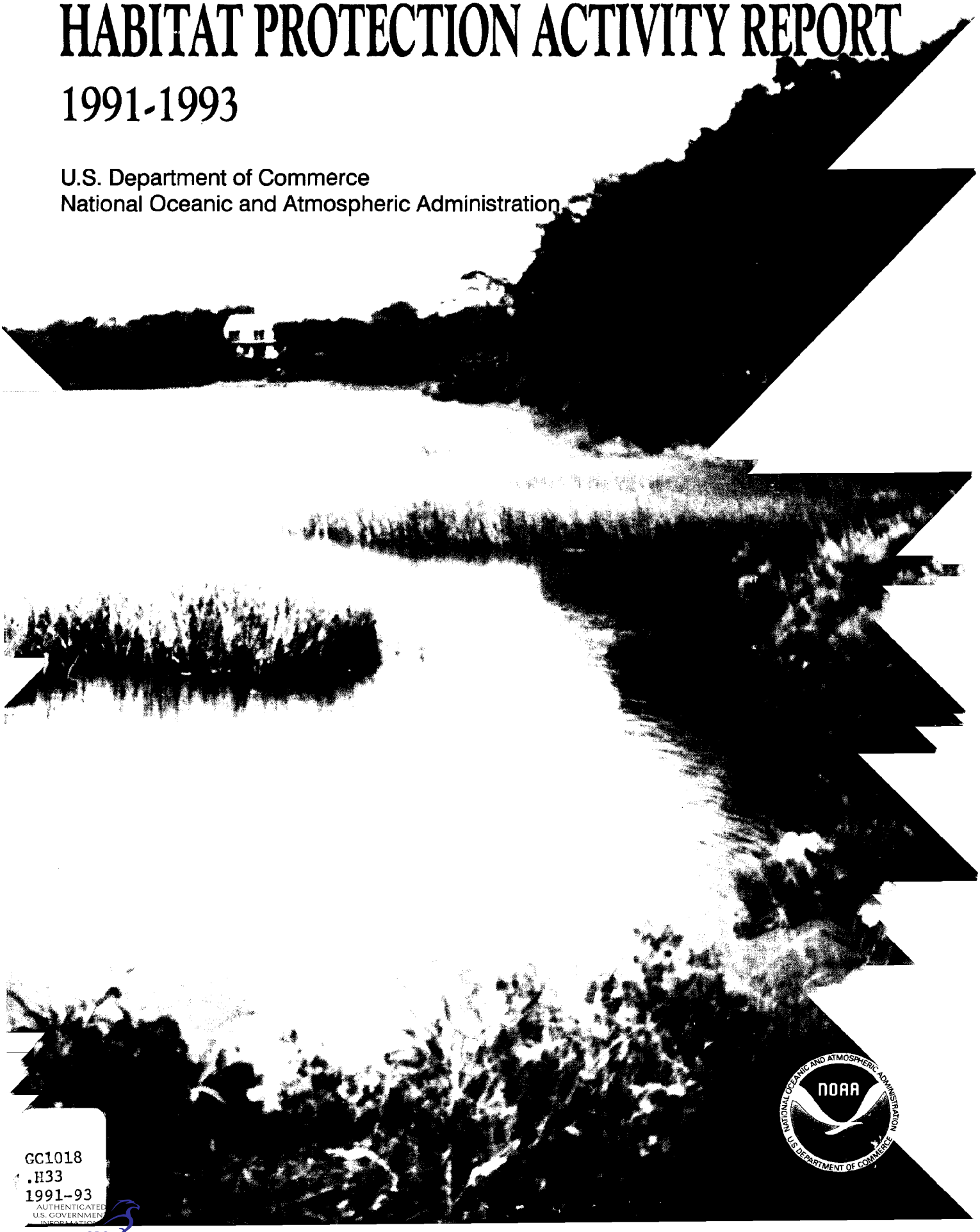
HABITAT PROTECTION ACTIVITY REPORT

1991-1993

U.S. Department of Commerce
National Oceanic and Atmospheric Administration



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Habitat Protection Activity Report: 1991 - 1993

Office of Habitat Protection
Silver Spring, Maryland
August, 1994

U.S. DEPARTMENT OF COMMERCE
Ronald H. Brown, Secretary

National Oceanic and Atmospheric Administration
D. James Baker, Under Secretary

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Rolland A. Schmitten, Assistant Administrator

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Cover Photograph: Tidal creek and salt marsh in Wild Harbor River, Cape Cod, Massachusetts. This highly productive habitat supports numerous marine and estuarine species. Local recreational fisheries include blue crab, bluefish, eel, soft-shelled clam and quahog. Massachusetts lost 28% of its wetlands between 1780 and 1980. Photo courtesy of Susan M. Stedman.

FOREWORD

It is a particular pleasure to introduce the first activity report of the Office of Habitat Protection. Although habitat protection activities have been carried out by National Marine Fisheries Service (NMFS) personnel for many years, concern for the increasing loss and degradation of habitat critical to fisheries resources has called for increased effort. This concern prompted the organizational elevation of habitat protection efforts to Office level. In October, 1992, the Office of Habitat Protection was created.

This report will introduce the reader to habitat protection and conservation activities currently being carried out around the nation by NMFS field staff. Although the report does not include all field activities, the examples selected are representative of the many important types of projects under way. These cover a wide range of activities including the authorization of dam construction and operation, assessing of environmental damage from oil spills, protecting coastal wetlands, restoring access of fishery resource populations to ecosystems critical to their life cycles, designating disposal sites for dredge materials and restoring damaged ecosystems.

The staff of the Office of Habitat Protection, regional habitat personnel, and we invite you to read the report and become better acquainted with this important NMFS program. We believe that this report will give you a fresh appreciation for the importance of habitat preservation and our role in the protection and conservation of fishery habitats.

Any questions you may have about these activities or suggestions for additional activities will be welcomed.

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I. Introduction

The National Marine Fisheries Service (NMFS), an agency of the National Oceanic and Atmospheric Administration (NOAA) within the Department of Commerce (DOC), is responsible for the conservation of living marine resources, the protection of marine mammals and endangered marine species and the habitats on which they depend. The purpose of NMFS' Habitat Protection Program is to conserve and protect the valuable habitats necessary to sustain marine biological communities. This is accomplished primarily through review of licensing, permitting, legislative, and administrative activities that affect living marine resources and habitats; coordinating with Regional Fishery Management Councils on Fishery Management Plans (FMPs); and conducting habitat-related research. As trustees of the habitats of living marine resources, the Program offers supervision and guidance for activities in land-use and wetland planning so that proper attention is given to their welfare.

This report describes important marine habitat issues, and gives examples of the accomplishments and activities of the Agency's Habitat Protection Program for 1991, 1992 and 1993. This report is available from the Office of Habitat Protection, National Marine Fisheries Service, 1335 East-West Highway, Silver Spring, Maryland, 20910.

II. The Problem

A. The Magnitude of the Problem

THE DECLINE OF LIVING MARINE RESOURCES

Coastal habitat and wetland loss have significantly affected declines in the U.S. fishery stocks. In 1992, the U.S. commercial fishing industry caught over 9.6 billion pounds of seafood valued at $3.7 billion. However, estuarine dependent fishery landings are down, and the shellfishing industry is operating at historic low levels. Since 1982, commercial landings of fish and shellfish in the Southeast Atlantic states and the Gulf of Mexico have decreased 42%. Oyster landings at 90% below historic levels in the Chesapeake Bay and Long Island Sound are attributable to habitat loss and degradation in those estuaries. Colombia River Basin salmon and steelhead runs have declined 75-84% from historic levels, due largely to impedance by dams of sea-bound smolts and returning adults. California's natural salmon runs have been reduced by 65% in only 20 years.

IMPACT ON ECONOMY

The losses of these fisheries resources mean fewer jobs for the fishers, processors, and vendors. Commercial fishing in 1988 employed over 274,000 fishers and 90,000 shore workers. The income of fishing gear manufacturers and fisheries product transporters are also reduced. In 1989, over $17 billion was spent on fishing-related products and services such as boats, motors, equipment, fuel, insurance, and docking fees. The absence of these revenues and their multiplier effects on the U.S. economy is significant. In addition, the loss of the natural fisheries resources results in the reduction of the domestic food supply. This reduction will result in higher prices to the consumer or increased imports to meet demand or both.

Recreational marine fisheries in 1985 contributed over $4.9 billion to coastal economies in trip expenditures alone. In 1990, 65,000 tons of fish were caught recreationally in the Atlantic and Gulf of Mexico; 13,000 tons were taken from the Pacific in 1989. More than 13,709,000 people participated in the sport. Aggregate expenditures for saltwater finfishing in 1985 were estimated at greater than $7.2 billion. Losses in recreational fisheries stocks affect charter boat operators, bait shops, boat rentals, boat manufacturers, fishing gear manufacturers, and the motel and hotel industry.

IMPACT ON HEALTH

The impacts of habitat degradation stretch beyond economics to human health and even the way of life for a significant portion of the Nation's population. Bivalve molluscs are relatively immobile filter feeders unable to move from polluted waters which they pump through their systems in large quantities. Enteric diseases, Vibrio bacteria, and marine biotoxins can be carried by shellfish to human consumers. Shellfishing restriction is an indicator of coastal water quality conditions relative to pollution from human activity. In 1974, about one-fourth of the shellfish beds in the United States were closed to harvesting due to sewage contamination in the beds. Shellfish contamination, environmental impacts from mosquito control, and beach closures all are associated with the health of the marine resources. Unhealthy waters pose a threat to bathers; recent attention has focused on medical wastes and raw sewage which have closed popular beaches. Tracking the extent and duration of beach closings is an indicator of how the nation monitors coastal water quality and the severity of coastal water pollution.

IMPACT ON WAY OF LIFE

Fishing as a livelihood and a sport represents one of the most important uses of this resource. The commercial industry employs over 345,000 people, many of which come from generations of fishermen and women. Commercial fishers increased in number almost 15% from 1985 to 1988. This workforce has a significant stake in the future of fisheries resources. As marine resources decline, a significant portion of the population may find its historical livelihood at risk.

Recreational marine fisheries are also affected. For example, 70% of recreationally important fishery resources in the Southeast utilize estuaries and nearshore marine habitats at some point in their lifecycle. Loss of habitat reduces stocks and has negative effects on the opportunities available to recreational fishers.

B. Causes

OVERFISHING

Fishing effort remains greater than many commercial and recreational species can withstand. While total U.S. fish landings continue to grow, a substantial portion of the stocks are over-utilized, due in part to overcapitalization and technological improvements. By weight, estuarine-dependent fish make up 77% of the Nation's commercial harvest, and these species are the most vulnerable to habitat and water quality impacts. Many species, such as salmon, striped bass, and mackerel, have declined in abundance. Shellfish also show a steady decline in abundance as well, though they vary by region and species. Protection of fishery habitats is critical to ensure propagation for future stocks.

PHYSICAL HABITAT LOSS

Decades of widespread habitat destruction is evident throughout the country. Habitats critical to the life cycles of fishery resources are being lost due to both human and natural factors. Estimates indicate that coastal wetlands are being lost at the rate of 20,000 acres per year. About half of the original 11.7 million acres of coastal wetlands in the lower 48 states were lost during the period of 1780 to 1978. From 1953 to 1977, over 372,000 acres of estuarine wetlands disappeared. Of these, 55% were lost to coastal erosion and 45% to urban development. Regionally, certain areas have exceptional problems. Texas has estimated that over one–third of its approximately one million acres of coastal marshes may have been lost between the mid–1950's and the mid–1970's. In areas like Louisiana's marshes, land loss rates approaching 60 square miles per year have been observed, due primarily to a gradual rise in sea level, extensive canal dredging, and upland flood control levees on the Mississippi River which prevent the normal flow of sediments to the coastal marshes. Other aquatic systems show similar trends in wetland losses.

HABITAT QUALITY LOSS

Discharges from wastewater plants and industries or oil and other hazardous chemical spills contribute to the degradation of critical habitat. Many bays and coastal waters have been contaminated with heavy metals, petroleum compounds, and other chemical wastes. Upland

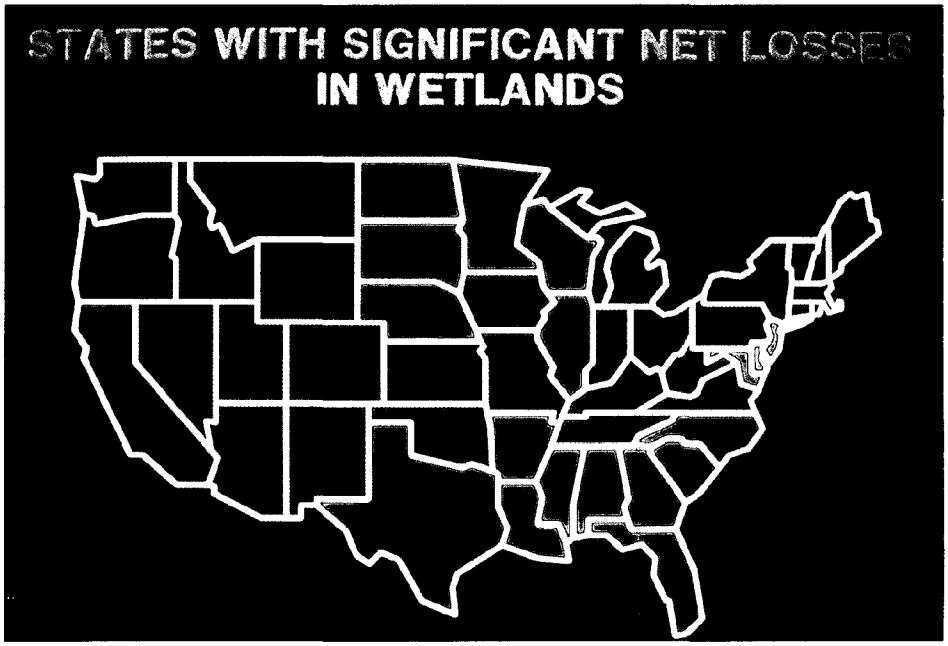

Figure 1. States with Significant Net Losses in Wetlands.

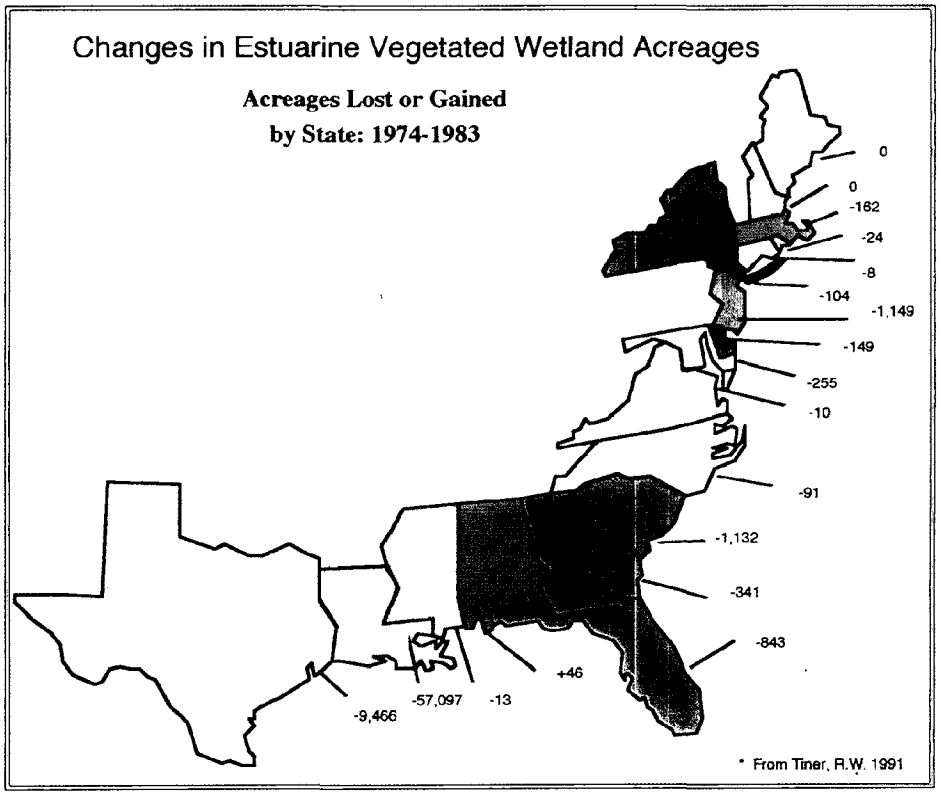

Figure 2. Changes in Estuarine Vegetated Wetland Acreages by State.

activities such as logging, mining, agricultural conversion and runoff, and hydroelectric power development have also seriously affected the quality and quantity of habitat for living marine resources.

The presence of pollutants and the effects of pollution in U.S. waters are of great national concern. There has been strong public response to widely publicized incidents of medical waste along beaches, dolphin deaths, and beach closings in the past 5 years. Only 56% of U.S.-assessed estuarine waters fully support their designated uses such as swimming and fishing; the Great Lakes waters fare far worse. Specific water bodies suffer from specialized problems such as fish kills and shellfish bed closings tied to particular pollution sources (agriculture, toxic chemicals, thermal plumes, etc.).

Coastal and estuarine habitats are important to maintaining healthy fish stocks. Tidal marshes, from salt to freshwater, provide valuable nursery and foraging habitats for a variety of marine life. The plants found in tidal marshes provide nutrients to the surrounding ecosystem. Recent studies have shown a direct connection between the amount of marsh vegetation and shrimp abundance in the Gulf of Mexico. Other studies show greater use of marsh areas by subadult shrimp and fish than the open water environment. Without such areas, commercially important species such as shrimp, oysters, fish, and crab would not be available. This also holds for recreationally important fish including red drum, red snapper, grouper, seatrout, mackerel, salmon, and others.

Figure 3. Pollution from sewage outfall pipe.

III. Solutions - Habitat Protection

A. Habitat's Importance To Living Marine Resources

Estuaries and wetlands are important to many species of finfish and shellfish because these habitats provide areas for spawning, nurseries, protection from predators, and food supplies. These areas are where the complex food web begins (see Figure 5). More than two-thirds of the commercially-important fish species on the Atlantic and Gulf of Mexico coasts depend on wetlands as critical habitat at some time during their life. In addition, these habitats serve as efficient filters for contaminants from upland discharges and urban runoff. Wetlands help to maintain water quality and in many estuaries, retard erosion, retain flood waters, and afford many recreational opportunities. Such areas are especially important because they are so productive and so close to shore. About one-half of all U.S.- caught fish are caught in coastal waters within 3 miles of shore.

Rivers are also important for salmon and other anadromous fish that migrate from the ocean to spawn in the rivers where they were hatched. Thus, habitats used for migration require protection from disruption by construction, damming, or logging activities which may restrict this crucial transit to spawning areas. In addition, riverborne discharges from numerous upland sources have adversely affected the quality of many remaining coastal and estuarine habitats.

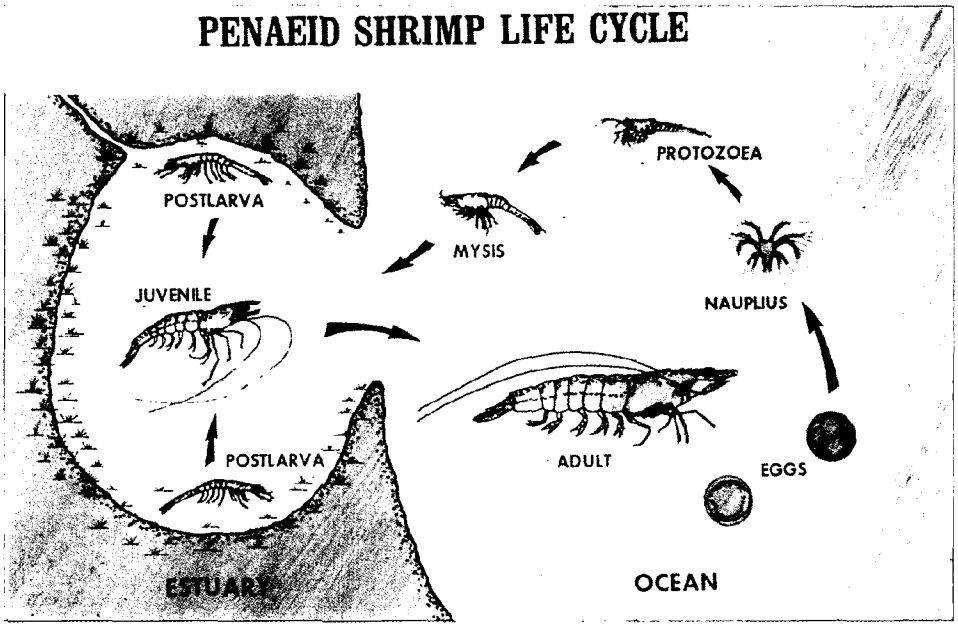

Figure 4. Diagram of the life cycle of the Penaeid shrimp.

SOLUTIONS - HABITAT PROTECTION

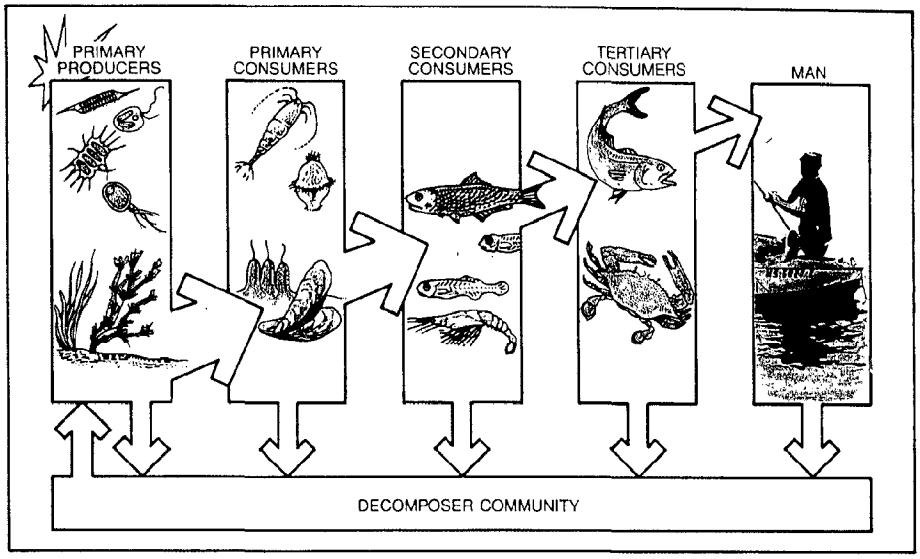

Figure 5. Animals and plants of the ocean are connected by the network called a food web. Animals from shrimp to humans depend on the energy passed from the sun through this food web.

