

runs to inshore areas along the Newfoundland coast. The Soviet and Norwegian fisheries operate in conformity with regulations of the International Commission for the Northwest Atlantic Fisheries (ICNAF) which involve quotas on stocks over broad areas. However, Mr. Davis pointed out that "a problem has been created by the foreign fleets concentrating in a small area very close to shore and fishing a vulnerable segment of a stock of special importance to our hard-pressed inshore fishermen."

A shift toward shore in Soviet and Norwegian fishing activity between 1973 and 1974 has resulted in an increased take of capelin stocks which migrate into the bays of Newfoundland where they are fished by Canadians and where they are a vital food source for cod and other valuable species. Canadian fisheries patrol vessels par-

ticipating in the ICNAF joint enforcement scheme reported that more than 50 Soviet fishing vessels had been operating within 30 miles of the Newfoundland coast and as late as 1 June six more large vessels had joined the Soviet fleet. Seven Norwegian catching vessels had been fishing just outside the Canadian 12-mile limit off Trepassey Bay.

Last year the fishery did not pose the same threat to Canadian inshore fisheries because it concentrated on capelin spawning on the southeast edge of the Grand Banks over 200 miles offshore. Capelin in these offshore areas do not migrate inshore and because most of them die after spawning, have no value as food for cod. With regard to the new situation which has arisen this year the Minister instructed Canadian negotiators at the 24th annual meeting of

ICNAF, which opened 4 June in Halifax, to make the strongest representations to officials of the Soviet Union and Norway attending the meeting for an immediate cessation to fishing for capelin in the sensitive areas close to shore. Mr. Davis said that he was hopeful that the matter could be resolved through negotiations during the ICNAF meeting.

"In view of the grave concern of inshore fishermen in Newfoundland and the Newfoundland fishing industry generally, if immediate action is not forthcoming Canada will consider what other measures may be taken to provide effective protection of the inshore capelin stocks. In the meantime Canadian patrol vessels and aircraft are continuing to inspect Soviet and Norwegian ships and are maintaining close surveillance over this fishery," Mr. Davis said.

#### Publications

### **Russian, Polish, Japanese, and Mexican Fisheries Books and Journals Translated**

**Eel culture**, by Atsushi Usui, Midori Shobo Publishers, Tokyo, 1970, 79 p. Mr. Usui is president of the Shizuoka Tansui Freshwater Fish Farming Company. His book, long considered the best on Japanese eel culture techniques, is now available in English translation, revised and expanded to make it more meaningful to a Western audience. It includes a description of the world's species of *Anguilla* eels and a history of their culture, but the majority of the book is devoted to the practical aspects of eel culture. It covers catching of elvers, location of pond sites, construction of ponds, feeding, collection techniques and timing, prevention and cure of diseases, transport to market, and even the major methods of cooking eels.

Ichiro Hayashi of Tokai Regional Fisheries Research Laboratory in Tokyo prepared the original translation; Dr. Gordon Williamson, a British biologist who spent a year in Japan studying eels, has redrawn sketches and added to the text information on when and where to catch elvers in Europe, suitability of Euro-

pean climate to eel culture, species of *Anguilla* eels in Europe and the U.S., availability of supplies, and a comprehensive bibliography on eel culture. The excellent original set of figures has been expanded to include British and European subjects.

The translation, 186 p., is sufficiently comprehensive to provide a firm basis for new eel culture enterprises. It is available from Fishing News (Books) Ltd., 23 Rosemount Avenue, West Byfleet, Surrey, England, price about US\$15.60 (6.75 English pounds) plus postage.

**Biological and hydrological factors of local movements of fish in reservoirs**, edited by B. S. Kuzin, Proceedings of Institute of Biology of Inland Waters, No. 16(19), Academy of Sciences of the USSR, "Nauka" Publishers, Leningrad, 1968, 277 p. This is a collection of 16 articles covering a wide range of factors affecting fish movement in reservoirs. The majority deal with studies conducted in the Rybinsk reservoir and include reservoir morphology, bottom sediment content, fish species com-

position, population dynamics, feeding habits, and species interaction. Other studies cover characteristics and dynamics of water masses in reservoirs, and particularly turbulent exchange, electroconductivity, temperature, and current velocity measurement.

