NMFS — NEW DIRECTIONS

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In the October 1970 issue of COMMERCIAL FISHERIES REVIEW, I discussed the new responsibilities the National Marine Fisheries Service would assume as we became part of the National Oceanic and Atmospheric Administration. At that time I promised to discuss with you, in a subsequent issue, what we would do to reshape our organization for its vital role in NOAA.

The year 1971 was one during which the National Marine Fisheries Service underwent major changes in organization. These changes responded in part to long-standing criticisms of the organization of NMFS' predecessor agency, the Bureau of Commercial Fisheries, and in part to our new role as an element of NOAA and our new responsibilities to marine recreational anglers.

ORGANIZATION

The restructuring of NMFS could have taken any one of a number of forms. The one adopted represents the consensus of those in NOAA and NMFS who are most concerned; its implementation is now virtually complete. The restructuring is not simply a matter of reshuffling. Rather, it represents departure from the past, and reflects a basic change in philosophy and a response to that change in terms of organizational structure.

The major aspects of the new organization are these:

1. The primary functions of NMFS have been assigned among three areas, those concerned with Resource Research, Resource Utilization, and Resource Management. Each is headed by an Associate Director.

2. We have created a small number of fishery research centers by combining the administrative and program functions of similar biological laboratories.

3. The centers concerned more with oceanic programs, national in nature, report to the Associate Director for Resource Research rather than to a Regional Director.

4. The centers and laboratories concerned chiefly with inshore programs, local in nature, report to the Regional Director concerned.

5. We have integrated into this system the marine game fish laboratories, which came to us from the Bureau of Sport Fisheries and Wildlife when NOAA was established.

6. We have placed the fishery products technological laboratories under the Associate Director for Resource Utilization.

7. Finally, we retained the basic regional structure with the Regional Directors continuing as the key NMFS representatives in their geographical areas of responsibility. The Directors of Centers who report administratively to the Central Office also serve as senior scientific advisors to the Regional Directors.

A major criticism of the old system was that there were too many small laboratories, some without sufficient budget or staff to operate effectively as independent units. Another major criticism was that the essentially regional approach to, and control of, research programs made development and implementation of national programs a monumental job. The center concept responds to the first criticism, and the national control of some of the centers to the second.

There are four major fisheries research centers concerned primarily with high-seas research carried out as part of nationwide programs designed to solve problems of a national or international nature. The lead laboratories of these centers are located in Seattle, Washington; La Jolla, California; Miami, Florida; and Woods Hole, Massachusetts. These centers, and the Atlantic Estuarine Fisheries Center at Beaufort, North Carolina, report to the Associate Director for Resource Research.

Two centers, with headquarters in our laboratories in Galveston, Texas, and Sandy Hook, New Jersey; and two laboratories at Tiburon, California, and Auke Bay, Alaska, are concerned chiefly with inshore and estuarine research and with programs and problems that tend to be regional in nature. These report to the Regional Directors.

MAFAC and NACOA

In March of last year the Secretary of Commerce announced formation of a Marine Fisheries Advisory Committee (MAFAC), composed of 27 leaders in both commercial and sport fishing activities and from the academic community.

The Committee, which meets three times a year, advises the Secretary on the Department's responsibilities for fisheries resources, and it reviews and advises him on the adequacy of our programs in NMFS and on related programs in NOAA. With such a limited number of members, not all facets of our fisheries can be represented on the Committee at any one time.

However, the Committee Charter specifies that the membership will rotate with vacancies occurring annually, and all segments will be represented over a period of about 3 years.

The second group was appointed by the President on October 19, 1971, to serve as members of NACOA, the new National Advisory Committee on Oceans and Atmosphere. William Nierenberg, Director of Scripps Institution of Oceanography, was designated Chairman, and William J. Hargis, Director of the Virginia Institute of Marine Science, Gloucester Point, Virginia, was named Vice Chairman. The Committee is charged with undertaking a continuing review of the progress of the Nation's marine and atmospheric science and service programs. It also advises the Secretary of Commerce with respect to the administration of NOAA. This group will submit its first report to the President by June 30 of this year. Several members of this Committee are from the fishing industry and one is also a member of the Marine Fisheries Advisory Committee.

