

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.
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number	Title
FS-4054	- Frozen Fishery Products, 1965 Annual Summary, 15 pp.
FS-4080	- Frozen Fishery Products, March 1966, 8 pp.
FS-4115	- Maine Landings, February 1966 (Revised), 4 pp.
FS-4117	- North Carolina Landings, March 1966, 4 pp.
FS-4119	- Georgia Landings, March 1966, 3 pp.
FS-4120	- Frozen Fishery Products, April 1966, 8 pp.
FS-4122	- Fish Sticks, Fish Portions, and Breaded Shrimp, January-March 1966, 4 pp.
FS-4123	- Florida Landings, 1965 Annual Summary, 18 pp.
FS-4125	- California Landings, February 1966, 4 pp.
FS-4126	- North Carolina Landings, 1965 Annual Summary, 9 pp.
FS-4128	- Alabama Landings, March 1966, 3 pp.
FS-4129	- Louisiana Landings, February 1966, 3 pp.
FS-4130	- Texas Landings, February 1966, 2 pp.
FS-4131	- North Carolina Landings, April 1966, 4 pp.
FS-4132	- Fish Meal and Oil, April 1966, 2 pp.
FS-4133	- Georgia Landings, 1965 Annual Summary, 9 pp.
FS-4134	- Maryland Landings, March 1966, 4 pp.
FS-4136	- New Jersey Landings, March 1966, 3 pp.
FS-4139	- Maine Landings, March 1966, 4 pp.
FS-4140	- Massachusetts Landings, 1965 Annual Summary, 15 pp.
FS-4142	- Florida Landings, April 1966, 8 pp.
FS-4151	- Georgia Landings, April 1966, 3 pp.
FS-4152	- Louisiana Landings, March 1966, 3 pp.
FS-4157	- California Landings, March 1966, 4 pp.
ep. No. 765	- Species Composition of the North Carolina Industrial Fish Fishery.
ep. No. 766	- The South Pacific Albacore Long-Line Fishery, 1954-64.

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, May 1966, 15 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, May 1966, 19 pp., illus. (U. S. Bureau of Commercial Fisheries, Tuna Resources Laboratory, P. O. Box 271, La Jolla, Calif. 92038.) 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-- April 1966, 16 pp. (Market News Service, U. S. Fish and Wildlife Service, 346 Broadway, Rm. 1003, New York, N. Y. 10013.) A review and analysis of New York City's wholesale fishery trade--receipts, landings, prices, imports, stocks, and market trends; and trends in the fisheries of the New York Marine District, New Jersey and Delaware Bay areas; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, May 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--Annual Summary, 1965, by John J. O'Brien and Henry R. McAvoy, 38 pp., illus., May 1966. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston, Mass. 02210.) Reviews the fishery marketing trends and conditions at the principal New England ports, and highlights of the Canadian fisheries. The latest developments in the purse-seine tuna and swordfish long-line fisheries, fish meal market, and frozen fishery products are recounted. Also includes fishery landings and ex-vessel prices for the ports of Boston, Gloucester, New Bedford, and Provincetown,

Mass., Portland and Rockland, Me., Point Judith, R.I., Stonington, Conn.; and principal events in the Maine sardine fishery. In addition, contains data on monthly landings and ex-vessel prices by species, at Boston and Atlantic Ave. fish piers.

New England Fisheries--Monthly Summary, April 1966, 19 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.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, May 1966, 9 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 landings reported by primary receivers; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl vessel receipts reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and nonscheduled 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.

THE FOLLOWING SERVICE PUBLICATION IS FOR SALE AND IS AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402.

Progress in Sport Fishery Research, 1965, Resource Publication 17, 124 pp., illus., processed, Mar. 1966, 60 cents.

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.

ANCHOVY:

"Anchovy," by John Radovich, article, Outdoor California, vol. 27, no. 4, April 1966, pp. 5-6, 15, illus., printed. State of California, Office of Procurement, Documents Section, P. O. Box 1612, Sacramento, Calif. 95807. Historical summary of the anchovy fishery.

AUSTRALIA:

Synopsis of Biological Data on the Grey Mullet (MUGIL CEPHALUS Linnaeus 1758), by J. M. Thomson, Fisheries Synopsis No. 1, 75 pp., illus., processed,

June 1963. Division of Fisheries and Oceanography, Commonwealth Scientific and Industrial Research Organization, Cronulla, Sydney, Australia.