The collection was translated from Russian by Amerind Publishing Co., New Delhi, India, for the Fish and Wildlife Service, U.S. Department of the Interior, under the Special Foreign Currency Science Information Program (financed with Public Law 480 funds). The translation, 389 p., is available from the National Technical Information Service, Springfield, VA 22151, price \$8.25. Cite the translation's accession number, TT 71-58014, when ordering. A limited number of free copies is available from the Language Services Division, Office of International Fisheries, F43, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235.

**Oxyuroidea of animals and man**, by K. I. Skrjabin, et al, Essentials of Nematology, Vol. 8, Academy of Sciences of the USSR, Moscow, 1960, 280 figs., 531 p. This is a comprehensive study of the morphology, biology, ecology, and geography of Oxyuroidea, one of five superfamilies of Oxyurata, a suborder of parasitic nematodes.



The book contains a brief history and state of the art of the study of *Oxyurata* as well.

The translation, 280 figs., 625 p., was produced by the Israel Program for Scientific Translations (IPST) and is available from Keter Publishing House Jerusalem, Ltd., P.O. Box 7145, Jerusalem, Israel, or International Scholarly Book Services, P.O. Box 4347, Portland, OR 97208, price \$40.00.

**Fisheries exploitation of resources of the oceans**, by M. S. Pavlov, et al, Central Scientific Research Institute for Information and Technical-Economic Studies of Fisheries (TSIITEIRKh), Reviews of Information, Series I, No. 4, Moscow, 1971, 46 p. The Moscow institute has issued a paper analyzing current catch data and delineating fish stocks with development potential in all the major fishing regions of the world. It considers FAO estimates of total ocean productivity to be low, as they do not take into account the potential use of phytoplankton, zooplankton, and algae; these could add 150-200 million tons to FAO and other estimates of 60-200 million tons per year. The paper points out, however, that plankton and algae harvest require significantly different technology. At present, cephalopods, in particular coastal squid, can provide the major feasible increase in catch.

In spite of obvious depletion of traditional stocks in the North Atlantic and Pacific, the paper sees the possibility of increased catches in all areas of the world's oceans through development of underutilized stocks. Soviet catches in the Northeast Atlantic have increased recently through additional catches of blue whiting and Arctic cod; other stocks suggested for exploitation were capelin, grenadier, argentine, silver hake, lanternfish, sand lance, Atlantic saury, and sea robin. The Pacific saury, cod, walleye pollock, and anchovy were open to greater Soviet exploitation in the Northeast Pacific, and squid and saury in the Northwest Pacific.

The Indian Ocean has the greatest potential for fishery development; the current catch of approximately 2 million tons might be increased

tenfold by the end of the century. Catches of tuna, mackerel, and other pelagic species south of Java, in the Northwest Arabian Sea and Gulf of Aden, and at the equatorial upwelling might increase fivefold. Inshore and coastal fisheries of the Indian Ocean also have great potential productivity. Stocks such as squid off New Zealand and Moroccan herring in the Central Atlantic were also mentioned as having potential for development. The translation, 35 p., includes an extensive bibliography and is available on loan from the Translation Program, International Activities Staff, Fx4, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235.

**Theoretical premises for construction of an information system for economic evaluation of fish resources in the Atlantic Ocean**, by V. V. Ivchenko, Proceedings of the Atlantic Scientific Research Institute of Marine Fisheries and Oceanography (AtlantNIRO), No. 33, Kaliningrad, 1971, p. 11-18. This article discusses the need for and basis to a systems analysis approach to economic exploitation of fisheries resources, particularly in the Atlantic Ocean. It defines economic evaluation of fish resources of a particular fishing ground as "the determination of their value compared to resources of other grounds, calculated according to the system of economic indexes." Economic efficiency of exploitation is a major criterion. Two possible information systems for the Atlantic Ocean fisheries are described and discussed. The translation, 7 p., is available on loan from the Translation Program, International Activities Staff, Fx4, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235.