NMFS RESPONSIBILITIES

GENERAL

Despite the destruction of coastal wetlands, and considerable advances in our understanding of their enormous importance, they still remain at risk. NMFS is responsible for protecting living marine resources and their habitats from the inland reach of anadromous fish to the outer limits of the U.S. Exclusive Economic Zone.

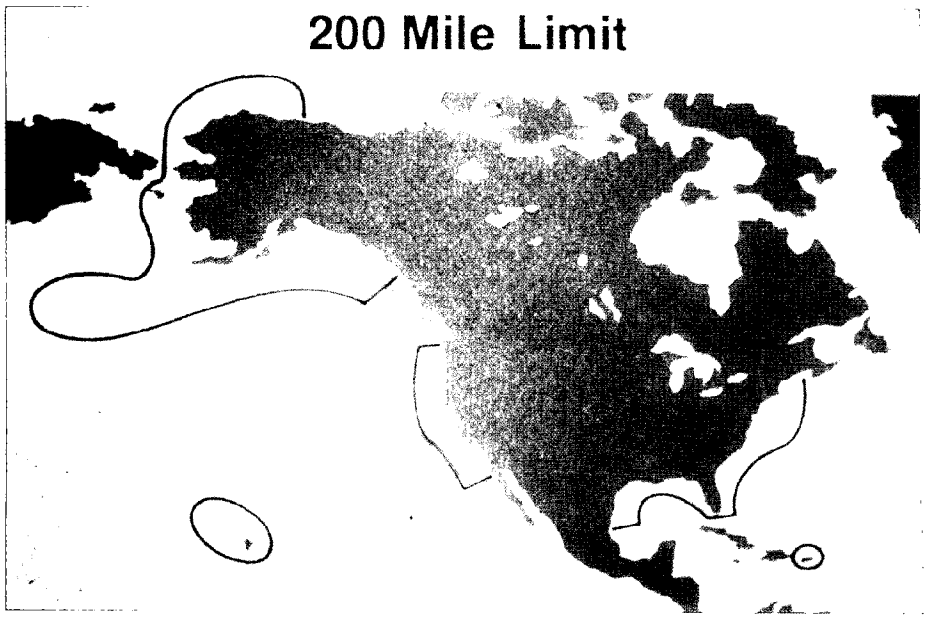

Figure 6. Diagram of Exclusive Economic Zone (EEZ) which extends 200 nautical miles from shore.

SOLUTIONS - HABITAT PROTECTION

LEGAL AUTHORITIES

NMFS carries out its charge under many laws and mandates from Congress. These statutes and implementing regulations require that licenses, permits, and construction projects regulated or undertaken by other Federal agencies in waters of the United States must include consultation with Federal resource agencies (e.g. NMFS). Most of NMFS' responsibilities emanate from the following statutes:

- Clean Water Act, which has the goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters (lakes, wetlands, streams, and other aquatic habitats);
- Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), which gives NOAA authority, as a natural resources trustee, to assess injury, destruction, or loss of natural resources in the marine environment caused by releases of hazardous substances;
- Endangered Species Act, which protects species determined to be threatened or endangered;
- Federal Power Act provides, among other things, NMFS authority to prescribe fishways;
- Fish and Wildlife Coordination Act, which authorizes NMFS to collect fisheries data and to advise other governmental agencies on environmental decisions that affect living marine resources;
- Magnuson Fishery Conservation and Management Act of 1976, which regulates fisheries within the (EEZ);
- Marine Mammal Protection Act, which regulates taking or importing marine mammals;
- Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA), under Title II, gives NOAA broad research authority on the effects of pollution on the marine environment, including coastal and marine habitats.
- National Environmental Policy Act, which requires disclosure of environmental consequences associated with Federal or Federally- authorized rules or projects with the potential to significantly affect the quality of the human environment and the alternatives to these actions;
- Oil Pollution Act of 1990, which combines various oil spill response mechanisms, and addresses all oil discharges to navigable waters and shorelines. It raises liability limits for vessels, expands cleanup and economic damage collections, provides for emergency response planning, and creates a $1 billion Oil Spill Liability Trust Fund;
- Rivers and Harbors Act of 1899, which controls the placement of structures in navigable waterways so that commerce and marine, anadromous, and estuarine resources are not adversely impacted;

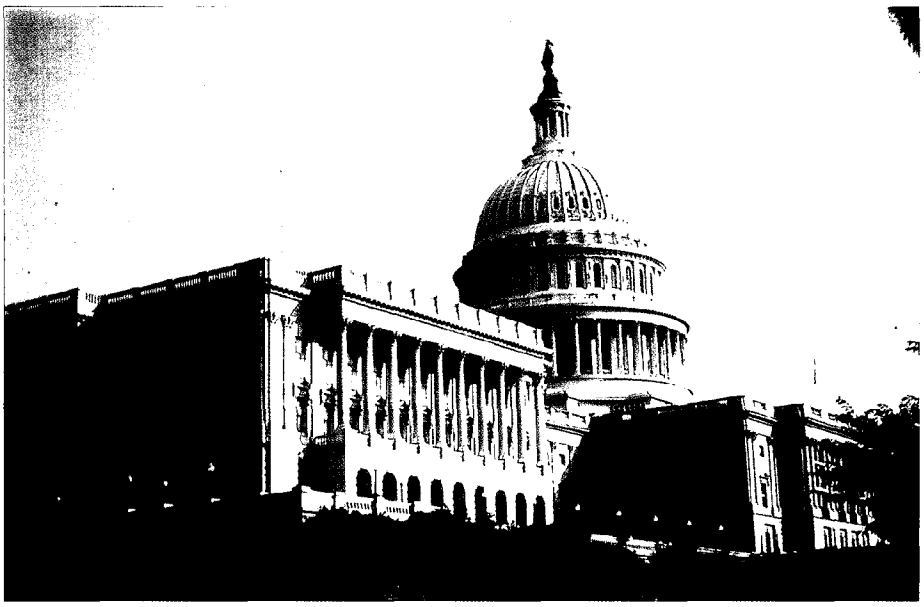

Figure 7. The Capitol, where congressional committees develop habitat legislation.

B. NMFS Habitat Protection Program

NOAA's National Marine Fisheries Service (NMFS) Habitat Protection Program activities are carried out nationwide as part of the overall NMFS fisheries research and management program. Facilities involved in these activities include NMFS regional office Science Centers and Laboratories (responsible for fisheries research), Regional Headquarters (which manage the Regional field activities), and field stations (responsible for on-site inspections and analysis of proposed actions). The NMFS Office of Habitat Protection central office in Silver Spring, MD provides policy guidance for the NMFS Regional and Center programs. Habitat programs are organized and administered in each area to respond effectively to unique regional issues.

All regional habitat conservation programs are a reflection of three important considerations: the pressures on the living marine resource habitats in the region, the size of the area managed, and the commercial and recreational importance of the species. The NMFS Habitat Protection Program is directed by several Federal laws and its National Habitat Conservation Policy, which was published in 1983. Implementation of this policy is facilitated by 12 strategies targeting: coordinating research and management; habitat research; interacting with the eight Regional Fishery Management Councils and specific Fishery Management Plans; strengthening NMFS involvement under the Fish and Wildlife Coordination Act; assisting states with marine habitat issues; initiating and strengthening interagency agreements; protecting anadromous fish; increasing preapplication planning; integrating habitat consideration across NMFS programs; increasing intra-NOAA cooperation; providing necessary and appropriate regulatory relief; and communicating of habitat information to NMFS constituents.

SOLUTIONS - HABITAT PROTECTION

OFFICE OF HABITAT PROTECTION PROGRAM

As a result of an intensive study of the Habitat Protection Program between 1990 and 1991, several recommendations were submitted to the Assistant Administrator. The overwhelming theme of these recommendations was the need for reorganization within NMFS, and the effective placement of the habitat protection function within that structure. Consequently, in October 1992, the Office of Habitat Protection (OHP) was formally created as a separate office on a par with the other NMFS Offices.

The Headquarters Office in Silver Spring, Maryland, a suburb of Washington, D.C., is responsible for policy development and technical guidance. Staff at Headquarters provide day-to-day guidance to NMFS regions and fishery science centers on implementing the NMFS Habitat Conservation Policy including any necessary revisions, updating, and interpretation. The Office's primary objective is to favorably influence the decisions of other Federal agencies to protect and manage habitats of importance to NMFS' trust resources. Office staff provide key support to the Assistant Administrator, the Director of the Office of Habitat Protection, and NOAA and DOC on living marine resource habitat and environmental matters; draft new policy, agreements, and Federal legislation; and evaluate the same. The Office provides Headquarters leadership for the President's Council on Environmental Quality (CEQ) referrals, Clean Water Act (CWA) Section 404(q) Memorandum of Agreement elevations, and national office interaction with other Federal Departments and Agencies where living marine resource habitat policy issues are involved.

The Office is a source of funding for NMFS habitat conservation research activities. Of special interest is research and information sharing activities undertaken by NOAA's National Ocean Service's (NOS); Office of Ocean and Coastal Resource Management (OCRM); Office for Atmospheric Research (OAR); Coastal Ocean Program (COP); Sanctuaries and Reserves Division for research funding of marine sanctuary and estuarine research efforts; Office of Ocean Resources Conservation and Assessment (ORCA); Coastal Monitoring and Bioeffects Assessment Division; and Strategic Environmental Assessment Division (SEAD) for mapping, benthic surveillance, and other synoptic and diagnostic efforts that characterize marine, estuarine, and anadromous fish habitats.

National habitat outreach and educational activities including development and dissemination of the Habitat Conservation Biennial Report, and other products required by law (e.g., the National Plastics Pollution Report) are developed within the Program. The Office also has the lead for all briefings on matters regarding NMFS habitat research, and works closely with the NMFS Senior Scientist and the National Academy of Sciences.

IV. PROGRAM ACCOMPLISHMENTS

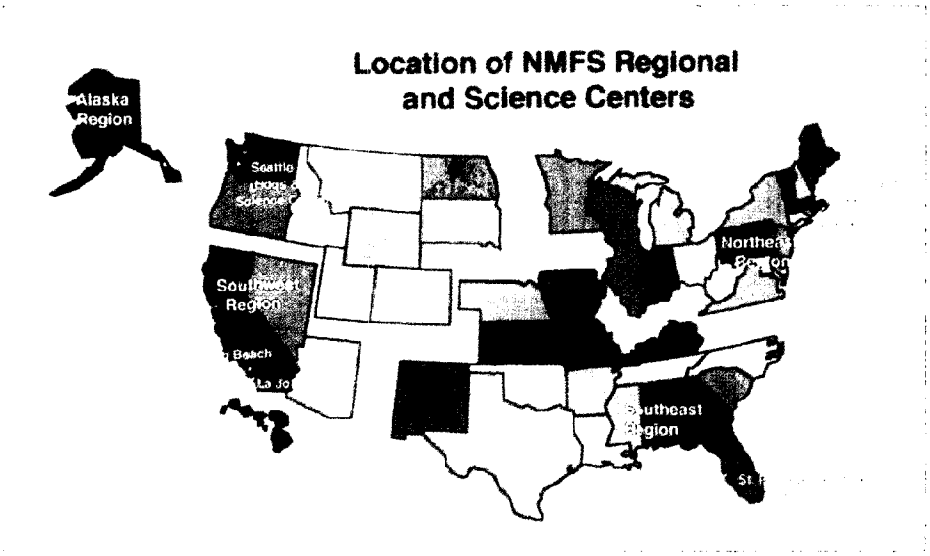

Figure 8. Location of NMFS Regional Offices and Science Centers.

Management and research activities are the responsibility of five Regional Offices. Regional programs reflect three important considerations: the pressures on living marine resource habitats; the size of the area managed; and the recreational, commercial, and ecological values of the species involved. The habitat programs in each region respond to unique regional issues and geographic constraints. Each Region also has a Fisheries Science Center, some with satellite laboratories, that carry out research programs on important fishery resource issues. All 5 regions have programs dealing with the habitats of various marine mammals and, in some cases, endangered marine species such as whales, seals, sea lions, and turtles.

A. Headquarters Accomplishments

ELEVATION TO WASHINGTON, D.C.: POINT AU FER PERMIT

During March 1993, the NMFS Southeast Regional Director elevated the Corps' Point au Fer, Louisiana, permit application to Washington, D.C. This permit application involved proposed construction of a 3,160-acre impoundment on Point au Fer Island, a brackish marsh complex about 28 miles southeast of Morgan City, Louisiana near the Gulf of Mexico. The project purpose was to undertake "marsh management" to benefit waterfowl and retard marsh loss. NMFS recommended against issuance of this permit because it would have adverse impacts on living marine resources, including those under Magnuson Act Fishery Management Plans. When the Corps' New Orleans District elected to issue the permit over NMFS opposition, the issue was elevated. The Deputy Under Secretary for Oceans and Atmosphere subsequently raised the NMFS concerns to the Assistant Secretary of the Army for Civil Works. In the face of the NMFS objections and before a final decision, the applicant chose to withdraw the application.

Figure 9. An aerial view of a marsh management project to benefit waterfowl.

ELEVATION TO WASHINGTON, D.C.: PETROSTAR, INC. PERMIT

Also in early 1993, the Corps' Alaska District announced its intention to authorize modification of its permit to allow for construction of a new oil pipeline at the Valdez Container Terminal in Valdez, Alaska. The pipeline would be used to deliver refined petroleum products (e.g., diesel and jet fuels) originating at a new refinery built nearby by Petrostar, Inc. to barges. Because of potential adverse effects of this permit, NMFS, the U.S. Fish and Wildlife Service, and the EPA issued opinions opposing this permit. On June 14, 1993, the NOAA Assistant Secretary for Oceans and Atmosphere objected in writing to the Assistant Secretary of the Army For Civil Works. In a response of July 14, 1993, the Army Secretary agreed that modification of the permit would result in substantial and unacceptable impacts on aquatic resources of national importance. Based on this finding, it was concluded that additional evaluation is required. The Alaska District Engineer was instructed to undertake additional studies, including the practicability of alternatives to the proposed site.

WETLAND DELINEATION MANUAL

In late 1991, NMFS, through the Department of Commerce, became the only Federal resource agency to oppose proposed revisions to the 1989 "Federal Manual for Identifying and Delineating Jurisdictional Wetlands."

NMFS was concerned that the proposed revisions could affect its ability to carry out responsibilities and programs under Federal law (e.g., Magnuson Fishery Conservation and Management Act, the Coastal Zone Management Act, the Endangered Species Act, and the Fish and Wildlife Coordination Act). An analysis of the changes was conducted.

Based on its analysis, NMFS concluded that 2 of 3 wetland identification tests in the proposed manual had sound scientific basis (e.g., use of indicator soils and vegetation) and generally appeared to be workable in the field but only by persons with specialized training. The third test, a proposed mandatory hydrology criterion, appeared to have little or no scientific basis. Therefore, NMFS concluded that these tests were not appropriate for inclusion in the final manual. Additionally, NOAA submitted a formal recommendation that EPA support an independent and scientifically rigorous analysis of the proposed revisions. That suggestion was taken and the National Academy of Science is presently conducting such an analysis.

PROGRAM ACCOMPLISHMENTS

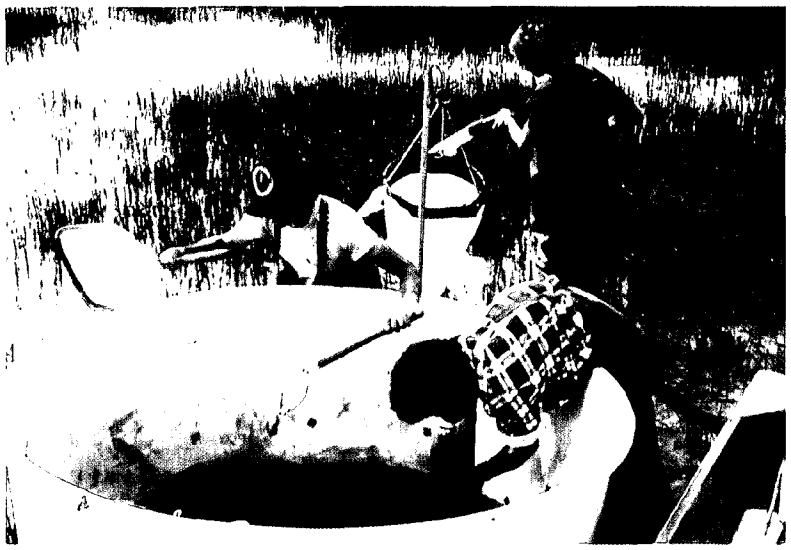

Figure 10. Field research project in progress to assess wetland identification and importance.

WHITE HOUSE WETLANDS TASK FORCE

On August 24, 1993, the Administration issued a comprehensive strategy entitled "Protecting America's Wetlands: A Fair, Flexible, and Effective Approach" for improvement of Federal wetlands programs. During the preceding three months, the Office provided the NOAA lead in preparation of this strategy. Its provisions are important to NMFS' habitat protection efforts. The initiative makes more than 40 changes to current wetlands policy including a more effective process so that developers can seek review of permit decisions without having to go to court. The plan closes a loophole in regulations that allowed certain destructive activities, such as draining wetlands, to go unregulated. The policy of "No Net Loss of Wetlands" will impose deadlines and provide guidance so that permitting decisions will be made in a timely and more predictable fashion.

DOA/NOAA COOPERATIVE PROGRAM

In November 1990, John A. Knauss, Under Secretary for Oceans and Atmosphere, U.S. Department of Commerce, and Dr. G. Edward Dickey, Acting Assistant Secretary of the Army (Civil Works), announced an agreement to initiate a NOAA - U.S. Army Corps of Engineers (Corps) fisheries habitat restoration and creation program. NOAA and the Corps implemented the Agreement during fiscal year 1991. A budget of $456K was provided for the first year of this national effort. The agencies combined their authorities, resources, and expertise to mutually accomplish respective missions. This joint program supports the Administration's goal to protect wetlands.

The initiative is based on recommendations found in a 1990 study entitled NOAA-Corps Pilot Study to Restore and Create Fisheries Habitats. The study involved 12 NMFS Offices, 15 Corps Divisions and Districts, the Corps Waterways Experiment Station, 44 states and other interested parties.

The study involved construction and monitoring of an artificial reef in California, an oyster bar in Chesapeake Bay, an eelgrass nursery area in Maryland waters, grading and revegetating three disposal areas to create nursery habitat in North Carolina, salt marsh creation on dredged

material deposit sites along with channel construction to establish fish production areas in Texas, and conversion of low elevation farmland to wetland fish-rearing habitat in the Sacramento River Delta, California.

Study results demonstrate the feasibility of integrating fisheries habitat restoration features into Corps projects, sometimes at no net increase in Corps project costs. Combining the construction capability of the Army Corps of Engineers and the expertise of NOAA's National Marine Fisheries Service produced a successful interagency program with the significant potential to increase habitat for the Nation's fish and shellfish and to improve scientific knowledge of habitat restoration technology.

AMENDMENTS TO THE MAGNUSON ACT

The Office developed a habitat provision for inclusion in NOAA's proposed amendments for Reauthorization of the Magnuson Fisheries Conservation and Management Act. If enacted, the resulting habitat amendment would create an enhanced role for the Fishery Management Councils in protection of fish habitats. Under the amendment, the Councils would be responsible for identifying and designating "essential" fish habitats within U.S. marine and estuarine coastal areas. The resulting designated areas would provide guidance for the Corps, Federal Energy Regulatory Commission (FERC), and other Federal agencies in development decisions which may affect fish and shellfish habitats. The proposed amendment is included in NOAA's 1995 legislative package.

FEDERAL HIGHWAY ADMINISTRATION INTERACTIONS

During 1991-1992, staff participated in developing a syllabus for an interagency (Federal Highway Administration (FHWA), NMFS, FWS, COE, and EPA) course in alternative dispute resolution. The syllabus is now being used in the Department of Transportation – sponsored course, Practical Conflict Management—Skills to Resolve Highway and Wetlands Issues being given nationwide to state and Federal employees involved in environmental and resource protection.

WATER QUALITY 2000 (WQ2000)

Staff participated in numerous WQ2000 Steering Committee meetings preparing the WQ2000 Final Report. The report, A National Water Agenda for the 21st Century, provides a sound conceptual framework from which to consider improvements to the CWA and other environmental laws. The contents of the report are being used by many lobbyists and consultants to advise Congress on changes to the CWA. To further implement the use of the WQ2000 Final Report, the Environmental Energy Institute has been holding Hill briefings on its recommendations. In addition, the chairman of the WQ2000 Steering Committee used the report for testimony before the Water Resources and Environment Subcommittee of the House Public Works Committee hearings related to reauthorization of the CWA.

PROGRAM ACCOMPLISHMENTS

INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT (ISTEA)

ISTEA has $2.6 billion for enhancing/restoring environmental integrity associated with highway construction/repair over the next 5 years. NMFS staff participates as a member of an interagency team (FWHA, NMFS, FWS, COE, and EPA) whose mission is to guide regional managers during preplanning stages on how to successfully access these moneys by merging the National Environmental Policy Act (NEPA) and Section 404 permit processes. This proactive approach avoids lengthy delays and litigation due to faulty project design.

COASTAL AMERICA

Coastal America, is a project-oriented, problem-solving partnership of Federal, State, and regional authority participants. Through its regionalized planning structure, Coastal America enables multiagency response to specific environmental problems that threaten coastal waters. This regionalized structure has enabled Coastal America to accomplish projects across the country that no single agency or program could have effectively done alone.