BACTERIOLOGY:

Articles from Applied Microbiology, printed. The Williams & Wilkins Co., 428 East Preston St., Baltimore, Md. 21202:

"Bacterial pollution indicators in the intestinal tract of freshwater fish," by Edwin E. Geldreich and Norman A. Clarke, vol. 14, no. 3, May 1966, pp. 429-437, illus., single copy \$3.00.

"Bacteriology of spoilage of fish muscle. III--Characterization of spoilers," by Peter Lerke, Ralph Adams, and Lionel Farber, vol. 13, July 1965, pp. 625-630.

"Effect of heating on Staphylococcus aureus in frozen precooked seafoods," by G. Houghtby and J. Liston, article, Food Technology, vol. 19, May 1965, pp. 192-195, printed. Institute of Food Technologists, Special Services Office, 510 North Hickory St., Champaign, Ill. 61820.

BRAZIL:

A Pesca no Nordeste (The fishery in the northeast), edited by J. M. Brandão, SUDENE GCDP Documentação 1966 DOP-4, 51 pp., printed in Portuguese, 1966. Grupo Coordenador do Desenvolvimento da Pesca (GCDP), SUDENE, Cais de Santa Rita, Edifício do Entrepósito Federal de Pesca, Recife, Pernambuco Brasil.

BRISLING:

"Las conservas de 'brisling' noruegas" (Conservation of Norwegian 'brisling'), article, Industria Conservera, vol. XXI, no. 313, July 1965, pp. 191-192, illus., printed in Spanish, single copy 25 ptas. (about US\$0.40). Industria Conservera, Calle Marques de Valladares, 41, Vigo, Spain.

CALIFORNIA:

California Fish and Game, vol. 52, no. 2, Apr. 1966, pp. 67-128, illus., printed, single copy 75 cents. Office of Procurement, Documents Section, P. O. Box 1612, Sacramento, Calif. 95807. Some of the articles are: "An early hepatoma epizootic in rainbow trout, Salmo gairdnerii," by J. H. Wales and R. O. Sinnhuber; "Annotated list of fishes collected by midwater trawl in the Gulf of California, March-April 1964," by Robert J. Lavenberg and John E. Fitch; "Fecundity of the Pacific hake Merluccius productus (Ayers)," by John S. MacGregor; "A sexually abnormal red crab, Cancer productus Randall," by Richard Poole; and "Sea lion census for 1965 including counts of other California Pinnipeds," by John G. Carlisle, Jr., and J. A. Aplin.

CANADA:

Fisheries Statistics British Columbia and Yukon; La Statistique des Pêches Colombie-Britannique et Yukon; 1964, Catalogue no. 24-208 annual, 18 pp., illus., printed in English and French, May 1966, C\$0.50. Queen's Printer and Controller of Stationery, Ottawa, Canada.

Fisheries Statistics of British Columbia 1965 (Preliminary), 12 pp., processed, April 1966. Canadian Department of Fisheries in Vancouver, Area Director of Fisheries, 1155 Robson St., Vancouver 5, B.C.

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

CANNED FISH

A Note to the Fishing Industry and General Public on Sulphide Discoloration ("Smut") in Canned Fishery Products, by P. M. Jangaard, New Series Circular No. 22, 1 p., September 17, 1965. Fisheries Research Board of Canada, Halifax Laboratory, Halifax, Nova Scotia, Canada.

FILE

Inversiones y Capacidad de Produccion en la Industria de Harina de Pescado en el Norte de Chile. Un Modelo Matematico Para su Racionalizacion. (Investments and Production Capacity of Northern Chile's Fish Meal Industry. A Mathematical Model for its Rationalization), by Maris Liebeschutz and Hector Aliaga, Publicacion No. 15, 61 pp. illus., printed in Spanish with English summary, 1966. Library, Instituto de Fomento Pesquero, Pedro de Valdivia 2633, Casilla 1287, Santiago, Chile. A comprehensive economic study of the fish meal industry of northern Chile through 1965.

Primera campaña Chilena para popularizar las conservas de atún (First Chilean promotion to popularize canned tuna), article, Información Conservera, vol. XIV, no. 147, March 1966, pp. 58-61, printed in Spanish. Información Conservera, Garrigues 21, Valencia 1, Spain.

HILLING

Superchilling. Research and Development Bulletin No. 16, 2 pp., processed, November 1965. White Fish Authority, Lincoln's Inn Chambers, 2/3 Curator St., London EC4, England.

