vent a serious depletion of the resource. Scientists accurately predicted catch declines by analyzing each species by year classes since the early 1960's, but Norwegian fishermen tended to reject such dire predictions.

Overfishing of young cod and capelin is generally blamed for the current shortages, but some recovery in these fisheries is predicted by 1976 or 1977, unless heavy fishing of the Barents Sea by Soviet, British, and other trawlers continues unabated.

In the mid-1960's Norway's herring fishery also slumped badly due to overfishing, so a switch was made to the capelin resource. Both species were used primarily for reduction to meal, but recently Norway has joined other nations in proclaiming that herring is too important for human consumption to be used for reduction purposes.

As the capelin resource has declined, research interest in the catch of blue whiting has increased greatly. It is estimated that this resource could provide an annual yield of 500,000 to 1,000,000 metric tons, most of which would be used for reduction purposes or for minced products. Currently blue whiting accounts for about 20 percent of the catch listed under the generalized category of "Norway pout."

According to the NMFS International Fisheries Analysis Division, Norway currently appears to be predisposed toward acceptance of a 200-mile Fishing Zone, and unrestricted trawling off her coastline will do nothing to lessen her conviction that such an extension is absolutely necessary to preserve her fishery resources.

Publications

Polish, Yugoslavian, Russian, German, and Italian Fishery Translations Are Available

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

Translation numbers, titles, and authors include: TT 66-57049, Technological and chemical characteristics of the North Atlantic redfish, Hryniewcka, K.; TT 66-57050, Statistics of Polish fisheries in 1961, Kazmierski, K., et al.; TT 66-57054, Economic foundations of Polish sea fisheries development, Lasczynski, S.; TT 66-57055, Polish fishery statistics in 1920-1960, Lasczynski, S.; TT 66-57056, Separation of fish flesh amines by the modified Steiner-Kamienski method, Minakowski, W., and O. Rzewuski.; TT 66-57058, Trawler operation in the North Sea, Noetzel, B.; TT 66-57059, Method of examination of yield of catches of a fishing fleet on distant fishing grounds, Orlowski, J.; TT 66-57060, Psychosociological problems of work in the fisherman's occupation, Polanska, A.; TT 66-57063, Preliminary examination of the operation of B-23 trawlers on fishing grounds of the northwest Atlantic shelf, Swiniarski, J.; TT 66-57064, Effect of thermal denaturation on the mechanical resistance and texture of animal tissue (Baltic herring), Tilgner, D.J., and B. Markowski; TT 66-57065, Mechanical resistance of fresh Baltic herring, Tilgner, D.J., and B. Markowski; TT 66-57066, Chemical and weight composition of fish. II. Edible parts and offals of *Coregonus albula* L., Ziechik, M., and J. Zamojski; TT 66-57067, Chemical and weight composition of fish. I. Edible and inedible parts and gonads of flounder, Ziecik, M., and J. Nodzynski; TT 66-57068, Variable factors in the production of canned sprat in relation to labor productivity, Ziemba, Z.; TT 66-57069, Frozen fish as raw material for the processing industry (1959 data), Zukowski, K.; TT 71-50120, Automation of navigation and tactical control in fishing, Ol'khovskii, V. E., et al.; TT 71-50128, Soviet fisheries investigations in the Indian Ocean, Bogdanov, A.A. (editor); TT 71-50129, Theory and design of commercial fishing gear, Fridman, A. L.; TT 71-50130, Fauna of the Kurile-Kamchatka trench and its environment, Bogorov, V.G. (editor); TT 72-50035, Life activity of pelagic communities in the ocean tropics, Vinogradov, M.E. (editor); TT 71-50019, Chemistry and technology of Pacific fish, Kizevetter, I.V.; TT 70-55125/8, 9, Marine Technology and Management, Vol. 20, Nos. 8, 9; TT 70-55125/12, Marine Technology and Management, Vol. 20, No. 12; TT 70-55126/5, 6, Shipbuilding, Vol. 15, Nos. 5, 6; TT 77-55126/11, 12, Shipbuilding, Vol. 15, Nos. 11, 12; TT 60-21144, State of Stocks and means of increasing the number of Amur pink salmon, Abramov, V.V.; TT 60-21150, Age of pink salmon and the pattern of their fluctuations in abundance, Vedenskiy, A.P.; TT 60-21865, Technology of fish processing, Styr, J.; TT 60-51041, Population dynamics and the state of the chum and pink salmon stocks in the Amur River basin, Birman, I.B.; TT 60-51129, Some suggestions on the standardization of Far Eastern trawls, Lestev, A. V., and G. Ye. Grishchenko; TT 61-11367, Thrusting implements for fishing (archeological study), Znamierowska-Pruffer, M.; TT 64-11101, Bibliography of literature on fisheries of the Far East, 1923-1956, Romanov, N.S.; TT 65-50097, Annotated bibliography on fisheries of the southern basins of the U.S.S.R., 1918-1953, Romanov, N.S.; TT 65-50365, Chlorophyll in the seston of certain Polish lakes as an indicator of productivity, Solski, A.; TT 65-50368, Hydrographic observations in the southern Baltic in 1953-1955, Filarski, J.; TT 65-50503, Selected translations from Roczniki Nauk Rolniczych (Polish publication); TT 66-51047, Parasites of the fishes of the Barents Sea, Polyanskii, Yu. I.; TT 66-57048, Sprat freezing with the use ascorbic acid and alginian gel, Gora, A., and P. Trzesinski.

