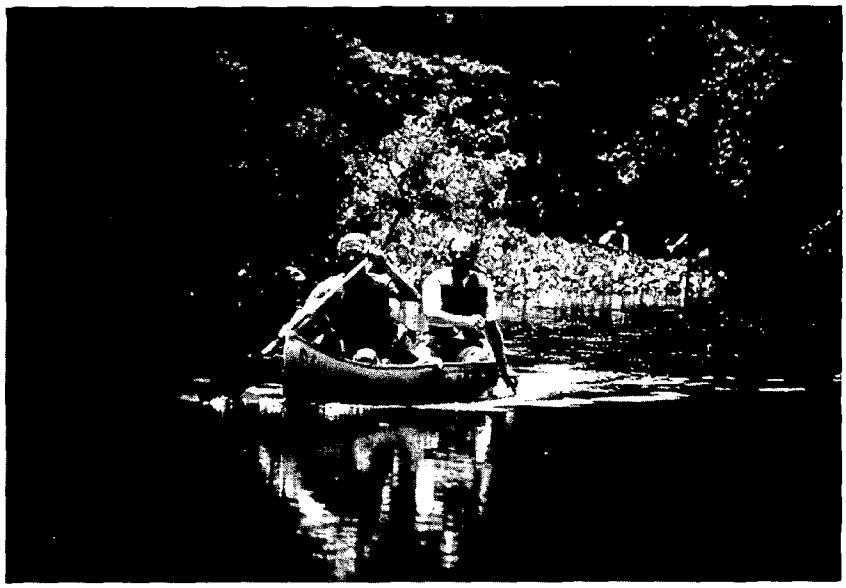
PROGRAM ACCOMPLISHMENTS

Nonpoint Source Pollution — St. Jones Watershed: Delaware has designed a project to reduce nonpoint source pollution flowing into the St. Jones River watershed by addressing both agricultural and urban nonpoint sources of pollution. As elements of this project, Delaware's Coastal Management Program is planning and implementing the "We Care" approach developed in the Inland Bays area of Sussex County, retrofitting existing stormwater facilities for water quality enhancement, and mapping groundwater recharge areas in the watershed. This project will aid an ongoing, cooperative effort between the Delaware Geological Survey and Department of Natural Resources and Environmental Control to map groundwater recharge areas in the St. Jones watershed.

Nonpoint Source Pollution — Inland Bays: Delaware also instituted a comprehensive watershed approach for controlling nonpoint source pollution for the Inland Bays. The coordination project combines cost sharing and installation of agricultural best management practices (BMPs) by private landowners, agricultural and development oriented technology transfer, and developing sediment and stormwater management regulations. The state also designed education activities to spread state information on reducing nonpoint source pollution.

Delaware joined the ranks of federally approved coastal programs in August 1979.

Cumulative and Secondary Impacts: Delaware's Coastal Management Program is concerned with assessing the impacts, both cumulative and secondary, of population growth and urban

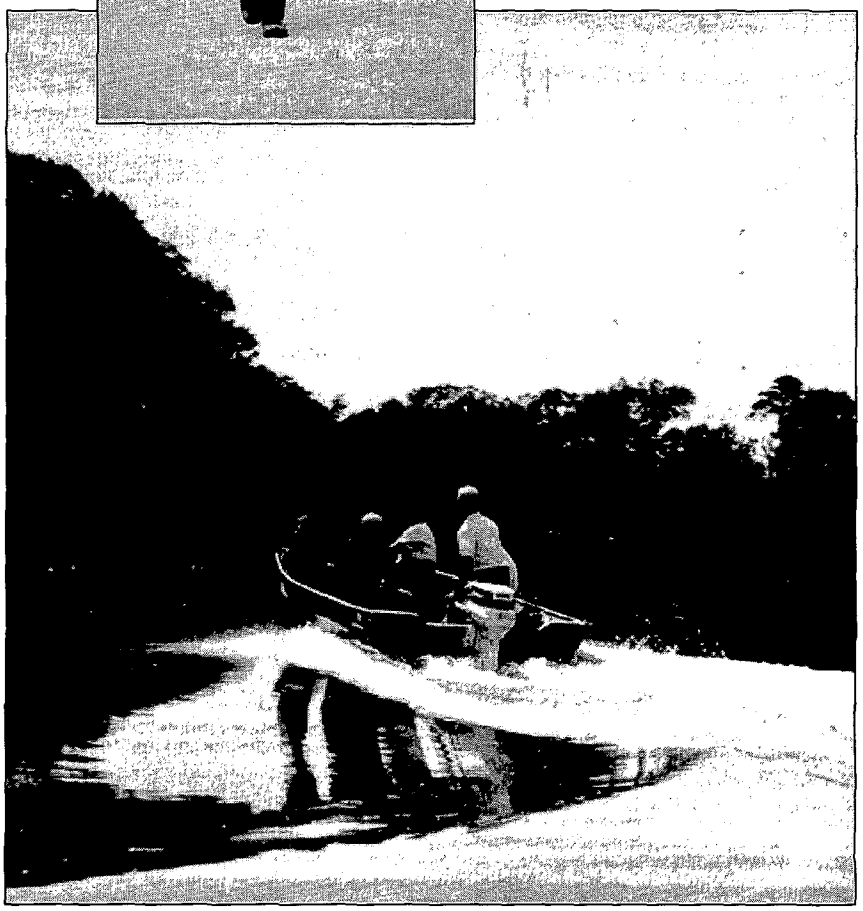


development around the coast on a watershed basis. To this end, the DCMP is working closely with the Dover City Government, Kent County, other State agencies, and area landowners, to complete a comprehensive sediment and stormwater management plan for the Dover/Silver Lake/St. Jones Watershed through the section 309 Enhancement Grants Program. Rather than just treating the symptoms, Delaware is using a "health maintenance approach" for developing this plan. Delaware will derive much of the plan from findings and predictions about the impacts of various land use scenarios on the watershed, made through computer modelling . The state is using EPA's Storm Water Management Model (SWMM Version 4.2) with ARC/INFO geographic information system functions and graphics. The coastal management program will modify, accurately calibrate and verify EPA's model with detailed quantitative data.

SUMMARY OF EVALUATION FINDINGS

Final evaluation findings, issued September 27, 1992, show that DNREC is satisfactorily adhering to programmatic requirements. The evaluation documented five areas in which the DCMP has made significant improvements in managing Delaware's coastal resources: sediment and stormwater control; estuarine conservation; wetland restoration; public outreach; and grants management.

The state received $777,000 in federal funding for FY92 and $876,000 for FY93.



The findings also identified some necessary actions for Delaware's program to address. The state must : review and update its program document; reassess its federal funding strategy to focus limited resources on high priority coastal management issue; finalize draft regulations to implement the Delaware Coastal Zone Act of 1971; and revise its federal consistency procedures to conform to CZMA regulations. The DCMP has addressed these actions.

The Delaware National Estuarine Research Reserve (DNERR), the newest of the research reserve system, consists of two components: the Lower St. Jones River and the Upper Blackbird Creek, which are managed by the Delaware Department of Natural Resources and Environmental Control. The Lower St. Jones River Component in Kent County, is only six miles from downtown Dover. It encompasses 699 acres of tidal marshes, tidal creeks, open water and uplands. The Upper Blackbird Creek Component is in New Castle County about 26 miles from Wilmington. Its 212 acres consist primarily of brackish tidal wetlands, open water and wooded uplands, 20 miles from the Lower St. Jones area.

The Delaware Reserve features full range tidal wetlands dominated by saltmarsh cordgrass and salt hay, open water of creek, river, and bay areas, and buffered by freshwater wooded fringe, farmlands and meadows. The reserve is endowed with a rich prehistory and a historic 18th century plantation setting. Numerous species of birds, reptiles and mammals make their home at the reserve including the snowy egret and great blue heron, bald eagle and slack duck, white perch, weakfish, killifish and more. The St. Jones River segment also contains spawning horseshoe crabs relished by migratory shorebirds. One pair of nesting bald eagles have taken up residence in the Upper Blackbird Creek segment of the reserve.

PROGRAM ACCOMPLISHMENTS

Management Plan: Draft and final management plans and environmental impact statements were developed for the reserve during the biennium.

Land Acquisition: By taking advantage of market opportunities, Delaware purchased 910 acres of fee simple lands and conservation easement within the proposed reserve boundary using 100% state funding at a cost of $938,000. Federal funds through NOAA may match thesse state grants when other key lands become available for purchase.

The reserve encompasses 8,600 acres, with open bay water; 3,800 acres land and wetlands; 1,000 acres river and creek waters, and 3,800 acres of Delaware Bay waters.

Facilities: The State of Delaware and NOAA have committed $175,000 to design the on-site Education and Research facility as a commitment towards the operation of the reserve.

Delaware used $260,000 of its State Greenway funds towards the construction of environmental/cultural trails, boardwalks, education stations, and a boat launch on the reserve in order to further link the implementation of multiple facets of the reserve's mission.

RESEARCH AND MONITORING PROGRAMS

Since designation, the Delaware NERR began to monitor and inventory plant and animal species, and cultural and historical resources within the reserve.

The reserve has acquired 66% of the total 8,600 acres — 24% is under state control.

Delaware joins national reserve system

The Delaware National Estuarine Research Reserve (DNERR) became the 22nd reserve of the National Estuarine Research reserve System on July 21, 1993.

Even in this short time, the program has already demonstrated a commitment to work with local interests and resourcefulness in acquiring state funding for reserve projects.

The state's commitment to keep surrounding local interest groups and citizens involved and informed throughout the reserve designation process smoothed the process. As a result, the Delaware Reserve was favorably received by the public and landowners within the proposed boundaries.

The reserve staff, with aid from Delaware's Conservation Districts, helped nearby landowners create landowner associations for each component to bring landowner's concerns to the state.

The associations, which elect different officers each year, have been involved in the development of the Final Environmental Impact Statement and Draft Management Plan, as well as the Final Management Plan for the entire reserve. These associations may even become "friends of the reserve," providing volunteer support to meet the reserve's conservation needs.

In just the first year, DNERR staff secured $252,000 through the Greenways Program in Delaware to plan and construct a marsh boardwalk.

The 1,300-foot boardwalk will be used for interpretative purposes. A 33,000-square-foot NERR Education and Research Center at the St. Jones Component is in the architectural drawing stage.

The State of Delaware plans a formal designation ceremony for the reserve in the spring of 1994.

As the reserve moves into the operating mode, staff will monitor water resources and the reserve's contributing watershed; protect, restore and rehabilitate resources; and conduct research studies to determine resource response to induced activities in the controlled environment of the reserve.

The reserve received $100,000 in federal funding during FY92 and $110,000 in FY93.

EDUCATION AND OUTREACH PROGRAMS

Also since designation, the Delaware NERR began to develop education and outreach programs, defining goals for those programs that fit the site's management plan.

Education services will be designed to facilitate information exchange between estuarine researchers and the coastal users and decision makers. Education and outreach activities will target adults who can, in turn, develop children's awareness of human uses, misuses, conservation, and protection of estuarine resources.

These programs will also be designed to instill an environmental/cultural ethic geared toward encouraging beneficial human use of estuarine resources.

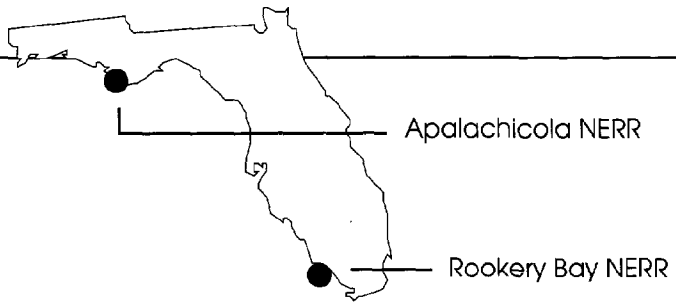
SUMMARY OF EVALUATION FINDINGS

NOAA did not conduct an evaluation during FY92 or FY93.

The reserve lies within the Virginian biogeographic region.

Florida

- Florida Coastal Management Program
- Apalachicola National Estuarine Research Reserve
- Rookery Bay National Estuarine Research Reserve



The Florida Coastal Management Program (FCMP) is a networked program comprised of 26 State laws and their implementing regulation. The CZM boundary includes the entire state and its territorial waters. Eleven separate agencies administer these laws and regulations, with the Department of Community Affairs' Office of Coastal Management, designated as the lead agency in charge of programimplementation. Day-to-day administration rests primarily with the Department of Community Affairs (DCA) and the Department of Environmental Protection (DEP) — formerly the Department of Environmental Regulation and the Department of Natural Resources. The DCA and DEP coordinate their activities under a memorandum of understanding (MOU), which was signed in 1981 and recently updated in order to formalize their working relationship and better coordinate Florida's approach to coastal management. A Florida Coastal Resources Interagency Management Committee (IMC), which includes the heads of all FCMP agencies and the chairperson of the Florida Citizen Advisory Committee on Coastal Resources Management (CAC), formulates and coordinates policy and resolves disputes for the FCMP. The CAC, whose members are appointed by the Governor, provides ongoing public input into the program. The Governor's Office of Planning and Budget (OPB) assists the DCA with federal consistency reviews.

PROGRAM ACCOMPLISHMENTS

ELMS III Legislation: With CZMA funds, Florida supported the third Environmental Land Management Study Committee (ELMS III) study and recommendations. In 1993, legislation was passed which implemented many of the ELMS III study recommendations. Among other things, the legislation defined the state's coastal high hazard area as the area inundated by a Category I storm; and directed the IMC to: establish a county-based, prioritized program for acquiring coastal properties; develop and implement a public outreach strategy for the FCMP; develop and implement a pilot coastal water quality improvement program; identify incentives to encourage counties to adopt county-wide marina siting plans; establish, by rule, a process for resolving disputes regarding the designation of spoil disposal sites; and study and prepare recommendations on coastal management funding. FCMP and IMC staff are now working to complete all of these assigned tasks.

The state coastal program was approved by NOAA in September 1981.

Public Access: Florida is using section 309 enhancement grant funds to develop the authority to require public access to state-funded beach restoration projects. The state will have the authority to impose conditions on the projects to ensure that provisions are made for public access.

Public Outreach and Participation: In 1992, the Governor re-established the Citizens Advisory Committee on Coastal Resource Management (CAC), and reappointed its membership. The legislature also adopted legislation to make the Chairperson of the CAC a voting member of the IMC. To directly expand its public

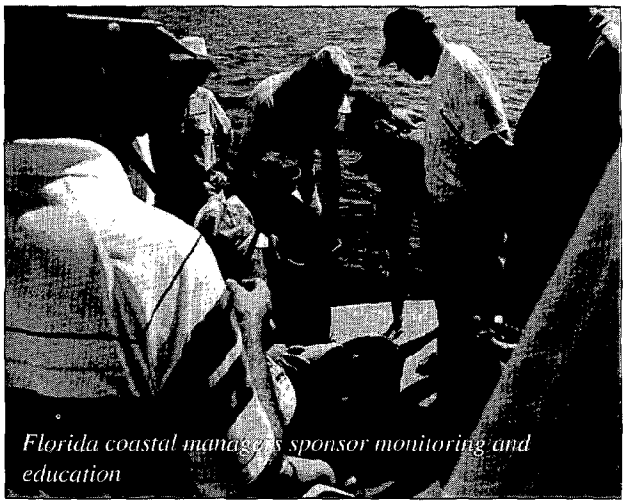
Ecotourism has become an issue for coastal managers.

outreach efforts, the DCA hired a full-time publication specialist. With this help, the FCMP has produced new fact sheets on the program, the IMC, and the CAC; technical bulletins on various sources of technical assistance and funding programs; and a quarterly newsletter.

Improvements to Cooperative Agreement Management and Administration: The IMC adopted the Florida Coastal Action Plan in March 1992 to set funding priorities for the FCMP. Florida adopted rules (9M-1 F.A.C.) governing the administration of state coastal zone managment funds. The state is also revising rules to improve how the State applies for, evaluates and disburses federal funds. In October 1993, the IMC adopted the revised Coastal Action Plan for 1994-96, which more clearly specifies priority issue areas.

To acquaint the public with new state coastal zone management subgrant application procedures, FCMP staff conducted 15 public workshops during FY92 and FY93. The FCMP is working with five regional agencies to organize workshops on a variety of coastal related issues.

Hazard Mitigation—IMC Winter Storm Task Force: At the request of the Governor,the IMC created a task force to evaluate the impacts of the March 13, 1993 winter storm and develop recommendations for mitigating impacts of future storm events. The IMC Winter Storm Task Force is comprised of IMC agencies and other state, federal, and local representatives, with staff support provided by the FCMP. The task force conducted public meetings in Dixie, Levy, and Taylor Counties to seek public input and comment.and has worked to resolve issues that would require state action in the rebuilding process. The task force identified 17 issues and made recommendations, adopted by the IMC, and forwarded to the Governor and Cabinet.



Florida coastal managers sponsor monitoring and education

Point Washington Land Purchase: At the request of the Governor and Cabinet, the IMC established an *ad hoc* committee to determine whether the state needed all of the approximately 18,000 acres of land purchased from the Resolution Trust Corporation to achieve the conservation goals for which the state bought the land, and to address local government concerns about removing so many acres from local tax rolls. The *ad hoc* committee concluded that portions of the land were, surplus to the state's needs and recommended that the state study all of south Walton County — to determine the area's conservation and development needs. The study, funded by the state legislature, is ongoing.

SIGNIFICANT PROGRAM CHANGES

In April, 1992 the state legislature passed legislation transferring lead agency responsibilities and program administration from the Department of Environmental Protection (DEP) to the Department of Community Affairs (DCA). The legislation placed the FCMP in the DCA's Office of the Secretary. Florida submitted the legislation as a program change, which OCRM approved in 1992. Since then the state has hired an Executive Director for the FCMP, and hired 15 full-time staff members to work on administering the coastal management. program.

Florida also revised its interagency operating agreement. which establishes the State's responsibilities and procedures for Federal Consistency Review. The new operating agreement was executed on June 14, 1993.

agreement designates the DCA as the state agency responsible for issuing all consistency concurrences or objections, except where the DEP has an analagous state permit; in those cases, DEP could issue a consistency determination.

SUMMARY OF EVALUATION FINDINGS

Final evaluations findings, issued in June, 1992, indicated that the state was not fully adhering to the provisions of the federally approved FCMP. These findings contained several necessary actions for the state to address including: relocating and fully staffing the program to enhance the ability of the lead agency to adequately administer the approved FCMP; strengthening the policy formulation and coordination function of the IMC; providing for better evaluation of the effectiveness of implementing the FCMP; improving financial assistance allocation and management; clarifying and documenting the procedures used by the State to conduct federal consistency reviews; and improving public involvement in the implementation of the FCMP. All necessary actions related to the 312 evaluation have been accomplished by the state.

Florida's coastal program received $2,387,600 in federal funding in FY92 and $2,388,600 in FY93.

The findings also noted accomplishments in the state's: use of CZM funds to assist the development of watershed management plans as part of the Surface Water Improvement Management program; development of a computerized program to facilitate federal consistency review; and sponsorship of the successful "Navigating the Nineties" conference that attracted 300 participants.

Florida takes charge of on-site sewage disposal

Through the CZMA enhancement grants program, Florida is addressing the cumulative impact of the use of on-site sewage disposal systems in coastal development.

The state used enhancement funds to develop legislation which expands its regulatory authority over septic systems. With this expanded authority, the state will consider the environmental quality of coastal waters and resources, as well as the public health consequences in managing and siting on-site sewage disposal systems.

As part of this project, the coastal program has adopted memoranda of understanding between relevant agencies, established an advisory committee, and prepared a report for the governor and legislature concerning on-site sewage disposal systems on lots platted before 1972. Florida's coastal program is also testing different technologies for alternative on-site sewage disposal.

Florida's regulations on management of on-site sewage disposal systems were incorporated into the FCMP with NOAA's approval in December 1993.

These regulations include Chapter 381, F.S. and Chapter 10D-6, F.A.C. Chapter 381 gives the Department of Health and Rehabilitative Services the authority to permit the installation and construction of on-site disposal systems, which include septic tanks, package sewage plants, and alternative systems, in order to prevent the spread of communicable diseases, degradation of water quality, and contamination of coastal resources.

Chapter 10D-6, Florida Administrative Code, which implements Chapter 381, provides permitting standards, many of which are designed to set a minimum level of protection.

The incorporation of these regulations into the FCMP will provide a more uniform, comprehensive management of on-site disposal systems and their asssociated impacts, protect the surface and ground waters that serve for public drinking and recreation, and protect marine and estuarine organisms from contamination by reducing nutrient and pathogen loadings.

The Apalachicola National Estuarine Research Reserve and surrounding drainage basin contain barrier islands, as well as estuarine, riverine, floodplain, and upland environments. Among the habitats within these environments are beaches, oyster bars, salt and fresh marshes, forested floodplains, and sandhills. Within the reserve, 1162 species of vascular plants have been identified. More than 1300 species occur in the Apalachicola drainage basin; of these, 103 are listed as threatened. The reserve also houses the largest stand of tupelo trees in the world, which supports a $500,000 a year honey production industry.

The reserve sponsors education tours for students learning about science and coastal ecosystems.

The Apalachicola basin is rich in species diversity. It has the highest species density of amphibilans and reptiles in all of North America, north of Mexico. Counting subspecies, 47 species of amphibians and 87 species of reptiles can be found in the basin. The reserve also boasts 315 species of birds within its boundaries — 100 species of which nest at the site and 21 of which are listed as threatened or endangered. Apalachicola NERR is home to fifty-seven species of mammals, including the threatened Florida black bear, endangered West Indian manatee, and Indiana and gray bats. Under the water's surface, more than 180 species of fish have also been documented in the reserve, and through research, the reserve has doubled, to 362 species, its list of marine mollusks found within the reserve and adjacent portion of the Gulf of Mexico.

Apalachicola Bay, with its rich species diversity, is one of the most productive estuaries in the Northern Hemisphere. Over 90 percent of all oysters harvested in Florida, and over ten percent of the nation's crop, come from waters within the Apalachicola Bay Reserve.

Florida's Department of Environmental Protection manages the reserve, and employs its 11 person staff. The reserve's headquarters is a 3,300 square foot facility containing office space, a research and teaching laboratory, and an auditorium with 100-person seating capacity. An annex houses office and lab space for the reserve's research staff.

PROGRAM ACCOMPLISHMENTS

During the biennium, the staff drafted a management plan for the reserve, updating the plan that was put in place when the reserve was designated in 1979.

Federal funding granted the reserve with $110,000 for operation in FY92 and $100,000 in FY93.

Most of the reserve's 193,758 acres is state-owned, submerged land.

RESEARCH AND MONITORING PROGRAMS

The reserve provides support for visiting scientists. During the biennium, the reserve continued an ongoing study of on-site disposal systems on St. George island to determine whether the systems are adequate or whether a centralized sewage treatment system is needed for the island. Efforts are also underway to collect

baseline information on contaminants in the sediments and on sedimentation rates within the reserve.

The reserve's two research staff members worked on 28 research projects during fiscal years 1992 and 1993. With respect to six of the projects, research staff are the principle investigators; on the remainder, they provide research support. The reserve's priority research topics include water quality monitoring; correlating biological components of water quality with river flow and upland development; commercial and recreational fishery management; and food chain research.

The reserve was designated in 1979 in the Louisiana biogeographic region.

EDUCATION AND OUTREACH PROGRAMS

The Apalachicola Bay NERR provides its audiences with a variety of methods to learn about estuarine ecology in a natural setting. On-site education opportunities include hands-on exhibits, cultural experiences, an audio-visual lending library, slides and audio-visual presentations, a guest lecture series, interpretive field trips and hikes into river, bay, and barrier island habitats, teacher workshops, and training to certify oystermen. Among its off-site educational opportunities, the reserve offers classroom curriculum materials, travelling displays, slide and audio-visual presentations, and publications such as newsletters and brochures. Among its publications, the reserve developed a field trip activity guide for the reserve through its education program, which targets an audience ranging from Pre-K through adult.

SUMMARY OF EVALUATION FINDINGS

No evaluation of the Apalachicola National Estuarine Research Reserve was conducted during the biennium. The next evaluation is scheduled for September 1994.

Reserve heightens students' science appreciation

Minority and underprivileged elementary students in the Apalachicola Bay area may have gained a greater appreciation for the resources of the reserve over the summer of 1993.

Approximately 90 fourth through sixth graders from the three local elementary schools spent three days at the reserve as part of a 12-day summer school program on math, science and computers.

In two sessions, one in late June and another in early July, students explored the reserve, spending one day on an island, one day on the river flood plan and the final day at the reserve center.

Students experienced hands-on environmental activities, such as wastewater treatment and monitoring. The program, funded by an education grant to the local public school system, is the first of its kind for the reserve.

The Rookery Bay Reserve features pristine mangrove forests surrounding shallow bay waters. The upland buffer consists of pine flatwoods and dry-zone scrub. Bottle-nose dolphin thrive in Rookery Bay's shallow waters, as does the manatee. Red, white and black mangroves make up the reserve's pristine forests, which are home to the white ibis. The state has continued to acquire land, adding to the reserve's area. The reserve staff is employed by the Florida Department of Environmental Protection — the state agency responsible for managing the site.

PROGRAM ACCOMPLISHMENTS

In 1993 the State of Florida acquired 2,300 acres on Key Island, the largest remaining unbridged barrier island in Florida for inclusion within the reserve. The purchase represents the culmination of three years of negotiations between the State of Florida and the owners. The land will increase the possibility for public environmental education, increased research, and of course, improved protection of the land. Efforts are underway to expand the reserve's boundaries to include this island.

The reserve was designated in 1978 in the Western Indian biogeographic region.

In 1993, the state of Florida spent $20 million, with another $750,000 in federal money, to acquire over 3,000 acres for the reserve — including Key Island. The reserve also completed the installation of a new modular office building in 1993, funded by NOAA.

The reserve staff revised the site's management plan during 1993, and conducted a public meeting on the revised plan. Approval of the management plan is expected in early 1994.

RESEARCH AND MONITORING PROGRAMS

Research activities include mangrove restoration and monitoring, water quality monitoring, habitat mapping, and wetland studies. Rookery Bay NERR has one of the largest state-supported research programs in the system. Research activities include studies on the impacts of mosquito control pesticides on non-target estuarine species, recovery of mangroves from the impacts of Hurricane Andrew, restoration of mangrove ecosystems, and the effects of eutrophication on phytoplankton and mangrove communities. The reserve is home to the second oldest long-term monitoring plots for mangrove forests anywhere in the world. Through its monitoring program, the reserve measures estuarine water quality and surveys the number of wading birds and manatees.

In FY92, the reserve operated using $110,000 in federal funds and in FY93, using $190,000.

EDUCATION AND OUTREACH PROGRAMS

The Rookery Bay Reserve has one of the most accomplished education programs in the Reserve System. Programs include high school field trips, in-class lectures and demonstrations, career days, science fairs, and teacher workshops. Extending its education and outreach efforts to adults, the reserve developed a brochure for "locals" entitled "*Keep It Clean*" which informs the public on how to manage households in an environmentally sensitive manner. The reserve also conducts coastal zone management seminars for resource decision-makers at the state and local levels.

The Friends of Rookery Bay, Inc., a volunteer non-profit organization for the reserve, has sponsored a quarterly bird census, and hosted an annual Catch and Release Fishing Tournament as a fund-raiser and fisheries conservation event.

A non-profit organization, The Conservancy, Inc., owns and operates an interpretive center within the reserve. Through a cooperative agreement The Conservancy and the reserve share resources to reach a wide range of target audiences.

The reserve has developed a popular series of education courses and weekend seminars for the adult public, on topics ranging from Inshore Fishing and Birdwatching to Gulf Coast Cooking.

SUMMARY OF EVALUATION FINDINGS

An evaluation of the Rookery Bay Reserve was conducted in 1993. Final evaluation findings are pending.

Most of the reserve's 8,400 acres is state-owned land.

Reserve, CZM collaborate to educate coastal users

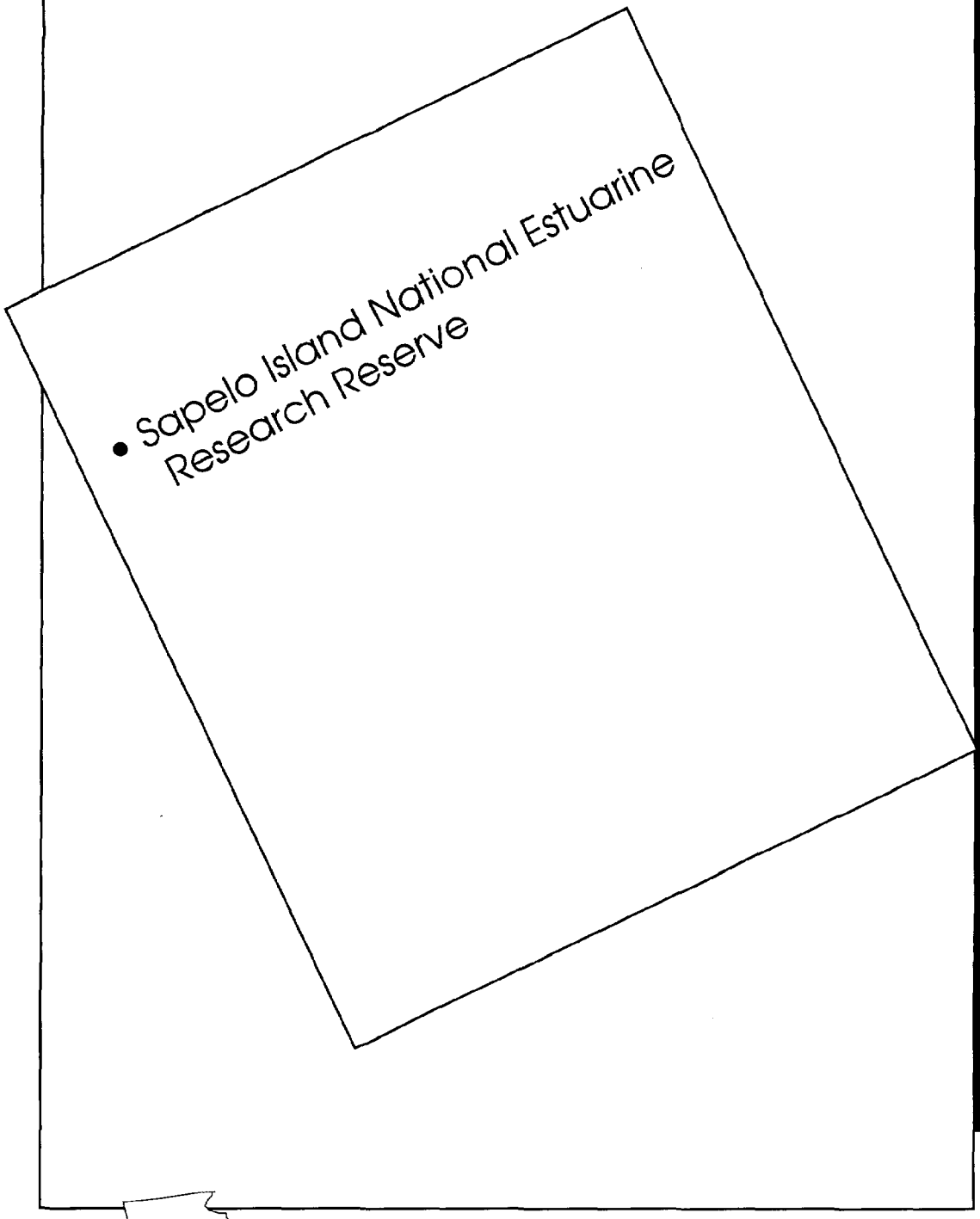
In a spirit of cooperative resource management, the state's Coastal Management Program picked up on the Coastal Resource Management Workshop Series offered by the Rookery Bay Reserve.

Reserve staff members coordinated the original series, arranging for experts to voluntarily speak to groups of 30-40 people on topics ranging from land acquisition to pesticide use and oil spill response.

The free workshops targeted local and regional planning and permitting agents and environmental industries. To give participants a clear picture of the topics, the day-long programs were divided into two segments: technical discussion and field trips.

The program, which has run six workshops a year since 1989, has proven so useful that the state's Coastal Management Program will expand the series, sponsoring workshops at five additional sites. The new spotss include Apalachicola Reserve, Florida Keys National Marine Sanctuary, the Environmental Protection Agency's Indian River National Estuary Program, a community college in Tampa, and a university in Jacksonville. The extension program begins early in 1994.

Georgia



Sapelo Island NERR

The Sapelo Island National Estuarine Research Reserve is located in the midst of an estuary where the currents of Doboy Sound and the Duplin River meet. The reserve encompasses ecologies typical of the Carolinian biogeographic region, which stretches from North Carolina into upper Florida, and incorporates a coastline characterized by vast expanses of tidal salt marshes protected by a buffer of barrier islands. Sapelo Island is the fourth largest of a string of 13 barrier islands along the Georgia coast.

The Sapelo Island NERR contains about 2,300 acres of upland forest inhabited predominantly by stands of southern hardwoods (particularly live oak), pure stands of pines (long leaf and loblolly), white-tailed deer, wild turkey and other wildlife. The reserve also contains a network of oak, cedar and palm upland hammocks scattered throughout the salt marsh and beach areas and a healthy beach and dune system fronting the Atlantic Ocean. The greatest portion of the reserve is comprised of extensive belts of salt marsh, which hosts a wealth of inhabitants. Smooth cordgrass (*Spartina alterniflora*) provides some 90 percent of the salt marshes on the reserve. At low tide, members of the diverse salt marsh community come to feed and reproduce in and around the marshes along the exposed river and creek banks. The Duplin River, which flows through the heart of the reserve, serves as a nursery ground for the development of juvenile shrimp, menhaden, Atlantic blue crabs, sea trout, sea bass, oysters, clams and other marine life.

The reserve includes the entire Sapelo Island, in the Carolinian biographic region.

PROGRAM ACCOMPLISHMENTS

Management and Staffing: In the summer of 1993, administration of the Sapelo Island Reserve was transferred from the Wildlife Resources Division of the Georgia Department of Natural Resources to the Parks and Historic Sites Division. At the same time, a new Reserve Manager was employed to coordinate the educational, interpretive, research and monitoring activities of the Sapelo Island NERR. A new Education Coordinator was hired at the end of 1993. The Department of Natural Resources also appointed new members to the reserve's Advisory Committee in 1993. This committee represents various disci-

plines and public interest groups on a local, regional and state level.

Land Acquisition: In 1992, the reserve bought the Sapelo Island lighthouse tract on the south end of the Island, with partial funding from OCRM. This purchase added 205 acres of tidal salt marsh and oak and pine hammock land to the reserve, as well as an historic brick lighthouse built in 1820 and abandoned.

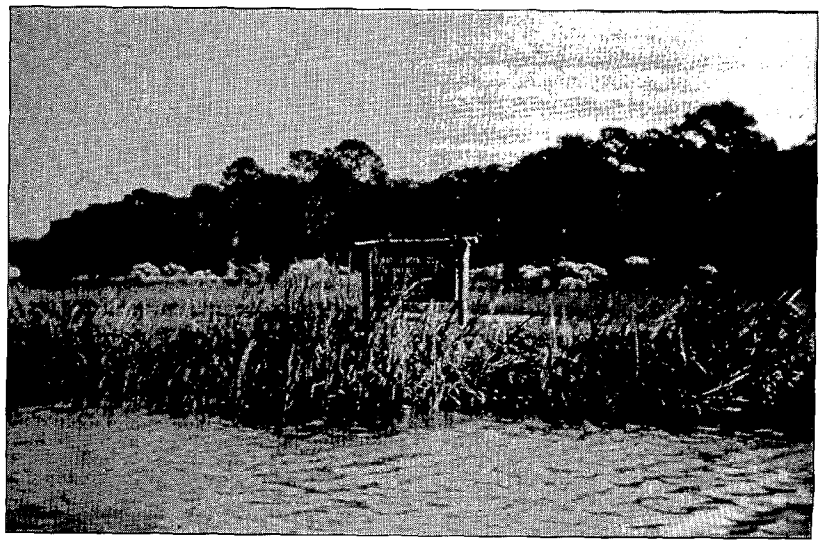
Designated in 1976, the reserve now covers 6,110 acres, giving the site a 100% complete acquisition status.

RESEARCH AND MONITORING PROGRAMS

The reserve attracted a variety of estuarine research projects funded by universities, state and federal agencies. Scientists from the University of Georgia Marine Institute conduct most of the research at the reserve. The Marine Institute, also within the reserve, is now in its 40th year of research on Sapelo Island, employing seven full-time scientists and over 60 visiting scientists. Through the Marine Institue, scientists have studied the many facets of salt marsh and barrier island ecology, including microbial processes, biogeochemistry, and the population dynamics of the salt marsh and other estuarine environments. Most of the Marine Institute's 600 or more scientific publications address the general ecology and system energetics of the Sapelo Island Reserve's salt marshes.

During the biennium, OCRM funded a study on the settlement of oyster larvae in an area over time and space to determine recruitment pattern at several sites within the reserve. Combined with pathological and gametogenic studies of spat and adult oysters, as well as hydographic data recorded at each site, the database established by this study will provide management agencies with the biological information necessary for the establishment of effective fishery and resource management guidelines.

OCRM also provided funding to upgrade weather stations and Hydrolab Data Sonde III units for the Marine Institute's network, which will greatly aid the reserve's monitoring program. With this state-of-the-art equipment, the Sapelo Island Reserve



can more effectively gather data at fixed depths from the bottom of the Duplin River, and investigate the long-term differential between water mass at the bottom and near the river's surface. OCRM funding replaced older weather monitoring equipment with Omnidata systems, including barometric pressure sensors and electronic sensors to improve the reliability of tide height data collection.

As part of Georgia's continuing monitoring efforts and as part of its shellfish program, the Coastal Resources Division of Georgia's Department of Natural Resources conducts bi-monthly water sampling at four different sites within the reserve. Georgia's Environmental Protection Division collects over 22 physichemical parameters each quarter and samples metals and pesticides in water, oysters and sediments annually. Over the next two years, the Marine Institute will compile a comprehensive ecological characterization profile for the reserve using OCRM funding.

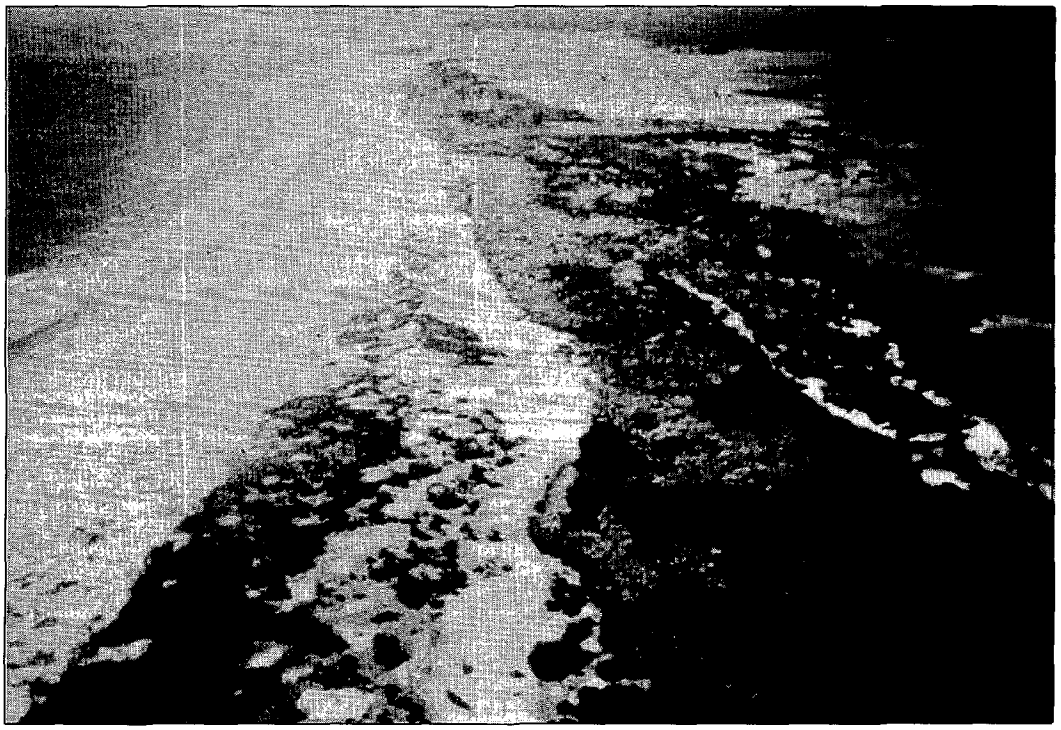
Sapelo Island Reserve relied on $110,000 in federal funding during FY92 and $109,000 in FY93.

EDUCATION AND OUTREACH PROGRAMS

During the biennium, the Sapelo Island Reserve developed detailed plans to expand its educational programs and public relations outreach efforts. More than 6,000 visitors toured the reserve during the biennium as part of the reserve's school outreach program, special group activities, and public tours offered three days a week.

The education program sponsored slide talks, films, and guided tours of the Reserve. OCRM provided the reserve with funds to develop three videos which examine the value of wetlands in fishery production, the role of tides in estuarine productivity, and the reserve's efforts to monitor and assess the health of the estuarine environment.

Georgia's Department of Natural Resources acquired a modern, new 65-foot ferry vessel, the *Annemarie*, in 1993 to transport island residents and commuters to the mainland, and take visitors to the reserve. The reserve nows plans to establish a new mainland visitors interpretive center, upgrade and expand the existing interpre-



tive center on the Island, and design an interpretive nature trail at the site. In 1992 and 1993, the reserve actively participated in the nationwide National Geographic Kids Network outreach program, with two local schools taking an active role. Special ecological, natural history, cultural history and archaeological tours are conducted regularly on the reserve.

SUMMARY OF EVALUATION FINDINGS

A routine program evaluation was conducted in December 1992 with final evaluation findings issued in May 1993. The findings highlighted program accomplishments in purchasing the historic lighthouse tract and a new ferry, and establishing a task force to determine restoration of reserve property and examine timber practices on the island. However, the evaluation found that the Department of Natural Resources was not operating the reserve in a manner fully consistent with the goals and objectives of the reserve system and was not fully adhering to the reserve's management plan.

Major concerns identified in the evaluation were: shortfalls in facility development, staffing, the education program and program visibility; the lack of advisory committee meetings; issues surrounding the adjacent community and Marine Institute, and grants and timber management. The state has made considerable progress since the evaluation. The state transferred reserve management responsibility to the Parks and Historic Sites Division, hired a new reserve manager, committed to developing a mainland and on-island interpretive center, and hired both a part-time research coordinator and a full-time education coordinator. Having made such progress since the evaluation, OCRM believes that the state is re-establishing its firm commitment to the Reserve Program.

Sapelo Island monitors change through GIS

With NOAA/OCRM funding, the Marine Institute began developing Geographic Information System (GIS) analysis techniques, which will help document land use patterns and changes in the Sapelo Island Reserve.

Other reserves or barrier island systems may find Sapelo's GIS analysis a useful prototype. Researchers are combining GIS analysis, remote sensing, global positioning system satellite surveys and photogrammetric techniques to compare historical land use and land cover data to current conditions on the reserve.

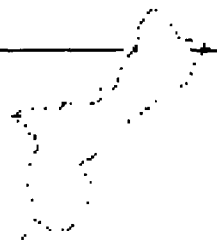
So far, the system has documented alterations in the salt marsh caused by agricultural diking experiments from the 1800s and early 1900s, as well as shifting plant communities along the coast due to beach erosion.

Researchers can overlay an original photo mosaic onto a digital elevation model to create a three dimensional perspective of the area.

The GIS model is valuable to scientists and resource managers in evaluating possible impacts of upland management practices on downstream marshlands and evaluating proposed coastal management scenarios to make ecologically sound management decisions.

Guam

- Guam Coastal Management Program



The entire island of Guam and the territorial waters which surround it are included in the coastal zone. To manage these areas, the Territory created the Guam Coastal Management Program (GCMP)—a networked program — with the Bureau of Planning acting as the lead agency. Coastal policies and authorities set forth in Executive Order Numbers 78-20, 21, 13, and 37; the Comprehensive Planning Enabling Legislation; and the Territorial Seashore Protection Act govern the management of coastal resources. The seven-member Territorial Land Use Commission (TLUC), appointed by the Governor, makes land use decisions throughout the territory, with the Department of Land Management acting as staff to the commission. The Development Review Committee (DRC), established by Executive Order No. 90-09, provides an inter-governmental review of all projects submitted to the TLUC. A representative of Guam's Coastal Management Program sits on the Development Review Committee. Several other territorial agencies that make coastal resource management decisions are networked into the coastal program to ensure that coastal decisionmaking throughout the territory is consistent with the territory's coastal policies. These networked agencies include Guam's Environmental Protection Agency, the Public Utility Agency of Guam, and the Departments of Agriculture, Public Works, Parks and Recreation, Commerce, and Public Health and Social Services.

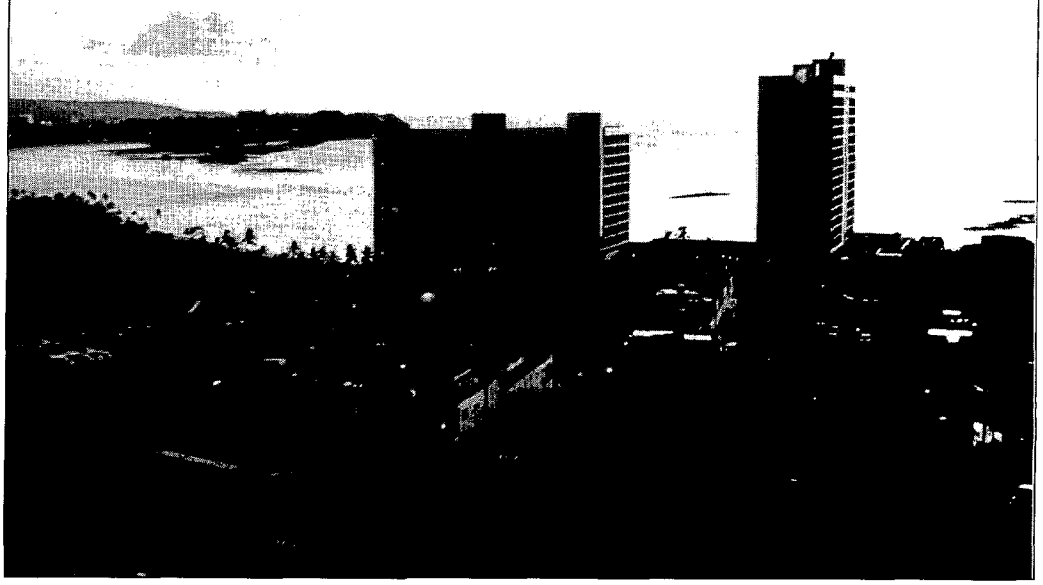
The Territory of Guam received federal approval on its coastal program in August 1979.

PROGRAM ACCOMPLISHMENTS

Comprehensive Land Use Planning: Guam is developing a comprehensive Master Plan, which will include elements such as land use, community design, and conservation and development policies. Guam's Coastal Management Program has a central role in the master planning effort and is developing the Geographic Information System mapping and data base system for that effort. Data stored in the system will include lot lines, topography, and boundaries of limestone forests and the seashore reserve. Guam's database will provide information on zoning, land use, lot size, infrastructure availability, and endangered species or habitat.

Public Access: Guam's Coastal Management Program is working to improve public access to inland sites, important

Guam's CZM program is responding to the territory's rapid development by designing a comprehensive master plan to guide the growth.



viewplanes, historic sites, and other less traditionally addressed areas and access for physically disabled persons to all areas through a public access project. This two-year project involves a survey of public needs and expectations, identification of existing and potential access sites, and constraints to access development. To implement the plan, Executive Orders and other regulatory tools will be developed as needed.

Analysis of Past TLUC Actions: Guam's coastal program will analyze all TLUC actions for the period from 1987 through 1992 to identify patterns in requests, approvals, and zone changes; conditions on approved permits; applications involving wetlands; impacts of approvals on public access; approvals in hazard areas; approvals on sites over Guam's sole-source aquifer; and number of acres taken out of agricultural zoning. This analysis will be used to identify shortcomings, strengths, and weaknesses in the review and permitting process and to develop recommendations for improving the system to better protect natural resources while ensuring an adequate response to human community needs.

Updated Program Document: Although new laws, rules, regulations, and executive orders have been adopted and approved as changes to the Guam Coastal Management Program since its approval in 1978, the program document has not been revised. After incorporating these regulatory changes through the program change process, GCMP staff will update the program document to reflect these changes. The new document will be published and made available to the public.

SIGNIFICANT PROGRAM CHANGES

Guam's Coastal Management Program did not submit any program changes during the biennium.

SUMMARY OF EVALUATION FINDINGS

The final evaluation findings issued October 29, 1992, indicate that the territory is implementing and adhering to the provisions of its approved coastal management program. Findings cited accomplishments in improving the land use review process for projects that require clearance from the Territorial Land Use Commission; developing a geographic information system to catalog and assess natural and cultural resources; implementing a Recreation and Water Use Management Plan; and expanding the public information program. Evaluation findings recommended that the state improve monitoring and enforcement activities, upgrade participation in wetlands issues, analyze the coastal management network, update the program document, and improve coordination with federal agencies.

The Guam coastal program operated using $565,200 in federal funding during FY92 and $586,200 during FY93.

Earthquake cuts coastal conference short

An earthquake measuring 8.1 on the Richter scale cut short the 11th annual Pacific Basin Coastal Zone Management Conference, hosted this year by Guam.

The earthquake shook the island on Sunday, August 8, just as the opening reception for the conference—originally scheduled for Aug. 8-11, 1993 — was about to begin.

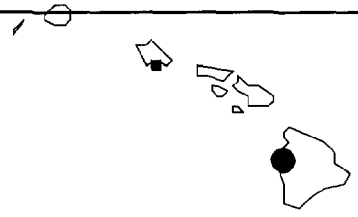
Ironically, the theme of this year's conference was hazards in the coastal zone.

Conference participants conducted an abbreviated version of the conference on the afternoon of Aug. 9 in a building without electricity or running water and toured the island to survey the damaged coastline.

In addition to the 8.1 earthquake of Aug. 8, Guam also recently suffered from hits of typhoons Yuri, Russ, and Omar.

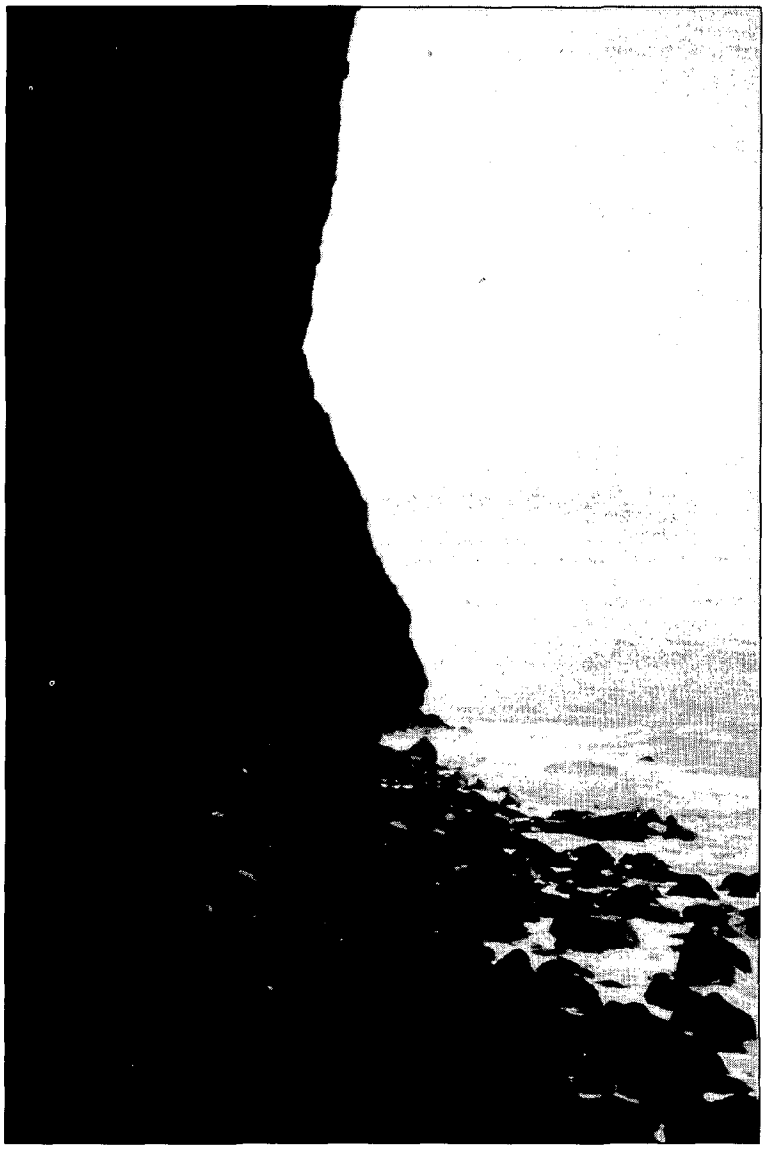
Hawaii

- Hawaii Coastal Zone Management Program
- Waimanu Valley National Estuarine Research Reserve



Waimanu Valley NERR

The Hawaii Coastal Zone Management (CZM) Program depends primarily on statutory provisions that direct state agencies and county governments to conduct their permitting and non-permitting activities in compliance with the coastal policies established in the Hawaii Revised Statutes. The Office of State Planning (OSP) is the lead agency for the Hawaii Coastal Zone Management Program.



PROGRAM ACCOMPLISHMENTS

Hazard Protection: The Office of State Planning, through a federal program administration grant, completed a report entitled *Beach Management Plan with Beach Management Districts.* The report was conducted in order to develop recommendations to preserveundeveloped beaches while allowing for intelligent and safe development along the shore, and to address the erosion problems of currently developed areas of the coasts. The report found that, since 1928, approximately eight to nine miles — close to 15 percent — of the sandy shorelines studied on Oahu have disappeared or been harmed by shoreline stabilization structures. Beach loss has accelerated due to a combination of factors such as sea-level rise and hardening of the shoreline. The report recommended Beach Management Districts (BMDs) as an alternative to individual hard control structures.

Hazard Protection: The Office of State Planning is nearing completion of its study on the viability of beach nourishment from offshore sand sources. As part of this study, OSP is reviewing the procedures, permits, and environmental assessment requirements associated with offshore sand mining and beach nourishment.This study will produce recommendations for streamlining and improving the regulatory regime for beach nourishment. The state is also trying to understand the physical properties of the offshore sand bodies. To do this, OSP is compiling existing information on sand deposits off Oahu.

Natural Resource Protection: The Office of State Planning received a technical assistance award to study the environmental damage from Hurricane Iniki, which hit the Island of Kauai on

Sept. 11, 1992. Immediately following the storm, there was an opportunity to capture valuable data for determining the extent of damages to the marine environment and the physical processes that caused the damages, and to correlate the findings with the meteorological events and supratidal patterns during that period. The final report was completed Sept. 30, 1993.