During 1991-1992, regional habitat protection staff represented NOAA and NMFS at meetings of the Coastal America Program's National Implementation Team. One of this team's important functions is to provide guidance to Regional Implementation Teams on how to identify and access agencies with funds earmarked for environmental efforts.

In addition, Habitat Protection's staff has participated in revising Coastal America's progress report, "Building Alliances to Restore Coastal Environments" and the reporters guide " Covering the Coasts." Both documents are now being distributed nationally as educational outreach tools.

NATIONAL OCEAN POLLUTION PROGRAM

The Office coordinated the gathering and updating of information on NMFS pollution research during Fiscal Years 1990 and 1991 and then compiled and prepared it for input to NOAA's National Ocean Pollution Program Office (NOPPO) for its use in developing the FY 1990-1991 update of the "National Ocean Pollution Program Summary of Federal Programs and Projects," required by the National Ocean Pollution Planning Act of 1978 (P.L. 95-273, as amended).

Funding for pollution-related research by all Fisheries Science Centers nationwide was $9,443,012 in FY1990 and $9,257,300 in FY1991. A total of 41 projects were pursued by the Northeast, Southeast, Northwest, and Alaska Fishery Science Centers.

Diversity among Regional research projects was high. Studies included broad multi-year, multi-disciplinary projects, generic studies, and site-specific activities. Examples are the following: biological impact studies of chemical contaminants and sewage sludge dumping on fisheries populations; impacts of waste disposal and habitat modification on coastal fish populations; characterization of the distribution and extent of coastal wetlands and life history patterns of fishery organisms; larval recruitment; effects of contaminated estuaries on juvenile salmon; damage assessment of the impacts on Prince William Sound habitat resulting from the *EXXON VALDEZ* oil spill, and marine debris impacts on resources.

PROGRAM ACCOMPLISHMENTS

HABITAT CONSERVATION BROCHURE

In response to Strategy 12 of the NMFS Habitat Conservation Policy that directs the NMFS to emphasize greater communication of its habitat conservation activities to its constituency (i.e., commercial and marine recreational fishing interests, academia, environmental groups, coastal residents, marine-oriented industries, the general public, and Congress), the Office, through a contract to the Center for Marine Conservation, developed and produced a Habitat Conservation Brochure. The brochure is used extensively to inform the general public and special interest groups about the NMFS habitat conservation program.

CORPS OF ENGINEERS NATIONWIDE PERMITS

Every 5 years the Corps of Engineers reviews its Nationwide Permits (NWP). These permits are for minor wetland activities which supposedly would have no individual or cumulative impact on the environment. The announcement contains detailed descriptions of the permits and invites public comment and hearings before final issuance of the permits.

The 1991 review listed 40 permits. Preliminary review by Habitat Protection HQ staff identified numerous permits that would do harm to habitat and could result in negative impacts on fisheries. Thanks to excellent cooperation from the Regions and NOAA General Counsel, NMFS prepared and submitted extensive comments on the Corps of Engineers proposed list. In some instances, Habitat Protection Staff attended public hearings on the projects. These combined efforts contributed to 4 of the permits being dropped from the list and some reduction of habitat damage from the 36 NWPs adopted.

HABITAT VIDEO TAPE TEACHING UNIT DEVELOPED

OHP staff in cooperation with George Washington University's (GWU) International Institute of Tourism Studies produced a college-level teaching unit entitled "Agenda For Sustainable Island Tourism Development." The unit consists of a 28-minute video cassette based on NMFS Southeast Region's guidelines for proposed wetland alteration, an educational supplement in booklet form, and a copy of National Marine Fisheries Service Guidelines For Proposed Wetland Alteration in the Southeastern United States.

The video applies habitat protection principles to the development of island ecotourism destinations. It is designed for training programs with government officials, economic consultants, resource management consultants and college students. The educational supplement and the guidelines are for the use of the instructor and/or the student. The materials are being promoted and distributed to foreign governments, academic institutions, private tourism development organizations and environmental preservation groups through GWU's International Institute of Tourism Studies.

This cooperative effort was funded by GWU. The materials have been well-received and are being widely distributed. Additional OHP guideline materials are being collected, reviewed, and evaluated for similar treatment.

NATIONAL ESTUARY PROGRAM ACTIVITIES

NMFS regional Habitat staff have played an active role in many of the National Estuary Programs, serving on committees and working groups to enhance attention to relevant habitat and resource issues. These groups address potential problems which may impact resources and increase awareness toward the critical habitat and resources involved in the project. Committees also coordinate involvement for participating organizations which have a role in the program.

The Southeast Region continues to be active in the National Estuary Program. Seven programs are located in the region, and staff are actively involved, participating on most management and technical committees, including the upcoming Corpus Christi program. The Southwest region is also active in regional programs. Regional staff participate on management and technical committees, as well as research and monitoring studies for the San Francisco Bay Project. In the Santa Monica Bay Program, a NMFS Habitat staff member served as co-chairperson of the Marine Habitat Subcommittee (see Southwest Regional Accomplishments). Although the National Estuary Program currently resides within NOAA's Coastal Ocean Program, increased involvement and leadership from the NMFS Habitat Protection Headquarters level is anticipated in the future.

CHESAPEAKE BAY OFFICE CREATED

In response to Congressional intent that NOAA become more involved in the interstate, interagency Chesapeake Bay Program, NMFS has established an office adjacent to EPA's Chesapeake Bay Program Office in Annapolis, Maryland to facilitate coordination with and input to the Bay cleanup effort. The Division coordinates NOAA participation in Bay Program expert subcommittees, represents NOAA, administers certain research grants, and maintains cognizance of all NOAA activities with relevance to the Bay.

CLEAN WATER ACT REAUTHORIZATION

Staff of the Office of Habitat Protection have served as the lead for NOAA participation in the interagency Clean Water Act (CWA) reauthorization process chaired by the EPA and have participated in the interagency work group chaired by the White House Office on Environmental Policy to develop a consensus on wetlands policy issues. The Administration position on CWA was released in January 1994 as "President Clinton's Clean Water Initiative," which articulates the five key policy issues: nonpoint source pollution, watershed management, toxics/water quality criteria and standards, funding, and enforcement.

B. Northeast Region

The Northeast Region with its Office in Gloucester, Massachusetts has critical estuarine and riverine habitats to protect and faces significant development pressures. The Region also manages long-established, economically-important offshore and coastal fisheries. The Northeast Fisheries Science Center (NEFSC) in Woods Hole, Massachusetts conducts research related to North- and Mid-Atlantic offshore, coastal, and estuarine species and their habitats. Its laboratories study the effects of ocean dumping, industrial and domestic contaminants, and urban and industrial expansion on fish, marine mammals, endangered species and all associated habitats.

PROGRAM ACCOMPLISHMENTS

REGION WIDE

Increased Involvement in Hydroelectric Projects

In the past, due to limited staff and budget in the Northeast Region, NMFS has deferred review of Federal Energy Regulatory Commission applications to the U.S. Fish and Wildlife Service. Because of the large number of projects being relicensed in the region, the depleted status of migratory fish stocks, and the tremendous potential of these long term licenses to have significant adverse effects on resources for which NMFS is responsible, the Regional Office is increasing its participation in the review of these applications.

The Habitat and Protected Resources Division requested technical assistance from the Northwest Region's Environmental and Technical Services Division. A hydraulic engineer from the Northwest visited the region for two weeks in 1993 to evaluate projects and to train fisheries engineers. This was the first component of a regional effort to develop in-house expertise to support NMFS evaluations and recommendations for fish passage, and to maintain high quality habitat for anadromous fish.

Mapping River Basins

In an effort to view habitat concerns from a broader perspective, NMFS is generating data bases for individual river basins throughout the northeast. By keeping track of cumulative impacts to a particular river system rather than addressing each potential impact individually, NMFS will better able to assess the health of the system and the stresses affecting it. Spawning and nursery habitat areas for anadromous fish, the location of dams with and without fish passage, and sites of point source pollution are just a few of the types of data being collected and compiled. The goal is to eventually incorporate this information into a geographic information system so that it may be readily accessed, modified, and displayed.

Efforts to Protect Anadromous Fish

NMFS continues to work effectively through the Section 10/404 program to implement its mission relative to anadromous fish conservation, enhancement, and restoration. The Region was successful in having a stream barrier removed from Burch Branch in Prince Georges County, MD, to partially compensate for filling 3,000 linear feet of headwater stream. The removal will restore spawning river herring runs to approximately one-half mile of pristine upper perennial stream.

The regional staff was also successful in having its recommendations incorporated into the permit issued for Greensprings Plantation, a housing project near Williamsburg, VA. The plans included withdrawing and storing water from Powhatan Creek for irrigating two golf courses. The permit was conditioned to prohibit removal of any water from Powhatan Creek between February 15 and June 1 when anadromous fish are migrating and spawning.

NMFS worked with the permit applicant for a sand and gravel mining operation on the Biles Island in the Delaware River, PA, to modify plans for a compensatory habitat enhancement proposal. The original plan would have resulted in hypoxic or even anoxic conditions that could adversely affect anadromous fish, including American shad and shortnose sturgeon. Because of NMFS efforts, the plan was modified to eliminate the undesirable conditions.

PROGRAM ACCOMPLISHMENTS

Water Supply Projects

Water supply proposals still constitute a major area of activity for NMFS' Oxford, Maryland office. Major effort has been expended on the Churchmans Marsh proposal located in New Castle County, DE. This project would convert more than 90 acres of tidal freshwater marsh into a water supply reservoir. Our evaluation of the applicant's preliminary alternatives analysis suggested that it was biased toward the applicant's preferred alternative. NMFS, in collaboration with the COE and EPA, was successful in having the consultants prepare a detailed, objective analysis of potential alternatives.

Other significant water supply proposals include Spotsylvania and Henrico Counties, VA, projects. One of the Spotsylvania alternatives includes a dam on the Rappahannock River at Fredericksburg that will require fish passage facilities. The Henrico proposal is to withdraw water from the James River, which has resulted in implementation of an Instream Flow Study to determine how much water can be allocated without adversely affecting aquatic resources.

NMFS has recommended that a similar flow study be performed for the Lehigh River, PA, where proposed withdrawals for water supply threaten efforts to restore anadromous fish to the watershed. Both the Pennsylvania State and USFWS have supported regional staff recommendations to the Corps.

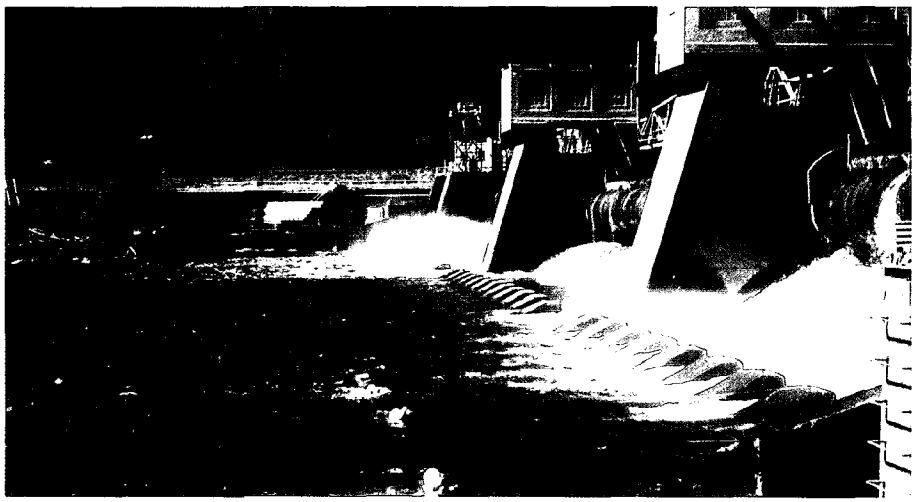

Figure 11. Dam releasing impounded water used for irrigation and other water supply projects.

Mid-Atlantic Fisheries Management Council (MAFMC)

NMFS continued to work with Council staff to educate the COE on the Council's purpose and function, the interactions between MAFMC and NMFS, and the Corps' responsibilities under the Magnuson Act. The COE has begun to recognize the expertise and opinion of MAFMC.

MAFMC's interest in developing detailed habitat maps continues. The Council has recently funded MD Department of Natural Resources (DNR) to do a demonstration project to map critical habitat. NMFS's Oxford Laboratory staff continues to advise the Council to proceed cautiously with respect to "critical" habitat mapping because when one area is identified as critical, the implication is that other habitat lacks value or importance.

Additionally, the Oxford Laboratory staff continued to brief the Council's Habitat Committee on issues of environmental significance. This interaction has resulted in the introduction of several motions to the full Council in support of NMFS' position on Assateague Point (MD), LaGuardia Airport (NY), and several dredging proposals in Anne Arundel County (MD). Due to NMFS input, MAFMC also approved a motion to oppose ocean disposal of dioxin-laden dredged spoil at the Mud Dump Site in New York Bight.

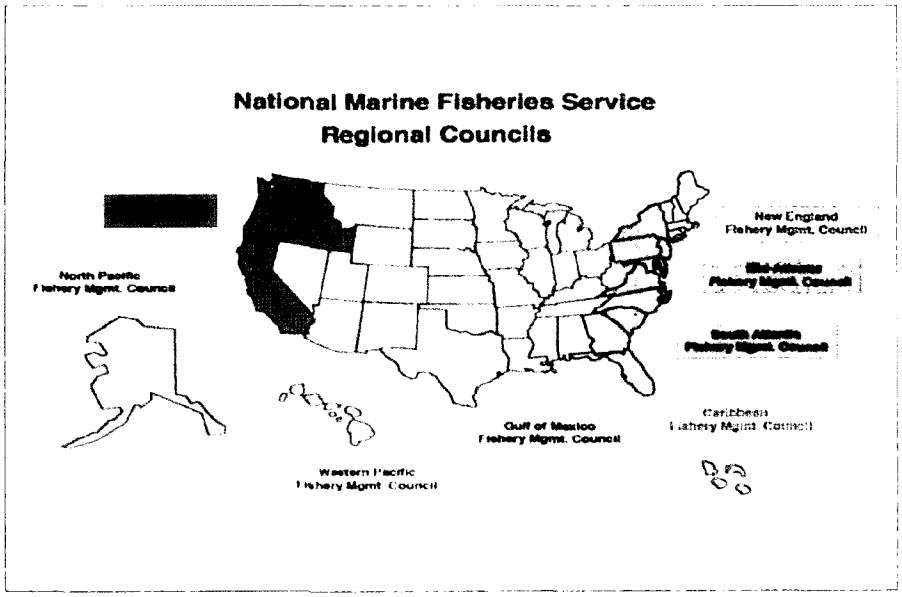

Figure 12. Regional Fishery Management Council Jurisdictions.

DELAWARE

Artificial Reef Planning

Delaware Department of Natural Resources and Environmental Control (DNREC), in coordination with NMFS, is preparing an Artificial Reef Plan for Delaware Bay and Atlantic coastal waters. Of 16 candidate sites, approximately 6 will be selected for development. We have directed them away from scrap tires as a primary "material of opportunity". Large-scale use of tires gives the perception that the artificial reef program substitutes as a solid waste disposal operation.

Delaware Coastal Zone Management (CZM) Program

As a result of modifications in the 309 program mandated by Coastal Zone Management Act reauthorization, Delaware CZM staff will review all state activities to ensure consistency with the approved plan. It is anticipated that these changes should reduce or eliminate conflicts between NMFS and certain Delaware agencies in the future. Additionally, Delaware plans to develop a Special Area Management Plan (SAMP) for northern Delaware and has requested NMFS participation. Improved working relations within DE is a result of NMFS' efforts to work more closely with Delaware and NOAA CZM personnel on National Estuarine Research Reserve and other CZM initiatives.

PROGRAM ACCOMPLISHMENTS

Delaware Watershed Management

NMFS is working with Delaware DNREC on developing a holistic approach to watershed management. The initiative complements plans to develop a SAMP for northern DE. The plan will outline a framework for managing aquatic resources (e.g., surface and ground water, living resources, physical habitat, etc.) from a watershed perspective. The management plan will define goals and objectives, provide criteria for identifying high priority watersheds, and present a flexible process for planning and implementing watershed protection measures. The plan will be comprehensive in its approach by addressing total ecological health, including water chemistry, nearshore coastal waters, and identifying linkages between terrestrial and aquatic systems.

MAINE

Seagrass Survey Documents and Saves Valuable Habitat

A 1992 exploratory seagrass survey recommended by NMFS identified extremely valuable eelgrass beds in an area proposed for industrial development in Penobscot Bay, Maine. An environmental analysis of a proposed new port development project had been conducted previously but failed to consider potential impacts to shallow subtidal habitats. Thus, during scoping efforts for a Supplemental Environmental Impact Statement NMFS recommended that the state Department of Transportation conduct a diver survey of the project area.

NMFS' advice was based on a review of past records of observations made near the project area. The survey, using a study protocol designed by NMFS, documented the presence of extensive eelgrass beds (over 20 acres) which support a variety of finfish and shellfish including menhaden, scallops, and lobsters. The discovery of these resources dramatically affected the project's environmental review, and ultimately lead the COE and Federal Highway Administration to support the analysis of alternative sites for the project.

Figure 13. Staff preparing seagrass for planting.

Net-Pen Aquaculture

From 1990 through 1992, NMFS took a lead role in developing guidelines for net-pen aquaculture facilities in Maine. The guidelines were intended to promote responsible site selection, minimize environmental impacts of net-pen aquaculture and relieve applicants of unnecessary data collection burdens.

NMFS organized an attempt among the appropriate agencies to establish joint state and Federal guidelines for aquaculture projects. This landmark effort combined the permitting requirements under Section 10 of the Rivers and Harbors Act; EPA requirements for NPDES permits under the Clean Water Act; Department of Environmental Protection (DEP) requirements under Maine's water quality classification program and clean water law; and Department of Marine Resources (DMR) requirements under the Maine Aquaculture Leasing Act. In addition, the guidelines accommodated the concerns of NMFS, USFWS, and the Maine Department of Inland Fish and Game. The result was a streamlined regulatory process for the public, and better opportunities for protection of aquatic habitat.

In 1993 NMFS began using divers to determine first-hand the impacts on benthic habitats that result from fish farming. Participation in these dive investigations allows NMFS to work cooperatively with the state to address the concerns of both. The COE and state now rely on NMFS' evaluation of these sites before any decision is made.

MARYLAND

Mitigation Banking Agreement

NMFS staff have been active participants on the Mitigation Task Force. This group, organized by the Baltimore District COE, is composed of state and Federal regulatory and resource agencies and charged with reaching consensus on a variety of topics relative to compensatory mitigation. The Mitigation Task Force has completed a series of issue papers that include replacement ratios, site selection and plan development methodologies, monitoring protocols, and performance standards. The papers provide guidance and result in consistency when reviewing and evaluating compensatory proposals.

The Task Force has also drafted a Mitigation Banking Agreement which provides guidance for constructing and operating one or more mitigation banks by the Maryland Department of Transportation. The agreement is near finalization and concurrence was anticipated in July 1993.

Several other mitigation banks, both with and without benefit of formal agreements, have been proposed in the past year. VA DOT has nearly exhausted the mitigation credits in their existing bank and is seeking one or more replacement sites. Additionally, Prince Georges County, MD Department of Public Works; the City of Virginia Beach, VA; and Wetland Studies and Solutions, Inc., a private company, are seeking approvals for wetland banks.

It has been difficult for the Mitigation Task Force to maintain consistency when reviewing these various proposals. Clearly, there are advantages to mitigation banking with state highway agencies when dealing with large numbers of relatively small impacts along a linear corridor.

However, when private, profit-motivated corporations enter the wetland banking arena, the results may be tantamount to buying and selling permits. The task force continues to proceed cautiously to preserve its ability to negotiate with the Corps and would-be bankers for the benefit of living marine resources.

Oyster Reef Restoration, Neale Sound and Bonum Creek

The Neale Sound and Bonum Creek projects were constructed according to the Memorandum of Agreement (MOA) between the COE and the NMFS on the beneficial use of dredged material for fish habitat restoration. Following the success of the pilot project in Slaughter Creek, MD, other sites were investigated for their potential for restoring oyster reefs in Chesapeake Bay and its tributaries. These two sites in the Potomac River were identified as having characteristics suitable for restoration of oyster habitat. At both places, sandy dredged material was deposited and covered with oyster shell to promote attachment of oyster spat. The result was the successful establishment of productive oyster habitat on approximately 5.3 acres at Neale Sound (1991) and 4.1 acres at Bonum Creek (1992) .

Patapsco River Anadromous Fish Restoration

One of the commitments of the Chesapeake Bay Agreement is to eliminate impediments to the migration of anadromous fish. Pursuant to that commitment, the State of Maryland identified the Patapsco River Basin with its four major and many minor blockages as a priority for restoration.

At the mouth of the Patapsco is Baltimore Harbor where development proposals requiring COE permits are required. The NMFS Northeast Region reviews such proposals and attempts to mitigate adverse impacts to living marine resources. Because of the highly-developed and frequently degraded nature of habitats in Baltimore Harbor, on-site mitigation is often not feasible or is undesirable. As an alternative, NMFS was instrumental in having mitigation requirements directed to habitat restoration efforts in other parts of the Patapsco Basin. As a result, more than $600,000 was channeled to the MD DNR for construction of fish ladders at Simpkins and Daniels Dams. With completion of the Patapsco restoration effort, more than 30 miles of the mainstem of the river will be reclaimed for migratory fish.

Additionally, NMFS was successful in having the Seagrams Dam removed from Deep Run, a tributary to the Patapsco, as part of the mitigation for a highway (I-195) construction project. Removal of this blockage restored 5 to 6 miles of stream to fish migration.

Assateague Point Marina

NMFS, with strong support from the Mid-Atlantic Fishery Management Council (MAFMC), was successful in preventing construction of Assateague Point Marina, a proposed 250-slip marina in Sinepuxent Bay, Maryland. Baltimore District COE has denied the proposal because of potential impacts to juvenile summer flounder. The marina was to be located in an important summer flounder nursery area. Summer flounder stocks are extremely depressed, partially because of habitat degradation, necessitating strict management measures.