**Life cycle and dispersion of *Euphausia superba* Dana**, by R. R. Makarov, and **Geographical distribution of spiny lobsters and ecological factors determining their commercial concentrations**, by V. I. Chekunova, in "Wealth of the World Ocean," No. 2, Proceedings of the All-Union Scientific Research Institute of Marine Fisheries and Oceanography (VNIRO), Vol. 77, Moscow, 1972, p. 85-92

and p. 110-119. The first article reviews what is known of the life cycle of Antarctic krill and describes the distribution of krill, particularly in the Weddell Sea, as observed by Soviet vessels from 1967 to 1969. The second article describes the variety and size of catches of the genera *Palinurus*, *Panulirus*, and *Jasus* in certain ocean regions and the biological bases for their commercial concentration. Total catches in tropical regions, where the greatest number of spiny lobster species exist, amount to 21,000 tons annually; the southern temperate region yields 36,000 tons per year. A lesser amount is harvested in northern temperate regions. Spiny lobsters, as members of well-balanced communities, are relatively unproductive crustaceans. They require constant, relatively closed-water circulation on a shelf area to form commercial concentrations, and such concentrations occur only among a few species. The two translations are available on loan from the Translation Program, International Activities Staff, Fx4, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235.

**The development of pisciculture in Cuba**, by Yu. A. Privezentsev, in "Soviet-Cuban Fisheries Research," No. 3, All-Union Scientific Research Institute of Marine Fisheries and Oceanography (VNIRO) and (jointly) Center of Fisheries Research of the National Fisheries Research Institute of Cuba (TsRI), Havana, 1971, p. 111-116. Cuba is planning fish-breeding ponds in conjunction with reservoirs for irrigation according to VNIRO. Recent studies of inland water quality by an existing pond station and the Institute of Biology of the Cuban Academy of Sciences have made possible planning for development of aquaculture at several reservoirs, marshes, and rice paddies. Native populations of largemouth bass may be suitable for culture, as well as common carp, grass carp, and silver carp, all introduced from the USSR. Preliminary breeding results are described as encouraging. The translation is available on loan from the Translation Program, International Activities Staff, Fx4, NMFS,



NOAA, U.S. Department of Commerce, Washington, DC 20235.

**Some problems of the biology of tunas in the Indian Ocean**, by B. S. Solov'ev and B. N. Kuzmin, in "Current State of Biological Productivity and Living Resources of the World Ocean and Prospects of their Exploitation," Atlantic Scientific Research Institute of Marine Fisheries and Oceanography (AtlantNIRO), Kaliningrad, 1970, p. 230-238. AtlantNIRO has been gathering data on biological productivity and commercial concentrations of tuna in the Indian Ocean. This article summarizes data from 1966 to 1969, for the region bounded by 8°N and 5°S latitudes and from the eastern coast of Africa to 60°E, and southwest to 13°S latitude and the western coast of Madagascar. Bathythermograph probes to 200 meters were made where longlining is conducted. Yellowfin tuna were observed at depths of 131-180 meters; bigeye tuna were found at 222-253 meters. The study concluded that research into the biology and distribution of squid, luminous anchovy, and lancetfish (the main food of tuna) will aid considerably in locating the tuna themselves. The translation is available on loan from the Translation Program, International Activities Staff, Fx4, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235.