Hazard Protection: With combined section 309 enhancement grant funds and section 306 program administration funds, Hawaii is completing a Hazard Mitigation project. This project will include recommendations on preferred mitigation options and proposed language for enforceable coastal natural disaster mitigation policies to reduce Hawaii's vulnerability of life and property from future hurricanes and tropical storms. The state is using a participatory hazard mitigation planning approach involving a wide range of federal, state and county government officials, legislators, architects and engineers, and environmentalists. The Office of State Planning is convening a Hazard Mitigation Policy Advisory Group, with interest groups representatives, to participate in and serve as an advisory committee for the project. This project is being conducted by the University of Hawaii and consultants.

SIGNIFICANT PROGRAM CHANGES

In 1993, NOAA approved numerous routine program implementation changes from the 1990 and 1991 Hawaii legislative sessions. Also, the state's revised Hawaii Coastal Zone Management Program document was submitted and approved.

SUMMARY OF EVALUATION FINDINGS

No evaluation of Hawaii's Coastal Zone Management Program was conducted during the biennium. The next evaluation is scheduled for February 1994.

The program received approval in September 1978, and operated using $840,000 in federal funds in FY92 and $837,000 in FY93.

The Waimanu Valley National Estuarine Research Reserve (WVNERR) covers almost an entire valley-stream system on the northeast windward coast of the Island of Hawaii, known as the Big Island.

Waimanu Valley represents the insular biogeographic region and can best be described as a drowned river valley with some tidal influence at the mouth of the stream. Geologically, the island chain is young, which means its estuaries have not developed as much as the more mature estuaries of the eastern United States.

Waimanu Valley's shoreline uniquely features steep slopes, rising as high as 465 meters (1,528 feet). Access is somewhat restricted. Weather permitting, the valley can only be reached by boat, helicopter, or a seven-hour hike from the nearest valley.

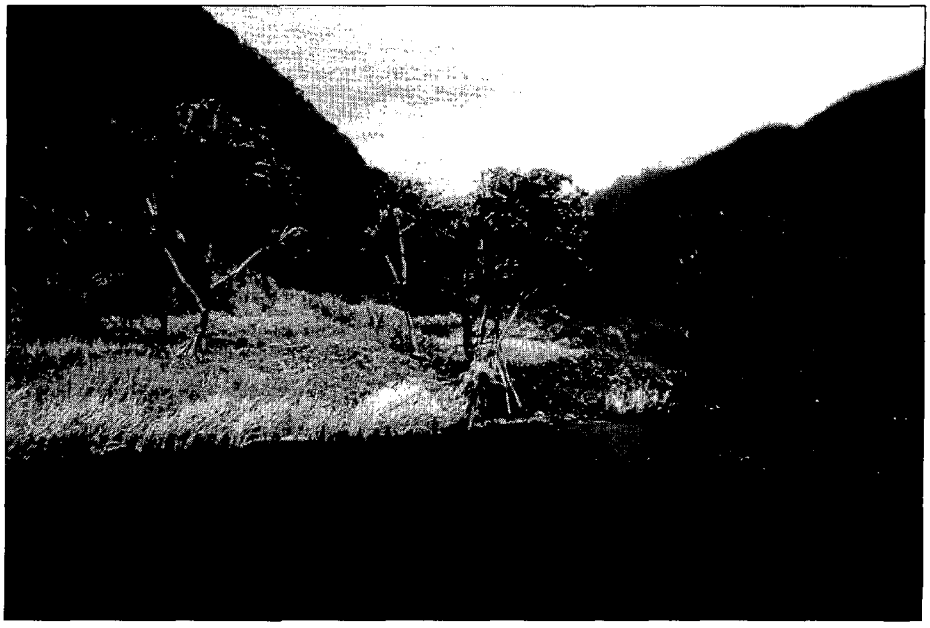
Waimanu Valley was occupied for many centuries, although probably intermittently. The valley stream was formally diverted for agriculture, and scientists have uncovered the remnants of residences built on Hawaiian temple ruins. The valley has remained largely uninhabited except for occasional hunters and campers since 1946, when the resident population was destroyed by a tsunami. Primary archeological surveys reveal that significant cultural remains at the reserve have been well preserved.

The valley's volcanic origin and isolation have created a niche for many unique species of plants and animals within the reserve. These unique species are derived from native species, as well as non-native species brought by Polynesians and by later settlers. Two endangered bird species, the 'io (Hawaiian hawk) and the 'a'o (Newell's sheerwater) are found within the reserve as is Hawaii's only native terrestrial mammal, the endangered 'ope'ape'a (Hawaiian bat).

The valley's volcanic origin and isolation have created a niche for many unique species of plants and animals within the reserve.

The watershed and adjacent wetlands in Waimanu Valley, one of the state's more pristine aquatic systems, serves as the reserve's principal resource. This diverse system features an embayment, a limited estuary (where tides bring salt water into the mouth of the stream), wetlands, streams and tributaries, waterfalls and springs.

This system contains the last undiverted stream on the island. The falls and springs develop from an equally pristine upland watershed, which is part of the state Puu 0 Umi Natural Area



Reserve. The reserve's aquatic system is impaired by non-native plants and animals like the Tahitian prawn, Chinese catfish, ferral pigs and mosquito fish.

PROGRAM ACCOMPLISHMENTS

The state published a brochure describing the resources of the reserve, visitor rules, health precautions, and other hazards. The brochure is available to camping permit applicants, accompanied by material on leptospirosis and camping guidelines.

Two NERR supported studies were completed during the last two years. One study includes a description of the physical structure of the estuary system, its biological communities and the life history of the fish communities in the estuary. The other, a comprehensive archeological survey, identified the archeological surface sites within the reserve and concluded that several buried cultural sites remain undocumented.

SUMMARY OF EVALUATION FINDINGS

The final evaluation findings for the Waimanu Valley NERR concluded that the state is not fully adhering to National Estuarine Research Reserve goals and NOAA regulations in three significant areas.

OCRM found that 17 years after designation, the Waimanu Valley NERR did not have an approved final management plan. Reserve managers need such a plan to guide reserve operations and resource management, research and education efforts. Although management plans were not program requirements when Waimanu Valley was designated, all other reserves in the national program have complied with the current rule.

Moreover, the state has not developed a suitable strategy to adequately protect a key 200-acre parcel of land within the reserve owned by the Department of Hawaiian Home Lands. The ability to provide adequate control over this core component of the reserve is a prerequisite for NOAA approval of the management plan.

The 3,600-acre site, designated in 1976, is considered geologically young.

Finally, the reserve does not employ enough staff members to adequately implement the operation, education, research, resource management and protection components for the reserve. The reserve manager administers the reserve, as well as the Hawaii Natural Area Reserve Program, from Honolulu, on the island of Oahu, which means that the manager can only devote part-time attention to reserve management from a remote location.

In accordance with Sections 312 (c)(1) and 315 (f)(2) of the CZMA, OCRM imposed interim sanctions on the Waimanu Valley NERR until the state addresses program inadequacies identified in the final evaluation.

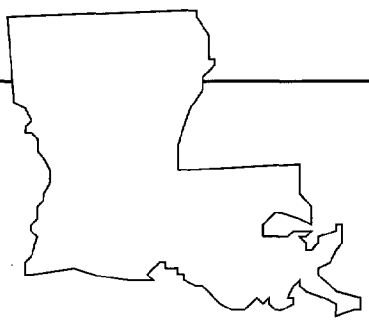
Waimanu Valley requests to leave reserve system

On Oct. 21, 1993, the Sanctuaries and Reserves Division of OCRM received a letter from the State of Hawaii Department of Land and Natural Resources requesting that Waimanu Valley be removed from the National Estuarine Research Reserve System.

OCRM has prepared a response to the state's request for withdrawal of Waimanu Valley from the National Estuarine Research Reserve System advising the Governor of Hawaii of the procedure for withdrawing the reserve from the national program.

Louisiana

- Louisiana Coastal Resources Program



Louisiana's coastal zone boundary encompasses all or part of 19 parishes — roughly 5.8 million acres — and extends to the limit of state waters. Through the Louisiana State and Local Resources Management Act of 1978, the state established a comprehensive regulatory program, called the Coastal Use Permit program, through which the state directly regulates any use or activity within the coastal zone that has a direct and significant impact on coastal waters.

The Department of Natural Resources/Coastal Management Division (DNR/CMD), designated as the lead agency, implements the Louisiana Coastal Resources Program (LCRP) and administers the Coastal Use Permit program. Parishes are authorized, but not required, to develop Local Coastal Programs (LCP) and if an LCP is approved by Coastal Management Division, the Parish may then regulate certain uses of local concern. Currently, eight Parishes have adopted local coastal programs. The Coastal Management Division has designated two special management areas - the Louisiana Offshore Oil Port and the Marsh Island Wildlife Refuge.

PROGRAM ACCOMPLISHMENTS

Improved Enforcement Capabilities: The CMD drafted, and was instrumental in passing, Act 194, which establishes an administrative fine system and grants the Department of Natural Resources the authority to assess fines to recover abatement or mitigation costs, during the 1993 Legislative session. The administrative fine system will allow more efficient enforcement of Louisiana's Coastal Management Program by providing administrativfe as well as judicial remedies for violations of the program in many cases. Administrative fines and mitigation costs will also generate revenues for program administration and local and state restoration projects.

State Wetlands Restoration Program: Louisiana continued to refine and implement its coastal wetlands restoration program. The program was enacted in 1989 to combat the significant coastal wetlands loss, which the Corps of Engineers estimate to be 40 to 50 square miles annually. Louisiana adopted a state comprehensive restoration plan, and using funds from the state Restoration Trust Fund (roughly $25 million in FY92 and FY93) is funding numerous wetlands restoration projects called for in the plan. Since 1989, 22 major restoration projects have been completed, including wetlands shoreline stabilization, water diversion and hydrologic management, and vegetative plantings of wetland species.

Coastal restoration experts collect disguarded Christmas trees each season from hundreds of local citizens and use the trees in a unique recycling project: as erosion barriers.

The Department of Natural Resources' Office of Coastal Restoration and Management is coordinating the state restoration efforts with Federal efforts provided for in the Coastal Wetlands Planning, Protection, and Restoration Act, commonly known as the Breaux-Johnson Act. DNR has participated on the Coastal Wetlands Planning, Protection, and Restoration Task Force which is also completing a comprehensive plan for the state and has approved 29 projects totalling $80 million in federal funds.

While finding it difficult to establish cause and effect relationships, Louisiana is encouraged that coastal wetlands loss appears to be decreasing from the Corps' estimate of 40 to 50 square miles per year in 1989 to 25 to 30 square mile per year in 1993.

State Mitigation Legislation: CMD staff have drafted rules to implement Act 1040, a coastwide Wetlands Mitigation Law. The draft rules will require compensatory mitigation for any permitted development activity that impacts coastal wetlands, provide for the establishment of mitigation banks, and includes exemptions from the mitigation requirements for certain activities which have an overriding public interest. Public notice for the proposed rules will be published in January 1994— the first step in the formal rulemaking process. Upon completing the rulemaking, Louisiana's Coastal Management Division will submit the legislation and rules to OCRM as a program change for approval and incorporation into the LCRP.

Dredge Material Disposal Plans: Louisiana's coastal zone has nearly 3,000 acres of navigation channels. While these channels provide important economic benefits to the state, they also cause significant wetland loss directly (through dredging and dredge material disposal) or indirectly (through erosion and salt water intrusion). Through the efforts of the Department of Natural Resources, the legislature enacted Act 637 in 1991 to strengthen the coastal programs guidelines for the management of dredge material for beneficial purposes, such as bank stabilization and wetland creation.

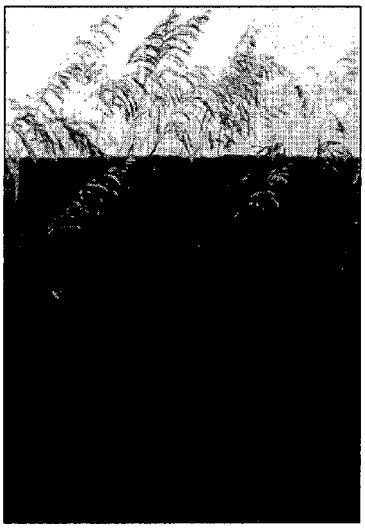
On Aug. 1, 1980, the Louisiana coastal management program received federal approval.

Louisiana received $2,114,000 in federal funding during FY92 and $2,297,400 during FY93.

DNR is authorized and directed to develop long term dredge material disposal plans for each channel or canal more than one mile in length and/or when there is dredging of five hundred thousand cubic yards or more of any water bottom or wetland. In 1992, DNR developed short term plans for all ten major navigation channels in the coastal zone and will develop long term plans for the channels in 1993-1994. Once the plans are developed, they will be promulgated as regulations by DNR and submitted as a program change under the section 309 enhancement grant program.

Enhancement Grant Projects: In 1992, the LCRP developed a section 309 Assessment

and Strategy for addressing priority needs in three enhancement areas: cumulative and secondary impacts, wetlands, and hazards. Under the 1993 coastal zone management award, Louisiana's Coastal Management Division is evaluating coastal uses and existing laws, regulations, and policies to determine if uses currently exempt from the authority of the state's coastal program have adverse cumulative impacts on coastal waters and wetlands. The CMD will then change the LCRP regulations to incorporate the assessment's findings and develop methodologies to manage these cumulative and secondary impacts through the permitting process.



Using 309 funds the CMD is also identifying hazard-prone areas in the coastal zone and develop a methodology to evaluate and incorporate hazard mitigation considerations in the review and analysis of each coastal use permit application.

Finally, the CMD will incorporate the long term management of dredged material plans, developed pursuant to Act 637, as a program change into LCRP regulations.

Public Awareness: Using CZM funds, the Louisiana Coastal Resources Program is now developing a comprehensive public information and outreach strategy to determine how best to increase public awareness about Louisiana's coastal area, its value and the goals of the coastal program. Once the strategy is developed, the CMD anticipates dedicating a total of $20,000 to $60,000 per year for the program.

SIGNIFICANT PROGRAM CHANGES

Permit Simplification: The state adopted a Coastal Use Permit-General Permit (CUP-GP9) which reduces permitting time for marinas and boat slips that are built in upland areas and which meet the conditions of the general permit. The State submitted CUP-GP9 to OCRM as a program change and OCRM approved it for incorporation into the Louisiana Coastal Management Program.

SUMMARY OF EVALUATION FINDINGS

No evaluation was conducted during the biennium. The next evaluation of the Louisiana Coastal Management Program is scheduled for March, 1994.

Ten years of progress: joint public notice agreement

August 1993 marked the tenth anniversary of the Joint Public Notice agreement between Louisiana's Coastal Management Division and the New Orleans District Corps of Engineers.

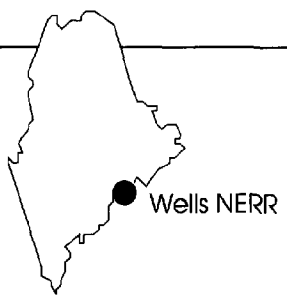
During this 10-year history, the Joint Public Notice has improved coordination, reduced costs to participating government agencies, and allowed for faster permit processing time.

In 1992, the Department of Environmental Quality's (DEQ) Office of Water also joined the Joint Public Notice agreement.

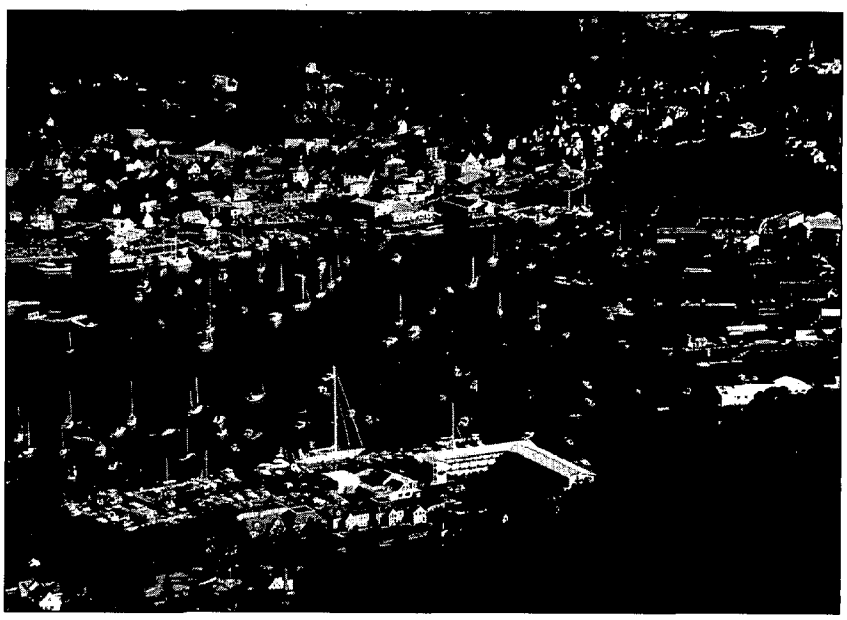
This expanded agreement further streamlines the state's permitting process by enabling applicants to send only one permit application to the Coastal Management Division for processing of Section 404 and Section 10 permits by the Corps of Engineers (New Orleans District), for a Coastal Use Permit by the state Coastal Management Division, and for a 401 Water Quality Certification by DEQ's Office of Water.

Maine

- Maine Coastal Management Program
- Wells National Estuarine Research Reserve



Maine's Coastal Program (MeCMP) consists of a network of 13 State Laws that are jointly administered by the State and local governments. The State Planning Office (SPO) is the lead state agency for the MeCMP. The Maine Department of Environmental Protection (DEP) is the primary regulatory agency for most of the MeCMP's core authorities. The State's coastal boundary extends landward to the inland boundary of all coastal towns, townships on tidal waters and includes all coastal islands. The seaward boundary extends seaward to the outer limit of the U.S. territorial sea. The state's coastal program includes a Gubernatorial Executive Order that requires all state agencies to comply with the policies of the state's coastal program.



Major coastal issues in Maine include: growth management, water quality, public access, and cumulative and secondary impacts of development. The state has engaged in various efforts to address these and other critical coastal issues. Some of these efforts are described below.

PROGRAM ACCOMPLISHMENTS

Implementing the Growth Management Act: During the biennium, Maine's coastal program continued to implement the Growth Management Act (GMA) of 1988 despite some obstacles. Maine's legislature passed the Act to address rapid land development, especially in the state's coastal area where the most growth was reported. The Act allows for local growth and development, but directs growth in a more organized and environmentally sound manner. In December 1991, Maine's legislature repealed the law; it reinstated the law in April 1992, but with less vigorous provisions. Under the revised Growth Management Act, communities that want to regulate land use must base their ordinances on comprehensive plans that are consistent with the Act. Plans and ordinances must be completed by Jan. 1, 2003.

The state coastal program operated using $1,796,467 in federal funds during FY92 and $1,906,000 in FY93.

After steps were taken to weakened the Act and reduce funding for its implementation, Maine's Coastal Management Program used its program implementation (section 306) funds to continue the Comprehensive Planning Program, and once again build the momentum lost. Since the program's inception, 233 municipalities state-wide have received grants to prepare plans and 50 have received grants to implement the plans. Sixty-three of the 233 are coastal towns; 19 of these have received implementation grants. Using coastal and state funds, 20 to 30 grants will become available to municipalities for planning and implementation.

Local Code Enforcement Program: During the biennium, Maine's Department of Economic and Community Development (DECD) used coastal funds to develop a successful Training and Certification Program for local code enforcement officers (CEOs). The Growth Management Act also requires that each town hire a certified CEO and that

the state develop a program for training and certifying local CEOs. The certification and training program that the state developed requires that CEOs take several examinations on various elements of local and state regulatory programs, including shoreland zoning, zoning/land use, site development, building standards, and internal and external plumbing. All CEO's must have completed the appropriate examinations and been certified by December 1993. So far, the program has certified 304 individuals statewide in one or more of the areas. Most of Maine's 147 coastal towns now employ certified local CEOs, approximately 60 percent of all coastal communities. Some towns share a CEO.

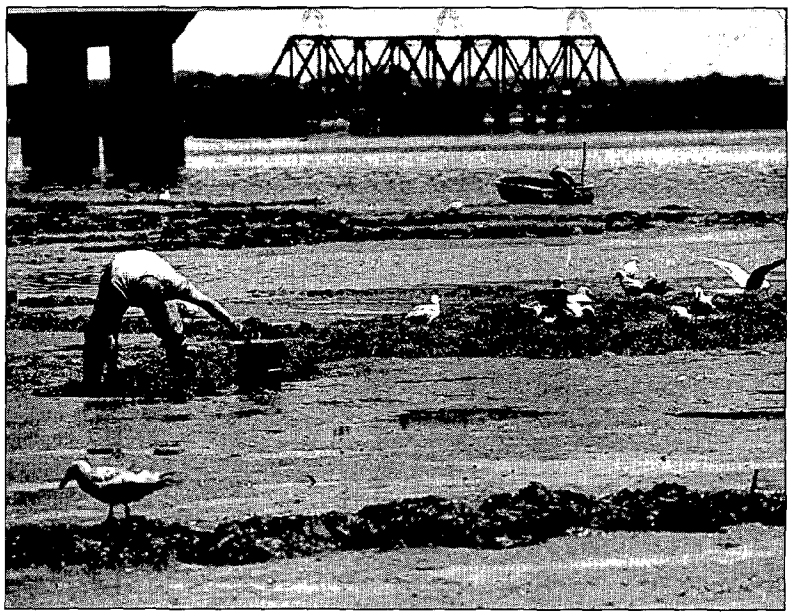
Advanced training and certification is also available on topics ranging from "legal issues and enforcement techniques" to floodplain management. Coastal management funding supported the training workshops, and paid for the production of training manuals for each session and for administering the examinations. The state believes that the training program has led to equitable enforcement of Maine's coastal laws and regulations, increased professionalism, and fostered environmental awareness in the towns through the CEOs. To date, over 1,200 persons have attended one or more of the training workshops offered through the program.

Permit by Rule — Simplifying Government Procedures: Maine's Department of Environmental Protection created a Permit-by-Rule (PBR) program from its efforts to streamline the regulatory process under the National Resources Protection Act (NRPA). Under this program, selected activities with minor impacts gain automatic approval 14 days after DEP recieved the application, unless applicants are notified otherwise. In submitting a PBR application, the applicant agrees to abide by enforceable standard conditions developed by DEP for specific activities.

The PBR program has already reduced DEP's permitting load. The agency has faced extreme pressure to process permits and to do so in an environmentally sound fashion. A consultant's study on the program's effectiveness found that there is about a 70 percent compliance rate (for 450 study sites) under the PBR program — compliance is highest in the southern part of the state where DEP staff monitors compliance.

The Maine coastal program received federal approval in September 1978.

Citizen Participation in Water Quality Monitoring: Despite 20 years of work to reduce coastal water pollution, one quarter of Maine's productive shellfish beds are closed due to bacterial contamination. Recognizing that citizen action at the local level is the key to clean water, Maine's Coastal Program, through its Shore Stewards Partnership Program, has been working with 13 citizen monitoring programs in coastal waters from Kittery to the St. Croix estuary. The program focuses on solving local water quality problems at the local level. Over 200 volunteers completed an intensive training program, enabling them to test



Estuary project fosters cooperation to protect water quality

Cumulative and secondary impacts of development has become a priority issue for Maine in its strategy under the section 309 Enhancement Grants Program. The state has designed a demonstration project to address cumulative and secondary impacts on a regional management basis, without creating another layer of bureaucracy.

The Damariscotta River Estuary Project is a regional management initiative bringing together seven towns that have recently developed local comprehensive plans and that share a common resource, the Damariscotta River estuary. A local steering committee directs the three-year project and includes representatives of town governments, people whose livelihood depends on the river, local business and conservation organizations, and other interested citizens. The management approach used in designing this project will target coastal watersheds as basic management units and reallocate state technical and financial resources on a regional level.

The Project's two goals are: to encourage cooperation among citizens sharing the Damariscotta River Estuary on resource issues, and to reach agreement on how the river's resources can be used in such a way that the river continues to contribute to the local economy and improve the area's quality of life for years to come. To accomplish these goals, Maine's coastal program will support efforts to inventory and monitor the natural systems of the estuary's watershed; identify threats to water quality, health of the fisheries and other natural systems; develop, with input from residents and their town governments, recommendations for regional land and water management that sustain the use and promote thoughtful stewardship of the River and watershed; continue to educate the regional community on how to balance conservation with natural resource use; and encourage public participation in all aspects of the project.

Other statewide coastal management efforts can draw from information gathered through the Damariscotta River Estuay Project. Descriptions developed for the estuarine and marine habitats in the Damariscotta River have already played a key role in developing a statewide estuarine and marine habitat classification scheme. The state expects that this project will yield many more benefits.

local marine waters for temperature, salinity, turbidity, dissolved oxygen, pH, and fecal coliform. Up and down the Maine coast, volunteers working with local officials and state enforcement authorities are abating water quality problems. To date, the Partnership has attracted roughly $37,500 in corporate donations, foundation support, and individual contributions. The Partnership's contributions brought the project's total annual budget to about $115,000 — a small budget, but one which has produced tremendous results for the state of Maine. In addition to supporting volunteer monitoring, funds donated to this project are also distributed through mini-grants for water quality related educational projects for students and adults. Mini-grants have supported slide shows, travelling displays and public forums for adults and curriculum development on shellfish, marine debris, water quality and "community links to the sea" for eighth grade through Kindergarten.

Right: Salmon aquaculture, a growing industry, provides alternatives for overfishing coastal areas.

Far right: Navy shipyard.

SUMMARY OF EVALUATION FINDINGS

Final findings for the evaluation conducted in June 1993 cited several areas of accomplishment by the state, including: development and implementation of a successful Code Enforcement Officer Training and Certification Program, which has resulted in certification of more than 300 CEOs; improvements in coordination initiatives involving the Maine Coastal Management Program and its catalyst role for initiating and sponsoring a variety of discussions on marine policy related issues, sponsoring the Gulf of Maine Program, and serving as the region's advocate for the program since its inception.

The evaluation findings also noted some areas for improvement, including public relations and public education on the state's complex resource management laws, technical assistance to local governments, and assessment of key program issues and priority funding elements.

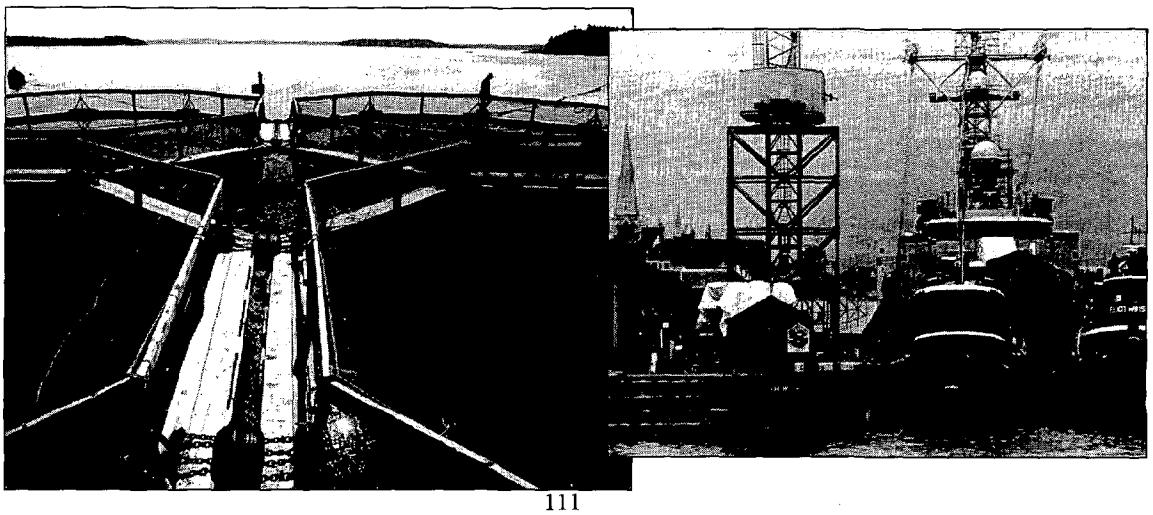
Did you know?

▶ Maine's coastal program director has served as Chairman of the Coastal States' Organization (CSO) during the past two years, in addition to overseeing Maine's vast web of coastal and other related issues.

▶ Working with the Canadian Department of Environment, the Gulf of Maine Council on the Marine Environment produced the first in a series of "State of the Gulf" reports. The series will present current information on elements of the Gulf of Maine ecosystem, initially on its water quality, in a style geared to the general public.

▶ Increasingly, coastal residents are looking for ways to become more effectively involved in coastal stewardship on a year round basis. Maine's Shore Stewards Partnership Program, established by the Maine coastal program, offers that opportunity by directing public and private resources toward building and supporting a lasting network of skilled citizen stewards. The environmental monitoring being performed by citizens under the Shore Stewards Partnership Program is an excellent example of the usefulness of citizen stewards.

▶ Maine was among the nation's first states to formally incorporate sea level rise provisions into environmental regulations. Maine did so through the state's Sand Dune Rules, which are among the strictest in the nation. The Rules impose restrictions on where structures may be sited in sanxd dune areas that the state has identified as vulnerable to storm damage. No construction may occur on, or seaward of, a frontal dune or in the V-zone, which are areas subject to wave action or a one percent, or greater, chance of flooding in any given year. Furthermore, the state prohibits projects likely to be damaged from changes in the shoreline within 100 years.



The Wells Reserve is nestled in York County, in the town of Wells, on the southern coast of Maine with the historic Laudholm Farm calling the property home. The reserve's diverse natural features create an ecosystem unique to the region, with undeveloped marshes and transitional upland fields and forests along two contrasting watersheds, the Little River estuary and the Webhannet River estuary. Two endangered species — the piping plover and least tern — nest within the reserve, and seven plant species recently expanded the list of state protected species that thrive at the reserve, bringing the total to ten.

The Wells Reserve Management Authority, a state agency, makes management decisions guiding the reserve. A private-nonprofit organization, the Laudholm Trust, raises funding to support the reserve's programs and match federal grants to the reserve.

PROGRAM ACCOMPLISHMENTS

Facilities: Wells Reserve dedicated its newest trail to former Sen. Edmund Muskie during a ceremony attended by Sen. Muskie and Madeline Albright, U.S. Ambassador to the United Nations. The reserve's seven mile trail system is still the longest trail system in Maine outside of Acadia National Park.

With funding from OCRM, the Wells Reserve stabilized several historic buildings, including the barn, now used as education facility. Another building was converted into a research laboratory, dedicated by the Governor.

Using volunteer support, a Maine Conservation Corps crew constructed an elevated boardwalk crossing the ocean dune at Laudholm Beach. The reserve also collaborated with the Town of Wells to restore an overwashed area of Laudholm Beach.

Staffing: During the biennium, the reserve increased its staff to eleven and hired a full-time research coordinator. The Wells Reserve Management Authority, a state agency primarily composed of other state and federal agencies owning land within the reserve, issued regulations guiding public use of the reserve and adopted a personnel policy manual for reserve employees.

In 1992, Laudholm Trust completed a successful capital campaign, raising more than $6 million to support the reserve. The Trust also received an award for Coastal Leadership at NOAA's First Annual Excellence Awards Ceremony for its philanthropic efforts supporting the reserve.

Networking: Wells Reserve manager takes an active role not only in the site's management, but also in promoting and supporting the entire National Estuarine Reserch Reserve System through his position as vice-president of the National Estuarine Research Reserve Association. The manager also served broader research and management needs as a member of the Corporation of the Bermuda Biological Station for Research, Inc., a governor-appointed member of the Marine Research Board and as a member of the Marine Policy Committee of the Land and Water Resources Council; the

Open Space, Wetlands, and Natural Habitat Task Group of the State Comprehensive Outdoor Recreation Plan; and the Wells Harbor Management Plan Committee. Wells Reserve also sponsored the semi-annual meeting of the New England Estuarine Research Society and hosted two meetings of the Regional Association for Research on the Gulf of Maine.

Habitat Protection: Piping plovers, federally listed as endangered species, and least terns, on the state's endangered species list, were recorded nesting on Laudholm Beach in the reserve for the first time in twenty years. The Wells Reserve staff cooperated with National Wildlife Refuge personnel to post and patrol the area and worked with Maine's tern/plover group to erect protective nest enclosures.

Habitat Restoration: The reserve consulted with the Army Corps of Engineers on a proposed study to remedy adverse ecological damage caused by the 1962 dredge of Wells Harbor. The Corps proposed isolating the dredge disposal area (formerly a saltmarsh) with a moat for wildlife habitat enhancement. The Reserve Management Authority research committee recommended that the Corps of Engineers also consider impacts to beaches and other estuarine habitats at Wells. In another project, the U.S. Fish and Wildlife staff planned to restore wetlands on the reserve by plugging a ditch to raise the water table

in a former seasonal wooded wetland.

RESEARCH AND MONITORING PROGRAMS

During the biennium the reserve's research coordinator became an adjunct professor with the University of New Hampshire's zoology department and at Antioch College of New England. She also participated in workshops and lectures at Bowdoin College, the University of Rhode Island and Massachusetts Sea Grant College and served on a subcommittee of that organization to help develop a workshop on Gulf of Maine habitats. Through her academic affiliations, reserve staff were able to teach graduate courses in Ecological Research Methods and Marine Ecology at the reserve.

Protecting 1,600 acres, the reserve now holds 100% acquisition status.

The reserve also became an associate member of the Regional Association for Research on the Gulf of Maine, an international organization of scientists focusing on regional marine and coastal research.

Wells Reserve's research coordinator successfully organized a group of more than 60 dedicated volunteers to participate in the reserve's water quality monitoring project. The volunteers surveyed the shoreline of the reserve's estuaries and tributaries, measured water and air temperature, and collected samples to record *E. coli* levels, chlorophyll, phytoplankton, salinity, and dissolved oxygen. These measures are taken twice a month at a minimum of twelve sites on the reserve.

Using data from the reserve, the research coordinator presented a paper discussing how an impounded salt marsh responds to restored tidal flow at a Coastal Wetlands Ecology and Manage

ment Symposium hosted by National Marine Fisheries Service, the Environmental Protection Agency, Fish and Wildlife Service, Sea Grant, and the National Audubon Society at Louisiana State University. She also presented the research at annual meetings of the American Society of Limnology and Oceanography and Society of Wetland Scientists.

The reserve has served researchers from several New England institutions during the past two years. Researchers from the University of New Hampshire and University of Boston collected meteorologic and hydrologic data at the reserve to construct a water budget for Wells Bay. Also, researchers from the Southern Maine Medical Center collected data on the prevalence and viability of Lyme disease at the reserve. Graduate students performed censuses of deer and wading birds on the reserve and documented biological changes brought on by restored tidal flow to a salt marsh.

The reserve received $142,920 in federal funding in 1992 and $123,830 in 1993.

During 1992, the reserve expanded its computerized mapping system by digitizing the marshes as part of a research project on salt pannes. Wells staff also surveyed the biology of seasonal wetlands on the reserve.

EDUCATION AND OUTREACH PROGRAMS

The reserve's award winning outreach educational program, designed to bring hands-on estuarine environmental education into kindergarten through sixth grades, instructed more than 4,000 students in eight school districts in New Hampshire and in Maine. The staff presented the outreach program at the Gulf of Maine Marine Educators and the National Marine Educators conferences, and the National Science Teachers Association meeting.

Members of the education staff served on the Gulf of Maine Council's Public Education and Participation Committee, Maine's Shore Steward Trust, and the Wells-Ogunquoit school districts Science Curriculum Revision Committee. The staff also co-directed a science and mathematics academy for the State Systemic Initiative funded by the National Science Foundation to enhance science instruction statewide.

During the biennium, the reserve offered in-depth teaching of estuarine habitats and processes through summer "Junior Re

searcher" programs for children 9 to 11 years old and "Advanced Junior Researcher" programs for children ages 11 to 13. The reserve also participated in a state education program that enabled two MERIT high school students to work at the reserve's research facilities to gain a greater understanding of research techniques. The reserve also sponsored a summer course on coastal ecology for teachers and the public and supported a state education program that allowed 60 teachers to improve math and science instruction skills through first-hand experience with scientists conducting research.

During the fall and spring of 1992, Wells staff and volunteers conducted 20 fourth-grade programs at the reserve involving nearly 1200 pupils. A corps of 30 docents was trained to lead the program. The spring programs were given in cooperation with staff from the Rachel Carson National Wildlife Refuge.

Reserve staff also trained volunteer docents, who guided natural history tours for 5,000 visitors. During 1992 alone, 30,000 people visited the reserve, and 7,000 visited the annual Laudholm Nature Crafts Fair and viewed special exhibits on education, research, and volunteer programs of the Wells Reserve.

An education subcommittee produced a new interpretive slide program which is being used to inform civic groups about the reserve and to recruit new volunteers. The reserve produced a report that analyzed development and interpretation of its interpretive trails.

During the biennium, education staff collaborated with the state Department of Environmental Protection in promoting National Wetlands Month, and cooperated with the Wells Harbor Committee to coordinate a beach clean-up observing Earth Day.

In 1992, through the support of the Maine Humanities Councils, the reserve produced a 7-week series of evening seminars entitled "Do Fish Pay Taxes?" which discussed environmental trends in the Gulf of Maine region. In 1993, the reserve produced a 6-week series of evening seminars entitled "On the Edge" presenting information on sustainability of the coastal environment. Both seminars offered continuing education credits to participants.

During the biennium, the Wells Reserve gained widespread recognition. The *Voice of America* radio program broadcast an interview with the reserve manager on the program's European segment. The *New York Times* featured the reserve on the front page of its Sunday travel section. The reserve's outreach program was highlighted on a Portland television station's *Color Me Green* environmental series and was featured in weekly cable television information spots. Wells also gained recognition in quarterly newsletters to the Laudholm Trust's 3,200 members who support the reserve throughout the United States and in four foreign countries.

Wells Reserve was designated in 1984 in Wells, Maine, called the Acadeian biogeographic region.

SUMMARY OF EVALUATION FINDINGS

No evaluations were conducted during the biennium.

Maryland

- Maryland Coastal Zone Management Program
- Chesapeake Bay National Estuarine Research Reserve in Maryland

Chesapeake Bay-MD NERR

Maryland's 16 coastal counties and Baltimore City are included in the state's coastal zone boundary. Through the coastal program, Maryland controls development in a "Critical Area" which comprises tidal lands and waters of the Chesapeake Bay to the head of tide and all lands within 1,000 feet of mean high water or from the landward edge of tidal wetlands. The 1984 Maryland General Assembly enacted the Chesapeake Bay Critical Area Protection Act; the Critical Area Commission later promulgated regulations to implement the Act. The Critical Areas law and criteria were incorporated into Maryland's Coastal Zone Management Program by amendment on July 27, 1987. All of the local coastal communities have developed land use plans for the Critical Area as mandated by the Critical Areas legislation.

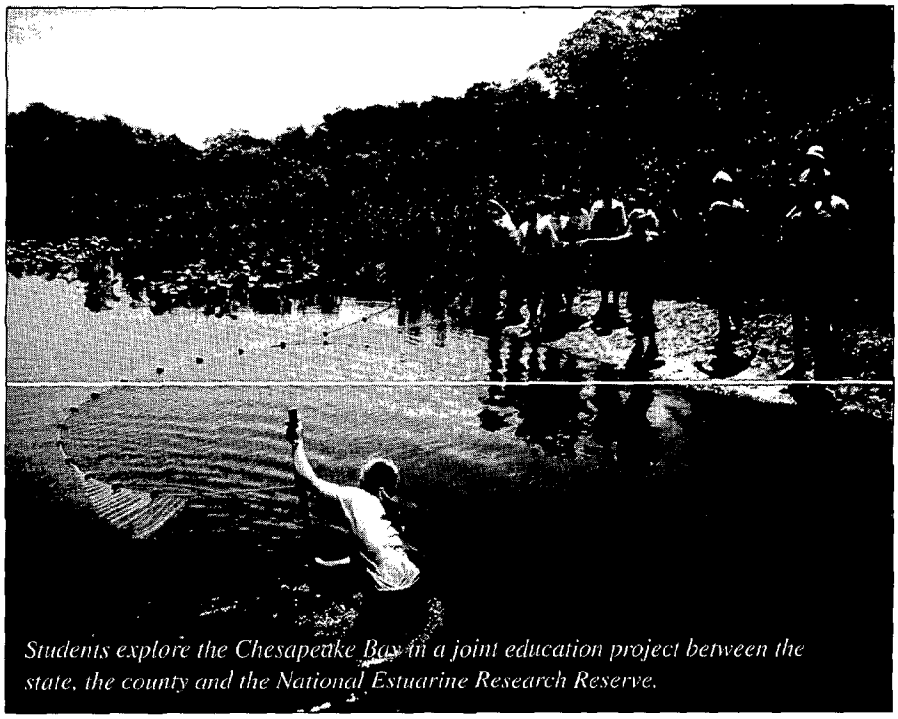
Maryland's Coastal Zone Management Program (MCZMP) is networked, using existing state laws and authorities to manage coastal resources. State agencies implementing the program are bound through Memoranda of Understanding with the Coastal and Watershed Resources Division of the Department of Natural Resources (DNR), which serves as the lead agency for program funding and administration. Networked agencies include the Departments of the Environment, Agriculture, Housing and Community Development, and Transportation, and the Office of Planning

PROGRAM ACCOMPLISHMENTS

Coastal Nonpoint Program: The Coastal and Watershed Resources Division has taken the lead in coordinating the development of Maryland's coastal nonpoint program, required by section 6217 of the 1990 Coastal Zone Act Reauthorization Amendments. Coastal program staff and staff from several networked agencies analyzed Maryland's current nonpoint source authorities and compared them to the management measures developed under section 6217(g) of the CZMA. CWRD staff are synthesizing this and other information for use in the 1994 threshold review of Maryland's coastal nonpoint program development.

The Maryland coastal program received federal approval in September 1978.

Growth Management: In 1992, Maryland passed the Economic Growth, Resource Protection, and Planning Act which requires all local governments to include "sensitive areas" elements in their comprehensive plans, and to ensure that local development ordinances are adhering to the comprehensive plans. The sensitive areas elements must address the protection of steep slopes, streams and their buffers, 100-year floodplains, and endangered and threatened species habitats. The Coastal and Watershed Resources Division coordinated with the Office of Planning to produce the guidance document,



Students explore the Chesapeake Bay in a joint education project between the state, the county and the National Estuarine Research Reserve.

"Preparing a Sensitive Areas Element for the Comprehensive Plan." Staff also participated in workshops and public meetings on sensitive areas protection and assisted with the preparation of sensitive areas definitions and land use guidelines for state agencies to follow during the design and construction of projects that are intended for state use or management.

Increased Coordination: Maryland's most recent 312 evaluation findings found that the lead coastal zone management agency should work to increase the MCZMP's visibility and improve its interagency coordination efforts. In response, the Coastal and Watershed Resources Division meets regularly with representatives from state agencies and members of the Coastal and Watershed Resources Advisory Committee to discuss coastal program priorities and to review and rate specific projects considered for coastal management funding.

Coastal and Watershed Resources Advisory Committee: The Coastal and Watershed Resources Advisory Committee (CWRAC) is a long-standing forum for local government officials and private citizens to participate in and influence the direction of Maryland's coastal program. Recently, the Advisory Committee has taken an active role on such issues as the review of Maryland's coastal zone management grant, monitoring state and federal legislation, and recommending courses of action to state and local officials on specific environmental issues facing Maryland's coasts.

Maryland's coastal program operated using $2,290,000 in federal funding in FY92 and $2,330,000 in FY93.

SIGNIFICANT PROGRAM CHANGES

The state is working on a revised program document which, along with several authorities not yet incorporated into Maryland's coastal program, will be submitted to OCRM for review and approval as a program change.

SUMMARY OF EVALUATION FINDINGS

No evaluation of the Maryland Coastal Zone Management Program was conducted during the biennium. The next evaluation is scheduled for June 1994.

Maryland requires tributary strategies to protect Chesapeake Bay

The 1987 Chesapeake Bay Agreement, signed by the Governors of Maryland, Virginia, Pennsylvania, the Mayor of the District of Columbia, the administrator of the U.S. Environmental Protection Agency, and the Chairman of the Chesapeake Bay Commission, calls for a comprehensive planning and resource management program to restore the health and productivity of the Chesapeake Bay. A major element of the Agreement proposed a 40 percent reduction in the level of nutrients (nitrogen and phosphorus) in the Bay by the year 2000, based on 1985 levels. Amendments to the Agreement, signed in August 1992, mandate the development and implementation of strategies to reduce nutrient enrichment of the Bay's tributaries, thus decreasing the flow of nutrients into the main stem.

CWRD staff are actively involved in the multi-agency effort to develop strategies for Maryland's Chesapeake Bay tributaries. Maryland officials, with considerable public input, are preparing nutrient reduction strategies which will include both point and nonpoint source controls. When completed, the strategies will be presented to the Governor and will be implemented by state and local agencies whose activities affect the Chesapeake Bay. As an element of the strategies, Maryland is using section309 Enhancement Grant funds to strengthen the state's approach toward the management of marine sewage.

The Chesapeake Bay National Estuarine Research Reserve in Maryland has three components: Monie Bay, located within the Deal Island Wildlife Management Area in Somerset County about 50 miles southwest of Ocean City, Md.; Otter Point Creek on the upper western shore of the Bay, 17 miles northeast of Baltimore; and Jug Bay, on the Patuxent River flowing into the Bay from the West only 20 miles southeast of Washington, D.C.

Comprised of tidal creeks, open estuarine waters, salt marshes and pine forest, the 3,400 acre Monie Bay Component is relatively pristine and isolated. Monie Bay is a haven for resident and migratory bird populations, including herons, egrets, ibises, and a wide variety of waterfowl species. Blue crabs, white perch, oysters, blue fish and other important aquatic populations are also found in Monie Bay. The Otter Point Creek Component includes 700 acres of tidal freshwater marsh, two ponds, open water and uplands. With approximately 400 acres of wetland, this component is one of the few large freshwater tidal marshes in the Chesapeake Bay region that remains in a comparatively natural, undisturbed state. The Jug Bay Component covers 700 acres, 250 of which are a broad shallow embayment of the Patuxent River, and contains one of the largest stands of wild rice on the East Coast. Jug Bay also provides healthy spawning habitat for striped bass and serves as a haven for over 100 bird species.

In FY 93, the reserve received $109,000 in federal support.

PROGRAM ACCOMPLISHMENTS

Facilities: For the last two years, Maryland's Chesapeake Bay Reserve has been working with personnel from the Otter Point Creek and Jug Bay Components on two separate facility development projects. Staff from Harford County, where the Otter Point Creek Component is located, have been working with an engineering and architectural firm to design a reserve Visitors Center that is to be located in Harford County. Preliminary plans are for a more than 7,OOO-square-foot building which will house an auditorium and conference room, an exhibit area, offices, discovery room, library, and a wet lab. Plans should be finalized by late winter 1994, barring any unforeseen obstacles.

At the Jug Bay Component, reserve staff and Anne Arundel County personnel worked with an architect to develop plans for an annex to an existing visitors center. The existing structure was undersized for the program needs. The annex was designed to contain exhibit space, an office, and a volunteer's conference and planning room. In the plan, the original exhibit space will become a sorely needed conference room. Anne Arundel County also planned other interior modifications to the existing structure to accommodate the annex. Construction began in February 1993 and was completed in July 1993. The annex is open and currently in use.

The Volunteer Coordinator, working at Jug Bay Component, continued to work on the draft of the volunteer guidebook being developed for Jug Bay Component. Reserve and Jug Bay staff coordinated on supplying text,

editing drafts, and devising the concept of a field-sized guide which would contain facts about the cultural, biological and natural history of the Jug Bay area.

Reserve staff have been working with the Monie Bay Component Site Manager to find the right niche for the reserve at Monie Bay. Future trail development into the component, since it is most easily accessed by water, is being discussed. Its inaccessibility is what makes Monie Bay Component most attractive to researchers. Nearby university professors have been conducting the field work aspects of their classes in the marshes of Monie Bay Component. NOAA funding has also been provided to these same scientists to conduct research in this component.

Other accomplishments include: further development of the trail network at the Otter Point Creek Component; the design, construction, and installation of two fiberglass interpretive signs at the Jug Bay Component; facilitating the travel of component site managers to attend conferences of the National Estuarine Research Reserve Association; and developing a volunteer support group for Otter Point Creek Component.

Chesapeake Bay, Md., Reserve, in the Virginian region, was designated in two parts, one in 1985 and one in 1990.

RESEARCH AND MONITORING PROGRAMS

A study of habitat alteration in the tidal freshwater wetlands of Otter Point Creek is being conducted by Dr. Grace Brush of Johns Hopkins University. Dr. Brush will be collecting information from the Jug Bay Component and comparing the tidal estuarine system with the non-tidal estuarine system at Old Woman Creek NERR. In addition, Dr. Thomas Jones of Salisbury State University is studying the nutrient sequestering capabilities of marsh plants and sediments at all three Components of the reserve. The reserve continues to use student interns to research, collect, and monitor land use change and environmental data.

EDUCATION AND OUTREACH PROGRAMS

Current reserve activities include adult field lectures, discovery programs for children, marsh monitoring studies, guided nature hikes, scheduled school group trips, and canoe trips. Reserve staff also organized several outings for reserve supporters including: a brainstorming session/ picnic to develop education program ideas and a bus trip tour of the Monie Bay Component.

Reserve staff have been working primarily with the Jug Bay Component to develop a teachers' curriculum guide. The guide will contain materials and activities for estuarine science in the classroom and on the reserve.

Teachers' workshops took place at each component to test proposed activities and solicit feedback on teachers' needs in estuarine education.

The education and site manager at the Otter Point Creek Component worked through Harford County public schools to provide in-the-field and classroom programs in estuarine science. Hikes, canoe trips, weekend marsh clean-ups and interpretive programs became a valuable part of the manager's outreach effort.

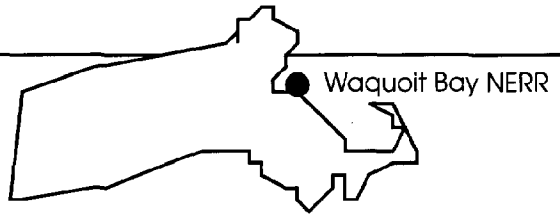
SUMMARY OF EVALUATION FINDINGS

A program evaluation site visit was conducted in September 1993. Findings, currently being drafted, are scheduled for publication in early in 1994.

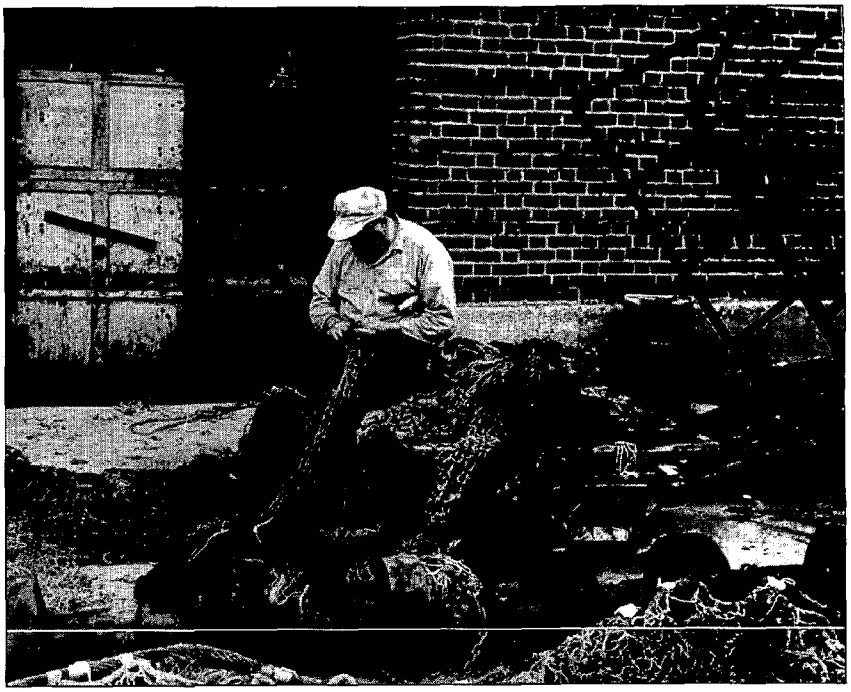
With 4,820 acres, Chesapeake Bay, Md., Reserve is 98% complete.

Massachusetts

- Massachusetts Coastal Zone Management Program
- Waquoit Bay National Estuarine Research Reserve



Massachusetts' coastal zone spans 1,500 miles from the New Hampshire to the Rhode Island borders and three miles offshore, extending 100 feet inland, past major roads and railways, to cover up to a half mile of coastal waters and salt marshes. The coastal zone includes the area from Cape Cod to Martha's Vinyard and Nantucket. Given this extensive coastline, the state faces pressing coastal issues, including public access, coastal erosion, nonpoint source pollution, critical area planning, and ocean resource management issues.



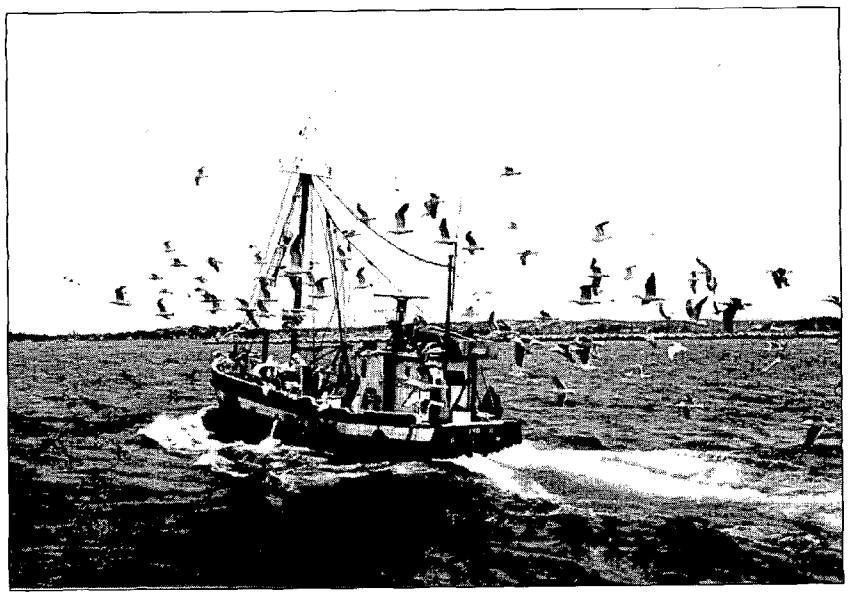
The Massachusetts Coastal Zone Management Program (MCZMP) finds primary legal authority in the Act Relative to the Protection of the Massachusetts Coastline, passed in 1983, although the Wetlands Protection Act, the Wetlands Restriction Act, and the Ocean Sanctuaries Act and other Commonwealth authorities also play key roles in supporting the state's coastal program. In all, state agencies use 27 policies to guide program implementation. Massachusetts' Executive Office of Environmental Affairs (EOEA) is designated as the Commonwealth's lead agency for program funding, with EOEA's Coastal Zone Management Office responsible for daily program administration.

