

National Marine Fisheries Service Reorganizes

Reorganization of the National Marine Fisheries Service (NMFS) was announced last fall by then-secretary of Commerce Elliott L. Richardson. Under the Commerce Department's National Oceanic and Atmospheric Administration (NOAA), the Service has realigned its organization and functions in keeping with new and expanded responsibilities in fisheries management under the Fishery Conservation and Management Act of 1976.

The reorganization provides a single focal point for policy development and managerial guidance at headquarters level, emphasizes long-range planning and program evaluation, consolidates the management and planning of fisheries research and utilization functions, delegates more authority and operational responsibility to units in the field, and streamlines the organization of headquarters staff units.

A new position of Associate Director, who will execute policy decisions of the Director and allocate Service resources, has been established.

Four new staff offices have been organized within the Washington, D.C., headquarters: the Office of Scientific and Technical Services, the Office of Fisheries Development, the Office of Policy Development and Long-Range Planning, and the Office of Marine Recreational Fisheries. Three offices have Directors for Resource Research, Resource Utilization, and Resource Management.

Four offices will remain basically unchanged: the Office of International Fisheries; the Office of Executive and Administrative Support; the Office of Program Planning, Budget, and Evaluation; and the Office of Fisheries Management.

The Office of Scientific and Technical Services assists the Director with environmental protection, the Columbia River Program, environmental impact statements, aquaculture and other research, resource assessment, and with integration of programs.

The Office of Fisheries Development provides staff advice and review at the

national level on financial assistance programs, harvesting and marketing technology, regional fisheries development programs, foreign trade, voluntary inspection and grading programs, and on product standards for seafoods.

The Office of Policy Development and Long-Range Planning reviews, evaluates, and coordinates current policies and programs; develops studies of new theory, techniques, and procedures to achieve fisheries resource quotas which will protect the stocks; and predicts the impact of complex, multi-species fisheries decisions.

The Office of Marine Recreational Fisheries coordinates the planning and development of a diversified program in marine recreational fisheries and relates with other governmental, state, and private organizations.

Seven existing fisheries research centers and three existing utilization research centers have been consolidated into four centers responsible for both biological/environmental research and fisheries utilization research. This change involves a decentralization of authority and a consolidation of management responsibility for NMFS research.

No fisheries laboratories will be closed or relocated as a result of the reorganization, but all research units will report directly to one of the four research centers in the field instead of to Washington headquarters.

Additionally, research centers now have primary responsibility for the conduct of socio-economic research required for the development of fisheries management plans under the provisions of the Fishery Conservation and Management Act of 1976. The four centers are also responsible for providing scientific research support to the Regional Fishery Management Councils established by the Act.

The four centers and their component units are:

NORTHEAST CENTER (WOODS HOLE, MASS.)
Woods Hole Laboratory
Woods Hole, Mass.
Narragansett Laboratory
Narragansett, R. I.

Gloucester Laboratory
Gloucester, Mass.
Highlands Laboratory
Highlands, N.J.
Milford Laboratory
Milford, Conn.
Oxford Laboratory
Oxford, Md.
National Systematics Laboratory
Washington, D.C.
Atlantic Environmental Group
Narragansett, R. I.

SOUTHEAST CENTER (MIAMI, FLA.)

Miami Laboratory
Miami, Fla.
Pascagoula Laboratory
Pascagoula, Miss.
Galveston Laboratory
Galveston, Tex.
Panama City Laboratory
Panama City, Fla.
National Fisheries Engineering Laboratory
Bay St. Louis, Miss.
Port Aransas Laboratory
Port Aransas, Tex.
Beaufort Laboratory
Beaufort, N.C.
College Park Laboratory
College Park, Md.

SOUTHWEST CENTER (LA JOLLA, CALIF.)

La Jolla Laboratory
La Jolla, Calif.
Tiburon Laboratory
Tiburon, Calif.
Honolulu Laboratory
Honolulu, Hawaii
Pacific Environmental Group
Monterey, Calif.

NORTHWEST AND ALASKA CENTER (SEATTLE, WASH.)

