



# RECENT FISHERY PUBLICATIONS

## FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE OFFICE OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON, D. C. 20402. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES  
FL - FISHERY LEAFLETS,  
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number	Title
CFS-4070	- New Jersey Landings, 1965 Annual Summary, 10 pp.
CFS-4077	- New York Landings, 1965 Annual Summary, 12 pp.
CFS-4093	- Maine Landings, January 1966, 4 pp.
CFS-4102	- New York Landings, February 1966, 4 pp.
CFS-4105	- Maine Landings, 1965 Annual Summary, 21 pp.
CFS-4106	- Mississippi River Fisheries, 1964 Annual Summary, 13 pp.
CFS-4107	- New Jersey Landings, February 1966, 3 pp.
CFS-4109	- Rhode Island Landings, January 1966, 3 pp.
CFS-4110	- Alabama Landings, February 1966, 3 pp.
CFS-4112	- Mississippi Landings, January 1966, 2 pp.
CFS-4113	- Shrimp Landings, 1965 Annual Summary, 17 pp.
CFS-4114	- Fish Meal and Oil, March 1966, 2 pp.
CFS-4118	- Mississippi Landings, February 1966, 2 pp.
CFS-4121	- South Carolina Landings, March 1966, 2 pp.

Sep. No. 764 - Experimental Fish Trawling Survey Along the Florida West Coast.

FL-590 - List of Fishery Associations in the United States, by Leslie D. McMullin, 10 pp., May 1966.

FL-584 - Marine Protein Concentrate, 32 pp., April 1966. Contains a summary report on the development of a commercial manufacturing process to convert red hake into a high-quality marine protein concentrate for human consumption. Plans, as well as estimates of processing and product costs, are shown. Data are presented on the physical, chemical, nutritional, bacteriological, and toxicological studies on marine protein concentrate.

An Economic Study of the Boston Large-Trawler Labor Force, by Virgil J. Norton and Morton M. Miller, Circular 248, 57 pp., illus., printed, May 1966. The report focuses on the socio-economic characteristics of the Boston offshore trawler labor force covering the age; national origin; education and train-

ing; fishing and non-fishing job experience; unemployment, illness and injury rates and earnings of fishermen in the Boston offshore labor force.

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE AVAILABLE ONLY FROM THE BUREAU OF COMMERCIAL FISHERIES, U. S. DEPARTMENT OF THE INTERIOR, 101 SEASIDE AVE., TERMINAL ISLAND, CALIF. 90731.

"Finance and insurance," Chapter VIII, pp. 539-560, Translation No. 18, 33 pp., processed, April 1966.

"Marketing," Chapter IX, pp. 596-600, Translation No. 19, 2 pp., processed, April 1966.

(Both are translations from the Japanese Comprehensive View of the (Japanese) Tuna Fishery, by Shoichi Masuda, 844 pp., published by Suisansha, 8 Banchi, Sanei-cho, Shinjuku-ku, Tokyo, Japan, March 1963.)

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED:

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, April 1966, 14 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif. 90731.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, sardines, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; prices for fish meal, oil, and solubles; for the month indicated.

California Fishery Market News Monthly Summary, Part II - Fishing Information, April 1966, 8 pp., and Supplement, 1 p. illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6121, Pt. Loma Station, San Diego, Calif. 92106.) Contains sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists; for the month indicated.

Middle Atlantic Fishery Trends--Monthly Summary-- February and March 1966, 20 and 18 pp., respectively. (Market News Service, U. S. Fish and Wildlife Service, 346 Broadway, New York, N. Y. 10013.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and fresh-water sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks and Stonington, Conn.; for the month indicated.



Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, April 1966, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va. 23369.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

New England Fisheries--Monthly Summary, March 1966, 21 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston, Mass. 02210.) Review of the principal New England fishery ports. Presents data on fishery landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and Boston Fish Pier and Atlantic Avenue fishery landings and ex-vessel prices by species; for the month indicated.

New York City's Wholesale Fishery Trade, 1965 (Includes Statistics and Marketing Trends), 37 pp., illus. (Market News Service, U. S. Fish and Wildlife Service, 346 Broadway, New York, N. Y. 10013.) The first part of this annual summary discusses fishery products receipts, prices, and imports; fish meal, oil, and solubles prices; highlights of the 1965 season; shrimp supplies, prices, and imports; and canned tuna prices in the salt-water section of New York's wholesale Fulton Fish Market. The second section covers receipts, prices, and trends in the fresh-water fish market (Peck Slip Area). The final section contains statistical tables giving receipts of fresh and frozen fish and shellfish by species, states and provinces, and transport methods, 1964-65; landings and ex-vessel prices at Fulton Market; imports through New York Customs District; frozen fishery products by months; and monthly shrimp imports by country.