The state's coastal program received federal approval in April 1978.

PROGRAM ACCOMPLISHMENTS

Program Integration/Coordination: Massachusetts has successfully coordinated its coastal program with relevant federal agencies, including the U.S. Environmental Protection Agency's (EPA) National Estuary Program and with NOAA's National Marine Sanctuary Program and National Estuarine Research Reserve Program to expand the MCZMP's role in managing coastal resources. For example, Massachusetts' coastal program now administers the Buzzards Bay and Massachusetts Bays National Estuary Programs and became the state's designated agency to cooperate in developing and designating NOAA's Stellwagen Banks National Marine Sanctuary.

The Governor of Massachusetts and the Adminstrator of EPA approved the Buzzards Bay Comprehensive Conservation Management Plan, developed by the MCZMP, in April 1992. Municipalities and environmental organizations around the Bay now implement this plan. To date, EPA has awarded pollution prevention funding to the towns of Bourne, Wareham, and Plymouth to adopt the Buttermilk Bay Nitrogen Management District, developed and proposed through the Buzzards Bay Project. The MCZMP worked with the Buzzards Bay Project and the Town of Wareham to designate the town as a no-discharge area — the first such EPA designation on the east coast. The MCZMP also nominated Waquoit Bay, site of the National Estuarine Research Reserve, for designation as a no-discharge area.



Massachusetts' coastal program also worked aggressively with OCRM prior to the September 1993 designation of the Stellwagen Bank National Marine Sanctuary. The MCZMP requested and received joint-agency status for the Stellwagen Bank Sanctuary and co-authored the Environmental Impact Statement and Management Plan for the sanctuary.

Coastal Hazards: The MCZMP hosted a coastal hazards workshop in March 1993 in response to impacts from Hurricane Bob in 1991 and the nor'easters of 1991 and 1992. Technical and management staff from New Jersey, New York, Michigan and New England coastal programs participated in the workshop, which included presentations from each of these eight states on coastal hazards and mitigation efforts. The workshop's success prompted coastal states in other regions to conduct similar sessions.

The Federal Emergency Management Agency (FEMA), requested that the MCZMP's hazards coordinator, participate on the Federal Hazards Mitigation and Assessment Team for several affected states in the New England Region. O'Connell, a coastal geologist, provided invaluable assistance to FEMA on storm assessment and mitigation efforts.

Permit Advisory Services: The MCZMP established a permit advisory service, PAS, to advise applicants on permitting requirements and procedures within Massachusetts's coastal zone. PAS provides information on permits, project application review meetings, and the state's regulatory programs and serves as a referral service for coastal project contacts. Upon request, the service will also comment to resource agencies on the regulatory merits of a project. However, the coastal program staff does not perform technical or advocacy work for any projects, although these staff members are available for technical assistance and consultation on most coastal activities. The PAS also mails out information sheets on state regulations, applicable policies, a list of contacts within the environmental agencies, and any other supporting materials that may be helpful to applicants. The key to PAS's success has been the service's close coordination with other state agencies on project reviews.

Barrier Beach Protection: In May 1992, the MCZMP, the Audubon Society and the Association for the Preservation of Cape Cod sponsored a symposium on barrier beach conservation which prompted change in the way Massachusetts manages its coastline. In response to issues raised at the symposium, a Barrier Beach Task Force was established, which includes representatives from federal, state and local government agencies and private industry. The task force has been charged to study the issues and develop guidelines for managing and stewarding barrier beaches, particularly emphasizing the relationship between

Federal funds provided $1,784,000 for the coastal program in FY92 and $1,856,000 in FY93.

Did you know?

- Massachusetts's coastal program director has served as the chairman of the Massachusetts Bay and Buzzards Bay National Estuary Programs and as the Governor's representative on the Gulf of Maine Council on the Environment.

- The MCZMP served as the Secretariat for the Gulf of Maine Council and Working Group Program from July 1, 1992 through June 30, 1993. The Secretariat handles day to day planning and work elements for the Gulf of Maine Program, and organizes and conducts the Council's meetings and working group sessions.

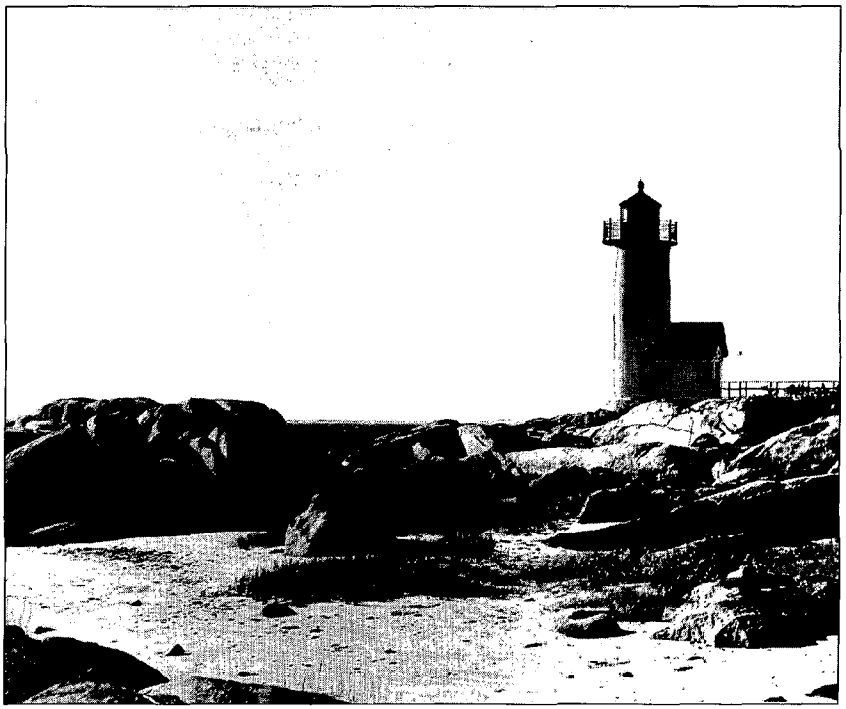
- Massachusetts is the only coastal state so far to request an expansion of the management area recommended by NOAA and EPA under the section 6217 national Coastal Nonpoint Pollution Control Program. NOAA and EPA approved the state's request to expand the 6217 program's management area to include areas covered by the Massachusetts Bay and Buzzard Bay National Estuary Programs.

- EPA's Administrator recognized the towns of Bourne, Wareham and Plymouth by giving them awards for adopting the Buttermilk Bay Nitrogen Management District developed and proposed by the Buzzards Bay Project.

human activity and endangered species.

Draft guidelines, which have been completed, promote proactive beach management, while recognizing that some beach management issues must be individually negotiated between local government and state agencies. The guidelines contain a set of "Recommended Management Measures" that can be applied to any proposed use of barrier beaches. Task force members recognize, however, that in many cases these management measures represent the minimum level of protection recommended to meet environmental protection standards. The task force encourages barrier beach stewards, both state and local, to take bolder steps toward maximum protection for these fragile barrier beaches. The guidelines, now in final draft, also serve as a reference tool to local and state managers in preparing barrier beach management plans.

Recommendations of the task force also resulted in a state requirement that state and local agencies prepare barrier beach management plans for public review by local conservation commissions. This review ensures that barrier beach management plans are consistent with the state's Wetlands Protection Act and other relevant local wetlands protection bylaws or ordinances. Massachu



setts Coastal Zone Management Program's Assistant Director chairs the task force.

Federal Consistency Activities: During the report period, MCZMP used the federal consistency process to review three major activities in the state coastal zone: a federal waterfront development project, designations of federally operated marine disposal sites, and interstate review of a wastewater treatment plant. Through the consistency review process, Massachusetts negotiated significant improvements on each project. Each case is described in the federal consistency section of this report.

SUMMARY OF EVALUATION FINDINGS

No evaluation of the Massachusetts Coastal Zone Management Program was conducted during the biennium. The next program evaluation is scheduled for June 1994.

Rapid response spurs recovery from storms

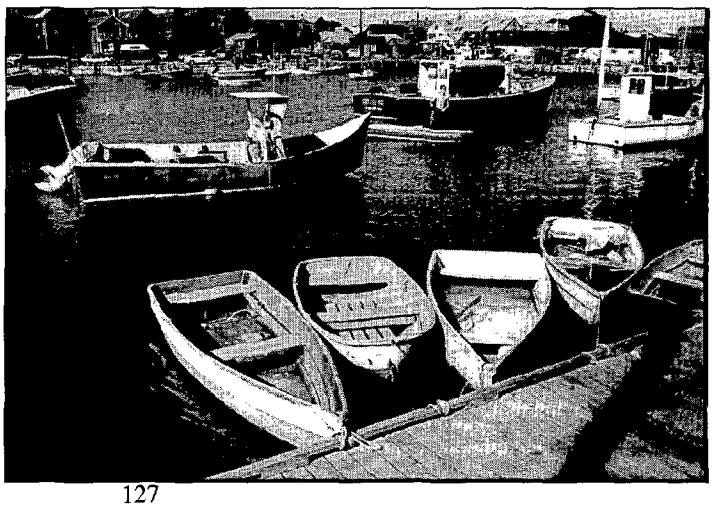
In the onslaught of a coastal storm, local, state, and federal emergency operations personnel must react as quickly and decisively as the storm itself to save lives and property from disaster, and protect the environment.

To help emergency personnel in these critical moments, Massachusetts's Coastal Zone Management Program organized a Rapid Response Storm Assessment Team (RRSAT). The team's mission is to quickly obtain accurate and concise preliminary information on coastal storm damage, both during and immediately following a coastal storm event.

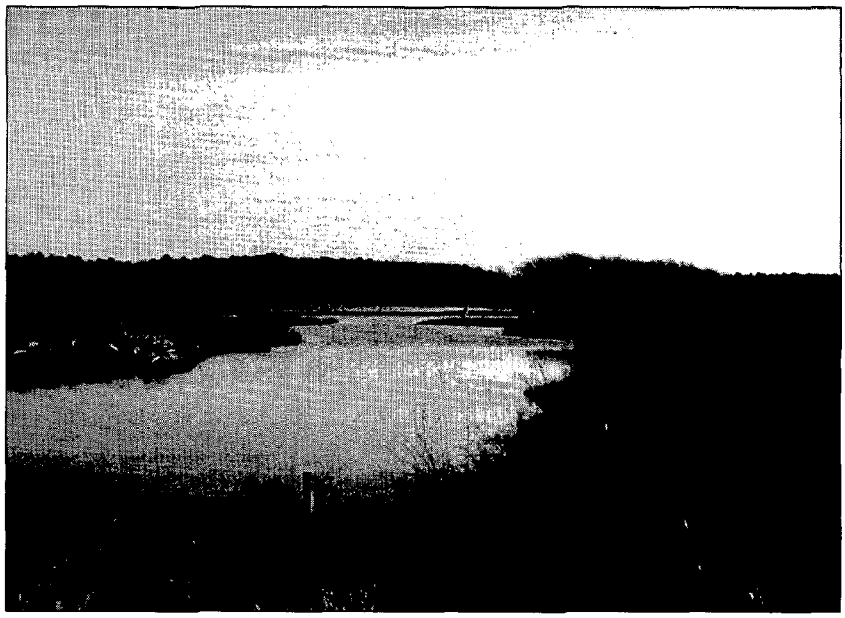
The MCZMP's Emergency Operations Headquarters then summarizes all preliminary damage assessments and relays that information immediately to the Governor, Massachusetts Emergency Management Agency officials, Secretary of the Executive Office of Environmental Affairs, director of the Massachusetts Coastal Zone Management Program, and other top government officials. Using that information, officials determine whether to petition for a presidential declaration of disaster, to declare a state of emergency, or to take other appropriate action. Immediate damage reports are essential for the Governor to make such a determination.

In December 1992, a presidential disaster declaration was issued for the Massachusetts coastline following a major coastal storm. The data compiled by the RRSATeam helped justify the disaster declaration and provided information to aid hazard mitigation measures during the "repair and recovery process."

Response team members also provide technical assistance to communities and other state and federal agencies involved in emergency management efforts.



Waquoit Bay National Estuarine Research Reserve includes areas of intense, moderate and low human impact in the towns of Falmouth and Mashpee in Barnstable County. The reserve's boundary encompasses 2,250 acres spanning the open water and marshes of Waquoit Bay, adjacent upland fields and forest, and public recreational areas of South Cape Beach State Park and Washburn Island. Waquoit Bay NERR provides a haven for the Piping Plover, federally listed as a threatened species, the endangered Roseate Tern, and other rare species. In only one other place in the Commonwealth besides Waquoit Bay has the endangered Sandplain Gerardia been confirmed to grow.



PROGRAM ACCOMPLISHMENTS

Facilities: Massachusetts recently released $250,000 to renovate the interior of the Swift Estate Main House beginning in Fall 1993. When renovated, the Main House will feature a conference room, exhibit space and reserve offices.

Resource Protection: Waquoit Bay's Resource Protection Subcommittee, composed of town and state officials with jurisdiction in Waquoit Bay, developed a *Resource Protection Summary* which examined resource protection issues, regulations and regulatory gaps, and offered recommendations for filling the gaps. These recommendations evolved into a watershed action plan, developed by the Waquoit Citizens Action Committee, focusing on discharge and nitrogen loading affecting the Bay.

An Intermunicipal Committee, composed of representatives of the town boards from Falmouth, Mashpee and Sandwich, has been meeting at the reserve to respond to the plan. The Intermunicipal Committee has submitted a "No Discharge Zone" application to the U.S. Environmental Protection Agency (EPA) to eliminate boating discharges into the Bay. Citizens for the Protection of Waquoit Bay, the reserve's support organization, collaborated with the Association for the Preservation of Cape Cod and the Intermunicipal Committee to discuss developing an "overlay" district approach for reducing nitrogen loading in the Bay.

RESEARCH AND MONITORING PROGRAMS

In related activities, the reserve worked closely with Land Margin Ecosystem Research (LMER) scientists to develop a computer model designed for local planners to determine nitrogen loading levels in area watersheds. Ultimately, the reserve will train planners to use this model. The LMER project, "Coupling of Watershed and Coastal Waters in Waquoit Bay," is supported by a 4-year grant jointly funded by NOAA, the National Science Foundation and EPA. The project studies how changes in land use over time affect groundwater nutrients and how these effects influence the health of Waquoit Bay.

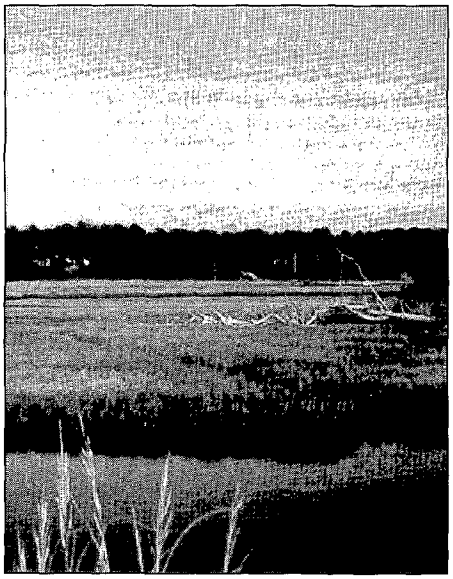
Waquoit Bay Reserve staff are working with the EPA on two EPA demonstration projects. In 1992 the Waquoit Bay Watershed

became one of eight sites in the country designated as a National Demonstration Project Site for Advanced Onsite Waste Water Treatment Systems. As such, the reserve will receive approximately $200,000 in technical advice and technology through EPA's Small Flows Clearinghouse to install and monitor onsite denitrification systems. Having established a strong role in research and monitoring in the watershed, the reserve will serve as project manager for this effort. The reserve is also working with EPA to test an ecological risk assessment methodology, which looks at several stressors, including nitrogen loading and other chemicals, boating and agriculture, to determine the probability of impact to human, biological and ecological health. Toxic plumes from the Massachusetts Military Reservation, where at least 50 toxic sites have been identified, head down the watershed directly toward the reserve. The Waquoit Bay watershed is one of five demonstration sites in the country and represents a coastal watershed. The Research Advisory Committee has developed a technical review procedure for reserve documents, and is focusing on the need for a scientific network across Cape Cod.

The Waquoit Bay Reserve was designated in 1988 in the Northern Virginian biogeographical region.

EDUCATION AND OUTREACH PROGRAMS

The reserve is also involved with the Massachusetts Department of Education and the Towns of Falmouth, Bourne and Mashpee in the Partnerships Advancing Learning in Mathematics and Science (PALMS) Project. Designated the "museum partner" of this team, the reserve reaches out to any nature center or reserve with exhibits, to train teachers in watershed ecology and related topics, and offers the use of Waquoit Bay Reserve classroom facilities. The reserve's educational and interpretive outreach activities reached over 9,000 people during fiscal years 1992 and 1993. An estimated 30,000 people also used South Cape Beach, within the reserve, for recreational purposes during this period. Education subcommittee members continue to review and make recommendations regarding reserve educational products, such as the Watershed Awareness curriculum.



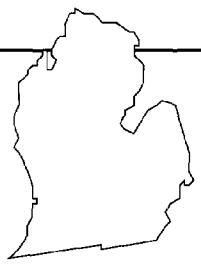
Federal funds provided $ in FY92 and $ in FY93 for reserve operations, education and research.

SUMMARY OF EVALUATION FINDINGS

Final evaluation findings were issued in January 1992. Accomplishments of the program included: developing a large volunteer corps; creating and actively involving the Resource Protection Subcommittee; facilitating the flow of information from researchers to coastal policymakers and the public; renovating the Swift Estate, and providing educational and interpretive opportunities. The evaluation recommended that the state commit funding to the education coordinator position and other staff at the reserve. The findings also recommended that the state develop a long-term acquisition plan, conduct a study of the cumulative impacts of docks, piers and boating on marine resources; and improve fiscal administration in Boston. In response to the last recommendation, the Department of Environmental Management selected a full-time grants management staff member in Boston to improve fiscal management and administration of federal grants to the reserve and to other Commonwealth programs.

Michigan

- Michigan Coastal Zone Management Program



The Michigan Coastal Management Program (MCMP), approved in 1978, covers 3,200 miles of Great Lakes shoreline along Lake Michigan, Lake Huron, Lake Superior and Lake Erie. Featuring two large peninsulas and touching four of the five Great Lakes, Michigan's coastline is geographically unique. The state coastal program's jurisdiction extends into to the border of Canada's Province of Ontario and the states of Minnesota, Wisconsin, Illinois, Indiana and Ohio. The inland boundary of the coastal zone includes resources that affect the coastal zone and sand dunes, wetlands, and coastal lakes — all of which are significant coastal features.

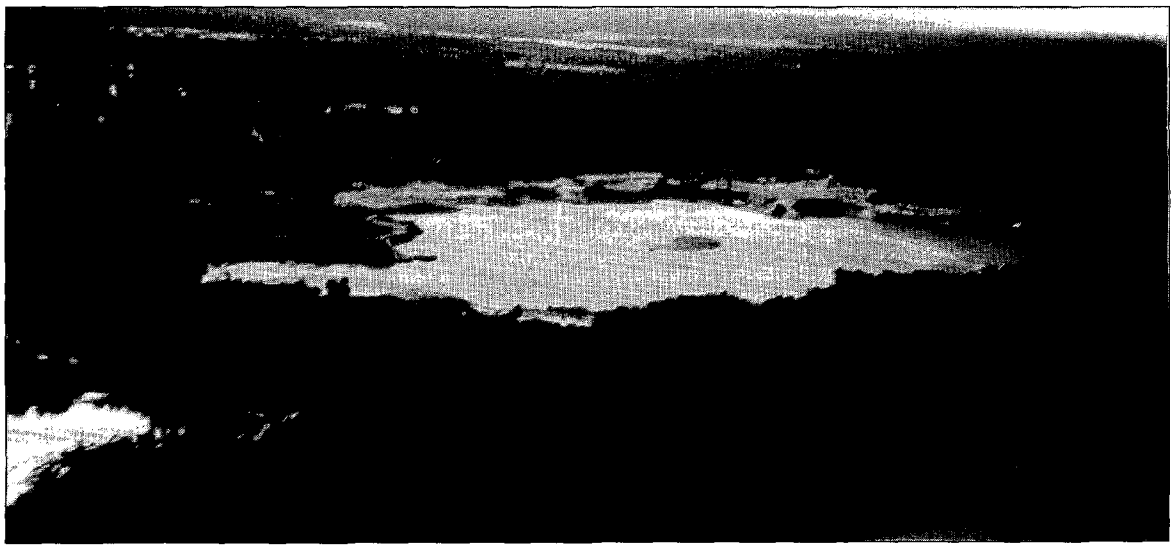
The Michigan Coastal Management Program, approved in 1978, covers 3,200 miles of Great Lakes shoreline.

As the lead agency, the Michigan Department of Natural Resources (DNR), Land and Water Management Division (LWMD) administers the MCMP. The LWMD also issues permits under the Great Lakes Submerged Lands Act, Shorelands Protection and Management Act, Sand Dunes Protection and Management Act, Inland Lakes and Streams Act, Goemaere-Anderson Wetland Protection Act, and the Underwater Salvage Act.

PROGRAM ACCOMPLISHMENTS

Amendments to Shorelands Protection and Management Act rules: In May 1992, the Michigan Natural Resources Commission approved amendments to the Great Lakes Shorelands Protection and Management Act regulations, which constitutes part of Michigan's Coastal Management Program. The amendments clarify the definition of a readily movable structure, require most small structures to be readily moveable, require a double setback for large structures, establish a recession rate update procedure, add 15 feet to some setback requirements, and add seven communities to the list of flood risk communities. To implement the new rules, Michigan's Coastal Management Program contacted communities with High Risk Erosion Areas to notify them of the one-year period for amending their zoning to conform with the revised rules, to offer assistance with zoning ordinance revisions and to provide model ordinance language. The amendments provide Michigan's Department of Natural Resources with a mandate to further protect its high hazard and flood risk areas in Michigan's coastal zone.

Sand Dunes Program: In 1989, passage of the Sand Dunes Protection and Management Act greatly broadened the DNR's authority to regulate activities in



Critical Dune Areas. The Act, which sunsets in 1995, calls for a joint legislative study committee to report issues relating to the effectiveness of the DNR's administration of the Sand Dunes Act to the legislature. LWMD staff have assisted the committee by providing information for their report to the legislature.

Coastal Litigation Support Services: The MCMP funded a full-time attorney, in response to a NOAA evaluation, to initiate plaintiff actions and to provide litigation and support services on behalf of the Great Lakes Shorelands Section in the LWMD. Before funding this position, the LWMD received limited support from the Department of the Attorney General because of staff shortages in the Attorney General's office. By using coastal management funding to support an attorney, the DNR has been able to become more proactive in enforcing its coastal statutes through the Attorney General's office.

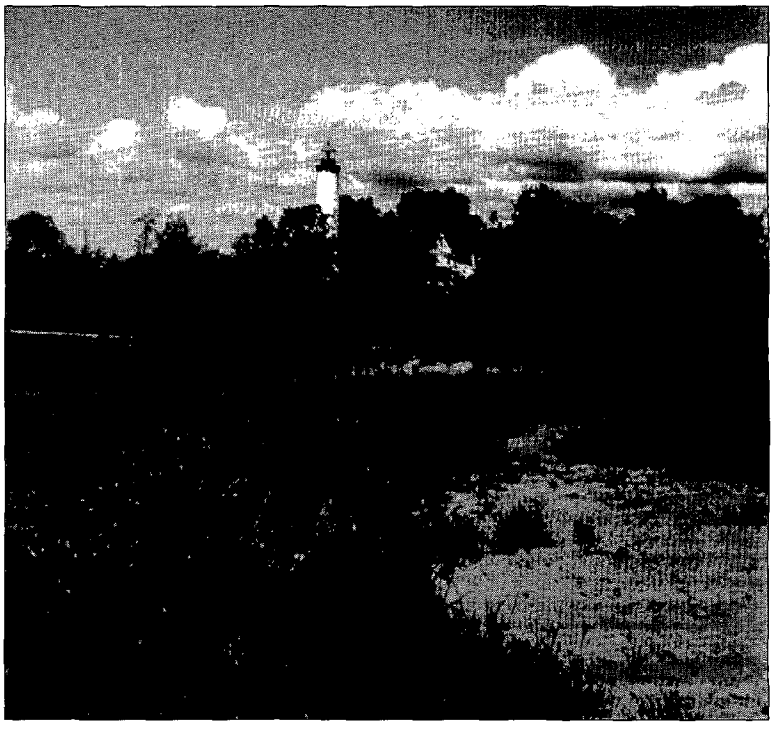
NOAA supported Michigan's coastal program with $2,014,000 in FY92 and with 2,388,600 in FY93.

Growth Management: Michigan's Coastal Management Program funded several projects to manage growth in northern lower Michigan using a combination of section 309 Enhancement Grant funds and section 306 program administration funds. Leelanau County funding revised its outdated Comprehensive Development Plan. The Leelanau General Plan project is a citizen-based effort to plan and manage growth in a way that provides protection for sensitive coastal resources in the Leelanau Peninsula. Eleven townships, three villages, and several hundred citizens have participated in the development of the General Plan.

Funded through the CZM program, other related projects created and implemented an agricultural preservation plan using the purchase and transfer of development rights; prepared a document entitled "Biodiversity of Michigan's Great Lakes Islands", which the state used in developing Michigan DNR's island management policy; and surveyed endemic Great Lake plant species which may be threatened by increased coastal development.

Adopt-A-Beach/Beach Sweeps Program: Michigan was one of the first Great Lakes states to become active in the national effort to clean up beaches. The MCMP used coastal management funds to develop, print, and disseminate beach clean-up materials to the public and to facilitate the implementation of a Great Lakes Beach Clean-up along Michigan's beaches.

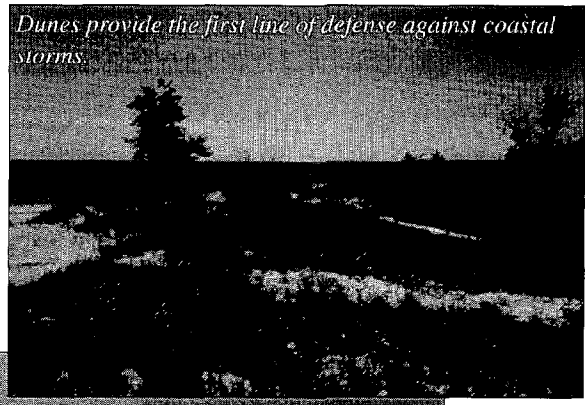
Shipwreck Management: Michigan's coastal management program funded several projects to further develop video mosaic imaging technology as a way of documenting shipwrecks and other submerged resources. With CZM funds, video imaging technology



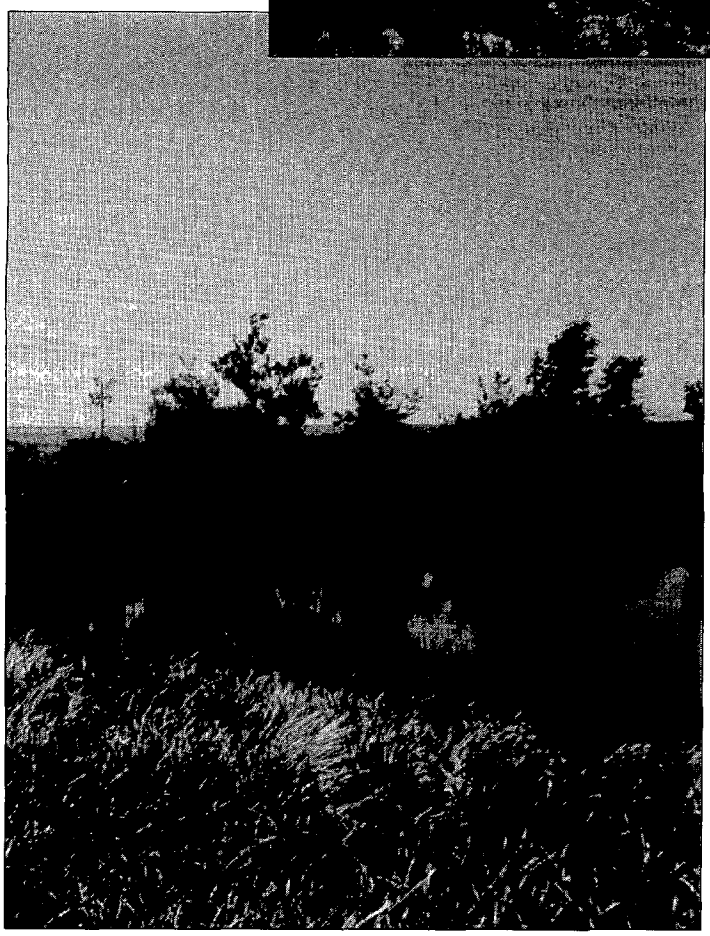
documented the *Edmund Fitzgerald* and the *F.T. Barney*. The state also funded two seasons of field investigations and preparation of detailed maps of the sunken schooner, the *Alva Bradley*.

Using CZM funds, two local communities inventoried submerged cultural resources to identify resources that are not now protected through the state's established underwater preserve program. Results will determine whether the communities will seek preserve designation. Michigan currently has nine designated Underwater Preserves which provide recreational diving opportunities while protecting historic cultural resources.

As related projects, Michigan worked to develop and underwater interpretive trail, restore three historic vessels, participate in and print the Great Lakes Regional Underwater Resources Conference proceedings, and develop interpretive exhibits on the U.S. Life Saving Service. The MCMP has also worked with NOAA and the City of Alpena on the designation of the Thunder Bay Underwater Preserve in Lake Huron as a National Marine Sanctuary.



Dunes provide the first line of defense against coastal storms.



Section 306A Low-cost Construction Projects: During the reporting period, Michigan's coastal management program continued to spend approximately a third of its section 306 funds on section 306A, low-cost construction projects. These projects provide for urban waterfront restoration, increased public access, resource protection, and historic preservation. Community involvement in the coastal program is greatly enhanced through local grants. Section 306A funds serve as the catalyst for coastal communities to improve or re-evaluate the use of their waterfronts. Several communities have reported that using low-cost construction grants has increased private investment in waterfront areas.

Federal consistency: After almost two decades of debate with the Corps of Engineers over the Corps' operation of the Sault Ste. Marie Locks, Michigan's DNR reached an agreement with the Corps and other federal agencies which will study the environmental effects of fixed closing and opening dates of the locks.

Public access

Michigan's Coastal Management Program has long maintained that the opening and closing of the locks for navigation during the winter months should be based on environmental criteria rather than on a set date. Vessel traffic through the connecting channels of the Great Lakes under ice conditions can have significant impacts on coastal wetlands, fisheries habitat and shoreline structures.

After lengthy negotiations, the Michigan DNR, Corps of Engineers, U.S. Coast Guard, and U.S. Fish and Wildlife Service have agreed to a combined commitment of up to $250,000 per year in money, staff and equipment to conduct two years of monitoring studies to determine if there are adverse environmental impacts caused by lock-related winter navigation.

SIGNIFICANT PROGRAM CHANGES

The MCMP did not submit any program changes during the reporting period.

SUMMARY OF EVALUATION FINDINGS

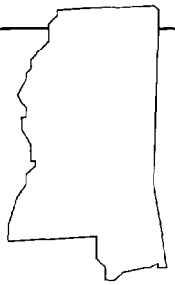
NOAA issued final evaluation findings in March, 1992, for the review period from August 1988 to July 1990. Overall, NOAA found the Michigan Coastal Management Program to be effectively implementing its approved program. The evaluation cited many accomplishments of Michigan's Coastal Management Program. Among them, NOAA noted that the state signed amendments to the Sand Dunes Protection and Management Act into law; passed amendments to the "Underwater Salvage Act" which formally created the Underwater Preserve Committee; and that the MCMP developed policy on marina development and drafted amendments to the Shorelands Protection and Management Act.

The evaluation also recommended some actions toward strengthening the program even further in some areas. NOAA recommended that the MCMP hire additional field staff, particularly for enforcement, use federal funds to support an attorney in the General Attorney's office whose time is dedicated to the Land and Water Management Division, clearly explain and document its federal consistency procedures, work on procedures for determining that a permit application is complete, and increase technical assistance, particularly for soil erosion and sedimentation officials and for local governments implementing the state's coastal management-related laws. The MCMP has worked to address these recommendations.

NOAA approved Michigan's coastal managment program in 1978

Mississippi

- Mississippi Coastal Program



The Mississippi Coastal Program (MCP) is based in large part on the Mississippi Coastal Wetlands Protection Law, and the Mississippi Marine Resource Council enabling legislation. The Department of Wildlife, Fisheries and Parks/Bureau of Marine Resources (BMR) is the lead agency that administers the major portion of this networked program. Mississippi's coastal zone boundary encompasses three coastal counties and all coastal waters, although regulatory jurisdiction is generally more limited in scope. Collectively, three "coastal program agencies"—the DWFP (Bureau of Marine Resources), the Department of Environmental Quality (Office of Pollution Control and Office of Land and Water Resources), and the Department of Archives and History—are responsible for managing coastal resources, monitoring decisions that affect the coastal area, and insuring that such decisions are consistent with the program's goals. The BMR assures that decisions made by other State and Federal agencies are consistent with the MCP. While the primary management technique is direct state permitting authority, Mississippi has designated several ports and beaches Special Management Areas (SMA's). Special management area plans have been developed for most beaches and the Port of Pascagoula.

PROGRAM ACCOMPLISHMENTS

Development of Net Pen Aquaculture Regulations: In response to proposals to establish a large scale pen-net aquaculture operation outside and in the Mississippi Sound, the MCP developed, adopted and implemented comprehensive permitting rules and regulations to address marine aquaculture facilities. The rules provide criteria for siting and operating these facilities. The BMR is currently finalizing monitoring requirements to submit to the Mississippi Commission of Wildlife, Fisheries and Parks for adoption.

Coastal Preserves Program: MCP is developing a coastal preserve program that will identify and prioritize estuarine ecosystems, develop and implement an acquisition program to acquire priority ecosystems, and develop management plans for the acquired preserve parcels. During the biennium, the MCP, in conjunction with the Mississippi Heritage Program, characterized twenty major estuarine systems (1,500 acres) along the coast in the Bangs Lake area in order to determine their eligibility for land acquisition and set priorities for acquisition. Once acquired, management plans for the areas will be developed.

The state joined the ranks of federally approved coastal programs in September 1980.

Citizens Guide for Protecting Wetlands: MCP, in conjunction with The Nature Conservancy, developed and published a "*Citizens Guide to Protecting Wetlands in Mississippi.*" The guide explains wetlands definitions, functions and values, state and federal laws regulating wetlands and the permitting process. The guide also identifies proactive roles that the public can

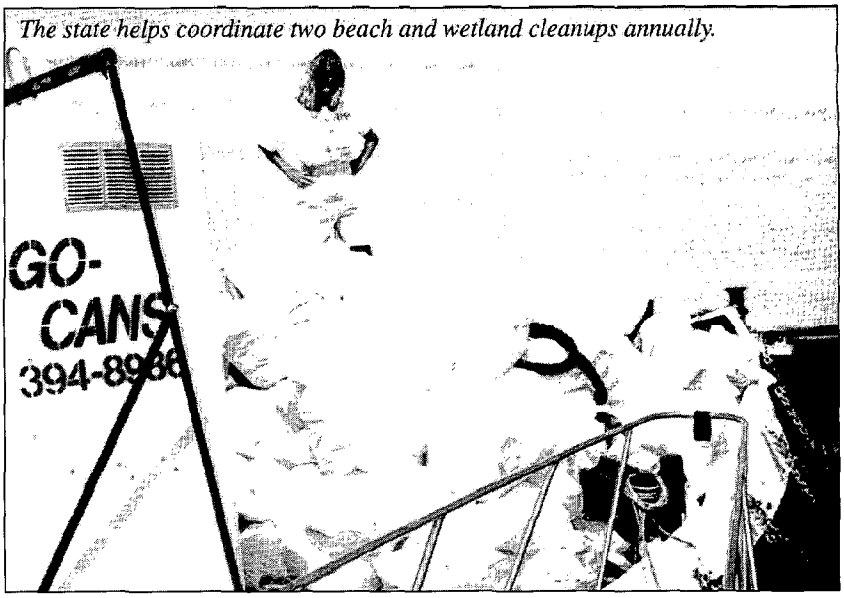
In Mississippi, coastal managers use federal funds to increase the public's access to the coast.

play in permitted and unpermitted activities as well as its role in enforcing state and Federal wetlands laws.

Wetlands Mitigation Guidelines: Mississippi's Coastal Program developed wetlands mitigation guidelines for wetlands permitting, which allow the program to make regulatory decisions that would avoid, minimize, restore, or compensate for adverse impacts. The guidelines also establish criteria for compensatory mitigation to offset unavoidable adverse impacts from permitted projects. Mississippi's guidelines are similar to those issued by the U.S. Environmental Protection Agency and Army Corps of Engineers but are more comprehensive. The state is also developing standards for evaluating the success of compensatory mitigation projects.

Derelict Structure Survey: In response to threats to public health and safety and navigation posed by abandoned piers, pilings, vessels, fishing shacks, and other structures, the MCP conducted a survey of derelict structures. The survey's results included: locating, describing, and mapping the location and ownership, where possible, of all such near shore derelict structures in Harrison, Hancock, and Jackson counties. A legal analysis of state law was also conducted to determine responsibilities and authorities, and cost estimates for removing the structures. Mississippi's Coastal Program is in the process of identifying alternative funding sources to remove other structures.

The state received $579,333 in federal funds in FY92 and $728,000 in FY93.



The state helps coordinate two beach and wetland cleanups annually.

Public Trust Tidelands: The Mississippi Public Trust Tidelands Act of 1990 requires that projects which are proposed on lands subject to the ebb and flow of tides must first obtain a public trust tidelands lease from the Secretary of State's office. Under provisions of the Act, a majority of leasing revenues are directed to the Bureau of Marine Resources for preservation, conservation, acquisition, education, public access, and public improvement projects.

Low Cost Construction Projects: Using section 306A resource management improvement funds, the BMR conducted nine low cost construction projects to provide or enhance public access in coastal Mississippi. These projects included the construction of nature trails, least tern viewing platforms and a boat launch. The MCP also developed non-industrial construction standards for water access and shoreline protection facilities. These standards, used by local governments receiving 306A funds, guarantee minimum environmental impact and quality construction.

Cumulative and Secondary Impacts: With funding through the CZMA section 309 enhancement grant program, Mississippi's coastal program is addressing the cumulative impacts of septic systems on coastal waters. Working with the Department of Health, the Bureau of Marine Resources will develop guidelines for the location, design, and operation of on-site disposal systems (septic

systems) whichwill consider a broader range of impacts than traditional public safety concerns. These guidelines are intended to be incorporated into the state septic regulations.

Improvements to the Coastal Wetlands Use Plan: The Bureau of Marine Resources is also using section 309 enhancement grant funds to revise and update the state's wetlands use plan to take into consideration uses, such as dockside casinos, that were not envisioned at the time of program development. The BMR is also using enhancement funds to clarify which uses have an indirect impact on wetlands and therefore are subject to the state's wetlands regulations.

SIGNIFICANT PROGRAM CHANGES

No program changes were submitted during the biennium.

SUMMARY OF EVALUATION FINDINGS

An evaluation of the Mississippi coastal program was conducted in April 1993. Final evaluation findings are scheduled for release in December 1993.

Mississippi coastal managers restock oyster shells to replenish oyster reefs to increase oyster harvests.

Dockside gambling brings new challenge to Mississippi's coast

Mississippi's newest industry, dockside gaming and casino development, has already created significant positive and negative impacts on the Mississippi coastline. Legalized dockside gambling was enacted by the Mississippi legislature in 1991. Since then, seven casino operations have opened in two of the three coastal counties that approved the referendum (eight are licensed and approved by the Gaming Commission); and nineteen applications have been filed, many of which are expected to be opened by late 1993 or mid 1994.

The casinos are an economic boom to a rather weak economy. Mississippi's Gulf Coast gaming market is expected to generate an annual revenue of $56.1 million to $71.6 million and create thousands of new jobs, primarily for local residents. Some of the casinos are netting as much as $500,000 per day in revenue. Fortunately, to date, the impacts to coastal resources from casino development have been limited. Most casino development has taken place in previously impacted areas on sites of deteriorated boat yards and obsolete seafood processing facilities. Further, improvements have been limited to minor shoreline modifications and reconfiguration, dredging for access and flotation. This is expected to change as prime sites are taken up and the casinos move into more pristine back bay areas.

The major impact to date is the displacement of the commercial seafood industry, primarily the commercial shrimp fleet. Many seafood industry facilities (fuel, ice, storage, supplies and mooring) as well as some processing facilities, have sold property to casino developers.

New Hampshire

- New Hampshire Coastal Program
- Great Bay National Estuarine Research Reserve

Great Bay NERR

The New Hampshire Coastal Program (NHCP) is a networked program based on a series of State laws and implementing regulations administered by various state agencies, boards and commissions. The Office of State Planning, as the lead agency, has responsibility for implementing the program. Other important networked agencies include the Department of Environmental Services Water Supply and Pollution Control Division and Wetlands Bureau, the Fish and Game Department, the New Hampshire Port Authority, and the Department of Transportation. The Council on Resources and Development (CORD), an interagency board comprised of key state agencies, is responsible for coordinating State policies and resolving agency conflicts in the coastal zone.

In 1993, 15,000 pounds of debris were collected from New Hampshire shores.

New Hampshire used the segmented approach in designing its coastal program. The first phase, approved in June 1982, included the Ocean and Harbor Segment which encompasses the Atlantic Ocean shoreline, Hampton Estuary, and the Portsmouth Harbor portion of the New Hampshire coast. Phase two, approved in 1988, included all remaining areas under tidal influence located near the Great Bay estuary. New Hampshire's inland coastal zone boundary is defined as 1,000 feet from the mean high water, or to the limits of the Wetland Board's jurisdiction over tidal waters, depending on the area. The boundary around Great Bay extends inland to identifiable features, such as roads, which in most cases are more than 1,000 feet from the shoreline, and to the limits of the Wetlands Board's jurisdiction along estuarine rivers. Seaward, the boundary includes all coastal waters within the three-mile limit of the state's jurisdiction.

The coastal program, federally approved in June 1982 and September 1988, received $639,667 in federal funds FY92 and $601,000 in FY93.

PROGRAM ACCOMPLISHMENTS

Public Education & Outreach: New Hampshire's Coastal Program has taken the lead on coordinating New Hampshire's Coastweeks events, including the state's Coastal Cleanup and Adopt-a-Beach programs. The 1993 Coastweeks celebration was the most successful to date, with over 800 volunteers participating. New Hampshire's Coastal Program has cooperated extensively with the Odiorne Point Seacoast Science Center and recently funded educational programs for middle and high school students, the general public, and environmental day camps. As part of this cooperative effort, fall tidepool slide presentations and studies in upland habitat, mammals, and freshwater ponds took place. The program has also funded permanent sea tank exhibits at the center in order to educate the public about coastal and marine issues. Coastal issues are regularly featured in the New Hampshire Coastal Program's *Tidelines* newsletter.

Wetlands Preservation and Restoration: New Hampshire is actively involved in wetlands preservation and restoration and is recognized as having a strong and equitable program. New Hampshire regulates every square foot

of wetland in the state and monitors compliance on all projects in the coastal program communities through its wetlands inspectors. The Environmental Law Institute recently presented New Hampshire with a National Wetlands Award in recognition of the state's stringent yet efficient permit review program.

The NHCP, in conjunction with the U.S. Fish & Wildlife Service, is actively involved in a showcase wetlands restoration project at Awcomin Marsh near Rye Harbor. Portions of this marsh have been cut off from tidal influence since 1941, when berms were constructed. The area has also been used as an Army Corps of Engineers dredge spoil disposal site. As a result, the site has been invaded by a noxious weed, *Phragmites australis*, and other freshwater and brackish species.

New Hampshire's Coastal Program is committed to a long term restoration of this site: it is removing the berms and spoil material and reintroducing tidal flooding to the area. Spoil material on a portion of the site has been removed and the program has attempted to recreate the original tidal creek patterns. Phase I has been met with quick success, and vegetative changes are already noticeable.

The NHCP has also funded a long-term program to monitor vegetative changes scientifically by conducting soil analyses and a pre-restoration assessment of sediments and vegetation. Data gained through this project may be invaluable for management and restoration decisions.

Natural Resource Protection: Using coastal zone management funds, the City of Portsmouth and the Town of Rye produced a watershed management plan for the Berry's Brook Watershed. Located in both communities, Berry's Brook is a unique 5.9 square mile coastal ecosystem comprised of a 6.2 mile long stream with associated freshwater wetlands, an estuary and tidal marsh. The watershed contains several rare plant species, over 1000 acres of forested wetlands, and a spawning ground for brown trout. Berry's Brook has clearly suffered from impacts due to development and may be suffering from nonpoint source pollution. The watershed management plan for Berry's Brook recommended implementing a combination of regulatory and non-regulatory management strategies to ensure long-term protection of the watershed's water and wetland resources.

Public Access: To increase public enjoyment of a previously underutilized waterfront park in Portsmouth, New Hampshire's Coastal Program funded improvements to Pierce Island Park. This funding enabled the construction of a handicapped accessible walking path, installation of interpretive signs around the park, general clean-up of the site, and the purchase of handicapped accessible play equipment. Pierce Island Park is the first municipal playground in the Portsmouth metropolitan area with equipment accessible to disabled children.

SIGNIFICANT PROGRAM CHANGES

No program changes were submitted during the biennium.

SUMMARY OF EVALUATION FINDINGS

OCRM conducted an evaluation site visit in September 1993, and will issue final evaluation findings in early 1994.

Did you know?

▶ Only about 12%, or 18 miles, of New Hampshire's coastline is on the Atlantic ocean. The remaining 113 miles is tidal coastline primarily located in the Great Bay estuary. Of the 18 miles along the Atlantic coast, 78% is in public ownership.

▶ The Great Bay National Wildlife Refuge has been formed from the six-mile portion of the old Pease Air Force Base that bordered the Great Bay Estuary. This undeveloped area is prime habitat for Bald Eagles, who winter there from December through March.

Stretching fifteen miles from the coast at New Castle, New Hampshire, to the upper Great Bay in southeastern New Hampshire, the Great Bay estuary mixes tidal ocean waters with the freshwater inflow of the Winnicut, Sqamscott and Lamprey Rivers. The Great Bay reserve itself protects nearly 4,500 acres of tidal waters and mudflats and about 48 miles of shoreline. Within the five hundred fifty acres of upland in the reserve, the estuary's environment ranges from salt marsh and tidal creeks to islands, woodlands, and open fields. All of Great Bay lies within the reserve, as do the small channel from the Winnicut River and large channels from the Squamscott and Lamprey Rivers, that meet in the center of the bay to form a channel connecting to Little Bay at Adams Point.

Nearly one-half of Great Bay is exposed at low tide, with most of the intertidal being mudflat. Typical of northern New England estuaries, the bay hosts a variety of marine plant communities, eighteen rare or endangered plant species, and five rare or endangered animal species. New Hampshire's Department of Fish and Game manages the reserve.

PROGRAM ACCOMPLISHMENTS

Facilities: Construction of the 4,000 square foot Discovery Center at Sandy Point is to be completed for a Spring, 1994, dedication. This major project will feature a classroom, bookstore, indoor and outdoor exhibits, and a 1,600 foot boardwalk that draws visitors out to the saltmarsh. Over 3,000 feet of shoreline along the bay fronts the 50 acre site. The Sandy Point Interpretive Center is also being preparted for a Spring opening, with help from the Great Bay Research Reserve Advisory Board, which has recently been activated.

The Great Bay Reserve was designated in 1989 and received $120,000 for FY92 and $190,000 for FY93.

Management Planning: The reserve is actively involved in establishing a 1,100-acre National Wildlife Refuge at the former Pease Air Force Base, to be managed by the U.S. Fish and Wildlife Service. A preliminary management draft plan has been completed and is out for review. The reserve is continuing to work closely with the New Hampshire Department of Environmental Services, the U.S. Coast Guard, and local industry in developing an Area Response Plan for oil spill planning. A draft Wildlife Rehabilitation Plan, also developed by the Reserve, is under review by the Fish and Game Department.

Using a historic gundalow, reserve specialists explain coastal history to visiting students.

Hunters gather to hear duck callers at Duckers' Day, an activity sponsored by the reserve to foster understanding between coastal users and environmentalists.

Raising the sail of the reserve's historic gundalow became a unique event to celebrate Coastweeks '93.

RESEARCH AND MONITORING PROGRAMS

The reserve is successfully implementing its year-round water quality monitoring program through the University of New Hampshire's Jackson Lab. The Lab is cataloging all existing water quality data, back to 1970 and maintaining three permanent baseline monitoring stations.

The reserve is also working with the University of New Hampshire's Sea Grant Program, which sponsors the Great Bay Watch, a citizen-based water quality monitoring program, to coordinate the Bay Watch's activities with Jackson Lab's monitoring program.

EDUCATION AND OUTREACH PROGRAMS

The reserve continued to expand its educational efforts by giving presentations for school children and adults, providing educational workshops for teachers, presenting booths and displays at local Earth Day and Ducker's Day celebrations, tours, and other lectures. New publications will be released soon; others proved so popular that they are in reprint.

To support the Piscataqua Gundalow Project, the reserve recently sponsored its third annual Ducker's Day festival, bringing together hunters and the general public at a historic farm in Durham to learn more about each other and their shared environment. Hundreds of people visited the festival and were treated to displays of art and local history, retriever shows, yard sales, fishing lessons, duck boat skulling and falconry. The reserve also brought a touch tank and showed off the Piscataqua Gundalow boat used to transport goods on the Bay 250 years before trains. Ducker's Day sponsors hope that the festival promotes understanding between hunters and the general public, as well as teaching people about reserve resources.

SUMMARY OF EVALUATION FINDINGS

A routine program evaluation of the Great Bay NERR was conducted in September 1993. Final evaluation findings are due for release in early 1994.

New Jersey

- New Jersey Coastal Management Program

New Jersey's Coastal Management Program (NJCMP) is administered by the Office of Land and Water Planning (OLWP) within the Department of Environmental Protection and Energy (DEPE). Several core laws form the state's basis for regulatory control in the coastal zone, including the Coastal Area Facility Review Act (CAFRA), the Wetlands Act of 1970, the Waterfront Development Law, and the Riparian statutes. The NJCMP couples regulatory responsibilities with a coastal land-use planning function through direct state control.

New Jersey's coastal boundary extends from the New York border to the Raritan Bay landward up to the first road or property line from mean high water; from the Raritan Bay south along the Atlantic shoreline up to the Delaware Memorial Bridge varying from one-half to 24 miles inland (1,376 square miles of land area); north along the Delaware River to Trenton landward to the first road inclusive of all coastal wetlands; and includes a 31-mile square area in the northeast corner of the state bordering the Hudson River under the jurisdiction of the Hackensack Meadowlands Development Commission, the state's designated body responsible for implementing New Jersey's Coastal Management Program in the Meadowlands.

The program received $2,114,000 in federal funding for FY92 and $2,115,000 in FY93.

PROGRAM ACCOMPLISHMENTS

Estuarine Ecosystem Management: New Jersey's Coastal Management Program took the lead in developing a comprehensive land use and environmental management plan for the Barnegat Bay area. Barnegat Bay is a 75

square mile estuarine ecosystem that supports densely vegetated eelgrass, shellfish beds, finfish habitats, nesting grounds for the endangered least tern, and an overwintering site for American black ducks and Atlantic brant. Located between a developing suburban upland area to the west and a barrier island system to the east, the Bay is subject to intense fishing , recreational uses, and nonpoint source pollution from changing and intensifying land uses. The *"Watershed Management Plan for Barnegat Bay,"* finalized in June 1993, includes action plans for public education, sensitive areas acquisition and protection, fisheries management, public access, and water use planning. The NJCMP is already developing a public access guide for Barnegat Bay based on recommendations of the public access action plan.

Hazards Management: In July 1993, New Jersey passed amendments to its Coastal Area Facilities Review Act (CAFRA). Originally adopted in the 1970s, CAFRA contained a major loophole that required only those facilities containing 25 or more housing units and commercial development with 300 or more parking spaces to obtain a permit from the Department of Environmental Protection and Energy. As a result, about 50 percent of the development in the coastal zone proceeded without state or NJCMP review. The important amendments to CAFRA require a permit for any development on a beach or dune, and within 150 feet inland of the beach or dune. With these amendments, the state will significantly improve its oversight of development within the coastal zone, particularly for meeting hazard management requirements, and begin to address the cumulative and secondary impacts of numerous small developments. New Jersey's coastal program is preparing regulations to implement the CAFRA amendments.

Water Quality: New Jersey's Coastal Management Program funded two studies address-

Federal approval came in two parts: the Bay/Ocean Shore Segment in September 1978 and the Consolidated Program in September 1980.

ing stormwater runoff and nonpoint source pollution: *Stormwater Management in the New Jersey Coastal Zone*, and *Limiting NPS Pollution from New Development in the New Jersey Coastal Zone*. These studies examine innovative techniques New Jersey could incorporate into its regulatory program to control stormwater and nonpoint source pollution, and evaluate the suitability of land development related management measures for coastal water resources. Recommendations from these studies will become part of New Jersey's efforts to develop their section 6217 Coastal Nonpoint Pollution Control Program, a statewide nonpoint source pollution

State Plan Consistency: In June 1992, New Jersey adopted the State Development and Redevelopment Plan (SDRP)—a statewide master plan that will channel development to preserve important natural resources and minimize the adverse impacts of development pressures. New Jersey's coastal program worked closely with local governments and other state agencies to compare local, regional and state agency plans affecting the coastal area, and develop the coordinated state plan for New Jersey's coastal area. The State Development and Redevelopment Plan designates New Jersey's coastal area as an Area of Critical Statewide Concern. The NJCMP is now reviewing the entire coastal planning process to ensure compatibility between the SDRP and the state's Rules on Coastal Zone Management.

SIGNIFICANT PROGRAM CHANGES

As part of an on-going reorganization of New Jersey's DEPE, the NJCMP has been moved to the Office of Land and Water Planning within the Environmental Regulation Element. The reorganization sought functional chang. The Land Use Regulatory Program now handles all state permits, and the Enforcement Element conducts all enforcement activities.

OCRM approved a number of minor changes and incorporated them into the NJCMP as routine program implementations during the reporting period. Among them were changes to rules on coastal resources and development (N.J.A.C. 7:7E - 1.1 et seq.) and changes to the rules governing the Hackensack Meadowlands Development District. NOAA and the NJCMP are also discussing the possibility of incorportating revisions to New Jersey's outer continental shelf coastal policies into the coastal program.

