

RECENT FISHERY PUBLICATIONS

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

- CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
 SL - STATISTICAL SECTION LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
 SSR - FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
 SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number	Title
CFS-1584	- Manufactured Fishery Products, 1955 Annual Summary, 6 pp.
CFS-1592	- Florida Landings, 1956 Annual Summary, 9 pp.
CFS-1603	- Florida Landings, May 1957, 5 pp.
CFS-1608	- Mississippi Landings, May 1957, 2 pp.
CFS-1609	- Ohio Landings, June 1957, 2 pp.
CFS-1610	- South Carolina Landings, June 1957, 2 pp.
CFS-1615	- Massachusetts Landings, March 1957, 3 pp.
CFS-1616	- New Jersey Landings, June 1957, 3 pp.

Wholesale Dealers in Fishery Products (Revised):

- SL-14 - South Carolina, 1957.
 SL-15 - Georgia, 1957.
 SL-16 - Florida, 1957.
 SL-17 - Alabama, 1956.

SSR-Fish. No. 206 - Neuse River Shad Investigations, 1953, by Charles H. Walburg, 17 pp., illus., June 1957. The purpose of the Neuse River shad investigation was to determine total catch, fishing effort, fishing rate, size of run, and spawning escapement for the 1953 season in order to establish a basis for scientific management of the fishery. "The total catch in the commercial fishing area," reports the author, "was 98,000 shad. The fishing rate in this area was estimated to be 65 percent, and the number of shad available to this fishery was approximately 151,000. Most male shad entered the fishery at 4 years of age, most females at 5 years of age. Less than 3 percent of the run had spawned the previous year. It was estimated that 440 shad used the Goldsboro Dam fishway during the 1953 run." In summary, the author states that "Before the Neuse River shad fishery can be scientifically managed, catch and effort data must be gathered for a series of years. Studies can then be undertaken to determine factors limiting population abundance. If these factors can be controlled, it may be possible to manage the Neuse River shad population to obtain maximum yields."

SSR-Fish. No. 215 - Chaetognaths and Pteropods as Biological Indicators in the North Pacific, by Thomas S. Hida, 17 pp., illus., June 1957.

SSR-Fish. No. 221 - Zooplankton Abundance in Hawaiian Waters, 1953-54, by Joseph E. King and Thomas S. Hida, 28 pp., illus., June 1957.

Sport Fish Restoration, 30 pp., illus., printed, September 1957. A well-illustrated booklet describing the fish-restoration program which includes fisheries research, purchase or lease of lands or waters, improvement in environment, and construction of facilities. To illustrate accomplishments of the Federal Aid in Fish Restoration Program, statistics from the first five years (fiscal years 1952 through 1956) have been used in this report. Program details are available in a separate publication known as Sport Fish Restoration (Statistical Supplement), 60 pp. This supplement is designed to supply legislators, state administrators, project workers, outdoor writers, and interested individuals with detailed project and program information.

Sep. No. 489 - An Investigation of the Chemistry of Texture Changes of Frozen Blue Crab Meat.

THE FOLLOWING SERVICE PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

Receipts of Fresh and Frozen Fishery Products at New York City's Fulton Fish Market, 1956, (Includes Statistics and Marketing Trends), by T. J. Risoli, 24 pp., processed. (Available free from the Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York 38, N. Y.) The first part of this annual summary of New York City's Fulton Market receipts of fresh and frozen salt-water fishery products discusses the marketing trends for 1956. The subjects covered are: a comparison of New York City's Fulton Market Salt-Water Section receipts of finfish and shellfish, leading finfish species, the City's fishing fleet and direct fishing vessel landings, types of transportation used, receipts by shipping areas, general marketing trends and conditions that affected fishery products, consumption of fishery products in New York City, business conditions, an estimate of the receipts by the Fresh-Water Section of Fulton Fish Market, and a number of other related subjects. This first section also includes a table showing the imports of selected fresh and frozen fishery products through the New York Customs District in 1956. The second part of this annual report consists of a series of statistical tables giving the receipts of fish and shellfish in the Salt-Water Section of New York City's Fulton Fish Market by months and method of

transportation; by species, method of transportation and state and provinces; and by states and provinces of origin.

California Fishery Products Monthly Summary, July 1957, 9 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of raw tuna and tunalike fish, herring, mackerel, anchovies, and squid; pack of canned tuna, herring, mackerel, anchovies, and squid; market fish receipts at San Pedro, Santa Monica, San Diego, and Eureka areas; California imports; canned fish and frozen fish prices; for the month indicated.

(Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, August 1957, 12 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces; fresh-water fish, shrimp, and frozen fillet wholesale market prices; for the month indicated.

Gulf Monthly Landings, Production, and Shipments of Fishery Products, July 1957, 5 pp. (Market News Service, U. S. Fish and Wildlife Service, 609-611 Federal Bldg., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; and wholesale prices of fish and shellfish on the New Orleans French Market; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, August 1957, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va.) Fishery production for the Virginia areas of Hampton Roads, Lower Northern Neck, and Eastern Shore; the Maryland areas of Crisfield, Ocean City, and Cambridge; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data; for the month indicated.