ICCAT PAPERS TRANSLATED

"Albacore populations in the northeast Atlantic," by H. Aloncle and F. Delaporte, 78p.; "Some data on bluefin tuna *(Thunnus thynnus L.)* fishing

in the North Atlantic," by J.C. Dao and C. Bessineton, 16p.; "Representation of spatio-temporal groupings on the basis of statistics of parasite infestation in the Atlantic yellowfin *(Thunnus albacares)*. First results obtained through a factorial analysis of correspondences," by F. Baudin Laurencin, 18p.; "Comparative fishing efficiency and evolution of the effort of the tuna boats of the French-Ivory Coast-Senegal fleet exercised on the various sizes of Atlantic yellowfin tuna," by A. Fonteneau and A. Caveriviere, 15p.; "Application of Schaefer model and derivatives to the Atlantic yellowfin *(Thunnus albacares)* populations," by A. Fonteneau and A. Caveriviere, 40p. The above papers presented at the Fourth Meeting of the Permanent Committee for Research and Statistics (SCRS), International Commission for the Conservation of Atlantic Tunas (ICCAT), November 19-24, 1973, Paris, have been translated in Tunisia for the National Marine Fisheries Service under the Special Foreign Currency Information Program (financed with PL-480 monies). Aloncle and Delaporte establish heterogeneity of the albacore stock in the northeast Atlantic, based particularly on 1971-72 tagging research. Dao and Bessineton studied Atlantic bluefin catch data and suggest that a larval concentration may exist off Morocco and Mauritania, as they found a concentration of young fish in this area, quite far from known spawning grounds. Laurencin uses factorial analysis of data on parasitic infestation of yellowfin to distinguish among stocks, noting two stocks, north and south respectively, in the Gulf of Guinea, and a third stock in the sea off Antilles. Fonteneau and Caveriviere analyze catch statistics for Atlantic yellowfin tuna since 1969, showing greatly increased fishing effort on the larger yellowfin, somewhat less on 2-4 year-class yellowfin, and relatively unchanged pressure on the small yellowfin. The second Fonteneau-Caveriviere paper applies the Schaefer-type model to Atlantic yellowfin stocks and estimates fishing effort, 1960-1972, in the eastern tropical Atlantic fishery, to give an average MSY of approximately 50,000 metric tons, signalling the need for a catch quota in the near future. The translations are available on loan from the Language Services Division, F43, Office of International Fisheries, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235.

POLISH PROCEEDINGS

The following five articles from the Fiftieth Anniversary Volume of the Polish publication, Proceedings of the Sea Fisheries Institute, 1971, were recently translated in Poland for the National Marine Fisheries Service (NMFS), NOAA, under the Special Foreign Currency Science Information Program (financed with Public Law 480 funds). They are available on loan from the Language Services Division, F43, Office of International Fisheries, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235.