SUMMARY OF EVALUATION FINDINGS

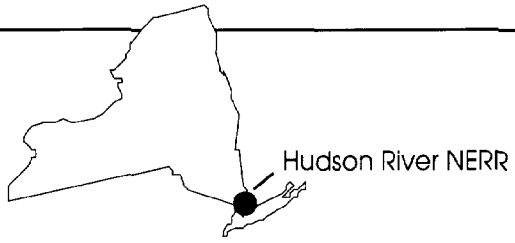
The final evaluation findings for the period August 1988 through August 1991, issued Feb. 24, 1992, concluded that New Jersey is adhering to its approved coastal management program. New Jersey's coastal program made major accomplishments by updating the state's coastal program document, and strengthening policies related to high rise structures, large scale development, farmland conservation, shellfish beds and submerged vegetation. The findings suggested that New Jersey could improve its program by improving enforcement, increasing inter-agency cooperation with local governments, and simplifying state environmental laws and regulations.

Did you know?

- Nearly 40 percent of New Jersey ocean waters have fishery limitations of some sort imposed as the result of water quality problems.
- 28 percent of New Jersey shellfish program acreage is condemned for shellfishing due to either high levels of bacteria or the presence of other pollutants.
- The New Jersey Pinelands, a 1.1-million-acre reserve, is composed of contiguous forest, wetlands, agriculture, and controlled development. The area is known for unique natural and physical characteristics and extensive, high quality water resources. The Pinelands was designated an International Biosphere Reserve by the United Nations.

New York

- New York Coastal Management Program
- Hudson River National Estuarine Research Reserve



New York's coast is the fourth longest in the nation, totaling 3,200 miles. Over 12.6 million people, or 72 percent of New York's population lives and works in the cities and towns along coastal waters, creating a strong need for effective management of the state's coastal resources. To manage this coastal area, New York state identified five distinct coastal regions: Great Lakes, St. Lawrence River, Hudson River estuary, New York City (with an approved Waterfront Revitalization Program), and Long Island. The state's coastal boundary is generally 1,000 feet from the shoreline, but includes areas of particular concern which extend the boundary up to 10,000 feet in some places.

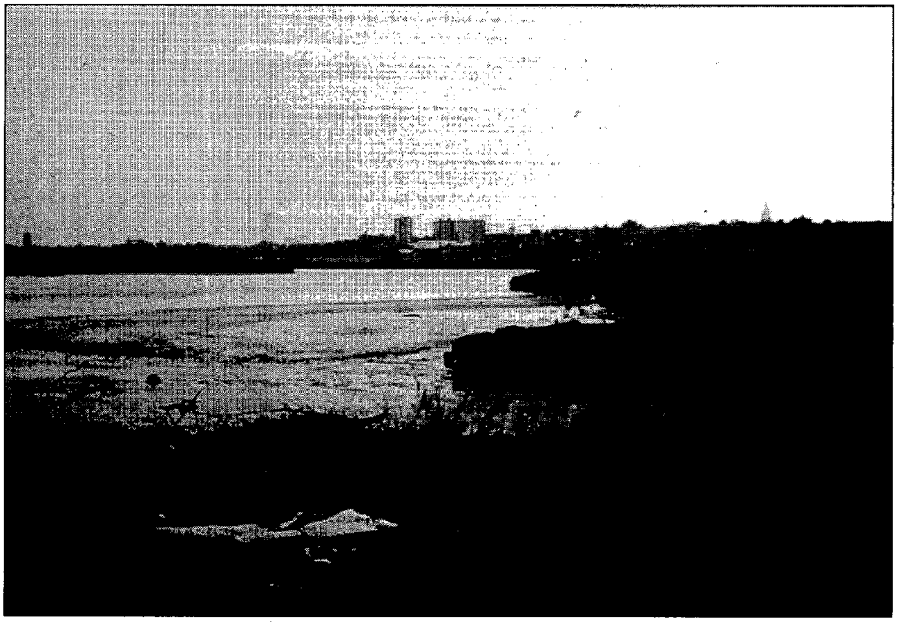
The Department of State (DOS), through its Division of Coastal Resources and Waterfront Revitalization, administers the New York Coastal Management Program (NYSCMP) and coordinates state activities and programs essential to the NYSCMP's implementation. The NYSCMP was established pursuant to the Waterfront Revitalization and Coastal Resources Act (WRCRA) and is supported by a number of other state laws, the State Environmental Quality Review Act (SEQRA), the Coastal Erosion Hazards Areas Act, and the Freshwater and Tidal Wetlands Acts.

The NYSCMP, with its coastal policies, coastal boundary, state consistency requirements, and coordination process gives New York's 250 coastal local governments the option to establish Local Waterfront Revitalization Programs (LWRPs) which address local needs and objectives in accordance with NYSCMP policies. Over 100 local governments are now participating in the LWRP process. New York coordinates state agency actions with the coastal program through the WRCRA and SEQRA. The Coastal Erosion Hazards Area Act grants authority for the state to set uniform setback requirements in coastal high hazard areas.

The New York coastal program earned federal approval in September 1982.

PROGRAM ACCOMPLISHMENTS

Regionalizing the Coastal Management Program: In a 1991 report entitled *"Now and for the Future: A Vision for New York's Coast,"* the Governor's Task Force on Coastal Resources recommended revising New York's Coastal Management Program to reflect demographic, environmental and economic trends, local priorities, and the need for conservation and development in each coastal region. In response to the report, the NYSCMP developed the first regional coastal management program for Long Island Sound (LISCMP). The RCMP proposes policies and standards which address the unique needs and priorities in Long Island Sound, and identifies outstanding coastal natural resource areas and areas for concentrated development. The program will assist state, federal and local governments in setting priorities for public investment on a regional basis. New York's Department of State (DOS) anticipates submitting the LISCMP to OCRM in early 1994 to incorpo-



rate it into the NYSCMP. DOS plans to begin preparing the next regional coastal management program in January 1994 for the Long Island Sound South Shore Estuary, as mandated by the New York State Legislature in 1993.

Coastal Hazards: Following the December 1992 nor'easter which caused over $250 million in property damage along the Long Island, Westchester and New York City shoreline, New York's Governor established a Coastal Erosion Task Force to develop short-term and long-term recommendations and action plans for addressing continuing flood and erosion damage. *"Emergency Response to Coastal Storms, Vol. I of the Final Report,"* submitted to the Governor on Sept. 1, 1993, makes recommendations for addressing short-term impacts of severe coastal storms. The report recommends, among other strategies, creating a Critical Erosion Response Team which would report to the scene of critical erosion immediately after major storm events and evaluate the erosion sites to determine the necessary mitigation measures. The Response Team would also stockpile materials, enabling the state to provide immediate engineering responses to overwash and inlet breaching. The report's second volume, which addresses the need and strategy options for a proactive approach to long-term management of coastal hazards, is being finalized. Both reports direct the NYSCMP's coastal hazard activities over the next several years.

Federal funding provided $2,554,600 in FY92 for program operation and $2,547,680 in FY93.

Public Access: Completion of the New York City Comprehensive Waterfront Plan will lead to substantial increases in public access along New York City's shorefront. The plan proposes new links to reconnect neighborhoods with the waterfront, and recommends more than 100 new or improved public spaces and 40 sites where public access would be a mandatory component of new development. The plan also recommends that the City rezone over 500 acres of land, with careful guidelines to protect the scale and accessibility of the waterfront. To implement the plan, the City, in conjunction with DOS staff, extensively revised its zoning regulations. The revisions introduce mandatory public access and open space on the shoreline, and require public access and visual connections to the waterfront. Design standards will reduce the height and bulk of structures on the waterfront. The zoning changes will also ensure opportunities to site water dependent uses. New York City enacted these changes in late 1993.

Coastal Habitat Protection: One of New York Coastal Management Program's stated policies requires that, "significant coastal fish and wildlife habitats will be protected, preserved and...restored so as to maintain their viability as habitats." In August 1992, the Department of State designated 14,790 acres of significant coastal fish and wildlife habitats in the New York City coastal

Scene from Hudson River

area. As a major resource protection step in one of the most urbanized coastal areas in the world, these designations are unique. The designations protect the least tern, piping plover, diamondback terrapin, upland sandpiper, striped bass, shortnose sturgeon and snowy egrets, among other species.

SIGNIFICANT PROGRAM CHANGES

OCRM approved several of New York's Local Waterfront Revitalization Programs as routine program implementation changes during the reporting period. Revitalization programs were approved for the Villages of Ossining, Piermont, Croton-on-Hudson, Port Chester, and Nyack; the Towns of Penfield and Hamlin; and the Cities of Albany, Beacon and Kingston.

New York designated scenic areas of statewide significance in Albany, Rensselaer, Greene, Ulster, Dutchess, Orange, Putnam, Rockland and Westchester counties, and submitted those designations for incorporation into the NYCMP as a program change.

The state also designated significant coastal fish and wildlife habitats along New York City's shoreline and incorporated those habitats into the coastal management program. Those habitats fall within Richmond, Kings, Queens, Bronx and New York counties.

SUMMARY OF EVALUATION FINDINGS

Final evaluation findings for the period July 1987 through November 1990, were issued October 11, 1991, and concluded that New York is adhering to its approved coastal management program. Cited as major accomplishments, the NYCMP created the Governor's Task Force on Coastal Resources in 1989, provided substantial technical assistance to local governments in developing Local Waterfront Revitalization Programs, and aggressively used Federal and state consistency as a tool to preserve and protect the state's coastal resources. As areas for improvement, the findings recommended that the NYCMP develop a comprehensive public access plan, establish Special Area Management Plans for critical areas, and provide greater incentives to local governments for participation in the Local Waterfront Revitalization Program. The next evaluation of New York's Coastal Management research needs.

The Hudson River Reserve includes four natural areas that span 100 miles of the tidal Hudson's 152-mile length, representing the estuary's wide range of salinity conditions and habitats. Tidal freshwater wetlands are the reserve's most unusual habitat. Emergent marshes and submerged shallows fuel both the detrital and phytoplankton food chains, and provide habitat for fish, turtles, crustaceans, waterfowl, and wading birds. Piermont Marsh, a brackish tidal wetland bordered by shallows, is located on the west shore of the Tappan Zee, 25 river miles north of Manhattan (RM 25). Iona Island, located at the southern gate to the Hudson Highlands at RM 43, is comprised of rocky, forested uplands surrounding tidal marshes that vary in salinity from fresh to brackish. The Tivoli Bays (RM 100) is a large complex of freshwater tidal marshes, swamps, and vegetated shallows that occupy two large coves bordered by mixed deciduous forests on islands and uplands. Stockport Flats (RM 125) is a mosaic of mudflats, subtidal shallows, emergent freshwater tidal marshes, and vegetated dredge spoil islands. The reserve's shallows also serve as spawning and nursery grounds for many species of fish.

The New York Department of Environmental Conservation manages the reserve in cooperation with four state and interstate agencies that own or regulate Hudson River Reserve land. Representatives of these agencies and NOAA comprise the reserve's Steering Committee.

PROGRAM ACCOMPLISHMENTS

Staffing: Three permanent reserve staff positions were created during the biennium, two of which are state-funded. Previously the reserve was operated by two federally-funded staff on a contractual basis.

Management Plan: The Hudson River reserve's Final Management Plan was completed in January, 1993. This plan stipulates that the reserve develop four individual site management plans (SMPs) to provide more detail about public access and resource management initiatives. SMPs were drafted for Stockport Flats and the Tivoli Bays.

The reserve operated using $110,000 in federal funds in both FY92 and FY93.

Facilities: Renovation of a nineteenth century dwelling at the Nutten Hook portion of Stockport Flats was completed in February, 1993. Using Federal and private development funds,

toric structures, and natural features. A caretaker was hired to maintain buildings and trails with assistance from volunteers. Identifying ways to increase handicap accessibility to the site became a focus for reserve staff.

RESEARCH AND MONITORING PROGRAMS

The reserve's four sites represent many of the natural areas and the broad range of salinities found in the estuary, as well as the wide variation in the density of development surrounding the estuary. The site provides many excellent opportunities for research related to coastal management issues.

Monthly water sampling of tributary and tidal waters, which began as the first phase of the reserve's water quality monitoring program, was expanded to include storm events. Sampling sites were established in watersheds of the Tivoli Bays using a geographic information system developed at Yale University. Water sampling will continue to monitor trends in water quality and to track impacts of watershed development and nonpoint source pollution.

A new NOAA-funded study, in collaboration with the Rensselaer Polytechnic Institute and the Environmental Protection Agency, is focusing on sediment movement and distribution patterns and sediment pollution levels. Researchers use radionuclide dating techniques on core samples to estimate historic and recent sedimentation rates and patterns. Analyses of dioxins, furans, heavy metals, and PCBs will be performed.

Large-scale vegetation maps (1"=200") were completed for tidal wetlands within the reserve. These maps help detect past and future changes in plant communities, impacts of sediment accumulation, and erosion at the reserve sites. Vegetation maps also enable researchers to accurately indentify field sites suited to their specific research needs.

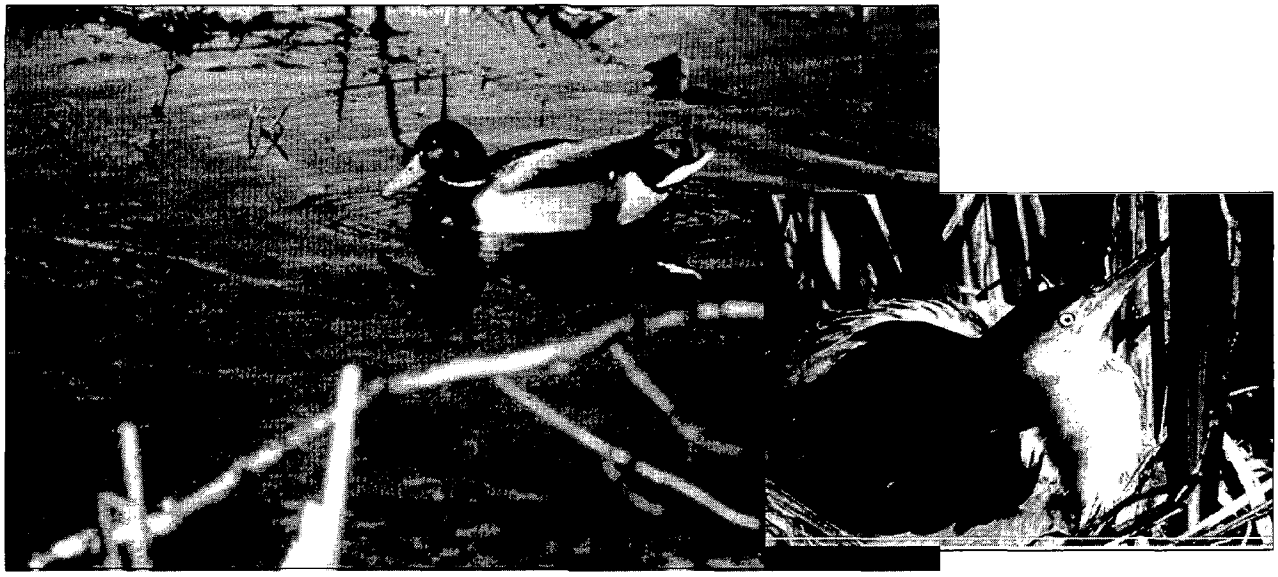
Under the Tibor T. Polgar Fellowship Program, the reserve sponsored 16 research projects on many aspects of estuarine ecology, including physical, biological and chemical characterizations, studies of ecosystem processes, exotic species control, nonpoint source pollution, and exchanges between tidal wetlands and the main stem of the Hudson River.

EDUCATION AND OUTREACH PROGRAMS

Hudson River Reserve hosted the annual National Estuarine Research Reserve System Workshop in 1991, which featured working sessions on key research, monitoring, education, resource management and administrative topics for 75 state and Federal staff within the NERR System.

Together, the Hudson River and Old Woman Creek NERRs developed a pilot project identifying innovative educational uses of remote sensing techniques, with the assistance of the Cornell Laboratory for Environmental Applications of Remote Sensing. Case studies linking land use and stream water quality will be presented at a professional development workshop for NERRS educators in November, 1993.

The reserve conducted nearly 100 tidal wetland programs for the general public and elementary, secondary and high school



students at the four reserve sites. Hudson River staff also presented demonstrations and activities, career days, seminars, and lectures illustrating estuarine processes on a wide variety of topics affecting the Hudson River.

The reserve received three private grants to develop a comprehensive teacher training program. A variety of professional development workshops have already been offered, some in cooperation with the Bank Street College of Education and a regional consortium of environmental education providers in the mid-Hudson Valley. Supplementary information and educational materials have been developed for participating teachers.

The reserve produced and distributed a poster celebrating 1993 National Estuaries Day activities in the Hudson River. The staff completed a program brochure in November, 1992.

SUMMARY OF EVALUATION FINDINGS

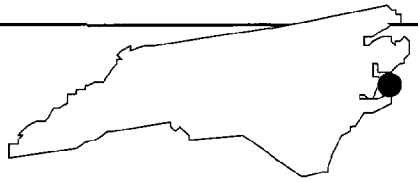
A program evaluation of the Hudson River NERR was conducted in May 1992. Final evaluation findings documented program accomplishments including the classification of three full-time professional staff members within the New York State Civil Service system, a state-funded research coordinator's position (and since the evaluation, state-funded Reserve Manager position), land acquisition in the Stockport Flats/ Nutten Hook and Tivoli Bays components and effective on- and off-site education programs. The reserve has also begun to lay the foundation for a solid research and monitoring program. The reserve enjoys strong public support and awareness.

Designated in 1982, the reserve now protects 4,800 acres — 95% complete — in the Virginian biogeographic region.

Recommendations for improvement targeted the following: compliance with the schedule listed in Hudson River NERR's Final Management Plan for completing all four Site Management Plans by January 1995; continued efforts in providing handicapped access to programs and facilities; work with OCRM to develop a plan for a comprehensive site profile of the Hudson River reserve's four components; and improved management of financial assistance awards through more timely completion of projects and submission of performance reports.

North Carolina

- North Carolina Coastal Management Program
- North Carolina National Estuarine Research Reserve

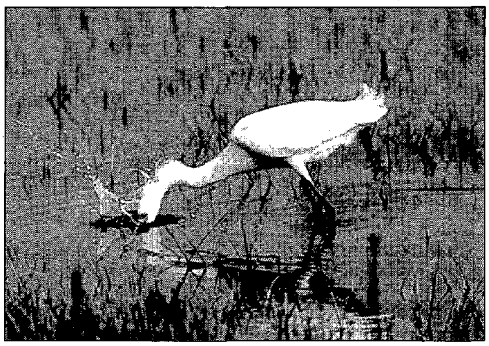


North Carolina NERR

North Carolina's Coastal Management Program (NCCMP) is based primarily on the state Coastal Area Management Act (CAMA). The lead agency for program funding and adminstration is the Division of Coastal Management (DCM), within the Department of Environment, Health and Natural Resources, while a Governor-appointed Coastal Resources Commission adopts rules and policies for the program. The inland boundary of North Carolina's 20 counties form the program's coastal zone boundary. Within the coastal counties, areas of environmental concern—tidelands, beaches, dunes, and coastal waters — have been designated and are managed by DCM through direct permitting authority. Outside of the critical areas, all state and federal agency actions are reviewed for their consistency with the goals and policies of the NCCMP. Further, the coastal counties are required, through CAMA, to develop land use plans which are used to guide growth and to make permit and consistency decisions throughout the state's coastal zone.

PROGRAM ACCOMPLISHMENTS

Wetlands Protection: North Carolina continues as a leader in protecting wetland resources in the coastal zone. Under the CZMA section 309 Enhancement Grants Program, the state is developing a Wetlands Conservation Plan that will provide crucial data for the management of these sensitive resource areas. In the plan, wetlands will be categorized and prioritized by ecological significance which will help the state identify primary wetland restoration and creation sites. The plan will also establish a monitoring program to assess trends in wetlands loss, restoration and creation, and the effectiveness of the state's wetlands regulatory program. The information will also provide a basis for improving wetland policies in local land use plans.



Cumulative and Secondary Impacts: North Carolina's coastal resources face threats from the effects of increased population and development in the coastal zone. Over the past two years, the state has used the Enhancement Grants Program to address the cumulative impacts of growth in the coastal zone by undertaking several initiatives. North Carolina will use a geographic information system to compile information on population, coastal resources, and development on a watershed basis to track development pressureson sensitive resources. The information system will enable the state to identify and designate critical areas where cumulative impacts are most significant. These initiatives tie into the development of North Carolina's nonpoint source pollution program which will address water quality issues through a watershed-basin planning approach.

Natural Resource Protection: North Carolina is completing its acquisition of almost 800 acres of the Buxton Woods maritime forest which will be preserved as part of the North Carolina Coastal Reserve. Both federal and state funds were used to acquire this unique natural area. Buxton Woods is the largest maritime forest on North Carolina's coast. It also harbors the greatest concentration of mammals and rar e plant species on the Outer Banks of North Carolina.

Hazards Protection: The state continues to implement its oceanfront management program which mandates setbacks for construction along the oceanfront

Did you know?

- North Carolina has 300 miles of coastline. There are more than 4,000 miles of shoreline including estuaries, rivers, and bays.
- 12% of land in the coastal area is preserved in federal parks and wildlife areas. The 12% comprises 721,000 acres out of a total of 6,000,000 acres of land area in the state's 20-county coastal zone.
- The Albemarle/Pamlico Sound Estuary system is the nation's second largest estuarine system, behind the Chesapeake Bay.

shoreline, and prohibits the use of erosion control structures such as jetties and revetments. The effectiveness of these oceanfront management regulations were twice put to the ultimate test during the biennium; first, in October 1991, by a major Nor'easter storm—the "Halloween Storm," and second, in August 1993, by Hurricane Emily. The state believes that the hazards program, and setback provisions and construction standards in particular, played a large part in preventing storm damage to North Carolina's coast.

NOAA approved North Carolina's coastal program in September 1978.

Ocean Resource Planning: North Carolina began developing an Ocean Resources Management Plan that will be used to develop new state policies directed at ocean resources and their use. The state formed an Ocean Resources Task Force comprised of state, federal, and local representatives, scientists, and user groups to focus on the issues and identify policy needs.

Federal Consistency: North Carolina continues to aggressively use the federal consistency review process. The state has increased its coordination with the U.S. Army Corps of Engineers (Corps) district office in Wilmington to review Corps nationwide permits. This coordination allows the state to review the Corps permits for consistency with its own coastal management program protection standards.

SIGNIFICANT PROGRAM CHANGES

OCRM approved several rule changes that North Carolina submitted for incorporation into its coastal management program. The most significant of these changes is a rule that addresses special needs for shoreline stabilization along the barrier islands. The rule allows the use of erosion control structures to protect historic sites of national significance and regionally significant commercial navigation channels. The program change provided a narrow exception to the state's existing policy that prohibited erosion control structures on the oceanfront.

SUMMARY OF EVALUATION FINDINGS

Final evaluation findings issued Nov. 1, 1991, found that the state is adhering to the requirements of the NCCMP. The evaluation noted several program accomplishments which include improvements to the state's federal consistency computer tracking system, providing public access, continued acquisition of Buxton Woods, and expanded resource protection to include inland primary nursery areas. Areas identified for improvement include communication among the Division's district offices, more training for local permit officers, providing full public participation at Coastal Resources Commission meetings, and improving communication and coordination between the Division of Coastal Management and the Albemarle/Pamlico Estuary Study.

The state received $1,508,000 in federally funding for FY91-92, $1,891,000 for FY92-93, and $1,914,600 for FY93-94.

Governor designates 1994 as "Year of the Coast"

Governor James B. Hunt, Jr., has issued an Executive Order that declares 1994 "The Year of the Coast" in North Carolina.

The Executive Order established a governor-appointed Coastal Futures Committee made up of 15 local representatives interested in the future of the North Carolina coastal program.

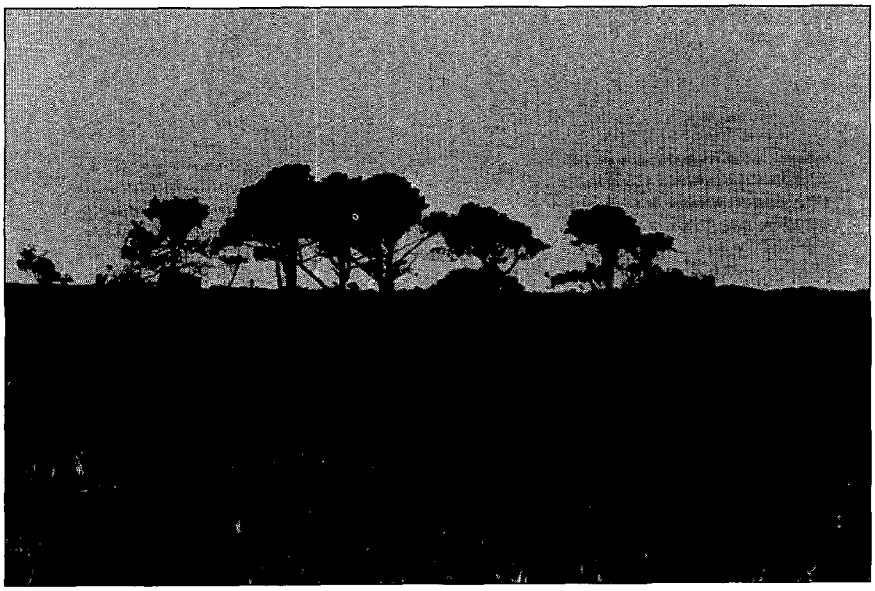
The committee will meet monthly in 1994 to review the effectiveness of the first 20 years of implementation of the North Carolina's Coastal Management Program.

The committee will ultimately present its recommendations at a conference in which leaders in coastal management from several states will convene.

State agencies and environmental organizations, including the North Carolina National Estuarine Research Reserve, are planning an array of activities to heighten awareness and appreciation for coastal issues.

Four components along North Carolina's coast make up the North Carolina National Estuarine Research Reserve: Zeke's Island, 1,165 acres in Brunswick and New Hanover counties; Masonboro Island, 4,974 acres in New Hanover County; Rachel Carson, 2,625 acres in Carteret County, and Currituck Banks, 960 acres in Currituck County. Currituck Banks is the only site representing the Virginian biogeographic region; the other three sites represent the Carolinian region. The four sites depict an array of habitats and communities with ocean beaches; dunes; grassy flats; maritime shrub thickets and forests; intertidal ponds; salt, brackish and freshwater marshes; intertidal mud and sand flats; oyster bars; submerged aquatic plant beds, and subtidal communities. Several species found in the reserve, including the nesting loggerhead and green sea turtles and seabeach amaranth, listed as threatened under the Federal Endangered Species Act.

North Carolina's Department of Environment, Health and Natural Resources, which manages the sites, worked with NOAA to revise the reserve's management plan in 1990. The plan includes policies for research, education and compatible recreational uses. Feral horse populations on Rachel Carson and Currituck Banks, off-road-vehicles on Currituck Banks and Zeke's Island, and dredge material deposition on Rachel Carson and Masonboro Islands were also addressed in the plan as management issues.



PROGRAM ACCOMPLISHMENTS

During the past two years North Carolina NERR's 3-person staff firmly established themselves in their positions located in Wilmington and Beaufort. Program staff combined NOAA funds with generous assistance from Cape Fear Community College and the University of North Carolina at Wilmington (UNCW) to construct a 2,000-square-foot research and educational facility. The building was completed in 1992 and moved to UNCW property on the mainland near Masonboro Island. The reserve's research specialist has an office in this facility; the reserve coordinator works out of the UNCW Center for Marine Science Research; whereas the education specialist occupies a leased office within the North Carolina Maritime Museum in Beaufort.

During the biennium, the state acquired another four percent of Masonboro Island to bring the reserve's acquistion status to 99 percent complete. North Carolina now owns over 85 percent of the island. The Society for Masonboro Island, a local nonprofit organization, helped the State Property Office acquire the additional land by contacting and negotiating with owners of remaining tracts.

The reserve relied on $129,000 in federal funding in FY92 and $109,000 in FY93.

RESEARCH AND MONITORING PROGRAMS

The third year of a phased monitoring program began at Masonboro Island and Zeke's Island. Biological, physical and chemical data acquired through monitoring will be used to develop site profiles. This project received tremendous assistance from a University of North Carolina at Wilmington graduate student and three summer interns.

Each year several research proposals were submitted for funding consideration. In all, two projects were accepted for federal funding: Dr. Charles Peterson's (University of North Carolina) study of *Relative habitat value of two seagrass species: Implications for global warming at Rachel Carson* and Dr. Richard Wetzel (Virginia Institute of Marine Science) and Dr. Robert Christian's (East Carolina University) study of *Sediment-water nutrient exchange in estuarine sediments of different trophic status* on Currituck Banks and Masonboro Island.

At 9,724 acres, the reserve has reached a 99% complete acquisition status.

Other studies conducted at the reserve received funding from non-federal sources, such as Ken Swain's (UNCW) *Sediment dynamics in the Zeke's Island Reserve*; Kathy Reinsel's (Duke University) *Biology of Fiddler Crabs at the Rachel Carson Estuarine Reserve Component*, and Bob Miltner's (UNCW) *Fish feeding habits in the Masonboro Island Estuary.*

EDUCATION AND OUTREACH PROGRAMS

The reserve's education specialist developed a number of educational activities for school groups and the public. Over 8,000 people participated in field trips, outreach programs and other reserve activities during the biennium. A monthly lecture series was presented at the North Carolina Maritime Museum. The reserve hosted four teacher workshops to train instructors in using estuarine curriculum guides written by Dr. Gail Jones of the University of North Carolina at Chapel Hill, *Project Estuary* for middle school and *Sound Ideas* for elementary level students. Activities also included litter pickups and an estuarine art contest.

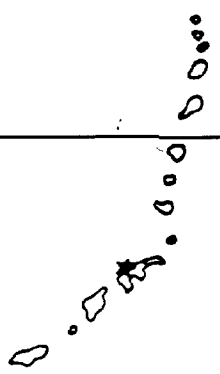
The reserve was designated in two parts, first in 1985 and second in 1991, and in two biogeographic regions: Virginian and Carolinian

SUMMARY OF EVALUATION FINDNGS

A section 312 program evaluation was conducted in May 1993. Final evaluation findings documented program accomplishments, including the addition of two state-supported, full-time staff members, continued land acquisition, designation of the Masonboro Island component and location of reserve staff to the coast. Due to increased staff visibility, the reserve enjoyed a growth in public support and awareness. Recommendations for improvement included: securing state funding for an education coordinator; adding a position for Currituck Banks, the most northern component; strengthening educational and interpretive programs at all four components; and developing a strategy and timeline for completing a North Carolina National Estuarine Research Reserve site profile.

Northern Marianas

- Northern Mariana Islands Coastal Resources Management Program



The entire land area of the 14 Northern Mariana Islands and surrounding territorial waters makes up the Commonwealth's coastal zone. Regulations governing the Northern Mariana Islands Coastal Resources Management Program set up a two-tiered permit program, which distinguishes between the most sensitive of the islands resource areas and less sensitive areas. Activities occurring within the four areas of particular concern (APCs) — shoreline, lagoon and reef, wetlands and mangrove, and port and industrial — require a permit. Outside the Areas of Particular Concern, only activities which are deemed to be "major sitings" require a permit.

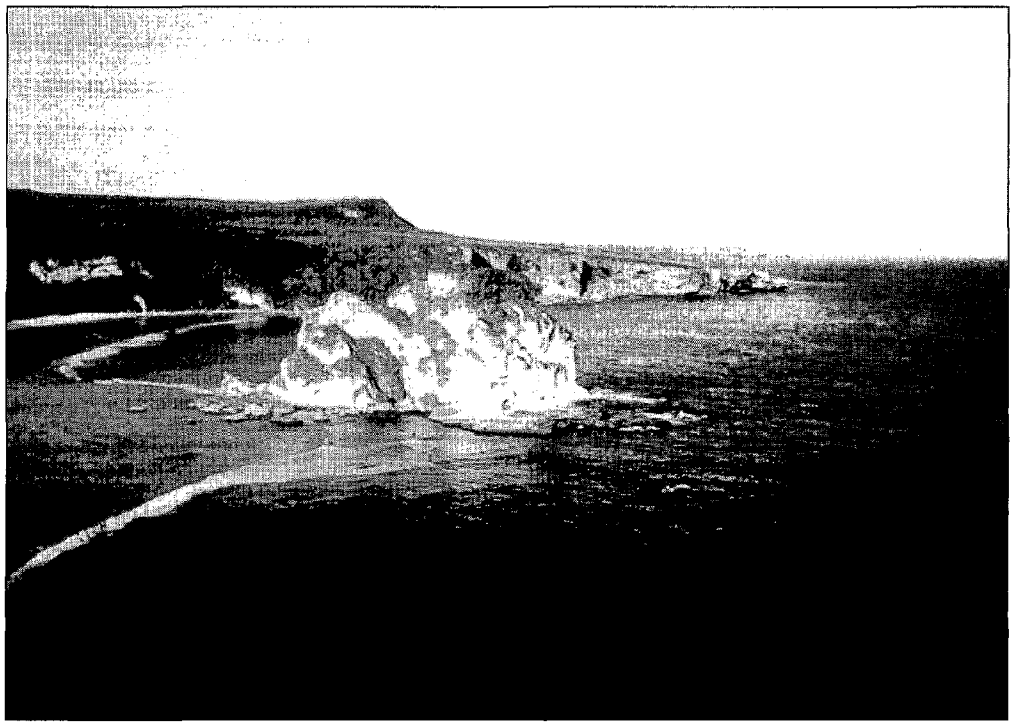
An Executive Order originally established the Northern Mariana Islands Coastal Resources Management Program (CRMP) in 1980. In 1983, the Commonwealth enacted the Coastal Resources Management Act to codify the policies and use priorities of the CRMP. The Coastal Resources Management Office (CRMO) in the Office of the Governor administers the Commonwealth's coastal program. The CRMO and six other Commonwealth agencies make permit decisions. Those agencies are: the Departments of Natural Resources, Public Works, and Commerce and Labor, the Division of Environmental Quality, the Historic Preservation Office, and the Commonwealth Utilities Corporation.

The program received federal approval in September 1980.

PROGRAM ACCOMPLISHMENTS

Public Access: To educate residents and visitors on various coastal recreational opportunities found in Saipan, the CRMO used coastal management funding to support the development and publication of the *Shoreline Access Guide to Saipan.*

Brown Tree Snake Prevention Program: The Commonwealth of the Northern Mariana Islands, like many other Pacific Islands, faces a continuing threat of ecological invasion from the brown tree snake. Once established, the snakes can cause irreparable harm to native populations of birds and small mammals, many of which are endangered on CNMI. The Coastal Resources Management Office has developed an innovative campaign to prevent the introduction of these ecological invaders. Components of the program include: a widespread public education campaign aimed at prevention, eradication and reporting; close cooperation with



construction crews to conduct inspections of incoming heavy equipment; and, coordination among the other CNMI and Federal agencies having responsibilities for natural resource protection throughout the Commonwealth.

The coastal program operated using $529,333 in federal funds during FY92 and $587,000 in FY93.

Hazard Protection: Using a CZMA section 309 Enhancement grant, CNMI has begun to study the objectives and policies of its coastal resource management statutes as they relate to coastal development in the commonwealth. To more effectively manage coastal resources located within high-risk, hazard-prone areas, the study will identify changes that can be made to the statutes' objectives and policies.

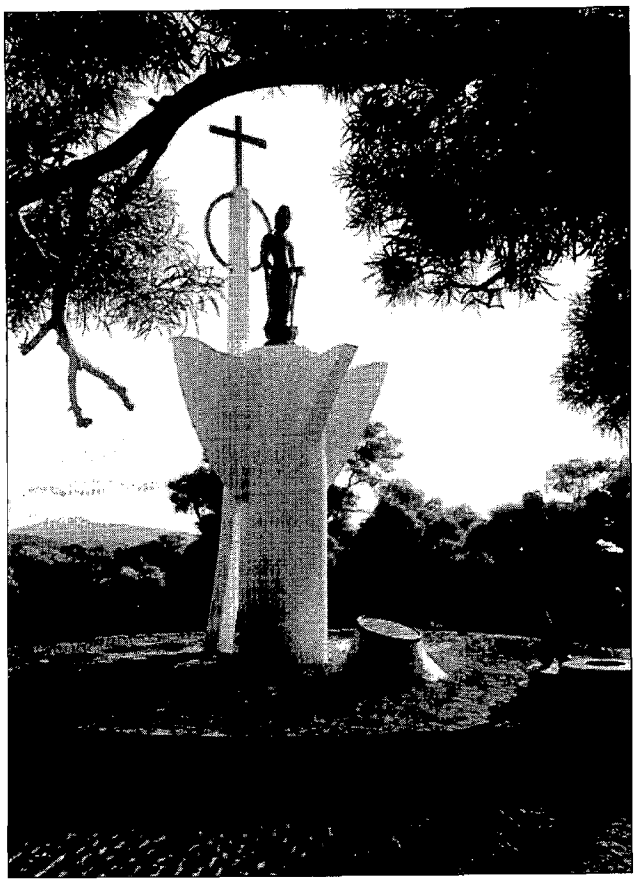
Zoning Law: In 1992, the commonwealth's legislature passed the Saipan Zoning Law. The zoning program now regulates shoreline building setbacks and building heights, previously regulated by the CRMO.

SIGNIFICANT PROGRAM CHANGES

During the biennium, NOAA approved changes to the Coastal Resources Management Program's regulations. The changes outline requirements for submitting Major Siting Applications, require erosion control and drainage plans, and require that all documents be submitted to the program office in english units.

SUMMARY OF EVALUATION FINDINGS

The final evaluation findings, issued in February, 1992, indicated that the commonwealth of the Northern Mariana Islands was not fully adhering to its approved coastal management program. OCRM indicated a specific concern that the Commonwealth is not fully implementing and enforcing key program components of its Coastal Permit process. In addition, NOAA indicated serious problems with monitoring and enforcement, appeals, grants management and Federal consistency reviews. Mandatory recommendations contained a schedule of actions that must be implemented in order to bring the Coastal Resources Management Program into full adherence with the national program. The CNMI has fulfilled the actions set forth in this schedule.



Previous Page: Bird Island off Saipan

Left: Preserving cultural heritage is a component of Northern Marianas coastal management.

Ohio

- Old Woman Creek National Estuarine Research Reserve

Old Woman Creek NERR

Old Woman Creek, located at a drowned stream mouth that drains into Lake Erie, is the smallest reserve in the National Estuarine Research Reserve System, and the system's the only example of a Great Lakes freshwater estuary. Habitats within the reserve include remnant embayment marshes, mudflats, swamp/riverine forests, barrier beach and oak/hickory upland forests that surround the estuary's open waters.

Hundreds of species of algae, vascular plants, invertebrates, mammals, fishes, and birds dwell in the reserve's many habitats. Several of these species are threatened, endangered, or identified as species of special concern, including the American bald eagle, sharp-shinned hawk, eastern fox snake, and the spotted turtle. The reserve also functions as an important nursery and spawning area for Lake Erie forage fish.

Ohio's Department of Natural Resources, Division of Natural Areas & Preserves, manages the Old Woman Creek National Estuarine Research Reserve. The reserve's management plan, approved in 1983, is now being revised and managers, in revising the plan, may incorporate two satellite estuarine wetlands into Ohio's reserve program .

PROGRAM ACCOMPLISHMENTS

Program Coordination: Reserve staff worked closely with the Ohio Department of Natural Resources staff in developing Ohio's Coastal Zone Management Program, and Sept. 22-23, 1993, hosted the annual Great Lakes Regional meeting of NOAA's coastal zone management state program managers from Indiana, Michigan, Pennsylvania and Ohio.

The reserve received $70,000 in federal funding in FY 1992 and $90,000 in FY 1993, with another $15,749 in FY 1993 for aerial photography.

RESEARCH AND MONITORING PROGRAMS

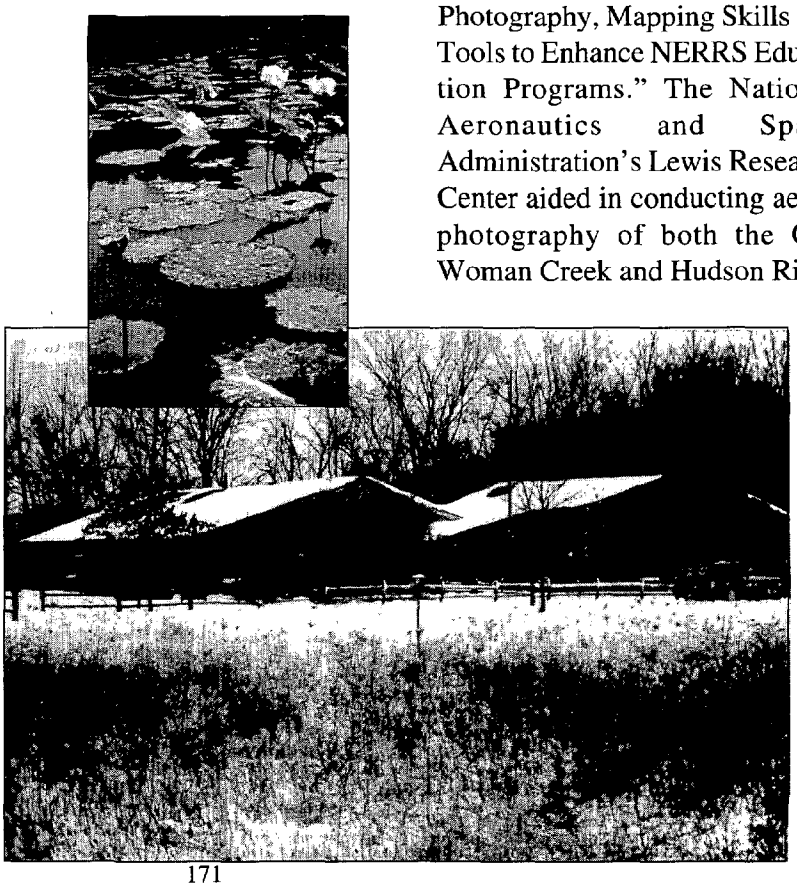
Thirteen research projects and four ecological monitoring projects have been initiated during this biennium. Among the topics were: development of protein biomarkers and assessment of tumor frequency in wild fish populations; wetlands sedimentation; ability of wetlands to reduce pollutants; ecology of algae in four Lake Erie estuaries; effect of zebra mussels on the consumption of zooplankton by selected fish species; and nitrogen dynamics in the sediments of the estuary.

The Old Woman Creek watershed was chosen by the Agricultural Stabilization and Conservation Service (ASCS), Ohio Department of Natural Resources, and the Erie County Agricultural Extension Service as a demonstration site for studying the effect of selected agricultural management practices, with the goal of improving water quality within the watershed. The reserve monitoring program is involved with sampling and testing for this project.

The Old Woman Creek estuary represents the Lower Great Lakes biogeographic region

Throughout the summer and early fall of 1993, the Ohio Environmental Protection Agency used the Old Woman Creek estuary as a collection site for its long-term Lake Erie water quality study. OEPA biologists will continue to collect samples of fish and insects over the next three years.

In June 1992, Pennsylvania State University began monitoring the baseline characteristics of benthic organic matter and surface-associated microbial communities at Old Woman Creek. This crucial study will provide the baseline information needed to make future management decisions about living resources at the reserve. In the summer of 1993 reserve staff embarked on the next stage of monitoring toward developing a site profile for the reserve. When complete, this project will be used to formulate and implement an expanded reserve monitoring plan.



EDUCATION AND OUTREACH PROGRAMS

During the past two years, the reserve staff have undertaken a broad array of education and outreach programs, reaching practicing wetland scientists and coastal management professionals as well as high school and college students. The reserve's programs also focused on both local cultural resources and state-wide natural resource initiatives.

In the fall of 1992, Old Woman Creek staff began working with Cornell University's Laboratory for Environmental Applications of Remote Sensing (CLEARS) on a two-year project called "Development of Aerial Photography, Mapping Skills and Tools to Enhance NERRS Education Programs." The National Aeronautics and Space Administration's Lewis Research Center aided in conducting aerial photography of both the Old Woman Creek and Hudson River

(New York) NERRs. This is one of the first education projects funded entirely by NOAA that supports education/interpretive projects benefiting the entire NERR system. This project trains other reserve education coordinators in remote sensing techniques, so that the coordinators may study land use changes and the effects of such changes on estuarine ecosystems; to promote the use of aerial photos and maps in reserve education programs for teachers and resource managers; and to enhance the ability of reserve educators to provide technical assistance to coastal managers.

The reserve was invited as an exhibitor at the 4th International Wetlands Conference (INTECOL) at Ohio State University in September 1992. Over 700 wetland scientists and educators from throughout the United States and 56 foreign countries attended. The reserve hosted a field trip in conjunction with this conference.

In 1992, reserve staff taught two "Development and the Environment" workshops for 50 regional realtors.

In both 1992 and 1993, the reserve hosted Ohio's "Coast Weeks" kickoff ceremonies and "National Estuaries Day" activities. Over 100 interested citizens and local, state, and regional coastal decisionmakers took part in these events each year.

During this biennium, reserve staff completed a new archeology exhibit depicting the chronology of American Indian occupation of the Old Woman Creek estuary from 10,000 years ago to recent times. The exhibit emphasizes the importance of local natural resources to Indian survival. A color poster and interpretive brochure were also produced by this project.

Reserve staff and visiting college faculties organized and taught a 2-credit hour course entitled, "Wetlands Ecology of Lake Erie" for twenty students from Bowling Green State University.

Recently, regional educators have initiated "Project Oceanus" for gifted high school students from Hancock County, Ohio. This project will allow students to conduct comparative ecosystem studies between the Old Woman Creek NERR, Rookery Bay NERR, and the Florida Keys National Marine Sanctuary.

SUMMARY OF EVALUATION FINDINGS

No evaluation of the Old Woman Creek NERR was conducted during the biennium.

Reserve, interagency team study serves coastal management

What can tumors in bullhead catfish teach coastal managers?

Dr. Paul Baumann form the U.S. Fish and Wildlife Service and a team of researchers from Ohio State University, the Canada Centre for Inland Waters, and the Smithsonian Institute are using Old Woman Creek NERR to find the answer.

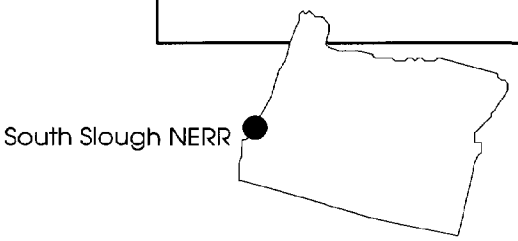
At the site, the team is examining the blood chemistry and liver pathology in brown bullhead catfish populations. The liver tumor frequency may indicate the impact of dredging on the animals' health.

Specifically, the study looks at animal health after animal tissues absorb the breakdown products of petroleum and related carcinogenic compounds that result from dredging operations.

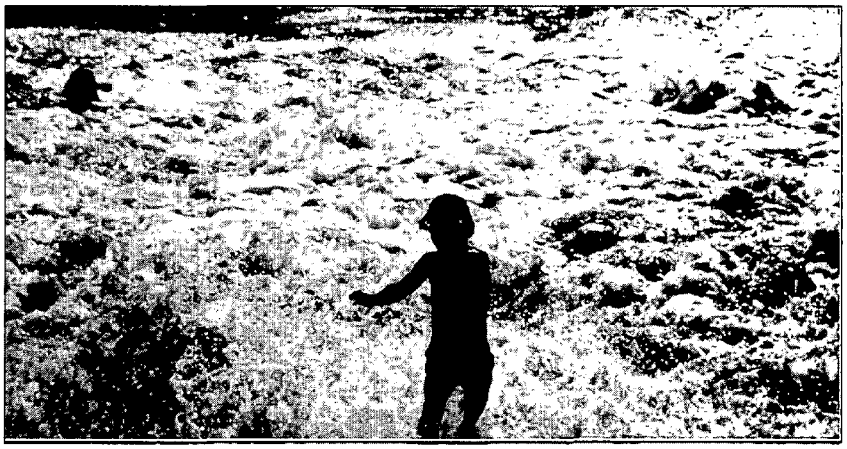
Researchers also hope to develop biomarkers for tumors in fish populations. Biomarkers, elements in an animal's bloodstream that indicate tumors, allow for early tumor detection and are quicker, more accurate, and less expensive than traditional methods of surgically removing tissue from the animal.

Oregon

- Oregon Coastal Management Program
- South Slough National Estuarine Research Reserve



Oregon manages its coastal resources as part of a statewide program for coordinated land use planning. A networked program, Oregon's Coastal Management Program is based on the Oregon Land Use Planning Act (Act), regulations for 19 statewide planning goals, local comprehensive land use plans that are consistent with the statewide goals, and statutes and rules governing the state's networked agencies. The Act designated the Land Conservation and Development Commission (LCDC) and its staff, the Department of Land Conservation and Development (DLCD), as the lead agency for administering Oregon's Coastal Management Program (OCMP). LCDC can adopt goals and guidelines to provide direction for the program and the local comprehensive plans. Oregon's Division of State Lands, and the Oregon Departments of Fish and Wildlife, Forestry, Transportation, Energy, Agriculture, and Environmental Quality are the program's principal networked agencies. Oregon's Coastal Management Program defines the state's coastal zone boundary as the watershed from the crest of the Coast Range mountains seaward to the three-mile jurisdictional boundary of state waters.



Recent evidence suggests that major subduction zone earthquakes occur along the Oregon coast every 300 to 500 years on the average and that the last major quake probably occurred about 350 years ago. Damage from such an event would result not only from groundshaking but also from earthquake-induced liquefaction, landsliding, subsidence, and tsunamis. The Oregon Coastal Management Program is currently considering policy and planning implications for this evidence.

PROGRAM ACCOMPLISHMENTS

Public Access: DLCD continues its strong commitment to increase public access throughout the state. Section 306A Resource Management Improvement Grants contributed to many joint state/local public access efforts, including four in fiscal year 1992 and three in fiscal year 1993. DLCD also annually updates its section 306A "Field Guide," which presents a photograph, map, and description for each project under section 306A.

Ocean Resources Management: Oregon is currently drafting a Territorial Sea Plan — a major ocean resources initiative. The Terrirorial Sea Plan will be based on the issues and recommendations of the Oregon Ocean Resources Management Plan, an advisory and guidance document completed in 1991, and will address other emerging issues. The effort to develop the Plan is now focusing on Oregon's rocky intertidal areas, which are suffering damage from increasingly heavy tourist traffic. The rocky shores management program and other components of the Territorial Sea Plan will be based on mandatory, enforceable policies. To coordinate state ocean policy and prepare the Plan, Oregon has established a permanent ocean resources planning and management body — the 23-member Ocean Policy Advisory Council (OPAC). The DLCD coordinates the OPAC's work.

Coastal Hazards: Oregon's Coastal Management Program undertook several hazards initiatives during the biennium. A policy working group, representing different interests and perspectives, has been working to define coastal hazard issues and problems, formulate and evaluate alternative solutions, and recommend preferred alternatives. The group is focusing mainly on policies related to beach erosion, flooding, and upland development.

The state has also begun working to develop new standards for geotechnical reports on proposed building sites and to develop a methodology for inventorying areas subject to dune undercutting. Oregon is also mapping hazards to show the combined effects of both chronic and catastrophic hazards affecting Oregon's coast.

The Oregon Coastal Management Program is acting to save the state's rocky intertidal pools, which are being seriously damaged through overuse and uninformed use by tourists. The OCMP, through its supporting role to the Ocean Policy Advisory Council, is developing policies and regulations to protect these areas. Among the policies proposed are restricted access to specific sites to protect habitats, and using public education, information, and awareness programs.

Public Education: Oregon is developing a Communications Strategy for Coastal Stewardship — a master plan for coordinating and unifying messages from federal and state agencies to the public. In Oregon, as in many other states, public educational and interpretive materials have been developed by numerous agencies and entities without benefit of an overall master plan. The result is a hodge-podge of communication strategies, ranging from excellent to poor, with overlap, gaps, and even contradictory messages. The Oregon Coastal Management Program and Oregon Sea Grant are supporting the development of an interrelated communications effort that will enable all agencies to deliver a consistent, coordinated message to the public. Different communications strategies will also be tested to determine which are most effective in increasing visitor knowledge and promoting personal stewardship.

Wetlands Assessment Methodology: With support from DLCD, the Division of State Lands (DSL) is developing a methodology to assess the functions and values of wetlands. State agencies, local governments, and private landowners will use this methodology to evaluate wetlands. By using this methodology, Oregon will improve its wetlands program in both quantitative and qualitative assessment.

SIGNIFICANT PROGRAM CHANGES

OCRM approved two significant program changes during the reporting period: the Lane County Comprehensive Plan and the Periodic Review Amendments to the City of Yachats Comprehensive Plan.

The Oregon program, approved by NOAA in May 1977, received $1,173,667 in federal funding for FY92 and $1,061,886 for FY93

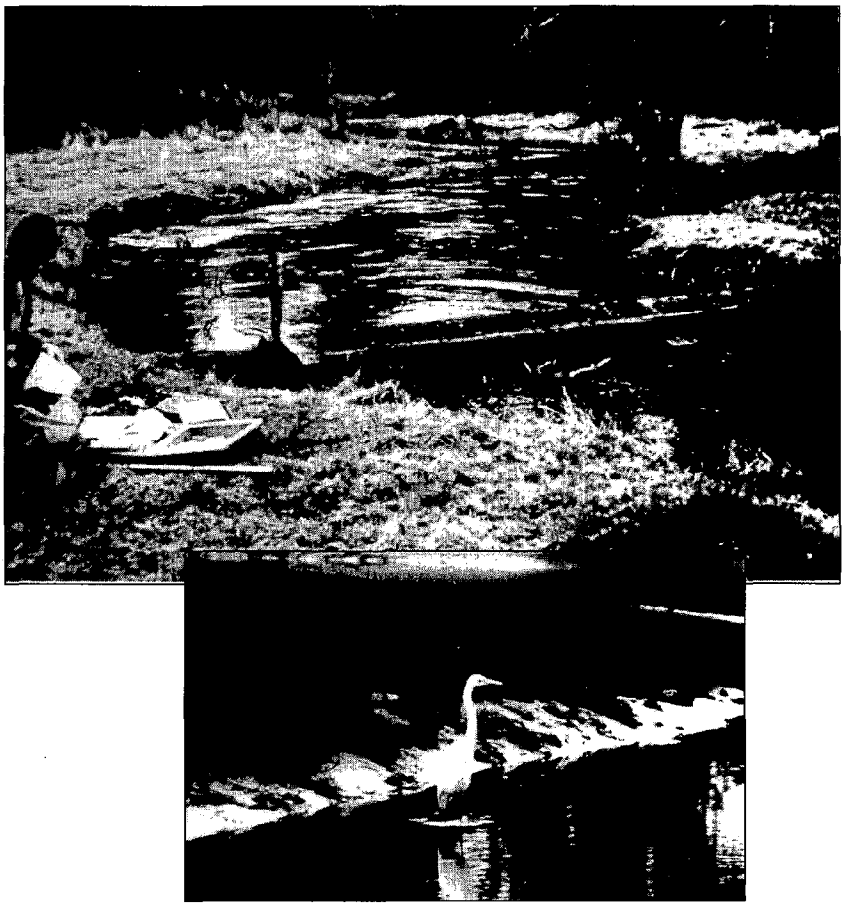
SUMMARY OF EVALUATION FINDINGS

Final evaluation findings issued in July 1993 indicate that Oregon is successfully implementing and enforcing its federally-approved coastal management program. DLCD is taking a leadership role in coastal issues, coordinating with other State agencies, and assuring the opportunity for full participation by the public and other interested parties. The findings recommended that the state improve the participation of other state agencies in the local plan periodic review process; develop ways of improving protection of non-estuarine coastal wetlands; enhance public outreach; and work with the Department of Environmental Quality to provide additional support for developing the state's section 6217 Coastal Nonpoint Pollution Control Program.