(Seattle) Monthly Summary - Fishery Products, July 1957, 7 pp. (Market News Service, U. S. Fish and Wildlife Service, 421 Bell St. Terminal, Seattle 1, Wash.) Includes landings and local receipts, with ex-vessel and wholesale prices in some instances, as reported by Seattle and Astoria (Oregon) wholesale dealers; also Northwest Pacific halibut landings; for the month indicated.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Commercial Fishing Vessels and Gear, by Gustaf T. Sundstrom, Circular 48, 50 pp., illus., printed, 40 cents. The author has illustrated in this booklet the most important types of fishing gear and vessels in use today in the United States and Alaska. Descriptions of representative types of fishing vessels are also included. General

range of length, beam, draft, net tonnage, construction, engine, refrigeration, speed, average crew, length of trip and convertibility, are indicated. The main fishing areas are shown on maps.

Early Development, Spawning, Growth, and Occurrence of the Silver Mullet (MUGIL CUREMA) along the South Atlantic Coast of the United States, by William W. Anderson, Fishery Bulletin 119 (From Fishery Bulletin of the Fish and Wildlife Service, vol. 57), 21 pp., illus., printed, 20 cents, 1957.

Federal Aid in Fish Restoration, Regulatory Announcement 54, 17 pp., printed, 10 cents, May 1957.

"Fish-Escapeweigher," by Earl Leitrita and Robert Macklin, article, The Progressive Fish-Culturist, vol. 18, no. 4, October 1956, pp. 178-180, processed, single copy 25 cents (annual subscription \$1 domestic, US\$1.30 foreign). Describes a tank-truck loading device patterned after a conventional flat-belt conveyor. Important differences are the use of a rubber cleated belt, construction primarily of aluminum, and two pneumatic-tired wheels for portability around the hatchery. No fish remains on the belt more than 10 seconds, and all water escapes before the fish reach the top and drop into the tank truck. As no water is added at the time of loading the fish, displacement is used to weigh the fish. Where three men took 1.5 hours to load 2,000 pounds of fish, two men can now do the job in 15 minutes.

"The Inland Fisheries of Indonesia," by Atmo Hardjono, article, The Progressive Fish-Culturist, vol. 18, no. 1, January 1956, p. 29, processed, single copy 25 cents (annual subscription \$1 domestic, US\$1.30 foreign).

Past and Present Delaware River Shad Fishery and Considerations for Its Future, by James E. Sykes and Burton A. Lehman, Research Report 46, illus., printed, 20 cents, 1957. A report presenting a history of the Delaware River shad fishery, especially emphasizing its constant state of decline since the peak year of 1896. Describes efforts to restore the shad fishery to its former economic importance through surveys of the distribution and migrations of the shad, and studies of the problems of pollution and dams. The report concludes with a presentation of some of the future problems that confront the Interstate Commission on the Delaware River Basin as a result of proposed development of water resources of the Delaware River. Despite the many problems, if the objectives of the shad-rehabilitation program are accomplished as planned, according to the authors, "there is no apparent reason why the shad runs cannot be rebuilt to their former abundance."

"Population Changes and Studies Caused by the Sea Lamprey," article, The Progressive Fish-Culturist, vol. 18, no. 1, January 1956, p. 41, processed, single copy 25 cents (annual subscription \$1 domestic, US\$1.30 foreign).

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

BIBLIOGRAPHY:

Bibliographia Oceanographica, 1950, (Oceanographic Bibliography), Vol. XXIII, 521 pp., printed in Italian and English, \$6. Bibliographia Oceanographica presso il Consiglio Nazionale delle Ricerche, Piazzale delle Scienze, 7, Rome, Italy, 1956. This bibliography for 1950, listing a total of 2,453 articles, is the first of a new series. The use of (1) Italian and English in the text and (2) the decimal classification developed by FAO for fisheries science, makes this a bibliography of outstanding value. The bibliography contains the following major divisions: The Geophysical Environment--including, among others, the subtopics of physical oceanography, marine biology, chemical composition of marine animals, and ecology; Stocks of Marine Organisms--identification and measurement of the dimensions of individuals and stocks; Harvesting of Marine Products--fishing operations, fishing technology, and civil engineering; Effects of Environmental Changes - Damage to and Protection of the Living Resources of the Sea; Aquaculture--improvement and creation of habitat and environment, and culture of aquatic organisms; Exploitation of the Stocks - Economy of Primary Operations - Administration of Fisheries; Markets, Storehouses, transportation, and Conservation of Fresh Fish Products; Utilization of Fish Products, Ownership, Processing, Conservation; and History and Policy of Fisheries - Regional Studies, National and International Social Aspects and Economics of Fisheries. Included also are a list of the principal periodicals from which the articles of the bibliography have been derived, and an author index.

BRAZIL:

Peixes da Agua Doce (Fresh-Water Fish), by Eurico Santos, 276 pp., illus. in color, printed in Portuguese. F. Briguiet & Cia., Travessa do Ouvidor, 11, Rio de Janeiro, Brazil, 1954. A beautifully-illustrated guide to the fresh-water fish of Brazil.

CANADA:

Annual Report of the Fisheries Research Board of Canada, 1955, 182 pp., printed. Fisheries Research Board of Canada, Ottawa, Canada, 1956. Detailed reports of the various investigations of the Fisheries Research Board of Canada are presented for 1955. The work of the Board is divided into three principal branches: work in fishery biology, technology, and oceanography. During 1955 considerable effort was again expended in the field of industrial develop-

Fisheries Statistics of Canada, 1955 (British Columbia), 14 pp., illus., printed in French and English, 25 Canadian cents. Department of Trade and Commerce, Dominion Bureau of Sta-

tistics, Ottawa, Canada, 1957. Contains tables giving the quantity and value of fishery products landed in British Columbia in 1952-55, by species and by fisheries districts; quantity and value of manufactured fishery products for 1954-55; capital equipment in the primary fisheries operations; and the number of fishermen engaged in the primary fisheries operations.