So much for the reorganization and growing pains that have concerned NMFS during the past year. While the reorganization was taking place, we were simultaneously defining program areas. I would like now to touch on the more significant of these.

NEW PROGRAMS

Biological Research

Our biological research program is now undergoing what we like to regard as a healthy change from the past. We have recognized for a number of years that we lack adequate resource and environmental data for short-term and long-term assessments of the condition of our marine resources--and the physical, chemical, and biological events that affect their well-being. In an attempt to cope with this, we have recently launched a coordinated national effort called the Marine Resources Monitoring, Assessment, and Prediction Program (MARMAP). What we intend to do in MARMAP is to carry out intensive surveys of ichthyoplankton, groundfish, pelagic fish, and environmental conditions using standardized methods.

This program is designed to give us the basic data prerequisite to: (1) better management and allocation of resources, and improved regulation of exploitation to insure optimum yields and economic returns; (2) protection of resources from damage by pollution; (3) decisions on multiple uses of the marine environment; (4) utilizing new living marine resources; and (5) providing fishermen with real-time information on locations of fish concentrations to reduce search time and, as a result, reduce the cost of fishing.

MARMAP is thus designed--in combination with our population dynamics and other biological programs--to give us reasonably accurate estimates of the abundance, distribution, susceptibility to capture, and status of all stocks of actual or potential interest to American fishermen. Information of this sort is a prerequisite if we are to be successful at the international bargaining table and if we are to be able to develop rational management schemes at home.

While MARMAP is the largest single new element of the biological research program, it is not the only one.

Projects concerned with environmental quality will play a much larger role in the future of NMFS. MESA--Marine Ecosystem Analysis--is the NOAA-wide program covering this broad area. So far as living marine resources are concerned, we will be, among other things, gathering baseline ecological information with particular respect to nearshore waters, determining the effects of environmental changes on marine organisms, developing means of rehabilitating damaged environments and, most importantly, providing a review and advisory service in the general area of Federal water resources planning.

We are also increasing our efforts with respect to sport fish research. At present, we are concerned especially with the development of a sound statistical program and with augmentation of the more traditional studies of life history, migratory patterns, and the like.

State-Federal Program

The State-Federal Fisheries Management Program is now being implemented. I regard this program as the most significant new step of the National Marine Fisheries Service.

Specifically, the State-Federal initiative is our response to two matters of concern. The first relates to the common-property nature of fishery resources. In effect, this means that until they are captured fish belong either to no one or to everyone, depending on your social philosophy. The end result is the same: fishermen have no property rights to these resources. When this is coupled with the absence of limitations on the entry into a fishery, there is a natural tendency to overcapitalize a growing fishery. The result, particularly if the fishery declines, is too many units of gear, too many fishermen, too many boats, too much capital, or all of these.

The second problem stems in part from the first: in the United States, each State has reserved to itself the right to manage its living resources. This has led to a multitude of management systems--each tailored to the needs of a given State but very few tailored to the needs of the fish stocks, which are no respectors of State or national boundaries. Further, the managerial schemes tend to take the form of instituting inefficiencies thru such means as gear restrictions rather than dealing with the real problem of too many

fishermen pursuing too few fish. The State-Federal Fisheries Management initiative proposes to deal with these two problems by developing an effective management plan that will assure the rational use of fishery resources for both sport and commercial purposes.

We are dealing basically with allocation conflicts. Some of them involve different countries fishing the same resource. Some of them are between States in the contiguous fishery zone. Some of them involve disputes between commercial and recreational fishermen. Some of them are among groups of fishermen fishing the same resource but with different gear. And some of them are between fishermen of all sorts on the one hand and competitors for use of the environment on the other.

These conflicts may relate to individual States or local areas, but many of them involve more than a single State and are beyond the ability of the States alone to resolve.