South Slough was the first designated National Estuarine Research Reserve. The site is one of eleven shallow tidal inlets of the Coos Estuary in Coos Bay, Oregon. Encompassing approximately 25 percent of the South Slough drainage basin, the reserve includes a variety of habitats, including upland forests, freshwater marsh, mudflats, salt marsh, and open water. At least 22 commercially important fish species reside in the estuary and the reserve's extensive eelgrass beds attract waterfowl migrating along the Pacific Flyway.

The South Slough estuary has been altered dramatically since its development in the mid 1850s. Like most estuaries on the west coast, a large portion of its coastal wetlands are diked agricultural lands. Now the reserve's most prominent feature is its extensive array of dikes, many of which have been breached naturally at various times in the recent past. Some remain intact.

South Slough NERR is managed by Oregon's Division of State Lands, the staff agency of the State Land Board which includes the Governor, Secretary of State, and State Treasurer. The Director of the Division of State Lands chairs the South Slough Management Commission — a 7-member voting commission appointed by the governor to: 1) oversee the operations of the reserve and provide policy guidance to reserve staff; 2) uphold the statute creating the reserve; and 3) uphold the policies of the State Land Board.



One non-voting federal representative also sits on the Commission.

The permanent staff of the South Slough NERR includes the manager, assistant to the manager, research coordinator, education coordinator, maintenance foreman, and public service representative. The research and education programs are also supported by interns from colleges and universities around the country and by an advisory committee. A large volunteer staff and the non-profit "Friends of South Slough, Inc." provide support to the reserve.

The first reserve in the national system, South Slough NERR was designated 1974 in the Columbian biogeographic region.

PROGRAM ACCOMPLISHMENTS

Management Plan: South Slough National Estuarine Research Reserve is at a pivotal point in its evolution. The reserve has completed most of the goals outlined in its first management plan drafted in 1984. Reserve and

OCRM staff have completed a formal draft revision of the reserve's original management plan which reflects substantial development of reserve management and programs over the past nine years, as well as changes and growth in the National Estuarine Research Reserve System. The revised management plan incorporates a new regional emphasis for all aspects of the reserve's operations. While retaining its own activities, the reserve will build stronger ties with the larger educational and scientific community. Reserve staff have also become involved with coastal resource management initiatives throughout Oregon.

Facilities: South Slough reserve staff brought the reserve's facilities program to maturity during the past two years. A 3,500 square foot farmhouse, purchased in 1992 with the Tracy Property, was converted to a field science station for the tidelands restoration projects. Buildings, roads and trails are operating at nearly full capacity. Following recommendations in the facilities plan, inappropriate buildings are being demolished. Necessary roads have been graded and graveled, ditched and drained. All unnecessary roads are closed and in the process of natural revegetation. The trail system is being upgraded to allow for handicap accessibility to major portions of the study trail. Routes are being developed for an additional new system on the North Creek drainage. Construction will begin as the existing system begins to exceed capacity.

Since many of South Slough's facilities are operating at or near capacity, environmental carrying capacity is addressed in facilities and trail planning in the revised management plan.

The reserve operated using $168,000 in federal funds in FY92 and $109,000 in federal funds in FY93.

RESEARCH AND MONITORING PROGRAMS

The reserve has completed its inventory and assessment of habitat conditions within freshwater streams, marshes and riparian areas. This information will be combined with similar data from tidal lands and upland forest habitats when preparing the community profile of the site which is underway. The community profile will describe the primary habitats and communities that occur within estuarine tidelands, riparian areas and upland forests and provide the framework for a long-term monitoring program.

During the biennium, graduate students researched the correlation between inundation period and coastal wetland productivity in the reserve, the recovery of eelgrass populations and communities of bottom-dwelling invertebrates following removal of commercial oyster stakes, and seasonal changes in the abundance, distribution, and population size and structure of dense beds of burrowing ghost shrimp as they re

Reserve plans Winchester Tidelands restoration

With support from a NOAA development grant, South Slough NERR sponsored an intense three day workshop in June 1993 to finalize a strategy for rehabilitating the Winchester Tidelands.

The workshop brought together the Winchester Tidelands Restoration Project (WTRP) Advisory Committee, a group of experts in wetland restoration, estuarine ecology, botany, tidal hydrology and wetland regulation, and representatives from state and federal agencies and private industry.

The South Slough's research coordinator and a wetland planner on contract co-authored an article describing the restoration project's goals and objectives, which was published in the U.S. Department of Interior periodical *Park Science* (Vol. 13 (4), Fall, 1993).

The Winchester Tidelands, a key component of the reserve, once were highly productive estuarine channels, mudflats and saltmarshes. They were since altered by dikes to channel water to agricultural lands, resulting in lost habitat for anadromous fish, invertebrates, mammals, shorebirds and migrating waterfowl.

The project seeks to restore tidal circulation and estuarine functions by removing dikes and tide gates. As a control for the experiment, researchers will compare the success of artificially facilitated wetlands restoration with the series of wetlands in the reserve whose dikes breached naturally at various times in the recent past.

The entire series of diked wetlands in the reserve will therefore become part of a larger research initiative which will provide valuable insights into the effectiveness of wetland restoration efforts thorughout the entire Pacific Northwest. Because of the significance of the research, the restoration efforts at South Slough NERR are gaining nationwide attention.

In support of the plan adopted by the Advisory Committee, South Slough has completed a private contract with Menasha Corporation to establish precise benchmark elevations within tideland portions of the reserve.

Further, Menasha Corp. provided the instrumentation and satellite communications needed to complete the on-site topographic surveys within several of the saltmarsh restoration sites.

The reserve is now looking to the National Fish and Wildlife Foundation, the US. Fish and Wildlife Service, and Oregon Community Foundation-Katherine Bisbee Fund for financing to carry out restoration of the Winchester Tidelands.

spond to ecological variation. Through an interagency agreement with the University of Oregon Institute of Marine Biology, the reserve has gained a temporary Research Assistant to work on projects with South Slough.

South Slough Reserve embarked on a cooperative effort to re-establish a diverse coastal forest at the Slough. The Hidden Creek Tree Planting Program was set up as a cooperative venture between the reserve, the U.S. Small Business Administration, Oregon Department of Forestry, local nurseries and private forestry crews to purchase and plant 4,700 coniferous and deciduous trees within a 15-acre plot along the Hidden Creek watershed trail. The planting will take place in May 1994.

The reserve's acquisition status stands at 100% complete, protecting 4,700 acres.

EDUCATION AND OUTREACH PROGRAMS

The reserve's work in education and outreach during the biennium has brought new media offerings to completion and has diversified the reserve's role in regional networks. Among the reserve's new media products is a widely shown, award-winning video, "Tide of the Heron". The reserve published a general trail brochure, the national brochure for the National Estuarine Research

Reserve System and put together the soon-to-be published Hidden Creek Trail and Ten-Minute Trail brochures. Local newspapers ran a series of 52 illustrated articles featuring Oregon's estuaries. Ten illustrations from the series were displayed publicly in Salem. South Slough reserve also sponsored a photography contest highlighting estuaries; three winners will be awarded a one-person show in 1994. Sixteen public media sites, such as newspapers and public libraries, have requested sets of the illustrated articles. South Slough reserve also sponsored a piloted entry of the NERR system into National Geographic's "What's in our Water" program. Approximately 3000 school children, adults and families are served by such direct programming each year. An additional 30,000 are served annually through the reserve's trails and interpretive center.

South Slough staff continue to increase their role in education and outreach in Oregon. As well as serving on several boards and committees, reserve staff actively participated in regional projects, among them developing a statewide wetlands education strategy plan, and a Wetland Institute for teachers. As part of a regional network, the staff conferred with and provided expertise to the Oregon Coast Aquarium, Oregon Coast Recreational Atlas, Umpqua (River) Discovery Center, the Coastal Rivers Scenic Loop Tour, and the Oregon Institute of Marine Biology, among others.

SUMMARY OF EVALUATION FINDINGS

Final evaluation findings were issued in March 1992 for the period June 1986 through December 1991. The evaluation concluded that the State of Oregon is operating and managing a strong reserve program and is adhering to the federally approved reserve management plan and tasks contained in financial assistance awards.

Among the accomplishments identified were: strengthening administrative frameworks; improved staffing at the reserve; improved networking in the community; complete acquisition of all property within the reserve boundary; implementing a trail system and facilities masters plan; enormous growth in the research and monitoring programs; and expanding the education program.

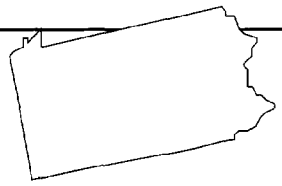
By core sampling at the reserve, coastal and reserve managers can explore the history and health of ecosystem through sedimentation studies, contamination levels, and the existence of underground life.

The findings recommended changes to improve the program, including: developing strategies to maintain the reserve's core research, education, and resource protection mandates despite the projected budgetary cuts; coordinating more closely with OCRM and its contractor to complete a revised management plan; considering creation of volunteer coordinator and land steward positions in the reserve's staffing strategy, and securing full state funding for the research coordinator and public service representative. The findings also suggested a more proactive role for the South Slough Management Commission; streamlined communication with OCRM; improved monitoring of visitor use and determination of carrying capacity; and improved linkages between the reserve education and research programs.

Recommendations in the evaluation findings have been incorporated into the revised management plan. The plan identifies a land steward and volunteer coordinator as critical goals of reserve staffing; coordinates the research, education and management programs to achieve maximum resource protection; and places emphasis on off-site programming to increase the Reserve's influence and minimize environmental impacts of increased visitor use.

Pennsylvania

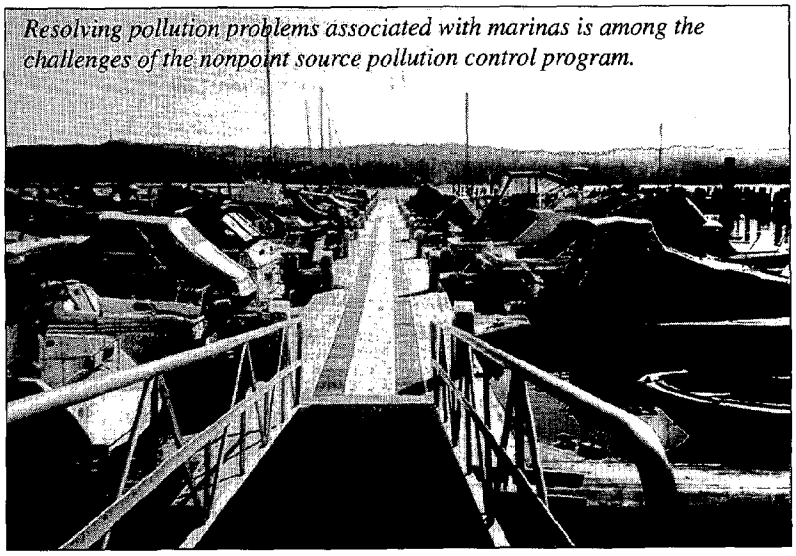
- Pennsylvania Coastal Zone Management Program



Pennsylvania's coastal zone lies within three coastal counties on the Delaware estuary — Bucks, Philadelphia, and Delaware — and in Erie County on the shore of Lake Erie. On the 57-mile stretch of coastline along the Delaware estuary, the coastal zone varies from one-eighth mile in urban areas like Philadelphia to over three and one-half miles in Falls Township, Bucks County. On the 63-mile coast of Lake Erie, the coastal zone runs from 900 feet within parts of the City of Erie to more than three miles in Harborcreek and North East Townships.

To manage this diverse coastline, Pennsylvania established a coastal zone management program (PCZMP) in 1980 as a networked program operating under the Department of Environmental Resources (DER). The DER serves as the state's lead agency for implementing, administering, and enforcing the coastal program. DER's Division of Coastal Programs (DCP) is responsible for monitoring and evaluating activities related to coastal zone management and ensuring compliance with the program's enforceable policies. However, this networked program relies on other agencies to comply with those policies, and an Executive Order provides the authority needed to ensure this compliance.

Commercial fishing in Pennsylvania is confined almost entirely to Lake Erie and its tributaries.



Resolving pollution problems associated with marinas is among the challenges of the nonpoint source pollution control program.

Pennsylvania derives the coastal program's policy structure from existing state laws, including the Dam Safety and Encroachments Act, the Floodplain Management Act, the Clean Streams Law, and the Air Pollution Control Act. As part of their program development, the state developed a new piece of legislation for the program: the Bluff Recession and Setback Act of 1980. Based on that law, eight Erie County coastal municipalities administer bluff setback ordinances with funding support from the state program.

PROGRAM ACCOMPLISHMENTS

Lead Agency Reorganization: When the Department of Environmental Resources reorganized in 1992, the former Division of Coastal Zone Management was renamed the Division of Coastal Programs (DCP) and moved to the Bureau of Land and Water Conservation (formerly Bureau of Water Resources Management). This move may facilitate coordination of the state's nonpoint source pollution control program, since the Division of Nonpoint Source Management is in the same bureau.

In an effort to make permitting processes within the Bureau of Dams and Waterway Management more efficient and to reduce permit processing time, reorganization planners transferred permitting responsibilities to regional offices.

Coastal Nonpoint Pollution Control Program: Pennsylvania added a new staff member in September 1993 to work exclusively on the section 6217 Coastal Nonpoint Pollution Control Program. To prepare for 6217 measures, the state completed an initial inventory and analysis of existing authorities, as well as a detailed schedule of tasks and a timeline to complete those tasks. The state also passed the Nutrient Management Act, which may be-

come a strong element of the coastal nonpoint pollution control program. The Act, administered by the State Conservation Commission, requires concentrated animal operations to develop and implement nutrient management plans.

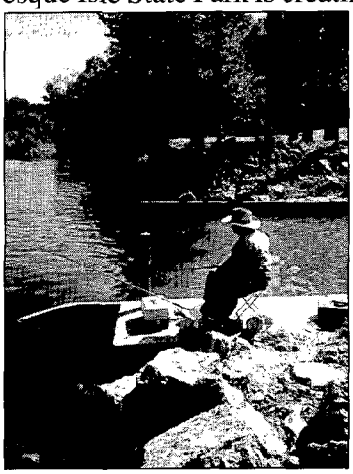
Boundary Change for Wetland Protection: Through the section 309 Enhancement Grant Program, Pennsylvania moved forward with plans to redefine the coastal zone boundary, which would increase the protection of a vast number of wetlands. The state proposes shifting the boundary further inland and including all hydrologically connected wetlands in the coastal area.

Coastal Hazard Mitigation: Also under the Enhancement Grant Program, Pennsylvania is working to amend the Bluff Recession and Setback Act to restrict construction on the bluff face. This change would reduce the risk of injury and property damage, as well as decrease erosion on the bluff face.

To further protect people and property from coastal hazards, the state has a companion program to the Bluff Recession and Setback Act as part of the policy on coastal hazards. This free service, called the Site Analysis and Recommendation (SAR) service, offers help through site evaluation and constructive recommendations to evaluate erosion problems and to educate coastal land owners on the processes of shoreline erosion and bluff recession. In place since 1981, SAR has brought strong local support for the state coastal management program.

Cumulative and Secondary Impacts: Through enhancement grants funding, Pennsylvania's coastal program is studying the impact of boating in Presque Isle Bay on Lake Erie. Coastal program managers will use the conclusions of this developing study to determine the best management strategy for the Bay.

Lake Erie Projects: In addition to amending the Bluff Recession and Setback Act and the Presque Isle Bay boating impact analysis, Pennsylvania has undertaken and completed several other projects for Lake Erie's shoreline. Presque Isle State Park is creating



digital topographic maps of the peninsula, and is removing several non-indigenous species from specific sites in the park. The City of Erie will soon begin construction of a bayfront bikeway, which will increase low-impact public access to Lake Erie's shoreline.

Pennsylvania has also initiated projects to increase the public's access to Lake Erie's shore. Among these projects, the state is looking at defining the limits of the public trust along the shoreline, upgrading the public access policy from encouragement to enforceable, and assuming authority to keep shoreline access areas open to the public.

More than 40 percent of the nation's population lives within a day's ride of the Delaware Estuary.

Permit Review: During the biennium, the PCZMP addressed the problem of permit review backlog and worked to streamline permit reviews. Managers increased the coastal program's scope of authority in wetland permit review by negotiating a letter of agreement with the Pennsylvania Bureau of Dams and Waterway Management. Under the agreement, the PCZMP gained additional opportunities to review wetland permits and apply conditions to these permits.

Wetland Monitoring and Enforcement: Pennsylvania continues to monitor coastal wetlands for violations using aerial photography interpreted by coastal program staff. Aerial monitoring successfully enabled the state to spot wetland violations, delineate wetlands, and determine wetland loss over time. The Division of Coastal Programs shares the information on wetland losses with state and

federal enforcement agencies to encourage restoration or mitigation activities.

Volunteer Monitoring Program: During FY93, Pennsylvania expanded its Delaware Riverkeeper Network Volunteer Monitoring Program by ten sites, bringing the total to 34. The Delaware Riverkeeper Network began as a volunteer citizen monitoring program in the fall of 1990 to provide a trend analysis of water quality conditions at various sites in the estuary. Volunteers currently monitor water quality at sites throughout the Delaware River, testing for dissolved oxygen, pH, water temperature, nitrates, phosphates, and Secchi depth and other human impacts on the estuary. Results are distributed to decision makers to assist in sound management of coastal zone resources. The Delaware Riverkeeper Network complements other monitoring programs, such as those conducted by the Delaware River Basin Commission.

SIGNIFICANT PROGRAM CHANGES

Amendments to Wetlands Regulations: Through a routine program implementation change submitted in October 1993, managers incorporated changes in policies and regulations into the coastal program — from Solid Waste Management regulations to Dam Safety and Waterway Management regulations, the PCZMP wetlands policy, and other minor administrative changes. Changes to the Dam Safety and Waterway Management regulations (Title 25 PA Code Chapter 105) established an "exceptional value" wetland category to provide additional protection to wetlands.

SUMMARY OF EVALUATION FINDINGS

No evaluation of Pennsylvania's Coastal Zone Management Program was conducted during the biennium.

Pennsylvania strengthens wetlands protection

Pennsylvania revised the wetlands regulations in Chapter 105 of Title 25 PA Code, which governs implementation of the Dam Safety and Waterway Management Act. By doing so, the state took steps to increase protection for Pennsylvania wetlands of "exceptional value," considered the state's most environmentally significant wetlands.

Recent changes to Chapter 105 will benefit wetlands in other ways. The regulations now require a higher than one-to-one mitigation acreage ratio when the mitigation is intended to replace lost functional value or respond to a wetland violation. The regulations also require that wetlands be replaced within the same watershed or within the designated boundaries of the state coastal zone area where the loss occured.

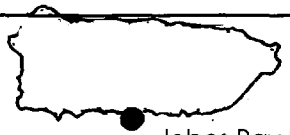
People wishing to alter wetlands must now submit an environmental assessment to DER for permit applications, unpermitted structures or any activities in wetlands and waters of exceptional value. The Department of Environmental Resources can deny a wetlands permit to any applicant who continually violates the state's environmental laws.

Changes to Chapter 105 also streamlined the permitting process in two ways. The state can now waive permit requirements for additional categories of structures or activities that do not significantly affect life, health, property, or the environment. The changes also simplified application procedures and set fees to better reflect the state's costs for processing applications and administering the wetlands program.

Although some environmental advocates may not view these changes as major, the amendments do increase wetland protection and replacement, a benefit to the entire coastal program. The revised regulations also facilitate the state's permitting process and better focus DER's resources.

Puerto Rico

- Puerto Rico Coastal Management Program
- Jobos Bay National Estuarine Research Reserve



Jobos Bay NERR

The Puerto Rico Coastal Management Program (PRCMP) was created to manage the significant land and water activities occurring in territorial waters and in a land area extending approximately 1,000 meters inland from mean high tide. The commonwealth set up the coastal management program as a networked program and incorporated the coastal management plan into the Islandwide Land Use Plan. The Department of Natural Resources (DNR) and Planning Board act as the primary planning and permitting agencies in Puerto Rico's coastal zone. As the lead agency, DNR is responsible for managing the commonwealth's natural resources and activities in the maritime zone, territorial waters, and submerged lands. The Coastal Management Office (CMO) within DNR coordinates daily administration of the coastal program. The Planning Board, which is part of the Office of the Governor, holds broad regulatory power and land use planning responsibility in Puerto Rico. The Planning Board controls all land uses through general controls over subdivisions, residential and agricultural uses, industrial projects, commercial centers, and hotels, and by adopting zoning district maps.

The program was federally approved in September 1978 and operated with $1,113,400 in federal funds during FY 92 and 1,125,667 during FY93.

Two other commonwealth agencies play important roles in coastal management: the Environmental Quality Board and the Regulations and Permit Administration. The Environmental Quality Board assesses environmental impact statements and adopts and monitors pollution control standards and regulations. The Regulations and Permits Administration administers building and use permits as well as minor zoning changes in urban areas.

PROGRAM ACCOMPLISHMENTS

Natural Resource Protection: The Planning Board and DNR have made notable progress in designating 20 of 28 natural reserves. Among these, the Cuevo del Indio natural reserve was designated in April 1992 and the Cibuco Swamp natural reserve was designated in February 1993.

Maritime Regulations: In December 1992, DNR adopted the Maritime Zone regulations which govern the activities permissible in the commonwealth tidelands, territorial waters, and submerged lands. The regulations establish criteria for granting concessions for coastal activities and uses.

Special Area Management: The Planning Board prepared and adopted the Pinones Special Planning Area (SPA) management plan in 1992 and the Tortuguero SPA management plan in 1993. The PRCMP also set up a 5-year schedule to complete the remaining SPA management plans.

Sedimentation and Erosion Control: An interagency agreement for sedimentation and erosion control (the Puerto Rico CEST Program) was signed in September 1993 by Puerto Rico's DNR, Planning Board, Regulations and Permit Administration, Environmental Quality Board, U.S. Environmental Protection Agency's Region II office, the Agricultural Extension Service, the Puerto Rico Department of Agriculture, the Soil Conservation Service Caribbean Area Office, and the Commonwealth's 17 Soil Conservation Districts. The agreement

Puerto Rico adopts maritime zone regulations

Department of Natural Resources Secretary Santos Rohena Betancourt approved new maritime zone regulations as one of his last acts before departing with the outgoing gubernatorial administration. The regulations empower the Department of Natural Resources (DNR) to fully address the plaguing issue of harmful nonconforming uses in the maritime zone, by either improving them to protect natural resources, access, health and safety or removing them.

The regulations, adoped Dec. 30, 1992, established criteria and mechanisms to grant authorizations and concessions for future construction, repairs, expansions and demolitions; existing structures that do not have a concession from the DNR; existing expansions and repairs on structures with a concession; and disposal of solid and liquid wastes.

Titled "The Regulation for Use, Surveillance, Conservation, and Administration of the Territorial Waters, the Submerged Lands Beneath Them, and the Maritime Zone," the rules include special provisions for existing activities and structures located in natural reserves and other special planning areas. The regulations also vest authority in DNR to grant franchises, leases, and permits and to collect fees and duties.

Deriving legal basis from 19th century Spanish and 20th century American traditions, the Maritime Zone Regulations govern permissible activities in the Commonwealth's public tidelands and offshore areas. The regulations also advance a public policy mandating the conservation of natural resources as well as development and use for the general benefit of the community. The regulations are further intended to preserve and maintain cultural resources.

Since the inception of Puerto Rico's Coastal Management Program, DNR staff members have prepared numerous drafts of the regulations, none of which gained final approval.

Thus, adoption of the regulations represents significant advancement for the coastal program. All of the DNR staff who worked on this project deserve special recognition for this achievement.

establishes an interagency committee to implement the sedimentation and erosion control regulations when they are adopted and a companion manual of standards and specifications. The agreement also spells out the responsibilities of the committee and of each participating agency in implementing the CEST Program.

Coastal Hazards: Puerto Rico's Natural Hazards Planning Program participated in the Federal Emergency Management Agency's (FEMA) response to a disaster declaration in January, 1992 from flash flooding following a low pressure tropical depression. The Natural Hazards Planning Program also updated Puerto Rico's hazard mitigation plan, as is required following a disaster declaration by FEMA.

Federal consistency: Five federal consistency appeals were decided during the biennium. In all five cases, the Secretary of Commerce declined to override the Planning Board's objections. See the earlier chapter on federal consistency for details of these cases. Two other consistency appeals are pending.

Enforcement: The Regulations and Permits Administration and the Department of Natural Resources signed an interagency agreement to resolve certain inspection and enforcement issues in Puerto Rico.

SIGNIFICANT PROGRAM CHANGES

No program changes were submitted during the biennium.

SUMMARY OF EVALUATION FINDINGS

No evaluation of Puerto Rico's Coastal Zone Management Program was conducted during the biennium. However, an evaluation site visit was conducted in December 1993, and final evaluation findings are due for publication in 1994.

The Jobos Bay National Estuarine Research Reserve includes 15 offshore islets known as Cayos Caribe, and the mangrove forest of Mar Negro, with its complex system of lagoons, mud salt flats, and channels. The reserve also includes sand beaches, coral reefs, seagrass beds and territorial waters.

It is believed that fifty or so West Indian Manatees that forage within Jobos Bay and the Mar Negro and Caribe Islets represent the second largest manatee population in Puerto Rico. Hawk's bill sea turtles are also indigenous to the seagrass beds of Jobos Bay.

The reserve received $110,000 in federal funding both FY 1992 and FY 1993.

Puerto Rico's Department of Natural Resources (DNR) employs the reserve staff, who now manage the site through the Coastal Management Office. The DNR Ranger Corps and legal staff also provide support to the reserve.

PROGRAM ACCOMPLISHMENTS

Puerto Rico's Department of Natural Resources recently signed a Memorandum of Understanding which affirms the long-term commitment on the part of the Commonwealth and the Federal governments to manage the site as a National Estuarine Research Reserve. Jobos Bay reserve also completed a visitor center and research facility.

The reserve incorporates 2,883 acres of state-owned land along the south central coast of Puerto Rico.

EDUCATION AND OUTREACH PROGRAMS

The reserve's education program focuses on teacher training workshops— coordinated through the Sea Grant College Program of the University of Puerto Rico — and tours for school groups.

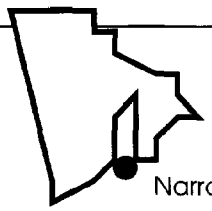
SUMMARY OF EVALUATION FINDINGS

Final evaluation findings were issued in February 1993 for the period from May 1989 through February 1992. Recommendations addressed the need to complete a management plan for the site, develop use regulations for the reserve, resolve boundary concerns, develop research and monitoring programs, and complete the Visitor Center.

The Jobos Bay Reserve was designated in 1987 in the Caribbean Sea biogeographic region.

Rhode Island

- Rhode Island Coastal Management Program
- Narragansett Bay National Estuarine Research Reserve



Narragansett Bay NERR

The Rhode Island Coastal Management Program regulates development in the coastal waters, 200 feet inland from a coastal feature, such as wetlands and bluffs, and certain coastal uses throughout the state. Rhode Island's Coastal Resources Management Council (CRMC), which administers the coastal program, created Special Area Management Plans for the Salt Ponds area, Providence Harbor and the Narrow River. Twenty-one coastal local governments participate in the program on a voluntary basis, developing local harbor management plans.

Rhode Island's Coastal Management Program is based on the Coastal Resources Management Act of 1971, which created the CRMC. The CRMC administers Rhode Island's program through direct permitting. The state recently enacted its Comprehensive Planning Act, which now requires municipal planning and zoning to be consistent with the Rhode Island Coastal Management Program.

PROGRAM ACCOMPLISHMENTS

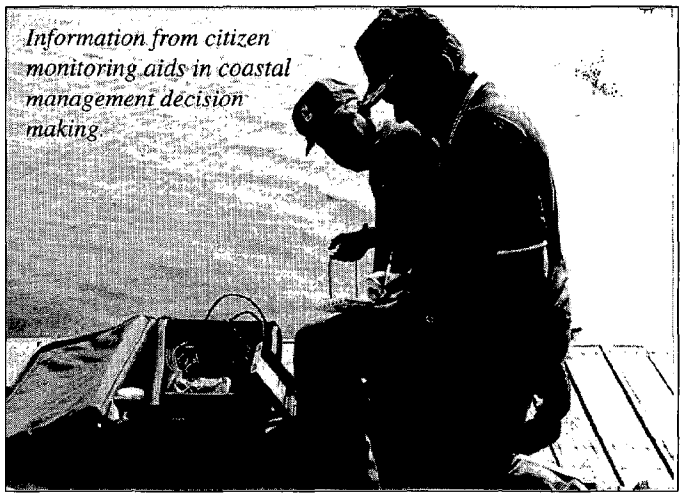
Dock Registratione Program: As part of the Submerged Lands Lease Program being developed under the §309 Enhancement Grant Program, the CRMC adopted regulations for what they have termed the Dock Registration Program. The CRMC found that they had to get a handle on existing private docks before they could institute a Submerged Lands Lease Program requiring owners of activities that are on, in, or over public trust areas of the coastal zone to compensate the public for private uses. The Dock Registration Program sets up a system for registering all docks, whether permitted or unpermitted, and brings them into the submerged lands lease system. One novel aspect of the program is that all docks will have to display "license plates" showing that the dock is registered.

The Rhode Island coastal program earned federal approval in May 1978.

Wetlands Mitigation Policy: Rhode Island's adoption of CRMC wetlands mitigation regulations was another significant accomplishment under the §309 Enhancement Grant Program. These regulations codify the Council's policy of achieving no net loss of wetlands acreage or function as a result of coastal development. Under the new regulations the Council must require mitigation for all unavoidable impacts to wetlands. Wetlands that will be permanently lost or altered must be replaced through restoration of a historical wetland or creation of a new wetland at a site approved by the Council. Wetlands replaced must be of equal or greater area and ecological value than those lost. Also, mitigation projects, to the maximum extent practicable, must take place before or at the same time as the wetlands alteration and must be on-site.

Section 309 Enhancement Strategy Revisions: In 1992, the CRMC revised their original Strategy developed for the section 309 Enhancement Grants Program. The Council's revised the strategy to improve coordination with its other ongoing planning initiatives. The Strategy, which received a higher ranking with the changes, focuses on public access and special area management planning.

Pawcatuck Estuary and Interstate Management Program: In cooperation with the state of Con-



Information from citizen monitoring aids in coastal management decision making.

Coastal Program Funding

	Total	306	6217	309
FY 92	$800,000	$600,000	$46,000	$154,000
FY 93	$786,000	$595,000	$46,000	$145,000

necticut, the CRMC completed and adopted an interstate special area management plan for the Pawcatuck River Estuary and Little Narragansett Bay. The Plan addresses a broad array of issues from water quality, habitat restoration and protection, to recreational uses, public access, and interstate coordination. To coordinate the management strategy, the Plan sets up an interstate notice procedure, interstate Memoranda of Agreement, coordinated review for large-scale projects, a Pawcatuck River Bi-State Commission, and other mechanisms.

Harbor Management Planning: To deal with the growing demand for water-related activities and the accompanying conflicts, the CRMC instituted a comprehensive harbor management planning program in 1988. Through this program, the CRMC requires coastal communities to establish use priorities for their harbor areas. The Council then gives each community the flexibility to identify its most pressing and relevant planning issues and to develop a consensus vision. The first harbor management plan was approved in 1990. To date, eight of the twenty-one coastal towns have developed plans; five more are in the final stages.

Public Access: Over the past two years, the CRMC has continued its work to designate public access rights-of-way. To date, the Council has investigated 290 potential sites and designated 195 sites. The Council has also increased public access by placing conditions on the permits it issues. In 1992, through a permit condition placed on the Manchester Street Station, Narragansett Electric will provide approximately $20 million for waterfront public access improvements, including a three acre waterfront park with walkways, shoreline improvements, a boat launching ramp, and a fishing pier.

Permit Simplification: In 1990, the CRMC instituted a new form of CRMC permit or assent called a "Finding Of No Significant Impact (FONSI)." The FONSI allows the Council to expedite its review for minor activities such as re-shingling and roofing a house. The new process has reduced the Council's permit processing time, which has enabled the Council to process more administrative actions over the last two years.

Stormwater Management Regulations: The Council adopted comprehensive stormwater management regulations which implement some of the section 6217 management measures within the Council's jurisdiction. The new regulations require applicants to submit stormwater management plans which demonstrate that the proposed activity will result in the removeal of at least 80 percent of the average annual total suspended solid loadings. The CRMC, in conjunction with Rhode Island's Department of Environmental Management, also developed the *Rhode Island Stormwater Design and Installation Standards Manual*. This manual, designed to complement the Rhode Island Soil Erosion and Sediment Control Manual, contains applicable Best Management Practices and requirements for stormwater management plans.

Marina Certification Program: The CRMC created a voluntary program which allowed marinas to apply for marina certifications. Marinas are required to submit a surveyed plan which clearly defines the main perimeter and all upland facilities. This allows the CRMC to establish baseline data on all facilities present at each marina, which in turn facilitates the review of future projects.

Marina Pumpout Requirements: In December 1992, CRMC adopted requirements that new marinas and marina expansions of 50 boats or more must install a marine pumpout facility. Also, marinas which expand by more than 25 percent of their previously approved capacity must install a marine pumpout facility if the 25 percent increase will expand the marina's capacity by more than 25 boats. Marinas which already have sufficient pumpout facilities are exempt from the new requirements. However, the regulations do allow the CRMC to impose other appropriate mitigation requirements.

Denitrification Task Force: The CRMC and the Rhode Island Department of Environmental Managment's Division of Groundwater and Individual Sewage Disposal Systems created a Denitrification Task Force, to improve governmental coordination, examine ways to streamline the regulatory process, and to find ways to incorporate denitrification requirements into the respective regulatory programs. From these efforts, the CRMC has made several program changes to streamline the permit process for repairs to onsite sewage disposal systems and adopted denitrification requirements for a specified region of the *Salt Ponds Special Area Management Plan.*

SIGNIFICANT PROGRAM CHANGES

OCRM incorporated changes to the CRMC regulations into Rhode Island's Coastal Management Program in 1991 and 1993. The most significant changes: new authority for CRMC members or staff to issue warnings when they witness a violation; additional setbacks from a buffer zone in certain cases to protect the ecological integrity of the buffer; new or expanded marina facilities requirements to mitigate water quality impacts; and add a new aquaculture policy that requires aquaculture leaseholders to post a performance bond for cleanup or removal upon termination or expiration of the lease. These changes have improved the efficiency and effectiveness of Rhode Island's Coastal Management Program.

Researchers study core samples — taken from a closed military base — for contamination levels to determine the health of the ecosystem.

SUMMARY OF EVALUATION FINDINGS

Final evaluation findings, issued on April 19, 1993, covering the period from May 1989 through June 1992 cited the following as major accomplishments: improved CRMC permit procedures, strengthened enforcement authority and capabilities, new permit requirements for wetlands protection, increased public outreach efforts, and completion of an interstate management plan for the Pawcatuck River Estuary and a public access guide.

The findings identified areas for program improvement, including: public education about CRMC procedures and requirements, training for Council members, update of the CRMC book of regulations and the federal consistency procedures, additional enhancements to monitoring and enforcement capabilities, interagency communication and coordination, training for local officials about the coastal management program and emerging coastal issues, general public outreach on coastal issues, coordinated coast-wide public access efforts, interagency coordination on water quality certifications, and financial assistance award and reporting requirements.

Rhode Island, Connecticut complete interstate management agreement to protect Pawcatuck River estuary

Rhode Island and Connecticut completed their three year effort to develop the Pawcatuck River Estuary and Little Narragansett Bay Interstate Management Plan in July 1992. Prepared as a cooperative venture between the two states, the Interstate Management Plan was funded by Coastal Zone Management Act interstate and implementation grants.

Rhode Island and Connecticut enlisted the help of many interested people through a citizen's advisory committee, which assisted in developing a list of issues reflecting the public's concerns about the estuary. The committee identified water quality, habitat protection and restoration, recreational uses, public access, open space, the protection of scenic values, and interstate coordination as central issues. The states studied these issues in more depth, by collecting data on past and current land use and development trends, water quality status, critical wildlife habitats, and recreational use patterns and concluded with findings about the management of resources and uses of the estuary.

The states also found that project review lacked effective coordination among various reviewing agencies at all levels of government across state boundaries. Better coordination would allow these different agencies to implement consistent management policy — the interstate management planning process provided the policy and management framework to improve coordination. The plan did so by setting up several coordination mechanisms, including an interstate notice procedure, interstate Memoranda of Agreement, coordinated review for large-scale projects, and a Pawcatuck River Bi-State Commission.

The Interstate Management Plan also specified several management regulations and initiatives for each issue of concern. For example, the plan included policies that state and local governments should: establish consistent minimum standards for stormwater management; require and promote the restoration of wildlife habitats within the estuary; improve the use at existing commercial boat ramps to increase the amount of small boat access; and protect and increase physical and visual public access through adoption of common policies and standards.

Better coordination allows these different agencies to implement consistent management policy

Rhode Island's Coastal Resources Management Council adopted the Interstate Management Plan on July 14, 1993. In Connecticut, the Plan has been implemented through the Department of Environmental Protection's regulatory programs and through municipal plans.

Subsequent to the Plan's adoption, the Rhode Island CRMC issued a contract for monitoring water quality in the estuary. The monitoring program will collect data on dissolved oxygen, water temperature, and salinity, and compare it to previous year's data. By monitoring water quality trends in the estuary, state and local agencies can continually improve management of the estuarine resources through future decision making.

The CRMC also contracted out for aerial photography to identify submerged aquatic vegetation beds within the estuary. This information has been passed on to the two states, the University of Rhode Island and the University of Connecticut- Avery Point, so that it can be used in future studies and decision-making.

Finally, by including the entire Pawcatuck River estuary within its Management Plan's boundaries, the Long Island Sound Study may effectively coordinate and implement recommendations in the Pawcatuck River and Little Narragansett Bay Management Plan — recommendations such as allowing dredged material spoils from Rhode Island's marinas to be disposed within the New London Open-water disposal site. This allowance is important to Rhode Island since the state's marinas need dredging, but no open water disposal options now exist within Rhode Island's waters.

Spanning 2,200 acres of land on Prudence, Patience, and Hope Islands, and 2,750 acres of water adjoining the islands, the Narragansett Bay NERR sits in the geographic center of Narragansett Bay, only twelve miles from Newport, Rhode Island. Diverse aquatic and terrestrial habitats, providing nesting sites for numerous species of birds, are harbored on the islands. Soft-shell clams, quahogs, lobster, striped bass, black-back flounder and sea trout thrive in the reserve's tidal deepwater. On an occassional winter day, harbor seals haul themselves out of the water to rest on the reserve's exposed offshore rocks. On the islands, visitors can use an extensive trail system to reach the reserve's major ecological features. Since its creation in 1980, the reserve has been managed by the state's Department of Environmental Management.

The Narragansett Bay Reserve, designated in 1980 in theVirginian biogeographic region, now protects 4,950 acres.

PROGRAM ACCOMPLISHMENTS

During the last two years, the Department of Environmental Management expanded the Division of Fish and Wildlife to include estuarine resources. This new division, headed by Chief David Broden, is responsible for managing and operating the Narragansett Bay Reserve. A desire to increase the organization's efficiency prompted this move.

Narragansett Bay NERR keeps growing. The reserve recently incorporated South Park, a state-owned facility into reserve boundaries, and in the process gained significant new facilities. The park came equipped with overnight accommodations for researchers, operational piers and floating docks, a garage and workshop complex, a naturalist kiosk and nature trails.

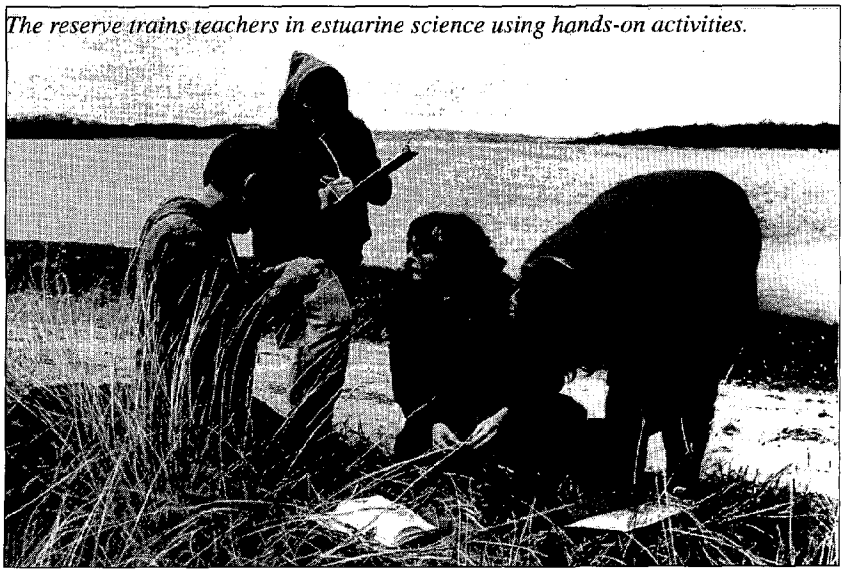
The reserve also acquired 454 acres in the center of Prudence Island which was owned by the Heritage Trust of Rhode Island. This property is a key piece in linking the north and south ends of Prudence Islands with a continuous green corridor stretching the length of the island.

Reserve staff released deer management regulations for the 1993/94 season. The regulations encourage a higher take of deer this season to reduce the herd's risk from Lyme Disease, protect biodiversity and improve the overall health of the herd. Deer hunting has historically been allowed in the reserve's upland areas and conforms with federal regulations governing habitat manipulation.

RESEARCH AND MONITORING PROGRAMS

Research at the reserve has grown in recent years. By 1992, 10 research projects were underway, two of which were completely funded by NOAA; only three were ongoing before 1992. Brown University, the University of Rhode Island, the Department of Environmental Management, and the University of Connecticut were

The reserve trains teachers in estuarine science using hands-on activities.



some of the institutions conducting research at the reserve during this period. Research included studies of fish habitat use, assessments of the Prudence Island habitat, assessments of ecological risk of the former Prudence Island landfill on the biota of Nag Creek, and a comparison of ecology of five types of marsh systems and atmospheric depositions of chemical contaminants.

Working with the Prudence Conservancy,the reserve's on-site manager developed a successful volunteer monitoring program that focuses on water quality monitoring and meteorology on Prudence Island. Results from the meteorology monitoring are being written in a format that will educate reserve visitors.

EDUCATION AND OUTREACH PROGRAMS

Save the Bay is a non-profit conservation organization that coordinates its activities with the reserve. Save the Bay completed successful workshops to train teachers, involving them in on-the-water sampling of the reserve's waters, studying the Coggeshall Cove salt marsh, and orientating them, through the reserve staff, on the history and natural history of the Narragansett Bay NERR. The reserve also offered a family research cruise as part of the Governor's Narragansett Bay Day. Both activities have increased visibility for the reserve.

SUMMARY OF EVALUATION FINDINGS

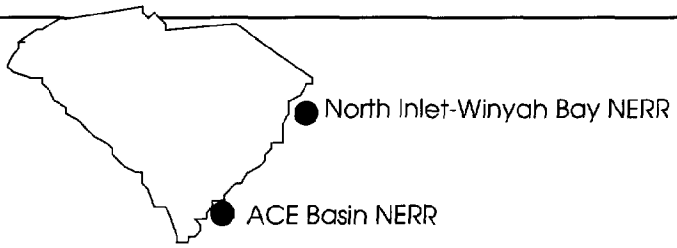
A routine program evaluation conducted in December, 1992, determined that the State was operating and managing the reserve satisfactorily and adhering to the reserve's management plan. Final Evaluation Findings commended the State for its progress in three areas: the reserve's land acquisition and boundary expansion, the reserve's education program, and the reserve's research and monitoring efforts.

Following recommendations, the state will update the reserve management plan; develop educational materials such as boundary maps and markers for use by the reserve visitors; improve the reserve Center's overnight accommodations for visiting researchers and add basic laboratory equipment at the Center. The State will also establish a program to involve interested state and local government agency decision-makers and researchers in developing research priorities and disseminating the research results. The recommendation also called on the state to allocate adequate staffing to manage the reserve.

In 1993, the Narragansett Bay Reserve operated on a budget with $110,000 in federal funds.

South Carolina

- South Carolina Coastal Management Program
- ACE Basin National Estuarine Research Reserve
- North Inlet-Winyah Bay National Estuarine Research Reserve



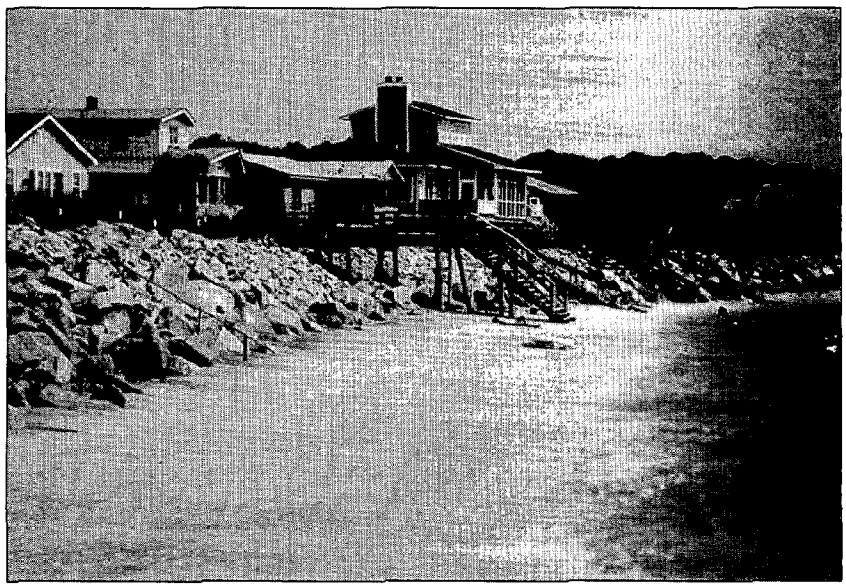
South Carolina's coastal zone encompasses eight counties that contain "critical areas"—tidelands, coastal waters, and beaches and dunes. The South Carolina Coastal Council (SCCC) manages activities in these critical areas through direct permitting authority and by holding certification authority in the eight coastal counties outside the critical area. The council also ensures that direct federal actions and permits, as well as the actions and permits of other state agencies are consistent with the state's coastal program. The South Carolina Coastal Council (SCCC) derives authority to direct the state's coastal management program from the South Carolina Coastal Zone Management Act of 1977. Fourteen appointed members make up the SCCC, with members serving on specialized committees.

As a result of state agency restructuring in the 1993 legislative session, the Coastal Council will become a part of the State's Department of Health and Environmental Control in July 1994.

South Carolina has 187 miles of coastline, including estuaries, bays, rivers, and creeks.

PROGRAM ACCOMPLISHMENTS

Hazards Protection: South Carolina continues to be a leader in mitigating the effects of coastal



hazards by implementing the 1988 Beachfront Management Act and the 1990 Amendments to the Act. The Act, as amended, regulates construction on the oceanfront via setback requirements.

A central issue in the Act's implementation has been whether the Council's regulation of the beach critical area could result in an unconstitutional "taking." In *Lucas v. South Carolina Coastal Council*, the state Supreme Court, on remand from the U.S. Supreme Court, ruled that the 1988 Act had temporarily taken Lucas' property. A special permit process provided in the 1990 Amendments allows property owners, such as Lucas, to build structures seaward of the baseline in limited circumstances.

The 1990 Amendments seem to insulate the Council from future takings challenges, while maintaining a progressive mandate that prohibits development in hazardous coastal areas.

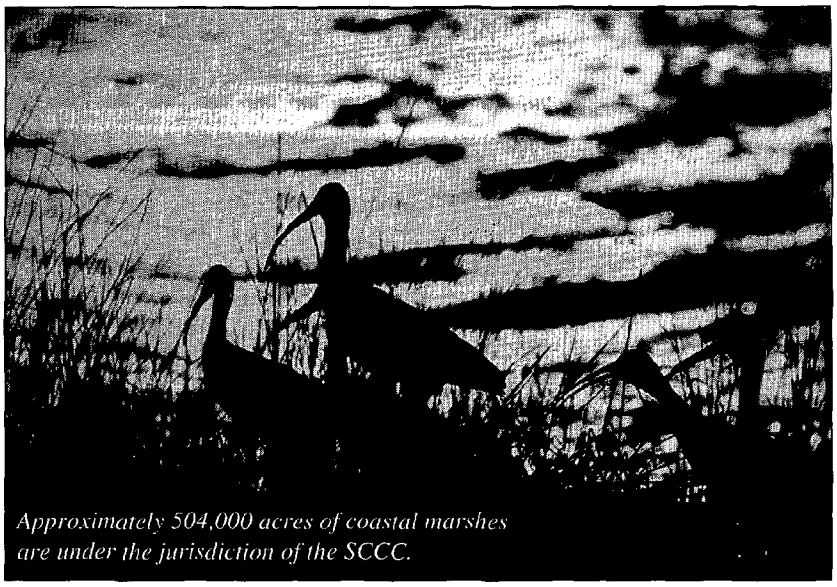
Wetlands Protection: South Carolina continues to aggressively use the federal consistency provisions to protect freshwater wetlands in the eight coastal counties. In contrast to other coastal states, South Carolina refused to certify the U.S. Army Corps of Engineers' nationwide permit #26. This refusal allows the SCCC to review even small proposed wetlands alterations for consistency under SCCC's wetland protection standards.

Cumulative and Secondary Impacts: Using a section 309 enhancement grant, South Carolina is developing a shellfish man-

Approved in September 1979, the state received $1,334,000 in FY91-92; $1,787,800 in FY92-93, and $1,767,800 in FY93-94.

agement plan that will help strengthen state provisions that protect shellfish from the cumulative impacts of permitted activities. In its assessment, the state is concentrating on two primary sources of water quality problems: stormwater runoff and faulty septic tanks. The state is also a pioneer in the treatment of stormwater runoff from bridges and golf courses.

Also under the Enhancement Grants Program, South Carolina is monitoring the effectiveness of stormwater "best management practices" required in the state's Guidelines for Stormwater Management. Results of the monitoring effort will be used to revise the Guidelines, which will later be adopted as regulations into the state's program.



Approximately 504,000 acres of coastal marshes are under the jurisdiction of the SCCC.

SIGNIFICANT PROGRAM CHANGES

During this biennium, 1990 Amendments to the Beachfront Management Act were submitted and approved for incorporation into the South Carolina Coastal Management Program. Several refinements to the state's enforceable policies were also submitted to OCRM and approved as program changes. One change defined a 3-year time period in which critical area delineations (where the SCCC has direct permitting authority) are valid. This change is intended to make anyone using a subdivision plot aware that the critical line drawn on the map may be out of date after three years.

SUMMARY OF EVALUATION FINDINGS

The most recent evaluation of the South Carolina Coastal Management Program was conducted in November 1993. Evaluation findings will be issued in 1994.

South Carolina shows leadership in coastal protection

South Carolina continues to lead the nation in advocating protection of the oceanfront from coastal hazards. In July 1993, the state hosted a Coastal Hazards Conference attended by state coastal hazards staff from the Southeast Atlantic and Gulf Coast states, Massachusetts and Puerto Rico. Federal and regional representatives from the Federal Emergency Management Agency, along with legislative staff from Capitol Hill, were on hand to discuss the latest developments in legislation reforming the National Flood Insurance Program.

States presented their coastal hazards management programs and exchanged ideas on how state programs can protect their shorelines from coastal hazards.

The South Carolina Coastal Council was celebrated as the premier coastal zone management agency at OCRM's 20th Anniversary awards celebration. The Council was chosen to receive the Excellence in Coastal Zone Management award for its leadership and progressive approach to managing the coastal zone and coastal resources.

Forty percent of the state coastline is held in trust as parks or wildlife preserves; 50% is developed, and 10% is undeveloped.

The Ashepoo-Combahee-Edisto (ACE) Basin NERR, located about 45 miles south of Charleston, S.C., is one of the most diverse and pristine estuaries on the East Coast of the United States. An array of maritime forests, tidal swamps, marshes and associated uplands provide valuable habitat for seventeen rare or endangered species and over 500 species of birds, mammals, reptiles, amphibians and plants. The area is used mainly for wildlife and forest management, limited farming, and commercial and recreational fishing. Cooperation among landowners and private and public agencies has resulted in a multifaceted initiative to protect and enhance critical wetlands and uplands in the ACE Basin.

South Carolina's Wildlife and Marine Resources Department manages the reserve. The South Carolina Coastal Council serves as the fiscal agent in acquiring funds from NOAA and provides surveillance and enforcement to ensure compliance with the coastal management program.

PROGRAM ACCOMPLISHMENTS

Management Plan: The Final Management Plan for the ACE Basin NERR was completed and approved during this biennium. The reserve was designated on Aug. 27, 1992, with a designation ceremony on Oct. 3, 1992.

Program Staffing: Staff for the reserve, including the reserve manager, research coordinator, education coordinator, and reserve biologist, was immediately assembled and began molding the site into a functional research reserve. An advisory committee and functional subcommittees were also organized and participated in setting goals for the reserve.

Property Acquisition: The reserve used a combination of funds from NOAA, private donations, Memoranda of Understanding, and National Coastal Wetlands Acquisition funds to acquire Ashe Island (1,722 acres), Beet Island (1,686 acres), and Otter Island (3,232 acres). With six of the ten islands proposed for acquisition now included in the reserve, the site now preserves 10,521 acres. During 1993, the managers also made significant progress on acquiring a field station for on-site research and education. Staff members placed signs at key locations throughout the reserve to delineate boundaries.

RESEARCH AND MONITORING PROGRAMS

Managers designed a phased monitoring program for ACE Basin Reserve with a site characterization, a long-term monitoring program, and an analysis of water quality and quantity data to provide a better understanding of the estuary's resources. As part of the site characterization, reserve staff collated existing data for the area and used digital cartographic databases. The South Carolina Water Resources Commission used the state's geographic information system to establish a multi-layered database for ACE Basin at a scale of 1:24,000 from orthophotographs. Spatially referenced data layers include soils, wetlands, land use and land cover, environmental permits, historic and archaeological sites, timberlands, water quality, flood zones, geology, mining, statewide rivers assessment, threatened and endangered species habitats, high quality natural areas, fisheries, water use and evaluation.

The reserve relied on $50,000 in federal funding for FY92 and $109,000 for FY93.

In order to obtain better information on biological productivity in the reserve, reserve staff initiated a trawl survey in the tri-river system. In the survey, data are collected monthly on fishes and decapod crustaceans to assess changes in species composition and biomass across time and space in the system. With the help of South Carolina's Department of Health and Environmental Control, the reserve also analyzes information on water quality, stream flow and fecal coliform.