Geographic Observations, 1963, East Coast of the United States, by Joseph Chase, Data Report 10, 3 microfiche cards, illus., distribution limited. (Branch of Reports, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington, D. C. 20240.)

Production of Fishery Products in Selected Areas of Maryland, Virginia, and North Carolina, 1965, Preliminary, by William N. Kelly, 20 pp., June 1966. (Market News Service, U. S. Fish and Wildlife Service, P. O. Box 447, Hampton, Va. 23369.) A summary of commercial landings of fish and shellfish and the production of crab meat and shucked oysters as reported by producers and wholesalers from selected principal fishing localities of Virginia, Maryland, and North Carolina. Discusses landings at the Hampton Roads, Lower Northern Neck, Lower Eastern Shore, and Chincoteague areas of Virginia; Ocean City, Cambridge, and Crisfield, Maryland; and Morehead City, North Carolina. The statistics in this summary represent partial commer-

cial fisheries production only and do not represent complete commercial landings or production for a given area, individual state, or the Chesapeake Bay Area as a whole. However, the statistics do show trends in fisheries production for the specific area designated and do reflect the over-all production trend by species, localities, and states.

Releases and Recoveries of Marked Pink Shrimp, PENAEUS DUORARUM Burkenroad, in South Florida Waters, 1958-1964, by Donald M. Allen and T. J. Costello, Data Report 11, 3 microfiche cards, illus., distribution limited. (Branch of Reports, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington, D. C. 20240.)

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, April 1966, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 New Federal Office Bldg., 909 First Ave., Seattle, Wash. 98104.) Includes landings by the halibut fleet reported by the Seattle Halibut Exchange; salmon fleets reported by primary receivers; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl vessels receipts reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district for the month indicated.

## 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.

### ALASKA:

Test Fishing in Bristol Bay, 1960-64, by Melvin C. Seibel, Informational Leaflet 67, 39 pp., processed, Aug. 12, 1965. Alaska Department of Fish and Game, Subport Bldg., Juneau, Alaska 99801.

### ALEWIVES:

"Composition of combustible concretions of the alewife, *Alosa pseudoharengus*," by Ernest Sondheimer and others, article, *Science*, vol. 152, no. 3719, Apr. 8, 1966, pp. 221-223, illus., printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005.

### ALGAE:

"The occurrence and assay of isocitrate lyase in algae," by W. Geoffrey Haigh and Harry Beevers, article, *Archives of Biochemistry and Biophysics*, vol. 107, July 1964, pp. 147-151, printed. Academic Press, Inc., 111 Fifth Ave., New York, N. Y. 10003.

### ANCHOVIES:

"Block-freezing of Caspian Sea anchovies arranged in rows," by E. F. Krivorotov, article, *Rybnoe Khozjaistvo*, no. 6, 1965, pp. 69-71, illus., printed in Rus-



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sian. Institute of Marine Fisheries & Oceanography, 17 V. Krasnosseleskja, Moscow, U.S.S.R.

#### ARGENTINA:

Analisis (Fisheries Special Edition, titled "Nuestro mar ancho y ajeno" -- Our wide and unknown sea), 90 pp., illus., printed in Spanish, March 1966, M\$N 1.78 (US\$1.00). Analisis Sociedad Anonima, Bartolomé Mitre 226, Buenos Aires, Argentina. This Argentine weekly's special edition describes and reviews the current situation in the country's fishing industry. Includes articles on Government relationships and support; status of industry development; the fleet; the fishery export situation; prospects for the industry; fishery meetings; integration of the fillet industry; technical needs of the industry; and interviews with the President of the Banco Industrial (which has established a system of credits for the industry), the President of the Mar del Plata Chamber of the Fishing Industry, and the vice president of the Argentine Chamber of Fishmeal Industries.

#### ARTIFICIAL REEFS:

Artificial Reefs--A Review, by Iris Unger, Special Publication No. 4, 74 pp., illus., printed, 1966, \$1.00. American Littoral Society, Sandy Hook Marine Laboratory, Highlands, N. J. 07732.

#### BACTERIOLOGY:

"Bacteriological survey of filleting processes in the Pacific Northwest. IV--Bacterial counts of fish fillets and equipment," by Wayne I. Tretsven, article, Journal of Milk and Food Technology, vol. 28, Sept. 1965, pp. 287-291, printed. Journal of Milk and Food Technology, P. O. Box 437, Shelbyville, Ind. 46377.

#### BIOCHEMISTRY:

"Microelectrophoretic separation on starch gel of the hemoglobins of Salmo salar," by H. J. A. Koch, Eva Bergstrom, and J. C. Evans, article, Chemical Abstracts, vol. 63, Nov. 22, 1965, Abstract No. 15208c, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

#### BLOOD OF FISH:

Papers available from the American Fisheries Society, 1404 New York Ave. NW., Washington, D. C. 20005, by Charles W. Caillouet, processed, 1965:

Changes in Blood Lactic Acid in Mature Bullheads After Live Transportation (Presented at Annual Meeting, Southern Division, American Fisheries Society, Tulsa, Okla.), 8 pp.