Our present institutional arrangements for managing fisheries are simply not adequate. Everyone, whether he works at the local, State, national, or international level, is aware of these deficiences.

Until now, the approach of the Federal Government seems to have been one of accepting the institutional setting as it existed and of working within these constraints.

This approach has not worked, especially in commercial fisheries, and we are convinced it never will work. Unless we, in cooperation with the States and others, can bring about the necessary mechanisms to cope better with these growing allocation problems, we will continue to see increasing difficulties in controlling fishing effort and in preventing destruction of our resources.

I believe the reorganization we have undergone and the new programs we have initiated have made NMFS a viable and responsive organization. In the first years of our second century of service, with your help, we will make great strides toward fulfilling our mission.

The NMFS 'DAVID STARR JORDAN' will be used this year in the Eastern Pacific between Oregon and Mexico to conduct MARMAP Ichthyoplankton surveys. It will perform sonar assessments of pelagic resources and physiological studies of large pelagic fish.

DR. WILLIAM ROYCE NAMED NMFS ASSOCIATE DIRECTOR

Dr. William F. Royce, Associate Dean of the School of Fisheries, University of Washington, Seattle, since 1967, has been appointed NMFS Associate Director for Resource Research.

Dr. Royce has overall responsibility for managing resource research and development at NMFS Fisheries Centers--about 50 laboratories and field stations and 30 research vessels. More then 775 scientific, professional, technical, and support personnel are involved in resource research activities.

Dr. Royce served the Federal fishery service from 1942 until 1958. He left to become professor of fisheries and director of the University of Washington's Fisheries Research Institute. He has been adviser to developing nations in Africa, Latin America, and the Middle East, to the UN's Food and Agriculture Organization on fishery education and training programs in East Africa, and to the U.S. section of the International North Pacific Fisheries Commission in problems concerning salmon.

Dr. Royce, 56, was born in DeBruce, N.Y. He earned his B.S. in 1937 and Ph. D. in 1942 from Cornell University, Ithaca, N.Y. His major graduate study was vertebrate zoology. He did graduate work in mathematics at the University of Hawaii, and in statistics at the University of Florida.

He is author of 60 professional publications, including a textbook, "Introduction to the Fishery Sciences." He is a Fellow, American Association for the Advancement of Science, American Institute of Fishery Research Biologists, and the International Institute of Fishery Scientists. Dr. Royce is a member of 9 technical societies.

WHITELEATHER RETIRES FROM NMFS

Richard T. Whiteleather, who served the U.S. for 36 years, retired Jan. 14, 1972, as Director of the NMFS Southeast Region.

He was a specialist in fishery-resource development and an administrator. He had directed Federal fishery activities in 17 states, Puerto Rico, and the Virgin Islands.

The recreational and commercial fisheries of the southeast are the most valuable in the United States. More than 40% of U.S. seafood production comes from there. It is the center for research on several valuable coastal fishery resources, particularly shrimp and menhaden.

GEHRINGER REPLACES WHITELEATHER

Jack W. Gehringer, 48, has been named Director for the Gulf and South Atlantic Region of the National Marine Fisheries Service (NMFS). He served as an associate director there since April 1970.

Gehringer is a native of Papillion, Nebraska. He received his B.S. in fisheries from Colorado A&M College in 1950. He has spent his entire Federal career in the Gulf and South Atlantic Region. He began serving NMFS (formerly Bureau of Commercial Fisheries) in 1950 as marine biologist in the Galveston, Tex., laboratory. In 1952, he transferred to the Brunswick, Ga., laboratory, where he served as program leader, assistant laboratory director and, later, as acting laboratory director. Early in 1969, he was assigned to the regional headquarters in St. Petersburg, Fla., as acting deputy director.

NMFS RESEARCH LEADS TO WORLD'S NO. 1 PILOT SALMON FARM

Salmon research by scientists of the NMFS Northwest Fisheries Center (NFC) has led to establishment of the world's largest pilot commercial salmon farm near Seattle, Wash. The farm's winter-spring (1971-72) production is approaching 100 tons.

