

# PROGRAM PLANNED TO PREVENT DEPLETION OF LOBSTERS

On August 21, Secretary of Commerce Peter G. Peterson called on the Atlantic States from Maine to North Carolina to join with NMFS in developing a long-range program to prevent depletion of the American lobster.

He said: "The need is pressing for the States involved in this industry to join together and, with the cooperation of the National Marine Fisheries Service, to establish a uniform management system for both inshore and offshore stocks of lobsters. The American lobster constitutes the single most important Atlantic coast fishery, and returns \$35 million annually to American fishermen."

## A Threatening Development

Despite large recent increases in the number of lobster fishermen, the annual average yield of inshore fisheries has not increased above 22-29 million pounds in the past 20 years. Last winter, this situation drove lobster-meat prices as high as \$12 per pound. Even this stable yield may be threatened by a recent development: the dramatic increase in number of lobstermen now fishing in deep offshore waters. The lobstermen may be interfering with the supply of larvae, their movement to inshore waters via the currents, and their contribution to inshore lobster resources. Lobsters take 4-5 years to reach one-pound size, so this impact is not yet certain.

## Action Needed

Secretary Peterson emphasized that the pace of events overshadowed the need to await additional basic research: "For too

many years, we have tended to study and restudy a problem with the result that the resource was gone before we decided how to save it. We are determined to avoid that error in this fishery. When the requirements of management indicate the need for specific new information, we shall acquire new data, but we cannot afford the luxury of awaiting continued refinements in the data. If we do, the proliferation of effort and sheer fishing power that are currently being attracted into this fishery will overwhelm it bringing low fishing incomes, inevitable resource depletion, and loss of jobs and social stability in hundreds of coastal communities."

He added: "As we gain experience in this cooperative management program, we will seek to apply the lessons learned to other important U.S. fisheries, which also suffer from institutional short-comings, and economic ills."

## STATE AND FEDERAL OFFICIALS MEET

In late August, the directors of fisheries in the states addressed by Secretary Peterson met with Federal officials in Baltimore, Maryland. They agreed unanimously on the urgency of a management plan.

The fishery officials agreed to seek uniform laws or regulations, including an increase in the minimum size of lobsters taken legally.

Dr. Robert M. White, NOAA Administrator, stated that the management plan will be a cooperative effort between NOAA's NMFS and the States.

Technical and Policy committees were formed with State and Federal representatives.

Discussions with the lobster industry are planned for the near future.

## U.S. & SOVIETS EXTEND INFORMAL LOBSTER AGREEMENT

On August 2, NMFS and Coast Guard representatives met with the Soviet Fishing Fleet Commander for the Northwest Atlantic and agreed to continue an arrangement designed to reduce incidents between Soviet vessels and U.S. lobster fishermen. The meeting place was the Soviet mothership 'Villis Lacis', about 90 miles southeast of Cape Cod, Mass.

The original agreement was reached in May 1971. It led to weekly broadcasts by the Coast Guard notifying the Soviets and others of the location of U.S. lobster fishing. When he receives these weekly notices, the fleet commander advises all his fishing captains of the pot (trap) locations and orders them to avoid these areas. The Soviets assign inspection vessels to assure compliance with these orders and with regulations of the International Convention for the Northwest Atlantic Fisheries (ICNAF). Both the USSR and the U.S. are Convention signatories.

### Incidents Reduced

The Coast Guard and the NMFS said the Soviet Commander had agreed that the arrangement has helped reduce disturbing incidents. The U.S. will continue to urge all American fishermen in the area to report locations of their offshore lobster pots to the Coast Guard. The Soviets have provided U.S.

representatives with frequencies or which U.S. fishermen can communicate with Soviet fishermen.

## NMFS INCREASES FOREIGN MARKET COVERAGE

The Statistics and Market News Division of NMFS plans to publish in its Fishery Market News Reports more price and market information concerning several foreign countries.