MARYLAND/VIRGINIA

Sea Turtle Issues Raised as Relevant to Navigation Projects

Federal navigation projects implemented by the COE are routinely reviewed by the Habitat Program of the Northeast Region. In 1992, it became evident that sea turtle issues were becoming increasingly more frequent with proposals in lower Chesapeake Bay and coastal Virginia. Coordination of these proposals with NMFS has resulted in initiation of a joint Section 7 of the Endangered Species Act (ESA) consultation with Norfolk and Baltimore Districts and the Coast Guard. Joint consultation should afford a more comprehensive evaluation of the issues and greater protection of the resource.

MASSACHUSETTS

Massachusetts Bay Disposal Site Designation

NMFS was heavily involved in the site designation process for the Massachusetts Bay Disposal Site for clean dredged material completed in 1993. The site is located near the interim site, the historic industrial waste disposal site, and the recently designated Stellwagen Bank National Marine Sanctuary. The new site was selected after a thorough analysis of the options, impacts and site management alternatives that could be used to mitigate adverse effects of dredged material disposal.

The U.S. Environmental Protection Agency recognized the biological value of the general area and Stellwagen Bank specifically. To accommodate the multiple services derived from the area, EPA used a public review process supplemented with joint research efforts and a collaboration of resource managers and researchers. That process recognized the site limitations of water depth, protected and directed fishery use, the proximity of the industrial waste site, and many of the needs of the marine transportation industry. The designated site and its management represent a new level of appreciation for the need to make dredged material disposal workable for all concerned interests.

Boston Central Artery / Tunnel Project

NMFS' application of a holistic approach to the protection of wetlands and waterways and mitigation of impacts for the Central Artery/Tunnel Project has greatly benefited the marine environment. Using this approach and working through the Water Resources Subcommittee, which was formed to conduct a comprehensive evaluation of impacts to wetlands and waterways from the project and the proposed mitigation effort, NMFS has been able to protect living marine resources while avoiding unnecessary and costly time delays for the project.

Blasting for the Third Harbor Tunnel had the potential to affect marine mammals and anadromous fish. NMFS and the Massachusetts Division of Marine Fisheries suggested that by instituting measures such as using observers on vessels and acoustic devices to detect the presence of marine species, blasting could be allowed to continue without adverse impacts to these resources. This resulted in considerable time and cost savings for the applicant.

Material dredged during the highway project will be used to cap the 9-acre Spectacle Island, an inactive former landfill that is currently leaching refuse into Boston Harbor. This will close the landfill and prepare it to be eventually turned into a public park.

The closure of this landfill requires filling 11.5 acres of waterways. The Water Resources Subcommittee has designed a mitigation package with components both inside and outside Boston to mitigate for impacts involved with this project. Two sites within Boston, the Belle Isle Fishing Company and Calf Pasture, will be excavated to recreate intertidal and subtidal habitat. In addition, 13 acres of salt marsh will be restored at Rumney Marsh in Revere. Especially noteworthy is an artificial reef in Boston Harbor which was included in response to NMFS' concerns over the permanent loss of fish habitat.

NEW HAMPSHIRE

Portsmouth Port Authority Reduces Loss of Fish Habitat

NMFS' involvement through 1991 and 1992 in the environmental review of a port expansion project on the Piscataqua River in Portsmouth, New Hampshire helped to minimize habitat losses for fish and shellfish and gain substantial compensation for unavoidable impacts.

The project involved an area which has endured cumulative habitat losses associated with coastal development. The habitats at the project site consist of a linked complex of salt marsh, intertidal flats, and eelgrass beds. These habitats provide valuable shelter, foraging, and nursery habitat for river herring, Atlantic silversides, winter flounder, American lobster, softshell clams, and other recreational and commercially important species.

NMFS' persistence, along with efforts by the EPA and USFWS, persuaded the applicant to modify the design of the port expansion, reducing direct losses of eelgrass beds and intertidal flats by over six acres. NMFS was also instrumental in developing a mitigation plan for the project which will compensate for unavoidable habitat losses and advance the knowledge base regarding seagrass restoration technology in New England.

NEW YORK

Passaic River Flood Protection Project

Congress authorized the New York District COE to conduct feasibility studies on a proposed $6 billion tunnel connecting the densely populated, flood prone upper watershed of the Passaic River Basin in northern New Jersey with Newark Bay. The tunnel is expected to be 20 miles long and 40 feet in diameter, and is expected to deliver flood stage waters to Newark Bay in an hour and a half as opposed to the two days it now takes.

As part of the feasibility studies, the COE agreed to sponsor a NMFS/ Northeast Fisheries Science Center (NEFSC) proposal to conduct baseline studies in Newark Bay for approximately $340,000. Sampling includes trawling and gill-netting for fish, grab samples for benthic organisms, ichthyoplankton sampling and hydrography. To date, studies show evidence of a much more abundant fauna than previously expected. Fish sampled include striped bass, white perch, winter flounder, river herrings, and tomcod.

The Regional Office supports the studies which provide insights into environmental impacts of the proposed project as well as vital information on a piece of the estuarine ecosystem not previously studied. The information is already proving its worth in determining future directions of the COE's dredged material management program.

Iroquois Gas Pipeline

The design, environmental review, emplacement and right-of-way restoration for the 24-inch Iroquois Gas Pipeline from Canada to Long Island, New York was facilitated by close and continuous involvement by NMFS. Endangered species, anadromous and nearshore finfish and shellfish resources were at risk. Through use of a coordinated mix of mitigation measures the project was designed to allow rapid and continuous placement over the entire 536 mile length. More than 27 miles of the alignment were subtidal, crossing Long Island Sound from Milford, CT to Northport, NY. This reach included over 2 miles of shellfish beds that were initially trenched for the armored pipe, backfilled to grade and productivity restored by placement of empty oyster shells. Almost one hundred acres of commercially-harvested oyster beds were disrupted and along the remaining alignment, benthic migrations were insured by requiring that at least two thirds of the pipe be buried. More than six years of coordination carried the project from conception to completion.

Coastal Wetland Restoration and Enhancement Activities Under a "Programmatic General Permit" Arrangement

As part of its efforts under the North American Waterfowl Management Plan, USFWS applied to the COE for a Programmatic General Permit to conduct a variety of wetland creation and restoration projects at unspecified locations on Long Island's south shore. The benefits of the General Permit include eliminating the need to apply for individual permits, focusing State and Federal marsh restoration plans into a more coherent effort and improving interagency coordination. Potentially, hundreds of acres of tidal wetlands may be restored or enhanced under this interagency initiative.

Most of the activities proposed for Long Island's south shore will be conducted and funded as a joint venture among the USFWS and the New York State Department of Environmental Conservation Wetlands and Mosquito Control units. Nearly 75 tidal wetlands are currently being contemplated for restoration and enhancement under this program. Together with the State and Federal partners, EPA, the COE, and NMFS negotiated the terms and conditions for the General Permit. Typical activities included in the General Permit are culvert installation, tide gate removal, appropriate intertidal grades and sprigging restoration, and Open Marsh Water Management. Once project plans are prioritized and funding is allocated, the resource agencies will continue to cooperate by attending pre- and post-construction site reviews.

Negotiations With Commercial/Residential Developers Reduce Aquatic Resource Impacts

NMFS staff have been active in pre-application coordination with representatives of the Trump organization and other interested parties regarding the proposed Riverside South development adjacent to the Hudson River on Manhattan's West Side. Upland portions of the project will include re-routing a highway as well as constructing mixed commercial, residential, and recreational space.

A unique aspect of the proposal is the applicant's stated desire to incorporate environmental enhancements such as a tidal salt marsh and freshwater pond into the park design. The marsh portion of this activity would require considerable discharge of fill and other site amendments to bring portions of the coastal zone to a suitable intertidal grade to support cordgrass.

The project would destroy or degrade at least 200 acres of critical overwintering habitat for juvenile striped bass (*Morone saxatilis*) and winter flounder (*Pleuronectes americanus.*) NMFS staff provided early guidance that discouraged the applicant from pursuing the fill aspect of the project further. However, regional staff will continue to cooperate with the applicant as project plans are refined and will encourage incorporation of all appropriate environmental amenities in the final design.

Coordination with the Navy on Stapleton Homeport Repairs

New York Harbor is experiencing accelerated decay of wooden portions of its infrastructure due to a resurgence of local marine borer populations that may be linked to improved water quality. Due to reduced structural integrity, many applicants including the Navy, have applied for authorization for the necessary repairs. The situation is particularly severe at the Navy's Stapleton Homeport on Staten Island where several acres of relieving platform and appurtenant structures are expected to collapse within the next several years.

The Navy's preferred alternative based on cost and logistics would destroy several acres of primarily subtidal rip rap that provides cover and habitat for a variety of marine finfish and invertebrates. In conjunction with the other Federal resource agencies and the New York State Department of Environmental Conservation, NMFS is negotiating with the Navy to build a moderate profile reef nearby as in-kind compensation. The structure would be designed to attract local and transient organisms such as American lobster (*Homarus americanus*), crabs (*Cancer sp.*), black sea bass (*Centropristis striata*) and other species that appear to be using habitat beneath the existing relieving platform. This option would retain similar habitat functions and values and minimize disruption to Navy operations at the Homeport facilities.

Proposed Runway Safety Overrun at LaGuardia Airport

LaGuardia Airport's Runway 13-31, which terminates on the East River and in Flushing Bay, has virtually no safety overrun to accommodate aborted takeoffs and other emergencies. The Federal Aviation Administration (FAA) standard for the existing aircraft using the airport is 1000 feet of standard width runway plus adjacent emergency vehicle access lanes. Due to the presence of a Federal Navigation channel and other factors, the applicants can only extend the runway approximately 500 feet waterward into Flushing Bay. Regardless of whether the structure is solid fill or a platform, project construction will destroy approximately 22 acres of littoral habitat and an additional 3-4 acres of intertidal salt marsh.

NMFS has been negotiating with the applicant, COE, EPA, and USFWS regarding an acceptable compensation plan. There is concern that the preferred alternative, excavating an earthen berm lying to the south of the runway, will induce mud waves and cause erosion of an expansive mudflat that has accreted to the lee of the berm since it was constructed in the 1920's. In addition to accelerating local dredging schedules, NMFS is concerned that contaminants held in the sediments will be resuspended. The Corps of Engineers has agreed to conduct a modelling study to determine the impacts associated with berm removal, a topic which was not included in the Environmental Impact Statement for the project.

NEW YORK/NEW JERSEY

EXXON BAYWAY Habitat Restoration Efforts

On January 1 and 2 of 1990, about 567,000 gallons of No. 2 fuel oil spilled out of EXXON's 6-mile long pipeline from the BAYWAY refinery under the Arthur Kill.

Under provisions of the Federal Water Pollution Control Act (FWPCA), the Federal government and the States of New York and New Jersey filed suit against Exxon. The corporation agreed to an out-of-court settlement under provisions of the 1977 amendments to Section 311 of the FWPCA. The settlement included $15 million dollars to restore the damaged environment.

Part of the settlement called for the establishment of a Trustee Committee to oversee use of settlement funds for restoration. The Trustee Committee includes one representative each from DOI, NOAA (NMFS), NYS, NJ, NYC, and the City of Elizabeth, NJ. The Trustee Committee has established a Technical Advisory Committee, comprised of one representative from each of the Trustee agencies. The Trustee Committee also works with a public advisory committee consisting of representatives of environmental groups.

To date, the Trustee Committee has entertained 15 resolutions to spend the settlement funds and has approved 11. Approved resolutions include land acquisition, salt marsh restoration, avian studies, and the hiring of an administrative assistant. Future work will include more acquisitions and the completion of a comprehensive restoration plan.

Through these two committees, NMFS uses its habitat management expertise to direct restoration efforts and direct funding toward goals that support NOAA habitat protection mandates.

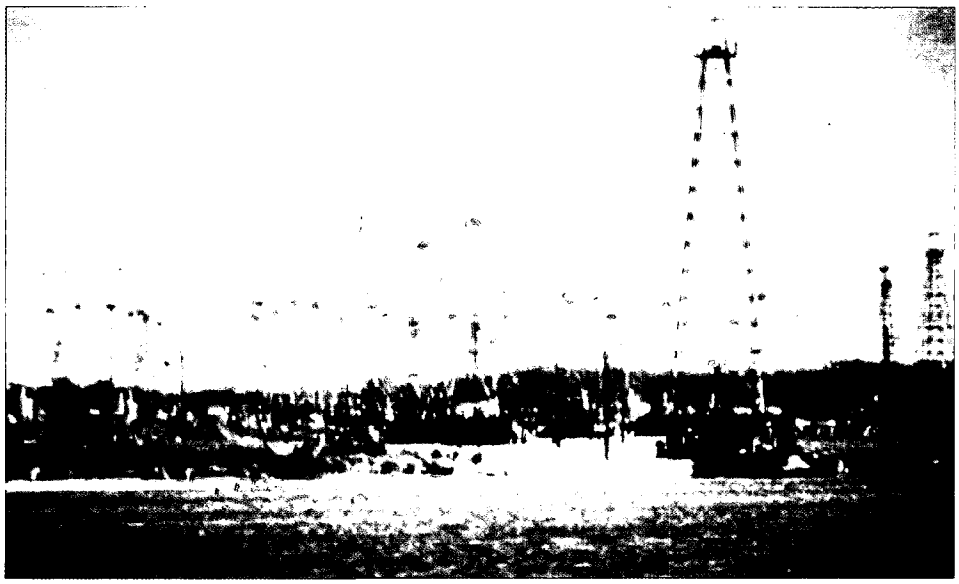

Figure 14. Coastal oil fields.

C. Southeast Region

The Southeast Region with its office in St. Petersburg, Florida (see figure 10) has large areas of productive and commercially valuable marine, estuarine, and riverine habitats that are under severe pressure from urban and industrial development. Accordingly, this region concentrates its programs on the review of the more than 4,000 individual and public projects each year that propose to alter wetlands. The Southeast Fisheries Science Center (SEFSC) in Miami, Florida studies the effects of habitat degradation and loss on the estuarine and coastal ecology and food chains of the Gulf of Mexico and the South Atlantic. Significant research projects are under way to determine habitat use by species, habitat values, and restoration and creation of fish habitat.

REGION WIDE

Research on Created Marsh and Seagrass Utilization

To increase understanding of the role of created marsh and seagrass meadows as habitat to living marine resources and in the stabilization of sediment, NMFS and the COE modified three eroding dredged material disposal sites in North Carolina. This effort was initiated in 1987 and was conducted under a joint memorandum of agreement to restore and create fish habitat. The original research design of these three sites incorporated examination of animal linkages between marsh habitat composed of smooth cordgrass and adjacent seagrass habitat.

Marsh was created and seagrass planted using an experimental design that would allow various planting methods and designs to be independently tested and compared. As a consequence of the research efforts, marsh and seagrass habitats have been established. As of spring 1992, the smooth cordgrass plantings had colonized the unplanted portions of the study sites, forming continuous marsh and the surviving seagrass plantings have merged into solid

Figure 15. Planting marsh grasses.

beds. A 3-foot-wide strip of oyster culch was placed along some of the marsh edges. The effect of culch on increasing stabilization of the sediments and on increasing habitat diversity will be examined. NMFS believes that living marine resources will begin using the culch and that this area and the adjacent marsh will support more animals than those marsh areas without culch.

The data on use of created marsh and seagrass habitat by living marine resources during the initial 3 years of the study will be used for study development during year 6 (1993) and year 7 (1994) of the experiments. Information on plant colonization and animal use of these habitats for the 3-year study period are currently being analyzed. Preliminary data on the culch phase of the study is also under analysis.

FLORIDA

Seagrass Restoration On Treasure Hunting Excavations

At the request of the Florida Keys National Marine Sanctuary, the Beaufort Laboratory of NMFS' Southeast Fisheries Science Center initiated a seagrass restoration project within the boundaries of the sanctuary. During 1992, underwater excavation occurred in connection with treasure hunting activities. The excavations varied in size and occurred in turtle grass dominated seagrass meadows. The excavation resulted in direct habitat losses and associated mounds of excavation debris are being eroded onto surrounding seagrass beds.

Beginning in May 1993, staff from the Beaufort Laboratory conducted a cooperative effort with Florida Keys Marine Sanctuary staff to restore bottom topography at some locations. Once recontoured, seagrasses will be transplanted at the sites. To compensate for the exceptionally slow growth and colonization rate of turtle grass, faster growing species of seagrasses will be transplanted to the sites and evaluated for performance. The recolonization effort is expected to require several years and periodic monitoring is planned.

Coastal America Restoration Project At Cockroach Bay

A $300,000 grant to the Tampa Bay National Estuary Program (NEP) was one of the first announced under the Coastal America initiative. The Tampa Bay NEP grant launched an ambitious habitat restoration project expected to extend over the next 10 to 20 years. NMFS is a project sponsor and part of the group that helped to obtain approval for the grant.

Planned work will restore a 651-acre site acquired by the Hillsborough County Environmental Lands Acquisition and Protection Program. A mosaic of wetlands and uplands will be created to improve water quality and restore estuarine and coastal habitats. This will restore significant habitat for fisheries within the Tampa Bay system, an estuary that has lost more than 11,000 acres of intertidal wetlands.

Much of the restoration started in the fall of 1992 occurred at Cockroach Bay which, despite its name, is the crown jewel of the Tampa Bay estuary system. The restoration work at the Bay will be the largest ever in Florida and one of the largest restoration construction efforts in the country.

PROGRAM ACCOMPLISHMENTS

The project is coordinated by the Southwest Florida Water Management District. The Cockroach Bay Restoration Alliance, an advisory committee whose members represent business and all levels of government including NMFS, is designing and implementing the plan. The conceptual plan for phase one's 200-acre area has been completed and approved for implementation at an estimated cost of $2.1 million. Survey work and detailed designs are complete. Volunteers have begun removing non-indigenous species and cleaning up the site. The first phase of the work will produce varied habitats in a series of interconnected water basins with differing salinity levels. New ponds to provide biological pretreatment of stormwater before it enters the bay are also included in phase one.

In addition to funding from Coastal America and the State of Florida, the Florida Department of Environmental Regulation and the Hillsborough County Environmental Protection Commission have pledged $200,000 each to the restoration effort. The Southwest Florida Water Management District's Surface Water Improvement and Management program has committed an additional $650,000 to the restoration. Hillsborough County's purchase of the site for $2.04 million made the program possible. The Florida Department of Natural Resources, the Tampa Bay Regional Planning Council, NMFS, EPA, USFWS, USGS, and COE also are part of the sponsoring coalition.

Restoration Of Fish Access To Wetlands Impounded For Mosquito Control

NMFS is a member of Florida's Subcommittee on Managed Marshes, a component of the Coordinating Council on Mosquito Control. The Subcommittee is restoring fisheries habitat in wetlands that have been impounded for mosquito control. The positive effects of this restoration are naturally reducing salt marsh mosquito production (e.g., fish predation of mosquito larvae); reducing the use of insecticides that harm fish and crustaceans; and increasing fish production by restoring access and tidal exchange to wetlands that have been isolated for many years.

Figure 16. Typical mosquito control project—ditching to reduce mosquito production.

PROGRAM ACCOMPLISHMENTS

The actions of this Subcommittee over the years have returned thousands of acres of wetlands to production. Recent examples include the rehabilitation of disturbed wetlands at Canaveral National Seashore in Volusia County near the Indian River and Merritt Island.

At Cape Canaveral, over 14 miles of new water courses will be established using a rotary ditcher. This technology creates shallow water areas with minimal environmental impact from disposal of dredged material. Several dikes also would be breached to allow tidal exchange and access by living marine resources. When completed, the total work will restore productivity to about 1,600 acres of coastal wetlands.

About 595 acres of coastal impoundments near the Indian River have been beneficially modified by adding culverts with water control structures and electric pumps. Through the Subcommittee's actions, the National Aeronautics and Space Administration and the Merritt Island National Wildlife Refuge in Brevard County also is restoring approximately 1,042 acres of marsh that was impounded in the 1960's for mosquito control.

LOUISIANA

Coastal Wetland Planning Protection And Restoration Act Activities

This Act of 1990 establishes a Task Force composed of representatives of the EPA, DOC (NOAA), DOI, USDA, and the State of Louisiana. The Task Force prepared and transmitted to Congress an annual priority list of wetland restoration projects for the State of Louisiana. It also required a comprehensive Coastal Restoration Plan for Louisiana by the end of 1993 which would provide the basis for selecting future priority projects lists.

The State of Louisiana is required by the Act to prepare a Coastal Wetlands Conservation Plan which specifies how the State will develop and implement the Coastal Restoration Plan, achieving no-net-loss of wetlands from future development.

Project planning and implementation is supported by a tax on small engines and equipment. The Act requires the State of Louisiana to provide 25% of the cost of restoration projects. Louisiana has established a Restoration Fund to meet this requirement which is administered by the COE. Of the amount appropriated, 70% (not to exceed $70 million annually) is to be available for wetland restoration projects and associated activities (about $35 million was available in 1992).

The Act also created a 50%-matching-fund grants program administered by the USFWS to encourage other coastal states to implement coastal wetland conservation projects. The process of selecting wetland restoration project proposals has begun. The Task Force selected 14 projects for its Priority List for 1992 and 15 were selected for 1993. Public input was sought during this selection process. Proposals were evaluated on the basis of the technical (scientific) merit, cost-effectiveness, and wetland quality. Implementation of additional projects will be considered annually.

Federal agencies on the Task Force can serve as sponsors for restoration projects. NMFS sponsored five of the projects selected for 1992 and 1993. The cost of these combined projects is about $7 million. These projects will be cooperatively implemented with the State.

PROGRAM ACCOMPLISHMENTS

Coastal Marsh Management Projects Affecting Fishery Resources

Since the mid 1980s, NMFS has recommended that an environmental impact statement be prepared by the COE to address individual and cumulative impacts of marsh management in coastal Louisiana. NMFS believes that a comprehensive environmental analysis was needed because of substantial public controversy surrounding this issue, the known adverse impacts to living marine resources, and the uncertainty of impacts to coastal wetland habitats.