Nature of Variability on Blood Lactic Acid Data from Fishes (Presented at the 95th Annual Meeting, American Fisheries Society, Portland, Oreg.), 11 pp.

#### BOATING:

Recreational Boating Statistics, 1965, CG-357, 44 pp., illus., processed, 1966. Commandant (ORB), U.S. Coast Guard Headquarters, Washington, D. C. 20226.

#### BOTULISM:

Botulism and Fishery Products, by J. M. Shewan and D. C. Cann, Torry Advisory Note no. 22, 7 pp., printed, 1965. Torry Research Station, Ministry of Technology, 135 Abbey Road, Aberdeen, Scotland.

This Note explains the cause of botulism, describes how outbreaks abroad have happened, and gives advice to producer and consumer on how the hazard can be averted.

#### BRAZIL:

Following articles available from Estação de Biologia Marinha, Universidade do Ceará, Av. Antônio Justa, 3207, Caixa Postal, 1072, Fortaleza, Ceará, Brazil:

"Bibliografia sobre os recursos marinhos do Brasil" (Bibliography on marine resources of Brazil), by Hitoshi Nomura, article, Boletim da Estação de Biologia Marinha da Universidade do Ceará, no. 7, 1965, 53 pp., printed in Portuguese.

"Length-weight tables of some fish species from Northeastern Brazil," by Hitoshi Nomura, article, Arq. Est. Biol. Mar. Univ. Ceará, vol. 5, no. 2, December 1965, pp. 103-105, printed in English and Portuguese.

#### CALIFORNIA:

California Fish and Game, vol. 52, no. 2, April 1966, pp. 67-128, illus., printed, single copy \$0.75. Department of Fish and Game, The Resources Agency, Sacramento, Calif. (Sold by Office of Procurement, Documents Section, P. O. Box 1612, Sacramento, Calif. 95807.) Includes articles on: "Annotated list of fishes collected by midwater trawl in the Gulf of California, March-April 1964," by Robert J. Lavenberg and John E. Fitch, pp. 92-110; "Fecundity of the Pacific hake Merluccius productus (Ayres), by John S. Macgregor, pp. 111-116; "Sea lion census for 1965 including counts of other California pinnipeds," pp. 119-120.

#### CANADA:

"Experts make joint study of vessels, gear, techniques," by James Kinloch, article, Trade News, vol. 18, no. 9, March 1966, pp. 3-13, illus., printed. Director of Information and Educational Service, Department of Fisheries, Ottawa 8, Canada.

Issued by Industry Division, Dominion Bureau of Statistics, Ottawa, Canada. (Sold by Queen's Printer and Controller of Stationery, Ottawa.):

Fisheries Statistics of Canada, 1963, Catalogue No. 24-201, 59 pp., printed in French and English, April 1966, C\$0.75. This report provides a summary of the Canadian fisheries and the information is arranged to show separately the three main fisheries areas i.e., Atlantic, Pacific, and Inland. A glossary is furnished of the accepted common names of the kinds of aquatic animals and plants included in this publication and also the scientific names and English synonyms. The statistics (shown in 16 tables) show value of products for selected species; landings, quantity, and value by specific species; etc.

Fisheries Statistics, Nova Scotia, 1964, Catalogue No. 24-205, 41 pp., illus., printed in French and English, April 1966, C\$0.75.

Journal of the Fisheries Research Board of Canada, illus., printed; issued by Fisheries Research Board of Canada, Ottawa, Canada. (Sold by Queen's Printer,



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(tawa.) Single issue C\$1.00 for Canada, U.S., and Mexico; for other countries C\$1.25:

vol. 23, no. 3, March 1966, 150 pp. Includes articles on: "Effects of salinity and temperature on embryonic development of the Pacific cod (*Gadus macrocephalus*)," by C. R. Forrester and D. F. Alford; "Swimming endurance of some Northwest Atlantic fishes," by F. W. H. Beamish; "Protein nutritive quality of commercial fish meals as assessed by biological and chemical methods," by B. March, Jacob Biely, C. Goudie, and H. L. A. Carr; and "Selectivity of gill nets, especially to lake whitefish," by H. A. Regier and D. S. Robson.