News about foreign fisheries and trade opportunities is coordinated by the NMFS International Activities Staff. Now the staff will have as an additional source of information the reports of commercial attaches in Switzerland, West Germany, Belgium, England, France, Italy, and the Netherlands. The attaches have been asked to collect and relay information on prices for fresh, frozen, canned, and other fishery products; possibilities for sales; import quantities and values; and import controls for certain products.

### Possible European Markets

Underway are plans to release market reports from a July 1972 study made by the Regional Fisheries Attache in Copenhagen. These contain names of European firms interested in buying U. S. fishery products.

Prices of shrimp on the Japanese market are supplied by the Regional Fisheries Attache in Tokyo. These are published regularly in Fishery Market News Reports.

The Fisheries Attache in Mexico also has been asked to supply prices and landings data on shrimp and other exported products.

# 1971 GREAT LAKES COMMERCIAL FISHERY FALLS BUT VALUE RISES

In 1971, the Great Lakes catch by U.S. and Canadian commercial fishermen was 100.4 million pounds, down about 10 million from 1970, and the lowest since 1965. But the \$12.5 million landed value was 7% above 1970 and the highest since 1958. These findings come from final 1971 catch statistics compiled by NMFS for the U.S. waters of the lakes, and 1971 preliminary figures for the Canadian areas provided by the Ontario Ministry of Natural Resources.

## U.S. Catch

The U.S. catch was 62.3 million pounds, 8 million below 1970. This decline resulted primarily from the fall in Lake Michigan production. The latter was tied to three major species--alewives, coho salmon, and chubs.

In lakes Huron and Superior, landings increased moderately from their 1970 record lows, but Erie's production continued downward to a new low.

However, the dollar value of Erie catch rose a good deal in 1971 and was the highest in 10 years. Lake Ontario's annual catch is minor: less than 1% of U.S. total for the lakes.

## Canadian Waters

In Canadian waters of Great Lakes, Ontario commercial fishermen landed about 38 million pounds worth slightly over \$6 million--about equal to value of 1971 catch.

In comparing volumes of Canadian and U.S. landings, however, note that alewife accounts for nearly half (48%) of U.S. total.



For Canada, the year-by-year status of its Great Lakes commercial fishery is related closely to the changes in Lake Erie production. The latter is 75-85% of Canadian total for the lakes.

#### Mercury Closes Lake St. Clair

The Lake St. Clair figures reflect the early 1970 closure of this fishery because significant amounts of mercury were found in the bottom sediments. Before, the annual commercial catch ranged from about 800,000 to 1 million pounds. Commercial fishing is not permitted in the U.S. (Michigan) waters of lake St. Clair.

The following summarizes weight and dollar value of 1970 and 1971 landings by commercial fishermen for each lake and for principal species caught in U.S. and Canadian waters. Production in these waters for one or both years was over a million pounds. For Great Lakes states, the extent of the 1971 yield from their jurisdictional waters was as follows (in 000s of lbs.):

Illinois	655.9
Indiana	784.9
Michigan	15,592.4*
Minnesota	2,008.1
New York	486.9
Ohio	8,110.8
Pennsylvania	376.8
Wisconsin	34,250.1*

\* Alewife landings: Michigan 3,895.5;  
Wisconsin 25,642.8.

#### Lake Basins

For several lake basins, these were some features of 1971 commercial fisheries, plus changes from 1970:

Lake Michigan: In 1971, 44.1 million pounds were caught, 71% of U.S. Great Lakes total.

The Green Bay section provided a little over half the Lake Michigan production (22.7 million pounds.)

The combined decrease in landings of three species -- coho, chubs, and alewives -- was about 10 million pounds, or a million more than overall decline for the lake. The levels of DDT and PCB found in some chubs and coho halted interstate sale of chubs and brought a Michigan ban on commercial sale of coho.

Whitefish production of 2.9 million pounds was 67% higher than 1970 and the highest since 1949.

Lake Erie: U.S. -Canadian production of 37.9 million pounds was 38% of Great Lakes total. When you exclude the Lake Michigan alewife catch, which is not sold retail, Erie's share of lakes' total is 54%.