NFC has conducted research in marine aquaculture (mariculture) for 2 years at its Manchester, Wash., station, which opened July 1969. The station's most prominent research is on one NMFS mariculture program--the saltwater rearing of Pacific salmon in floating pens.

The research station is situated ideally for its mariculture research. It is about 10 miles from Seattle on Clam Bay along Puget Sound's west shore. The area boasts a variety of habitats: Beaver Creek, a freshwater stream; exposed tidal flats; and deep, well-circulated salt water.

The Researchers

Dr. Timothy Joyner is program supervisor. The salmon research is conducted by Conrad Mahnken, oceanographer; Anthony Novotny, fishery biologist; and James S. Johnson and Gunnar Safsten, fishery technicians. In 2 years, these researchers showed that it was economically feasible to rear coho and chinook salmon in saltwater pens. They grew coho in pens resting on the bottom in about 40 feet. They raised many coho through maturity. They cooperated with Washington State's Department of Fisheries to increase the number of salmon for Puget Sound's recreational fisheries.

Two-Phased Studies

There were 2 phases in the Manchester studies on the feasibility of rearing salmon for market. The first was pioneering research of NFC's salmon-culture project to develop an economical system for raising salmon from hatching to market size or maturity. The second was an experimental pilot farm financed partly by NOAA's Office of Sea Grant.

Scientists of the salmon-culture project concentrated on rearing coho salmon. In 1969, they put 10,000 fingerlings in a plastic, meshed cage and floated it in Puget Sound. The fish grew well in salt water; their survival was high. The food conversions were excellent: 1.5 lb of feed for 1 lb of fish weight on the Oregon Moist Pellet (OMP) diet until the fish reached 1 lb.

Would the market and consumer accept the larger coho? The NMFS Marketing Division studied this. It received enough favorable comment to justify a closer look at the commercial feasibility of raising on a large scale 8 to 12 oz salmon (dressed weight).

Many Firms Interested

This initial NMFS research stimulated interest by many firms in commercial culture of salmon. Ocean Systems, Inc. (OSI), a subsidiary of Union Carbide, asked support from NOAA's Office of Sea Grant for a pilot project in Puget Sound. It received $100,000 in matching funds for a 1-year study. The principal objective was to encourage the development of mariculture in Washington State by demonstrating the technical and economic feasibility of such an operation.

OSI purchased 700,000 coho salmon eggs from Washington State in November 1970. "The eggs were incubated and hatched, using water from Beaver Creek, at a small building donated to NMFS by the U.S. Navy. Incubation was accelerated by holding the temperature at 10°-12° C with an oil-fried furnace."

About 400,000 eggs hatched in the winter. In early February 1971, the fry were moved from the hatchery to a freshwater pond. An adjoining pond was stocked with about 464,000 fall chinook salmon fry obtained from the University of Washington. The coho were fed only dry diets; the chinook were fed dry and moist (OMP) diets.

Saltwater Nursery Pen

The chinook salmon at 80/lb were trucked back to Clam Bay in late May and placed directly into a saltwater nursery pen. The pen was 30 x 30 x 15 ft deep and held 385,000 fall chinook. The diet was OMP. Treatments with medicated (terramycin) feeds became necessary in early June when mortalities from Vibriosis, a bacterial disease, began to increase. In June, 10.5% of the fish were lost.

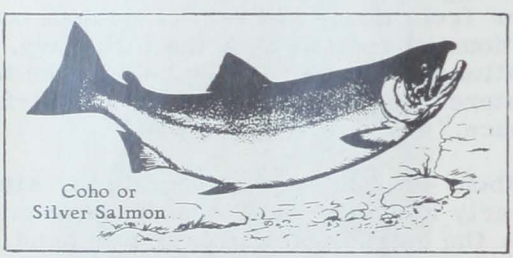
The coho salmon were graded in early July, when about 60% were smolted and weighed 25/lb. Then the coho were transferred to 4 growing pens (50 x 50 x 30 ft deep) designed for larger fish. In one pen, 158,000 coho reached a density of 1.8 lb/cu ft just before harvest began in late December; there were no adverse effects on survival, food conversion, or growth rate. The researchers say that at this density 700,000 lb of coho could be grown in 1 year in 1 surface-acre of water (30 ft deep), including the large raft support system; at harvest, their total weight would be about 2.5 million lb.