Fisheries Statistics of Canada, 1955 (Prince Edward Island), 22 pp., illus., printed in French and English, 25 Canadian cents. Dominion Bureau of Statistics, Industry and Merchandising Division, Fisheries Section, Ottawa, Canada, 1957. Contains tables giving the quantity and value of fishery products landed in Prince Edward Island in 1952-55, by species and by fisheries districts; quantity and value of manufactured fishery products; capital equipment in the primary fisheries operations; and the number of fishermen engaged in the primary fisheries operations.

COOK ISLANDS:

The Fisheries Industry of the Cook Islands, by H. Van Pel, 47 pp., illus., processed. South Pacific Commission, Noumea, New Caledonia, 1955.

CRAYFISHES:

The Crayfishes of New York State, by Denton W. Crocker, Bulletin 355, 97 pp., illus., printed. State Science Service, State Museum, Albany, N. Y., 1957.

DENMARK:

Fiskeriberetning for Aret 1956 (The Ministry of Fisheries' Annual Report for 1956), 144 pp., illus., printed in Danish with summary in English. Fiskeriministeriet, I Kommission Hos G. E. C. Gad, Copenhagen, Denmark. A report on the Danish fishing industry for the year 1956. Presents statistical data on the following: the number of fishermen and how many are employed permanently or occasionally; fishing vessels, gear, and nets; catch of fish and shellfish; trout produced in ponds; amount of fish used for filleting, smoking, and canning; production of fish meal and oil; exports of fresh and processed fish and shellfish; and imports of fish and shellfish.

DEPTH RECORDER:

"Underwater Telemetering," by William Dow, article, Deep-Sea Research, vol. 2, no. 2, January 1955, pp. 145-151, printed. Pergamon Press, 122 East 55th St., New York 22, N. Y. This report describes an inexpensive telemetering depth meter capable of determining depth of towing gear and other information, and of transmitting the data acoustically through the water to the surface. The device is somewhat unusual in that it uses the ocean rather than the air as the metering medium. Built into a torpedo-shaped fish for towing purposes, the instrument is self-contained and may be quickly attached to any trawl wire.

FARM PONDS:

Farm Ponds--Their Construction and Management, by H. D. Ayers, and A. deVos, Ontario Department of Agriculture Bulletin 515, 23 pp., illus., printed. Ontario Department of Agriculture,

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Parliament Bldg., East Block, Toronto, Ontario, Canada, July 1956.

FINLAND:

Tietoja Rannikkoalueidemme Kalaliikkeista ja Kalanjalostuslaitoksista Seka Vahittain ja Tukuttain Tapahtuvan Kalanjakelun Autolinjoista Kulutusalueille Vuonna 1951 (On the Fish Business, Curing Houses and Wholesale and Retail Distribution of Fish by Road in Finland 1951), by Erkki Halme and Veikko Sjoblom, 35 pp., illus., printed in Finnish with summary in English. (Reprinted from Fennia 80, N:o 4) Tilgmannin Kirjapaino, Helsinki, Finland, 1957.

FISHERMEN:

Conditions of Work of Fishermen, 71 pp., printed. International Labour Office, Geneva, Switzerland, 1957.

FISH FLOUR:

Algunas Observaciones Acerca de la Determinacion del Contenido Lipidico en Harinas de Pescado (Some Observations of the Determination of the Lipid Content of Fish Flour), by D. Montequi and M. D. Garcia Pineda, Boletin No. 79, June 30, 1956, 13 pp., illus., printed in Spanish. Instituto Espanol de Oceanografia, Ministerio de Marina, Madrid, Spain.

FISH LADDERS:

"Planning Anadromous Fish Protection for Proposed Dams," by W. R. Hourston, C. H. Clay, L. Edgeworth, P. A. Karkin, E. H. Vernon, and R. G. McMynn, article, Transactions of the Twentieth North American Wildlife Conference, pp. 440-454, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C., March 1955.

FLORIDA:

"The Fishes of Two Gulf Coastal Marsh Areas of Florida," by John D. Kilby, article, Tulane Studies in Zoology, vol. 2, no. 8, May 4, 1955, pp. 175-247, illus., printed. Tulane University, New Orleans, La.

FRANCE:

Rapport sur la Production de l'Industrie des Peches Maritimes en 1956 (Report on the Production of the Maritime Fisheries in 1956), 45 pp., processed in French. Comite Central des Peches Maritimes, Paris, France.

FRESH-WATER FISH:

"Commercial Netting May Help Fishing in Big Reservoirs," by Otho D. May, Jr., article, South Carolina Wildlife, vol. 4, no. 3, Summer Issue 1957, pp. 2-3, 14-15, illus., printed. South Carolina Wildlife Resources Department, 1015 Main St., Columbia, S. C. Describes a study of Lake Murray and Lake Greenwood to find some means of decreasing the large roughfish population and at the same time harming the gamefish population as little as possible. It was found that the roughfish population could be appreciably decreased through the use of a sufficient number of gill nets, particularly in the larger sizes.