Seattle Laboratory
Seattle, Wash.
Auke Bay Laboratory
Auke Bay, Alaska

More decentralization of program direction and control from Washington to the five NMFS Regional Offices (located in Gloucester, Mass.; St. Petersburg, Fla.; Terminal Island, Calif.; Seattle, Wash.; and Juneau, Alaska) will also be achieved. Among the management functions previously performed in Washington that will now be performed by regional offices are enforcement and surveillance, fisheries statistics, and fisheries financial support.

Moreover, new functions stemming from extended jurisdiction will be added to regional responsibilities; administrative and technical support to the Regional Fisheries Management Councils will be provided by the regional offices; and Regional Directors, under the Act, will serve as members of the Councils.

NOAA ANNOUNCES NEW APPOINTMENTS

J. Frank Hebard, an oceanographer with the National Oceanic and Atmospheric Administration (NOAA), has been appointed Director of the Commerce Department agency's Marine Ecosystems Analysis (MESA) program. The MESA program, managed by NOAA's Environmental Research Laboratories, is concerned with the impact of human activities on selected marine ecosystems. Present studies focus on the marine life and environment of the New York Bight and Puget Sound, and on the environmental consequences of deep-ocean mining.

Before assuming his present position, Hebard was chief of NOAA's Marine Environmental Protection Office in Rockville, Md., and also held several posts within the agency's National Marine Fisheries Service. He began his career as a biological oceanographer with Fisheries Service programs in Seattle, Wash., and later at the Auke Bay Biological Laboratory in Alaska.

Donald K. Atwood, a research chemist and oceanographer, has been appointed Director of the new Ocean Chemistry Laboratory in Miami, Fla., by the National Oceanic and Atmospheric Administration (NOAA). The NOAA laboratory, part of the Commerce Department agency's Atlantic Oceanographic and Meteorological Laboratories (of NOAA's Environmental Research Laboratories), studies the origin, identity, movement, and ecological impact of various organic and inorganic pollutants. It also pioneers new techniques for identifying pollutants in samples taken from the marine environment, and develops predictive ocean chemistry models of selected ecosystems.

Atwood has been an associate professor in chemical oceanography for the past seven years, at the University of Puerto Rico's Marine Sciences Department. Prior to that he was a research chemist with Standard Oil of New Jersey's Esso and Humble Production Research segments in Houston, Tex., for nine years.

The National Oceanic and Atmospheric Administration has established an Office of Ocean Engineering, Robert

M. White, Administrator of the Commerce Department agency, has announced. It will include the existing NOAA Data Buoy Office, the Office of Manned Undersea Science and Technology, and certain functions of the former National Oceanographic Instrumentation Center. Funded at slightly less than \$9 million—all drawn from existing component groups—it will be headed initially by Acting Director Steven N. Anastasion of NOAA's Office of Marine Resources.

Anastasion, who joined NOAA in 1972 after a 30-year career in the U.S. Navy, is Chief, Plans and Program Coordination Office in the Office of Marine Resources, and serves as Executive Secretary of the Interagency Committee on Marine Science and Engineering, and as Chief Scientist for the U.S.-French Cooperation in Oceanography. Additionally, he is U.S. Chairman of the Marine Resources and Engineering Coordination Committee of the U.S.-Japan Natural Resources Agreement.

The new office is considered of sufficient importance that it will report to the Administrator and receive policy guidance from the Associate Administrator for Marine Resources. Not only will it coordinate existing NOAA ocean engineering programs; it will initiate some of its own and will serve as a focus for technology transfer within the entire marine community, working closely with other Federal, academic, and industrial organizations.

Commerce Department Appoints Eight to Marine Fisheries Advisory Committee

Secretary of Commerce Elliot L. Richardson announced eight appointments to the Department's top level Marine Fisheries Advisory Committee late last year. The Committee advises the Secretary on programs carried out by the National Oceanic and Atmospheric Administration.

Topics of concern to the Committee include international fisheries, conservation, aquaculture, biological and environmental research, fisheries technology, certain sections of the Marine Mammal Protection Act of 1972, and advisory services for marine recreational and commercial fisheries.

Members of the Committee are

A major element of the new office's effort will be an ocean instrumentation program useful not only to NOAA but to the Federal and private marine program. It will include research, development, and the standards, meteorology, and calibration essential to data quality. In developing this national program, NOAA will work closely with the National Bureau of Standards.