vol. 23, no. 4, April 1966, pp. 471-621. Includes articles on "Appropriate size limits for lemon sole (*Parophrys vetulus*) in the Strait of Georgia," by K. Adway Allen and C. R. Forrester, pp. 511-520; "Reproduction in *Sphyrion lumpi*, a copepod parasitic on codfish (*Sebastes* spp.)," by H. J. Squires, pp. 521-526; "Glycogenolytic enzymes of cod (*Gadus callarias*) muscle," by J. R. Burt, pp. 527-538; "Procedure for analysis of schooling behavior," by John R. Hunter, pp. 547-562; "In vitro cultivation of cells of the oyster (*Crassostrea virginica*)," by M. F. Li, James E. Stewart, and R. E. Drinnan, pp. 595-599; "Preservation of the sardine *Sardinella melanura* by low-dose gamma radiation," by S. Hashish, M. F. Hussein, M. M. Abdel-Baki, H. M. Roushdy, and Y. L. Hassan, pp. 601-606; "Description of groundfish trawl developed for the side-trawl research vessel," by B. Reed," by W. R. Harling and S. J. Westheim, pp. 611-613.

#### CATFISH:

"Catfish by the acre," by McFadden Duffy, article, *Louisiana Conservationist*, vol. 18, nos. 5 & 6, May-June 1966, pp. 18-23, illus., printed. Louisiana Conservationist, Wild Life & Fisheries Bldg., 400 Royal St., New Orleans, La. 70130. Discusses spawning, raising, and marketing catfish; how catfish can clean unwanted bacteria and pollution material out of streams and rivers; catfish farms. Also discusses how catfish can become Louisiana's most profitable crop; what is needed for--and how to get into the catfish-raising business. The demand for catfish is greater than the present production.

"Catfish, catfish, catfish," by Jack Williamson, article, *Mississippi Game and Fish*, vol. 26, no. 2, Mar.-Apr. 1966, pp. 6-7, illus., printed. Mississippi Fish and Game Commission, Woolfolk Bldg., 501 West St., Jackson, Miss. 39201. For the benefit of persons who are interested in raising channel catfish, the author discusses pond construction, spawning pens, spawning containers, care of brood stock, stocking and cultural methods, catfish fry production, care of rearing pond, and feeding.

#### CENSUS SURVEY:

"1963 Census of Commercial Fisheries, FC63-1, 25 pp., printed, 1966, 25 cents. U. S. Department of Commerce, Washington, D. C. 20230. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Presents results of the census of commercial fisheries for the calendar year 1963, and is based on a survey conducted by the Bureau of the Census, Department

of Commerce, in cooperation with the Bureau of Commercial Fisheries, U. S. Department of the Interior. The 1963 Census of Commercial Fisheries is the first such census undertaken since 1908. Prior to the 1908 census, there were two census surveys of commercial fisheries, one in 1889 and the other in 1880.

#### CHARTS OF WRECKS:

Kingfisher Charts, Research & Development Bulletin No. 18, 11 pp., illus., printed, March 1966. Research Secretary, The White Fish Authority, 2/3 Cursitor Street, London, E. C. 4., England. Lists a series of charts showing obstructions and wrecks. Of the 14 already published, 11 cover what are broadly described as the North Sea areas and include such grounds as the Skagerrak Approach, the Coast of Denmark, and the North Fisher Bank area. Another 24 charts are in various stages of preparation. There are charts that give information on the trawling areas between Scotland and the Faroes, off the coasts of Iceland and Labrador, the Barents Sea, the Norwegian coast, and around Bear Island.

#### CHEMICAL COMPOSITION:

"Rapid determination of fat in fish and fish products," by E. F. Il'chev, article, Chemical Abstracts, vol. 62, May 24, 1965, Abstract No. 13767d, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

#### CHOLESTEROL:

"The absence of cholesterol synthesis in the crab, *Cancer pagurus*," by Andre Van den Oord, article, Chemical Abstracts, vol. 62, Mar. 1, 1965, Abstract No. 5614f, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

#### COD:

The Cod and the Cod Fishery at Faroe, by B. W. Jones, Fishery Investigations, series II, vol. XXIV, no. 5, 32 pp., illus., printed, 1966, 11s. (about US\$1.55). W. S. Cowell Ltd., Ipswich, England. Ministry of Agriculture, Fisheries and Food, London. (Sold by Her Majesty's Stationery Office, 49 High Holborn, London W. C. 1, England. The study was undertaken to provide information on the basic biology of the Faroe cod and to assess from the available data and original research the effect of fishing on the stocks of cod.

Articles from Journal of the Science of Food and Agriculture, illus., printed. Society of Chemical Industry, 14 Belgrave Square, London S.W.1, England. Single copy 17s. 6d. (US\$2.45):

"Lipid distribution and recovery during salt fractionation of cod muscle," by Ayman Sheltawy and June Olley, vol. 17, no. 2, February 1966, pp. 94-100.

"Protein denaturation in frozen fish. Changes in cod muscle in the unfrozen state, with some further observations on the principles underlying the cell fragility method," by R. M. Love, M. M. Aref, M. K. Elerian, J. I. M. Ironside, E. M. Mackay, and M. G. Varela, vol. 16, May 1965, pp. 259-267.