FREEZING:

"Bulk-Freezing of Fish," by Eirik Heen, Olaf Karsti, and Einar Bagge-Lune, article, FAO Fisheries Bulletin, vol. X, No. 2, April-June 1957, pp. 89-98, printed, single copy 30 U. S. cents. Food and Agriculture Organization of the United Nations, Rome, Italy. (For sale by Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N. Y.) The term "bulk-freezing" refers to fish frozen aboard for subsequent distribution in the thawed state as fresh fish, fish fillets frozen in blocks for fish sticks, products for pet foods and bait, but not to fish frozen in consumer and institutional packs. This paper discusses the fish freezing activities in various countries and of the many different aspects of freezing fish in bulk; it is not intended to cover production and distribution of consumer goods. It describes commercial activities in the tuna, herring, salmon, halibut, and white fish fisheries. A section on the bulk-freezing methods describes brine freezing, air-blast freezing, and indirect contact freezing. Another section discusses the economic aspects of freezing fish at sea.

"The Freezing and Cold Storage of Raw Crayfish," by K. W. Anderson, article, Food Preservation Quarterly, vol. 16, December 1956, pp. 69-71, printed. Council for Scientific & Industrial Research, Division of Food Preservation, 314 Albert St., East Melbourne, Australia. The experiments reported in this paper were designed to assess the effect of storage for 2 to 8 weeks at 0° F. on the quality of the edible meat of raw crayfish (spiny lobster). Examination of the treated fish was largely organoleptic but data on weight losses during storage, cooking, and thawing were also obtained.

FROZEN FOODS:

Production of Frozen Prepared Foods, 1954-55, by Robert B. Reese, Marketing Research Report No. 170, 20 pp., illus., processed, 15 cents. Agricultural Marketing Service, U. S. Department of Agriculture, Washington, D. C., May 1957. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Reports on a study made to determine the current production level, relative importance of marketing outlets, and major problems of the frozen prepared foods industry. Total reported production of frozen prepared foods in 1955 exceeded one-half billion pounds, excluding all fish and shellfish items except fish sticks. Of 170 items being produced commercially, fish sticks are among the four product groups which account for about two-thirds of the total output. The data included on frozen prepared fish and shellfish production was obtained with the full cooperation of the U. S. Fish and Wildlife Service.

GENERAL:

Statistical Abstract of the United States, 1957 (78th Annual Edition), 1061 pp., printed, \$3.50 (buckram). U. S. Bureau of the Census, Washington, D. C., 1957. (For sale by Superintendent of Documents, U. S. Government Printing

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Office, Washington 25, D. C.) This is the standard summary of statistics for the most recent year available early in 1957 on the social, political, and economic organization of the United States. It is designed to fulfill two functions: first, to serve as a convenient volume for statistical reference; and second, to serve as a guide to other statistical publications and sources. It contains, among many others, a section on fisheries which presents briefly statistics relating to quantity, value, species, and disposition of fish caught for commercial purposes, and of fishery products. The principal sources of these data on fisheries are reports published by the Fish and Wildlife Service.

"Spectral Reflectance Applied to the Study of Heme Pigments," by J. J. Naughton, M. Frodyma, and H. Zeitlin, article, *Science*, vol. 125, no. 3238, 1957, pp. 121-122, printed, single copy 25 cents. *Science*, 1515 Massachusetts Ave., Washington 5, D. C.

"A Trip on a Sampan," by J. E. King, article, *The Elepaio* (Journal of the Hawaiian Audubon Society), vol. 17, no. 1, 1956, pp. 3-4, printed. Hawaiian Audubon Society, P. O. Box 5032, Honolulu 14, Hawaii.

GREAT BRITAIN:

"Governmental Services to the Sea Fish Industry of Great Britain," article, *FAO Fisheries Bulletin*, vol. X, no. 2, April-June 1957, pp. 65-84, printed, 30 U.S. cents. Food and Agriculture Organization of the United Nations, Rome, Italy. (For sale by Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N. Y.) This article is a summary of the monograph of the same title, prepared for FAO under the auspices of the Royal Institute of Public Administration, London. It describes the main features of the structure of the British sea fish industry and the functions performed by the Government in connection with the sea fish industry. These functions fall into two groups--those entirely concerned with fisheries and which are, therefore, unrelated to any other aspect of governmental work, and those which apply in some measure to the fishing industry but have also to be performed in other contexts and for other interests. This article also presents a background to the present governmental services and a description of the services which the Government provides at each stage of the progress of the fish from the sea to its ultimate consumers. The description of the organization of statistical work and scientific research is given separately in the closing section of the article.

HERRING:

On the Fecundity of the Herring (*CLUPEA HARENGUS PALLASI* V.) Spawning Along the Western Coast of the Sachalin Island, by I. A. Piskunov, *Zoologicheskii Zhurnal*, vol. 31, no. 1, pp. 115-121. Translated by K. F. Wiborg, Havforskninginstituttet, Bergen, Norway.