**Biology and fisheries of common cephalopods of the Atlantic**, by A. N. Vovk and Ch. M. Nigmatullin, in "Fisheries Research in the Atlantic Ocean," Proceedings of the Atlantic Scientific Research Institute of Marine Fisheries and Oceanography (AtlantNIRO), No. 42, Kaliningrad, 1972, p. 22-54; **On the possibilities of specialized fishery of low-value Atlantic fish for fish meal production**, by S. K. Bulanenkov, and **Present state and expected changes in raw material base of the trawl fishery in the North-western Atlantic**, by K. G. Konstantinov, in "Current State of Biological Productivity and Living Resources of the World Ocean and Prospects of their Exploitation," Atlantic Scientific Research Institute of Marine Fisheries and Oceanography (Atlant-

NIRO), Kaliningrad, 1970, p. 139-145 and p. 7-15.

Three documents from research institutes in the USSR on aspects of Atlantic fishery resources have been translated for the National Marine Fisheries Service. The first gives quite detailed descriptions of cephalopod species and their distribution throughout the Atlantic Ocean, as well as guidelines on freezing, storage, and utilization of cephalopod flesh products. The resources of the southeast Atlantic are least known, but estimates have been made that the current total Atlantic cephalopod catch of approximately 1 million tons can be increased to 20 million tons. The second article discusses some of the problems of Soviet entry into fish meal production (most species suitable for fish meal are within territorial waters of other nations). The most productive area accessible to Soviet trawlers is along the western coast of Africa; in addition, sea robin, dogfish, anglerfish, and skate in the Northwest Atlantic could provide the basis for a sizeable fish meal industry. Other stocks, such as lanternfish, could be developed with medium trawlers fishing with lights. The third article describes stock conditions in the Northwest Atlantic by area and predicts Soviet catches in the years immediately following 1970. The translations are available on loan from the Translation Program, International Activities Staff, Fx4, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235.

**Shrimp fishery on the high sea and in the northwest: a biological/fishery analysis**, by Daniel Lluch Belda, Secretariat of Business and Industry, Information Series INP/SI: 116, Mexico City, 1974, 78 p. This study, translated for the National Marine Fisheries Service, describes the state of the Baja California fishery for blue, white, and brown shrimp and discusses reasons for the recent decline in total harvest in that fishery. Reasons given include small mesh size of nets, excessive fishing effort and periods of poor growth of shrimp stocks. The study recommends 2½-inch mesh size of nets, seasonal protection of reproductive populations, and diver-

sification of effort into the sardine, anchovy, and langostino fisheries. The translation, 73 p., is available on loan from the Language Services Division, Office of International Fisheries, F43, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235.

**Studies on demersal fish resources in East China Sea by tagging method**, by Hideo Otaki, p. 73-97, in Report of Fishery Resource Investigations by Scientists of the Fisheries Agency, No. 12, 1971. This study, translated for the National Marine Fisheries Service, describes and evaluates results of experiments by the Japanese Government on red sea bream, conger eel, Korai shrimp, yellow croaker, and hairtail in the East China Sea. Stock size and movement were most successfully determined for red sea bream and Korai shrimp, but the more complex movements of hairtail and eels defied adequate delineation through tagging. The sensitivity of croaker to changes in pressure prevented the survival of a sufficient number of tagged individuals. These problems, as well as the more general problems—tag loss, lack of publicity, cost—of tagging research are discussed in detail. The translation, 52 p., is available on loan from the Language Services Division, Office of International Fisheries, F43, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235.

A limited number of the following Russian and Polish publications translated and printed for the National Marine Fisheries Service under the Special Foreign Currency Program (financed with Public Law 480 funds) are available for free distribution from the Language Services Division, Office of International Fisheries, F43, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235. Please request by translation number.

Translation number, titles, and authors include: TT 70-55125/3, 4, Marine Technology and Management, Vol. 20, Nos. 3, 4, 1970; TT 70-55125/7, Marine Technology and Management, Vol. 20, No. 7, 1970; TT 70-55126/3, 4, Shipbuilding, Vol. 15, No. 3, 4, 1970; TT 71-50026, The Living Resources of the World



Ocean, Moiseev, P. A.; TT 71-50032, Interpretation of Echograms of Hydroacoustic Fish-finding Instruments, Yudanov, K. I.; TT 71-50066, Marine Neustonology, Zaitsev, Yu. P.; TT 71-50111, Fertilization in Fishes and

the Problem of Polyspermy, Ginzburg, A. S.; and TT 71-50127, Soviet Fisheries Investigations in the Northeastern Pacific, Part V (*Trudy VNIRO*, Vol. 70), Moiseev, P. A., (chief editor).