"Studies on selectivity of trawls as a factor in ensuring Polish fisheries interests in the north Atlantic," by W. Strzyzewski, 38p. Tests were conducted in the Baltic and North Seas and in the north Atlantic by Polish researchers interested in selectivity of trawl gear, especially in the cod and herring fisheries. Coefficients of selectivity were calculated for codends constructed of various nets and fibers and surrounded by covers and chafers to prevent tearing the codend on the slipway when hauling gear, and a knotless chafer was developed which protected the codend but still allowed high selectivity.

"Progress in the development of processing by Polish fishing vessels in 1945-1970," by E. Kordyl, 37p. Kordyl traces technological and strategic developments in the Polish fisheries, from their concentration on the Baltic and North Seas to their expansion into the North Atlantic, and some of the reasons for these developments.

"Economic consequences of the expansion of the fishing range," by Z. Polanski, 31p. Polanski discusses the various factors determining the value of catch per unit of fishing effort during expansion of the fishing range. He concludes that technology is the primary factor: expansion of the range accompanied by technological improvements will tend to cause unit cost to drop, whereas without those improvements unit cost will tend to rise.

"Problems of fish refrigeration in economic works of the Sea Fisheries Institute," by K. Zukowski, 22p. This is a survey of the results of research conducted at the Sea Fisheries Institute on the refrigeration of catch. It compares developments in refrigeration technology in Poland with that in other countries. Zukowski's particular concern is for coordination of refrigeration technology with other aspects of the fisheries economy.

"Research on fish resources on the fishing grounds of Nova Scotia and New England," by B. Draganik, 60p. This presents results of Polish research into fish stocks in ICNAF subareas 4, 5, and 6 in 1964-1969. It includes Polish catch statistics for certain species and calculations of fishing effort and CPUE. Species investigated include herring, haddock, argentine, mackerel, butterfish, blueback, alewife, silver hake, and squirrel hake.

"Type ranges of benthic invertebrates and the biogeography of South American temperate waters," by V.N. Semenov, Wealth of the World Ocean, (P.A. Moiseev, editor), No. 2, Proceedings of the All-Union Scientific Research Institute of Marine Fisheries and Oceanography, Vol. 77, 1972, p. 120-152. Semenov reviews data leading to classification of faunal ranges of the South American continental shelf and on the basis of this identifies 24 type ranges, in 4 distinct groups: warm waters, warm-temperate waters, temperate waters, and cold-temperate waters. Rather than diversity indices, indicator species are used to delineate the type ranges. Although this classification is restricted to horizontal distribution, Semenov is able to make some general statements about correlation with the vertical. After proposing the type ranges, he discusses their characteristics in some detail, noting particularly their relative importance. He stresses transitional areas, especially where two ranges overlap to a considerable extent. The translation was done in Israel for the National Marine Fisheries Service under the Special Foreign Currency Science Information Program (financed with PL-480 funds).

It is available on loan from the Language Services Division, F43, Office of International Fisheries, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235.

GERMAN, ITALIAN VOLUMES

The following two German and one Italian fishery publications produced by the Naples Zoological Station, Naples, Italy, were translated and printed in Israel in 1972 for the Smithsonian Institution under the Special Foreign Currency Science Information Program (financed with PL-480 funds): "Fauna and Flora of the Bay of Naples," Monograph No. 35, "Cephalopoda," by Adolf Naef, 1921/1923, Part I, Vol. 1, Fascicle 1, 292 pp., TT 68-50343/1, and Part I, Vol. 1, Fascicle 2, 625 pp., TT 68-50343/2; and "Fauna and Flora of the Bay of Naples," Monograph No. 38, "Eggs, Larvae and Juvenile Stages of Teleostei," by Salvatore Lo Bianco, Parts I and II, 1931-1933, 417 pp., TT 68-50346. The Smithsonian was unable to obtain the copyright release at the time the translations were issued. Thus they were printed in a very limited number of copies and no outside distribution was made. The National Technical Information Service (NTIS), Springfield, VA 22151, has recently received the authorization to enter the three volumes into its system. The cost per xeroxed copy is as follows: TT 68-50343/1 — $6.75; TT 68-5034/2 — $13.00; and TT 68-50346 — $8.50. Foreign requesters will have to add $2.50 per copy for postage. Checks should be made payable to NTIS and orders must include the translations' accession numbers.