Canadian landings of 29.1 million pounds were 77% of lake's total. The yellow perch-smelt catch was 27 million pounds.

The 4-state production of 8.8 million pounds was a record low. The Ohio-Michigan waters of the small western basin was 74% (6.5 million pounds) of this figure.

Lake Huron: Both U.S. and Canadian production increased from 1970's all-time lows. The combined gain of 1 million pounds brought total to 5.5 million.

Lake Superior: The U.S. catch rose 23% from the 1970 record low. Smelt, chub, and whitefish landings increased. Lake herring production continued downward to a record low of 1.2 million pounds.

Lake Ontario: U.S.-Canadian catch was 3.2 million pounds. Canadians took 90% of total.



## ALASKAN VOTERS APPROVE 'LIMITED ENTRY' INTO FISHERIES

Alaskans voted in their August 22nd primary to remove a serious legal barrier to controlling the amount of fishing effort. Their action also may ease the problem of over-capitalization in some fisheries.

Before their vote, a section of the State Constitution banned the creation of an exclusive right of fishing in Alaska. The amendment, supported by 78.6% of the voters, provides limited-entry authority.

The new wording of the section:

"No exclusive right or special privilege of fishery shall be created or authorized in the natural waters of the State. This section does not restrict the power of the State to limit entry into any fishery for purposes of resource conservation, to prevent economic distress among fishermen and those dependent upon them for a livelihood and to promote the efficient development of aquaculture in the State."

## ALASKA TO RAISE SALMON IN SALT WATER

According to "Alaska Industry," some 750,000 king and coho salmon fingerlings from Anchorage were airlifted to new salt water rearing pens in Southeastern Alaska. Later another 350,000 will be trucked to salt water pens on Cook Inlet. This is an experimental project of the Alaska Fish and Game Department, designed to test the feasibility of rearing salmon in salt water. National Marine Fisheries Service is contributing personnel and technical services.

## Economics of Salt Water Rearing

Under study will be the economics of rearing these fish in easily constructed portable pens, and the possible increase in survival and growth rate. Scientists also hope to determine if salt water rearing will help avoid diseases which commonly afflict fish reared in fresh water. The units will have a mix of fresh and salt water for the juvenile cohos and kings. When they attain appropriate size they will be released into open salt water. The majority will be released in the spring of 1973. The first coho returns are expected in late summer and fall of 1974. Officials say that if these experiments with prototype systems are successful, production facilities will be built to expand the program.

## NMFS PARTICIPATES IN SEA SURVEY OFF NORTH SLOPE

The coastal waters of the Western Beaufort Sea, adjacent to the North Slope oil field of Alaska, are areas where future pollution is possible. The Coast Guard Oceanographic Unit is making baseline studies of its marine ecosystem. National Marine Fisheries Service is among the participants in this cooperative cruise. NMFS will take plankton tows, midwater trawls, and benthic samples. Coast Guard investigators will study physical oceanography, short-term current measurements, XBT transects, and meteorological and ice observations.

### Other Participants

The U.S. Geological Survey will study sediment transport, take bottom photographs, cores, bottom grabs, and measure water transparency. Smithsonian researchers will take a marine mammal and bird census, analyzing for pesticides and heavy metals. Other studies will consist of census of water fowl, chemical analyses, gravity measurements and marine biology.



## MARLIN TAGGING IN NORTH ATLANTIC

In 1954, The Woods Hole Oceanographic Institution's Cooperative Game Fishing Tagging Program began with the tagging of marlin in western North Atlantic waters. Returned to date are 133 tags from a total of 6,590 white marlin tagged and released since the program's inception.

Thousands of marlins and other oceanic fishes were marked by cooperating sport fishermen, using equipment furnished by the Institution. Tags carry the word "reward", the address of WHOI, and a serial number.

Returns have come from both sport and commercial fishermen. Many tags come from Japanese longliners and some from Cuban, Venezuelan and Korean fisheries.