Hillier and Richard D. Beckwith changed, among other factors, the rigging of the *Yankee 35* bottom trawl for tests in Narragansett Bay with the URI research vessel, *Gail Ann*.

## Vessel Finance, New England Fish Farms, Bottom Trawling Covered in URI Reports

**Financing Fishing Vessels** by Dr. Andreas A. Holmsen, published by the University of Rhode Island Sea Grant Program explains the roles of commercial banks, the Small Business Administration, the Farm Credit Administration and Production Credit Associations in financing new and used fishing vessels. Other finance programs explained are the Obligation Guarantee Program, a loan program operated by the National Marine Fisheries Service, and the Capital Construction Fund. Copies of "Financing Fishing Vessels," publication P343 are free from the Marine Advisory Service, University of Rhode Island, Narragansett Bay Campus, Narragansett, RI 02882.

Fish farming should be encouraged in New England by making specific coastal areas available to private concerns under long-term leases, and by conditional government assistance to fish farming enterprises, according to the report **Aquaculture in New England**, recently published by the University of Rhode Island Sea Grant program. The authors are Dr. John M. Gates, assistant professor of resource economics at URI, Clement S. Griscorn, physical oceanographer for the Marine Experiment Station at URI, and G. C. Matthiessen, biologist, and president of the Marine Research Corp.

The authors said each state should make available not more than 1,000 acres of suitable coastal area that could be leased for fish farming for at least five years, but not more than 10. During this time they said, the economic feasibility of commercial fish farms could be explored. The 77-page report was the culmination of a three-year study funded by the New England Regional Commission, a

federal-state agency comprised of the governors of the six New England states and a federal co-chairman appointed by the President, and the URI Sea Grant Program, which is supported by the National Oceanic and Atmospheric Administration. The researchers said the species appearing to have the greatest potential for fish farming in New England are the American oyster, hard clam, bay scallop, American lobster and silver (Coho) salmon, a Pacific species.

Copies (Marine Technical Report No. 18, p. 334) are available free of charge from the Marine Advisory Service, University of Rhode Island, Narragansett Bay Campus, Narragansett, RI 02882.

The factors that affect the performance of bottom trawl fishing nets are the subject of a report recently published by the University of Rhode Island Sea Grant program. Researchers Geoffrey A. Motte, Albert J.

Captains Motte and Hillier are members of the department of fisheries and marine technology and Mr. Beckwith is a graduate student in ocean engineering, all at URI. They found that the opening of the mouth of the trawl was affected most by the number of headline floats used and the size of the net mesh. Although the experimental vessel used was small (47 ft long, with 96 hp), the authors said that the research produced information of interest to persons fishing from smaller inshore draggers. Some of the results, they said, may be applied to the entire series of Yankee trawls.

The report titled, **Bottom Trawl Measurement Trials Report**, is available free of charge. Requests for publication P312 should be mailed to the Marine Advisory Service, University of Rhode Island, Narragansett Bay Campus, Narragansett, RI 02882. A technical report of the trials may be obtained in the publication, **Bottom Trawl Performance Study**, at a cost of \$1.50 for each copy. Requests mailed to the above address should stipulate P300. Payment must accompany orders.

## University of Washington Sea Grant Books

**A Hydroacoustic Data Acquisition and Digital Data Analysis System for the Assessment of Fish Stock Abundance** by Edmund Pierce Nunnallee, Jr. describes a system designed and constructed at the University of Washington to measure the abundance of pelagic fish. The portable data acquisition unit consists of an echo sounder interfaced to a magnetic tape recorder. The digital data analysis unit incorporates a small computer, a line printer, and various hardware to interface the computer to an echo sounder or a tape player.