Marsh management basically involves the alteration of marsh hydrology and impounding or semi-impounding wetlands to enhance waterfowl and furbearer production and to maintain marshes that are subsiding, eroding, or otherwise deteriorating. Fisheries resources are often adversely impacted by access restrictions and commercial and recreational fisheries may be further stressed. The economic consequences related to losses of fishery resources are not known but are expected to be considerable. For example, fisheries losses associated with one recently proposed 3,160-acre impoundment were estimated to exceed $673,900 in annual fisheries benefits.

Over the last decade, the COE has authorized the impounding and hydrological manipulation of more than 380,000 acres of marshlands in Louisiana. NMFS estimates that 71 marsh management projects impacting over 500,000 acres of coastal marsh and shallow waterbottoms have been advertised for public comment from 1982 through 1992. Of this area, permits authorizing various forms of structural marsh management activities impacting over 400,000 acres of estuarine fishery habitat have been issued. Notwithstanding the potential environmental impacts, the cumulative effects of these actions have not been adequately addressed nor has the need of this activity been established.

NMFS is concerned that many more marsh management projects will be proposed and implemented in the future. For instance, the Louisiana Coastal Wetland Conservation and Restoration Plan for 1990-92 contains at least 26 projects that could be categorized as marsh management. These would affect about 200,000 acres of wetlands. The Soil Conservation Service's Calcasieu-Sabine River Basin Study recommends construction of dozens of water control structures that, if implemented, would result in the active or passive management of all wetlands between Calcasieu and Sabine Lakes.

NMFS is pursuing a moratorium on marsh management projects pending completion of a comprehensive assessment of this category of wetland alteration. This issue has been raised to the Department of the Army under procedures established under the Clean Water Act. Efforts geared to resolving NMFS' concerns are expected to continue for many years.

Wetland Impoundment To Enhance Waterfowl And Furbearer Production in Terrebonne Parish

NMFS' efforts successfully prevented the impoundment of more than 3,160 acres of wetlands in Louisiana when an applicant withdrew a COE permit request because of the opposition. NMFS estimated that about $250,000 in annual fisheries benefits would have been lost had the project been authorized and built.

The project site was on the southwestern portion of Point au Fer, a coastal barrier island approximately 28 miles southwest of Morgan City, Louisiana, in Terrebonne Parish. The applicant planned to place 3,160 acres of predominately brackish marsh under levee management—for the purpose of reducing wetland erosion and enhancing waterfowl use at the site. Plans included refurbishing existing natural and man-made levee segments with dredged material; constructing new levees; installing and maintaining 12 fixed and variable-crest water control structures and two earthen plugs; repairing five existing fixed-crest weirs and one earthen plug; and regulating surface water exchanges within and into the impounded areas.

The project sponsors issued claims that the desired action would enable improved "management" of the marsh, abatement of erosion and improved waterfowl and furbearer production. NMFS' concerns centered on the proposal's adverse consequences to fishery resources (e.g., severe restriction of access). Additional NMFS concerns were raised due to the experimental nature of the project. Marsh management has not been demonstrated to prevent wetland deterioration. Further, there is evidence that the marsh is being maintained or augmented. The project site lies within the Atchafalaya River System, one of the few areas in Louisiana with a suitable sediment source for marsh building and maintenance.

Additional issues focused on cumulative effects on fisheries resources that use the Point au Fer area. These include Atlantic croaker, red drum, sand seatrout, spotted seatrout, southern flounder, gulf menhaden, spot, striped mullet, brown shrimp, white shrimp, and blue crab. It is also believed that the endangered Kemps ridley sea turtle uses watercourses in the project area and feeds on blue crabs that are produced there.

NORTH CAROLINA

Coastal Marsh Created On Artificial Island In Roanoke Sound

NMFS cooperated with the COE to create regularly and irregularly flooded coastal marsh in Roanoke Sound, Dare County, North Carolina. The work was accomplished under a memorandum of agreement to restore and create fish habitat. Fringing wetlands comprised of smooth cordgrass and black needlerush were planted along the edges of an artificial island created by disposal of material dredged during maintenance of an adjacent navigation channel.

The project, which is expected to extend over a 5-year period, utilizes NMFS biologists as technical advisors for the marsh planting. NMFS also assisted in logistical support and in the collection of plant materials used in the planting effort. The newly created marsh is monitored by NMFS biologists and the information obtained is used to establish priorities for subsequent plantings.

The project's benefits are numerous. The newly created marsh stabilized the island's shoreline and reduced the amount of dredged material that might otherwise reenter the navigation channel. With growth, the newly created wetlands are expected to produce plant materials for estuarine food chains and provide cover and feeding sites for fish and invertebrates. This should result in an increase of the production of local fisheries species such as summer flounder, bluefish, Atlantic croaker, spot, shrimp, and blue crab.

The project has also provided a convenient training site for students and instructors taking the Wetland Development and Restoration Training Course at the nearby Corps Coastal Research Facility located at Duck. In 1992, students and instructors planted approximately 300 linear feet of fringing marsh.

Oregon Inlet Jetties Project

Oregon Inlet, located near Cape Hatteras on North Carolina's Outer Banks, is one of three tidal passes connecting Pamlico Sound to the Atlantic Ocean. Stabilization of the inlet, using parallel jetties extending approximately 4,500 feet into the Atlantic Ocean, has been approved by Congress. Project construction, however, cannot proceed until environmental issues involving jetty-related effects have been resolved. NMFS is active in efforts to ensure that adverse impacts to living marine resources are understood and avoided.

Pamlico Sound is the Nation's third largest estuary and supports productive commercial and recreational fisheries. Over 90% of the commercially important marine fish landed in North Carolina are dependent on estuarine waters during some stage of their life history. Of these species, a large portion spawn offshore and then, as larvae and juveniles, must negotiate coastal inlets to reach estuarine sites where growth and development occurs. Recent findings by NMFS' Southeast Fisheries Center and North Carolina State University researchers indicate that the jetties could hamper sub-adult fish ingress into the sound by modifying local currents. Since recruitment reductions of as much as 60% may be possible, NMFS has informed the COE, the lead Federal agency for constructing the project, of this potential impact and of the need for further evaluation in connection with the Federal environmental review process.

SOUTH CAROLINA/GEORGIA

Restoration Of Anadromous Fish Habitat In The Savannah River

In 1977, COE initiated work to improve navigation in Savannah Harbor. A key project feature was the construction of a tide gate across the Back River, an arm of the Savannah River. The purpose of this feature was to reduce shoaling in navigable portions of the Savannah River. This would be accomplished by diverting water flows from the Back River through a newly dredged channel called New Cut to the Harbor area of the Savannah River. It was believed that the subsequent increased water flows in the area of Savannah Harbor would decrease the need for maintenance dredging.

The tide gate was subsequently built and the water diversion features were implemented. After project implementation, it became clear that the tide gate had severely modified environmental conditions in the Back River as well as the areas influenced by its waters. For example, freshwater habitats became saltier and water velocity subsided. These changes produced many adverse environmental consequences of which two are notable. First, water quality and habitat conditions were modified, which resulted in adverse effects on anadromous fish under NMFS purview. Waters became too salty to be used as spawning habitat and dissolved oxygen levels were too low for survival of striped bass eggs and young. The reduced flows also caused fish eggs to drop from the water column to the river's floor where they died. The second major adverse project effect was severe damage to wetlands at the Savannah River National Wildlife Refuge. Saltier water was causing freshwater marshes to die or to be replaced by more salt-tolerant plants. These changes were damaging waterfowl and other species that the refuge was originally established to protect.

A coalition of resource agencies including NMFS, USFWS, and the States of Georgia and South Carolina apprised COE of the severe adverse impact of its project and recommended reversal of the environmental changes caused by the tide gate and the New Cut diversion. Many years of consultation and comprehensive studies eventually convinced COE of the need to modify its operations. This resulted in permanent deactivation of the Back River tide gate operation and blocking of New Cut. The completed project is expected to meet navigation needs and protect striped bass. It is anticipated that the Savannah River National Wildlife Refuge will revert to conditions that existed before the tide gate operations began.

TEXAS

Galveston Bay Area Navigation Project

This project, as originally proposed, entailed widening and deepening the Houston and Galveston Ship Channels for a total distance of more than 90 miles. The project purpose was to reduce delays in shipping, increase safety, and allow deeper draft more efficient vessels to use the channel. The project's cost was expected to exceed $500 million and involve dredging and disposal of about 100 million cubic yards of silt and clay. NMFS' primary concerns related to that portion of Galveston Bay that would have been adversely affected by dredging (1,000 acres) and disposal (over 12,000 acres); potential effects of hydrological changes within the Bay; and modification of habitat used by fisheries resources such as oysters and shrimp.

By including Galveston Bay in the National Estuary Program, the U.S. Congress has recognized its national and local value as a habitat and harvest area for fish and shellfish. The Bay yields an abundance of fish and shellfish and is the most popular marine recreational fishing location in Texas. Commercial fish and shellfish caught or nurtured in Galveston Bay were valued at over $26 million to fishermen in 1986. Recreational fishing expenditures in the vicinity of Galveston Bay during 1986 exceeded $171 million.

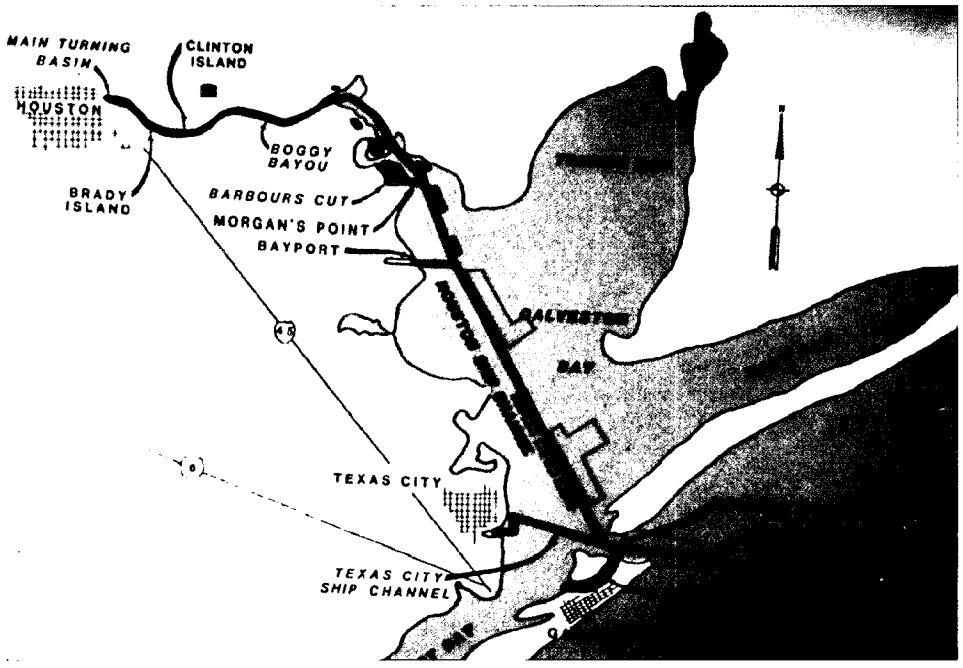

Figure 17. Drawing of proposed dredging of Houston and Galveston ship channels.

NMFS, in association with other agencies, requested COE to further review the environmental impacts of the proposed project. The process of seeking project authorization was subsequently suspended until all significant adverse effects have been minimized and studies that more adequately assess potential environmental impacts have been completed.

Following extensive negotiations, COE elected to perform seven supplemental investigations and the Port of Houston agreed to fund efforts that would ensure beneficial disposal of the dredged material. NMFS is assisting in the development of plans for beneficial use of the dredged material in Galveston Bay ranging from marsh creation to construction of islands for bird use. Of these, five have been recommended for inclusion in the overall beneficial use plan.

In addition to identifying beneficial uses of dredged material, NMFS and NOAA are providing technical assistance on 3-D hydrodynamic/oyster and salinity models of the bay. The salinity models are being developed by COE's Waterways Experiment Station and the hydrodynamic/oyster model is being developed by Texas A&M University. The models will be used in feasibility and impact assessment in conjunction with planned beneficial disposal techniques. NMFS efforts and involvement with this significant Federal project are projected to continue into the next century.

TEXAS/LOUISIANA

Protection Of Flower Garden Coral Banks

The Flower Garden Coral Banks, located about 110 miles off the Texas coast, have been noted by the NOAA's Sanctuaries and Reserves Division as "unique among the banks of the northwestern Gulf of Mexico in that they bear the northernmost tropical Atlantic coral reefs on the continental shelf and support the most highly developed offshore hard-bank communities in the region." Additionally, the Flower Gardens have been designated under the Magnuson Fishery Conservation and Management Act as Coral Habitat Areas of Particular Concern. The site is also pending designation as a National Marine Sanctuary.

In June 1991, NMFS learned that a major oil company planned to place an oil pipeline between the East and West Flower Garden coral banks. The proposed pipeline route would have passed about a mile south of the East Flower Garden Bank, turn north between both banks, and traverse ten fault scarps. NMFS was concerned with this proposal because of the ecological importance of the Flower Gardens and the potential for direct and indirect adverse impacts resulting from the pipeline. Physical disruption of habitat was possible with the proposed pipeline alignment as well as the potential for spills associated with pipeline failure. Geological fault lines were to be crossed. There was also considerable concern that the project would be precedent-setting and lead to a proliferation of similar activities.

Because of NMFS' involvement and coordination with the National Ocean Service and the Minerals Management Service (the permitting agency for the project), an acceptable alternative to proposed alignment was negotiated. This negotiated alignment routed the pipeline and all future pipelines to the north and west of the Flower Gardens. The pipeline was subsequently installed along the new alignment and was built with improved shutdown and monitoring provisions. The integrity of the Flower Gardens was preserved and potential future problems were avoided.

VIRGINIA / NORTH CAROLINA

Lake Gaston Freshwater Supply Project

Since the 1970s, NMFS has been involved in a proposal by the City of Virginia Beach, Virginia, for approval to withdraw 60 million gallons of water per day from Lake Gaston on the North Carolina-Virginia border. The lake is a reservoir and component of the Roanoke River System. The Roanoke River flows through an extensive floodplain of national significance and forms the major tributary of Albemarle Sound. Albemarle Sound was designated as one of the first national estuary programs by the EPA. The Roanoke River's wetlands are considered to be the largest intact, and least disturbed, bottomland forest ecosystem remaining in the Mid-Atlantic Region. The diverse habitats of the system support a rich array of wildlife and fish species. Surface waters of the river currently are used for municipal, industrial, and agricultural purposes and for maintaining habitats for wildlife and fish species.

The City of Virginia Beach has proposed construction of an 85-mile-long pipeline that would supply its water needs from Lake Gaston. The City has apparently exceeded current water supply capacities. The State of North Carolina strongly objects to the consumptive use of its waters by the City of Virginia Beach. The City, on the other hand, has committed millions of dollars to the pipeline project and claims to face considerable economic hardship because insufficient water exists to support growth.

Because water is already severely partitioned within the Roanoke River system, NMFS has been concerned with the cumulative effect of continued water withdrawals on already stressed estuarine and anadromous fisheries resources such as striped bass. NMFS maintains that knowledge concerning relationships between river flow and fishery production, cumulative effects of continued water withdrawals, and effects of flow modifications on resources in the Albemarle Sound is insufficient. Therefore, it cannot be guaranteed that continued individual and cumulative consumptive water withdrawals would not have adverse environmental consequences. NMFS has recommended to the Federal Energy Regulatory Commission, the Federal agency responsible for approving the permit modification, that additional studies and environmental documentation be done to help determine and describe the environmental impact of the City's proposal.

D. Southwest Region

The Southwest Region with its office in Long Beach, California has relatively little natural estuarine habitat left to conserve. Consequently, it focuses on protecting and enhancing the remaining coastal wetlands, anadromous fish habitats, reef environments, and several offshore fisheries. The Southwest Fisheries Science Center (SWFSC) in La Jolla, California conducts habitat studies that include research on the wetland dependency of coastal marine fish, fishing activities, and natural events on the offshore and coastal fisheries of the region. Marine mammal research is also a key element of its program.

PROGRAM ACCOMPLISHMENTS

REGION WIDE

Regional Hazardous Material Spill Contingency Planning

Throughout 1992 and 1993, Regional habitat conservation staff participated in a series of Area Contingency Planning meetings dealing with hazardous material spill issues relative to regional (California and Hawaii) fish and wildlife habitat issues. The result was the development of maps of California (county-by-county) and the western Pacific (Hawaii) reflecting the different sensitivity of various habitats to hazardous material spills. These maps are designed for the use of the Coast Guard Regional Response Team On-scene Coordinators during hazardous materials spill situations. This effort involved NMFS cooperation with the Coast Guard, State and Federal resource agencies, and State Offices of Oil Spill Prevention and Response.

As a result of NMFS' participation in the Hawaiian planning process, the habitat conservation staff received a Certificate of Merit from the Admiral, Fourteenth Coast Guard District.

CALIFORNIA

Santa Monica Bay Restoration Project

The Santa Monica Bay Restoration Project (SMBRP) was organized after the Bay was included in the National Estuary Program and a 1988 management conference made all interested parties aware of the Bay's problems and potential solutions. Currently NMFS serves on the Management Committee, the Technical Committee, and co-chairs the Marine Habitat Subcommittee for the SMBRP. These committees function as the focal point for the development of solutions for problems relative to the affected natural resources and are coordinating mechanisms for all the agencies having management responsibilities relating to the Bay. Working together with the other committees, a Comprehensive Conservation and Management Plan (CCMP) was to be produced by late 1993.

The late 1993 completion date for the CCMP was accelerated to mid 1993 in order to take advantage of a proposed 1994 State bond measure that could provide funding for the implementation of the plan. Draft elements of the plan were presented to the Management Committee during the latter part of 1992.

San Onofre Nuclear Generating Station (SONGS) Mitigation Activities

In 1974, when the California Coastal Commission (CCC) reviewed the application by Southern California Edison for expansion of the San Onofre Nuclear Generating Station (SONGS), there was little information available on the potential impacts on the marine environment of nuclear generation plants. As a consequence, a Marine Review Committee (MRC) was established to develop and conduct a comprehensive field study of the impacts associated with the operation of the new units.

The final report of the MRC, completed in 1989, concluded that significant adverse effects were associated with the operation of SONGS. Those identified impacts included a substantial reduction in standing stock of several fish populations in the southern California Bight and adverse impacts to the kelp community of the nearby San Onofre kelp bed. The MRC also concluded that proposed changes in operation of the cooling system would create further environmental impacts and were not cost-effective.

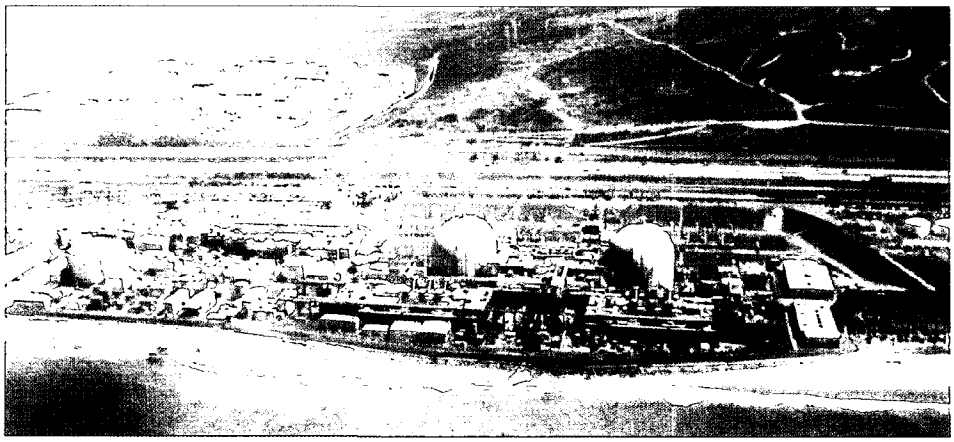

Figure 18. Aerial view of San Onofre Nuclear Generation Station.

NMFS is now providing direct input along with Federal and State resource and regulatory entities for the design and implementation of an overall mitigation package. To mitigate existing and future environmental impacts from these new units, CCC approved a plan which included the requirement for the restoration of 150 acres of wetlands and construction of a 300-acre artificial reef with kelp.

Experimental Eelgrass Transplant in San Diego Bay

The Le Meridien property eelgrass transplant project, utilizing a new NMFS technique for the construction of an eelgrass transplant site, was completed during 1990. The experiment was to transform a deep-water area to a depth suitable for the establishment of eelgrass. To accomplish this objective, a 180-foot-long submerged rock dike was constructed in water approximately -10 to -12 feet deep (MLLW) at a site near the Coronado Bridge in San Diego Bay. Sand fill was placed behind the structure to establish a planting elevation of -5 to -7 feet deep (MLLW.)

Fish monitoring at the site has suggested that this technique offers considerable potential for the enhancement of fishery resources. The inclusion of new rock habitat has resulted in the establishment of several fish species typically found in open coast reef communities. Diver observations indicate that these species apparently are taking advantage of the rich food resource found in the adjacent eelgrass bed. Further study could prove this experimental transplant technology to be a viable fishery habitat mitigation option.

Since clean sand was used as the fill material, experiments utilizing nitrogen-enriched fertilizers to enhance growth rates were conducted. The preliminary results of this work indicated little effect.

This transplant and other eelgrass vegetated areas of San Diego Bay experienced severe winter die-back in the later part of 1992. Monitoring will provide information regarding whether this die-back is related to seasonal factors or is more long-term.

Bay Farm Island Borrow Pit in San Francisco Bay

Bay Farm Island was created several years ago by "borrowing" material dredged from San Francisco Bay. Approximately 20 million cubic yards were removed, leaving a 480-acre pit approximately 30 feet deep. The Corps became interested in examining the pit as a potential

disposal site for dredged material, especially contaminated material. They began preliminary biological work in the fall of 1989. Multiple attempts to get COE interested in jointly examining the site as a NOAA/COE MOA fishery enhancement project failed. NMFS is interested in restoring eelgrass habitat over the pit once it is filled and capped. The pit probably has a 15 million cubic yard capacity. It would provide an alternative to disposal at Alcatraz and would serve as a suitable disposal site until EPA formally designates an offshore deepwater dredge spoil disposal site.