CLAMS

Economics of Quahog Depuration, by Andreas Holmsten and Joseph Stanislaw, Bulletin No. 384, 33 pp., illus., printed, 1966. Department of Food and Resource Economics, University of Rhode Island, Agricultural Experiment Station, Kingston, R. I. 02881. Pollution of our coastal waters has been increasing and because of the health hazard, many of these areas are closed for shellfishing. In the laboratory, the use of ultraviolet light to purify hard-shell clams from polluted waters has proven successful from a biological point of view, but no plant has yet been designed to utilize this method for hard clams. This study deals with the technical and economic aspects of depuration (purification), including design of a processing plant, design of equipment, and an analysis of the economic feasibility of this method as compared with the present method of transplanting from polluted to clean waters.

COLD STORAGE

A Note to the Industry on Superchilled Storage of Cod, by H. E. Power and M. L. Morton, New Series Circular No. 23, 2 pp., processed, Oct. 27, 1965. Fisheries Research Board of Canada, Halifax Laboratory, Halifax, Nova Scotia, Canada.

CONSERVATION

Federal Aid in Fish and Wildlife Restoration (Annual Report on Dingell-Johnson and Pittman-Robertson Programs for the Fiscal Year Ending June 30, 1965), 95 pp., illus., printed, 1966. Sport Fishing Institute, Bond Bldg., Washington, D. C. 20005. Presents a short program review of expenditures and projects (including sport fish restoration) operated during

FY 1965, and statistical tables on individual conservation projects, land purchases, hunting and fishing licenses issued by the states, and other related data.

CURED FISH

"Sweet cured freshwater fish slices," by A. W. Lantz and D. G. Iredale, article, Trade News, vol. 18, no. 10-11, April-May 1966, pp. 8-9, illus., printed. Director of Information and Educational Service, Department of Fisheries, Ottawa 8, Canada.

DEHYDRATION

"Development of dehydrated meat and fish salads for military use," by J. M. Tuomy, article, Food Technology, vol. 19, no. 6, pp. 46, 50, June 1965. Institute of Food Technologists, Suite 1350, 176 West Adams St., Chicago, Ill. 60603.

DOLPHIN

"Communication between dolphins in separate tanks by way of an electronic acoustic link," by T. G. Lang and H.A.P. Smith, article, Science, vol. 150, no. 3705, Dec. 31, 1965, pp. 1786-1789, illus., printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005. Two isolated dolphin (Tursiops truncatus) were provided with an electronic acoustic link during alternate periods of approximately 2 minutes. The dolphin repeatedly communicated in a tight sequence when the acoustic link was connected. Their responses varied as the experiment progressed. Some information regarding possible meaning of the whistles was obtained.

ECOLOGY

Ecological Studies of the Sacramento-San Joaquin Estuary. Part I--Zooplankton, Zoobenthos, and Fishes of San Pablo and Suisun Bays, Zooplankton and Zoobenthos of the Delta, compiled by D. W. Kelley, Fish Bulletin 133, 133 pp., illus., printed, 1966, Office of Procurement, Documents Section, P. O. Box 1612, Sacramento, Calif. 95807.

ELECTRICAL FISHING

"Una útil aplicación de la electricidad en la pesca" (A useful application of electricity for catching fish), article, Mar. & Pesca, vol. 2, November 1964, pp. 14-15 illus., printed in Spanish. Mar. & Pesca, Amargura 103 esq. a San Ignacio, Havana, Cuba.

FISH

The Life of Fishes, by N.B. Marshall, 402 pp. + 43 plates, illus., printed, 1965, 63s. net (US\$8.85). Weidenfeld and Nicolson, London, England.

FISHERY MANAGEMENT

"There are obstacles between abundance and fishing profits," article, Fishing Gazette, vol. 82, May 1965, pp. 18-19, 30-31, printed. Fishing Gazette Publishing Corp., 461 Eighth Ave., New York, N.Y. 10001.

FISH MUSCLE

"Phospholipids of menhaden muscle," by John R. Froines, C. Yvonne Shuster, and Harold S. Olcott, article, Journal of the American Oil Chemists' Society, vol. 42, Oct. 1965, pp. 881-884, printed. American Oil Chemists' Society, 35 E. Wacker Drive, Chicago, Ill. 60601.

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FOOD AND AGRICULTURE ORGANIZATION

Articles available from Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy:

Proceedings and Basic Working Papers of the Technical Meeting on Fishery Cooperatives (Naples, May 12-21, 1959), 1963, printed.