Articles from Journal of the Fisheries Research Board of Canada, printed. (Sold by Queen's Printer, Ottawa, Canada.):



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"Lysolecithinase of cod muscle," by M. Yurkowski and H. Brockerhoff, vol. 22, May 1965, pp. 643-652.

"Studies on the quality of Newfoundland cod. 10 - Effect of some commercial freezing rates on the frozen and stored quality of trap cod," by W. A. MacCallum, Dorothy A. Chalker, and E. J. Laishley, vol. 22, March 1965, pp. 411-420.

"Studies on the quality of Newfoundland cod. II - Thaw-drip in polyphosphate-treated and untreated fillets," by Dorothy A. Chalker and W. A. MacCallum, vol. 22, May 1965, pp. 783-791.

#### COD WORMS:

Cod Worms, by B. B. Rae and G. H. O. Burgess, Torry Advisory Note no. 24, 7 pp., printed, 1965. Torry Research Station, Ministry of Technology, 135 Abbey Road, Aberdeen, Scotland. This Note gives a brief account of the occurrence of worms in cod, for the information and guidance of those engaged in the handling, processing, retailing, and preparation of fish for food.

#### COLD STORAGE:

Cold Storage of Frozen Fish, Torry Advisory Note no. 28, 12 pp., printed, 1965. Torry Research Station, Ministry of Technology, 135 Abbey Road, Aberdeen, Scotland. This Note gives the reasons why fish must be kept at a low temperature during cold storage, and indicates for how long different products can be kept.

#### CRABS:

Handling and Processing Crabs, by J. C. Early, Torry Advisory Note 26, 10 pp., printed, 1965. Torry Research Station, Ministry of Technology, 135 Abbey Road, Aberdeen, Scotland. This Note briefly describes the handling, storage, and transport of the live crabs; killing, boiling, and extraction of the meat; and freezing and canning.

Phenoloxidase activity in crab leukocytes during the intermolt period," by W. Declair and R. Vercauteren, article, Chemical Abstracts, vol. 63, Nov. 8, 1965, Abstract No. 13747c, printed, American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

#### CRAWFISH:

"More about crawfish," by Cecil LaCaze, article, Louisiana Conservationist, vol. 18, nos. 5 & 6, May-June 1966, pp. 3-7, illus., printed. Louisiana Conservationist, Wild Life & Fisheries Bldg., 400 Royal St., New Orleans, La. 70130. Discusses very briefly the life history and habits of some of the many species of fresh-water crawfish. The author discusses in greater detail the harvesting of crawfish in Louisiana and farming in artificial impoundments.

#### CRAYFISH:

"Carotenoids of cavernicolous crayfish," by Douglas A. Wolfe and David G. Cornwall, article, Science, vol. 144, June 19, 1964, pp. 1467-1468, printed. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20006.

#### CRUSTACEA:

"The Gomori method for identification of acid phosphatase in tissues of crustacea Porcellio scaber and Oniscus asellus," by Zofia Hryniewicka-Szyfter, article, Chemical Abstracts, vol. 61, Nov. 9, 1964, Abstract No. 12375e, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

"Pheromone: Evidence in a decapod crustacean," article, Science, vol. 151, no. 3708, Jan. 21, 1966, pp. 340-341, printed. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005.

#### CUBA:

"Coup d'oeil sur les pêches Cubaines" (A glance at Cuban fisheries), by A. Briantais, article, La Peche Maritime, vol. 45, no. 1057, April 1966, pp. 253-255, illus., printed in French. Les Editions Maritimes, 190, Boulevard Haussmann, Paris, France.

#### DECOMPOSITION:

"Ammonia as an index of decomposition in crab meat," by James L. Burnett, article, Journal of the Association of Official Agricultural Chemists, vol. 48, June 1965, pp. 624-627, printed. Association of Official Agricultural Chemists, Inc., Box 540, Benjamin Franklin Station, Washington, D. C. 20004.

#### DEHYDRATION:

"Developments of dehydrated meat and fish salads for military use," by J. M. Tuomy, article, Food Technology, vol. 19, June 1965, pp. 46, 50, printed. Institute of Food Technologists, Special Services Office, 510 North Hickory St., Champaign, Ill. 61820.