Veteran meteorologist and air pollution expert John M. Miller has been named Director of the National Oceanic and Atmospheric Administration observatory on the slopes of Mauna Loa, Hawaii. He succeeds Ronald Fegley who returned to the global monitoring program's headquarters in Boulder, Colo.

The observatory is part of a network maintained by the Commerce Department agency's Geophysical Monitoring for Climatic Change program. Stations in the network make measurements of atmospheric constituents and weather variables at locations far from sources of human pollution—high on Mauna Loa; at American Samoa; Point Barrow, Alaska; and the South Pole—to discern long-term climatic trends. The global monitoring program is operated by the Air Resources Laboratories of NOAA's Environmental Research Laboratories. Miller has served as a research meteorologist at the Air Resources Laboratories in Silver Spring, Md., since April of 1972. During his first year there, he was a Presidential Intern.

chosen for recognized competence and proven interest in the marine fishery resources of the United States and are appointed by the Secretary for a term of three years. Approximately one-third of the Committee members are replaced each year and are selected to achieve both balanced geographical representation as well as a broad view of the U.S. commercial fishing industry, marine recreational fishing, the academic community, conservation interests, state governments, and the consumer. The new members are listed below.

Edward Chin: Academic representative from Athens, Ga; Director, Marine

Resources Program, and Director, Sea Grant Program at the University of Georgia. Chin has a long history of associations with recognized fisheries organizations, including the former Bureau of Commercial Fisheries. He is acknowledged by his many associates as one of the best informed scientists on marine fisheries in the Gulf of Mexico and the western Atlantic.

E. Charles Fullerton: State fisheries representative from Sacramento, Calif. He has, since 1975, been Director of the California Department of Fish and Game and is a veteran of more than 28 years of service with the department beginning as assistant fish and game warden in 1947. He has also served as advisor to the U.S. delegations to U.S.-USSR fisheries negotiations in Washington, D.C. He is California's designated official to the Pacific Fishery Management Council.

Ronald R. Jensen: Commercial fishing representative from Seattle, Wash., and Chairman of the Board and President, Pan-Alaska Fisheries, Inc. Jensen will also represent Pacific Northwest fishermen who also fish in Alaska waters. He is President of the Alaska King Crab Institute; Past President, Northwest Fisheries Association; and was a member of the Advisory Committee on Bilateral Fish Treaties, USSR, in 1973.

Edward G. McCoy: A State government representative from Morehead City, N.C., and Director, Division of Marine Fisheries, Department of Natural and Economic Resources, State of North Carolina. McCoy holds B.S. and M.S. degrees in Fisheries and Wildlife from North Carolina State University. Prior to his employment by the Division of Marine Resources, he served as a biologist with the Wildlife Resources Commission. He has extensive experience in fisheries research and management. McCoy also serves as North Carolina's designated State official on the south Atlantic Regional Fishery Management Council.

Guy Raymond McMinds: A representative of Indian fisheries from Taholah, Wash., and Director of the Quinault Resource Development Program. McMinds holds a B.S. in Fisheries from the University of Washington. He has served as Fisheries Coordinator for the Small Tribes Organization-

Western Washington. From 1970-1976, he was Director, Quinault Department of Natural Resources and Economic Development where he managed tribal fisheries and forestry resources.

Mary DePoe Norris: Consumer representative from Seattle, Wash. Norris has been affiliated with Seattle's power company as their home economist. She is a well-known consumer advocate in the Pacific Northwest and has had a strong interest in cooperative fish promotion programs.

Claude Ver Duin: Commercial fishing representative from Grand Haven, Mich., and Executive Secretary of the Midwest Federated Fisheries Council, Inc., Grand Haven, Mich. Ver Duin publishes a trade magazine, *The Fisherman*, and is an active participant in civic and regional affairs. He has served as Commissioner in the (International) Great Lakes Fishery Commission since 1956 and has wide knowledge of biological and ecological problems of the Great Lakes.

Charles C. Yamamoto: Marine recreational fisheries representative from Honolulu, Hawaii, and President and General Manager of C&E Radio of Hawaii, which has served commercial and pleasure boats in the State of Hawaii for the past 23 years. He is a billfisherman who has participated in many major tournaments in the United States and foreign countries and served as officer in several well-known Hawaii Game Fishing clubs. For the past 30 years, he has been involved in many ways in recreational and commercial fishing.