Report to the Government of India on Fishing Harbor Project at Vizhinjam, by Hermann A. Selmer, FAO Fisheries Report No. 1845, 30 pp., processed, 1964.

FRANCE

Rapport sur la Production de l'Industrie des Pêches Maritimes en 1965 (Report on the Production of the Maritime Fishing Industry in 1965), 76 pp., illus., processed in French, 1966. Comité Central des Pêches Maritimes, Paris, France.

"Técnicas francesas de fabricación de conservas de atún" (French techniques for packing canned tuna), article, Información Conservera, vol. XIV, no. 147, March 1966, pp. 67-70, printed in Spanish. Información Conservera, Garringnes, 21, Valencia 1, Spain.

FREEZE-DRYING

A Note to the Industry on Freeze-Drying, by A. L. Wood, New Series Circular No. 24, 2 pp., processed, Oct. 27, 1965. Fisheries Research Board of Canada, Halifax Laboratory, Halifax, Nova Scotia, Canada.

FRESH-WATER FISH

Fresh-Water Fish and Fishing in Africa, by A. C. Harrison and others, 210 pp., illus., printed, 1963. Cape and Transvaal Printers Ltd., Cape Town, South Africa. (Available from Thomas Nelson and Sons, 18 E. 41st. St., New York, New York, 10017.)

GENERAL

"Demand for fishery products must be demonstrated," by Donald L. McKernan, article, Fish Boat, vol. 10, Feb. 1965, pp. 14-15, printed, Fish Boat, H. L. Peace Publications, 624 Gravier St., New Orleans, La. 70150.

HAKE

"Phospholipids of marine origin. I.--The hake (Merluccius capensis, Castelnau)," by A. J. de Koning, article, Journal of the Science of Food and Agriculture, vol. 17, no. 3, March 1966, pp. 112-117, printed, single issue £1 17s. 6d. (US\$5.27). Society of Chemical Industry, 14 Belgrave Square, London, SW1, England.

HERRING

"The Atlantic herring," by S. N. Tibbo and R. D. Humphreys, article, Trade News, vol. 18, no. 5, Nov. 1965, pp. 6-9, illus., printed. Director, Information and Consumer Service, Department of Fisheries, Ottawa, Canada.

HIGH-SEAS FISHING

"Peaceful co-existence on the high seas," by J. L. Kask, article, Fishing News Information, vol. 4, no. 4, Oct.-Dec. 1965, pp. 413-414, illus., printed, single copy 3s.6d. (about 50 U.S. cents), Arthur J. Heighway Publications Ltd., Ludgate House, 110 Fleet St., London EC4, England.

INDIA

Seafood Trade Journal, vol. 1, no. 4, April 1966, 46 pp., illus., printed in English. The Seafood Canners' and Freezers' Association of India, Cochin, India, includes articles on "Export of Indian seafood," pp. 5-9; "Fisheries of Goa," by V. P. Kale, pp. 13-17; "International Fisheries Ltd.," pp. 21-27; "Indian shrimp in Australia," pp. 29-31.

IRRADIATION

"Microbial flora of irradiated Dungeness crabmeat and Pacific oysters," by Maureen A. Shiflett, J. S. Lee, and R.O. Sinnhuber, article, Applied Microbiology, vol. 14, no. 3, May 1966, pp. 411-415, illus., printed, single copy \$3.00. The Williams & Wilkins Co. 428 E. Preston St., Baltimore, Md. 21202.

JAPAN

Bulletin of Tokai Regional Fisheries Research Laboratory, no. 44, 59 pp., illus., printed in Japanese with English summaries, Oct. 1965. Tokai Regional Fisheries Research Laboratory, 5-Chome, Kachidoki, Chuo-Ku, Tokyo, Japan. Some of the articles are: "On the prediction of future catches of yellowtails caught by set nets at Kuki in Mie Prefecture from techniques of time series," by Takeyuki Doi; "Separation of unsaponifiable components of deep-sea shark liver oil by chromatography on florisisil," by Yaichiro Shimma and Hisako Taguchi; and "The effect of adjustment of pH of the washing medium on the jelly forming ability of fish meat," by Minoru Okada, Kazushi Iwata, and Noriaki Suzuki.

History of Modern Fisheries Development, By Nobuo Okamoto, 614 pp., printed in Japanese, Mar. 1964, 2,300 yen (about US\$6.38), postage extra, Suisansha, 8-banchi, Sanei-cho, Shinjuku-ku, Tokyo, Japan. Summarizes the development and present status of the different fisheries, the founding of fishing companies and fisheries organizations, development of foreign trade, etc.