INDIA:

Indian Journal of Fisheries, Vol. III, No. 2, (October 1956), 207 pp., illus., printed. The Editorial

Committee, Indian Journal of Fisheries for the Ministry of Food and Agriculture, Government of India, New Delhi, India. Contains, among others, the following articles: "Rate of Growth in Spat and Yearlings of the Indian Backwater Oyster *Ostrea madrasensis* Preston," by K. Virabhadra Rao and K. Nagappan Nayar; "The Bacterial Flora, Trimethylamine and Total Volatile Nitrogen of Fish Muscle at 3° C.," by N. K. Velankar; "The Bacterial Flora, Trimethylamine and Total Volatile Nitrogen of Fish Muscle at 0° C. (in Ice)," by N. K. Velankar and P. V. Kamasastri; "Experimental Air-Shipments of Carp Fry in Plastic Bags," by M. R. Renade and H. G. Kevalramani; "A Simple Scientific Fish-Liver Oil Extractor for Production of A-Vitaminized Oil," by K. C. Saha; "Studies on Some Aspects of the Biology of the Common Anchovy, *Thrissoles mystax* (Bloch and Schneider)," by G. Venkataraman; "Annual Report of the Central Inland Fisheries Research Station, Calcutta, for the Year 1954"; and "Government of India, Central Marine Fisheries Research Station, Mandapam Camp--Annual Report of the Chief Research Officer for the Year Ending 31st March 1955."

JAPAN:

The Journal of the Shimonoseki College of Fisheries, vol. 6, no. 1, 157 pp., illus., printed. Shimonoseki College of Fisheries, Yoshimi, Shimonoseki City, Japan, November 1956. Contains, among others, the following articles: "Forms of Fish Shoal Lured by the Fish Lamp and Setting Direction of Purse Seine," by Masanori Chigusa, Akiyoshi Kataoka, and Makoto Hirose; "On Refractive Index of Crystal Guanine from Marine Fish," by Tadashi Ueda and Jogoro Matsuzawa; and "On the Body Composition and Morphological Character of Yellowfin Tuna in the Mid-Indian Ocean," by Osamu Hirano and Shoji Tagawa.

The Journal of the Shimonoseki College of Fisheries, vol. 6, no. 2, 143 pp., illus., printed. Shimonoseki College of Fisheries, Yoshimi, Shimonoseki City, Japan, March 1957. Contains, among others, the following articles: "At the Middle Indian Ocean about Result of Tuna Long-line Fishing Examination," by Akiyoshi Kataoka; and "Fish Fauna of the Japan Sea," by Hiroshi Yoshida and Takeo Ito.

MARKETING:

Analyzing Your Cost of Marketing, by Charles H. Sevin, *Management Aids for Small Manufacturers* No. 85, 4 pp., printed, available free. Small Business Administration, Washington 25, D. C., June 1957.

MENHADEN:

"Early Life History of the Gulf Menhaden, *Brevortia patronus*, in Louisiana," by Royal D. Suttkus, article, *Transactions of the Twenty-first North American Wildlife Conference*, pp. 390-407, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C.

NORTH BORNEO:

Report on a Collection of Marine Fishes from North Borneo, by Robert F. Inger, 67 pp., illus., printed.

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(Reprinted from Fieldiana: Zoology, vol. 36, no. 3, pp. 341-405). Chicago Natural History Museum, Chicago, Ill., May 29, 1957.

NORWAY:

Fisheries Research in Northern Waters - Study Items and Results, by Gunnar Saetersdal, 28 pp., illus., processed. (Translation of Departmental Report No. 1 from the Deep Sea Research Institute, Fisheries Directorate, Bergen, August 1956.) Ministry of Agriculture, Fisheries and Food, Fisheries Laboratory, Lowestoft, England.

Konkylien, no. 1 (July 1957), 30 pp., illus., printed in Norwegian with summary in English. Stord Marin Industri a-s, Bergen, Norway. Contains, among others, the following articles: "Herring Meal Quality," by Knut Breirem--discusses the characteristics of high-quality fish meal, especially Norwegian produced fish meal; "Antioxidants," by Lars Aure; and "A Visit Aboard the Havkvern"--describes the Norwegian-made motor trawler Havkvern, a factory ship unique for fishing herring and sand-eel for meal and oil production only, which has a capacity of 60 tons of raw material and can stay at sea for about 30 days without refuelling.

OCEANOGRAPHY:

"Variations in the Equatorial Countercurrent in the Central Pacific," by T. S. Austin, E. D. Stroup, and M. O. Rinkel, article, Transactions, American Geophysical Union, vol. 37, no. 5, 1956, pp. 558-564, printed. American Geophysical Union, 1530 P St., NW., Washington 5, D. C.

OYSTERS:

Cleansing Research on Cultured Oysters in Hiroshima Bay, 5th Report. Experiments on Artificial Purification of Oysters, No. 2, September 1953, by Dr. M. Okinami, M. Sakai, S. Sasaki, G. Chiba, M. Kaganaka, K. Kishimoto, T. Takeuchi, T. Matsuhara, Dr. H. Yoshino, and R. Inoue, 13 pp., processed. (Translated from Report on Hiroshima - Eisei-Kenkyusho No. 4, pp. 101-06, 1954.) Ministry of Agriculture, Fisheries and Food, Fisheries Laboratory, Lowestoft, England.

Heat Death and Associated Weight Loss of the Oyster CRASSOSTREA VIRGINICA, by Milton Fingerman and Laurence D. Fairbanks, 15 pp., illus., printed. (Reprinted from Tulane Studies in Zoology, vol. 5, no. 4, April 1, 1957, pp. 55-68.) Department of Zoology, Tulane University, New Orleans, La.