Other members of the Committee are: Richard B. Allen, a lobster fisherman from Westport, Mass.; Donald E. Bevan, Acting Dean, College of Fisheries, University of Washington, Seattle, Wash.; Frank E. Carlton, Savannah, Ga., President of the National Coalition for Marine Conservation; Ross N. Clouston, President of the Gorton Corporation, Gloucester, Mass.; Edwin J. Gould, New York City, a recreational fisherman who also serves as Deputy U.S. Commissioner on the International Whaling Commission; Dennis A. Grotting, Eureka, Calif., Secretary-Manager of the Fishermen's Marketing Association in Eureka; Frank W. Holas, President, Booth Fisheries Division, Consolidated

Foods Corporation, Chicago, Ill.; Edward G. Huffs Schmidt, a recreational fisherman, Lake Oswego, Oreg.; Joe R. Lee, President, Red Lobster Inns, Orlando, Fla.; Frank T. Moss, New York City, Associate Editor with *Yachting Magazine*, and also on the staff of the National Coalition for Marine Conservation; Julius R. Nelson, New Haven, Conn., President of Long Island Oyster Farms, Inc.; Virgil J. Norton, Professor, Department of Economics, University of Rhode Island, Kingston, R.I.; Elmer E. Rasmuson, Anchorage, Alaska, Chairman of the Board, National Bank of Alaska, and Chairman of the International North Pacific Fisheries Commission; Charles W. Sahlman, President, Sahlman Seafoods, Tampa, Fla.; Oliver A. Schulz, San Francisco, Calif., Manager for Fisheries Relations for the Del Monte Corporation; Jack T. Styron, New Orleans, La., President, Louisiana Menhaden Company; Clement Tillion, Halibut Cove, Homer, Alaska, Alaska State Legislator and commercial salmon fisherman; Robert B. Weedin, Fairbanks, Alaska, a conservation spokesman on the staff of the University of Alaska; and Melvin H. Wilson, Los Angeles, Calif., Vice President and Associate Trust Counsel for the Security Pacific National Bank and a well-known Pacific west coast marine recreational fisherman.

Tax Reform Act Aids Fishermen

The Tax Reform Act of 1976, signed into law 4 October 1976 contains several changes affecting the tax status of United States fishermen, according to the National Oceanic and Atmospheric Administration's National Marine Fisheries Service. The Act increases the benefits available to users of the Capital Construction Fund (CCF) tax-deferral program and increases the number of fishermen eligible to use the program.

The CCF program, administered by the Commerce Department agency, enables fishermen to construct, reconstruct, or, under limited circumstances, acquire fishing vessels with before-tax (rather than after-tax) dollars by allowing them to defer payment of Federal taxes on income from the

operation of their vessels. These Federal taxes, when deferred and used to help pay for a qualified vessel project, amount to an interest-free loan from the Government.

Previously, fishermen using the CCF program were not allowed to claim investment tax credit on that portion of a vessel's cost paid for under the CCF program. The Act provides, however, that a 5 percent investment tax credit may now be claimed even on the portion of a vessel's cost paid for under the CCF program (the regular 10 percent investment tax credit is still available for the portion of a vessel's cost

not paid for under the CCF program). This change applies to vessels placed in service during taxable years after 31 December 1975.

Only fishing vessels of at least 5 net tons had previously been eligible for the CCF program. The Act, however, now extends CCF eligibility to all fishing vessels 2 net tons or more.

Under the Act, operators of fishing boats with fewer than 10 crewmen no longer have to withhold taxes from crew pay, or make Social Security contributions, if the crew's pay consists only of a share of the boat's or the fleet's catch. Until now, crewmen on

fishing boats were treated as regular employees rather than as self-employed, regardless of how they were paid. However, fishing boat operators employing one or more individuals still are required to comply with certain reporting provisions of the Act.

Another section of the Act clarifies the status of certain fishermen's organizations which may now qualify to receive the lower postal rates enjoyed by tax-exempt agricultural organizations. For further information, call or write the nearest NMFS Regional Financial Assistance Division Office.