This paper was written to provide a basic operators manual for the hydroacoustic data acquisition and analysis system and to compile vari-

ous publications relative to its use. General descriptions, instructions for use, and theory of operation are given for each major component of the system. Several methods for the analysis of recorded hydroacoustic data are also included. Single copies free, multiple copies are \$1.00 each from Washington Sea Grant Communications Program, Division of Marine Resources, University of Washington HG-30, 3716 Brooklyn Ave., N.E., Seattle, WA 98195.

**So You Bought a Boat! Practical Tips for the Mariner** by Captain Robert E. Williams contains safety tips and hints on cruising. It provides useful information not normally found



in more conventional books on boating, and its intended use is for those chance occasions when the more usual systems are inoperative. There are helpful tips on how to avoid trouble and in some cases how to get out of trouble in the 40-page paper-bound booklet.

The author based this pamphlet on over 20 years of experience with the National Ocean Survey and Coast and Geodetic Survey. Single copies are free (multiple copies cost \$1.50 each) from the Division of Marine Resources, University of Washington HG-30, Seattle, WA 98195.

The **Atlas of Physical and Chemical Properties of Puget Sound and Its Approaches** by Eugene E. Collias, Noel McGary, and Clifford A. Barnes was planned to provide useful information for anyone making decisions based on physical and chemical characteristics of Puget Sound, and for anyone doing research on estuaries. Ocean engineers, commercial fishermen, fish farmers, regulatory agency personnel, and legislators are among those who will be interested in the data portrayed in this atlas.

The first readily available graphic description of Puget Sound water quality data over a sustained time period (1952-1966), the 235-page atlas includes the oceanographic parameters for vertical profiles along eight major channels of the Sound. The paperbound volume is available from the University of Washington Press, Seattle, WA 98195 for \$15.00.

Letter  
Editor:

I found the paper "Some ABC's of Fo'c'sle Living" (Marine Fisheries Review, June 1974) most informative as well as entertaining. It was obvious that the authors had experienced both the hardships and rewards of life at sea, for only "someone there" could describe them with such vigor and color.

But while my "editorial greed" was aroused I wasn't able to overlook a few items to "nitpick" about. These may be small details or simple misconceptions in my mind, but if valid they are important to a seaman.

On several occasions the authors refer to the "dock" as the physical structure to which one secures his vessel. This structure may be called the pier or wharf, if open piered, or the bulkhead, if it is a solid structure. "Dock" would refer to the space alongside a wharf that a ship occupies when tied up; or more commonly to a basin or enclosure for the reception of vessels and subsequent control of the water level (i.e., a graving dock or floating dry dock); or to the act of berthing a vessel. The word "dock" should be used to describe a piece of water, or a particular act of shiphandling, or a specialized structure but not the good ol' pier.

A vessel is not necessarily "underway" when she is "in forward motion, running, steaming"; she is "making way." A vessel is underway when she is not at anchor, or made fast to the shore, or aground and may indeed be underway, but not making way. These definitions are provided for in the nautical rules of the road and accepted by most seamen.

Finally, with regard to an anchor watch, I cannot agree with the definition that a bearing "is a compass reading on a very close landmark." Bearings, whether radar or visual, are best

observed to landmarks or land tangents a good distance from the observer but sufficiently close to avoid their obscurity by weather. Bearings on objects at close range may change substantially as a vessel swings about her anchor causing undue alarm, but a watchstander will soon get the feel for how much a distant bearing may allowably change. In the absence of radar, a good range, and at least one cross bearing, will enable one to detect anchor drag.

The above comments should not detract in any way from the excellent essay written by Larssen and Jaeger. The authors have been going to sea for a longer period of time than I have been alive and it is from men such as these, who have both loved the sea and learned how to live with her, that younger men acquire their best knowledge. Any seaman, fisherman or merchant, should be indebted to someone who takes the time to pass on his experience.

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