#### DOG FISH:

"Om mulighetene for pigghåfiske I vestatlanteren om sommeren," (Possibilities for a dogfish fishery in the Western Atlantic in the summer), by Olav Aasen, article, Fiskets Gang, vol. 15, April 14, 1966, pp. 281-287, illus., printed in Norwegian. Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Steroid biosynthesis in the semen of dogfish (Squalus acanthias)," by T. H. Simpson, R. W. Wright, and Joyce Renfrew, article, Chemical Abstracts, vol. 62, Mar. 1, 1965, Abstract No. 5615b, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

#### ECUADOR:

"Las pesquerias en la provincia de Esmeraldas" (The fisheries of the province of Esmeralda), by Domingo Quiroga, article, Puntal, vol. XII, no. 138, Sept. 1965, pp. 8-15, illus., printed in Spanish. Puntal, Apartado 316, Alicante, Spain.

#### EXPORTS:

"Sea Fare from U. S. Sells," article, International Commerce, vol. 72, no. 17, April 25, 1966, pp. 8-9, illus., printed, single issue US\$0.35. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (Sold by Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Describes international trade promotion of U. S. Bureau of Commercial Fisheries, including food-fair participation in Cologne, Brussels, London, Milan, and Manchester.



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**FILLETTS:**

Articles from Supplement to Fishing News and Fishing News International, July 1965, printed. Fishing News, Ludgate House, 120 Fleet Street, London E.C. 4, England:

"Freezing fillets," by J. J. Diestel, pp. 52-55.

"Freezing fillets at sea," by N. R. Jones, pp. 40-46.

**FEED COOKERY:**

"Chicken/fish coating mix," article, Canner/Packer, vol. 134, Mar. 1965, p. 48, printed. Canner/Packer, Triad Publishing Co., 59 East Monroe St., Chicago, Ill. 60603.

**FISH FINDERS:**

"Detection of disbursed fish near the sea bottom by means of echo sounders," by K. I. Yudanov, article, Trudy, vol. 3, 1961, pp. 175-183, printed. Atlanti-cheskii Nauchno-issledovatel'skii, Institut Morskogo Rybnogo Khoziaistvo i Okeanografii, Latvinsk, SR. (Sold by: Four Continent Book Corp., 156 - 5th Avenue, New York, N. Y. 10010.)

**FISHERY RESEARCH:**

Quarterly Report, Iowa Cooperative Wildlife and Fisheries Research Units, vol. 31, no. 3, January, February, March 1966, 18 pp., processed. Department of Zoology and Entomology, Iowa State University of Science and Technology, Ames Iowa 50012. Includes among others: "Factors affecting fish production in ponds," "Stream biology as related to fish production: Des Moines River," and "Dynamics of fish populations in natural lakes: Clear Lake investigations."

**FISH HATCHERIES:**

"Louisiana's fish hatcheries," by Sammy Stokes, article, Louisiana Conservationist, vol. 18, nos. 5 & 6, May-June 1966, pp. 8-9, 23-24, illus., printed. Louisiana Conservationist, Wild Life & Fisheries Bldg., 900 Royal St., New Orleans, La. 70130. Discusses types and quantities of fish Louisiana's hatcheries produce, how harvested, and species that are presently under study.

**FISH MEAL:**

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"Wide range of freeze dried foods," by John B. Klis, pp. 72-73.

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Thawing Frozen Fish, Torry Advisory Note no. 25, 10 pp., printed, 1965. Torry Research Station, Ministry of Technology, 135 Abbey Road, Aberdeen, Scotland. This Note briefly describes the principal methods of thawing and discusses some of the advantages and disadvantages of each.

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Informationen für die Fischwirtschaft (Information for the Fishing Industry), vol. 13, no. 1, January 1966, 38 pp., processed in German. Bundesforschungsanstalt für Fischerei, Hamburg-Altona 1, Palmstraße 9, West Germany. Includes, among others, these articles: "91. Forschungsreise des FFS 'Anton Dohrn' in die Norwegischen Gewässer und in das Barentsmeer vom 6.10-11.11, 1965" (91st research cruise of the FFS "Anton Dohrn" covering waters off the Norwegian coast and the Barents Sea, October 6-November 11, 1965); "Neue deutsche Heringsfischerei im Nordmeer" (New German herring fishery in the North Sea); "Fangtechnische reise des FFS 'Walther Herwig' in das Gebiet Skagerrak/Ostkante vom 6.10-2.11, 1965" (Gear research cruise of the FFS "Walther Herwig" in the area of the Skagerrak/Ostkante, October 6-November 2, 1965); "Polyäthylen und Polyamid; prüfwerte von netzgarnen für schleppnetz der hochseefischerei" (Polyethylene and polyamid; comparative trials of these netting twines in trawls of the high-seas fisheries); "Über den stand der normblatt-entwicklung für von der fischerei verwendete netztuche" (On the state of the development of standards for netting materials used in the fisheries).