Fifth NACOA Report Asks Program Changes

The National Advisory Committee for Oceans and Atmosphere (NACOA), in a wide-ranging report, has advocated significant changes in the nation's energy, marine, weather, and climate programs. Chairman of the 25-member group, charged with reporting to the President and Congress annually on the state of the nation's marine and atmospheric programs, is William J. Hargis, Jr., Director of the Virginia Institute of Marine Sciences.

In a report transmitted to the White House on 28 September by the Secretary of Commerce, NACOA recommended refocusing Federal atmospheric and oceanic planning and operational activities. The major recommendations are numbered below.

1) An ad hoc task force should be established by legislation to formulate a comprehensive marine affairs policy and plan pending development of a continuing coordinating mechanism. NACOA stated that oceanic events are developing more rapidly than are plans to cope with them.

2) The nation should explore and develop offshore oil and gas resources consistent with environmental safety and the need for maintaining strategic reserves; and the process should be reconciled with an economic atmosphere suitable for development.

3) Congress should enact pending legislation for a program of climate watch, forecasting, and research under the coordination of the Secretary of Commerce.

4) The National Oceanic and Atmospheric Administration should receive

responsibility for coordinating and managing a coherent Federal program of weather modification research and experimentation.

5) Federal funding for the National Sea Grant program should be increased from \$23 million to about \$40 million per year over the next 3-5 years, and its legislation should be amended to free earmarked funds from matching criteria; its operations, goals, and priorities should be studied and improved.

NACOA found "too much emphasis on haste" in energy research projects whose payoffs are distant in time, and not enough on near term possibilities. It recommended the establishment in the Energy Research and Development Administration of a Directorate for Oversight of Energy Research (DOER) reporting directly to the Administrator, whose function would be to give the Administrator technical advice on comparisons of alternatives.

The advisory group also termed inadequate Environmental Protection Agency pollution research programs addressed to long-term basic knowledge needs. It asked that longer term basic research receive more attention and that lead agencies be established for this purpose in three areas: the National Institute of Environmental Health Sciences for human health and disease; the National Oceanic and Atmospheric Administration for the atmosphere and oceans; and the Department of the Interior for plant and animal life on land and inland waters, with the Council on Environmental

Quality leading a high-level inter-agency coordinating committee in the effort. NACOA also called attention to "serious deficiencies" in diver-physiology-related research, and in the development of decompression tables, and recommended a \$3.5 million program toward faster, safer decompression and toward better understanding of the effects of undersea work.

The panel recommended that the Federal Aviation Administration and the National Weather Service review aviation weather needs and capabilities in the light of technological advance; and update their priorities and agreements. It also recommended that educational standards for training in the use of weather information be improved, with emphasis on the effects of developing weather situations on flight control; that computer programs be used to screen deviating data on airway weather observations; that forecasts be analyzed after the fact; and that rapid weather hazard warnings be available to all pilots in flight.

Under NACOA's legislation, the Secretary of Commerce is required to respond to the report's recommendations. His comments, which reflect the views of all government agencies involved, accompany the NACOA document to the White House and Capitol Hill.

Secretary of Commerce Elliot L. Richardson transmitted general agreement with a great many of NACOA's recommendations, but he and other officials took issue with others.

Stating that the U.S. is "setting the pace" for oceans policies, the Secretary sees the problem as the "lack of a

comprehensive approach to setting ocean policies." He termed "the more traditional modes of cooperation between the Executive and the Congress" preferable to NACOA's suggestion for an ad hoc task force; and pointed out that NACOA itself can, under its charter, undertake long-term advisory planning efforts.

The recommendation concerning offshore oil and gas development drew comment from Interior Secretary, Thomas Kleppe; EPA Administrator, Russell Train; and Secretary Richardson.

Kleppe said it was urgent for the government to encourage industry to get on with exploration drilling at a maximum responsible rate. He also expressed concern with NACOA's reference to maintenance of strategic reserves as susceptible to misinterpretation by those who might read into it endorsement of government oil and gas exploration—which, he said, is not the case.

EPA Administrator, Russell Train, concurring "generally" with Secretary Kleppe, voiced his concern that our present knowledge of marine ecological processes and our present technology is of doubtful adequacy to establish or protect oceanic environmental norms. He said offshore energy development should proceed only with full recognition of the need for obtaining scientific information and technology necessary to assure environmentally sound decisions. Secretary Richardson agreed that it would be useful to separate exploration and development environmental impact assessments.