The Port of Oakland and COE are seriously considering the borrow pit as an alternative disposal site for the Oakland Harbor deepening project. It is still unclear whether they are considering it as a one-time confined aquatic disposal site (CAD) and would then cap it for restoration. Another option which may be looked at is a multi-user CAD site for use over several years.

The COE has also contracted a study to determine the utilization of the pit itself. They have been looking at sea bottom fauna and fish utilization of the water column and they have been using gillnets set at various depths to determine fish species present. COE will trawl the pit in 1993 to check the set-net data.

Gravel Mining in Coastal Streams

NMFS continued its efforts to improve the management of gravel mining in coastal streams. Gravel mining removes spawning gravels and alters the fluvial geomorphology of rivers, often resulting in the degradation of anadromous spawning and rearing habitat. River areas with extensive gravel mining typically become severely braided and shallow with little or no rearing habitat. A Regional NMFS Gravel Management Policy was adopted in January 1991 to provide guidance and consistency in project reviews.

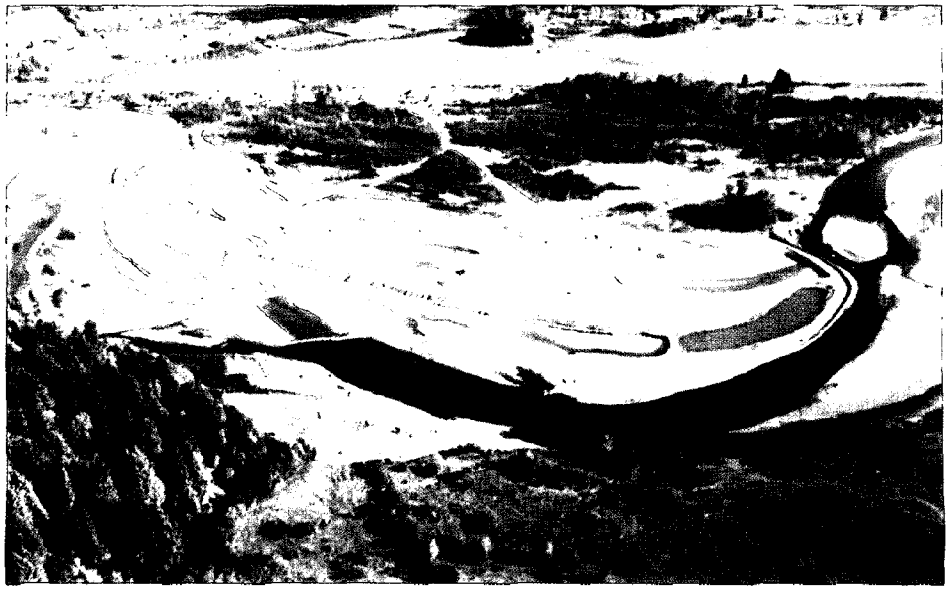

Figure 19. Aerial view of gravel mining site in the Mad River in California.

In California, gravel mining is managed by county government. Therefore, NMFS has been providing comments as a trustee agency for salmonids through the county permitting process in Del Norte, Humboldt, Mendocino, and Sonoma counties. Principal rivers in these counties include the Smith, Klamath, Trinity, Eel, Mad, Garcia, Gualala, and Russian Rivers. In cases where a COE permit is also required, NMFS provides comments through the COE process.

Largely due to the efforts of NMFS, the California Department of Fish and Game, and environmental groups, all four counties are now developing and/or refining Environmental Impact Reviews (EIR) that include comprehensive impact assessments and gravel mining management plans. Each plan gives careful consideration to the potential impacts of gravel mining to salmonids, and includes extensive environmental impact monitoring. NMFS will continue to work with the counties to ensure that gravel mining management provides adequate protection of anadromous resources.

Red Bluff Diversion Dam (RBDD) on Sacramento River- Fish Passage Program

The Red Bluff Diversion Dam (RBDD) was constructed in 1964 on the upper Sacramento River in the northern portion of California's Central Valley. RBDD is located 243 river miles above San Francisco Bay. Many investigators in the 1970's and early 1980's attributed much of the decline of anadromous fisheries in the upper Sacramento River to construction and operation of the RBDD. This resulted in the formulation of the RBDD Fish Passage Program in 1983 by the fisheries and water agencies.

NMFS Southwest Region's Habitat staff has contributed extensively to the Fish Passage Program during the past ten years. They identified three major problems: 1) inadequate screening of downstream migrating juvenile salmonid fishes at the intake to the Tehama-Colusa Canal; 2) substantial mortality on downstream migrating juvenile salmonids that remain in the river but are forced to pass under the RBDD gates; and 3) delay and blockage of upstream migrating spawning adult salmonids.

NMFS Southwest and Northwest Regional staffs provided biological criteria and engineering specifications for fish screens to solve the fish passage problems. Consequently, a 600-foot long array of drum screens has been constructed to replace the existing louver fish screens which annually "leaked" an average of 500,000 juvenile salmon into the Tehama Colusa Canal. The new screen system, the largest facility of its kind, should especially improve passage of winter-run fry.

NMFS will continue to work with the operators to ensure that the system is operated effectively in the wide variety of flow conditions that the project experiences. Full evaluation will probably be delayed until irrigation season due to low diversion flows during drought.

Addressing and correcting the remaining fish passage problems at RBDD have been assigned to a group called the Planning Coordination Team on which NMFS staff has played a critical role. The Team developed a list of alternatives which include variously-sized, new left-bank fish ladders, a permanent mid-dam ladder and modifications to the right ladder. These alternatives are now being reviewed in an appraisal-level study to determine the preferred alternative.

An alternative that is very attractive to NMFS and other fisheries agencies employs a bank of Archimedes screws to pump water into the Tehama-Colusa Canal headworks rather than using the RBDD to divert the river by gravity. This would allow the dam gates to be raised out of the river year-round resulting in virtually unimpeded upstream and downstream fish passage. This is the *only* alternative under consideration that remedies the combined impacts of delay and blockage of upstream migrating adult fish and the estimated 50% mortality of downstream juvenile migrants which pass under the dam gates. However, there is significant opposition to this alternative due to the costs of pumping being passed on to the water users.

In 1992, the Bureau of Reclamation allocated money for a 500-cubic-foot-per-second (cfs) pilot, archimedes screw pumping plant to begin research to:

1. Identify the feasibility and potential problems of using either an archimedes screw pump and/or a helical pump in anticipation of a full-scale design of a pumping plant at RBDD,

2. Determine if the plant could provide low-volume, winter-time water deliveries while the RBDD gates are raised.

The Bureau began with an ambitious schedule of construction from spring through fall of 1993. Potential hydraulic problems were identified during the summer. NMFS and the other agencies recommended a more methodical approach to the problems identified including physical model-testing. The Bureau decided to proceed, however; they did agree to field verification of flows in the fall. The fall flows confirmed the hydraulic problems and, in late December, an emergency design review recommended that the project be modified and model tested. This delayed the project by a year. NMFS will be heavily involved in the redesign, model testing, and further developing of testing procedures for the experimental plant.

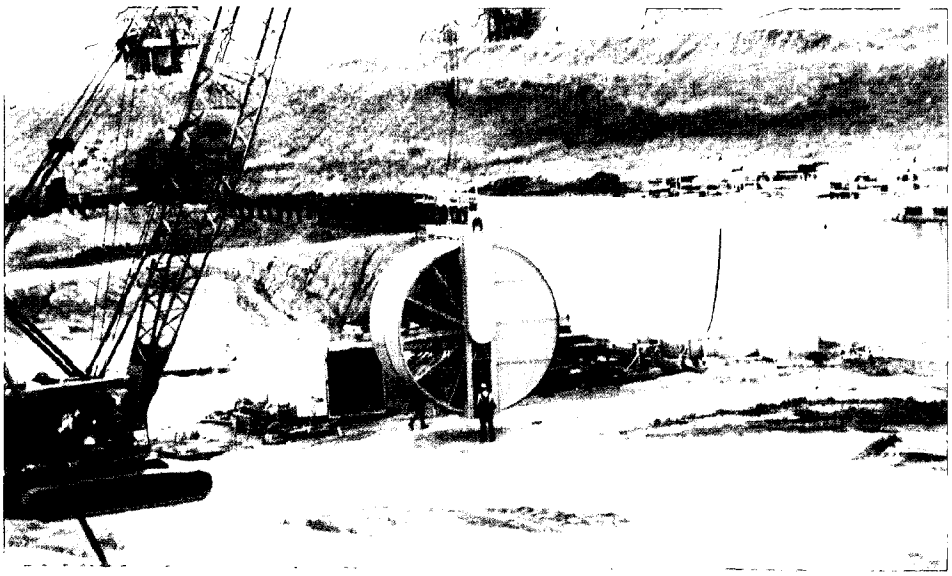

Figure 20. One drum screen fish passage device being placed at Red Bluff Diversion Dam (RBDD).

Glenn-Colusa Irrigation District (GCID) on Sacramento River

The GCID pumping operation is the largest and oldest on the Sacramento River and is believed to be the largest source of juvenile salmon mortality on the river below the RBDD. The existing fish screens have never worked properly and do not meet the current fish screen criteria of NMFS and California Department of Fish and Game. In addition, recent changes in the Sacramento River stream bed have altered the hydrology of the fish screen bypass so that at lower river flows the channel leading from the screens back to the river can become a dead-end "predation sink."

In late 1989, GCID's consultant with the close cooperation of the fishery agencies, completed a preliminary assessment of alternative fish screen sites and designs. NMFS, other fishery agencies, and fishery conservation groups met often to discuss implementation of the preferred alternative and to adopt interim measures to reduce fishery problems at the screening facility.

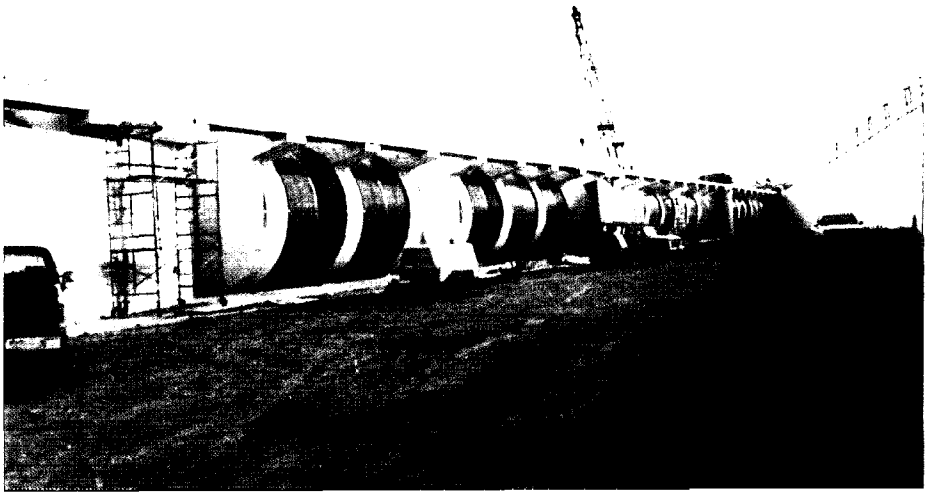

Figure 21. A series of drum screens in position.

In 1991, GCID applied for a permit to dredge the oxbow at its pumping site. So, under Section 7 of the Endangered Species Act (ESA), COE entered formal consultation with NMFS regarding potential impacts of the dredge permit application on winter-run chinook salmon. NMFS concluded the operation of the diversion was likely to jeopardize the continued existence of winter-run chinook salmon and the construction of an alternative was proposed. GCID failed to accept the alternative offered by NMFS and did not apply for authorization under Section 10 of the ESA to "take" winter-run at its pumping station. As a result, COE denied GCID's application to dredge.

NMFS also sought injunctive relief in Federal Court under Section 9 of the ESA to curtail the "taking" of juvenile winter-run at GCID's facility. A Preliminary Injunction was issued limiting GCID pumping to a level that would improve protection for winter-run fry and juveniles. NMFS returned to Federal Court seeking a permanent injunction against GCID until it complies with the ESA. The Permanent Injunction was granted.

In February and March 1993, GCID, NMFS and CDFG staff met to forge a Stipulated Agreement which would allow reduced pumping by GCID until the design and construction of the new screen facilities were completed. In addition to reduced pumping, GCID was also obligated to improve hydraulic conditions for fish passage in the pumping plant intake and bypass channels. These improvements will provide considerable improvement in juvenile survival until the new screen can be put in place.

During the spring, a contractor was selected to complete the conceptual design and Environmental Impact Review. This contract is scheduled to be completed in 1994. NMFS staff will continue to participate in reviews of the progress of this contract.

Central Valley Project Reform Act (Miller-Bradley Bill P.L. 102-575)

Over the years, it became evident that the Central Valley Project (CVP) was no longer serving the best economic interests of California. After an extensive drought, many recognized that one of the least expensive and least environmentally damaging sources of drought control would be for CVP farmers to conserve water or to fallow fields and voluntarily sell the saved water. Unfortunately, Federal law forbade CVP water from being used outside the CVP Service Area which excluded most of the Bay Area and Southern California.

Figure 22. Salmon moving through a fishway to spawning grounds.

On October 30, 1992, President Bush signed Public Law 575 beginning a new era in Federal water policy. Title 34 of this bill is the Central Valley Project Improvement Act, the most significant step ever taken toward the reform of the water project which has been perhaps the single greatest environmental disaster in the history of California.

NMFS Habitat Conservation Division staff reviewed several modifications of the bill and also presented supporting testimony before the Senate Energy and Natural Resources Committee in Washington, D.C.

The new law, known as Title 34 of Public Law 102-575, has the following among its provisions:

Establishes fish and wildlife protection as a"co-equal project purpose" of the CVP.

Dedicates 800,000 acre feet(af) of water annually to fish and wildlife.

Requires the construction of " hardware fixes" such as for improved fish screens at GCID, spawning gravel replenishment, and a temperature control device at Shasta Dam.

Establishes a $50 million fish and wildlife restoration fund to help pay for "hardware fixes" and purchase additional water for fish and wildlife.

Makes permanent a temporary order providing at least 340,000 af annually for the Trinity River.

Guarantees wildlife refuges an adequate supply of water.

Requires the preparation and implementation of a plan to double Central Valley anadromous fisheries stocks by 2002. When this Plan is submitted to the Secretary of Interior in 1995, even more water than the 800,000 af may be directed to fisheries restoration.

Requires the preparation of a study regarding the feasibility of restoring flows in the Upper San Joaquin River.

Precludes new water contracts until fish and wildlife obligations have been met.

Allows CVP growers to sell conserved water on the open market anywhere within California with limited regulation from agricultural water districts.

The Bureau of Reclamation and USFWS have been given Joint Lead in carrying out the provisions of the Bill. NMFS is a cooperating agency in the effort to produce the Programmatic Environmental Impact Statement required by October 1995. Further, NMFS is working cooperatively with the California Department of Fish and Game and FWS to establish the fish and wildlife water needs for allocation of the 800,000 af in 1993.

HAWAII

Hawaii Geothermal Project (HGP) Environmental Impact Statement

In August 1991, the Department of Energy (DOE) published a Notice of Intent to prepare an EIS for the Hawaii Geothermal Project (HGP). NMFS was invited to be a cooperating agency in developing the EIS. Staff attended a meeting in San Francisco to discuss the project and to identify environmental issues and resources which they thought would be potentially impacted by the project. By the end of the year, NMFS had given tentative approval to participate as a cooperating agency in developing the EIS, primarily because of its mandated responsibilities concerning the inter-island submarine cable portion of the project.

NMFS accepted the invitation from DOE to work as cooperating agency in developing an EIS for the HGP. An initial scoping meeting of cooperating agencies was held in late March in Honolulu. A series of ten public meetings was held throughout the State of Hawaii during the spring. A workshop to begin development of the EIS was held on July 16, 1992. Staff were concerned that the working draft of the Implementation Plan was too general and did not identify many of the potential project impacts in the nearshore marine environment.

PROGRAM ACCOMPLISHMENTS

MICRONESIA

Survey of Oroluk Atoll and Minto Reef

At the request of the Federated States of Micronesia (FSM), an expedition was organized through the South Pacific Regional Environment Program (SPREP) of the South Pacific Commission and the East-West Center, University of Hawaii, to survey the marine resources of two remote atolls in the Eastern Caroline Islands. The surveys were to inventory the marine resources and habitats of Oroluk Atoll and Minto Reef. These data were to be used in establishing the sites as protected areas. Staff was requested to participate in the expedition team.

Field work was carried out at Oroluk Atoll and Minto Reef from November 28 to December 6, 1990. Staff was responsible for underwater surveys of reef fishes and their habitats, as well as sea turtle abundance at the two atolls.

A paper entitled "Sea Turtle Survey at Oroluk Atoll and Minto Reef" was prepared by staff. After outside review, the paper was submitted to Marine Turtle Newsletter and was published in the October 1991 (No. 55) edition. A paper entitled "Survey of Reef Fishes and Their Habitats at Oroluk Atoll and Minto Reef" was finalized in December 1991. Both papers were submitted to FSM and SPREP for inclusion in the final Expedition Report.

REPUBLIC of PALAU

Resort Hotel and Marina at Ngesaol, Koror

In 1989, a developer proposed dredging and filling over 400 acres of mangrove, seagrass, and coral reef habitat for a resort, golf course, and a marina at Ngesaol. Early scoping meetings in which NMFS participated were successful in substantially reducing the scale of the project.

Despite the above scoping process, the applicant submitted a permit application to COE proposing the destruction and alteration of 200 acres of nearshore fishery habitat for a resort hotel and marina complex without the golf course. Habitat staff participated in a multi-agency site survey in April 1991. NMFS and other resource agencies recommended the permit be denied. The Corps concurred and informed the applicant that a Federal EIS would be necessary unless the applicant modified the project such that non-water dependent fills were avoided.

The applicant submitted a revised permit application for a substantially scaled-down project but still requiring the loss of approximately 86 acres of mangrove, seagrass and coral reef habitat. NMFS recommended denial of the revised permit and was supported again by the other resource agencies. NMFS also informed the applicant that should all non-water dependent fills be eliminated from the proposed project and compensatory mitigation developed for unavoidable loss of habitat, NMFS would reconsider its position of recommending denial.

In August 1992, the applicant submitted a fourth revised project application further reducing the project to 2.7 acres of fill and 13.5 acres of dredged channels. NMFS concurred with the further downsizing but continued to recommend mitigation for the Section 404 activities. The COE agreed and the applicant is now developing a mitigation plan.

E. Northwest Region

The Northwest Region with its office in Seattle, Washington also has critical estuarine and riverine habitats to protect and faces significant development pressures. Like the Northeast, this Region manages long-established, economically important offshore and coastal fisheries. The Northwest Fisheries Science Center (NWFSC) in Seattle, Washington investigates the effects of hydroelectric power development, industrial development, and urban pollution on habitats and resources.

REGION WIDE

FERC Fishway Definition Out, New Definition Needed

On May 8, 1991, FERC issued Order No. 533 which included a revised definition of "fishways" as only incorporating upstream passage facilities. FERC indicated that the new definition would not decrease their efforts to ensure safe downstream passage of fish in the licensing of hydroelectric projects. However, in all cases where FERC assumed such responsibility, anadromous fish runs have failed or been severely affected and the projects themselves are the subject of litigation or are undergoing extensive retrofitting to correct faulty or nonexistent fish passage facilities.

NMFS requested a rehearing on the order, pointing out the substantial body of literature that discusses fishways as providing both upstream and downstream passage, and suggesting that the definition be expanded to include flows, temperature regimes, project operation scenarios, and other measures designed to enhance or promote fish passage. Due to this request, FERC reconsidered its definition of the term "fishway" and issued Order 533A which contained a new definition including downstream passage. However, the new definition applied to flows within the bypass only and required that passage at the project be necessary for the life cycle of the fish.

The fishway definition dispute with FERC was rendered moot when Congress passed the Energy Policy Act of 1992, and rescinded FERC's fishway definition. The conference report on the Act suggested an opportunity existed to write a regulatory definition for fishways, so NMFS initiated discussions with the DOI to develop regulations for implementing authority to define fishways and to specify the process for implementing the fishway prescription provision of Section 18 of the Federal Power Act.

IDAHO

Salmon River Basin Proposed Hydroelectric Projects Rejected

Historically, the Salmon River Basin, Idaho, supported major runs of chinook and sockeye salmon, and steelhead trout. Today, due largely to downstream hydropower development on the Snake and Columbia Rivers, anadromous fish production is greatly diminished. Nevertheless, even with the present depressed runs, the Salmon River is the mainstay of salmon and steelhead production in Idaho and continues to provide spawning habitat for more spring and summer chinook salmon than any other drainage in the Columbia River system.

In the early 1980's, this production potential was threatened by unwarranted hydropower development when FERC was presented with an unprecedented number of applications for small hydroelectric project licenses. At one point, up to 80 hydropower proposals were before FERC. Recognizing the potential risk these projects represented both individually and cumulatively, NMFS became an active participant in the consultation process for these projects.

In coordination with other Federal and State fish and wildlife and land management agencies and Indian tribes, NMFS asserted that project proponents were obligated to develop a complete and adequate record of potential project impacts to fishery resources and mitigation of such impacts; that potential cumulative impacts arising from multiple project development must be a part of this record; and that FERC's licensing actions must be consistent with regional or state fishery enhancement programs.

In 1991, based largely on the consultation record developed by NMFS and other resource agencies, FERC began rejecting Salmon River Basin license applications. In 1992, the last three applications before FERC for projects in the Salmon River Basin were rejected. Thus NMFS, in assuming a lead role in the licensing and consultation process for these projects, was instrumental in assuring protection of Salmon River Basin anadromous fishery resources.

OREGON

Development of Wetland Evaluation Methodology

Recent Oregon State law provides for municipalities to develop wetland conservation plans (WCP) to ensure preservation of high-value wetlands while directing development activities, consistent with section 404(b)(1) of the Clean Water Act, to wetland areas of lesser value. NMFS has been involved in the formulation of a number of WCPs. However, these activities have pointed out the need for uniform guidelines in determining wetland functions and establishing values for wetlands serving those functions.