RUSSIAN BOOKS

"Whales and dolphins," by A. V. Iablokov, et al, Nauka publishers, 1972, 472p. This book, translated by the U.S. Joint Publications Research Service, is a broad but thorough survey of the behavior and functional anatomy of cetaceans. It is designed to provide basic information on cetaceans for researchers in all areas of biology and applied sciences. While it covers all of the cetaceans, there is considerable emphasis on current studies of dolphins, as more meaningful generalizations may be drawn from the larger number of dolphins examined. It includes a comprehensive current bibliography and over 200 figures. The translation in two volumes, is available on loan from the Language Services Division, F43, Office of International Fisheries, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235. It can be purchased from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22151. The first volume, JPRS 62150-1, is $6.50; the second volume, JPRS 62150-2, is $6.75 (total $13.25). On microfiche, the price is $1.45 per volume. If ordering from overseas, there is an additional mailing charge of $2.50 per volume. Please cite accession numbers when ordering.

"The world ocean," by A.L. Kolodkin, Mezhdunarodnoe otnosheniia publishers, 1973, 232p. This book, translated by the U.S. Joint Publications Research Service, discusses problems in the international legal regime of the sea, and in particular the policy of the U.S.S.R. concerning problems of the sea bed, territorial waters, and conservation of the marine environment as it has been revealed through scientific conferences and governmental action and doctrine. The translation, 107p., is available on loan from the Language Service Division, F43, office of International Fisheries NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235. It can be purchased for $4.50 from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22151. On microfiche, the price is $1.45. If ordering from overseas, there is an additional mailing charge of $2.50 per volume. Please cite accession number JPRS 60963 when ordering.

Recent NMFS Scientific Publications

NOAA Technical Report NMFS SSRF-679. Wing, Bruce L. **"Kinds and abundance of zooplankton collected by the USCG icebreaker Glacier in the eastern Chukchi Sea, September-October 1970."** August 1974. 18 p.

ABSTRACT

Zooplankton samples were taken at 39 oceanographic stations in the eastern Chukchi Sea in September and October 1970. Sampling was done by vertical tows from near bottom to the surface with a 0.5-m diameter No. 0 (0.57 mm) mesh NorPac standard plankton net. Data are presented on the distribution and relative abundance of 63 categories of zooplankton at the onset of winter. Zooplankton abundance generally was lowest in waters with temperatures below 0°C; it did not appear to be associated with the distribution of salinity; and it tended to be inversely related to dissolved oxygen concentration. Comparison of zooplankton abundance in 1970 with published observations on the Chukchi Sea in 1947 shows probable seasonal variation of meroplankton abundance and yearly variation of holoplankton abundance.

NOAA Technical Report NMFS SSRF-680. Sanger, Gerald A. **"Pelagic amphipod crustaceans from the southeastern Bering Sea, June 1971."** July 1974. 8 p.

ABSTRACT

Fourteen species of pelagic amphipods were present in zooplankton samples collected from the southeastern Bering Sea in June 1971. *Parathemisto pacifica* strongly dominated relative abundance (68-96 percent) and was present in numbers up to an estimated 2,755/1,000 m^3 of water. *Primno macropa* was the only other species present in all hauls and ranged from 4 to 27 percent in relative abundance. *Cyphocaris challengeri* was present in numbers up to 48/1,000 m^3 during night hauls, but only one animal was taken in all daylight hauls. *Hyperia medusarum* was present in 14 (82 percent) of the hauls but accounted for less than 1 percent of the total numbers.

A presumed diurnal vertical migration was evidenced for *Primno macropa, Cyphocaris challengeri,* and possibly for *Scina rattrayi, Hyperoche medusarum,* and *Hyperia medusarum.*

The occurrence of *Scina stebbingi, S. rattrayi, Vibilia caeca* (?), *Paraphronima crassipes, Phronima sedentaria,* and *Primno macropa* extended their known ranges in the Bering Sea eastward, and the occurrence of *Cyphocaris anonyx* represents a new record for the Bering Sea.