Hygienic Studies on Cultured Oysters in Hiroshima Bay. Fourth Report: Experiments in Artificial Purification of Oysters, No. 1, by Dr. M. Okinami, M. Sakai, Y. Kurata, M. Fujita, T. Matsuhara, Dr. H. Furuno, and R. Inoue, 20 pp., processed. (Translated from Hiroshima - Eisei-Kenkyusho No. 3, pp. 40-48, 1953.) Ministry of Agriculture, Fisheries and Food, Fisheries Laboratory, Lowestoft, England.

PHYSIOLOGY:

The Physiology of Fishes, vol. 1 - Metabolism, edited by Margaret E. Brown, 456 pp., illus.,

printed. Academic Press Inc., 125 East 23rd St., New York 10, N. Y., 1957.

PLANKTON:

Investigaciones Sobre el Plancton Marino de Cuba (Research on the Plankton of Cuba), by Jose A. Suarez Caabro, Publicacion Separada de Noverim, vol. 2, no. 6, 1957, 15 pp., illus., printed in Spanish with summaries in English and French. Universidad Catolica de Santo Tomas de Villanueva, Apartado 6, Marianao, Cuba. Discusses the background, importance, and objectives of the Cuban marine plankton investigations which were begun at the University of Villanova in January 1957. Includes outlines of the work done in Latin America, Gulf of Mexico, the Caribbean Sea, and especially in the waters that surround Cuba. The importance of these studies is considered in relation to what has already been done in other countries.

QUALITY:

Objective and Subjective Assessments of Fish Quality, by J. M. Shewan and J. Liston, DSIR Food Investigation Memoir No. 1022, 11 pp., illus., printed. Institut International du Froid, 177 Boulevard Malesherbes, Paris, France.

RED TIDE:

An Annotated Bibliography of Red Tides Occurring in the Marine Waters of Florida, by Robert F. Hutton, No. 2, 24 pp., illus., printed. (Reprinted from The Quarterly Journal of the Florida Academy of Sciences, vol. 19, nos. 2-3, June-September 1956, pp. 123-146.) Florida State Board of Conservation, Marine Laboratory, St. Petersburg, Fla.

RESEARCH VESSEL:

"A Gear Research Vessel," article, FAO Fisheries Bulletin, vol. X, no. 2, April-June 1957, pp. 85-88, illus., printed, single copy 30 U.S. cents. Food and Agriculture Organization of the United Nations, Rome, Italy. (For sale by Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N. Y.) In 1956, the Royal Swedish Board of Fisheries requested FAO to prepare preliminary plans for a fisheries research vessel to carry out gear research and experimental fishing. This article describes briefly a study of the design requirements for such a vessel.

SALMON:

"Further Observations on Stream Survival of King Salmon Spawn," by Harold A. Gangmark and Robert D. Broad, article, California Fish and Game, vol. 42, no. 1, January 1956, pp. 37-49, printed. California Department of Fish and Game, Sacramento, Calif.

"Problems of Pacific Salmon Management," by Ferris Neave and R. E. Foerster, article, Transactions of the Twentieth North American Wildlife Conference, pp. 426-440, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C., March 1955.

"Scotland's Salmon Fisheries," by T. W. Beak, article, The Atlantic Salmon Journal, no. 4,

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

December 1955, pp. 12-14, printed. The Atlantic Salmon Association, Inc., 1559 McGregor St., Montreal 25, Canada.

"Studies on Canadian Atlantic Salmon," by P. F. Elson and C. J. Kerswill, article, Transactions of the Twentieth North American Wildlife Conference, pp. 415-426, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C., March 1955.

SARDINES:

Biología de la Sardina de Baleares (Biology of the Baleares Sardine)--Puesta, Alevinaje y Desarrollo en su Primer Año de Vida (Spawning, Hatching, and Development in Its First Year of Life), by Miguel Oliver Massuti, Boletín No. 80, 23 pp., illus., printed in Spanish. Instituto Español de Oceanografía, Ministerio de Marina, Madrid, Spain.

SEA LAMPREYS:

"Lampreys in the Lake Champlain Basin," by Francis H. Wilson, article, American Midland Naturalist, vol. 54, July-October 1955, pp. 168-172, printed. American Midland Naturalist, Notre Dame, Ind.

"The Sea Lamprey," by Vernon C. Applegate and James W. Moffett, article, Scientific American, vol. 192, no. 4, April 1955, pp. 37-41, printed. Scientific American, 415 Madison Ave., New York 17, N. Y. This article presents a brief resume of the decline of the lake trout fisheries of Lake Huron and Lake Michigan, the life history of the sea lamprey, and the methods attempted and those now being used in control of the lamprey. Complete eradication of sea lampreys from the Great Lakes above Niagara Falls is the objective of the program.

SHRIMP:

The Biology of PANDALUS MONTAGUI Leach, by M. N. Mistakidis, Fishery Investigations Series II, vol. XXI, no. 4, 52 pp. text and 8 plates photographs, printed. Her Majesty's Stationery Office, York House, Kingsway, London, W. C. 2, England, 1957. A biological report on the breeding, growth, migrations, and parasites of pink shrimp, Pandalus montagui Leach. Includes as introductory background, a general description of the shrimp fishery off the coast of England and Wales--especially the highly successful beam-trawl shrimp fishery in the Wash and Thames estuaries. Six of eight photographic plates show vessels and gear employed in beam-trawl shrimp fishing.