In light of this need, NMFS has joined with the EPA, COE, the Oregon Department of Fish and Wildlife, the Oregon Department of Environmental Quality, and the Oregon Division of State Lands to develop a wetland valuation method that will establish values for delineated wetlands. When developed, implementation of this methodology will ensure preservation of high-value wetland areas and will allow reasonable streamlining of the section 404/10 permitting process while ensuring compliance with Federal Clean Water Act requirements.

WASHINGTON

Restoration of Elwha River Ecosystem After Removing Dams

The construction of Elwha Dam in 1911 and Glines Canyon Dam in 1926 blocked anadromous fish passage to over 60 miles of mainstream and tributary habitat of the Elwha River in Clallam County, Washington. As a result, salmon and steelhead runs were decimated and the ecosystem disrupted.

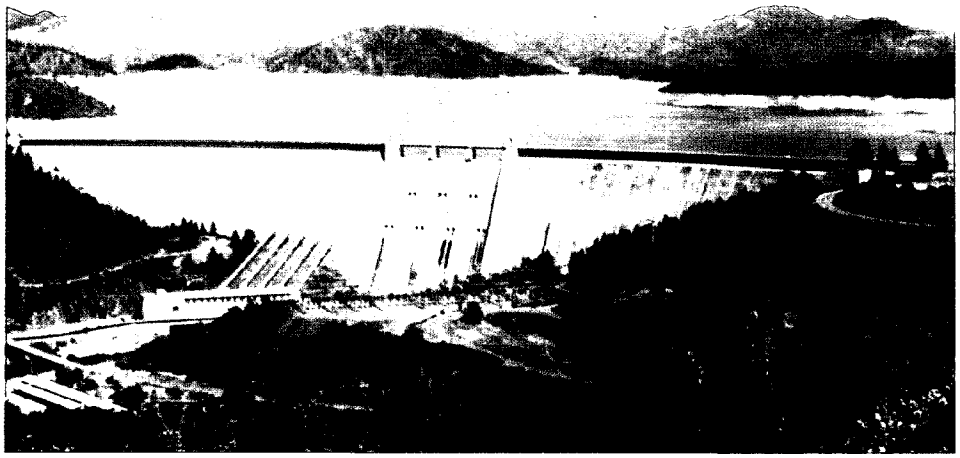

Figure 23. A typical hydroelectric dam.

FERC initiated licensing proceedings for the Elwha Project in 1968 and the Glines Canyon Project in 1975. FERC analyzed the alternatives of providing fish passage through the incorporation of passage facilities (e.g., ladders, fish screens) at the dams or dam removal. However, as a result of the lengthy and contentious FERC proceedings, the Elwha River Ecosystem and Fisheries Restoration Act (Public Law 102-495) was enacted in October 1992. This Act required that the Secretary of the Interior provide a Report to Congress by January 31, 1994, detailing a dam removal plan that would result in the full restoration of the ecosystem and native anadromous fisheries. Although NMFS is in the Department of Commerce, NMFS was selected to serve in the coordinating role for the preparation of the Report because of its expertise and leadership role in the FERC arena.

Investigations to date indicate that dam removal is feasible and would ultimately result in the restoration of the ecosystem and anadromous fish runs totalling about 250,000 fish per year.

Downward Trend of Fish Returns Reversed at Baker River Hydroelectric Project

This project is a 111 mega-watt hydroelectric project owned and operated by Puget Sound Power and Light Company. It is located in Skagit County, Washington, on the Baker River which is a tributary to the Skagit River. Although the license for this project does not expire until the year 2006, for the last several years NMFS has actively participated in an ad hoc project technical advisory committee along with the Puget Sound Power and Light Company, the Washington Department of Fisheries and Wildlife, the U.S. Forest Service, and the National Park Service. The committee was formed in the mid-eighties in response to plummeting returns of coho and sockeye salmon, and steelhead trout to the Baker River. The task of the committee is to obtain baseline information and develop and implement measures to reverse the downward trend in fish returns and, if possible, increase them to at least historic levels. Through a combination of improved

Figure 24. Salmon leaping in rapids on their way upstream to spawn.

downstream juvenile passage, pen rearing, and construction of a new sockeye spawning area, adult returns have increased dramatically. Coho salmon returns increased from 294 in 1984 to 7,400 in 1992. Sockeye salmon returns were at a historic low of 99 in 1985. In 1992, 2,443 returned and over 3,000 are expected back in 1993. Steelhead returns increased from a low of 38 in 1985 to over 900 for the 1992-1993 season. These restoration efforts and NMFS' participation and support will continue.

Yelm Hydroelectric Project

The diversion dam for this project creates a stretch of bypass of about 12 miles. When water is discharged back to the Nisqually River, fish are attracted to the tailrace discharge. Studies conducted by NMFS and others have demonstrated that this "false attraction" can result in significant delays for migrating adult salmon and steelhead. Also, fish can become injured as they try and ascend the draft tubes.

FERC determined that there was no problem at the Yelm powerhouse tailrace because there was no evidence indicating there was a problem. NMFS argued that there was no evidence because the operators, Centralia City Light, refused the request by NMFS and others to conduct a study of the problem. NMFS forced the issue to be addressed through the Federal Power Act's Section 10(j) dispute resolution process. During the dispute, NMFS was the lead for the various Federal and State agencies and with their help convinced FERC that the issue must be studied. FERC intends to make such a study a part of the licensing for the project.

Commencement Bay Restoration Planning

Commencement Bay (Tacoma, Washington's Harbor) in Puget Sound is near the top of the EPA's National Priorities List of hazardous waste sites. Under the Comprehensive Environmental Response, Compensation, and Liability Act, NOAA's Northwest Damage Assessment and Restoration Center (DARC) is actively engaged in a natural resources damage assessment (NRDA) effort. As part of this interagency natural resources trustee responsibility,

the NMFS Northwest's Restoration Center has participated in extensive restoration planning undertaken in conjunction with a group of businesses and local governments identified as potentially responsible parties (PRPs.) The unique combination of parallel NRDA planning paths and trustee/PRP cooperation should significantly reduce the time required to establish an estimate of damages and to ultimately effect restoration projects in Commencement Bay.

NMFS staff serves on the trustee negotiation team and as the restoration specialist in concert with the DARC Northwest resource counsel. In these roles, NMFS has participated in the finalization of plans for a pilot restoration project for the 1991 $0.6 million St. Paul (Simpson Tacoma Kraft) NRDA settlement. In addition, NMFS has helped craft a tentative $12 million plus property NRDA settlement with the Port of Tacoma which will accelerate local restoration planning.

F. Alaska Region

The Alaska Region, with its main office in Juneau and field office in Anchorage, manages large, valuable coastal and offshore fisheries. These fisheries are beginning to experience problems due to urban and industrial expansion typical in the other regions. The Alaska Fisheries Science Center (AFSC) in Seattle, Washington investigates the effects of petroleum development, logging, and mining on habitats and resources. AFSC also examines the relationship between environmental contaminants and diseases of demersal fish.

AFSC also manages the Marine Entanglement Research Program (MERP) authorized by the Driftnet Impact Monitoring, Assessment and Control Act of 1987 to study the nature, extent, and effects of North Pacific high seas driftnet fisheries on marine resources of interest to the United States.

The National Marine Mammal Laboratory, a part of the AFSC, studies the habitats of marine mammals, especially whales and northern fur seals.

EPA And COE Propose Exempting Alaska From Clean Water Act Provisions Based On One Percent Rule

Because an estimated less than 1% of the wetlands in the State of Alaska have been developed, EPA issued a proposed rule November 4, 1992, proposing that wetlands in Alaska receive less protection under the Clean Water Act. This proposal did not consider the importance of differentiation by wetland habitat type and geographic area and their significance to fisheries resources. NMFS pointed out that projects in coastal wetlands would have more critically significant effects on Alaska's fishery resources than would development in tundra wetlands. Almost all the coastal wetlands, and probably much of Alaska's fisheries resources, could be destroyed without reaching the 1% criteria. EPA decided to withdraw the proposed rule due to extensive negative comments.

Figure 25. Aerial view of proposed oil loading terminal site.

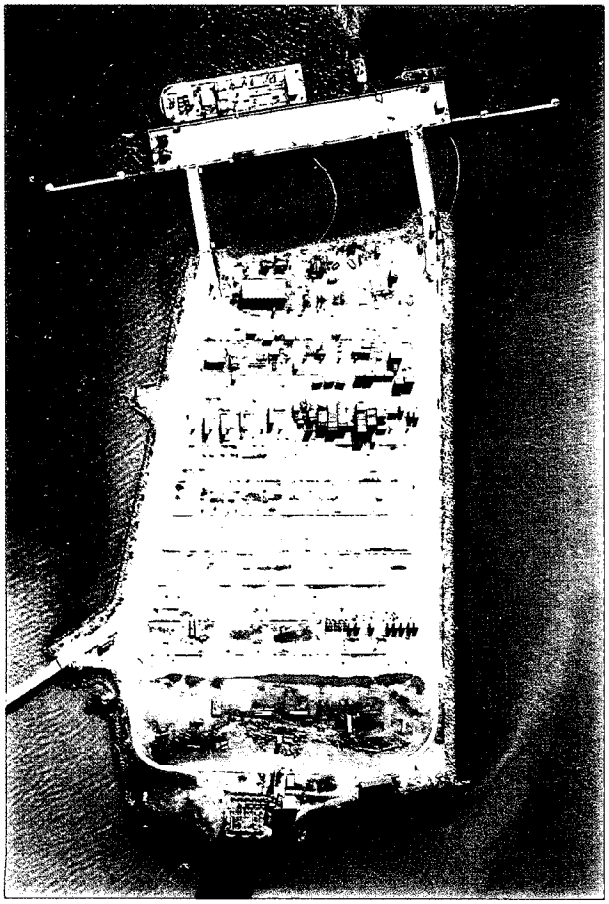

Figure 26. Closer view of the actual terminal.

City of Valdez Seeks Installation of Pipeline to Pump Petroleum to Barges at Valdez Container Terminal

In May 1992, The City of Valdez proposed to modify an existing COE permit issued in 1979 that stipulated no petroleum products were to be transferred at the Valdez Container Terminal (VCT), to authorize the installation of a pipeline at that site.

The pipeline would be used to deliver refined petroleum products from a new Petro Star refinery nearby to barges at the terminal. At risk of hydrocarbon pollution was nearby Duck Flats, a 1,000–acre salt marsh (which all parties agree is an Aquatic Resource of National Importance (ARNI)) with valuable habitat for five species of salmon, over 80 species of waterfowl, shorebirds, and other birds. The calculated value of only the salmon fisheries supported by the Duck Flats was $2.3 million annually.

NMFS objected to the proposed modification in May 1993, and recommended that the permit be denied due to the adverse impact of possible oil spills and chronic low-level pollution from hydrocarbons on Duck Flats. Further, the proposed permit did not meet the alternative analysis requirements of the NEPA and the CWA. NMFS also believed that there were unresolved national policy and procedural issues that required further consultation.

In compliance with 404(q) guidelines, NMFS regional staff requested higher review of the permit modification by the Assistant Secretary for Oceans and Atmosphere (ASOA.) The issue was submitted to the ASOA who then requested higher review of the permit modification by the Assistant Secretary of the Army, Civil Works (ASA(CW)).

The permit modification review by the ASA(CW) concluded that substantial and unacceptable impacts to the resources might occur as a result of spills and determined that additional evaluation of the project and the practicability of alternative sites is required. The permit modification request was denied pending further and more thorough analysis; thus, the COE acknowledged and met all of the NMFS requests.

Habitat Protection Working Group

A council of six Federal and State trustees was established to administer the $900,000,000 civil settlement to restore resources and services injured by the *Exxon Valdez* oil spill. NMFS habitat biologists, in cooperation with the Office of Oil Spill Damage Assessment and Restoration, participated in the Habitat Protection Working Group during the habitat evaluation process. NMFS coordinates with the other agencies for NOAA trust resources damaged by the oil spill.

The Trustee Council takes "restoration actions" such as acquisition of habitat by purchase of private land or partial interest such as conservation easements, mineral rights, or timber rights to prevent further injury to the resources. After an extensive ranking process including evaluation of development threats, the Council approved for acquisition 7,500 acres in the China Poot area near Kachemak Bay. Seal Bay, located on Afognak Island, was also ranked highly. Acquisition of Seal Bay was discussed at the Trustee Council meeting May 13, 1993. A property owner donated 2,500, acres clearing the way for the acquisition of all 17,391 acres. The Trustee Council approved funding for this parcel contingent on appraisals, title search, etc.

Copper River Highway Construction

The Alaska Department of Transportation (ADOT) started road construction in regulated habitats in the Copper River prior to obtaining all the proper permits and authorizations. If completed, the road would provide a connection between the city of Cordova and the rest of Alaska. The portion of the project completed without authorization entailed the construction of approximately 200 feet of roadbed along approximately 1.7 miles of riverbank. Several clearwater tributaries and drainages were crossed. The impacts of this project resulted in the loss of important riparian wetlands along the banks of the Copper River and the discharge of fill into clear water streams, resulting in adverse impacts to important spawning and rearing habitat for salmonids.

NMFS made formal comment to the COE on the importance of the Copper River and its tributaries in providing migration, spawning and rearing habitat for salmonids. Facts on the importance of riparian wetlands in maintaining the resources of the Copper River drainage were also provided. In addition, NMFS commented on the significance of the habitat to commercial and recreational fisheries.

The COE has taken the case to the U.S. Attorney and is presently in the discovery phase. No trial date has been set. In the interim, the ADOT has begun work on an Environmental Impact Statement to evaluate the project alternatives and other routes available to construct a road to Cordova. NMFS has provided comments on the preliminary alternative analysis.

PROGRAM ACCOMPLISHMENTS

Seafood Processing Discharge into Nearshore Marine Waters Near Dutch Harbor on the Aleutian Chain, Alaska

Captains Bay, the body of water receiving the effluent, is a deep fiord with a very shallow entrance that inhibits circulation within the water column. Past research has found naturally occurring oxygen depletion within the Bay during late summer. The addition of a high-volume oxygen-demanding effluent threatened the health of the Bay's resources, including commercially important fish and shellfish. This was the first major discharge authorized for Captains Bay.

NMFS staff expressed concern about the potential impacts to fisheries resources associated with the proposed discharge. During the public review period for the permit, NMFS coordinated extensively with EPA, recommending reductions or alterations to the discharge which would minimize water quality impacts. EPA, however, decided to issue a permit for the discharge. NMFS biologists travelled to the site before the proposed permit authorization date, intending to document local marine resources in the vicinity of the outfall. Using SCUBA gear, NMFS biologists found the processing company had begun discharging wastes prior to the effective date of the EPA permit. Further, the material discharged was not in compliance with the pending permit's conditions. NMFS documented the discharge on a videotape which was then provided to the EPA.

As a direct consequence of NMFS' actions, the EPA's Office of the Inspector General, initiated a full review of the case culminating in the issuance of a Special Report in January 1992. The Report found EPA was not justified in issuing this permit, that improper procedure had been followed, and that enforcement of the violations had been absent or inadequate. The EPA Inspector General found 17 separate violations of the discharge limitations for this permit and recommended civil penalties as well as revocation of the permit. The EPA did not, however, revoke the authorization but did levy fines on the permittee and order full compliance with permit limitations. As a result, wastes are screened prior to discharge and the applicant now is attempting to maximize by-product recovery of fishwaste for the manufacture of fishmeal.

In conducting follow-up site investigations the following year, NMFS research biologists discovered hundreds of red king crab, urchins, and octopus dead or dying in the immediate vicinity of this plant. Analysis of biological samples collected at the site suggested the animals died from oxygen depletion. NMFS also sampled water chemistry and found dissolved oxygen levels below two ppm — well below levels that could kill many fish and invertebrates. The conditions probably result from discharging condensate from the fishmeal plant and waste water from the processing plant (both effluents have extremely high biological oxygen demand). Captains Bay has since been identified as an "Impaired Water" under Section 303(d) of the CWA. EPA is now proposing to modify the permit and NMFS will be involved in this process.

Construction of a Commercial Boat Harbor in St. Hermans Harbor, Kodiak, Alaska

The proposed harbor would place a rubblemound rock breakwater across an 1800 foot-wide, 60 foot-deep channel between two islands. This channel is one of several local areas which act as juvenile rearing (nursery) habitat for the red king crab. The king crab population comprises one of the State's most valuable commercial fisheries. Past census data had indicated upwards of 10,000 crabs utilizing this immediate area. This project would destroy several acres of crab habitat through filling and partially block a migration corridor between St. Hermans Harbor and the open ocean.

NMFS biologists and scientists worked with the local sponsor, the City of Kodiak, and the COE to construct replacement habitat for the red king crab. Through NMFS research, a strong correlation between juvenile crab and certain vertical structures, such as wood piling, was discovered. From this research, a proposal was developed to utilize the Corps construction engineers and local materials to mitigate the loss of habitat. The Corps has dedicated $75,000 to the project. NMFS personnel are acting as consultants to the Corps of Engineers and will monitor the success of the mitigation after construction.

Bradley Lake and Terror Lake Hydroelectric Projects

The Bradley Lake and Terror Lake hydroelectric projects, planned and constructed in the late 1980's, are the two largest hydroelectric developments in Alaska. Both projects were located on important anadromous fish streams with multiple populations of Pacific salmon. They were licensed with a special condition requiring the operator to release adequate water for fish since the migrating, spawning, and rearing waters for these fish populations would have been severely reduced by upstream storage for hydro-generation.

NMFS biologists were extensively involved in the early planning processes of these projects. Through this coordination, NMFS was able to work with the developer prior to, as well as during, the Federal license review process. NMFS advocated release of waters to maintain all downstream fishery habitat. After construction, NMFS has maintained contact with the operators and periodically reviews each project to insure the salmon and their habitat remain viable.

The salmon populations of both hydroelectric development sites have responded, remaining stable within the Badley River. Salmon in the waters affected by the Terror Lake project have increased by 150,000 fish since operations began.

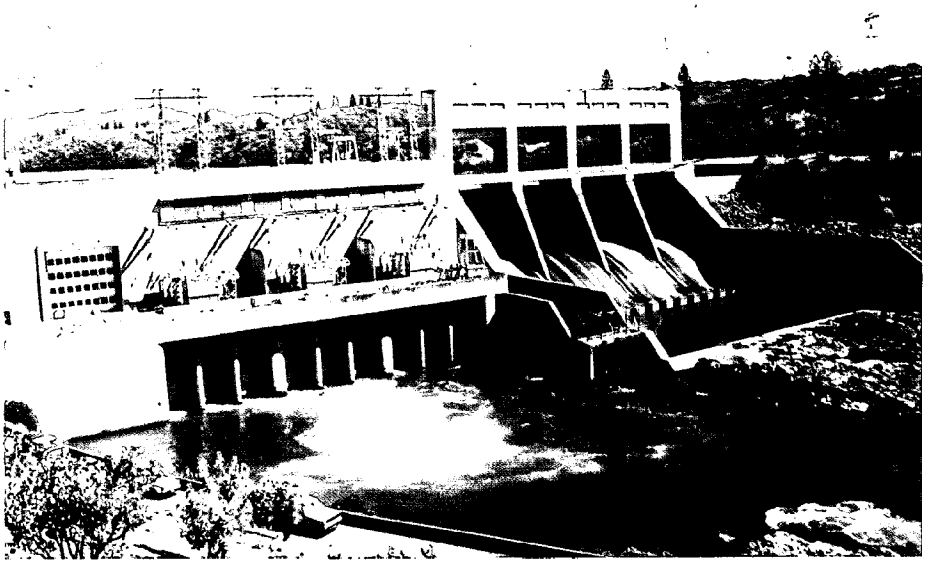

Figure 27. An example of a hydroelectric dam with fish ladders at right.

PROGRAM ACCOMPLISHMENTS

The Trans Alaska Gas System (TAGS) Pipeline to be Built by the Yukon Pacific Corporation

A project is being developed that will include a gas conditioning plant on the North Slope and an 800-mile long, 42-inch diameter, chilled and buried pipeline. The TAGS pipeline will transport natural gas along the same route as the existing Trans Alaska Pipeline (TAPS) which carries crude oil from the North Slope to Valdez. The new pipeline will terminate at Anderson Bay approximately three miles west of the TAPS crude oil terminal. Anderson Bay will be the site of the TAGS liquefaction plant and terminal where Alaska's North Slope natural gas reserves will be transformed into liquefied natural gas and shipped to customers in Japan, South Korea and Taiwan.

NMFS staff actively participated on an interagency task force involved in reviewing and commenting on the proposed TAGS route and marine terminal project. NMFS participation raised concerns that the original EIS did not fully address impacts to living marine resources and aquatic habitat at the proposed Anderson Bay Terminal Facility including the need for additional Section 7 consultation under the Endangered Species Act

As a result of NMFS intervention, FERC is in the process of completing a supplemental EIS. This document responds to NMFS comments in ways that result in project changes to reduce and avoid impacts such as:

1. developing timing constraints for discharging of fill into open water to reduce impacts on fish by minimizing siltation and turbidity during critical life stages,
2. changing the location of the disposal site for overburden to reduce habitat loss of intertidal and wetland areas.

Tongass Timber Reform Act

The anadromous fish populations in Alaska exist because of extensive freshwater habitat for spawning and rearing of fish. In 1988, the Alaska Region of NMFS established and promoted a policy for riparian habitat protection in Alaska in order to maintain optimum production of anadromous salmonids. Research conducted by the NMFS Alaska Fisheries Science Center recommended a minimum buffer zone width of 30 meters (100 feet) be maintained on each side of anadromous fish streams during timber harvest operations.

Subsequent to publication of NMFS' recommendations, an extensive conservation movement was carried out in Alaska related to habitat protection of anadromous fish habitat on the Tongass National Forest. It culminated on November 28, 1990, in the amendment of the Alaska National Interest Lands Conservation Act with the Tongass Timber Reform Act (Public Law 101-626). Contained in the law is the requirement that the Secretary of Agriculture maintain a buffer zone within which commercial timber harvesting shall be prohibited, of no less than one hundred feet in width on each side of all Class I streams (anadromous fish streams) in the Tongass National Forest and on those Class II streams (tributaries to anadromous fish streams) which flow directly into a Class I stream. NMFS staff were active in many aspects of the legislative process, including public and Congressional hearings, and success of the legislation can be largely attributed to NMFS' participation and influence on the process.