Concurring in the need to develop a better understanding of climate dynamics the Secretary of Commerce voiced support for recommendations of the Domestic Council Subcommittee on Climate for a National Climate Program as well as for the World Meteorological Organization climatic efforts. In the field of weather modification, the Secretary agreed with NACOA's recommendation that there is a need for more basic research and more attention to its environmental, economic, and social impacts.

Stating that the Sea Grant Program has performed well in its first decade, the Secretary agreed with the Committee that there is a need for further evaluation of the program procedures.

He has directed the Administrator of NOAA to review these procedures and make needed revisions to accomplish the objectives set forth by the Committee.

EPA Administrator Train, commenting on NACOA's suggestions for improvement of the agency's research programs, said that his Science Advisory Board, whose members are all outside EPA, soon would evaluate the application of long-term ecological research to the EPA mission.

Commenting on the Committee's expressed concerns over the institutional aspects of long-range research on environmental problems, Secretary Richardson said the passage of the National Science, Engineering, Technology Policy and Priority Acts should produce a review of all the science and technology coordinating mechanisms within the Federal Government. "It is my hope," he said, "that this review would result . . . in a discussion of NACOA's recommendations and means to achieve their thrust."

Responding to NACOA's finding of deficiencies in research related to diver

physiology, the Secretary of Defense stated that the Navy would be placing increased emphasis on the subject and that its funding for diving medical research is expected to increase by \$3 million over the next three years.

NACOA's comments on weather and air safety were called "timely" by Secretary Richardson, who noted that the recommendations would require substantial new Federal investments in manpower, communications and equipment, and would require careful budgetary review. He cited new efforts such as thunderstorm airport alert tests in the New York, Philadelphia, and Washington, D.C. area, greater emphasis on weather education for pilots and air traffic control specialists, and an experimental program at the Kansas City Air Route Traffic Control Center in Kansas City to provide improved weather communications to pilots in flight.

"A Report to the President and the Congress" is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, at \$2.00 per copy.

Low Oxygen Causes High Surf Clam Losses

Lack of oxygen caused mortality levels of surf clams in a 2,100 square mile section of the New Jersey coast to increase from 10 percent in mid-August to over 50 percent in mid-September, according to Carl J. Sindermann, Director of the National Marine Fisheries Service's Highlands Laboratory at Highlands, N.J. The NMFS is a branch of the National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

The NMFS scientists estimate that 59,000 metric tons of clam meat were lost by 1 October, representing about 5 percent of the total clam resource of the Middle Atlantic Bight (from Cape Cod to Cape Hatteras) and about 25 percent of the offshore clam stocks of New Jersey. The total surf clam resource outside the 3-mile limit along the New Jersey coast was estimated in April to be about 207,000 metric tons of clam meats.

During the same mid-August to mid-September period, an area of low oxygen below the thermocline (less than 2 parts per million) persisted.

Higher mortality levels were observed in this low oxygen water, reaching 100 percent of the surf clam population sampled at a number of stations.

Mortalities were also observed in New Jersey's ocean quahog populations, which are usually found in deeper waters than surf clams. In an early August cruise, a low mortality (0.8 percent) was observed at 17 sampling locations. Mortality increased in the September survey to 7.7 percent. In three of the deeper stations sampled during the recent survey, mortality levels reached 40 percent. All mortalities were in water with low oxygen levels (less than 2 parts per million).

Monitoring of shellfish populations and bottom dissolved oxygen was extended from the New Jersey coast to the waters off Long Island in late September. This was considered necessary because of several unconfirmed reports of scallop and clam mortalities. Two cruises by scientists from the Highlands Laboratory during the week of 19 September disclosed low-bottom

dissolved oxygen in the Hudson Shelf Valley out 70 miles from New York City and in a tongue extending eastward to Fire Island. Bottom dissolved oxygen readings eastward of that were above critical levels. Stressed surf clams were found in several samples off Jones Inlet, L.I., but no unusual mortalities had been observed by the end of the month.

The shellfish mortality has been attributed to the low oxygen levels observed below the thermocline. The causes for this condition seemed to be related to decay processes associated with a massive bloom of the dinoflagellate *Caratium tripos* which persisted in the area since March 1976, possibly combined with other large-scale oceanographic phenomena.