Sen. Fritz Hollings visits the reserve for the opening of a new visitor's center.

The reserve and South Carolina's Water Resources Commission completed a joint research project, compiling data on the current wetland cover in the ACE Basin reserve. This effort represented part of a large-scale project to evaluate long-term data sets in recommending a public policy process to address natural resource values. The databases generated from this project will provide a foundation for future research that focuses on how natural processes and human activities in plant communities can change landscape characteristics.

EDUCATION AND OUTREACH PROGRAMS

The reserve adopted a hands-on approach to educating students, teachers and the general public in the field. During the biennium, the reserve initiated a program of educational cruises entitled "A Coastal Adventure" onboard the 50-foot R/V *Anita*. On the 2-hour outing, students conduct sampling using a variety of techniques and procedures used by marine scientists, collect estuarine organisms, and discuss the general ecological concepts and life histories of those estuarine organisms. Teachers collect specimens for their classroom labora

The reserve was designated in 1992 in Charleston, S.C., the Carolinian biogeographic region.

tories and aquaria and are given post-visit written materials to enhance the field experience.

The "Marsh Classroom Adventure," another of the reserve's field-learning experiences, gives teachers an additional hands-on experience with many biological and ecological concepts. The program prepares instructors to use the marsh as an outdoor classroom. The reserve supplies each Marsh Classroom participant with a training manual for the program.

With 135,000 acres, the reserve is 60% complete.

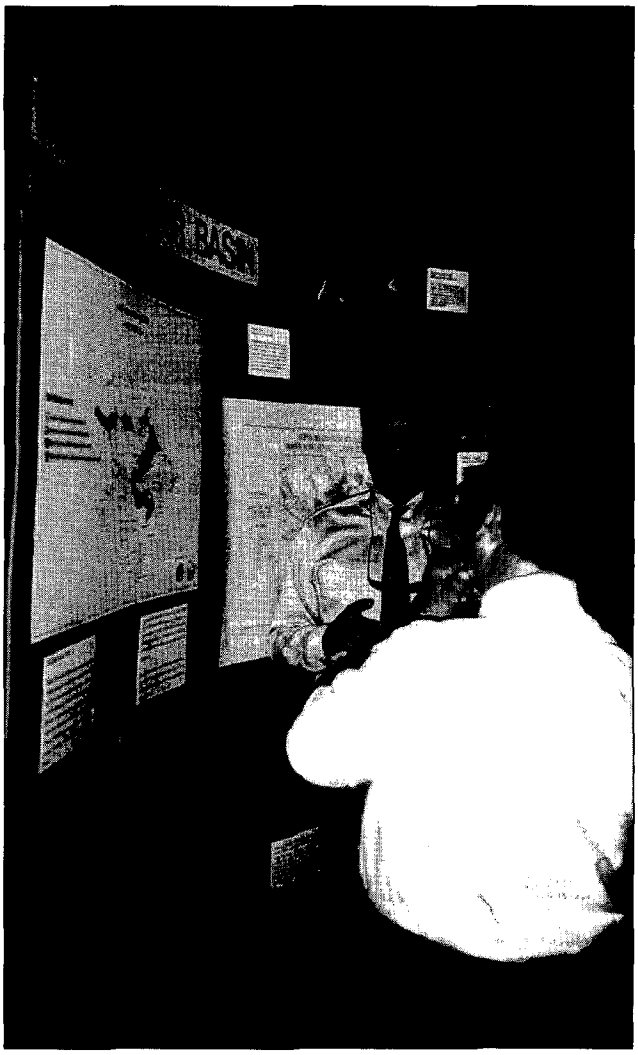
ACE Basin reserve staff also took the reserve's outreach efforts outdoors, giving tours and outings in the ACE Basin to the Wildlife Society, the National Audubon Christmas Bird Count, local bird watchers clubs, South Carolina Garden Clubs, Sierra Club, Marine Educators Association, Boy Scouts, and other organized groups. These activities took place as part of the state's Coastweeks celebration and National Estuaries Day. A special tour of the reserve is given aboard a 46-foot pontoon boat, which can reach the shallows and shores of the outer barrier islands.

To keep the public abreast of issues facing the basin, reserve staff published a semi-annual newsletter entitled *ACE Basin Current Events*. The staff also designed a self-guided tour of the site's buffer areas, published in *Driving the ACE Basin.*

To expand educational outreach, reserve staff worked with the South Carolina Dept. of Education to include ACE Basin in the South Carolina Maps curriculum materials. These materials, used at several grade levels, are designed to orient students with South Carolina's geological formation, so that they better understand the relationship between historical development of coastal areas and economic trends, with current land use patterns and the environmental concerns that arise from coastal development.

SUMMARY OF EVALUATION FINDINGS

No evaluations were conducted during FY92 and FY93.



In Georgetown County, S.C. — with the crowded beaches of Myrtle Beach 30 miles to the south and the city bustle of Charleston 50 miles to the north — lies a haven for the creatures of two massive estuaries. Threatened and endangered species, from sea turtles to least terns to bald eagles, call the North Inlet-Winyah Bay National Estuarine Research Reserve home. The high salinity tidal marshes and creeks of the Reserve's northern half, the North Inlet estuary, and the brackish waters of Mud Bay, a section of the Winyah Bay estuary in the southern half, create a rich, diverse ecosystem. In fact, reserve resources range from tidal and transitional marshes to oyster reefs and intertidal flats and from coastal island forests to open waterways. The reserve even supports a spectacular natural feature: the Pumpkinseed Island bird rookery, one of the largest nesting sites for wading birds in the entire southeast United States.

Since this site was set aside for research and education in August 1992, the University of South Carolina's Belle W. Baruch Institute for Marine Biology and Coastal Research has managed and operated the reserve. The site includes both state-controlled navigable waters and lands owned by the Belle W. Baruch Foundation, an institution established to perpetually preserve and conserve the environmental value of the site. Through a long-term agreement, the Baruch Institute manages the tidal wetlands and conducts research and education programs to inform the community on marine science. The Institute works with the South Carolina Coastal Council, the state coastal management agency, to protect and operate the reserve.

PROGRAM ACCOMPLISHMENTS

Program Staffing: In the first year of operation, the reserve hired a manager, an education coordinator, a temporary research coordinator, a research technician and filled secretarial positions. With the addition of a senior research scientist as a permanent, full-time research coordinator, the reserve staff will be at full strength.

Marine Lab Dedication: A community celebration led by Senator Ernest (Fritz) Hollings and top NOAA officials in May 1993 marked completion a 19,000-square-foot marine research laboratory of the University of South Carolina, which also serves as headquarters for the reserve. The new Baruch Marine Field Laboratory replaced buildings lost to Hurricane Hugo in 1989 and re-established state-of-the-art field research facilities next to one of the most thoroughly studied estuaries of its size in the world. Visiting scientists, students and the reserve staff can take advantage of the lab's modern equipment, current databases, and high-capacity running sea water system.

Management Planning: The Institute prepared a *Final Environmental Impact Statement* for the reserve in May 1992 to show the impact that Federal management may have on the site's multitude of environmental resources.

In October 1992, a *Final Management Plan* was published, establishing the boundaries and details the research and education activities which guide reserve management. Reserve managers also formed an advisory committee representing the diverse natural, public, and economic interests in the estuaries, which met in February and September of 1993.

RESEARCH AND MONITORING PROGRAMS

Research and monitoring needs for the reserve took top priority in the early stages of the program. Collaboration between many faculty and staff who have been conducting research in North Inlet Estuary for up to 20 years yielded recommendations for a long-term research and environmental monitoring program. Reserve researchers continued to regularly collect physical data on the water's chemistry, using a computerized meteorological station and submersible monitoring systems, specifically looking at concentrations of nutrients, organics, chlorophyll, and sediments, and the water's biological populations, including zooplankton, nekton, benthos, plants, and birds. Such monitoring efforts provide reserve managers and scientists with a yardstick to measure and watch the health of the North Inlet-Winyah Bay ecosystem, and possibly, of the coast itself.

The North Inlet-Winyah Bay Reserve, designated in 1992, is located in Georgetown, S.C., part of the Carolinian biogeographic region.

The data grows as reserve scientists scour databases of historic and current information, created by academic, local, state and federal agencies, searching for historic contaminant levels and the known physiological conditions of important species. By assessing these environmental health factors, the reserve can concentrate on research efforts that are cost-effective and beneficial to decisionmakers. For example, coastal managers benefit from reserve research that compares the relatively pristine North Inlet to the disturbed Winyah Bay Estuary, which shows the effects of coastal development on watershed ecology.

In 1993 alone, scientists and students found North Inlet-Winyah Bay Reserve ideal for over 40 research projects. Although most studies at the site are not supported by reserve funds, reserve staff participate in many. Through this research, the reserve gains the information necessary to achieve the program's goals. For instance, current studies at the site may tell how contaminated sediments affect fish feeding; how

sending freshwater and nutrients from the land into an estuary affects the life in that tidal system; what happens when fish and other estuary animals disturb pollutants that settle in estuary mud; how contaminants entering an estuary impact the ability of some animals to detect their food, and how pesticides move up the food chain, from plants to fish, birds and humans.

At 9,080 acres, the reserves has already reached 100% acquisition status.

EDUCATION AND OUTREACH PROGRAMS

A spectrum of educational programs, courses, field trips, lectures, and meetings introduced all segments of the public to the nature, goals, and research activities of the North Inlet-Winyah Bay Reserve in layman's terms. Visiting community groups received illustrated slideshows and toured the facilities and habitat. The reserve even sponsored an "open house" to give people a chance to interact with scientists and see marine organisms first-hand from a microscope.

Special programs for youngsters proved especially popular and an effective way to instill an understanding and a respect for environment, particularly estuarine ecosystems. The *Nature for Young Explorers* and *Coastal Ecology Classes for Children* courses, given over the summer of 1993, provided structured educational experiences. Yet reserve educators were not satisfied with reaching only these few children. Taking the concept one step further, the reserve sponsored workshops to give teachers the information and material to bring the estuary into their classrooms. Reserve educators worked closely with the South Carolina Board of Education and local school boards to heighten visibility of the reserve program. The education subcommittee of the reserve's advisory committee planned a strategy for communicating reserve goals, information, and resources to the public.

The reserve operated using $70,000 in federal funding during FY92 and $117,000 during FY 93.

As part of the plan to enhance coastal education and outreach, the reserve developed a traveling display, exhibits for the headquarters lobby, slide shows, and printed materials. Staff members also initiated a volunteer program by sponsoring an organized Marsh Litter Sweep and encouraging volunteers to participate in construction of a salt marsh boardwalk. Interpretive signs and field study programs will be developed during the construction to explain important sites along the walk.

SUMMARY OF EVALUATION FINDINGS

No evaluation of the North Inlet-Winyah Bay NERR was conducted during the biennium.

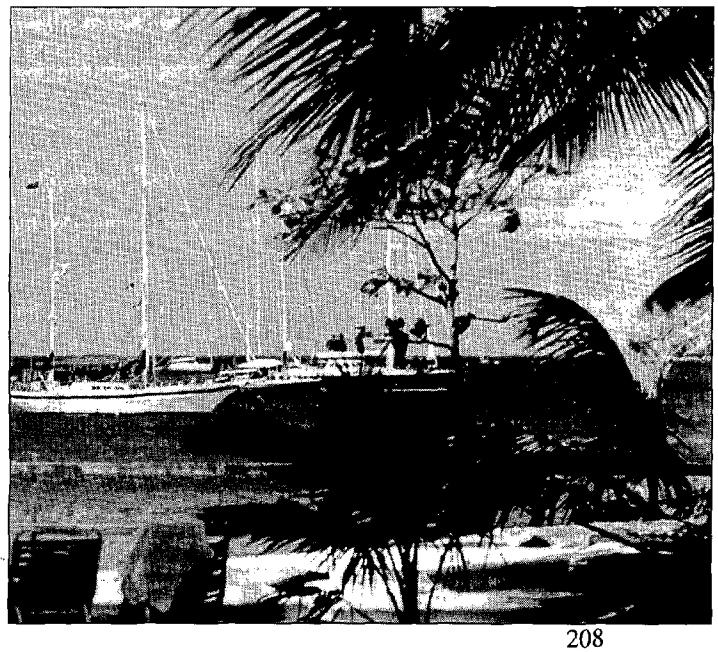
Virgin Islands

- Virgin Islands Coastal Zone Management Program

As a small island system, the entire Territory of the Virgin Islands is part of the coastal zone. To manage and balance the resources of this system, a comprehensive coastal zone management program was established under the Virgin Islands Coastal Zone Management Act of 1978. The Virgin Islands Coastal Zone Management Program (VICZMP), housed in the Department of Planning and Natural Resources (DPNR), directly manages development activities on the offshore islands and cays and within the first tier of the program's two-tier boundary structure, which is a relatively narrow coastal strip on the three major islands. The program accomplishes this through a comprehensive system of major and minor coastal zone management (CZM) permits. A separate set of laws and permits control activities within the second tier, which includes the interiors of the three major islands.

As the lead agency, DPNR exercises direct territorial control in administering the VICZMP. The Department approves or denies all earth change permits and minor coastal zone management permits and enforces the implementation of the major and minor coastal permits, including conditions placed on those permits. DPNR also processes all building, plumbing, and electrical permits. Major CZM permits are issued by a five-member Coastal Zone Management Committee appointed by the Governor for each of the three major islands. Together, the three committees constitute the Coastal Zone Management Commission, which promulgates rules and regulations and provides policy direction and leadership on coastal management issues.

The U.S. Virgin Islands coastal program received federal approval in June 1979.

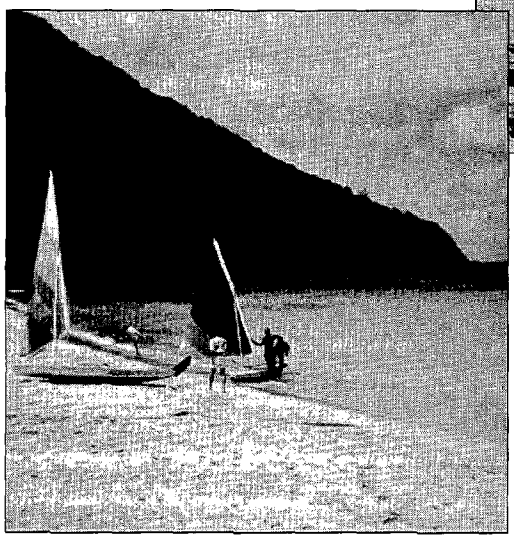


PROGRAM ACCOMPLISHMENTS

Vessel Mooring/Harbor Management: In November 1992, the Virgin Islands adopted companion regulations to "The Mooring and Anchoring of Vessels and Houseboats Act." The regulations provide the necessary guidelines to implement and enforce the Act.

Habitat Protection: In February 1992, President Bush signed into law an act designating Salt River as a national historical park and ecological preserve. Among its many unique features, Salt River contains the largest remaining mangrove forests in the U.S. Virgin Islands and includes a variety of tropical marine and terrestrial ecosystems. There is also evidence of human habitation by the Taino, Caribs, Dutch, African, French, Spanish, and English. Salt River is the only documented site in the United States where Christopher Columbus landed. This is the first national park to be managed by federal (National Park Service) and local governments through a joint commission. To date, no funds have been appropriated for implementation.

Areas of Particular Concern: In September 1993, the Coastal Zone Management Commission approved planning documents and boundary maps for 18 Areas of Particular Concern and Areas for Preservation and Restoration (APCs). The maps and plans



were completed over a two year period by DPNR with assistance from Island Resources Foundation, the University of the Virgin Islands, and Sea Grant, and substantial input from the public. The plans and maps have been submitted to the Office of the Governor with a recommendation for designation by the Virgin Islands Legislature as required by the Virgin Islands Coastal Zone Management Act.

Coastal Hazards: In 1991, the VICZMP completed a major study entitled "Hugo's Coastal Impacts: Damage, Recovery, and Revival of the Territorial Park System." The study included damage assessments for existing and potential park sites caused by Hurricane Hugo; recovery recommendations; and land acquisition and facilities options and costs.

SIGNIFICANT PROGRAM CHANGES

No program changes were submitted during the biennium.

SUMMARY OF EVALUATION FINDINGS

OCRM issued final evaluation findings for the Virgin Islands on Jan. 20, 1992 for the period of March 1989 through June 1991. Accomplishments cited include: technical assistance provided by the coastal program in the wake of Hurricane Hugo, general assistance provided to permit applicants, and more specifically to the public; and implementation of a civil fine system that improved monitoring and enforcement.

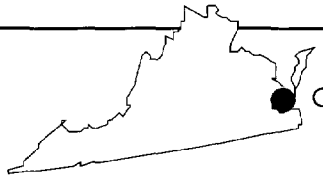
As a result of its evaluation, NOAA recommended that the Virgin Islands fill all program vacancies expeditiously; determine the training needs of DPNR staff, CZM commissioners and BLUA members; consider instituting a single-tier management approach; expedite revisions to the proposed subdivision ordinance; update standards and guidelines for major and minor permits; improve implementation and enforcement of the Virgin Islands environmental laws; review review the composition and responsibilitiesof the Board of Land Use Appeals as well as the technical and legal support for the Board ; designate Areas of Particular Concern and adopt and implement management plans; and coordinate with territorial agencies of coastal zone management issues and initiatives. The VICZMP has taken steps to address these recommendations.

Coastal Program Funding

	306/306A	309	6217
FY92:	$441,000	$49,000	—
FY93:	$489,333	$126,000	$42,000

Virginia

- Virginia Coastal Resources Management Program
- Chesapeake Bay National Estuarine Research Reserve in Virginia



Virginia's coastal zone includes all of Tidewater Virginia, as defined in *Virginia Code*, and all coastal waters under Virginia sovereignty, extending to the three mile outer limit of Virginia's territorial waters. Eighty-seven jurisdictions — cities, counties, and towns — lie within the coastal zone. Since Virginia's waters include a large portion of the Chesapeake Bay, and even more of the state's land area affects the Bay, Virginia is a major participant in the interstate effort to protect the Bay and its resources.

The Virginia Coastal Resources Management Program (VCRMP) networks existing state laws and authorities. The program is implemented through monitoring and coordination with state agencies and local governments, with the Department of Environmental Quality (DEQ) as its lead agency for administration. The VCRMP resides in DEQ's Division of Intergovernmental Coordination.

PROGRAM ACCOMPLISHMENTS

Water Quality: Virginia, along with other Chesapeake Bay states, has adopted a tributary approach designed to reduce excess nutrient loadings in the Bay. In September, 1993, the Chesapeake Executive Council issued directives supporting the program's "Tributary Strategies" to speed reduction of pollutants from both point and nonpoint sources entering the Bay. The strategies call for evaluating nutrient problems in individual rivers and customizing solutions for the individual river basins. The six basins Virginia are: the James, York and Rappahannock rivers, the smaller coastal basins on the mainland and the eastern shore, and the Virginia portion of the Potomac River.

The tributary strategies are intended to improve water quality and protect living resources in Virginia's rivers, coastal areas and the Chesapeake Bay by reducing nitrogen and phosphorus coming from agricultural and urban land uses and industrial and municipal wastewater treatment facilities.

Local Environmental Planning Assistance: Virginia's coastal program developed and has begun distributing a *Permit Guide for Business and Industry*. Program staff designed this technical assistance guide to help business and industry develop permit applications, which ultimately will streamline the permit process as called for in the CZMA.

Public Access: Over the past two years, Virginia's coastal program has helped to acquire 950 acres of coastal property for public access and/or habitat protection and helped to contruct nine coastal access facilities using coastal management funds.

Habitat Protection: Virginia's coastal program has helped the state's Marine Resources Commission create a county-by-county permit inspection and compliance program. This became particularly significant as the Commission gained legislative authority to issue civil charges and penalties for non-compliance.

Coastal management program seeks pollution reduction

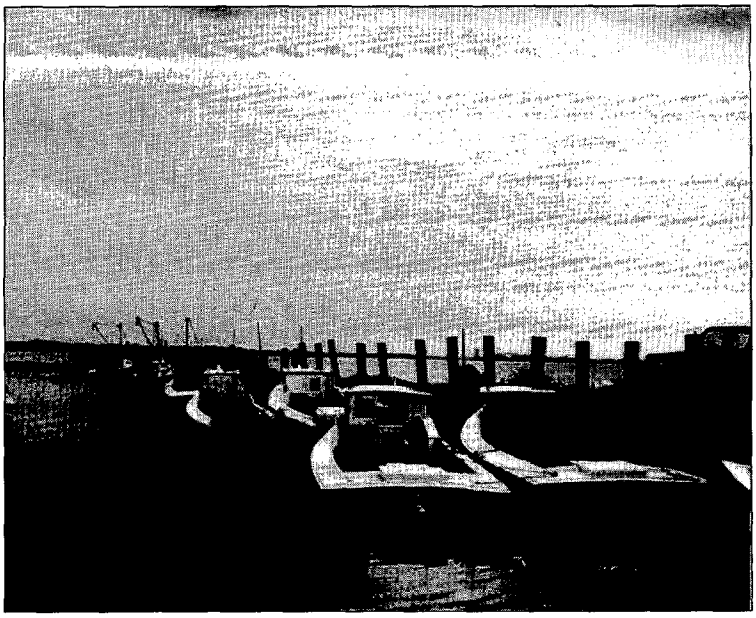
As part of an agreement between Virginia, Maryland, Pennsylvania the District of Columbia and federal agencies, coastal management experts in Virginia are seeking ways to reduce nutrient loadings in the tributary branches of the Chesapeake Bay 40% by the Year 2000.

To tackle nutrient problems in the Virginia portion of the Potomac River, coastal managers sponsored two tributary meetings for local residents and are producing a discussion paper on possible nutrient reduction methods. Managers plan three additional public meetings after the publication of the paper in late June.

Tributaries below the Chesapeake Bay present a different problem for the nutrient reduction project because of the hydrology of the area.

Coastal managers are working with the U.S. Environmental Protection Agency's Chesapeake Bay Program to determine nutrient reduction goals appropriate for these lower Virginia rivers.

In FY92 and FY93, the federal government contributed $2,323,000 and $2,292,000, respectively, to Virginia coastal program operations.



SIGNIFICANT PROGRAM CHANGES

No significant program changes were approved during the reporting period.

SUMMARY OF EVALUATION FINDINGS

Final evaluation findings, issued September 3, 1992, indicated that the Virginia is satisfactorily implementing and enforcing the VCRMP, addressing the Coastal Zone Management Act's coastal management needs, and adhering to the terms and conditions of its financial assistance awards. Virginia's program made accomplishments in developing and implementing new authorities to levy civil fines for violations of the Wetlands and Subaqueous Lands Act and strengthening the Barrier Island Policy of the Coastal Primary Sand Dunes/Reaches Guidelines.

The evaluation findings recommend that Virginia: as a part of reorganizing the Council on the Environment into the Department of Environmental Quality, place the VCRMP within the Office of the Director to assure more effective implementation of the state's program; clarify Virginia's federal consistency procedures; incorporate the Chesapeake Bay Protection Act into Virginia's coastal program; develop procedures for Virginia's Marine Resources Commission to monitor compliance with wetlands, dunes, and subaqueous permits; work with the State Water Control Board to implement the Virginia Water Protection Permit regulations; and submit several program changes to OCRM. Virginia's program has worked to meet these recommendations and required actions.

NOAA approved the Virginia coastal program in September 1986.

The Chesapeake Bay National Estuarine Research Reserve in Virginia has been established as a multiple component site, with components representing the lower estuarine, the transition and the tidal freshwater zones of each of the major river basins — James, York, Rappahannock, and Potomac — and representing the main stem of the Chesapeake Bay and its embayments. To date, the state has designated four components extending from the Mobjack/Seaford embayment at the mouth of the York River to a tidal freshwater site on the Pamunkey River.

These four components contain tidal salt and freshwater marshes, submerged aquatic vegetation, upland forests, beaches, mud flats and open water habitats across a broad range of salinity levels. Goodwin Island, at the mouth of the York River represents a polyhaline salinity regime; Catlett Island, about 19 miles above the mouth of the York, represents a mesohaline regime; Taskinas Creek represents the oligohaline transition zone and Sweet Hall Marsh represents a tidal freshwater regime.

The Virginia Institute of Marine Science (VIMS) of the College of William and Mary, a major estuarine and coastal oriented marine laboratory, manages Virginia's Chesapeake Bay NERR. Since the reserve's headquarters is located with the principal components of the Virginia Sea Grant Marine Advisory Service and Marine Education Program, the reserve program can work to develop cooperative and complimentary programs.

PROGRAM ACCOMPLISHMENTS

Research Fellow: The first National Sea Grant/SRD graduate fellowship was awarded to Mr. Chris Buzzelli, a Ph.D. candidate in the School of Marine Science of the College of William and Mary. Chris will pursue work on microbial production in vegetated and nonvegetated submerged bottoms at Goodwin Islands. Mr. Lawrence Libelo, another graduate student in the School of Marine Science, has been focusing on groundwater effects in coastal areas, and much of this work has been also done on the Goodwin Islands Component.

Outreach Exhibit: The reserve completed a new traveling exhibit in November 1992. The exhibit has been displayed at public meetings on the reserve's expansion, the Virginia Marine Science Museum in Virginia Beach, the Science Museum of Virginia in Richmond, and at the Virginia Wesleyan College in Norfolk.

Volunteer Programs: Virginia's Chesapeake Bay reserve has established a strong volunteer program to support monitoring and research in the York River Component. The reserve estimates that volunteers donated 3,684 hours during this biennium serving the site. For EarthWatch, ten teams, each with three to five volunteers, spent a week helping with the reserve's long-term marsh plant

studies. Another team of volunteers from the Alliance for the Chesapeake Bay collects water quality samples weekly from all of the York sites to assist with the reserve's monitoring program. Teams of volunteers, totalling 240 individuals, have collected debris quarterly at the Goodwin Islands and Catlett Islands, adding to what is now a three year record of marine debris from these components. Volunteers also continually conduct a bird census program at all four York River sites.

Resource Inventory: Reserve staff completed a survey of historic and prehistoric archaeological sites on the Catlett Islands and adjacent Timberneck farm during this blennium. This survey became the basis for an archaeological and historic development plan for the area.

Nomination Package for Designation: Working towards designation of additional components within the Chesapeake Bay estuary, the reserve completed a nomination package for expansion of the Chesapeake Bay NERR in Virginia into the Potomac, Rappahannock and Piankatank River and forwarded the package to the Governor's Office for state and local agency review.

The reserve operated using $110,00 in federal funding in both FY92 and FY93.

RESEARCH AND MONITORING PROGRAMS

Virginia's Chesapeake Bay reserve initiated a vigorous and growing research program on the York River components, funded by federal, state and private sources. Scientists interested in using the reserve have successfully competed for federal funds through OCRM. OCRM funded two competitive awards for research focused primarily in Virginia's Chesapeake Bay reserve sites through the national NERRS research program.

Citizen monitoring

Twenty-five diverse research or monitoring projects were underway at the York River components during the biennium. Another three projects were being conducted at potential sites in the Potomac and Rappahannock Rivers. Among the projects were a broad range of physical, chemical, and biological studies of salt marsh and estuarine processes and a study of the pre-colonial and colonial archaeology of one site. At least 49 different researchers from ten institutions took part in the projects, which covered: oxygen production in submerged aquatic vegetation (SAV), water quality monitoring, associations between oysters and submerged aquatic vegetation; studies on bird, fish, and crab populations; predator-prey relationships; reproductive ecology of sea grasses; and the use of reserves as control sites for pollution studies.

The two projects funded through the National Estuarine Research Reserve program are studies on the interaction between oysters and submerged acquatic vegetation and impacts on water quality, and nutrient exchange in SAV and the role of vegetated and non-vegetated areas in the nitrogen cycle. Both are important processes in the estuarine ecosystem.

An endowment has been established to support undergraduate research grants for work at sites within Virginia's Chesapeake Bay NERR. Any undergraduate in a Virginia public or private college may receive these grants, which are not restricted to natural science majors. The first competitive awards from this grant will be awarded in Fiscal Year '94. Funds from the endowment have already supported a survey of amphibians and reptiles at a potential Rappahannock River component,

The reserve was designated in 1991 in the Virginian biogeographic region.

Computer Networking Brings Research and Education to Virginia Schools

Feats of modern technology link Virginia teachers to the state's Chesapeake Bay National Estuarine Research Reserve.

The reserve uses two educational computer networks to bring estuarine education to students in kindergarten through 12th grade.

Through these networks, the reserve shares information on research and monitoring conducted at the reserve's four components.

Teachers can incorporate the data files, supporting text, and graphic materials made available by the reserve via the network. The reserve also provides suggestions on how the information can be incorporated into classroom activities.

These networks, part of a national program called Learning Link, are available to all public schools and interested private schools throughout the state through a partnership with the Consortium for Interactive Instruction.

In Virginia, the State Department of Education supports the network, which is managed by Public Broadcasting Station WHRO.

conducted by an undergraduate from Mary Washington College through a non-competitive grant.

EDUCATION AND OUTREACH PROGRAMS

The Chesapeake Bay NERR in Virginia educates the general public through its newsletter "A Fair Bay" with 1500 subscribers, a traveling exhibit, and presentations made by the reserve staff, and other initiatives. The reserve hosted Virginia's Estuaries Day celebration, held in conjunction with the Virginia Department of State Parks, at the Taskinas Creek Component in both 1992 and 1993. In 1992, 1,300 people attended; 1,400 attended in 1993.

The reserve supports in-service and summer training for teachers in network communications, and the use of spreadsheets and other computer tools to analyze and interpret data. Data on water quality , bird census, plant distribution, and data from the debris monitoring program are now on the system. Reserve staff update water quality data files weekly and update other data files at appropriate intervals.

SUMMARY OF EVALUATION FINDINGS

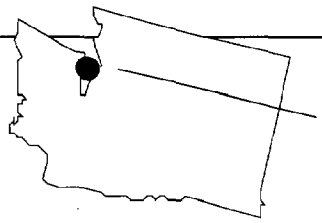
No evaluation of the Chesapeake Bay, VA., NERR was conducted during the biennium. The next evaluation is scheduled for June 1994.

Although the reserve protects 4,434 acres, managers hope to add three new components to the reserve.

Boy scout coastal cleanup

Washington

- Washington Coastal Zone Management Program
- Padilla Bay National Estuarine Research Reserve



Padilla Bay NERR

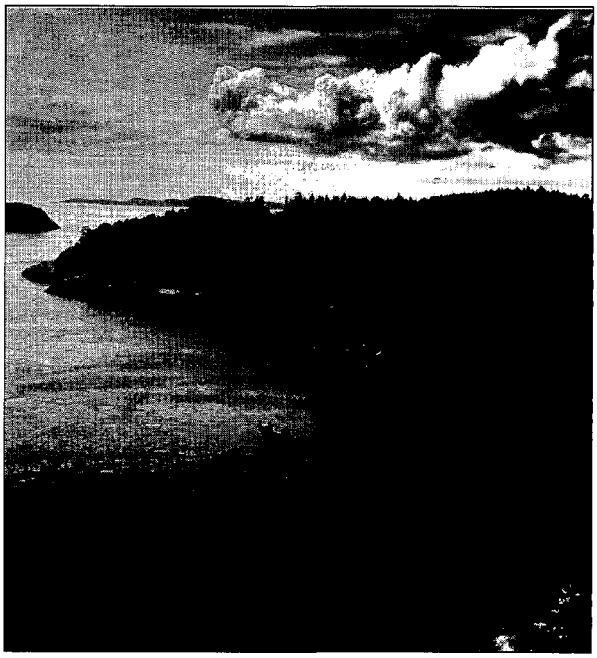
Washington was the first state to receive federal approval of a coastal management program. The Washington Coastal Zone Management Program (WCZMP) is based on the state's Shoreline Management Act of 1971, which established broad guidelines for the protection and management of all the state's shorelands, marine waters, and certain lakes, streams and wetlands.

The state's Department of Ecology (Ecology) serves as the lead agency for Washington's Coastal Program. This partially networked program involves multiple state agencies, 15 counties, and 36 cities.

The state Shoreline Management Act (SMA) provides the primary authority to plan and regulate the state's coastal zone. Cities and counties play leading roles in managing shorelines. The state provides overview and support. Local actions are guided by locally-developed, state-approved shoreline master programs (SMPs). The coastal zone boundary encompasses all 15 coastal counties bordering Puget Sound and the Pacific Ocean.

The Washington Coastal Program, federally approved in June 1976, relied on $2,448,000 in federal funds during FY92 and $2,370,000 in FY93.

PROGRAM ACCOMPLISHMENTS



Wetlands Protection: Ecology published *Restoring Wetlands in Washington, A Guidebook for Wetland Restoration, Planning and Implementation.* Acknowledging that the regulatory or non-regulatory context of a restoration project may affect the process, the report describes the concepts and procedures of wetland restoration which can be applied to both the creation and enhancement of wetlands. Although this document focuses primarily on the restoration of freshwater wetlands, the information also covers estuarine systems.

Ecology also produced three reports to assist efforts by the Washington State agencies and local governments developing policies and standards for a comprehensive wetlands protection program. *Wetland Mitigation Replacement Ratios: Defining Equivalency* summarizes and assesses information on wetlands mitigation in an effort to learn more about replacement ratios necessary to offset losses in wetlands acreage and function due to filling and other wetlands impacts. *Wetland Buffers: Use and Effectiveness* summarizes information related to wetland buffer use and effectiveness. *Wetland Mitigation Banking* discusses planning consideration and general guidelines for potential mitigation bank implementation.

Coastal Hazards: Ecology published two manuals to assist owners and contractors in addressing coastal erosion. *Slope Stabilization and Erosion Control Using Vegetation* describes general soil bioengineering practices using vegetation to control erosion and help stabilize slopes. *Vegetation Management: A Guide for Puget Sound Bluff Property Owners* focuses on vegetation management during site development with an emphasis on reducing the hazard of surface and mass soil erosion. Ecology also sponsored a series of technical bioengineering workshops, built mobile displays, and produced brochures for specific audiences such as highway engi-

neers and others to "market" the concept of using natural vegetation to control riverside erosion.

Public Trust: Ecology used coastal management funding to organize the Washington Public Trust Doctrine Symposium (November 18, 1992) and publish proceedings of the symposium as well as a videotape. Ecology provided funds to a professor at the University of Washington Law School whose work resulted in a Washington Law Review Article, "*The Public Trust Doctrine and Coastal Zone Management in Washington State.*"

Public Access: Ecology continues to increase public access in the coastal zone by funding local entities' projects through section 306A, low cost construction funds. The $77,500 of federal funds, matched by the local governments, resulted in three new access projects at the coast. Each project is handicapped-accessible.

Erosion Management: As part of Washington's section 309 coastal erosion management strategy work task, Ecology completed three technical studies: an inventory and characterization of shoreline armoring devices; engineering and geotechnical standards for shoreline erosion management; and physical effects of shoreline armoring. These studies provide the foundation for revising the Shoreline Management Act's policies to guide shoreline armoring and the use of other stabilizing techniques.

Growth Management: Through the CZMA Enhancement Grant program, Ecology is continuing to address coastal impacts through the Growth Management Act and the Shoreline Management Act. Ecology began early to assist the local governments to ensure adoption of growth management policies and regulations that support and strengthen their SMA Plans.

Rod Mack, program manager of the Washington Shorelines & Coastal Zone Management Program since 1975, retired Dec. 31, 1993, from the Department of Ecology.

Orion Law Suit: Ecology negotiated a settlement agreement with the Orion Development Corporation transferring some 8, 000 acres to the Padilla Bay National Estuarine Research Reserve. The purchase closed a 12-year legal conflict which included a major state Supreme Court decision reaffirming the right of the public to protect aquatic resources held in the public trust.

Public Education: Ecology, along with public, private and corporate sponsors, organized and planned Coastweeks, an annual celebration of the coastal zone. During Coastweeks '92 and '93, some 31,000 and 43,000 people, respectively, attended more than 200 participatory shoreline activities including beach clean-ups, watershed tours, storm-drain stencilling, hazardous waste roundups.

The CZM grant program payed for planning, blueprints, and some construction of an ocean front boardwalk that protects dunes while providing public access.

Shellfish Protection: State grants to local governments, matched with coastal zone funds, are successfully controlling nonpoint pollution in watersheds draining to shellfish growing areas. Burley Lagoon, closed to harvesting in 1981, was reopened. Four other commercial and recreational shellfish areas also reopened or were upgraded during this period.

SIGNIFICANT PROGRAM CHANGES

Washington's coastal management program has completed a draft revision of its program document and is scheduled to submit the final revised document this year.

SUMMARY OF EVALUATION FINDINGS

No evaluation was conducted during the biennium. The program was evaluated in December 1993. Evaluation findings will be issued in 1994.

Local grants allow counties to help the coast

Where do federal dollars for coastal management land? For the past 18 years, some federal funds awarded tothe State of Washington land in the hands of local governments for "grassroots" coastal projects.

In 1993, for example, the Washington State Department of Ecology's Shorelands Program awarded 22 Coastal Zone Management (CZM) grants totalling more than $300,000 to support planning for waterfront development, public access, and shoreline resource protection in 14 counties.

The predominate theme for 1993 grants was integrating shoreline management into the policy, planning and regulatory activities required by the state's Growth Management Act. Under this theme, local governments used grants to improve public access to the shore; to integrate coastal management administration; to restore riverfronts, estuaries and eroded bulkheads; for construction of boardwalks and coastal resource centers; to map watersheds; to create management plans; to update local coastal management plans — many written in the mid-70s — to meet the needs of modern shorelines, and much more.

A $20,000 CZM grant to the City of Everett, for example, may produce a model for identifying and ranking disposal site selection criteria for dredged material. The Snohomish River channel, carrying 6 to 7 million tons of commerce annually, is dredged every year by the U.S. Army Corps of Engineers. This clean sand is used for building roads, docks, boat launches and public parks. The space now used to store the massive material, however, is scheduled to become a public park, forcing city planners to find a new home for the dredged spoils. With the grant, city officials and an advisory group can develop a new action plan for material disposal and storage.

The funds are also used to improve or add public facilities along the shore. The Department of Ecology awarded a $40000 grant in 1992 to the Grays Harbor County Chapter of Trout Unlimited to study and build a picnic shelter, boat launch, and restrooms, creating the first handicapped-accessible facility on the Washington shoreline. In 1993, the chapter received $15,000 top study the feasibility of adapting the facility from a day to an overnight site. The 1993 grant will be used to analyze costs and begin preliminary engineering for an 18-unit overnight vehicle facility, as well as studying the impact of adding a nature trail with interpretive signs, a floating dock, permanent caretaker quarters, a sewer system, and a public restroom and shower.

In Island County, among the top three fastest growing counties in the state, a $20,000 CZM grant will train 20 volunteers on environmental topics related to marine shorelines. The 7-week program, called Beach Watchers, provides more than 100 hours of training. In return, volunteers commit to at least 50 hours of service monitoring local beaches and education community members. Graduates from past Beach Watchers training programs averaged more than 120 hours of volunteer service.

Summer visitors to the Port Towsend Marine Science Center took free guided beach tours with skilled naturalists, thanks to a $5,340 CZM grant. The grant to Jefferson County provided a series of educational beach walks at the center, located in Fort Worden State Park. Through these walks, visitors learned about local marine biology, geology and hydrology, in addition to historic human uses and enviornmental regulation of the coast.

The funds also aid researchers by providing facilities. Port of Willapa Harbor planners received a $15,000 CZM grant to bring their vision of a marine research and education center to light. The center will feature facilities for scientific studies of local watersheds and estuaries, focusing on sustainable management of the region's natural resources. The proposal shows an aquarium, interpretive exhiibits and meetings rooms similar to those of the Padilla Bay National Estuarine Research Reserve (see page 90 for more information on this unique site).

According to Rod Mack, the coastal program's first manager, "these kinds of grants help local governments meet our goals for the state's coastal program."

Established in 1980, under the management of the Washington Department of Ecology, the Padilla Bay National Estuarine Research Reserve encompasses over 10,604 acres of estuarine wetlands, 100 acres of uplands, and nearly 14,000 square feet of facility space. Located near Anacortes in Skagit County, Wash., the site contains one of the largest eelgrass concentrations on the Pacific Coast and supports a diverse collection of invertebrates, fish, birds, and marine mammals. The reserve is uniquely located adjacent to diked agricultural lands, surrounded by small urban centers, and bordering an inland marine system used extensively for commerce and urban recreation. The surroundings make the site ideal for researching impacts of urbanization on an estuarine environment.

The reserve implements major programs in research, education and interpretation, using on-site field, laboratory, classroom, and display resources. More than 25,000 citizens participate in these programs each year; outreach efforts reach several thousand more citizens. Cooperative programs involve state and regional universities, 40 regional public school districts, and local, state, and federal agencies. State and federal funding of the reserve is enhanced through support of a nonprofit corporation,the Padilla Bay Foundation. Advisory committees provide guidance in research and education to the reserve.

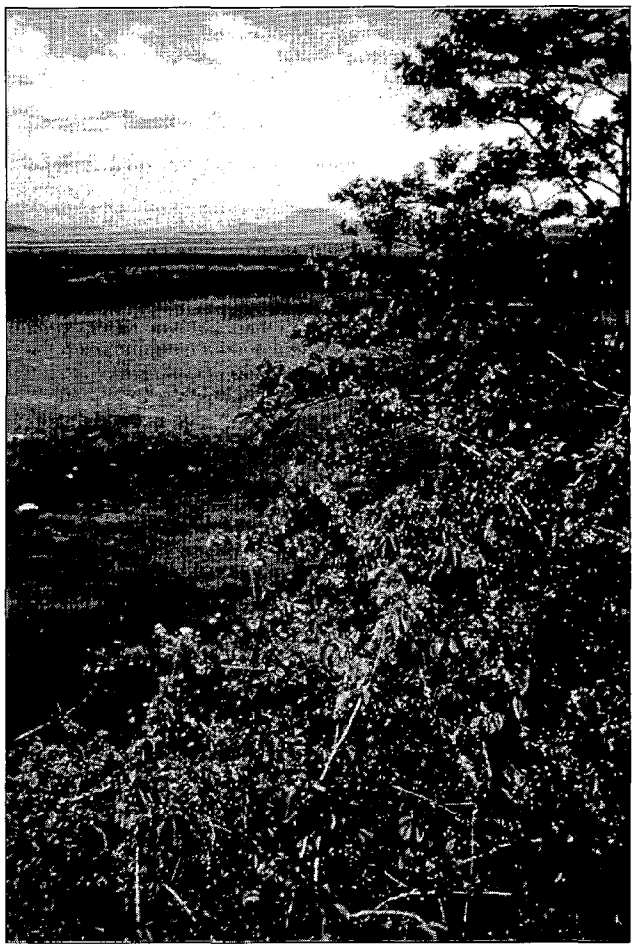
PROGRAM ACCOMPLISHMENTS

The reserve's management plan is currently under revision; an internal draft was recently reviewed by cooperating agencies and committees.

The reserve received $160,000 in federal funds in FY92 and $159,000 in FY93.

Land Acquisition: Settlement of the Orion dispute added 8,004 acres of tidelands to the reserve. Several other tideland and upland parcels were donated to the reserve during the biennium, including one beachfront access site. After evaluating selected agricultural lands adjacent to the estuary for purchase as a non-point pollution research/demonstration farm, the reserve obtained an option to purchase the land.

Operations: The reserve completed several tasks to enhance operation. For example, managers completed an estuarine curricula for high school classes, prepared a procedures and policy manual, and initiated a Padilla Bay Watershed Study financed by state and county government. The reserve also initiated a facility master plan, work-



ing specifically to plan and design more parking and handicap-accessible pathways at the interpretive center. The Padilla Bay Foundation continued support of operational, educational, and research programs by funding internship, assistantships, and special projects. The Texaco Corporation, through the Foundation, funded the concept design for a new exhibit at the interpretive center.

RESEARCH AND MONITORING PROGRAMS

The reserve continued to develop baseline information on the status of resources and processes in Padilla Bay. Through sediment toxicity measurements taken throughout the bay, a former landfill just outside reserve boundaries was found to be highly toxic. The reserve also determined seasonal and daily patterns of suspended sediment flow from agricultural fields in the watershed to Padilla Bay and the benefit that cover crops have on reducing that flow of suspended sediments.

Protecting 10,704 acres, the reserve is 82% complete.

A research assistantship program was initiated with funding from private, federal, and state sources to study water quality in the Swinomish Slough, which flows into Padilla Bay. More than half a dozen students worked on this project during the biennium. Other studies, conducted in cooperation with various state agencies, examined the vegetative communities on Hat Island, the drift of beach fill material, the effects of herbicide on eelgrass, and monitored nonpoint source pollution in the watershed.

EDUCATIONAL AND OUTREACH PROGRAMS

The reserve education and interpretation program includes in-house courses taught at the preschool through college level, teacher workshop, youth program, family programs, special group programs, adult workshops, guided tours, outreach programs, film series, exhibits and aquaria, portable display; a newsletter/activity calendar, and brochures.

The Padilla Bay Reserve was designated in 1980 in the Columbian biogeographic region.

Two projects developed during the biennium have received national attention. The new film, *Estuary!*, won the second place Silver Screen Award at the 26th Annual U.S. International Film Festival. The Video Communicators Association awarded the new high school outreach program with the organization's prestigious "Excellence Award."

SUMMARY OF EVALUATION FINDINGS

No evaluation of the Padilla Bay National Estuarine Research Reserve was conducted during the biennium.

Settlement reached in long-standing "takings" dispute

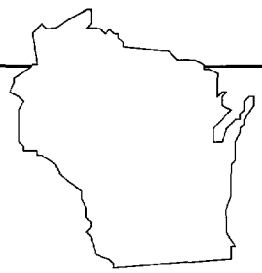
The lengthy legal dispute between the Orion Corporation and the State of Washington over an alleged "taking" of the corporation's property development rights finally reached settlement.

Through a mediated settlement, 8,004 acres of tidelands were added to reserve ownership. This mediated settlement closes twelve years of litigation, including two appearances before the Washington State Supreme Court and several county superior court trials and appeals.

Along the way, courts upheld the state's coastal zone/shoreline management laws and redefined the state's public trust doctrine.

Wisconsin

- Wisconsin Coastal Management Program

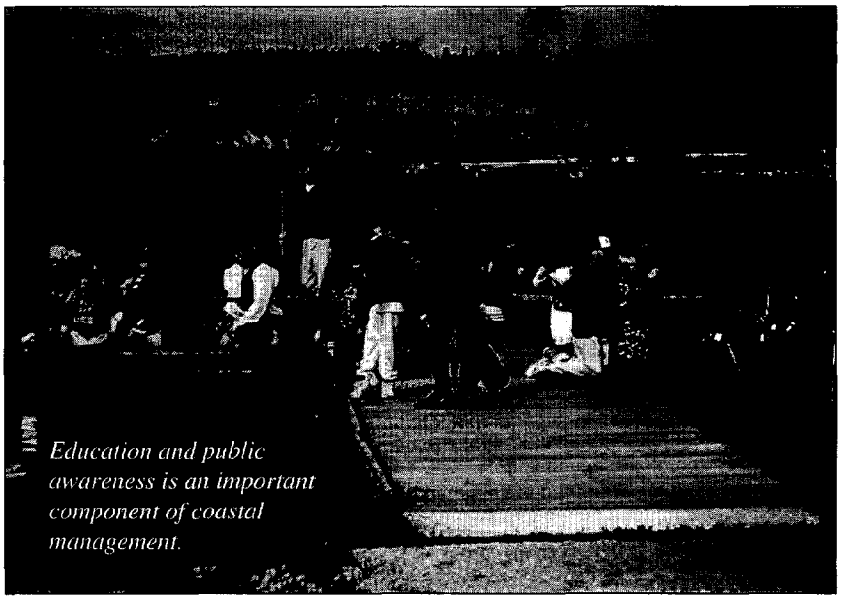


Wisconsin has 820 miles of coastline —156 miles along Lake Superior, 464 miles along Lake Michigan, and 200 around Green Bay — in 15 coastal counties. All land from the water's edge to the inland boundary of these counties and water to the state/international line make up Wisconsin's coastal zone.

Wisconsin's Coastal Management Program (WCMP), approved in 1978, is a networked program which incorporates many state laws and regulations. A Governor's Executive Order designated the Coastal Management Section in the Division of Energy and Intergovernmental Relations, under Department of Administration, as the lead agency for program coordination, with policy direction given by the Wisconsin Coastal Management Council. Federal consistency review is done in coordination with the Department of Natural Resources. However, the DOA holds no direct statutory, regulatory or management authority to implement Wisconsin's Coastal Management Program. Most of the core authorities are implemented by the Department of Natural Resources, although some authorities are implemented by the Department of Agriculture, the Public Service Commission, Department of Industry, Labor, and Human Relations, Department of Transportation and others.

The Wisconsin coastal program, designated in 1978, manages 820 miles of coastline.

The Governor's Executive Order also established the Wisconsin Coastal Management Council (the Council), made up of representatives from the legislature, state agencies, local governments, the university, public and tribal governments, with a Governor-designated chairperson. The Council oversees the program's implementation by providing policy direction to the coastal program. The Council also acts as a strong advocate for coastal resources and their wise and balanced use.



Education and public awareness is an important component of coastal management.

PROGRAM ACCOMPLISHMENTS

Coastal Nonpoint Pollution Control Program: Wisconsin's Coastal Management Program is building a Coastal Nonpoint Pollution Control Program on the expertise and established nonpoint program of the Department of Natural Resources (DNR). The WCMP provided funding to the DNR for support staff and facilities to develop the section 6217 nonpoint source pollution control program. The DNR is using information and resource management experience from the Department's Priority Watershed Program, which is a voluntary cost-share nonpoint source program, to comply with the requirements of section 6217.

The DNR is analyzing the requirements of CZMA section 6217 in relation to the existing nonpoint program and the coastal program to identify actions needed for the final adoption of the program. DNR staff are also compar-

ing the federal guidance management measures to the current Best Management Practices used in Wisconsin and developing nonpoint source pollution fact sheets to increase public awareness and gain public support for the program.

Enhancement of the State Shorelands-Wetlands Program: Working to address concerns from section 312 evaluations about deficiencies in monitoring and enforcement of core authorities of the shorelands-wetlands program, Wisconsin's coastal program has funded four "assistant water management specialist" positions in the coastal counties since 1991. The specialists have greatly improved the level of service to local units of government and the general public. The backlog of pending permit applications has been significantly reduced, and improvements have been made in compliance monitoring and enforcement and response time to requests for technical assistance.

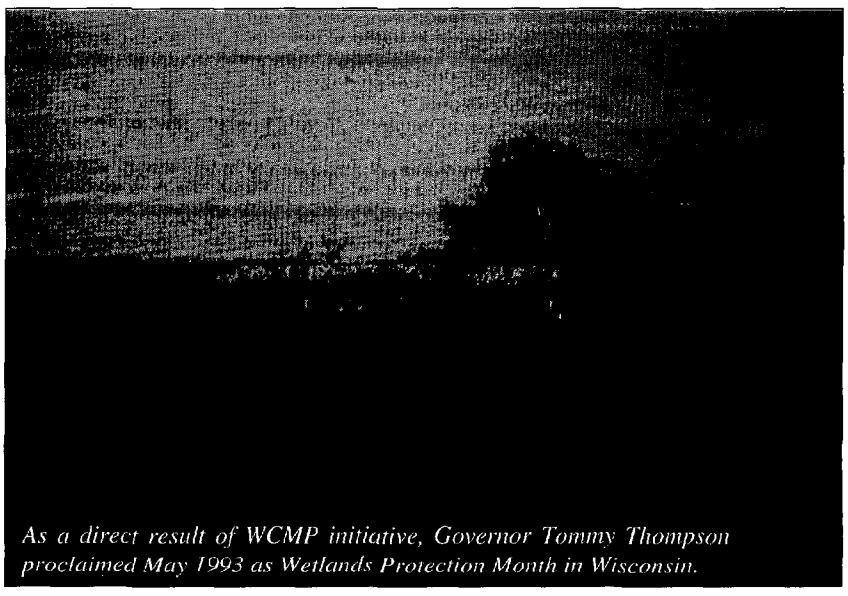
Monitoring and Enforcement: Working to address cumulative and secondary impacts (CSI) and nonpoint source pollution in its coastal zone, Wisconsin's coastal program provided funds under the 1992 grant to Oconto County to hire a staff person to investigate failing septic systems. Although this work began with a project funded in 1989, the project only reached a portion of the county. This funding will enable Oconto County to complete the investigation for the entire county and allow local units of government to monitor and enforce their own septic ordinances.

Wetlands Protection: Through the CZMA Section 309 Enhancement Grant Program Wisconsin's Coastal Management Program is increasing the level of wetland protection and awareness in the state. As part of the enhancement program, coastal program staff are developing a mandatory Wetland Professional Certification Program for local, state, and federal regulators and private consultants. A guide to wetlands and boundary delineation will be developed as part of this program, along with a curriculum to teach the guide. The program will begin modestly, but will grow in phases to educate and certify increasing levels of regulators and consultants. Along with this project, the state will track legislation for opportunities to codify the wetland certification requirement.

The Wisconsin coastal program operated using805.667 in federal funds during FY92 and 899,000 during FY93.

Wisconsin Wetland Inventory: Since 1989, the WCMP has provided funds to the Department of Natural Resources to update the Wisconsin Wetland Inventory on a geographic information system. The goal of this ongoing effort is to update and digitize the Wetland Inventory for the coastal counties and enhance the local role in wetland protection through adoption of shoreland-wetland zoning ordinances.

Wetlands Awareness: As a direct result of WCMP initiative, Governor Tommy Thompson pro-



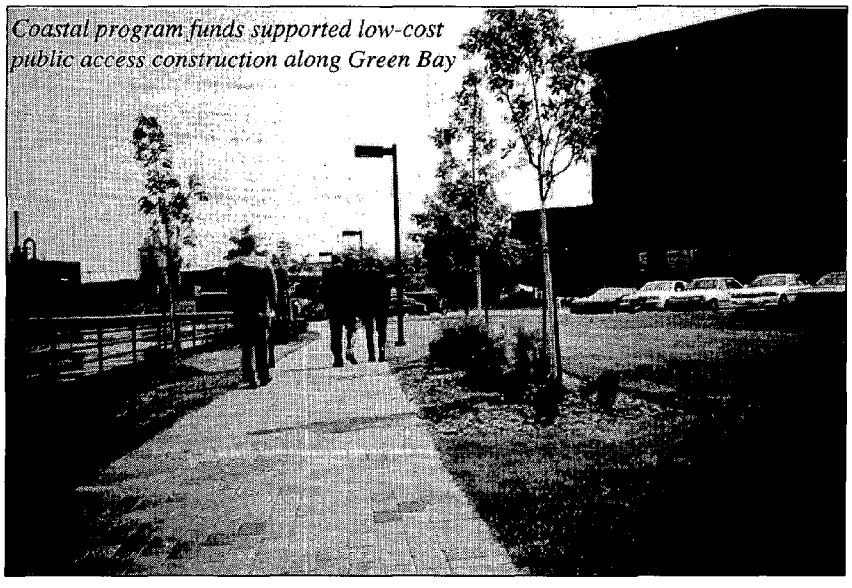
As a direct result of WCMP initiative, Governor Tommy Thompson proclaimed May 1993 as Wetlands Protection Month in Wisconsin.

claimed May 1993 as Wetlands Protection Month in Wisconsin. Run concurrently with the National Wetlands Month, this state effort included the development and distribution of thousands of posters and information to increase public awareness of the need for wetlands protection.