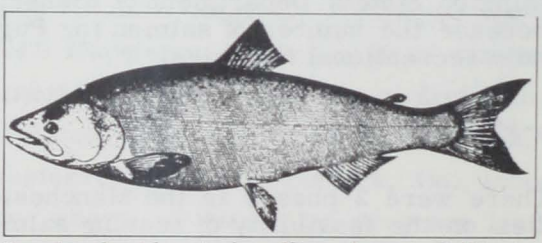
Conversion of feed by the coho salmon has averaged 1.1:1 (including mortalities) on a dry diet. Chinook salmon have not grown as rapidly. Conversion of feed by chinook throughout the study has averaged 1.7:1 (including mortalities) on mixed dry and moist feeds. Nearly a year after hatching (350 days) the coho are getting too large for market. During the peak growing period, September through November, a feed ration of 3% of body weight per day produced a 3% increase in weight per day. Many fish 13-14 inches long that weigh about 1.5 lb have been set aside for future brood stock.

Ready for Market

In December 1971, the first coho from the pilot farm were ready for market at a dressed weight of 11-12 oz. The chinook were expected to be ready in March 1972. The coho are being harvested at rate of 8,000 to 15,000 lb/week. The fish are killed in -1.5° C water and transported to Marysville, Wash., for processing by Pan-Alaska Fisheries, Inc. All fish are sold through Swiftsure Fisheries in Seattle. They bring $1.35-$1.70 per lb wholesale. Fish quality is excellent. There has been substantial interest among U.S. and foreign markets in 11-12 oz salmon. On Dec. 24, 1971, for example, Swiftsure received an order from a food service for international airlines for 5,000 lbs of salmon to be delivered as soon as possible, and for 10,000 lbs to be delivered each month thereafter.

In December 1971, also, Union Carbide announced plans to form a new subsidiary for its sea farming operations, effective Jan. 1, 1972. Dom Sea Farms, Inc., will operate independently of Ocean Systems, Inc., and concentrate exclusively on mariculture. Over 2 million salmon eggs purchased from Washington State are now hatching at Dom Sea's new freshwater facilities near Silverdale, Wash. Saltwater rearing schedules and past experience indicate a projected harvest of 400-500 tons in 1 year.





Oncorhynchus tshawytacha. King salmon in California, chinook in Alaska.

1971 ALBACORE LANDINGS DECLINE FROM 1970

Preliminary figures on west coast landings for the 1971 albacore season are about 54 million pounds (27,000 tons). In 1970, 58 million pounds (29,000 tons) were landed. The 1961-1970 average was 47 million pounds (23,500 tons). The following report was provided by R. Michael Laurs, Leader, Fishery-Oceanography Group, NMFS Southwest Fisheries Center, La Jolla, Calif.

Laurs states: "The relatively high 1970 landings probably reflect increased fishing effort. Although exact data are not available, rough weather during parts of the season and unavailability of fish near the normal end of the season tended to limit fishing activity and success for individual boats."

Preliminary California landings for 1971 were 30 million pounds, about the same as 1970. The aggregate Oregon, Washington, and British Columbia landings were 23.4 million pounds, down about 16% from 1970. British Columbia landings set a record.