Hokusuishi Geppo (Monthly Report of the Hokkaido Regional Fisheries Research Laboratory), vol. 23, no. 4, 40 pp., printed in Japanese, April 1966, 100 yen (about US\$0.28). Hokkaido Regional Fisheries Research Laboratory, 238-banchi, Hamanaka-cho, Yoichi, Hokkaido, Japan. Some of the articles are: "Fishes of the nearby seas of Hokkaido, part 15--eels"; "The tuna fisheries of Kutsukata, Rishiri Island"; "Bottom trawl nets of Hokkaido"; and "Changes in the putrefaction process of organic waters."

"Japan--modern development of the fishing industry," by Norio Fujinami, article, Fishing News International, vol. 4, no. 4, Oct.-Dec. 1965, pp. 405-407, illus., printed, single copy 3s. 6d. (about 50 U.S. cents). Arthur J. Heighway Publications Ltd., Ludgate House, 110 Fleet St., London EC4, England.

LAW OF THE SEA

Ocean Sciences, Technology, and the Future International Law of the Sea, by William T. Burke, Pamphlet No. 2, 91 pp., printed, January 1966, \$1.50. Ohio State University Press, Athens, Ohio, 45701. Objectives of this discussion are to offer a preliminary, and necessarily brief, examination of

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the changes in the age-old process of interaction on the oceans that account in measure for the emergence of novel problems in regulation; to seek to identify some of the new problems by speculating about the types of future claims and counterclaims that will differ from those encountered in previous experience; and to make a short, rather general, survey of the broad outlines of the legal technicality inherited from the past that modern decision-makers might adopt, wisely or not, as useful for resolving disputes in the future. No systematic effort is made to clarify community policies at stake in the emerging struggle over the sea, though brief suggestions are made about the direction of further research of some problems.

LOBSTER

"Lobster transplant in B. C.," by Bruce Woodland, article, Trade News, vol. 18, no. 10-11, April-May, 1966, pp. 3-6, illus., printed. Director of Information and Educational Service, Department of Fisheries.

MACKEREL

"The Atlantic mackerel," by R. D. Humphreys and S. N. Tibbo, article, Trade News, vol. 18, no. 5, Nov. 1965, pp. 15-17, illus., printed. Director, Information and Consumer Service, Department of Fisheries, Ottawa, Canada.

MARINE BIOLOGY

The Biological Bulletin, vol. 130, no. 2, April 1966, illus., printed, single copy \$3.75. The Biological Bulletin, Marine Biological Laboratory, Woods Hole, Mass. Contains, among others, articles on; "Factors affecting activity and burrowing habits of the pink shrimp, Penaeus duorarum Burkenroad," by Charles M. Fuss, Jr., and Larry H. Ogren; "Respiration during the reproductive cycle in the sea urchin, Strongylocentrotus purpuratus," by A. C. Giese and others; "Time and intensity of setting of the oyster, Crassostrea virginica, in Long Island Sound," by Victor L. Loosanoff; "Aerial respiration in the longjaw mudsucker Gillichthys mirabilis (Teleostei: gobiidae)," by Eric S. Todd and Alfred W. Ebeling; and "Caprella grahami, a new species of caprellid (Crustacea: amphipoda) commensal with starfishes," by Roland L. Wigley and Paul Shave.

MEXICO

La Industria Pesquera en Mexico y el Contrato de Asociacion en Participacion con las Cooperativas (The Mexican Fishery Industry and the Contract of Association and Participation with the Cooperatives), 57 pp., illus., printed in Spanish, July 1965. Gustavo Martinez Cabanas, Torre Latinoamerica Piso 36, Mexico, D.F. In two parts: Part I contains sections on location and importance of fishery centers; production by species; export market for shrimp; and domestic consumption. Part II covers agreements between vessel owners and cooperatives.

MICHIGAN

Your Michigan Department of Conservation--What It Is, What It Does, 44 pp., illus., printed, Apr. 1966. Michigan Department of Conservation, Lansing, Mich. 48926. Contains, among others, a section on fish.

MIDWATER TRAWLS

Further Experiences with Midwater Trawls (June to December 1962), by J. Scharfe and R. Steinberg (translated by C. A. McLean), 55 pp., 1964, printed. (Translation from Protokolle zur Fischereitechnik, vol. 37, no. 8, 1963, pp. 161-230.) Fisheries Laboratory, Department of Agriculture, Fisheries and Food, Lowestoft, Suffolk, England.