Continuing studies found improved oxygen conditions in the New Jersey waters according to the Highlands Laboratory. Carl Sindermann, Laboratory Director, said the recovery of the oxygen in the area may be the result of the expected autumn overturn of the water or the result of a recent storm, or a combination of both.

By mid-October Sindermann announced that "the protracted ecological event, so costly in terms of our living resources and of New Jersey's ocean-oriented economy, is coming to a conclusion. We will, however, continue to monitor the event and its after-effects." The low oxygen condition which persisted in the coastal waters all summer was then restricted to a long narrow band, some 15 miles wide, between 40 and 55 miles offshore. Vessels have been assessing the total impact of low oxygen regions upon the sea scallop, ocean quahog, and surf clam population, as well as the impacts upon the middle Atlantic stocks of bottom-dwelling fish and lobsters.

"While, undoubtedly, many finfish and lobster mortalities occurred at the beginning of the low dissolved oxygen period, it is felt that many escaped and have since avoided the area," said Sindermann. "The major effect of the low oxygen with respect to bottom fish and lobsters may well be economic. For instance, there is every evidence that the spring shoreward migration of offshore lobsters was blocked. New Jersey small-boat lobstermen depend on these migrants to supplement the coastal (indigenous) lobster stocks.

Lobster landings in at least two New Jersey counties declined 50 percent or more below last year's catch."

There is also evidence that the normal migrations of summer and winter flounders were disrupted, causing them to swim into areas heavily

fished by recreational fishermen, with resulting heavy catches of these species. The effects of the lack of oxygen and the heavy taking of the flounders upon their population were expected to be detected by October groundfish survey cruises.

Oregon Natural Area Dedicated as Nation's First Estuarine Outdoor Laboratory

An area virtually untouched by humans in recent decades, the nation's first estuarine sanctuary, was dedicated in Oregon last fall, Elliot L. Richardson, then Secretary of Commerce announced. The sanctuary was created by the Commerce Department's National Oceanic and Atmospheric Administration (NOAA) at the request of state officials some months ago.

The sanctuary consists of about 4,000 acres of land covering the southern tributary of Coos Bay and steep, tree-covered slopes forming a forest area. A brush-covered island guards its mouth, and a narrow finger of land divides South Slough into two arms. A number of historic sites are in the sanctuary, including a graveyard of early settlers, an abandoned gold mine, and an old country schoolhouse, as well as a prehistoric Indian midden and other Indian sites and trails.

To help establish the sanctuary, the state of Oregon was awarded a total of \$1,750,000 from NOAA's Office of Coastal Zone management, and contributed a like amount in state and private matching funds. The money is being spent primarily to buy lands within the sanctuary. Oregon just recently purchased 52 percent of the sanctuary lands, or about 2,200 acres, which allowed NOAA to designate the sanctuary. Settlements on the remaining properties are expected to occur by July 1977.

Robert W. Knecht, NOAA Assistant Administrator for Coastal Zone Management, said "the Oregon sanctuary largely reflects the concern of a variety of local citizens, government agencies, and state resource and planning bodies. Their concern for the protection of this little-known, but important, ecosystem will result in a number of benefits, social as well as scientific. The sanctuary designation will help maintain local water quality and enrich our understanding of the complex problems

confronting estuaries which is essential to the development of rational coastal management programs at the state, local, and regional levels." Ultimately, Knecht added, NOAA hopes to establish 18 different estuarine sanctuaries, nationally, "to reflect the major types of estuaries found along our coasts." Dedication of the estuarine "laboratory" took place in the Governor's office in Salem, Oreg., on 27 September.

According to NOAA, the sanctuary will serve as a model for measuring human impacts on similar estuarine areas, while simultaneously preserving the land in its natural, unspoiled state. It will also be used by students and scientists for educational and scientific research, and to provide data vital to the development of coastal zone management programs.

Under the Coastal Zone Management Act of 1972, 33 states and territories are at varying stages of designing programs to achieve optimum use of the coasts for recreation, tourism, conservation, beach homes, industrial development, energy production, and other competing purposes.