Propagation of the White Shrimp, PENAEUS SETIFERUS (Linn.), in Captivity, by Malcolm C. Johnson and J. R. Fielding, 17 pp., printed, 30 cents. (Reprinted from Tulane Studies in Zoology, vol. 4, no. 6, December 31, 1956, pp. 175-190.) Tulane University, New Orleans, La.

The Live Bait Shrimp Industry of the West Coast of Florida (Cedar Key to Naples), by Kenneth D. Woodburn, Bonnie Eldred, Eugenie Clark, Robert F. Hutton, and Robert M. Ingle, Technical Series No. 21, 33 pp., illus., printed. Florida

State Board of Conservation Marine Laboratory, St. Petersburg, Fla., May 21, 1957. Reports on a relatively new enterprise--the multi-million dollar live bait shrimp industry. Discusses the Cedar Key to Naples area which produces over 60 percent of Florida's bait shrimp. Presents, with the aid of figures and photographs, data on the life history and biological studies of shrimp; production, transportation, and retailing of live bait shrimp; and legal and conservation aspects of the live bait shrimp industry.

"Vitamin Content of Fresh, Processed Shrimp," by A. F. Novak, E. A. Fieger, and M. E. Bailey, article, Quick Frozen Foods, vol. 18, July 1956, pp. 64-65, printed, single copy 50 cents. E. W. Williams Publications, Inc., 82 Wall St., New York 5, N. Y. Results of an investigation showed that the vitamin content of fresh, iced, and frozen shrimp varies considerably. Vitamin losses were shown to occur both in ice-stored and frozen-stored shrimp. A comparison of data shows a more rapid decline in the iced than in the frozen product. Early losses in vitamin content may occur because of insufficient refrigeration from the time the shrimp are caught until they are processed and frozen. Organoleptic studies indicated a rapid decline in the quality of shrimp stored in ice during a two-week period.

SOUTH AFRICA:

Freshwater Fishing in the Cape South Western Districts, South Africa (With Notes on the Eastern Cape), Third Edition, 18 pp., illus., printed. The Cape Piscatorial Society, 73 St. George's St., Cape Town, South Africa, February 1957.

The Sea Fishes of Southern Africa, by J. L. B. Smith, revised enlarged edition, 581 pp., illus., printed. Central News Agency, Ltd., South Africa, 1953. Hafner Publishing Company, 31 East 10th St., New York 3, N. Y.

SPAIN:

Cotos de Pesca Continental (Continental Fishery Boundaries), 14 pp., printed in Spanish. Dirección General de Montes, Caza y Pesca Fluvial, Servicio Nacional de Pesca Fluvial y Caza, Madrid, Spain, 1957. Lists the most important inland fishery regions of Spain with information on the boundaries and regulations concerning fishery zones within those regions. Only very generalized descriptions of the fishery zones are given but the addresses of the various regional offices of the National Fluvial Fishery Service, which may be consulted for details, are included.

STURGEON:

"Progress Report on White Sturgeon Studies," by Richard L. Pycha, article, California Fish and Game, vol. 42, no. 1, January 1956, pp. 23-35, printed. California Department of Fish and Game, Sacramento, Calif.

SWORDFISH:

"On the Breeding Areas of the Swordfish (Xiphias)," by A. Vedel Taning, article, Deep-Sea Research,

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Supplement to vol. 3, Papers in Marine Biology and Oceanography, pp. 438-450, printed, 1955. Pergamon Press, 122 East 55th St., New York 22, N. Y.

THAILAND:

A General Account on the Fisheries of Thailand, 52 pp. text and 15 tables, printed. Department of Fisheries, Ministry of Agriculture, Bangkok, Thailand. This booklet presents a complete report on all phases of the fisheries industry in Thailand--an industry second in importance only to agriculture. The report is divided into the following headings: (1) Land and Water Environment; (2) Fisheries Resources; (3) Fisheries Industries--including the subtopics of fishing grounds, culture operations, and handling and utilization of catch such as canning, refrigeration, and cold storage; and (4) Fisheries Administration and Development. The tables cover fishing gear, 1947-56; fishingboats, 1942-56; annual catches, 1949-57; fresh and salted fishery products sales, 1948-57; exports and imports of fish, 1947-56; revenue from fisheries, 1949-56; market receipts and average wholesale prices at Bangkok, 1947-57; monthly market receipts at Bangkok, 1954-57; monthly auction prices at Bangkok Fish Market, 1956-57; fish fry distribution, 1947-56; balance of imports and exports of aquatic animal products, 1942-56; and number and area of fish ponds by geographical zones in 1955.

TRADE LISTS:

The Office of Economic Affairs, Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C., published the following mimeographed trade lists. Copies may be obtained by firms in the United States from that office or from Department of Commerce field offices at \$2 each.

Oils (Animal, Fish and Vegetable)--Importers, Dealers, and Producers--Haiti, 8 pp. (July 1957). Contains the names and addresses, the relative size of each firm, type of products dealt in or produced by each firm, and the annual production by producers. The main items imported are olive oil, soybean oil, crude vegetable oil for refining, lard and lard substitutes, and butter and butter substitutes. The United States is the chief supplier and there are no import

or exchange restrictions in Haiti. No firms are listed as importing, wholesaling, or producing either edible or inedible fish oils as such.