### Return Rate Accelerates

Originally, results from white marlin were discouraging, only 2 returns in 10 years. However, by May 1970 65 returns were in. Return rate continues to accelerate. The increase is attributed to fishermen's greater awareness of the program.

On the basis of tag returns and catch records scientists of National Marine Fisheries Service have published a study of the migration and distribution of Atlantic marlins.

### Migration of Marlins

Returns and records have provided detailed data on the movements and relative abundance of white marlin in the Atlantic. One group has been found to summer off the Atlantic coast of the United States, migrating offshore in the fall, then heading south to winter off the north coast of South America. In spring these fish return north along or through the Antilles and the Bahamas. An analysis of tag return data suggests that the annual mortality rate is between 14% and 39%.

There is an indication of decline in abundance. One of the goals of the tagging program is better conservation of the white marlin, which is important to sport and certain commercial fisheries.



## NMFS IS DEVELOPING NATIONAL SPORT FISH STATISTICS PROGRAM

Since October 1970, the collection of statistics on the marine sports fisheries of the United States has been the responsibility of National Marine Fisheries Service. NMFS is now developing a 5-year plan for collecting these statistics nationally.

In the past, data on number of fishermen and number and weight of fish caught have been collected every 5 years in household surveys by the Bureau of Census. These have been the only national data available. Because the accuracy has been questioned in the past, NMFS has contracted with an outside research firm, Audits and Surveys, Inc., New York City, to find out how these household surveys could be improved.

To get a clear picture of the different kinds of data needed by individuals and groups, NMFS has contracted with Moshman Associates, Inc., Washington, D.C., to do a further survey. They will contact about 75 people in State Fisheries agencies, universities, sport fish-related industries, NMFS and others interested in the marine sport fisheries of the United States. This survey will produce a priority listing of data needed, statements on accuracy required with various data, and statements of justification for different kinds of data.

### 5-Year Program Plans

Armed with these results, the Audits and Surveys study, and other information provided by NMFS, Moshman is to prepare alternative 5-year program development plans for the Marine Sports Fish Statistics Program. Plans will outline kinds of data to be collected and when, based on different assumed funding levels. They are expected to be completed by November 1972. A 15-man committee, comprised of representatives from the three interstate compacts, Sport Fishing Institute, and NMFS will review these 5-year development plans. When approved, implementation will begin early in 1973.



## SCIENTISTS SEEK TO REDUCE COST OF OCEANOGRAPHIC DATA

"Talking drift bottles" being developed for the Department of Commerce may provide an effective and relatively inexpensive tool for investigating oceanographic mysteries. Studies will range from the migration of icebergs to ocean-currents transportation of haddock eggs.

Scientists at the Woods Hole Oceanographic Institution, Woods Hole, Mass., have a one-year, \$50,000 contract to develop an electronic system. From shore stations it will track small drifting buoys.

### The Contract

The contract calls for design, fabrication, and demonstration of two shore stations and the drifting buoys. It is funded by National Data and Buoy Center and National Marine Fisheries Service.

Drift bottles have been used very effectively (and inexpensively) to gather data on ocean currents. However, recovery rate for drift bottles off the east coast of the United States averages only 10 percent per year. During the cold half of the year recovery rate is even lower because northwesterly winds push surface drift further offshore. Another major disadvantage: there is no way of knowing the route drift bottles follow from release to recovery.

Electronic systems previously used required expensive instrumentation. This prohibited deploying buoys in sufficient number to gather comprehensive data required for environmental assessment of fisheries resource prediction. Some of these electronic systems had severe range limitations.

### Tracking Techniques

A ship or an aircraft can be used to track buoys through radar contact a span of 5 miles or less, or tens of miles with radio or radar transponding systems. Present satellite tracking techniques require relatively expensive systems on each buoy.

For many studies, a system is needed that combines low cost, reporting reliability, and better range. "Talking drift bottles", scientists hope, will be the answer.

This system, proposed by the Woods Hole team, offers a range of about 250 miles between shore stations and drifting buoys. The land stations will track the field of buoys by listening to each buoy as it transmits on a programmed basis.