The Act allows states to receive four annual grants to develop their programs through assistance from NOAA's Office of Coastal Management. In three years of operating, OCZM has awarded states \$33 million for program development, \$2 million to the State of Washington to put its approved plan into effect.

Robert Kifer, estuarine sanctuaries coordinator for NOAA, said the Oregon sanctuary will have a special management program. Certain activities, he explained, will be prohibited from the sanctuary, while others will be permitted or controlled.

"As a general rule," Kifer said, "any use that would potentially alter the natural environment will be prohibited in the sanctuary. Although it's not a recreation area, the sanctuary will be

available for use by the general public so long as the levels and kinds of uses do not detract from or alter the natural setting."

Camping, for instance, will be permitted in the sanctuary, but no special facilities (such as roads or campsites) may be constructed. Similarly, oyster harvesting, which is now only accom-

plished in the South Slough of all of Coos Bay, will continue to be permitted and the area leased for harvesting may be enlarged. Uses permitted to limited degrees include farming, timbering, logging, and the operation of motor vehicles.

The Oregon State Land Board will own and manage the sanctuary, aided

by a nine-member team composed of representatives from the Oregon Fish and Wildlife Department, Natural Areas Committee, Department of Environmental Quality, Division of State Lands, University Institute of Marine Biology, and the Coos County Commission. Additionally, a full-time manager will be hired.

Foreign Fishery Developments

Fishery Development Plans Aired by Kenya

In a recent interview with the *Nairobi Daily Nation*, John Mumba, Assistant Director of Fisheries in the Ministry of Tourism and Wildlife, surveyed Government plans for developing Kenya's fishing industry. The principal objectives of the Fisheries Department's long-term program are the modernization of fishing operations and an improvement of marketing techniques.

Since less than 10 percent of the registered vessels engaged in coastal fishing are motorized, Mumba announced that the Fisheries Department would help cooperatives purchase more modern boats through a fishermen's loan program. The shipbuilding industry, owned by local craftsmen, will be advised how to construct more seaworthy craft capable of operating on the high seas. The Fisheries Department has improved traditional fishing gear for use by commercial enter-

prises. The Department has also promoted the construction of fish-landing depots, slipways, jetties, and boat-repair workshops. In addition, coastal fishermen have benefitted by the establishment of cold storage facilities and ice-making plants.

According to Mumba, the major problem currently facing Kenyan fishermen is the marketing of their catch. Through Government efforts, fishermen's cooperatives have been formed along the coast with the goal of eventually replacing the marine produce dealers who currently control the distribution of the catch of coastal fishermen. The new cooperatives have been able to regulate prices for the benefit of the fisherman. A new cooperative, being organized in Mombasa, will join those already established in Lamu, Tana River, Kilifi, Msambweni, Shimani, and Vanga.

Fisheries Department research pro-

grams have been oriented towards solving practical problems facing Kenyan fishermen. More resources, however, are spent on experimental surveys to identify different coastal fish species and locate new fishing grounds. Future development of marine fish and crustacea farming on a commercial scale is planned. While still in the research stage, such a project will be carried out at the new "Mariculture Complex" being built at the Fisheries Department's Mombasa headquarters. Mumba also indicated that plans exist for the construction of a fish cannery with private capital.

According to the NMFS Office of International Fisheries, a subsequent discussion with the Director of the Fisheries Department somewhat muted Mumba's optimistic description of Kenya's commercial fishing potential on the coast. The fish cannery for instance, has received only perfunctory interest so far in the Ministry of Tourism and Wildlife, which has yet to do even a feasibility study for such a venture. Likewise, mechanization of coastal fishing craft has consisted of the purchase of one deep-sea vessel.

The structure of Kenya's fishing industry presents sizable obstacles to the development of large-scale commercial enterprises. Coastal catches accounted for less than 15 percent of total fisheries landings in 1974 and the bulk of the commercial catch is coming from freshwaters such as Lake Victoria and Lake Rudolf (Fig. 1). Kenya's marine fisheries catch has declined from 7.9 metric tons (t) in 1970 to only 3.6 t in 1974 (Table 1). More recent data is not available.

The predominance of artisanal fishermen, using traditional gear, contributes to a heavy labor intensity (the 2,000 registered coastal fishing vessels

Figure 1.—Kenya and neighboring countries.