Oils (Animal, Fish, and Vegetable)--Importers, Dealers, and Producers--Sweden, 5 pp. (July 1957). Contains the names and addresses, the relative size of each firm, type of products dealt in or produced by the firms listed, and the value of the production for some of the producing firms. Production of animal, fish and vegetable oils in 1954 was valued at US\$20.2 million. Of this total 82 percent consisted of rapeseed and mustard oils, principally from domestic sources. In 1955, Swedish imports of animal, fish, and vegetable oils were valued at US\$3.6 million. Principal suppliers of fish oils were Japan and Denmark.

TRAWLING:

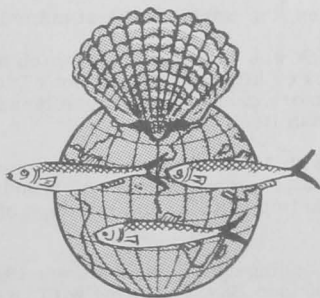
"Pair-Trawling on the Grand Banks," by Alfonso Rojo, article, Trade News, vol. 10, no. 1, July 1957, pp. 3-4, illus., printed. Department of Fisheries, Ottawa, Canada. The author states that "The art of taking fish by means of a single net towed between two ships is probably one of the world's most effective methods of fishing." This method, known as "pair-trawler fishing," was introduced by the Spanish fishing fleet in 1949 in the waters of the Grand Banks of Newfoundland. It was proved then that pair-trawling could be carried out on the Grand Banks with as much success as in the Spanish fisheries. This article describes the trawlers used in this fishery and the trawling nets and their operation which differ in many ways from the standard trawl.

VIETNAM:

Etudes sur les Techniques des Peches du Vietnam (Study of Vietnam's Fishing Methods), by M. M. R. Serene, Nguyen-Chau, and Nguyen-Trong-Hien, Fascicule II, Contribution 13, 51 pp. illus., printed in French. Institut Oceanographique de Nhatrang, Nhatrang, Indochina, 1956.

WASHINGTON:

Report and Recommendations for 1955-1957, 8 pp., illus., printed. Interim Fisheries Committee, Washington Legislature, Olympia, Wash., 1957. Recommendations for the fisheries of Washington.



WHALES AND DOLPHINS

Of all the sights at sea, probably nothing quite equals the thrill of "Th'ar she blows!" --the plume of spray that marks a whale's sudden surfacing for a breath of fresh air.

San Diego's Point Loma each fall is crowded with adults and youngsters alike who come to view the spectacle of the gray whale herds passing close to shore en route to breeding grounds in Baja California.

Whether it's whale, dolphin, or porpoise, they all belong to the same group of mammals, warm-blooded members of the animal kingdom. They give birth to living young about every two years after a gestation period of 10-12 months.

You also can tell them from fish by their tails: fish have vertical tails and members of the whale family all have horizontal tails.

There's no sharp line of distinction between a whale and a dolphin, or porpoise. Generally, the larger ones are called whales, but the pygmy sperm whale confuses things by being no larger than some of the dolphins.

Whether to call certain members a porpoise or a dolphin is another moot question, but the beaked ones are more likely to be known as dolphins and their snubnosed brethren as porpoises.



Fig. 1 - This gray whale, "taking a breather" at the surface, is blotched with pigment spots and with barnacles getting a free ride around the Pacific. Gray whales usually spout three or four times in close succession, then "sound" or submerge and stay down 8 to 11 minutes if not frightened.



Fig. 2 - Adair Dall's porpoise.

Of the 50 known kinds of whales and dolphins, 22 appear along the California coast. Most often seen in these waters is the California gray whale, which reaches a length of 45 feet. Recent counts from headlands in the San Diego area during the animal's migratory passage indicate that the gray's numbers are slowly increasing under protection, and now total about 4,000.

Several bays along the Baja California coast, among them the widely known Scammon's Lagoon, are named for early-day whaling vessels or whaling men who tracked the gray whales to their calving grounds. They were the far-ranging fleets out of New England ports. So successful were they that the gray whale was nearly wiped out before international action intervened to protect it.

Whales can be divided into two groups; those that have teeth (including dolphins) and can eat fish, and the larger species that depend on horny strainers, called baleen, or "whalebone," to filter the tiny organisms called plankton from the ocean water.

The blue or sulphur-bottom whales, the world's largest animals, are of the toothless type.

The famous but fictional Moby Dick was a sperm whale which had bitten off a whaler's leg, but the terrifying real-life exploits of the orca or killer whale put Moby Dick to shame. It's a swift and vicious terror of the sea, 20-30 feet long and more dangerous because it swims in packs or herds. It's capable of killing other whales much larger than itself.

California never was in a class with Massachusetts in its romantic heyday of the great whaling fleets, but there were commercial whaling operations established in California in the early 1800's. The first shore whaling station was set up in 1851, and that type of operation has continued off and on ever since.

A station was active at Field's Landing near Eureka from 1940 to 1951, and at present there's a station at Point San Pablo in San Francisco Bay, operating with two vessels. Its 1956 kill totaled 145 whales, processed mostly for pet food.

However, with whale oil for lamps and whalebone for corsets no longer much in demand, the industry in California provides a living for only a few. Thanks to international protective laws, the giant of the sea has made a gradual comeback throughout the world and once more appears in sizable numbers.