## UPWELLING SCRUTINIZED ON OREGON COAST

A six-mile stretch of ocean immediately off the Oregon coast was widely watched and instrumented in a special study of upwelling. This ocean phenomenon brings cold, nutrient-rich bottom water to the surface when northwesterly summer winds force surface water away from the shoreline. Its importance lies in the fact that even though upwelling occurs in only a fraction of the oceans of the globe (1/10th of 1 percent), over half the fish of the sea are found in upwelled water. The ocean off Oregon was picked for the first major U.S. study because upwelling continues so consistently there throughout the summer; also, Oregon State oceanographers already had gathered a vast amount of information on the area.

Scientists from across the nation joined Oregon State University researchers. Scores of recorders, buoys, etc., were placed in the ocean site off Newport. Temperatures, salinity, water movements, waves, etc., were recorded.

### Additional Observations from Plane and Satellites

To supplement on-the-spot findings by several oceanographic research vessels, a specially equipped airplane and earth satellites provided additional observations at heights from 300 feet to 22,000 miles. Linked to a high-speed computer, the plane measured and recorded 8 times a second atmospheric conditions, sea surface temperatures, surface chlorophyll content and other facts. Satellite observations included cloud patterns as they may relate to space and time variability in the upwelling surface signs.

It will take weeks for the mass of data from in-water recorders, the ships, satellites and plane to be analyzed by computers.

Future studies are tentatively set off Oregon in 1973 and off Africa in 1974.

# MANY SALMON WERE RIGHT THERE YESTERDAY --BUT TODAY?

The sport fishermen knew there were many sockeye salmon in Lake Washington (Washington State) this summer, but catching them was another matter. They were catching one for every 3 or 4 trips and needed help in locating the fish. So three organizations jointly conducted an acoustical survey designed to help the anglers increase their efficiency. The three were the University of Washington's Fisheries Research Institute, the State Department of Fisheries, and the Northwest Fisheries Center of the National Marine Fisheries Service.

The Lake Washington run resulted from a small number of sockeyes planted in Cedar River in 1934. It remained small until a couple of years ago when, suddenly, there were enough fish for a sizable harvest. This year, a sport fishery was scheduled to take fish in excess of the desired escapement of 350,000, which the state figured could spawn successfully in the Cedar.

## The Equipment Used

Biologists from the three agencies, aboard a 23-foot research boat operated by NMFS, made weekly surveys of the lake's south end to locate the salmon by area and depth. They used a specially designed acoustic detection device built by the Fisheries Research Institute and similar to echo sounders used by the Navy to locate submarines.

As the boat crisscrossed the lake on predetermined course lines, the fish showed up as "blips" on an oscilloscope. They were counted and recorded on magnetic tape. The counts were transferred to IBM-type cards immediately on returning to the Northwest Fisheries Center. The information was analyzed and plotted by computer. A map of the lake's south end was prepared, with contour lines showing density and location of the fish.

## For Immediate Use by Sportsmen

Each Thursday for eight weeks, biologists distributed the maps showing where the fish were the previous day to newspapers, radio and TV stations, and sporting goods shops.

Dr. Richard Thompson, head of the federal team, said: "We'll look at all the data at the end of the season to see what new information on salmon behavior is there, for possible use in making future management decisions by the (State) Department of Fisheries. But the immediate use for this information is by the sportsmen."

The Department of Fisheries has said the size of the run would not approach the 400,000 originally predicted. And, though the daily catch limit was cut from 6 to 2 salmon, the Department estimates that 13,600 sockeyes averaging 4 to 8 pounds each were boated by anglers through July.





# THE PLANKTON SORTERS ARE READY FOR THE PLUNGE

Plankton is the animal and plant life that swims weakly or floats passively in a body of water. Scientists say that sorting and identifying plankton lead to a better understanding of the interrelationships that exist among occupants of the sea. When they associate plankton species with other biological and environmental data taken at the same time, they can predict the relative productivity of oceanic regions. Known concentrations of egg and larval stages of food fish can be indicators of future populations.