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Report on the European Market for Herring, prepared by H. Göben and O. Mevatne, 96 pp., illus., processed in English, May 9, 1966, for the Organization for Economic Cooperation and Development (OECD) Committee for Fisheries. OECD, 2, Rue Andre-Pascal, Paris, France. The Report includes Part I--Herring for Human Consumption, Part II--Herring for Meal and Oil, Part III--Concluding Remarks, and an Annex with tables relating to Part II. Part I discusses decisive factors in production, utilization, and international trade in herring for human consumption. Part II provides a similar review of herring for industrial use. The concluding remarks in Part III were provided by OECD.

Synopsis of Biological Data on Sprat (Sprattus sprattus, Linnaeus, 1758, Mediterranean and adjacent Seas), by M. Demir, FAO Fisheries Synopsis no. 27, revision 1, 46 pp., illus., printed in English, November 1965, distribution restricted. Food and Agriculture Organization of the United Nations, via delle Terme di Caracalla, Rome, Italy.

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Which Kind of Ice is Best? by J. J. Waterman, Torry Advisory Note no. 21, 9 pp., printed, 1965. Torry Research Station, Ministry of Technology, 135 Abbey Road, Aberdeen, Scotland. This Note summarizes the principal methods of manufacturing ice and the advantages and disadvantages of the main types produced; some reference is made to costs.

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Indian Journal of Fisheries, vol. IX, no. 1, April 1962, illus., printed, 8 rupees net (US\$1.70). The Editorial Committee, Indian Journal of Fisheries for the Ministry of Food and Agriculture, Government of India, New Delhi, India:

Section A, 431 pp. Includes articles on: "Observations on the food and feeding habits of the Indian oil sardine, Sardinella longiceps Val.," by M. H. Dhulkhed, pp. 37-47; "Fluctuations in mackerel landings at Calicut in relation to hydrographical factors," by L. B. Pradhan and C. V. Gangadhara Reddy, pp. 100-109; "On the breeding of penaeids and the recruitment of their postlarvae into the backwaters of Cochin," by M. J. George, pp. 110-116.

Section B, 90 pp. Includes articles on: "Studies on the quality of dry prawn," by A. Lekshmy, T. K. Govindan and V. K. Pillai, pp. 1-6; "Studies on ice-stored prawns," by T. K. Govindan, pp. 7-15; "Storage characteristics of frozen prawns in relation to quality assessment," by Miss A. Lekshmy, T. K. Govindan and V. K. Pillai, pp. 58-70; "Certain ob-



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**Seafood Trade Journal**, vol. 1, no. 2, February 1966, pp., illus., printed in English. The Seafood Canners' and Freezers' Association of India, Cochin, India. Includes articles on: "Planning on fisheries," pp. 3-6; "The development of the freezing and export of prawns in India," by R. Madhavan Nayar, pp. 7-12; "Activities at the Central Institute of Fisheries Operatives Ernakulam," by M. C. Perumal, pp. 13-17; "Shrimp-rice culture," by Dr. M. V. Rajagopal, p. 25.

**Water Biology Reports**, vol. 17, no. 4, Oct.-Dec. 1965, 51 pp., illus., processed. Biology Section, Fish and Game Division, State Conservation Commission, E. 7th & Court Sts., Des Moines, Iowa 50309. This section on fisheries contains the following articles: "Results of an experimental muskellunge-silver northern pike cross," by Terry Jennings and Frank Fronk; "Pre-impoundment studies of the Chariton River in the vicinity of Rathbun Dam and Reservoir--Part II," by Jim Mayhew; "Some observations on trout populations in two Iowa streams," by Roger Boumacher; "Progress report: Channel catfish tagging studies on the Wapsipicon River, Buchanan County," by Robert Schacht; "Movement of tagged channel catfish before the impoundment of the Red Rock Reservoir," by Gary Ackerman; and "Channel catfish tagging on the Coralville Reservoir and adjoining waters--progress report no. 1," by Don Adams.

**IRRADIATION PRESERVATION:**

Effect of hypoxanthine on the flavor of fresh and irradiated low-dose-irradiated petrale sole fillets," by John Spinelli, article, **Journal of Food Science**, vol. 40, Nov.-Dec. 1965, pp. 1063-1069, printed. **Journal of Food Science**, 510-524 No. Hickory St., Champaign, Ill. 61820.

**ISRAEL:**

Fisheries and fish culture in Israel in 1964," by S. Ziv, article, **Bulletin of Fish Culture in Israel**, vol. 17, no. 4, Dec. 1965, pp. 94-106, processed. Fisheries Division--Fish Breeders Association, Tel-Aviv, Nir-David, D. N., Israel. A review of Israel's marine and inland fisheries including catch and consumption data for 1963-1964. Discusses marine and inland catch by area, fish cultivation, imports, canning industry, marketing, and consumption by product.