To educate students about the natural function and value of wetlands, Wisconsin's Coastal Management Program funded "Project WULP"— Wetland Understanding Leading to Protection. Through Project WULP, curriculum materials on the issue of wetland preservation will be developed, pilot tested, and produced. The project will rely on both indoor classroom and hands-on outdoor field experiences.

Low-Cost Construction for Public Access: The Wisconsin Coastal Management Program has continued to support waterfront redevelopment/low-cost construction projects to provide much-needed access to the Great Lakes coastline. Since 1991, the program funded six low-cost construction projects, which have involved the construction of waterfront walkways, fishing piers, promenades, observation decks, and land acquisition for developing a waterfront park. These projects have been highly successful in providing new or improved public access to the Great Lakes waterfront.

Public Access Guide: Wisconsin's coastal program spearheaded a project to produce the *Wisconsin Great Lakes Public Access Guide* providing information on recreational areas and access points along Lake Superior and Lake Michigan. The guide is a high-quality glossy publication with maps of public access points along the coast and natural resource protection information.



Coastal program funds supported low-cost public access construction along Green Bay

Training for Program Network: In response to Wisconsin's most recent section 312 program evaluation, the WCMP has held several training sessions for both the Coastal Management Council and networked groups to review the objectives and requirements of the state and national coastal programs, as part of an ongoing Wisconsin program development and enhancement program. As continuing education for the Council, they have invited representatives from other state coastal programs to learn how other coastal council programs operate.

SIGNIFICANT PROGRAM CHANGES

The WCMP submitted, and OCRM approved, a request to incorporate changes to Chapters NR 322 and NR 347 into the program through a routine program implementation (RPI) change. Changes to Chapter NR 322, General Permit Program for Certain Water Regulatory Activities, simplify the permit process to reduce staff time. Chapter NR 347, Sediment Sampling and Analysis, Monitoring Protocol and Disposal Criteria for Dredging Projects, was amended to shorten, simplify, and provide more guidance to applicants.

Several rules changes, promulgated pursuant to the Federal Water Pollution Control Act, were

incorporated into the WCMP, including changes to Wisconsin Chapters NR 102, 103, 105, 106, and 207. These changes affect water quality standards for wetlands, water quality standards for surface water, water quality-based effluent limitations, and water quality anti-degradation.

SUMMARY OF EVALUATION FINDINGS

OCRM issued final evaluation findings in August 1992 for the review period of April 1991 through December 1991. OCRM found that Wisconsin progressed in certain areas of Shorelands Program implementation and enforcement, development of a draft assessment of the multi-year strategy, interagency coordination and public access.

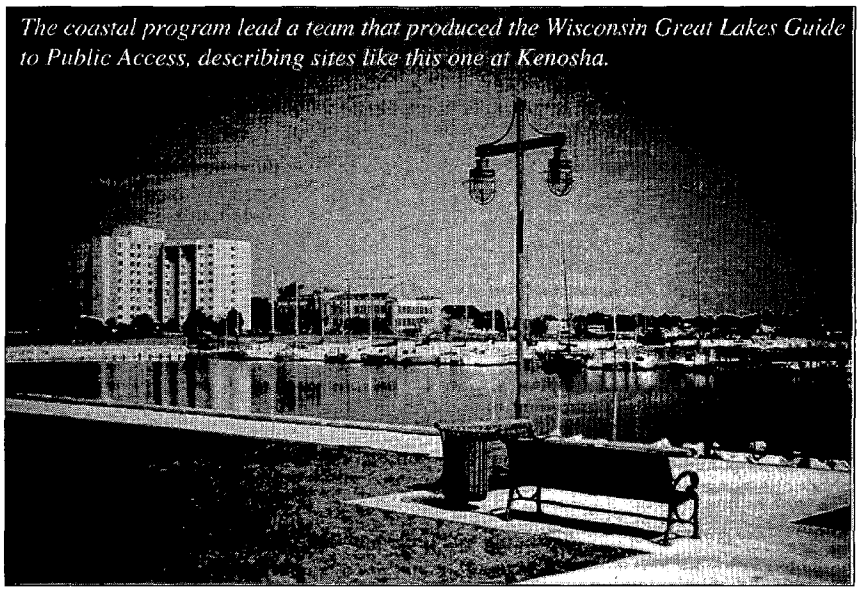
The findings also contained eight necessary actions which must be satisfied by Wisconsin's program in order to adhere to the federal program. The necessary actions require Wisconsin to: provide adequate monitoring of Chapter 30 permits (wetlands and waterways); complete adoption of local wetland ordinances and complete the Wetlands Inventory Update; complete the section 306 multi-year strategy; educate the WCMP networked groups on the proper scope of the WCMP; ensure that the Wisconsin Coastal Management Council fulfills its responsibilities; provide a DNR program liaison or submit a program change which accomplishes the same objectives; adhere to federal consistency procedures in the WCMP and NOAA regulations, and ensure that specific program changes are submitted to OCRM. Wisconsin's program has made significant progress in addressing these recommendations by completing six of the eight actions. One of the two remaining actions will require a program change, and program staff members are working on that change. The last action is part of a multi-year strategy which the WCMP is scheduled to complete by September 1998.

Low productivity in bald eagles indicates contamination of ecosystem

Wisconsin's coastal program sponsored a biological survey of bald eagles to determine the health and water quality of the Great Lakes ecosystem.

Researchers studied blood samples of nestlings along the Lake Michigan and Lake Superior shoreline to determine the effects of contaminants in the Great Lakes on the bald eagle population.

Blood samples showed that nestlings along the Lake Superior shoreline had moderately high levels of contaminants and lower productivity rates. Results also showed that nestlings along the shoreline of Green Bay have the poorest reproductive rates and the highest concentrations of contaminants of nestlings in Wisconsin.



The coastal program lead a team that produced the Wisconsin Great Lakes Guide to Public Access, describing sites like this one at Kenosha.

Appendices

- CZM Participation Status
- NERR Participation Status
- Program Maps
- Funding Allocation
- Coastal States' Section 309 Priority Needs
- Projects of Special Merit Under Section 309
- NERR Regulations
- Program Contacts
- Photo Credits

STATUS OF STATE COASTAL MANAGEMENT PROGRAMS

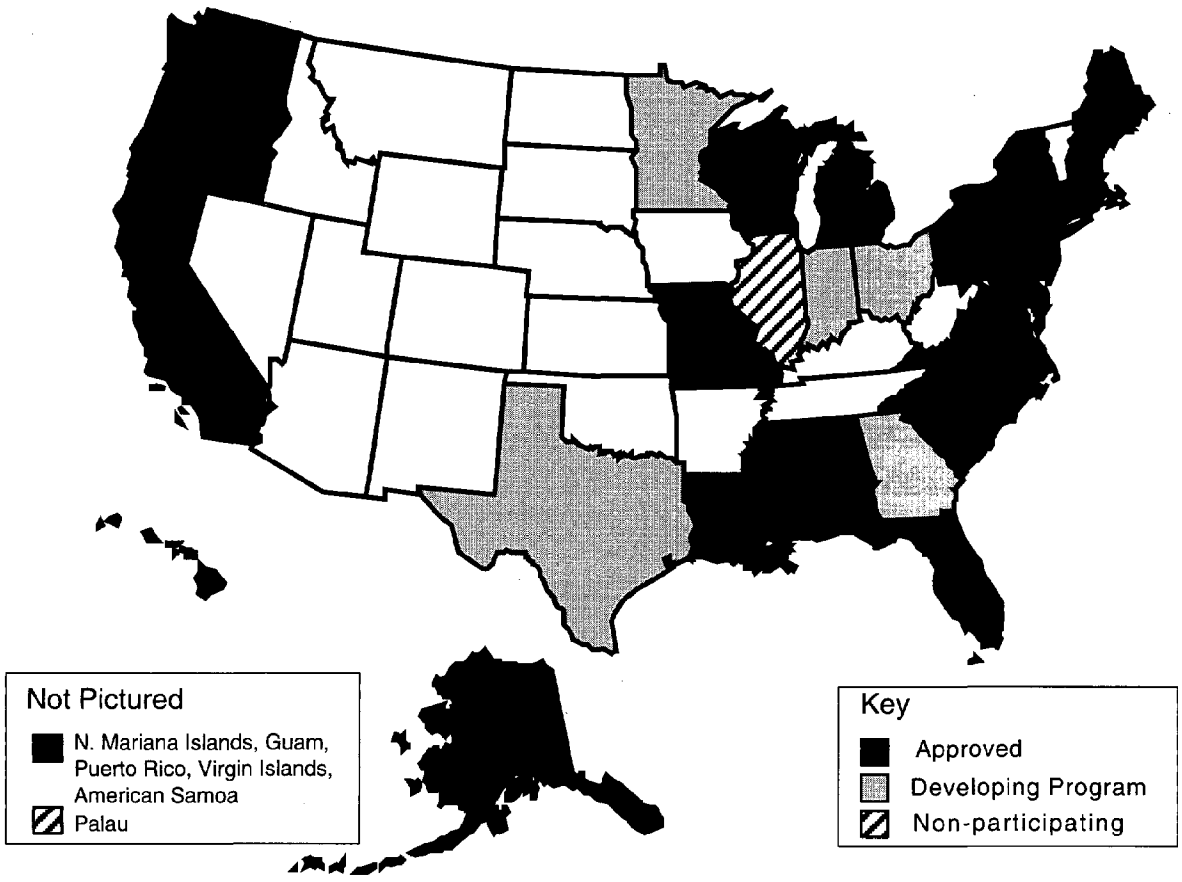
Participating State	Actual or Estimated Federal Approval Date By Fiscal Year End (end 9/30/93)	Comment and Status 9/30/93
Alabama	1979	Approved
Alaska	1979	Approved
American Samoa	1980	Approved
California		
BCDC (San Francisco)	1977	Approved
CCC	1978	Approved
Connecticut	1980	Approved
Delaware	1979	Approved
Florida	1981	Approved
Georgia	——	Pending
Guam	1979	Approved
Hawaii	1978	Approved
Indiana	——	Pending
Louisiana	1980	Approved
Maine	1978	Approved
Maryland	1978	Approved
Massachusetts	1978	Approved
Michigan	1978	Approved
Minnesota	——	Pending
Mississippi	1980	Approved
New Hampshire		
Ocean and Harbor Segment	1982	Approved
Great Bay Segment	1988	Approved
New Jersey		
Bay and Ocean Shore Segment	1978	Approved
Consolidated Program	1980	Approved
New York	1982	Approved
North Carolina	1978	Approved
Northern Mariana Islands	1980	Approved
Ohio	——	Pending
Oregon	1977	Approved
Pennsylvania	1980	Approved
Puerto Rico	1978	Approved
Rhode Island	1978	Approved
South Carolina	1979	Approved
Texas	——	Pending
Virginia	1986	Approved
Virgin Islands	1979	Approved
Washington	1976	Approved
Wisconsin	1978	Approved

Non-participating: *Illinois, Republic of Palau*

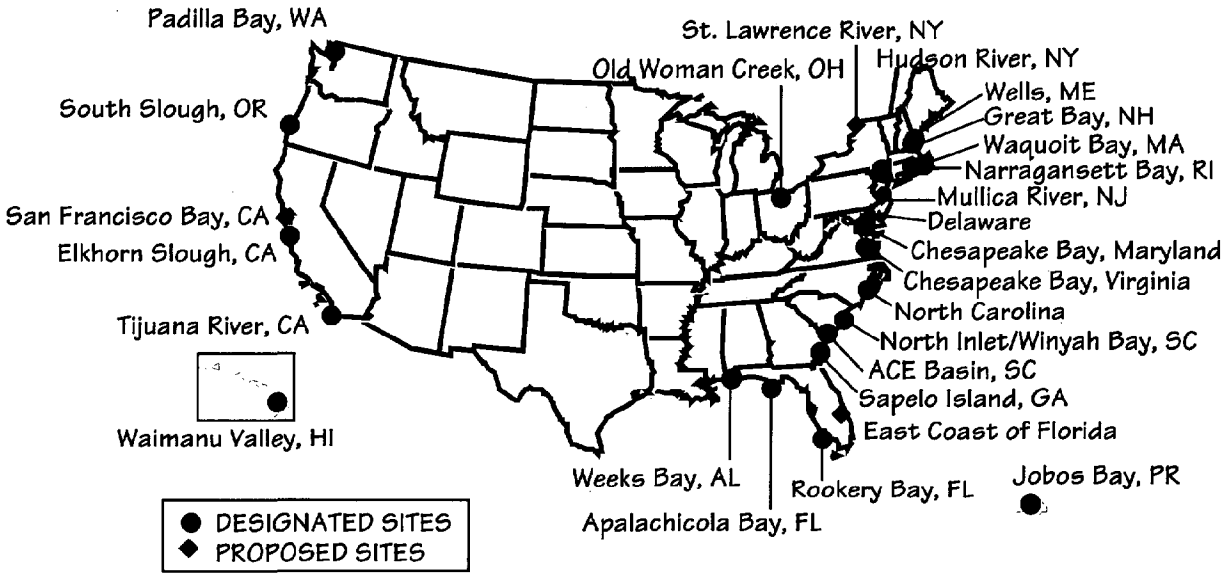
STATUS OF NATIONAL ESTUARINE RESEARCH RESERVE PROGRAMS

Participating Site	Actual or Estimated Federal Approval Date By Fiscal Year End (end 9/30/93)	Comment and Status 9/30/93
ACE Basin	1992	Approved
Apalachicola	1979	Approved
Chesapeake Bay— Maryland	1985; 1990	Approved
Chesapeake Bay— Virginia	1991	Approved
Delaware	1993	Approved
East Coast Florida	——	Pending
Elkhorn Slough	1980	Approved
Great Bay	1989	Approved
Hudson River	1982	Approved
Jobos Bay	1981	Approved
Mullica River	——	Pending
Narragansett Bay	1980	Approved
North Carolina	1982; 1991	Approved
North Inlet- Winyah Bay	1992	Approved
Old Woman Creek	1980	Approved
Padilla Bay	1980	Approved
Rookery Bay	1978	Approved
Saint Lawrence River	——	Pending
San Francisco Bay	——	Pending
Sapelo Island	1976	Approved
South Slough	1974	Approved
Tijuana River	1982	Approved
Waimanu Valley	1976	Approved
Waquoit Bay	1988	Approved
Weeks Bay	1986	Approved
Wells	1984	Approved

The Coastal Zone Management Program



The National Estuarine Research Reserve System



ITEMIZATION OF ALLOCATION OF FUNDS

Breakdown of Areas in Which Funds Were Expended
(in thousands of dollars)

State	Section									
	306 Program Administration		*309* Program Enhancement		*6217* Coastal Nonpoint Program		*315* NERRS		*305* Program Development	
	1992	1993	1992	1993	1992	1993	1992	1993	1992	1993
Alabama	589	587	73	53	45	45	223	209		
Alaska	2014	2015	401	342	100	100				
American Samoa	476	501	186	65	42	42				
California	2014	2015	463	475	100	100	383	486		
Connecticut	746	727	230	236	50	50				
Delaware	568	567	164	264	45	45	100	110		
Florida	2014	2014	274	273	100	100	425	544		
Georgia							210	160	135	200
Guam	480	501	43	43	42	42				
Hawaii	710	707	80	80	50	50	108	90		
Indiana										166
Louisiana	2014	2015	115	100	100	47				
Maine	1546	1555	172	272	79	79	33	125		
Maryland	2009	2004	182	226	100	100	175	213		
Massachusetts	1354	1520	348	254	82	82	160	250		
Michigan	2014	2015		274	100	100				
Minnesota										294
Mississippi	536	535		150	43	43				
New Hampshire	499	501	97	57	43	43	399	279		
New Jersey	2014	2015	228	228	100	100				
New York	2014	2015	441	433	100	100	117	160		
North Carolina	1499	1493	317	347	75	75	190	109		
Northern Marianas		988		42		86				
Ohio	135						94	127		
Oregon	844	821	277	188	53	53	168	109		
Pennsylvania	726	723	198	98	50	50				
Puerto Rico	1072	1011		107	54	54	90	90		
Rhode Island	600	595	154	145	46	46	310	199		
South Carolina	1327	1322	394	379	67	67	133	226		
Texas									200	200
Virginia	1916	1964	313	228	100	100	195	110		
Virgin Islands	489	501	126	138	42	42	408			
Washington	1949	1950	400	321	99	99				
Wisconsin	806	780		68	51	51				

	ENHANCEMENT AREA							
STATE BY REGION	Wetlands	Hazards	Public Access	Marine Debris	CSI	SAMPS	Ocean Resources	Energy /Govn't Facility Siting
North Atlantic								
Connecticut	x	x	x		x	x		
Maine	x	x	x		x			
Massachusetts	x	x	x		x		x	
New Hampshire	x				x			
New Jersey		x	x		x	x		
New York	x	x	x		x	x		
Rhode Island	x		x			x		
South Atlantic								
Delaware	x	x			x	x		
Maryland	x	x			x	x		
North Carolina	x				x	x	x	
South Carolina	x	x	x		x			
Virginia	x	x	x		x	x		
Gulf								
Alabama	x	x	x			x		
Florida		x	x		x			
Louisiana	x	x			x			
Mississippi	x	x			x			
Puerto Rico	x	x	x		x		x	
Virgin Islands	x		x		x	x		
Pacific								
Alaska	x			x	x	x		
American Samoa	x	x	x	x				
California	x	x	x	x	x		x	
CNMI	x	x			x			
Guam	x	x	x					
Hawaii	x	x	x		x	x	x	
Oregon	x	x			x		x	
Washington	x	x	x		x	x		
Great Lakes								
Michigan	x	x			x			
Pennsylvania	x	x	x		x			
Wisconsin	x	x			x			
TOTALS	27	24	18	3	25	13	6	
% of Eligible	93%	83%	62%	10%	86%	45%	21%	0%

Enhancement Area	State	Project	Funding/Yr
WETLANDS	AL	**Expanded Subdivision Review** • Lowering threshold for subdivision permit review from 25 to 5 acres to ensure greater wetlands protection. • Amending regulations to apply wetlands criteria, stormwater regulations, and erosion control measures in areas outside the jurisdiction of the coastal program.	$20,000 - '92
	AS	**Community-Based Wetlands Management** • Developing model village ordinances in two wetland areas that can be replicated in other communities. • Developing a geographic information system to support village-based wetlands management. • Developing special management area designation and management for six wetland areas.	$121,000 - '92
	CA	**Port Wetlands Mitigation Project** • Providing an up-front analysis of wetland mitigation needs associated with the expansion of several of California's major ports. • Identifying mitigation needs and potential mitigation sites. • Analyzing existing regulatory mechanisms.	$50,000 - '92
	CA	**Wetlands and Cumulative Impacts** • Developing performance standards to specify the functional value of wetlands and to provide criteria for assessing the success of wetland restoration proposals • Creating wetland performance guidelines for adoption by the Coastal Commission or the Executive Director	$77,000 - '92 $87,000 - '93
	MA	**Revised Regulations for Sanitary Waste Disposal in Coastal Wetlands** • Updating regulations on sanitary waste disposal in the coastal zone, addressing boat and recreational vehicle waste, pump out and storage, the use of alternative and innovative septic treatment systems, and the prohibition of cesspools in areas that can adversely affect coastal wetlands.	$70,000 - '92
	NC	**Advanced Identification of Wetlands in a Trial County** • Revising local land use planning guidelines to increase wetlands protection by providing a test in advance of actual revisions to the guidelines.	$75,000 - '92
	NC	**Wetlands Functional Assessment and Categorization** • Developing methods to prioritize wetlands in protection classes as a basis for creating wetlands protection policies in the state wetlands Conservation Plan, which categorizes wetlands by ecological significance. • Creating functional assessment maps for local land use planning and for determining priorities for wetlands restoration and creation efforts	$45,000 - '92 $ 70,000 - '93
	NH	**Coastal Wetlands Assessment Methodology** • Developing a coastal wetlands assessment methodology, which would allow local officials and laypersons to determine the functions and values associated with tidal wetlands.	$40,000 - '92

Enhancement Area	State	Project	Funding/Yr
	NY	**Tidal Wetlands Act Amendment** • Developing further restrictions on use of tidal wetlands • Restricting upland activities that degrade adjacent wetlands • Extending regulatory jurisdiction in the Hudson River coastal region	$28,000 - '92
	RI	**Formal Wetland Mitigation Policies** • Developing formal policies for wetlands mitigation, resulting in a consistent and coordinated effort for restoring wetlands and critical habitats.	$31,000 - '92
CUMULATIVE AND SECONDARY IMPACTS (CSI)	AK	**Assessment and Control of CSI Impacts of Coastal Uses on Fish Habitat of the Kenai River** • Continuing the second year of a three-year project to study the CSI on vital recreational and commercial salmon fishery habitat • Developing policy changes to the State Coastal Management Program and new or revised local CZM policies	$ 95,000 - '92 $114,000 - '93
	CA	**Analysis of the CSI Impacts of NPS within the Periodic Review Framework and Development of Interim Section 6217 Guidance** • Assessing the long-term CSI of nonpoint source pollution in the Monterey Bay area • Coordinating an array of coastal and water quality programs to address NPS needs for the Bay area • Creating interim guidance for implementing Section 6217 statewide	$114,000 - '93
	CT	**Evaluation of Coastal Boundary for 6217** • Determining what area needs to be managed to control the impacts of nonpoint source pollution • Identifying any modifications necessary to the state coastal zone boundary	$150,000 - '92 $140,000 - '93
	DE	**Watershed Protection Strategies for the Dover/Silver Lake/St. Jones** • Developing a watershed protection strategy for the restoration of degraded areas through improvements to stormwater management • Establishing a stormwater utility funded by user fees and landowner's matching fee based on pollutant contributions	$100,000 - '92 $200,000 - '93
	MA	**Draft Generic Environmental Impact Report on Small Docks and Piers** • Defining the CSI of small docks and piers and associated activities in coastal waters.	$95,000 - '92
	ME	**Coastal Islands Policy** • Developing carrying capacities for Maine's coastal islands with extensive local education, participation, and involvement.	$35,000 - '92
	MS	**Modification of State Septic Tank Requirements** • Linking the state coastal program with the state Department of Health to revise septic tank and health regulations • Developing a Memorandum of Understanding with the Dept. of Health	$ 90,000 - '93

Enhancement Area	State	Project	Funding
	NC	**Development of Resource Impact Coefficients** • Developing resource impact coefficients • Estimating threshold values and carrying capacities for individual watersheds • Creating a simulation model to predict the cumulative impacts of future coastal development • Designating new critical areas within watersheds and developing enforceable policies for addressing CSI of growth and development	$ 75,000 - '93
	PA	**Presque Isle Bay Management Plan** • Developing a management plan for Presque Isle Bay to avoid CSI of marinas and other boating activities on water quality, habitat, and public safety. • Determining the Bay's marina and boating capacity, types of restrictions needed and how they should be established, and what agency should implement and enforce them.	$100,000 - '92
	VA	**Northampton County Conservation Easement Program** • Establishing a conservation easement to control inappropriate development and land use impacts. • Developing and applying a financial analysis model to illustrate to landowners that low-impact development can be an economical alternative to traditional subdivisions.	$85,000 - '92
HAZARDS	ME	**Shoreline Erosion Management** • Preparing maps as the primary basis for developing a mandatory setback policy in coastal hazard zones • Revising core statutes of the coastal program	$ 95,000 - '93
	NY	**Nor'easter Regulatory Modifications** • Improving the hazards management components of the coastal program • Creating new standards for construction or improving structures in coastal hazard areas • Limiting state agency expenditures in coastal areas under the Coastal Barrier Resources Act • Requiring buyer notification when transferring property located in a coastal hazard zone	$ 84,080 - '93
	OR	**All Hazards Mapping Project, Catastrophic Hazards** • Continuing the second phase of the state effort to develop consistent maps of coastal areas showing relevant hazards to coastal development, including earthquakes and other catastrophic hazards	$101,000 - '92 $ 79,886 - '93
	RI	**Revised Barrier Beach Protection Policies for Salt Pond SAM Plan** • Technically analyzing barrier beach erosion problems • Changing coastal policies to address deficiencies • Creating new shoreline protection policies and special area management plan policies for Misquamicut Beach	$ 65,000 - '93
	SC	**Beachfront Setback Methodology** • Refining methodology for determining beachfront setbacks. • Developing a model, transferable to other states, to establish erosion rates based on the total sediment budget for particular littoral cells.	$215,000 - '92

Enhancement Area	State	Project	Funding
	SC	**Development of the Beach/Dune Critical Area Computer-based and Local Zoning Ordinance Overlay** • Creating a computer-based inventory of the jurisdictional setback line • Local government adoption of the beach overlay setback zone, which will be locally enforced.	$200,000 - '93
	WA	**Coastal Erosion Management Strategy** • Continuing the second year of a comprehensive project to update the state policies that protects the shoreline from erosion • Determining the ecological effects of armoring • Developing alternative means of managing slope failure as alternative regulatory approaches • Changing the CZM administrative rules to include new model standards for erosion control, so that local government management plans can be updated to reflect the new provisions	$179,000 - '92 $100,000 - '93
OCEAN RESOURCES	MA	**Developing a Framework for an Ocean Management Program** • Developing a management framework for comprehensive ocean resources planning • Changing coastal policies to incorporate ocean management • Recommending changes to statutes and regulations related to ocean resource management	$ 71,000 - '93
	OR	**Threatened and Endangered Species Protection** • Focusing primarily on ways to protect marine mammals as part of developing a Territorial Sea Management Plan.	$68,000 - '92
PUBLIC ACCESS	NY	**Regulations to Implement Chapter 791 of the Laws of 1992** •Developing procedures to review all leases, easements and grants for use of lands that are now or were formerly underwater •Preparing regulations, guidelines, and strategies for harbor management plans by local governments	$ 75,000 - '93
	RI	**Submerged Tidal Lands Leasing Program** • Developing policies and fee structure for public use of submerged tidal lands. • Setting up long-term program to use fees from docks, marinas, and other structures as a dedicated source of revenue to improve public access.	$78,000 - '92
	VI	**Territorial Park System Planning** •Developing a Territorial Park System Mgt. Plan for all marine and terrestrial parks to enhance public access to beaches and coastal resources •Implementing the plan through a Territorial Park Authority	$71,000 - '92 $82,834 - '93
ENERGY & GOVT. FACILITY SITING	AK	**OCS Consistency Review** • Resolving important issues regarding state review of OCS lease sales for federal consistency. • Developing and adopting a rational review process.	$78,000 - '92

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

15 CFR Part 921

[Docket No. 910927-3012]

RIN 0648-AB68

National Estuarine Research Reserve System Program Regulations

AGENCY: Office of Ocean and Coastal Resource Management (OCRM), National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce (DOC).

ACTION: Final Rule.

SUMMARY: This final rule revises the existing interim-final rule for selecting, designating, operating, and funding National Estuarine Research Serves to bring them into accord with requirements of the Coastal Zone Act Reauthorization Amendments of 1990 (the Amendments). In addition, it adopts some of the revisions suggested by comments received on the interim-final rule dated July 23, 1990, and incorporates comments received on the proposed rule published on July 17, 1992 (57 FR 31926).

FOR FURTHER INFORMATION CONTACT:
June Cradick at (301) 713-3132.
DATES: Effective July 14, 1993.

SUPPLEMENTARY INFORMATION:

I. Authority

This final rule is issued pursuant to the authority of section 315 of the Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1461 (the Act). The National Estuarine Research Reserve System (the System) has been operating under interim-final regulations published July 23, 1990 (55 FR 29940).

II. Availability of Comments

All comments received in response to the notice of proposed rulemaking for this rule (57 FR 31926, July 17, 1992) are available for inspection at the Office of Ocean and Coastal Resource Management during normal business hours (8 a.m. to 4:30 p.m.) in room 12520, 1305 East-West Highway, Silver Spring, Maryland 20190.

III. Regulatory Issues

A. General Background

On July 23, 1990 (55 FR 29940) NOAA published interim-final regulations for continued implementation of the National Estuarine Reserve Research System Program pursuant to section 315 of the Act, 16 U.S.C. 1461. Written comments were accepted until September 21, 1990. On November 5, 1990, Public Law No. 101-508 was passed reauthorizing the Program. Several changes to the regulations are required as a result of the 1990 reauthorization. In addition, for the reasons stated below, some of the revisions suggested by the comments received on the interim-final rule have been adopted. A summary of the significant proposed changes to the interim-final regulations is presented below. On July 17, 1992, NOAA published a proposed rule incorporating revisions required by the Amendments and revisions suggested by public comments received on the interim-final rule. Two public comments on the proposed rule were received during the review period which ended on August 31, 1992. The public's comments and NOAA's response are set forth in Section VI, Summary of Public Comments and Responses.

B. Final Rule

These regulations establish the Program's mission and goals and revise the existing procedures for selecting, designating and operating National Estuarine Research Reserves.

1. Changing the Name of the Program

The name of the Program was changed from the National Estuarine Research System to the National Estuarine Research Reserve System by the Amendments. The revisions to the regulations revise the Program name accordingly when it appears in the regulations.

2. Revision of Match Requirements

The Amendments effectively reduce from 50% to 30% state, and were applicable, private party match requirements for the following financial assistance award types: Operations, research, monitoring, facility construction and education/interpretation. They also provide for 100% Federal support for educational-interpretative activities that benefit the entire System. Match requirements for site selection and land acquisition remain at 50%. The revisions make the regulations conform.

3. Definitions

The revisions add a definition for the term "state agency".

4. Increase in Acquisition Support

The Amendments increase the maximum amount of Federal financial assistance that can be awarded for the acquisition of land and waters, or interests therein, for any one National Estuarine Research Reserve from $4,000,000 to $5,000,000. The revisions make the regulations conform.

5. Change in Development Support

The regulations allow costs associated with the development of research, monitoring and education programs to be included as supplemental development costs and eliminate the ceiling of $1,500,000 on financial assistance which can be provided for development assistance directly associated with facility construction.

6. Simplification of Operational Support

The regulations reduce state and Federal paperwork burdens by combining support for routine monitoring and education activities with the annual non-competitive operations and management awards. Competitive awards for special monitoring, research and education projects continue as a separate activity.

7. Clarification of Site Selection

The regulations clarify the process to be followed by a coastal state which proposed to reactivate an inactive site previously approved by NOAA for development as an estuarine sanctuary or National Estuarine Research Reserve.

8. Resource Manipulation

The regulations recognize the possibility that in Reserve buffer areas long-term uses may have existed prior to designation which should be allowed to continue.

9. Performance Evaluation

The Amendments emphasize the importance of public participation in the performance evaluation process. They also establish interim sanctions, including partial or full withdrawal of financial assistance, and establish a process for instituting such sanctions. The revisions make the regulations conform.

IV. Summary of Comments on the Proposed Regulations and NOAA's Responses

NOAA received two comments on the proposed rule. A summary of those comments and NOAA's response appears below.

Comment: There is a need to recognize that manipulative uses occur within the core area of Reserves. Further, traditional uses is a more appropriate term to describe sport fishing and hunting, rather than manipulative uses.

Response: NOAA is aware that manipulative uses occur within core areas of certain Reserves. However, given the purposed of the Program, NOAA believes that some of these activities are inappropriate to be carried out in core areas. In response to the commenters' concerns regarding the use of the term "manipulative uses", the regulations have been clarified to better explain the meaning of that term.

V. Other Actions Associated With the Rulemaking

[A] Classification Under Executive Order 12291. NOAA has concluded that these regulations are not major because they will not result in:

(1) An annual effect on the economy of $100 million or more;

(2) A major increase in costs or prices for consumers; individual industries; Federal, state, or local government agencies; or geographic regions; or

(3) Significant adverse effects on competition, employment, investment, productivity, innovation or the ability of United States based enterprises in domestic or export markets.

These rules amend existing procedures for identifying, designating, and managing national estuarine research reserves in accordance with the Coastal Zone Act Reauthorization Amendments of 1990. They will not result in any direct economic or environmental effects nor will they lead to any major indirect economic or environmental impacts.

[B] Regulatory Flexibility Act Analysis. A Regulatory Flexibility Analysis is not required for this rulemaking. The regulations set forth procedures for identifying and designating National Estuarine Research Reserves, and managing sites once designated. These rules do not directly affect "small government jurisdictions" as defined by Public Law No. 96-354, the Regulatory Flexibility Act, and the rules will have no effect on small businesses. Accordingly, when these regulations were proposed, the General Counsel of the Department of Commerce certified to the Chief Counsel for Advocacy of the Small Business Administration that these regulations, if adopted, would not have a significant economic impact on a substantial number of small entities.

[C] Paperwork Reduction Act of 1980. This rule contains collection of information requirements subject to Public Law 96-511, the Paperwork Reduction Act (PRA), which have already been approved by the Office of Management and Budget (approval number 0648-0121). Public reporting burden for the collections of information contained in this rule is estimated to average 2,012 hours per response for management plans and related documentation, 1.25 hours for performance reports, and 15 hours for annual reports and work plans. These estimates include the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of these collection of information, including suggestions for reducing this burden, to Richard Roberts, room 724, Department of Commerce, 6010 Executive Bldg., Rockville, Maryland 20852, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503. ATTN: Desk Officer for NOAA.

[D] Executive Order 12612. This rule does not contain policies which have sufficient Federalism implications to warrant preparation of a Federalism Assessment pursuant to Executive Order 12612. However, the provisions of the rule setting forth what a state must do or agree to do in order to qualify for the various types of Federal assistance available under the rule has been reviewed to ensure that the rule grants the states the maximum administrative discretion possible in the administration of the National Estuarine Research Reserve System policies embodied in the qualification requirements. In formulating those policies, the NOAA worked with affected states to develop their own policies with respect to the use of National Estuarine Research Reserves. To the maximum extent possible consistent with the NOAA's responsibility to ensure that the objectives of the National Estuarine Research Reserve System provisions of the Coastal Zone Management Act are achieved, the rule refrains from establishing uniform national standards. Extensive consultations with state officials and organizations have been held regarding the financial assistance qualifications imposed. Details regarding awards of financial assistance have been discussed above under the heading "REVISION OF THE PROCEDURES FOR SELECTING, DESIGNATING AND OPERATING NATIONAL ESTUARINE RESEARCH RESERVES" and are not repeated here.

[E] National Environmental Policy Act. NOAA has concluded that publication of this final rule does not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, an environmental impact statement is not required.

List of Subjects in 15 CFR Part 921

Administrative practice and procedure, Coastal zone, Environment impact statements, Grants programs, Natural resources, Reporting and recordkeeping requirements, Research. (Federal Domestic Assistance Catalog Number 11.420, National Estuarine Research Reserve System).

(Federal Domestic Assistance Catalog Number 11.420 Coastal Zone Management Estuarine Sanctuaries)

Dates: June 17, 1993.

W. Stanley Wilson,

Assistant Administration for Ocean Services and Coastal Zone Management.

For the reasons set out in the preamble 15 CFR part 921 is revised to read as follows:

PART 921—NATIONAL ESTUARINE RESEARCH RESERVES SYSTEM REGULATIONS

Subpart A—General

§921.1 Mission, goals and general provisions.
§921.2 Definitions.
§921.3 National Estuarine Research Reserve System biogeographic classification scheme and estuarine typologies.
§921.4 Relationship to other provisions of

the Coastal Zone Management Act and the Marine Protection, Research and Sanctuaries Act.

Subpart B—Site Selection, Post Site Selection and Management Plan and Development

§921.10 General.
§921.11 Site selection and feasibility.
§921.12 Post site selection.
§921.13 Management plan and environmental impact statement development.

Subpart C—Acquisition, Development, and Preparation of the Final Management Plan

§921.20 General.
§921.21 Initial acquisition and development awards.

Subpart D—Reserve Designation and Subsequent Operation

§921.30 Designation of National Estuarine Research Reserves.
§921.31 Supplemental acquisition and development awards.
§921.32 Operation and management: Implementation of the management plan.
§921.33 Boundary changes, amendments to the management plan, and addition of multiple-site components.

Subpart E—Ongoing Oversight, Performance Evaluation and Withdrawal of Designation

§921.40 Ongoing oversight and evaluations of designated National Estuarine Research Reserves.
§921.41 Withdrawal of designation.

Subpart F—Special Research Projects

§921.50 General.
§921.51 Estuarine research guidelines.
§921.52 Promotion and coordination of estuarine research.

Subpart G—Special Monitoring Projects

§921.60 General.

Subpart H—Special Interpretation and Education Projects

§921.70 General.

Subpart I—General Financial Assistance Provisions

§921.80 Application information.
§921.81 Allowable costs.
§921.82 Amendments to financial assistance awards.

Appendix I to Part 921—Biogeographic Classification Scheme

Appendix II to Part 921—Typology of National Estuarine Research Reserves

Authority: Section 315 of the Coastal Zone Management Act, as amended (16 U.S.C. 1461).

Subpart A—General

§921.1 Mission, goals, and general provisions.

(a) The mission of the National Estuarine Research Reserve Program is the establishment and management, through Federal-state cooperation, of a national systems (National Estuarine Research Reserve System or System) of estuarine research reserves (National Estuarine Research Reserves or Reserves) representative of the various regions and estuarine types in the United States. National Estuarine Research Reserves are established to provide opportunities for long-term research, education, and interpretation.

(b) The goals of the Program are to:

(1) Ensure a stable environment for research through long-term protection of National Estuarine Research Reserve resources;

(2) Address coastal management issues identified as significant through coordinated estuarine research within the System;

(3) Enhance public awareness and understanding of estuarine areas and provide suitable opportunities for public education and interpretation;

(4) Promote Federal, state, public and private use of one or more Reserves within the System when such entities conduct estuarine research; and

(5) Conduct and coordinate estuarine research within the System, gathering and making available information necessary for improved understanding and management of estuarine areas.

(c) National Estuarine Research Reserves shall be open to the public to the extent permitted under state and Federal law. Multiple uses are allowed to the degree compatible with each Reserve's overall purpose as provided in the management plan (see §921.13) and consistent with paragraphs (a) and (b) of this section. Use levels are set by the state where the Reserve is located and analyzed in the management plan. The Reserve management plan shall describe the uses and establish priorities among these uses. The plan shall identify uses requiring a state permit, as well as areas where uses are encouraged or prohibited. Consistent with resource protection and research objectives, public access and use may be restricted to certain areas or components within a Reserve.

(d) Habitat manipulation for research purposes is allowed consistent with the following limitations. Manipulative research activities must be specified in the management plan, be consistent with the mission and goals of the program (see paragraphs (a) and (b) of this section) and the goals and objectives set forth in the Reserve's management plan, and be limited in nature and extent to the minimum manipulative activity necessary to accomplish the state research objective. Manipulative research activities with a significant or long-term impact on Reserve resources require the prior approval of the state and the National Oceanic and Atmospheric Administration (NOAA). Manipulative research activities which can reasonably be expected to have a significant adverse impact on the estuarine resources and habitat of a Reserve, such that the activities themselves or their resulting short- and long-term consequences compromise the representative character and integrity of a Reserve, are prohibited. Habitat manipulation for resource management purposes is prohibited except as specifically approved by NOAA as: (1) A restoration activity consistent with paragraph (e) of this section; or (2) an activity necessary for the protection of public health or the preservation of other sensitive resources which have been listed or are eligible for protection under relevant Federal or state authority (*e.g.*, threatened/endangered species or significant historical or cultural resources) or if the manipulative activity is a long-term pre-existing use (*i.e.*, has occurred prior to designation) occurring in a buffer area. If habitat manipulation is determined to be necessary for the protection of public health, the preservation of sensitive resources, or if the manipulation is a long-term pre-existing use in a buffer area, then these activities shall be specified in the Reserve management plan in accordance with §921.13(a)(10) and shall be limited to the reasonable alternative which has the least adverse and shortest term impact on the representative and ecological integrity of the Reserve.

(e) Under the Act an area may be designated as an estuarine Reserve only if the area is a representative estuarine ecosystem that is suitable for long-term research. Many estuarine areas have undergone some ecological

change as a result of human activities (*e.g.*, hydrological changes, intentional/unintentional species composition changes—introduced and exotic species.) In those areas proposed or designated as National Estuarine Research Reserves, such changes may have diminished the representative character and integrity of the site. Although restoration of degraded areas is not a primary purpose of the System, such activities may be permitted to improve the representative character and integrity of a Reserve. Restoration activities must be carefully planned and approved by NOAA through the Reserve management plan. Historical research maybe necessary to determine the "natural" representative state of an estuarine area (*i.e.*, an estuarine ecosystem minimally affected by human activity or influence). Frequently, restoration of a degraded estuarine area will provide an excellent opportunity for management oriented research.

(f) NOAA may provide financial assistance to coastal states, not to exceed, per Reserve, 50 percent of all actual costs or $5 million whichever amount is less, to assist in the acquisition of land and waters, or interests therein. NOAA may provide financial assistance to any coastal state or public or private person, not to exceed 70 percent of all actual costs, to support research and monitoring within a Reserve. Predesignation, acquisition and development, operation and management, special research and monitoring, and special education and interpretation awards are available under the National Estuarine Reserve Program. Predesignation awards are for site selection/feasibility, draft management plan preparation and conduct of basic characterization studies. Acquisition and development awards are intended primarily for acquisition of interests in land, facility construction and to develop and/or upgrade research, monitoring and education programs. Operation and management awards provide funds to assist in implementing, operating and managing the administrative, and basic research, monitoring and education programs, outlined in the Reserve management plan. Special research and monitoring awards provide funds to conduct estuarine research and monitoring projects with the System. Special education and interpretative awards provide funds to conduct estuarine education and interpretive projects within the System.

(g) Lands already in protected status managed by other Federal agencies, state or local governments, or private organizations may be included within National Estuarine Research Reserves only if the managing entity commits to long-term management consistent with paragraphs (d) and (e) of this section in the Reserve management plan. Federal lands already in protected status may not comprise a majority of the key land and water areas of a Reserve (see §921.11 (c)(3)).

(h) To assist the states in carrying out the Program's goals in an effective manner, NOAA will coordinate a research and education information exchange throughout the National Estuarine Research Reserve System. As part of this role, NOAA will ensure that information and ideas from one Reserve are made available to others in the System. The network will enable Reserves to exchange information and research data with each other, with universities engaged in estuarine research, and with Federal, state, and local agencies. NOAA's objective is a system-wide program of research and monitoring capable of addressing the management issues that affect long-term productivity of our Nation's estuaries.

§921.2 Definitions.

(a) *Act* means the Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1451 *et seq.*

(b) *Assistant Administrator* means the Assistant Administrator for Ocean Services and Coastal Zone Management or delegee.

(c) *Coastal state* means a state of the United States, in or bordering on, the Atlantic, Pacific, or Arctic Ocean, the Gulf of Mexico, Long Island Sound, or one or more of the Great Lakes. For the purposes of these regulations the term also includes Puerto Rico, the Virgin Islands, Guam, the commonwealth of the Northern Marianas Islands, the Trust Territories of the Pacific Islands, and American Samoa (see 16 U.S.C. 1453(4)).

(d) *State agency* means an instrumentality of a coastal state to whom the coastal state has delegated the authority and responsibility for the creation and/or management/operation of a National Estuarine Research Reserve. Factors indicative of this authority may include the power to receive and expend funds on behalf of the Reserve, acquire and sell or convey real and personal property interests, adopt rules for the protection of the Reserve, enforce rules applicable to the Reserve, or develop and implement research and education programs for the reserve. For the purposes of these regulations, the terms "coastal state" and "State agency" shall be synonymous.

(e) *Estuary* means that part of a river or stream or other body of water having unimpaired connection with the open sea, where the sea water is measurably diluted with fresh water derived from land drainage. The term also includes estuary-type areas with measurable freshwater influence and having unimpaired connections with the open sea, and estuary-type areas of the Great Lakes and their connecting waters (see 16 U.S.C. 1453(7)).

(f) *National Estuarine Research Reserve* means an area that is a representative estuarine ecosystem suitable for long-term research, which may include all of the key land and water portion of an estuary, and adjacent transitional areas and uplands constituting to the extent feasible a natural unit, and which is set aside as a natural field laboratory to provide long-term opportunities for research, education, and interpretation on the ecological relationships within the area (see 16 U.S.C. 1453(8)) and meets the requirements of 16 U.S.C. 1461(b). This includes those areas designated as National Estuarine Sanctuaries or Reserves under section 315 of the Act prior to enactment of the Coastal Zone Act Reauthorization Amendments of 1990 and each area subsequently designated as a National Estuarine Research Reserve.

§921.3 National Estuarine Research Reserve System Biogeographic Classification Scheme and Estuarine Typologies.

(a) National Estuarine Research Reserves are chosen to reflect regional differences and to include a variety of ecosystem types. A biogeographic classification scheme based on regional variations in the nation's coastal zone has been developed. The biogeographic classification scheme is used to ensure that the National Estuarine Research Reserve System includes at least one site from each region. The estuarine typology system is utilized to ensure that sites in the System reflect the wide range of estuarine types within the United States.

(b) The biogeographic classification scheme, presented in appendix I, contains 29 regions. Figure 1 graphically depicts the biogeographic regions of the United States.

(c) The typology system is presented in appendix II.

§921.4 Relationship to other provisions of the Coastal Zone Management Act, and to the Marine Protection, Research and Sanctuaries Act.

(a) The National Estuarine Research Reserve System is intended to provide information to state agencies and other entities involved in addressing coastal management issues. Any coastal state, including those that do not have approved coastal management programs under section 306 of the Act, is eligible for an award under the National Estuarine Research Reserve Program (see §921.2(c)).

(b) For purposes of consistency review by states with a federally approved coastal

management program, the designation of a National Estuarine Research Reserve is deemed to be a Federal activity, which, if directly affecting the state's coastal zone, must be undertaken in a manner consistent to the maximum extent practicable with the approved state coastal management program as provided by section 1456(c)(1) of the Act, and implementing regulations at 15 CFR part 930, subpart C. In accordance with section 1456(c)91) of the Act and the applicable regulations NOAA will be responsible for certifying that designation of the Reserve is consistent with the state's approved coastal management program. The state must concur with or object to the certification. It is recommended that the lead state agency for Reserve designation consult, at the earliest practicable time, with the appropriate state officials concerning the consistency of a proposed National Estuarine Research Reserve.

(c) The National Estuarine Research Reserve Program will be administered in close coordination with the National Marine Sanctuary Program (Title III of the Marine Protection, Research and Sanctuaries Act, as amended, 16 U.S.C. 1431-1445), also administered by NOAA. Title III authorized the Secretary of Commerce to designate discrete areas of the marine environment as National Marine Sanctuaries to protect or restore such areas for their conservation, recreational, ecological, historical, research, educational or esthetic values. National Marine Sanctuaries and Estuarine Research Reserves may not overlap, but may be adjacent.

Subpart B— Site Selection, Post Site Selection and Management Plan Development

§ 921.10 General

(a) A coastal state may apply for Federal financial assistance for the purpose of site selection, preparation of documents specified in § 921.13 (draft management plan (DMP) and environmental impact statement (EIS)), and the conduct of limited basic characterization studies. The total Federal share of this assistance may not exceed $100,000. Federal financial assistance for preacquisition activities under § 921.11 and § 921.12 is subject to the total $5 million for which each Reserve is eligible for land acquisition. In the case of a biogeographic region (see appendix I) shared by two or more coastal states, each state is eligible for Federal financial assistance to establish a separate National Estuarine Research Reserve within their respective portion of the shared biogeographic region. Each separate National Estuarine Research Reserve is eligible for the full complement of funding. Financial assistance application procedures are specified in subpart I.

(b) In developing a Reserve program, a state may choose to develop a multiple-site Reserve reflecting a diversity of habitats in a single biogeographic region. A multiple-site Reserve allows the state to develop complementary research and educational programs within the individual components of its multi-site Reserve. Multiple-site Reserves are treated as one Reserve in terms of financial assistance and development of an overall management framework and plan. Each individual site of a proposed multiple-site Reserve shall be evaluated both separately under § 921.11(c) and collectively as part of the site selection process. A coastal state may propose to establish a multiple-site Reserve at the time of the initial site selection, or at any point in the development or operation of the Reserve. If the state decides to develop a multiple-site National Estuarine Research Reserve after the initial acquisition and development award is made for a single site, the proposal is subject to the requirements set forth in § 921.33(b). However, a state may not propose to add one or more sites to an already designated Reserve if the operation and management of such Reserve has been found deficient and uncorrected or the research conducted is not consistent with the Estuarine Research Guidelines referenced in § 921.51. In addition , Federal funds for the acquisition of a multiple-site Reserve remain limited to $5,000,000 (See § 921.20). The funding for operation of a multiple-site Reserve is limited to the maximum allowed for any one Reserve per year (see § 921.32(c)) and preacquisition funds are limited to $100,000 per Reserve.

§ 921.11 Site selection and feasibility

(a) A coastal state may use Federal funds to establish and implement a site selection process which is approved by NOAA.

(b) In addition to the requirements set forth in subpart I, a request for Federal funds for site selection must contain the following programmatic information:

(1) A description of the proposed site selection process and how it will be implemented in conformance with the biogeographic classification scheme and typology (§ 921.3);

(2)An identification of the site selection agency and the potential management agency; and

(3) A description of how public participation will be incorporated in to the process (see § 921.11(d)).

(c) As part of the site selection process, the state and NOAA shall evaluate and select the final site(s). NOAA has final authority in approving such sites. Site selection shall be guided by the following principles:

(1) The site's contribution to the biogeographical and typological balance of the National Estuarine Research Reserve System. NOAA will give priority consideration to proposals to establish Reserves in geographic regions or subregions or incorporating types that are not represented in the system. (see the biogeographic classification scheme and typology se for the in § 921.3 and Appendices I and II);

(2) The site's ecological characteristics, including its biological characteristics, including its biological productivity, diversity of flora and fauna, and capacity to attract a broad range of research and educational interests. The proposed site must be a representative estuarine ecosystem and should, to the maximum extent possible, be an estuarine ecosystem minimally affected by human activity or influence (see § 921.1(e)).

(3) Assurance that the site's boundaries encompass an adequate portion of the key land and water areas of the natural system to approximate an ecological unit and to ensure effective conservation. Boundary size will vary greatly depending on the nature of the ecosystem. Reserve boundaries must encompass the area within which adequate control has or will be established by the managing entity over human activities occurring within the Reserve. Generally, Reserve boundaries will encompass two areas: Key land and water areas (or "core area") and a buffer zone. Key land and water areas and a buffer zone will likely require significantly different levels of control (see § 921.13(a)(7)). The term "key land and water areas" refers to that core area within the Reserve that is so vital to the functioning or the estuarine ecosystem that it must be under a level of control sufficient to ensure the long-term viability of the Reserve for research on natural processes. Key land and water areas, which comprise the core area, are those ecological units of a natural estuarine system which preserve, for research purposes, a full range of significant physical, chemical and biological factors contributing to the diversity of fauna, flora and natural processes occurring within the estuary. The determination of which land and water areas are "key" to a particular Reserve must be based on specific scientific knowledge of the area. A basic principle to follow when deciding upon key land and water areas is that they should encompass resources representative of the total ecosystem, and which if compromised could endanger the research objectives

of the Reserve. The them "buffer zone refers to an area adjacent to or surrounding key land and water areas and essential to their integrity. Buffer zones protect the core area and provide additional protection for estuarine-dependent species, including those that are rare or endangered. When determined appropriate by the state and approved by NOAA, the buffer zone may also include an area necessary for facilities required for research and interpretation. Additionally, buffer zones should be established sufficient to accommodate a shift of the core area as a result of biological, ecological or geomorphological change which reasonably could be expected to occur. National Estuarine Research Reserves may include existing Federal or state lands already in a protected status where mutual benefit can be enhanced. However, NOAA will not approve a site for potential National Research Reserve status that is dependent primarily upon the inclusion of currently protected Federal lands in order to meet the requirements for Reserve status (such as key land and water areas). Such lands generally will be included within a Reserve to serve as a buffer or for other ancillary purposes; and may be included, subject to NOAA approval, as a limited portion of the core area;

(4) The site's suitability for long-term estuarine research, including ecological factors and proximity to existing research facilities and educational institutions;

(5) The site's compatibility with existing and potential land and water uses in contiguous areas as well as approved coastal and estuarine management plans; and

(6) The site's importance to education and interpretive efforts, consistent with the need for continued protection of the natural system.

(d) Early in the site selection process the state must seek the views of affected landowners, local governments, other state and Federal agencies and other parties who are interested in the area(s) being considered for selection as a potential National Estuarine Research Reserve. After the local government(s) and affected landowner(s) have been contacted, at least one public meeting shall be held in the vicinity of the proposed site. Notice of such a meeting including the time, place, and relevant subject matter, shall be announced by the state through the areas' principal newspaper at least 15 days prior to the date of the meeting and by NOAA in the Federal Register.

(e) A state request of NOAA approval of a proposed site (r sites in the case of a multi-site Reserve) must contain a description of the proposed site(s) in relationship to each of the site selection principals (§ 921.11(c)) and the following information:

(1) An analysis of the proposed site(s) based on the biogeographical scheme/typology discussed in § 921.3 and set forth in appendices I and II;

(2) A description of the proposed site(s) and its (their) major resources including location, proposed boundaries, and adjacent land uses. Maps are required;

(3) A description of the public participation process used by the state to solicit the views of interested parties a summary of comments, and, if interstate issues are involved, documentation that the Governor(s) of the other affected state(s) has been contacted. Copies of all correspondence, including contact letters to all affected landowners must be appended ;

(4) A list of all sites considered and a brief statement of the reasons why a site was not preferred; and

(5) A nomination of the proposed sites(s) for designation as a National Estuarine Research Reserve by the Governor of the coastal state in which the state is located.

(f) A state proposing to reactivate and inactive site, previously approved by NOAA for development as an Estuarine Sanctuary or Reserve, may apply for those funds remaining, if any, provided for site selection and feasibility (§ 921.11(a)) to determine the feasibility of reactivation. This feasibility study must comply with the requirement set forth in § 921.11(c) through (e).

§ 921.12 Post site selection

(a) At the time of the coastal state's request for NOAA approval of a proposed site, the states may submit a request of funds to develop the draft management plan and for preparation of the EIS. At this time, the state may also submit a request for the remainder of the predesignation funds to perform a limited basic characterization of the physical, chemical and biological characteristics of the site approved by NOAA necessary for providing EIS information to NOAA. The state's request of these post site selection funds must be accompanied by the information specified in subpart I and for draft management plan development and EIS information collection, the following programmatic information:

(1) A draft management plan outline (see § 921.13(a) below); and

(2) An outline of a draft memorandum of understanding (MOU) between the state and NOAA detailing the Federal-state role in Reserve management during the initial period of Federal funding expressing the state's long-term commitment to operate and manage the Reserve.