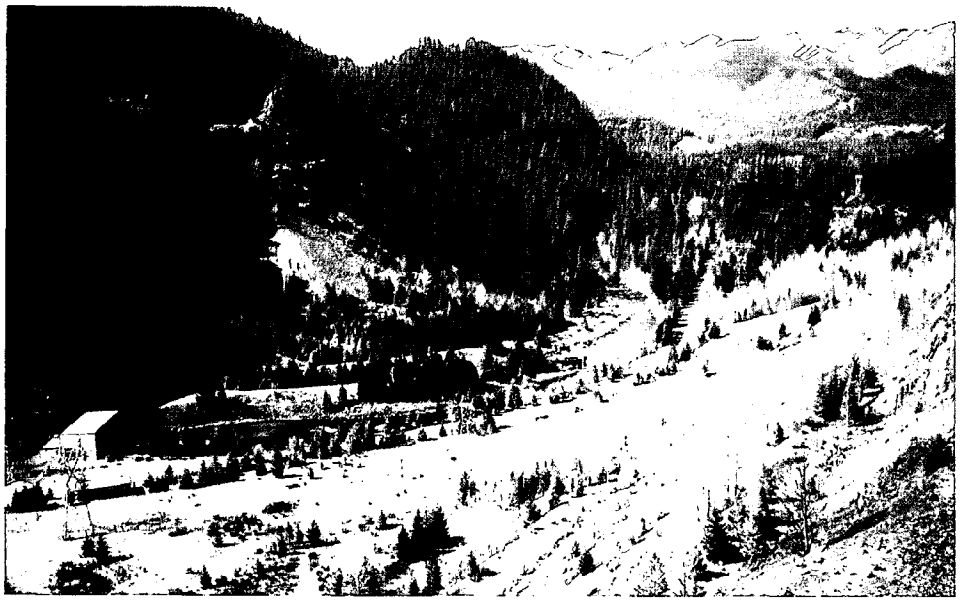

Figure 28. Wooded valley in varying stages of timber removal.

Airport Expansion at Hoonah, Alaska

Plans to expand the Hoonah airport required the filling of 11.5 acres of tidal-influenced wetlands. NMFS recommended mitigation for the project include several components: 1) forming intertidal pools near two small coho salmon streams at the seaward end of the runway; 2) widening and contouring Gartina Creek for spawning habitat (chum and pink salmon used the area the first season after construction, 1992); 3) enhancing a rearing area made by flooding an abandoned 1.2 acre borrow pit by adding boulder clusters and cable-anchored trees. Coho salmon and Dolly Varden char were observed in this area the first season after construction (1992); 4) creating a spawning area and rearing pool while re-routing a 200-foot long section of Coho Creek; 5) creating four ponds for migrating salmon rearing and resting areas in upstream Coho Creek. The stream was diverted into the ponds and has been used for spawning by pink salmon; 6) installing two new culverts so Coho Creek could be used for rearing salmon; and 7) replacing a road crossing at Shotter Creek with an open arch culvert to preserve the spawning area. Before any work was done in that particular section of the creek, all fish were seined and placed elsewhere in the same system.

V. Future Directions

Although there has been much progress from 1991 through 1993, much remains to be done. The loss of near shore ocean and estuarine fishery habitat is one of the greatest long-term threats to the productivity of U.S. marine fisheries. These losses and degradation of the remaining habitat are major factors contributing to poor harvests, depletion, endangerment, and extinction of living marine resources. Managing the stocks and promoting the recovery of endangered or depleted stocks is no longer sufficient. We must find additional ways to protect the habitat of these marine resources more aggressively if they are to survive.

Based on the findings of recent reports from the Department of Commerce's Office of the Inspector General (OIG), William Chandler Associates, and the National Fish and Wildlife Foundation, OHP has undertaken the following actions.

- Articulation of a new national direction for both the headquarters and field office,.

- Development of budget initiatives to obtain necessary resources for implementation of NMFS' mandated habitat authorities,

- Pursuit of stronger legislative authority through amendments to existing statutes, improvement of existing memoranda of agreement by which issues are elevated from the field to Washington, D.C., and

- Development of a national performance tracking system to document program accomplishments.

A. Programmatic Alignment

In October 1992, NMFS created OHP. This office will achieve program recognition by filling the Director's position at the Senior Executive Service level. The Director will exercise greater authority over the development of national habitat protection policy and setting priorities over NMFS' headquarters and regional program management activities. The NMFS Restoration Center will be transferred into OHP to ensure full integration of habitat protection and restoration activities. In addition, a new Anadromous Fish Habitat Division has been created. The purpose of this Division is to position NMFS as a lead Federal agency for protecting, restoring, and enhancing the Nation's anadromous fish habitat. The Division staff is also involved in rulemaking, developing an NMFS anadromous fish habitat policy, interacting with officials of the Departments of Agriculture and Interior, and activities with Treaty tribes, states and private interest groups.

Efforts are underway to improve OHP's interaction with FERC. Meetings in 1993 have signaled the beginning of a new, improved relationship with this agency. FERC Commissioners have supported increasing public and resource management agencies' involvement in their activities. FERC also has solicited public comment on decommissioning old projects and the mitigation of cumulative adverse impacts. OHP and NMFS field offices will actively work with FERC on these issues.

Another important program area will be increased application of habitat management by ecosystem (watershed). The health of coastal wetlands and oceans, as well as their biota, depends on the water quality of the watersheds that feed them. The entire water system surrounding the site of possible or actual damage must be considered because the cause of damage may be located some distance away. In coming years Habitat Protection field staff and OHP will continue the development of protocols and fine tune procedures to improve the techniques of ecosystem management. The Chesapeake Bay Program is essentially an ongoing experiment in ecosystem management. The Chesapeake Bay Office successfully integrates NOAA's capabilities in a manner that efforts can be transferred elsewhere.

B. New National Direction

To establish a new national direction to the field offices, the 1983 Habitat Conservation Policy is being revised. Development of the new policy will involve NMFS headquarters, field offices, other NOAA offices, MAFAC and other constituents. Elements of the policy will include: strong mandates to protect habitats of living marine resources through active and effective fishery habitat consultation; coordination between NMFS habitat research and management activities; alliances with NMFS and the Regional Fishery Management Councils; and encouragement for NMFS to meet with permit applicants before they submit Federal license or permit applications. When completed, the policy will be published in the Federal Register.

C. Habitat Protection Legislative Initiatives

While the above-mentioned actions planned in the administrative, policy and budget areas will greatly improve OHP activities related to our ongoing mission and responsibilities, over the long term a stronger NMFS habitat program will require changes in our statutory mandates. OHP has become involved in several Administration initiatives seeking to improve existing legislative authorities to address current and future environmental issues. OHP will build upon the following activities to strengthen the legal basis for protecting living marine resource habitats.

Increase Habitat Protection Responsibilities and Authorities in NMFS-Specific Legislation:

Under the reauthorization of the Magnuson Fishery Conservation and Management Act, OHP is seeking changes to emphasize the importance of marine, estuarine and aquatic habitats to commercial and recreational fisheries. This includes proposed amendments requiring the formal identification of marine and estuarine fish habitats that are essential to obtaining optimum fishery yields. OHP will continue to seek amendments to the Fish and Wildlife Coordination Act that will augment the NMFS' existing consultative role in the review of Federal actions.

Broaden Habitat Protection Provisions in Other Key Environmental Laws:

OHP will continue direct involvement with the reauthorization of the Clean Water Act (CWA) through its Chesapeake Bay Office, which represents NMFS on the Interagency CWA Working Group. OHP's headquarter's Habitat Policy and Management Division represents the Department of Commerce on the White House's Interagency Working Group on Federal Wetlands Policy and NMFS on the Interagency Working Group on the Dredging Process. This latter group will also examine the Marine Protection, Research and Sanctuaries Act, the River and Harbor Act, and the

Water Resources Development Act in terms of enhancing its habitat protection provisions.

Seek Greater Habitat Protection Emphasis in NOAA-Specific Legislation:

OHP will continue to work with other NOAA elements in the creation of legislation to protect coral reefs and associated ecosystems, in both this country and internationally, under the Department of State's U.S. Coral Reef Initiative. The 1995 reauthorization of the Coastal Zone Management Act will also provide opportunities to expand Federal/state partnerships and improve the national mandates in a number of areas including preserving important coastal habitats and developing non-point source pollution control plans.

D. Habitat Protection Budget Initiative

A multi-year budget plan for the Habitat Protection Program has been developed in direct response to the OIG January 1994 Report on the Office of Habitat Protection. This budget initiative is designed to meet the Administration's "no net loss" of wetlands policy and mandated NMFS mission to provide more protection for living marine resources. This plan is being fully integrated into NOAA's Strategic Plan. The plan identifies five specific areas that require enhancement of funding for NMFS to address the declines in living marine resource habitats.

Basic Habitat Protection Program:

Resources are being sought to augment Habitat Protection Program activities aimed at an integrated approach to managing and protecting the marine resources, watershed management and human impacts. NMFS will work to secure resources to support four essential Habitat Protection Program activities. Funds will be provided for increases in quantity and quality of consultations on Federal projects, permits and licenses with significant detrimental effects on coastal ecosystems and biodiversity. Increased identification of habitat in Magnuson Act Fishery Management Plans will be strongly encouraged. Proactive participation in Coastal America, the National Estuary Program and any new Clean Water Act watershed planning will be considered part of the base program rather than added responsibilities. NMFS will significantly increase technical-scientific support for regional habitat staff in developing sound agency positions on critically important projects.

Magnuson Act Amendment Requiring Identification of Essential Habitat:

Passage of proposed fishery habitat amendments to the Magnuson Fishery Conservation and Management Act under the 1994 re-authorization will require additional resources. Upon passage of these amendments, there will be an urgent need to identify essential fish habitats in the fishery management plans. Designation of essential habitats will identify key geographic areas of concern for Federal and state agencies and the public. Support will be needed to assist the eight Fisheries Management Councils to identify essential habitats and incorporate them as amendments to their plans.

Anadromous Fishery Habitat Improvements:

Anadromous fish stocks are imperiled in all regions of the United States, primarily due to loss of habitat and impacts of hydropower dams. Because licenses for dams are issued for a period of up to 50 years, NMFS fishery consultations with FERC represent a major opportunity to overcome adverse effects caused by past and future licensing. Over 200 major hydroelectric

dams are to be licensed or re-licensed during the next 10 years. This offers NMFS a major challenge to recommend and participate in improvements in anadromous fishery resources. Priority will be placed on activities designed to protect anadromous fishery habitats both as part of license consultation and participation in development of new national policies or processes such as developing regulations for fishway design.

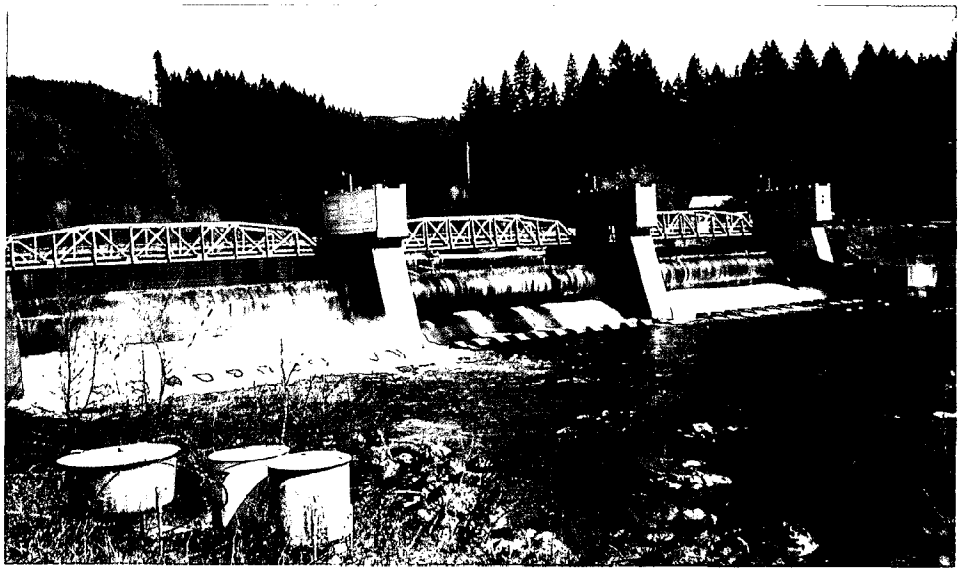

Figure 29. A dam on the Mackenzie River outside of Eugene, Oregon.

Activities to Avoid Endangered Species Act Listings:

Funds will be requested to improve existing programs aimed at reducing the need for listings of endangered species (i.e., pre-listing processes associated with the identification of essential habitats for candidate species, participation in the assessment and determination of essential habitats and ecosystem health for candidate species, collection of information regarding potential threats and impacts in designated areas, and advance planning and permit reviews to avoid irrecoverable losses of habitats and ecosystem health). Habitat Protection Program activities which link closely to NMFS' Protected Resources initiatives outlined in the NOAA Strategic Plan to take a proactive approach to species and habitat protection will receive special emphasis.

Habitat Restoration & Mitigation Technology Development:

Restoration has not been attempted for many NOAA trust habitats because of a lack of appropriate methodologies and funding. Most of the methods for restoring habitats that have been adversely affected or altered have not been rigorously tested under controlled conditions or in a range of geographic areas. As a consequence, a significant proportion of restoration actions have been viewed with skepticism relative to their success. New funds will be sought for watershed restoration plans developed by Federal, state, and nongovernmental partners and program development plans for Habitat Restoration Research Programs are emphasized. The improvements of science in the mitigation of developmental activities to avoid the need for later restoration of degraded resources are to be given the highest priority. Research on innovative techniques developed for restoration and clean-up approaches will have special preference. Plans to provide

databases for protocols will be essential. In addition, mitigation techniques research dealing with such continually controversial issues such as beach nourishment, marsh management and use of contaminated dredged material will receive strong encouragement. Funds will be set aside for the creation of habitat evaluation teams which will serve to increase the access of NMFS regulatory staff to scientific and technical support.

E. New National Tracking System

The current lack of an adequate performance tracking system is a major obstacle in evaluating program effectiveness and communicating program accomplishments. To correct this problem, OHP will fund a contract to create a tracking system. It will use regionally-generated data fed into an integrated national database to generate information on permits and construction programs and project accomplishments. When in place, the system should provide consistent, accurate and timely data on the status of all national and regional OHP habitat projects.

Regional Habitat Directory

National Marine Fisheries Service

Regional Habitat Offices

Northeast Region Habitat & Protected Resources Division
One Blackburn Drive
Gloucester, MA 01930-2298
(508) 281-9300
FAX: (508) 281-9301

Southeast RegionHabitat Conservation Division
9721 Executive Center Drive
St. Petersburg. FL 33702
(813) 893-3503
FAX: (813) 893-3111

Southwest Region Habitat Conservation Division
501 W. Ocean Blvd., Suite 4200
Long Beach, CA 90802-4213
(310) 980-4041
FAX: (310) 980-4047

Northwest Region Habitat Conservation Branch
911 N.E. 11th Avenue, Rm. 620
Portland, OR 97232
(503) 231-2376
FAX: (503) 230-3388

Alaska Region Protected Resources Management Division
P.O. Box 21668
Juneau, AK 99802-1668
(907) 586-7235
FAX: (907) 586-7131

List of Acronyms

af	acre feet
AFSC	Alaska Fisheries Science Center
ARNI	Aquatic Resource of National Importance
ASA(CW)	Assistant Secretary of the Army (Civil Works)
ASOA	Assistant Secretary for Oceans & Atmosphere
BR	Bureau of Reclamation
CCC	California Coastal Commission
CCMP	Comprehensive Conservation and Management Plan
CDFG	California Department of Fish & Game
CERCLA	Comprehensive Environmental Response, Compensation, & Liability Act of 1980
CEQ	Council on Environmental Quality
cfs	Cubic feet per second
COE	Army Corps of Engineers
CVP	Central Valley Project
CWA	Clean Water Act
cy	cubic yards
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DARC	Damage Assessment Restoration Center
DEP	Department of Environmental Protection
DMR	Department of Marine Resources
DNR	Department of Natural Resources
DNREC	Department of Natural Resources and Environmental Control
DOC	Department of Commerce
DOE	Department of Energy
DOI	Department of Interior
DOT	Department of Transportation
EEZ	Exclusive Economic Zone
EIR	Environmental Impact Review
EIS	Environmental Impact Study
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FMP	Fishery Management Plan
FSM	Federated States of Micronesia
FWPCA	Federal Water Pollution Control Act
GCID	Glenn-Colusa Irrigation District
HAZMAT	Hazardous Materials
HCP	Habitat Conservation Program
HGP	Hawaii Geothermal Project
LMR	Living Marine Resources
MAFAC	Mid-Atlantic Fisheries Advisory Council
MAFMC	Mid-Atlantic Fisheries Management Council
MFCMA	Magnuson Fishery Conservation and Management Act
mllw	mean least low water
MMPA	Marine Mammal Protection Act

LIST OF ACRONYMS

MPRSA	Marine Protection, Research, and Sanctuaries Act
MRC	Marine Review Committee
mw	megawatt
NEFSC	Northeast Fisheries Science Center
NEP	National Estuary Program
NEPA	National Environmental Policy Act
NERR	National Estuarine Research Reserve
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRDA	Natural Resources Damage Assessment
NWFSC	Northwest Fisheries Science Center
NYS	New York State
OAD	Ocean Assessments Division
OPA-90	Oil Pollution Act of 1990
OSC	On-Site Coordinator
ppm	parts per million
PRP	Potentially Responsible Party
RBDD	Red Bluff Diversion Dam
RO	Regional Office
SAMP	Special Area Management Plan
SCE	Southern California Edison
SEFSC	Southeast Fishery Science Center
SMBRP	Santa Monica Bay Restoration Project
SONGS	San Onofre Nuclear Generating Station
SPREP	South Pacific Regional Environment Program
SWFSC	Southwest Fishery Science Center
TAGS	Trans Alaska Gas System
TAPS	Trans Alaska Pipeline
TCC	Tehama Colusa Canal
USFWS	U.S. Fish & Wildlife Service
VCT	Valdez Container Terminal
WCP	Wetland Conservation Plan

Glossary

Anadromous	Fish, such as salmon, that spend part of their life in the sea but ascend rivers at regular intervals to spawn.
Archimedes screws	Device made of a tube bent spirally around an axis used to raise water over a restriction.
Appurtenant structure	Accessory structure on a harbor or dock.
Backfill	Materials placed behind a dike or berm for reinforcement or increased strength.
Barrier islands	Sandy, elongated island just off the coast which serves to provide protection to lagoons and wetlands from marine elements; these dynamic islands form and change position and shape in response to coastal processes and human actions.
Benthic	Occurring at the bottom of a body of water, usually in the depths of the ocean.
Berm	Strip of ground along a dike.
Borrow pit	Excavated area where materials have been removed for use as fill elsewhere.
Cap	Method of covering a material, generally contaminated sediments, with a layer of clean material in order to prevent the release of the tainted material into the water body.
Culvert	A transverse drain which redirects water flow.
bedding	Materials, generally gravel, used to replicate natural river bottom lining the bottom of a culvert.
sizing	Specialization of culvert diameter to best replicate natural flow of water which would alter fish passage.
Dike	Bank, usually of earth material constructed to control or confine waters.
Drum screen	Type of fish screen which revolves in order to move fish across a weir and around a dam.
Earthen plug	Dike composed made from dredged material and rubble to block or fill breached areas or canals.
Effluent	Waste material discharged into the environment.

GLOSSARY

Estuary	Shallow bodies of water, such as bays, where freshwater empties into and mixes with saltwater.
Fault line	Fracture line in the Earth's crust accompanied by a displacement in the parallel direction.
Fish ladder	Mechanism for fish which bypasses a dam and imitates the step-like terrain of natural riverbed.
Fish screen	Barrier which prevents or diverts fish from entrance into turbines or spill ways.
Fishway	Corridor set aside which allows fish, generally salmon, to travel around a dam or natural structure on a river.
Fixed-crest weir	A dam or blockade used to raise the water level or divert flow which is invariable in its height.
Fluvial	Organisms and materials living in streams or produced by stream action.
Hard-bank community	Substrate composed generally of rock or reef material which supports a specific community, compared to a community over a sand or shell substrate.
Ichthyo-plankton	Larval stages of fish which have little control of movement through the water column.
Impaired water	Rivers and streams impeded by dams, dikes, berms, etc.
Mud waves	Disturbance of marsh/mudflats by air or water currents which increases erosion and disturb habitat.
Outfall	The outlet of a river or stream or discharge point of a drain or sewer.
Overburden	Dredged material from land, channel, or harbor, generally composed of rock.
Pioneer road	New road development through a previously undeveloped area.
Predation sink	The result of a malfunctioning fish passage, a dead-end passage which traps fish and does not permit their return to the river from a passage.
Relieving platform	Dock facilities and infrastructure within harbors.
Riparian	Vegetated ecosystems found along a stream or river; such areas characteristically have a high water table and are subject to periodic flooding and influence from the adjacent water body.

GLOSSARY

Rotary ditcher	Tool used to dig shallow water courses through wetlands with minimal environmental impact from disposal of dredged material.
Rubblemound	Rock pile used to break strong currents and wave energy in order to protect sensitive nearshore habitat.
Scarps	Ditches below a fortification or a low steep slope along a beach caused by wave erosion.
Spoil	Dredged material from a harbor, channel, or land, containing sediment, organics, or rock material.
Sprigging	Method of planting seagrasses or salt marshes with vegetative stalks in the reconstruction of wetlands, saltmarsh, or seagrass beds.
Tailrace	Outfall region at the end of a fish passage diversion which circumvents a dam.
Tide gate	Mechanism used to regulate tidal flow through impounded areas, generally wetlands and salt marshes.
Variable-crest weir	A weir which can be set at varying heights to alter water flow.

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