At the NMFS Northwest Fisheries Center in Seattle, Wash., the plankton-sorting unit is preparing to help carry out the NMFS Marine Resources Monitoring, Assessment and Prediction Program (MARMAP).

MARMAP is a national program to evaluate the living resources in international waters off the United States. It will be conducted in three overlapping surveys: the first will deal with ichthyoplankton (fish eggs and larvae); the second with bottomfish and shellfish; and the third with pelagic fishes (those that swim freely in upper-water layers).

The plankton-sorting unit will be useful especially in the first stage. Its technicians will separate and count fish eggs and larvae in all plankton samples from MARMAP research in the northeast Pacific. Also, they will classify other groups of plankton.

MARMAP operations will peak in 1975. Eventually, MARMAP researchers will be able to map plankton concentrations and correlate them with the populations of commercially valuable fish that feed on them.

## Plankton Tows

Research ships working in the northeast Pacific make plankton tows with a sampling

rig called a "Bongo." It consists of two plankton nets of varying mesh size attached to hoops 40 or 60 centimeters in diameter and linked together. Quart jars are filled one-half to three-fourths full of the captured plankton preserved in formalin. The jars are taken to the sorting center at the end of the cruise. A single cruise can produce 1,200 jars; each jar contains as many as 150,000 animals, or even more.

## At Sorting Center

At the sorting center, the formalin is drained and fresh water added before sorting begins. A jar full of plankton is divided in half, and one of these halves is halved. The splitting is continued six or seven times. The original jar is divided into 64 or 128 approximately equal parts. The sorting is done with these small lots of animals, around 500 per part.

The initial sorting is in two phases. With ichthyoplankton, all fish eggs and larvae are taken out and sent to taxonomic specialists of the Northwest Fisheries Center's Division of Marine Fish and Shellfish for classification by species. Then, remaining organisms are classified by planktonic groups -- chaetognaths, euphausiids, amphipods, and copepods. And then each of these groups is sent to specialists for further classification; if possible, by species.

## The Plankton Sorter

Who makes a good plankton sorter? Janet Condon, a MARMAP supervisor at the Center who is employed by the Smithsonian Institution, says: "You have to be very patient, have good eyesight, have fairly good manual dexterity, and you must be able to recognize the different forms." The different forms number thousands; many are less than 1/30 of an inch long.



# THE FOOD FISH SITUATION

During April-June 1972, the retail fish price index averaged  $8\frac{1}{2}\%$  above that of a year earlier. Despite an increase in supplies, the index was  $2\frac{1}{2}\%$  higher than in Jan. -March 1972.

Although imports rose significantly, prices increased at all marketing levels, and these were reflected at retail. The rises caused consumption to level off. As a result, stocks were appreciably higher by July 1, 1972.

## Fishery Products

During first-half 1972, U.S. supplies of edible fishery products improved because high U.S. prices attracted nearly 20% more imports than a year earlier. Though U.S. landings were lower, total supplies were 10-15% above 1971. However, production will be down, and imports likely will be cut back during the remainder of 1972. During this year, consumer resistance to high prices is expected to limit any rise in per-capita consumption of fish.

## Imports of Fish Blocks

Through May 1972, the imports of fish blocks used in processing sticks and portions were a third greater than a year ago. In first-quarter 1972, production of sticks and portions increased 15%. But sales fell off, and inventories on June 1 were 15% above a year earlier. Through June, shrimp supplies were 6% higher than last year as a result of a 22% increase in imports.

## Canned Fish

The supply of canned fish likely will rise slightly in 1972. Production of canned tuna is well ahead of 1971. This was expected to be offset by a drop in production of canned salmon during summer 1972.

## Per-Capita Consumption Steady

Although the supply situation was encouraging, per-capita fish consumption in 1972 was expected to move upward only 0.1 pound to 11.3 pounds.

Consumption of canned fish may remain at 1971's 4.3 pounds per person. Use of fresh and frozen fish is expected to rise a little.