(b) The state is eligible to use the funds referenced in § 921.12(a) after the proposed site is approved by NOAA under the terms of § 921.11.

§ 921.13 Management plan and environmental impact statement development

(a) After NOAA approves the state's proposed site and application for funds submitted pursuant to § 921.12, the state may begin draft management plan development and the collection of information necessary of the preparation by NOAA of an EIS. The state shall develop a draft management plan, including an MOU. The plan shall set out in detail:

(1) Reserve goals and objectives, management issues, and strategies or actions for meeting the goals and objectives;

(2) An administrative plan including staff roles in administration, research, education/interpretation, and surveillance and enforcement;

(3) A research plan, including a monitoring design;

(4) An education/interpretive plan;

(5) A plan for public access to the Reserve;

(6) A construction plan, including a proposed construction schedule, general description of proposed developments and general cost estimates. Information should be provided for proposed minor construction projects in sufficient detail to allow these projects to begin in the initial phase of acquisition and development. A categorical exclusion, environmental assessment, or EIS may be required prior to construction;

(7)(i) An acquisition plan identifying the ecologically key land and water areas of the Reserve, ranking theses areas according to their relative importance, and including a strategy for establishing adequate long-term state control over these areas sufficient to provide protection for Reserve resources to ensure a stable environment for research. This plan must include an identification of ownership within the proposed Reserve boundaries, including land already in the public domain; the method(s) of acquisition which the state proposes to use— acquisition (including less-than-fee simple options) to establish adequate long-term state control; an estimate fo the fair market value of any property interest— which is proposed for acquisition; a schedule estimating the time required to complete the process of establishing adequate state control of the proposed research reserve; and a discussion of any anticipated problems. In selecting a preferred method(s) for establishing ad-

equate state control over areas within the proposed boundaries of the Reserve the state shall perform the following steps for each parcel determined to be part of the key land and water areas (control over which is necessary to protect their integrity of the Reserve for research purposes), and for those parcels required for research and interpretive support facilities or buffer purposes:

(A) Determine, with appropriate justification, the minimum level of control(s) required [*e.g.*, management agreement, regulation, less-than-fee simple property interest (*e.g.*, conservation easement) fee simple property acquisition, or a combination of these approaches]. This does not preclude the future necessity of increasing the level of state control;

(B) Identify the level of existing state control(s);

(C) Identify the level of additional state control(s), if any, necessary to meet the minimum requirements identified in paragraph (a)(7)(i)(A) of this section;

(D) Examine all reasonable alternatives for attaining the level of control identified in paragraph (a)(7)(i)(C) of this section, and perform a cost analysis of each; and

(E) Rank, in order of cost, the methods (including acquisition) identified in paragraph (a)(7)(i)(D) of this section.

(ii) An assessment of the relative cost-effectiveness of control alternatives shall include a reasonable estimate of both short-term costs, negotiation, adjudication, etc.,) and long-term costs (*e.g.*, monitoring, enforcement, adjudication, management and coordination). In selecting a preferred method(s) for establishing adequate state control over each parcel examined under the process described above, the state control over each parcel examined under the process described above, the state shall give priority consideration to the least costly method(s) of attaining the minimum level of long-term control required. Generally, with the possible exception of buffer areas required for support facilities, the level of control(s) required for buffer areas will be considerably less than that required for key land and water areas. This acquisition plan, after receiving the approval of NOAA, shall serve as a guide for negotiations with landowners. A final boundary for the reserve shall be delineated as a part of the final management plan;

(8) A resource protection plan detailing applicable authorities, including allowable uses, uses requiring a permit and permit requirements, any restrictions on use of the research reserve, and a strategy for research reserve surveillance and enforcement of such use restrictions, including appropriate government enforcement agencies;

(9) If applicable, a restoration plan describing those portions of the site that may require habitat modification to restore natural conditions;

(10) If applicable, a resource manipulation plan, describing those portions of the Reserve buffer in which long-term pre-existing (prior to designation) manipulation for reasons not related to research or restoration is occurring. The plan shall explain in detail the nature of such activities, shall justify why such manipulation should be permitted to continue within the reserve buffer; and shall describe possible effects of this manipulation on key land and water areas and their resources;

(11) A proposed memorandum of understanding (MOU) between the state and NOAA regarding the Federal-state relationship during the establishment and development of the National Estuarine Research Reserve, and expressing a long-term commitment by the state to maintain and manage the Reserve in accordance with section 315 of the Act, 16 U.S.C. 1461, and applicable regulations. In conjunction with the MOU, and where possible under state law, the state will consider taking appropriate administrative or legislative action to ensure the long-term protection and operation of the National Estuarine Research Reserve. If other MOUs are necessary (such as with a Federal agency, another state agency or private organization), drafts of such MOUs must be included in the plan. All necessary MOUs shall be signed prior to Reserve designation; and

(12) If the state has a federally approved coastal management program, a certification that the National Estuarine Research Reserve is consistent to the maximum extent practicable with that program. See §921.4(b) and §921.30(b).

(b) Regarding the preparation of an EIS under the National Environmental Policy Act on a National Estuarine Research Reserve proposal, the state and NOAA shall collect all necessary information concerning the socioeconomic and environmental impacts associated with implementing the draft management plan and feasible alternatives to the plan. Based on this information, the state will draft and provide NOAA with a preliminary EIS.

(c) Early in the development of the draft management plan and the draft EIS, the state and NOAA shall hold a scoping meeting (pursuant to NEPA) in the area or areas most affected to solicit public and government comments on the significant issues related to the proposed action. NOAA will publish a notice of the meeting in the **Federal Register** at least 15 days prior to the meeting. The state shall be responsible for publishing a similar notice in the local media.

(d) NOAA will publish a **Federal Register** notice of intent to prepare a draft EIS. After the draft EIS is prepared and filed with the Environmental Protection Agency (EPA), a Notice of Availability of the draft EIS will appear in the **Federal Register**. Not less than 30 days after publication of the notice, NOAA will hold at least one public hearing in the area or areas most affected by the proposed national estuarine research reserve. The hearing will be no sooner than 125 days after appropriate notice of the meeting has been given in the principal news media by the state and in the **Federal Register** by NOAA. After a 45-day comment period, a final EIS will be prepared by the state and NOAA.

Subpart C—Acquisition, Development and Preparation of the Final Management Plan

§921.20 General.

The acquisition and development period is separated into two major phases. After NOAA approval of the site, draft management plan and draft MOU, and completion of the final EIS, a coastal state is eligible for an initial acquisition and development award(s). In this initial phase, the state should work to meet the criteria required for formal research reserve designation; *e.g.*, establishing adequate state control over the key land and water areas as specified in the draft management plan and preparing the final management plan. These requirements are specified in §921.30. Minor construction in accordance with the draft management plan may also be conducted during this initial phase. The initial acquisition and development phase is expected to last no longer than three years. If necessary, a longer time period maybe negotiated between the state and NOAA. After Reserve designation, a state is eligible for a supplemental acquisition and development award(s) in accordance with §921.31. In this post-designation acquisition and development phase, funds may be used in accordance with the final management plan to construct research and educational facilities, complete any remaining land acquisition, for program development, and for restorative activities identified in the final management plan. In any case, the amount of Federal financial assistance provided to a coastal state with respect to the acquisition of lands and waters, or interests therein, for any one National Estuarine Research Reserve may not exceed an amount equal to 50 percent of the costs of the lands, waters, and interests therein or $5,000,000,

whichever amount is less.

§921.21 Initial acquisition and development awards.

(a) Assistance is provided to aid the recipient prior to designation in:

(1) Acquiring a fee simple or less-than-fee simple real property interest in land and water areas to be included in the Reserve boundaries (see §921.13(a)(7); §921.30(d));

(2) Minor construction, as provided in paragraphs (b) and (c) of this section;

(3) Preparing the final management plan; and

(4) Initial management costs, *e.g.,* for implementing the NOAA approved draft management plan, hiring a Reserve manager and other staff as necessary and for other management-related activities. Application procedures are specified in subpart 1.

(b) The expenditure of Federal and state funds on major construction activities is not allowed during the initial acquisition and development phase. The preparation of architectural and engineering plans, including specifications, for any proposed construction, or for proposed restorative activities, is permitted. In addition, minor construction activities, consistent with paragraph (c) of this section also are allowed. The NOAA-approved draft management plan must, however, include a construction plan and a public access plan before any award funds can be spent on construction activities.

(c) Only minor construction activities that aid in implementing portions of the management plan (such as boat ramps and nature trails) are permitted during the initial acquisition and development phase. No more than five (5) percent of the initial acquisition and development award may be expended on such activities. NOAA must make a specific determination, based on the final EIS, that the construction activity will not be detrimental to the environment.

(d) Except as specifically provided in paragraphs (a) through (c) of this section, construction projects, to be funded in whole or in part under an acquisition and development award(s), may not be initiated until the Reserve receives formal designation (see §921.30). This requirement has been adopted to ensure that substantial progress in establishing adequate state control over key land and water areas has been made and that a final management plan is completed before major sums are spent on construction. Once substantial progress in establishing adequate state control/ acquisition has been made, as defined by the state in the management plan, other activities guided by the final management plan may begin with NOAA's approval.

(e) For any real property acquired in whole or part with Federal funds for the Reserve, the state shall execute suitable title documents to include substantially the following provisions, or otherwise append the following provisions in a manner acceptable under applicable state law to the official land record(s):

(1) Title to the property conveyed by this deed shall vest in the [recipient of the award granted pursuant to section 315 of the Act, 16 U.S.C 1461 or other NOAA approved state agency subject to the condition that the designation of the [name of National Estuarine Research Reserve]; is not withdrawn and the property remains part of the federally designated [name of National Estuarine Research Reserve]; and

(2) In the event that the property is no longer included as part of the Reserve, or if the designation of the Reserve of which it is part is withdrawn, then NOAA or its successor agency, after full and reasonable consultation with the State, may exercise the following rights regarding the disposition of the property:

(i) The recipient may retain title after paying the Federal Government an amount computed by applying the Federal percentage of participation in the cost of the original project to the current fair market value of the property;

(ii) If the recipient does not elect to retain title, the Federal Government may either direct the recipient to sell the property and pay the Federal Government an amount computed by applying the Federal percentage of participation in the cost of the original project to the proceeds from the sale (after deducting actual and reasonable selling and repair or renovation expenses, if any, from the sale proceeds), or direct the recipient to transfer title to the Federal Government. If directed to transfer title to the Federal Government, the recipient shall be entitled to compensation computed by applying the recipient's percentage of participation in the cost of the original project to the current fair market value of the property; and

(iii) Fair market value of the property must be determined by an independent appraiser and certified by a responsible official of the state, as provided by Department of Commerce regulations at 15 CFR part 24, and Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally assisted programs at 15 CFR part 11.

(f) Upon instruction by NOAA, provisions analogous to those of §921.21(e) shall be included in the documentation underlying less-then-fee-simple interests acquired in whole or part with Federal funds.

(g) Federal funds or non-Federal matching share funds shall not be spent to acquire a real property interest in which the state will own the land concurrently with another entity unless the property interest has been identified as a part of an acquisition strategy pursuant to § 921.13(7) which has been approved by NOAA prior to the effective date of these regulations.

(h) Prior to submitting the final management plan to NOAA for review and approval, the state shall hold a public meeting to receive comment on the plan in the area affected by the estuarine research reserve. NOAA will publish a notice of the meeting in the **Federal Register** at least 15 days prior to the public meeting. The state shall be responsible for having a similar notice published in the local newspaper(s).

Subpart D— Reserve Designation and Subsequent Operation

§ 921.30 Designation of National Estuarine Research Reserves

(a) The Under Secretary may designate an area proposed for designation by the Governor of the state in which it is located, as a National Estuarine Research Reserve if the Under Secretary finds:

(1) The area is a representative estuarine ecosystem that is suitable for long-term research and contributes to the biogeographical and typological balance of the System;

(2) Key land and water areas of the proposed Reserve, as identified in the management plan, are under adequate state control sufficient to provide long-term protection for reserve resources to ensure a stable environment for research.

(3) Designation of the area as a Reserve will serve to enhance public awareness and understanding of estuarine areas, and provide suitable opportunities for public education and interpretation;

(4) A final management plan has been approved by NOAA;

(5) An MOU has been signed between the state and NOAA ensuring a long-term commitment by the state to the effective operation and implementation of the area as a National Estuarine Research Reserve;

(6) All MOU's necessary for reserve management (*i.e.*, with relevant Federal, state, and local agencies and/or private organizations/ have been signed; and

(7) The coastal state in which the area is located has complied with the requirements of subpart B.

(b) NOAA will determine whether the designation of a National Estuarine Research Reserve in a state with a federally approved coastal zone management program directly affects the coastal zone. If the designation is found to directly affect the coastal zone. If the designation is found to directly affect the coastal zone, NOAA will make a consistency determination pursuant to §307(c)(1) of the Act, 16 U.S.C. 1456, and 15 CFR part 930, subpart C. See § 921.4(b). The results of this consistency determination will be published in the **Federal Register** when the notice of designation is published. See §921.30(c).

(c) NOAA will publish the notice of designation of a National Estuarine Research Reserve in the **Federal Register**. The state shall be responsible for having a similar notice published in the local media.

(d) The term "state control" in § 921.30(a)(3) does not necessarily require that key land and water areas be owned by the state in fee simple. Acquisition of less-than-fee simple interests *(e.g.,* conservation easements) and utilization of existing state regulatory measures are encouraged where the state can demonstrate that these interests and measures assure adequate long-term state control consistent with the purposes of the research reserve (see also § 921.13(a)(7); § 921.21(g)). Should the state later elect to purchase an interest in such lands using NOAA funds, adequate justification as to the need for such acquisition must be provided to NOAA.

§ 921.31 Supplemental acquisition and development awards.

After National Estuarine Research Reserve designation, and as specified in the approved management plan, a coastal state may request a supplemental acquisition and/or development award(s) for acquiring additional property interests identified in the management plan as necessary to strengthen protection of key land and water areas and to enhance long-term protection of the area for research and education, for facility and exhibit construction, for restorative activities identified in the approved management plan, for administrative purposes related to acquisition and/or facility construction and to develop and/or upgrade research, monitoring and education/interpretive programs. Federal financial assistance provided to a National Estuarine Research Reserve for supplemental development costs directly associated with facility construction *(i.e.,* major construction activities) may not exceed 70 percent of the total project cost. NOAA must make a specific determination that the construction activity will not be detrimental to the environment. Acquisition awards for the acquisition of lands or waters, or interests therein, for any one reserve may not exceed an amount equal to 50 percentum of the cost of the lands, waters, and interests therein or $5,000,000, whichever amount is less. In the case of a biogeographic region (see Appendix I) shared by two or more states, each state is eligible independently for Federal financial assistance to establish a separate National Estuarine Research Reserve within their respective portion of the shared biogeographic region. Application procedures are specified in subpart I. Land acquisition must follow the procedures specified in §921.13(a)(7), §921.21(e) and (f) and §921.81.

§ 921.32 Operation and management: Implementation of the management plan.

(a) After the Reserve is formally designated, a coastal state is eligible to receive Federal funds to assist the state in the operation and management of the Reserve including the management of research, monitoring, education, and interpretive programs. The purpose of this Federally funded operation and management phase is to implement the approved final management plan and to take the necessary steps to ensure the continued effective operation of the Reserve.

(b) State operation and management of the Reserves shall be consistent with the mission, and shall further the goals of the National Estuarine Research Reserve program (see § 921.1).

(c) Federal funds are available for the operation and management of the Reserve. Federal funds provided pursuant to this section may not exceed 70% of the total cost of operating and managing the Reserve for any one year. In the case of a biogeographic region (see Appendix I) shared by two or more states, each state is eligible for Federal financial assistance to establish a separate Reserve within their respective portion of the shared biogeographic region (see § 921.10).

(d) Operation and management funds are subject to the following limitations:

(1) Eligible coastal state agencies may apply for up to the maximum share available per Reserve for that fiscal year. Share amounts will be announced annually by letter from the Sanctuary and Reserves Division to all participating states. This letter will be provided as soon as practicable following approval of the Federal budget for that fiscal year.

(2) No more than ten percent of the total amount (state and Federal shares) of each operation and management award may be used for construction-type activities.

§921.33 Boundary changes, amendments to the management plan, and addition of multiple-site components.

(a) Changes in the boundary of a Reserve and major changes to the final management plan, including state laws or regulations promulgated specifically for the Reserve, may be made only after written approval by NOAA. NOAA may require public notice, including notice in the Federal Register and an opportunity for public comment before approving a boundary or management plan change. Changes in the boundary of a Reserve involving the acquisition of properties not listed in the management plan or final EIS require public notice and the opportunity for comment; in certain cases, a categorical exclusion, an environmental assessment and possibly an environmental impact statement may be required. NOAA will place a notice in the Federal Register of any proposed changes in Reserve boundaries or proposed major changes to the final management plan. The state shall be responsible for publishing an equivalent notice in the local media. See also requirements of § 921.4(b) and § 921.13(a)(11).

(b) As discussed in § 921.10(b), a state may choose to develop a multiple-site National Estuarine Research Reserve after the initial acquisition and development award for a single site has been made. NOAA will publish notice of the proposed new site including an invitation for comments from the public in the **Federal Register**. The state shall be responsible for publishing an equivalent notice in the local newspaper(s). An EIS, if required. shall be prepared in accordance with section § 921.13 and shall include an administrative framework for the multiple-site Reserve and a description of the complementary research and educational programs within the Reserve. If NOAA determines, based on the scope of the project and the issues associated with the additional site(s), that an environmental assessment is sufficient to establish a multiple-site Reserve, then the state shall develop a revised management plan which, concerning the additional component, incorporates each of the elements described in § 921.13(a). The revised management plan shall address goals and objectives for all components of the multi-site Reserve and the additional component's relationship to the original site(s).

(c) The state shall revise the management plan for a Reserve at least every five years, or more often if necessary. Management plan revisions are subject to (a) above.

(d) NOAA will approve boundary changes, amendments to management plans, or the addition of multiple-site components,

by notice in the **Federal Register**. If necessary NOAA will revise the designation document (findings) for the site.

Subpart E — Ongoing Oversight, Performance Evaluation and Withdrawal of Designation

§ 921.40 Ongoing oversight and evaluations of designated National Estuarine Research Reserves.

(a) The Sanctuaries and Reserve Division shall conduct, in accordance with section 312 of the Act and procedures set forth in 15 CFR part 928, ongoing oversight and evaluations of Reserves. Interim sanctions may be imposed in accordance with regulations promulgated under 15 CFR part 928.

(b) The Assistant Administrator may consider the following indicators of non-adherence in determining whether to invoke interim sanctions:

(1) Inadequate implementation of required staff roles in administration, research, education/interpretation, and surveillance and enforcement. Indicators of inadequate implementation could include: No Reserve Manager, or no staff or insufficient staff to carry out the required functions.

(2) Inadequate implementation of the required research plan, including the monitoring design. Indicators of inadequate implementation could include: Not carrying out research or monitoring that is required by the plan, or carrying out research or monitoring that is inconsistent with the plan.

(3) Inadequate implementation of the required education/interpretation plan. Indicators of inadequate implementation could include: Not carrying out education or interpretation that is required by the plan, or carrying out education/interpretation that is inconsistent with the plan.

(4) Inadequate implementation of public access to the Reserve. Indicators of inadequate implementation of public access could include: Not providing necessary access, giving full consideration to the need to keep some areas off limits to the public in order to protect fragile resources.

(5) Inadequate implementation of facility development plan. Indicators of inadequate implementation could include: Not taking action to propose and budget for necessary facilities, or not undertaking necessary construction in a timely manner when funds are available.

(6) Inadequate implementation of acquisition plan. Indicators of inadequate implementation could include: Not pursuing an aggressive acquisition program with all available funds for that purpose, not requesting promptly additional funds when necessary, and evidence that adequate long-term state control has not been established over some core or buffer areas, thus jeopardizing the ability to protect the Reserve site and resources from offsite impacts.

(7) Inadequate implementation of Reserve protection plan. Indicators of inadequate implementation could include: Evidence of non-compliance with Reserve restrictions, insufficient surveillance and enforcement to assure that restrictions on use of the Reserve are adhered to, or evidence that Reserve resources are being damaged or destroyed as a result of the above.

(8) Failure to carry out the terms of the signed Memorandum of Understanding (MOU) between the state and NOAA, which establishes a long-term state commitment to maintain and manage the Reserve in accordance with section 315 of the Act. Indicators of failure could include: State action to allow incompatible uses of state-controlled lands or waters in the Reserve, failure of the state to bear its fair share of costs associated with long-term operation and management of the Reserve, or failure to initiate timely updates of the MOU when necessary.

§921.41 Withdrawal of Designation

The Assistant Administrator may withdraw designation of an estuarine area as a National Estuarine Research Reserve pursuant to and in accordance with the procedures of section 312 and 315 of the Act and regulations promulgated thereunder.

Subpart F—Special Research Projects

§921.50 General

(a) To stimulate high quality research within designated Research Reserves, NOAA may provide financial support for research projects which are consistent with the Estuarine Research Guidelines referenced in § 921.51. Research awards may be awarded under this subpart to only those designated Reserves with approved final management plans. Although research may be conducted within the immediate watershed of the Reserve, the majority of research activities of any single research project funded under this subpart may be conducted within reserve boundaries. Funds provided under this subpart primarily used to support management-related research projects that will enhance scientific understanding of the Reserve ecosystem, provide information needed by Reserve management and coastal management decision-makers, and improve public awareness and understanding of estuarine ecosystems and estuarine management issues. Special research projects may be oriented to specific Reserves; however, research projects that would benefit more than one Reserve in the National Estuarine Reserve Research System are encouraged.

(b) Funds provided under this subpart are available on a competitive basis to any coastal state or qualified public or private person. A notice of available funds will be published in the **Federal Register**. Special research project funds are provided in addition to any other funds available to a coastal state under the Act. Federal funds provided under this subpart may not exceed 70% of the total cost of the project, consistent with § 921.81(e)(4) ("allowable costs").

§921.51 Estuarine research guidelines

(a) Research within the National Estuarine Research Reserve System shall be conducted in a manner consistent with Estuarine Research Guidelines developed by NOAA.

(b) A summary of the Estuarine Research Guidelines is published in the **Federal Register** as a part of the notice of available funds discussed in § 921.50(c).

(c) The Estuarine Research Guidelines are reviewed annually by NOAA. This review will include an opportunity for comment by the estuarine research community.

§921.52 Promotion and coordination of estuarine research

(a) NOAA will promote and coordinate the use of the National Estuarine Research Reserve System for research purposes.

(b) NOAA will, in conducting or supporting estuarine research other than that authorized under section 315 of the Act, give priority consideration to research that make use of the National Estuarine Research Reserve System.

(c) NOAA will consult with other Federal and state agencies to promote use of one or more research reserves within the National Estuarine Research Reserve System when such agencies conduct estuarine research.

Subpart G— Special Monitoring Projects

§921.60 General

(a) To provide a systematic basis for developing a high quality estuarine resource and ecosystem information base for National Estuarine Research Reserves and, as a result, for the System, NOAA may provide financial support for basic monitoring programs as part

of operations and management under § 921.32. Monitoring funds are used to support three major phases of a monitoring program: (1) Studies necessary to collect date for a comprehensive site description/ characterization; (2) development of a site profile; and (3) formulation and implementation of a monitoring program.

(b)Additional monitoring funds may be available on a competitive basis to the state agency responsible for Reserve management or a qualified public or private person or entity. However, if the applicant is other than the managing entity of a Reserve that applicant must submit as a part of the application a letter from the Reserve manager indicating formal support of the application by the managing entity of the Reserve. Funds provided under this subpart for special monitoring projects are provided in addition to any other federal funds available to a state under the Act. Federal Funds provided under this subpart may not exceed 70% of the total cost of the project, consistent with § 921.81(e)(4) ("allowable costs").

(c) Monitoring projects funded under this subpart must focus on the resources within the boundaries of the Reserve and must be consistent with the applicable sections of the Estuarine Research Guidelines referenced in § 921.51. Portions of the project may occur within the immediate watershed of the Reserve beyond the site boundaries. However, the monitoring proposal must demonstrate why this is necessary for the success of the project.

Subpart H—Special Interpretation and Education Projects

§921.70 General

(a) To stimulate the development of innovative or creative interpretive and educational projects and materials to enhance public awareness and understanding of estuarine areas, NOAA may fund special interpretive and educational projects in addition to those activities provided for in operations and management under §921.32. Special interpretive and educational awards may be awarded under this subpart to only those designated Reserves with approved final management plans.

(b) Funds provided under this subpart may be available on a competitive basis to any state agency. However, if the applicant is other than the managing entity of a Reserve, that applicant must submit as a part of the application a letter from the Reserve manager indicating formal support of the application by the managing entity of the Reserve. These funds are provided in addition to any other funds available to a coastal state under the Act. Federal funds provided under this subpart may not exceed 70% of the total cost of the project, consistent with §921.81(e)(4) ("allowable costs").

(c) Applicants for education/interpretive projects that NOAA determines benefit the entire National Estuarine Research Reserve System may receive Federal assistance of up to 100% of project costs.

Subpart I - General Financial Assistance Provisions

§921.80 Application Information.

(a) Only a coastal state may apply for Federal financial assistance awards for preacquisition, acquisition and development, operation and management, and special education and interpretation projects under subpart H. Any coastal state or public or private person may apply for Federal financial assistance awards for special estuarine research or monitoring projects under subpart G. The announcement of opportunities to conduct research in the System appears on an annual basis in the **Federal Register.** If a state is participating in the national Coastal Zone Management Program, the applicant for an award under section 315 of the Act shall notify the state coastal management agency regarding the application.

(b) An original and two copies of the formal application must be submitted at least 120 working days prior to the proposed beginning of the project to the following address: Sanctuaries and Reserves Division Ocean and Coastal Resource Management, National Ocean and Atmospheric Administration, 1825 Connecticut Avenue, NW., suite 714, Washington, DC 20235. Applications for Federal Assistance Standard Form 424 (Non-construction Program) constitutes the formal application for site selection, post-site selection, operation and management, research, and education and interpretive awards. The Application for Federal Financial assistance Standard Form 424 (Construction Program) constitutes the formal application for land acquisition and development awards. The application must be accompanied by the information required in subpart B (predesignation), subpart C and §921.31 (acquisition and development), and §921.32(operation and management) as applicable. Applications for development awards for construction projects, or restorative activities involving construction, must include a preliminary engineering report, a detailed construction plan, a site plan, a budget and categorical exclusion check list or environmental assessment. All applications must contain back up data for budget estimates (Federal and non-Federal shares), and evidence that the application complies with the Executive Order 12372, "Intergovernmental Review of Federal Programs." In addition, applications for acquisition and development awards must contain:

(1) State Historic Preservation Office comments;

(2) Written approval from NOAA of the draft management plan for initial acquisition and development awards(s); and

(3) A preliminary engineering report for construction activities.

§921.81 Allowable costs.

(a) Allowable costs will be determined in accordance with applicable OMB Circulars and guidance for Federal financial assistance, the financial assistant agreement, these regulations, and other Department of Commerce and NOAA directives. The term "costs" applies to both the Federal and non-Federal shares.

(b) Costs claimed as charges to the award must be reasonable, beneficial and necessary for the proper and efficient administration of the financial assistance award and must be incurred during the award period.

(c) Costs must not be allocable to or included as a cost of any other Federally-financed program in either the current or a prior award period.

(d) General guidelines for the non-Federal share are contained in Department of Commerce Regulations at 15 CFR part 224 and OMB Circular A-110. Copies of Circular A-110 can be obtained from the Sanctuaries and Reserves Division; 1825 Connecticut Avenue, NW., suite 714; Washington, DC 20235. The following may be used in satisfying the matching requirement:

(1) *Site selection and post site selection awards.* Cash and in-kind contributions (value of goods and services directly benefiting and specifically identifiable to this part of the project) are allowable. Land may not be used as match.

(2) *Acquisition and development awards.* Cash and in-kind contributions are allowable. In general, the fair market value of lands to be included within the Reserve boundaries and acquired pursuant to the Act, with other than Federal funds, may be used as match. However, the fair market value of real property allowable as match is limited to the fair market value of a real property interest equivalent to, or required to attain, the level of control over such land(s) identified by the state and approved by the Federal Government

as that necessary for the protection and management of the National Estuarine Research Reserve. Appraisals must be performed according to Federal appraisal standards as detailed in Department of Commerce regulations at 15 CFR part 24 and the Uniform Relocation Assistance and Real Property Acquisition for Federal Land Federally assisted programs in 15 CFR part 11. The fair market value of privately donated land, at the time of donation, as established by an independent appraiser and certified by a responsible official of the state, pursuant to 15 CFR part 11, may also be used as match. Land, including submerged lands already in the state's possession, may be used as match to establish a National Estuarine Research Reserve. The value of match for these state lands will be calculated by determining the value of the benefits foregone by the state, in the use of the land, as a result of new restrictions that may be imposed by Reserve designation. The appraisal of the benefits foregone must be made by an independent appraiser in accordance with Federal appraisal standards pursuant to 15 CFR part 24 and 15 CFR part 11. A state may initially use as match land valued at greater than the Federal share of the acquisition and development award. The value in excess of the amount required as match for the initial award may be used to match subsequent supplemental acquisition and development awards for the National Estuarine Research Reserve (see also §921.20). Costs related to land acquisition, such as appraisals, legal fees and surveys, may also be used as match.

(3) *Operation and management awards.* Generally, cash and in-kind contributions (directly benefiting and specifically identifiable to operations and management), except land, are allowable.

(4) *Research, monitoring, education and interpretive awards.* Cash and in-kind contributions (directly benefiting and specifically identifiable to the scope of work), except land, are allowable.

§921.82 Amendments to financial assistance awards.

Actions requiring an amendment to the financial assistance award, such as a request for additional Federal funds, revisions of the approved project budget or original scope of work, or extension of the performance period must be submitted to NOAA on standard Form 424 and approved in writing.

Appendix I to Part 921 - Biogeographic Classification Scheme

Acadian

1. Northern of Maine (Eastport of the Sheepscot River.)
2. Southern Gulf of Maine (Sheepscot River to Cape Cod.)

Virginian

3. Southern New England (Cape Cod to Sandy Hook.)
4. Middle Atlantic (Sandy Hook to Cape Hatteras.)
5. Chesapeake Bay.

Carolinian

6. North Carolinas (Cape Hatteras to Santee River.)
7. South Atlantic (Santee River to St. John's River.)
8. East Florida (St. John's River to Cape Canaveral.)

West Indian

9. Caribbean (Cape Canaveral to Ft. Jefferson and south.)
10. West Florida (Ft. Jefferson to Cedar Key.)

Louisianian

11. Panhandle Coast (Cedar Key to Mobile Bay.)
12. Mississippi Delta (Mobile Bay to Galveston.)
13. Western Gulf (Galveston to Mexican border.)

Californian

14. Southern California (Mexican Border to Point Conception.)
15. Central California (Point Conception to Cape Mendocino.)
16. San Francisco Bay.

Columbian

17. Middle Pacific (Cape Mendocino to the Columbia River.)
18. Washington Coast (Columbia River to Vancouver Island.)
19. Puget Sound.

Great Lakes

20. Lake Superior (including St. Mary's River.)
21. Lakes Michigan and Huron (including Straits of Mackinac, St. Clair River, and Lake St. Clair.)
22. Lake Erie (including Detroit River and Niagara Falls.)
23. Lake Ontario (including St. Lawrence River.)

Fjord

24. Southern Alaska (Prince of Wales Island to Cook Inlet.)
25. Aleutian Island (Cook Inlet Bristol Bay.)

Sub-Arctic

26. Northern Alaska (Bristol Bay to Damarcation Point.)

Insular

27. Hawaiian Islands.
28. Western Pacific Island.
29. Eastern Pacific Island.

Billing Code 3510-08-M

Appendix II to Part 921—Typology of National Estuarine Research Reserves

This typology system reflects significant differences in estuarine characteristics that are not necessarily related to regional location. The purpose of this type of classification is to maximize ecosystem variety in the selection of national estuarine reserves. Priority will be given to important ecosystem types as yet unrepresented in the reserve system. It should be noted that any one site may represent several ecosystem types or physical characteristics.

Class I—Ecosystem Types

Group I—Shorelands

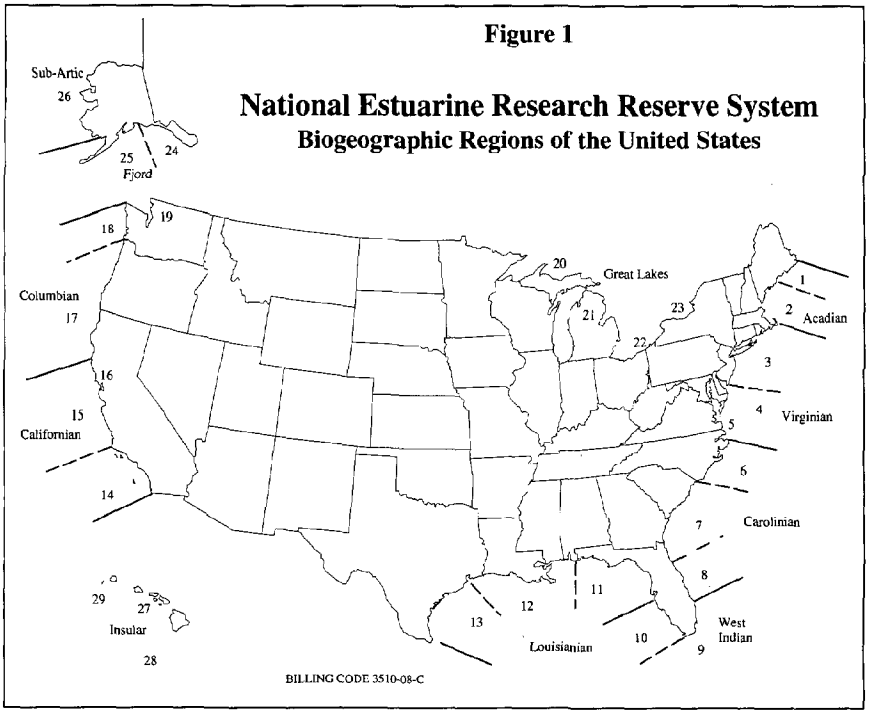
A. Maritime Forest-Woodland. That have developed under the influence of salt spray. It can be found on coastal uplands or recent features such as barrier islands and beaches, and biomes:

1. Northern coniferous forest biome: This is an area of predominantly evergreens such as the sitka spruce (Picea), grand fir (Abies), and white cedar (Thuja), with poor development of the shrub and herb leyera, but high annual productivity and pronounced seasonal periodicity.

2. Moist temperate (Mesothermal) coniferous forest biome: Found along the west coast of North America from California to Alaska, this area is dominated by conifers, has relatively small seasonal range, high humidity with rainfall ranging from 30 to 150 inches, and a well-developed understory of vegetation with an abundance of mosses and other moisture-tolerant plants.

3. Temperate deciduous forest biome:

Figure 1



This biome is characterized by abundant, evenly distributed rainfall, moderate temperatures which exhibit a distinct seasonal pattern, well-developed soil biota and herb and shrub layers, and numerous plants which produce pulpy fruits and nuts. A distinct subdivision of this biome is the pine edible forest of the southeastern coastal plain, in which only a small portion of the area is occupied by climax vegetation, although it has large areas covered by edaphic climax pines.

4. Broad-leaved evergreen subtropical forest biome: The main characteristic of this biome is high moisture with less pronounced differences between winter and summer. Examples are the hammocks of Florida and the live oak forests of the Gulf and South Atlantic coasts. Floral dominants include pines, magnolias, bays, hollies, wild tamarine, strangler fig, gumbo limbo, and palms.

B. Coast shrublands. This is a transitional area between the coastal grasslands and woodlands and is characterized by woody species with multiple stems and a few centimeters to several meters above the ground developing under the influence of salt spray and occasional sand burial. This includes thickets, scrub, scrub savanna, heathlands, and coastal chaparral. There is a great variety of shrubland vegetation exhibiting regional specificity:

1. Northern areas: Characterized by Hudsonia, various erinaceous species, and thickets of Myricu, prunus, and Rosa.

2. Southeast areas: Floral dominants include Myrica, Baccharis, and Iles.

3. Western areas: Adenostoma, arcotyphylos, and eucalyptus are the dominant floral species.

C. Coastal grasslands. This area, which possesses sand dunes and coastal flats, has low rainfall (10 to 30 inches per year) and large amounts of humus in the soil. Ecological succession is slow, resulting in the presence of a number of seral stages of community development. Dominant vegetation includes midgrasses (5 to 8 feet tall), such as Spartina, and trees such as willow (Salix sp.), cherry (Prunus sp.), and cottonwood (Pupulus deltoides.) This area is divided into four regions with the following typical strand vegetation:

1. Arctic/Boreal: Elymus;
2. Northeast/West; Ammophla;
3. Southeast Gulf; Uniola; and
4. Mid-Atlantic/Gulf; Spartina patens.

D. Coastal tundra. This ecosystem, which is found along the Arctic and Boreal coasts of North Amercia, is characterized by low temperatures, a shore growing season, and some permafrost,

producing a low, treeless mat community made up of mosses, lichens, heath, shrubs, grasses, sedges, rushes, and herbaceous and dwarf woody plants. Common species include Arctic/alpine plants such as Empeturm nigrum and Betula nana, the lichens Cetraria and Cladonia, and herbaceous plants such as Potentilla tridentata and Rubus chamaiemorus. Common species on the coastal beach ridges of the high arctic desert include Bryas intergrigolia and Saxifrage oppositifolia. This area can be divided into two main subdivisions:

1. Low tundra: Characterized by a thick, spongy mat of living and undecayed vegetation, often with water and dotted with ponds when not frozen; and

2: High tundra: A bare area except for a scanty growth of lichens and grasses, with underlaying ice wedges forming raised polygonal areas.

E. Coastal cliffs. This ecosystem is an important nesting site for many sea and shore birds. It consists of communities of herbaceous, graminoid, or low woody plants (shrubs, heath, etc.) on the top or along rocky faces exposed to salt spray. There is a diversity of plant species including mosses, lichens, liverworts, and "higher" plant representatives.

Group II - Transition Areas

A. *Coastal marshes.* These are wetland areas dominated by grasses (Poacea), sedges (Cyperacese), rushes (Juncaceae), cattails (Typhaceae), and other graminoid species and is subject to periodic flooding by either salt or freshwater. This ecosystem may be subdivided into: (a) Tidal, which is periodically flooded by either salt or brackish water; (b) nontidal (freshwater); or (c) tidal freshwater. These are essential habitats for many important estuarine species of fish and invertebrates as well as shorebirds and waterfowl and serve important roles in shore stabilization, flood control, water purification, and nutrient transport and storage.

B. *Coastal swamps.* These are wet lowland areas that support mosses and shrubs together with large trees such as cypress or gum.

C. *Coastal mangroves.* This ecosystem experiences regular flooding on either a daily, monthly, or seasonal basis, has low wave action, and is dominated by a variety of salt-tolerant trees, such as the red mangrove (Rhizophora mangle), black mangrove (Avicennia Nitida), and the white mangrove (Laguncularia racemosa.) It is also an important habitat for large populations of fish, invertebrates, and birds. This type of ecosystem can be found from central Florida to extreme south Texas to the islands of the Western Pacific.

D. *Intertidal beaches.* This ecosystem has a distinct biota of microscopic animals, bacteria, and unicellular algae along with macroscopic crustaceans, mollusks, and worms with a detritus-based nutrient cycle. This area also includes the driftline communities found at high tide levels on the beach. T he dominant organisms in this ecosystem

include crustaceans such as the mole crab (Emerita), amphipods (Gammeridae), ghost crabs (Ocypode), and bivalve mollusks such as the coquina (Donax) and surf clams (Spisula and Mactra.)

E. *Intertidal mud and sand flats.* These areas are composed of unconsolidated, high organic content sediments that function as a short-term storage area for nutrients and organic carbons. Macrophytes are nearly absent in this ecosystem, although it may be heavily colonized by benthic diatoms, dinoflaggellates, filamintous blue-green and green algae, and chaemosynthetic purple sulfur bacteria. This system may support a considerable population of gastropods, bivalves, and polychaetes, and may serve as a feeding area for a variety of fish and wading birds. In sand, the dominant fauna include the wedge shell Donax, the scallop Pecten, tellin shells Tellina, the heart urchin Echinocardium, the lug worm Arenicola, sand dollar Dendrastter, and the sea pansy Renilla. In mud, faunal dominants adapted to low oxygen levels include the terebellid Amphitrite, the boring clam Playdon, the deep sea scallop Placopecten, the Quahog Mercenaria, the echiurid worm Urechis, the mud snail Nassarius, and the sea cucumber Thyone.

F. *Intertidal algal beds.* These are hard substrates along the marine edge that are dominated by macroscopic algae, usually thalloid, but also filamentous or unicellular in growth form. This also includes the rocky coast tidepools that fall within the intertidal zone. Dominant fauna of these areas are barnacles, mussels, periwinkles, anemones, and chitons. Three regions are apparent:

1. Northern latitude rocky shores: It is in this region that the community structure is best developed. The dominant algal species include Chondrus at the low tide level, Fucus and Ascophylium at the mid-tidal level, and Laminaria and other Kelplike algae just beyond the intertidal, although they can be exposed at extremely low tides or found in very deep tidepools.

2. Southern latitudes: The communities in this region are reduced in comparison to those of the northern latitudes and possesses algae consisting mostly of single-celled or filamentour green, blue-green, and red algae, and small thalloid brown algae.

3. Tropical and subtropical latitudes: The intertidal in this region is very reduced and contains numerous calcareous algae such as Porolithon and Lithothamnion, as well as green algae with calcareous particles such as Halimeda, and numerous other green, red, and brown algae.

Group III - Submerged Bottoms

A. *Subtidal hardbottoms.* This system is characterized by a consolidated layer of solid rock or large pieces of rock (neither of biotic origin) and is found in association with geomophological features such as submarine canyons and fjords and is usually covered with assemblages of sponges, sea fans, bivalves, hard corals, tunicates, and other attached organisms. A significant feature of estuaries in many parts of the world is the oyster reef, a type of subtidal hardbottom. Composed of assemblages of organisms (usually bivalves), it is usually found near an estuary's mouth in a zone of moderate wave action, salt content, and turbidity. If light levels are sufficient, a covering of microscopic and attached macroscopic algae, such as keep, may also be found.

B. *Subtidal softbottoms.* Major characteristics of this ecosystem are an unconsolidated layer of fine particles of silt, sand, clay, and gravel, high hydrogen sulfide levels, and anaerobic conditions often existing below the surface. Macrophytes are either sparse or absent, although a layer of benthic microalgae may be present if light levels are sufficient. The faunal community is dominated by a diverse population of deposit feeders including polychaetes, bivalves, and burrowing crustaceans.

C. *Subtidal plants.* This system is found in relatively shallow water (less than 8 to 10 meters) below mean low tide. It is an area of extremely high primary production that provides food and refuge for a diversity of faunal groups, especially juvenile and adult fish, and in some regions, manatees and sea turtles. Along the North Atlantic and Pacific coasts, the seagrass Zostera marina predominates. In the South Atlantic and Gulf coast areas, Thalassia and Diplanthera predominate. The grasses both areas support a number of epiphytic organisms.

Class II - Physical Characteristics

Group 1 - Geologic

A. *Basin type.* Coastal water basins occur in a variety of shapes, sizes, depths, and appearances. The eight basic types discussed below will cover most of the cases:

1. Exposed coast: Solid rock formations or heavy sand deposits characterize exposed ocean shore fronts, which are subject to the full force of ocean storms. The sand beaches are very resilient, although the dunes lying just behind the beaches are fragile and easily damaged. The dunes serve as a sad storage area making them chief stabilizers of the ocean shorefront.

2. Sheltered coast: Sand or coral barriers, built up by natural forces, provide sheltered areas inside a bar or reef where the ecosystem takes on many characteristics of confined waters-abundant marine grasses, shellfish, and juvenile fish. Water movement is reduced, with the consequent effects pollution being more severe in this area than in exposed coastal areas.

3. Bay: Bays are larger confined bodies of water that are open to the sea and receive strong tidal flow. When stratification is pronounced the flushing action is augmented by rive discharge. Bays vary in size and in type of shorefront.

4. Embayment:: A confined coastal water body with narrow, restricted inlets and with a significant freshwater inflow can be classified as an embayment. These areas have more restricted inlets than bays, are usually smaller and shallower, have low tidal action, and are subject to sedimentation.

5. Tidal river: The lower reach of a coastal river is referred to as a tidal river. The coastal water segment extends from the sea or estuary into which the river discharges to a point as far upstream as there is significant salt content in the water, forming a salt front. A combination of tidal action and freshwater outflow makes tidal rivers well-flushed. The tidal river basin may be a simple channel or a complex of tributaries, small associated embayments, marshfronts, tidal flats, and a variety of others.

6. Lagoon: Lagoons are confined coastal bodies of water with restricted inlets to the sea and without significant freshwater inflow. Water circulation is limited, resulting in a poorly flushed, relatively stagnant body of water. Sedimentation is rapid with a great potential for basin shoeling. Shores are often gently sloping and marshy.

7. Perched coastal wetlands: Unique to Pacific islands, this wetland type found above sea level in volcanic crater remnants forms as a result of poor drainage characteristics of the crater rather than from sedimentation. Floral assemblages exhibit distinct zonation while the faunal constituents may include freshwater, brackish, and/or marine species. Example: Aunu's Island, American Samoa.

8. Anchialine systems: These small coastal exposures of brackish water form in lava depressions or elevated fossil reefs have only a subsurface connection in the ocean, but show tidal fluctuations. Differing from true estuaries in having no surface continuity with streams or ocean, this system is characterized by a distinct biotic community dominated by benthis algae such as Rhizoclonium, the mineral encrusting Schiuzothrix, and the vascu-

lar plant Ruppia maritima. Characteristic fauna which exhibit a high degree of endemicity, include the mollusks Theosoxus neglectus and Tcariosus. Although found throughout the world, the high islands of the Pacific are the only areas within the U.S. where this system can be found.

B. *Basin structure*. Estuary basins may result from the drowning of a river valley (coastal plains estuary), the drowning of a glacial valley (fjord), the occurrence of an offshore barrier (bar-bounded estuary), some tectonic process (tectonic estuary), or volcanic activity (volcanic estuary).

1. Coastal plains estuary: Where a drowned valley consists mainly of a single channel, the form of the basin is fairly regular forming a simple coastal plains estuary. When a channel is flooded with numerous tributaries an irregular estuary results. Many estuaries of the eastern United States are of this type.

2. Fjord: Estuaries that form in elongated steep headlands that alternate with deep U-shaped valleys resulting from glacial scouring are called fjords. They generally possess rocky floors or very thin veneers of sediment, with deposition generally being restricted to the head where the main river enters. Compared total fjord volume river discharge is small. But many fjords have restricted tidal ranges at their mouths due to sills, or upreaching sections of the bottom which limit free movement of water, often making river flow large with respect to the tidal prism. The deepest portions are in the upstream reaches, where maximum depths can range from 800m to 1200m while all depths usually range from 40m to 150m.

3. Bar-bounded estuary: These result from the development of an offshore barrier such as a beach strand, a line of barrier islands, reef formations a line of moraine debris, or the subsiding remnants of a deltaic lobe. The basin is often partially exposed a low tide and is enclosed by a chain of offshore bars or barrier islands broken at intervals inlets. These bars may be either deposited offshore or may be coastal dunes that have become isolated by recent sea level rises.

4. Tectonic estuary: These are coastal indentures that have formed through tectonic processes such as slippage along a fault line (San Francisco Bay), folding or movement of the earth's bedrock often with a large inflow of freshwater.

5. Volcanic estuary: These coastal bodies of open water, a result of volcanic processes are depressions or craters that have direct and/or subsurface connections with the ocean and may or may not have surface continuity with streams. These formations are unique to island areas of volcanic orgin.

C. *Inlet type*. Inlets in various forms are an integral part of the estuarine environment as they regulate to a certain extent,. the velocity and magnitude of tidal exchange, the degree of mixing, and volume of discharge to the sea.

1. Unrestricted: An estuary with a wide unrestricted inlet typically has slow currents, no significant turbulence, and receives the full effect of ocean waves and local disturbances which serve to modify the shoreline. These estuaries are partially mixed, as the open mouth permits the incursion of marine waters to considerable distances upstream, depending on the tidal amplitude and stream gradient.

2. Restricted: Restrictions of estuaries can exist in many forms: Bars, barrier islands, spits, sills, and more. Restricted inlets result in decreased circulation, more pronounced longitudinal and vertical salinity gradients, and more rapid sedimentation. However, if the estuary mouth is restricted by depositional features of land closures, the incoming tide may be held back until it suddenly breaks forth into the basin as a tidal wave, or bore. Such currents exert profound effects on the nature of the subtrate, turbidity, and biota of the estuary.

3. Permanent: Permanent inlets are usually opposite the mouths of major rivers and permit river water to flow into the sea.

4. Temporary (Intermittent): Temporary inlets are formed by storms and frequently shift position, depending on tidal flow, the depth of the sea, and sound waters, the frequency of storms, and the amount of littoral transport.

D. *Bottom composition*. The bottom composition of estuaries attests to the vigorous, rapid, and complex sedimentation processes characteristic of most coastal regions with low relief. Sediments are derived through the hydrologic processes of erosion, transport, and deposition carried on by the sea and the stream.

1. Sand: Near estuary mouths, where the predominating forces of the sea build spits or other depositional features, the shore and substrates of the estuary are sandy. The bottom sediments in this area are usually coarse, with a graduation toward finer particles in the head region and other zones of reduced flow, fine silty sands are deposited. Sand deposition occurs only in wider or deeper regions where velocity is reduced.

2. Mud. At the base level of a stream near its mouth, the bottom is typically composed of loose muds, silts, and organic detritus as a result of erosion and transport from the upper stream reaches and organic decomposition. Just inside the estuary entrance, the bottom contains considerable quantities of sand and mud, which support a rich fauna. Mud flats, commonly built up in estuarine basins, are composed of loose, coarse, and fine mud and sand, often dividing the original channel.

3. Rock: Rocks usually occur in areas where the stream runs rapidly over a steep gradient with its coarse materials being derived from the higher elevations where the stream slope is greater. The larger fragments are usually found in shallow areas near the stream mouth.

4. Oyster shell: Throughout a major portion of the world, the oyster reef is one of the most significant features of estuaries, usually being found near the mouth of the estuary in a zone of moderate wave action, salt content, and turbidity. It is often a major factor in modifying estuarine current systems and sedimentation, and may occur as an elongated island or peninsula oriented across the main current, or may develop parallel to the direction of the current.

Group II - Hydrographic

A. *Circulation*. Circulation patterns are the result of combined influences of freshwater inflow, tidal action, wind and oceanic forces, and serve many functions: Nutrient transport, plankton dispersal, ecosystem flushing, salinity control, water mixing, and more.

1. Stratified: This is typical of estuaries with a strong freshwater influx and is commonly found in bays formed from "drowned" river valleys, fjords, and other deep basins. There is a net movement of freshwater outward at the top layer and saltwater at the bottom layer, resulting in a net outward transport of surface organisms and net inward transport of bottom organisms.

2. Non-stratified: Estuaries of this type are found where water movement is sluggish and flushing rate is low, although there may be sufficient circulation to provide the basis for a high carrying capacity. This is common to shallow embayments and bays lacking a good supply of freshwater from land drainage.

3. Lagoonal: An estuary of this type is characterized by low rates of water movement resulting from a lack of strong tidal exchange because of the typically narrow inlet connecting the lagoon to the sea. Circulation whose major driving force is wind, is the major limiting factor in biological productivity within lagoons.

B. *Tides*. This is the most important ecological factor in an estuary as it affects water

exchange and its vertical range determines the extent of tidal flats which may be exposed and submerged with each tidal cycle. Tidal action against the volume of river water discharged into an estuary results in a complex system whose properties vary according to estuary structure as well as the magnitude of river flow and tidal range. Tides are usually described in terms of the cycle and their relative heights. In the United States, tide height is reckoned on the basis of average low tide, which is referred to as datum. The tides, although complex, fall into three main categories:

1. Diurnal: This refers to a daily change in water level that can be observed along the shoreline. There is one high tide and one low tide per day.

2. Semidiurnal: This refers to a twice daily rise and fall in water that can be observed along the shoreline.

3. Wind/Storm tides: This refers to fluctuations in water elevation to wind and storm events, where influence of lunar tides is less.

C. *Freshwater.* According to nearly all the definitions advanced, it is inherent that all estuaries need freshwater, which is drained from the land and measurably dilutes seawater to create a brackish condition. Freshwater enters an estuary as runoff from the land either from a surface and/or subsurface source.

1. Surface water: This is water flowing over the ground in the form of streams. Local variation in runoff is dependent upon the nature of the soil (porosity and solubility), degree of surface slope, vegetational type and development, local climatic conditions, and volume and intensity of precipitation.

2. Subsurface water: This refers to the precipitation that has been absorbed by the soil and stored below the surface. The distribution of subsurface water depends on local climate, topography , and the porosity and permeability of the under lying soils and rocks. There are two main subtypes of surface water:

a. Vadose water: This is water in the soil above the water table. Its volume with respect to the soil is subject to considerable fluctuation.

b. Groundwater: This is water contained in the rocks below the water table, is usually of more uniform volume than vadose water, and generally follows the topographic relief of the land being high hills and sloping into valleys.

Group III - Chemical

A. *Salinity.* This reflects a complex mixture of salts, the most abundant being sodium chloride, and is a very critical factor in the distribution and maintenance of many estuarine organisms. Based on salinity, there are two basic estuarine types and eight different salinity zones (expressed parts per thousand-ppt.)

1. Positive estuary: This is an estuary in which the freshwater influx is sufficient to maintain mixing, resulting in a pattern of increasing salinity toward the estuary mouth. It is characterized by low oxygen concentration in the deeper waters and considerable organic content in bottom sediments.

2. Negative estuary: This is found in particularly arid regions, where estuary evaporation may exceed freshwater inflow, resulting in increased salinity in the upper part of the basin, especially if the estuary mouth is restricted so that tidal flow is inhibited. These are typically very salty (hyperhaline), moderately oxygenated at depth, and possess bottom sediments that are poor in organic content.

3. Salinity zone (expressed ppt):

a. Hyperhaline - greater than 40 ppt.

b. Euhaline - 40 ppt to 30 ppt.

c. Mixhaline - 30 ppt to 0.5 ppt.

(1) Mixoeuhaline - greater than 30 ppt but less than the adjacent euhaline sea.

(2) Polyhaline - 30 ppt to 18 ppt.

(3) Mesohaline -18 ppt to 5 ppt.

(4) Oligohaline - 5 ppt to 0.5 ppt.

d. Limnetic: Less than 0.5 ppt.

B. *pH Regime*: This is indicative of the mineral richness of estuarine waters and falls into three main categories:

1. Acid. Waters with a pH of less than 5.5.

2. Circumneutral. A condition where the pH ranges from 5.5 to 7.4.

3. Alkaline: Waters with a pH greater than 7.4

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