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**Journal of the Faculty of Fisheries and Animal Husbandry, Hiroshima University**, vol. 6, no. 1, 321 pp., illus., printed in Japanese and English, December 1965. The Faculty of Fisheries and Animal Husbandry, Hiroshima University, Fukuyama, Japan. This issue contains, among others, the following articles: "On the production of carbon dioxide gas in fish flesh during the deterioration of freshness," by Suetaka Kawakawa, pp. 1-5; "A note on the fishing ground for spring skipjack fishing in the vicinity of Shiono-

misaki, Wakayama Prefecture," by Sadaichi Nishikawa, pp. 77-84; "An opinion on the forecast of fishing grounds and on the fundamental sea states from the water temperature distribution in the neighboring sea of Japan," by Yasuo Matsudaira, pp. 313-321.

**Report of Nankai Regional Fisheries Research Laboratory**, no. 23, March 1966, 208 pp., illus., printed in Japanese and English. Nankai Regional Fisheries Research Laboratory, Sanbashidori, Kochi-shi, Japan. Includes articles on: "Infra-central grooves of tunas with special reference to the identification of young tunas found in the stomachs of large predators," by Izumi Nakamura and Shoji Kikawa, pp. 55-66; "Morphological study on the slender tuna, *Allothunnus fallai* Serventy obtained from the Tasman Sea," by Izumi Nakamura and Keiichiro Mori, pp. 67-83.

"Studies on *Penaeus orientalis* Kishinouye," by Masao Oka and Soichiro Shirahata, article, **Bulletin of the Faculty of Fisheries, Nagasaki University**, no. 17, 1964, pp. 55-67, printed in Japanese; English abstract. Faculty of Fisheries, Nagasaki University, Sasebo, Japan.

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**Foreign Trade Regulations of Kuwait**, by Emil Stavritis, Overseas Business Reports 66-13, 5 pp., printed, April 1966, single copy \$0.35. Bureau of International Commerce, U.S. Department of Commerce, Washington, D. C. (Sold by Commerce Department field offices or Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402.)

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Navigate Safely!, 12 pp., illus., printed, May 1966. Environmental Science Services Administration, Rockville, Md. 20852. A booklet describing the various types of nautical charts issued by the Coast and Geodetic Survey. Also describes Weather Bureau services to boating interests, explains the meaning of weather warning display signals, and lists the charts published by the Bureau which show the location of coastal warning facilities. Included are some practical suggestions on the use of nautical charts and guidelines for avoiding bad weather.

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#### OCEANOGRAPHY:

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"Acidity in lean fish muscle. IV. Effect of sodium chloride and other salts," by C. H. Castell, J. MacLean and B. Moore, article, Journal of the Fisheries Research Board of Canada, vol. 22, 1965, pp. 939-944, printed. Queen's Printer, Ottawa, Canada.

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... and potential than it may appear because it is the possibility of being applied to any plant ... sequence and timing are important. This ... describes how numerical control works, dis- ... its advantages and disadvantages, and offers ... which should be useful when it is introduced ... plant.

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"FISH AND SHELLFISH OVER THE COALS"  
 RECIPE BOOKLET REISSUED

With the arrival of the outdoor cooking season in most sections of the Nation, the popular recipe booklet "Fish and Shellfish Over the Coals" is again made available by the U. S. Department of the Interior's Bureau of Commercial Fisheries.



The booklet was originally published last summer, and found immediate popularity with backyard chefs and sport fishermen. Many anglers "borrowed" the household copy to help in preparing their catch while on fishing trips.

The publication is part of the Bureau's continuing cooperation with the fishing industry of the United States to better acquaint the public with the economy and nutritive value of fish and shellfish as everyday foods, said Donald L. McKernan, Bureau Director.

Bureau home economists tested nearly 40 recipes for outdoor cooking of various seafood delicacies, such as lobster tails, broiled scallops, flounder with crab stuffing, rainbow trout, and many others.

"Fish and Shellfish Over the Coals" (Test Kitchen Series No. 14), which features easy-to-follow recipes and full-color illustrations, is available for 40 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.



GREAT CIRCLE OCEAN RIVER IN PACIFIC OCEAN PROBED

Scientists are probing the depth, origin and flow rate of the great circular ocean river that constantly surges around the edges of the Pacific Ocean.

This vast belt of moving water, sometimes 600 miles wide, affects in many unknown ways the weather and climate of Pacific shores, as well as the movements of fish, crabs, plants, and other marine life.

The current flows west along the north edge of the equator, turns north at the Philippines to form the Kuroshio Current, then crosses the North Pacific and heads south along the Pacific coast as the California Current.

Reports on the origin and depth of the Kuroshio Current, the Pacific Ocean's equivalent of the Atlantic's Gulf Stream, were made by a Japanese ocean survey group. It was the first phase of a cooperative ocean current study coordinated by the Intergovernmental Oceanographic Commission, which is sponsored by the United Nations Educational, Scientific, and Cultural Organization (UNESCO). (*Science News Letter*, February 12, 1966.)