	1971	1970	1969
California	30.0	29.9	14.7
Oregon	16.8	21.8	29.8
Washington	2.9	4.3	3.5
British Columbia	3.7	1.6	2.5

Highlights of 1971 Albacore Season

In February 1971, a small number of 2-3 pound albacore were caught near Uncle Sam Bank. These fish were thought to be young of albacore that remain in this area throughout the year. The first report of a migrating albacore caught in the West Coast fishery for 1971 was on June 25: Oregon State University's R/V 'Yaquina', on an oceanographic cruise, landed a 14-pound fish in 59° F waters about 420 miles west of Cape Blanco, Oregon. A day later, sport boats and private yachts reported albacore caught near the Sixty Mile Bank off San Diego, Calif. Sport boats off southern California continued to fish with success from San Clemente Island to the 213 fathom spot, and from 35 miles southwest of Point Loma to the dumping grounds on 12-18 pound fish. Sport boats out of San Diego had good fishing throughout July.

'Jordan' Checks Migration Route

The NMFS 'David Starr Jordan' left San Diego June 28 on a 19-day albacore-oceanography cruise. Its mission was to investigate the migration route of albacore when they enter the North American fishery near the season's beginning. Jordan made its first catches on June 30 about 200 miles west of San Diego on the cruise track to the study area, along longitude 135° W between latitudes 33° and 41° N. Catches along 135° W suggested a southerly distribution of fish.

On July 2, an albacore price settlement of $630 per ton delivered to the canneries was reached. Also, the canners agreed to pay $10 per ton for use in albacore research and scouting. Although the settlement was the earliest in 3 years, most of the fleet did not begin fishing until the second week of July.

As Season Developed

As the boats moved to the fishing grounds, two widely separated fishing areas developed. One was from San Clemente Island to Geronimo Island, Baja California; the most successful location was about 20-40 miles offshore, between Cape Colnett and Geronimo Island. The fishery off Baja California was the best in this area since 1967. On July 5, the 'Sunrise', on a chartered cruise for the Oregon Fish Commission, indicated commercial quantities of albacore 120 miles off Cascade Head to Reedsport in 57°-59° F waters. Boats had good catches there until July 13. The area off Grays Harbor also reported good fishing.

By the end of July, fishing was spotty off Baja California, though deep-running albacore were still present and some bait boats had days of good fishing during the last week of July. As fishing success decreased off southern California, catches increased 50-100 miles west of Eureka on 12-14 pound fish. Also, when weather permitted, boats reported good catches off central California. Fish catch off Newport and La Push increased during the last 10 days of July but dropped on August 1. At the end of July, about 4,000 tons of albacore had been landed on the west coast.

Fishing continued good from Eureka to Crescent City until August 12. Fishing again was reported off Grays Harbor, Cape Flattery, and some off La Push. Except for Cape Flattery area, the fishing in Oregon and Washington was spotty from mid-August until season ended. However, it was learned after the season that Canadian and some U.S. jig boats had very good fishing off Cape St. James on Queen Charlotte Islands for about 2 weeks in August, and good fishing off Vancouver Island's northwest tip during early September and off Estaban Point near end of September.

The Catches of August

By mid-August, the best fishing along U.S. coast was from Morro Bay to Farallon Islands on 9-11 pound fish. Weather continued to affect number of fishing days but, with better weather, a large fleet moved into this area. Average catches were good, but there were very few individual high scores, which was typical of this season's albacore fishery.

Other areas along coast had only spotty catches during last 2 weeks of August. Some fishing was reported in Gorda Seavalley area, but albacore fishing off the southern California area was over by end of first week in August. At end of August, total landings for west coast increased to 12,000 tons.

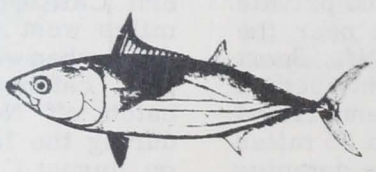
Most boats fishing off central California in early September were forced into port because of high winds. When winds abated, catches did not reach late-August numbers. Fishing was very spotty on 7-9 pound fish. Spotty fishing continued throughout September all along coast. In September, several boats unloaded fish caught earlier; at end of September, season's total landings were about 21,000 tons.

Albacore Research & Scouting

The American Fishermen's Research Foundation was established by the albacore fishing industry to administer a fund derived from the $10 per ton assessment paid by canners on albacore landed by U.S. fishermen. The Foundation chartered 4 jig boats for albacore research and scouting in cooperation with NMFS La Jolla Laboratory during October. The boats left San Diego October 4. Traveling in pairs, they worked waters out to about 250 miles off west coast between San Diego and San Francisco. Fish were located in relatively large numbers about 175-200 miles off Morro Bay, and in moderate quantities about 150 miles off Point Arguello; however, in most other areas, fishing was slow. The fish located off Morro Bay were small, about 7-9 pounds; those off Point Arguello were of mixed size. Besides trolling for albacore, the vessels collected oceanographic and weather data and tagged 912 albacore. Most of fish tagged, 72%, were 7-8 pounds; 11% were 12-16 pounds. Results of tagging should help NMFS fishery scientists assess proportion of albacore returns to enter U.S. fishery in later years--and what proportion enters Japanese fisheries in central and western Pacific and in coastal waters off Japan. Data collected by the four boats are being analyzed by scientists at the NMFS La Jolla Laboratory.

The albacore season was over by the end of October. Some boats continued to fish, but only small numbers of albacore were caught.

Although exact figures are not available, it appears that more boats fished this season than in past seasons, and that the season was shorter than in 1970. Although total west coast albacore landings were down only slightly from 1970, catches by individual fishermen were estimated to be 5-20% lower.



U.S. & CANADA TO STUDY LAKE ONTARIO

On April 1, 600 U.S. and Canadian scientists and technicians will begin a year-long study of Lake Ontario, the largest investigation ever undertaken of any of the Great Lakes. For 12 months ending March 1973, planes, vessels, buoys, weather stations and balloons will amass data about Lake Ontario and its drainage basin.

The study seeks to analyze completely the lake's biology and physical status--to see how much ecological damage man has inflicted on it, and how future damage can be minimized. The scientists selected Ontario because it is typical of the Great Lakes, excluding Erie. The latter is shallower than the others. What they learn from Ontario may help the other lakes.

The Great Lakes hold about a fifth of the world's supply of unfrozen fresh water.

Deterioration 'Alarming'

Dr. Robert M. White, Administrator of NOAA, which has primary responsibility for the U.S. share of study, said: "Their environmental quality has deteriorated to alarming levels. The Great Lakes and their basins are a high resource vital to the interests and well-being of our two nations. For this reason it is increasingly important that they be managed more effectively."

Lakes' Importance to Canada

J. P. Bruce, Canada Centre for Inland Waters, said 30% of Canada's population and 50% of her industrial production are concentrated in the Great Lakes and St. Lawrence basin. Because of the lakes' importance, they have been studied for at least 10 years, sometimes with U.S. participation.

Although these studies produced much useful information, Bruce noted, they pointed clearly to the need for a much larger effort.

The latest effort is named International Field Year for the Great Lakes. It will cost about $15 million.

U.S. headquarters will be in Rochester, N.Y.; Canada's in Burlington, Ontario.

Background

The project planners said the need for managing the Ontario basin was urgent because: 1) the lake's deterioration was advanced; 2) the coastal region, especially the Canadian, is one of the fastest developing areas of North America. Lake Ontario receives a large load of pollution, mostly from the U.S. side, from Lake Erie and the Niagara River.

Study Goals

The scientists hope that the study findings will lead to better control of pollution, weather forecasting, and better management of lake level and fisheries. Commercial fishing today is in poor condition.

The Study

Smallest of the Great Lakes, Ontario has an area of 7,340 square miles. More than 20 observation buoys and deep-water towers will span it. Five large research vessels--3 Canadian, 2 U.S.--will cruise it. Radar, balloons, and planes will gather data on the basin's atmosphere.

When all the data are processed, the scientists hope to prepare computer models that will predict the effects of proposed changes in the uses or environment of Lake Ontario. Also, they see an early-warning system applicable to the other lakes.

A Soviet Trawler on Georges Bank. (R. K. Brigham)