MOTION PICTURES

Careers in Oceanography, 16 mm. color film, 28 minutes duration. Can be borrowed for public showing by written application to the Public Affairs Officer of any Naval Station. This documentary presentation depicts the challenge and adventure of oceanography. It stresses the many opportunities open in the field and delineates the paramount position oceanography plays in the defense of the United States. There is also a lucid explanation of its contribution to the civilian economy. The many sciences included in the field of oceanography are explained as well as the opportunities for meaningful careers. Also spotlights such ocean phenomena as a 50-foot tidal bore and huge underwater sea kelp.

NORWAY

"Rekordår for norsk fisk under 1965. Några utvecklingstendenser i fangst och fartygsbygge" (Record year for Norwegian fisheries during 1965. Some development trends in fishing and vessel building), by Lars Storleer, article, Svenska Vastkustiskaren, vol. 36, no. 8, April 25, 1966, pp. 172-174, illus., printed in Swedish. George Åberg, Fiskhamnen, Goteborg V, Sweden.

"Trålfiske 1964--Melding fra Fiskeridirektoratet Kontoret for økonomiske undersøkelser og statistikk" (Trawl fishing--Report from the Fishery Department Office for Economic and Statistical Research), article, Fiskets Gang, vol. 52, April 1966, pp. 327-339, illus., printed in Norwegian. Fiskeridirektoratet, Rådstuplass 10, Bergen, Norway.

OCEANOGRAPHY

Oceanography--Science of the Future, by Rear Admiral O. D. Waters, Jr., USN, 17 pp., processed. U. S. Naval Oceanographic Office, Suitland, Md. An address at the commencement ceremony, Brevard Engineering College, Melbourne, Fla., June 15, 1966.

"Sea power and the sea bed," by John P. Craven, article, United States Naval Institute Proceedings, vol. 92, no. 4, April 1966, pp. 36-51, illus., printed, single issue \$1. U. S. Naval Institute, Annapolis, Md. 21402.

"The U. S. needs sea-grant colleges," by John A. Knauss, article, Undersea Technology, vol. 7, no. 5, May 1966, pp. 74-76, printed, single copy \$1.00. Compass Publications, Inc., Undersea Technology, 617 Lynn Bldg., 1111 No. 19th St., Arlington, Va. 22209.

The following Informal Manuscript Reports are available for limited distribution from the Marine Sciences Department, U. S. Naval Oceanographic Office, Washington, D. C. 20390:

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An Oceanographic and Acoustic Study of a One-Degree Square off Point Conception, California, June 1963, by Don F. Fenner, Report No. 0-67-64, 50 pp., illus., processed, August 1965.

An Oceanographic and Acoustic Study of a One-Degree Square in the Western North Atlantic, by Roland E. Johnson, Report No. 0-9-65, 45 pp., illus., processed, September 1965.

Summary Field Report of Oceanographic and Bathymetric Operations in the Strait of Gibraltar, May-June and October-November 1964, by Louis A. Banchero and Donald A. Burns, Report No. 0-13-65, 61 pp., illus., processed, October 1965.

A Standard-Vector Deviation Rose Program for Current Data, by Donald A. Burns, Report No. 0-22-65, 19 pp., illus., processed, August 1965.

Theoretical Computations of Sound Reflection from a Layered Ocean Bottom, by Robert S. Winokur, Report No. 0-33-65, 21 pp., illus., processed October 1965.

OYSTERS

The Oyster-Based Economy of Franklin County, Florida, by Marshall R. Colberg and Douglas M. Windham, 28 pp., printed, July 1965. U.S. Department of Health, Education, and Welfare, Public Health Service, Washington, D. C. 20201.

"The Pacific Oyster," Trade News, vol. 18, no. 10-11, April-May 1966, pp. 13-14, illus., printed. Director of Information and Educational Service, Department of Fisheries, Ottawa 8, Canada.

"Les problemes de la production d'huitres plates en Bretagne" (The problems in the production of flat oysters in Brittany), by Louis Marteil, article, Science et Pêche, no. 147, April 1966, pp. 1-10, illus., printed in French, single issue 0.50 fr. (11 U.S. cents). L'Institut Scientifique et Technique des Pêches Maritimes, 59 Avenue Raymond-Poincaré, Paris 16^e, France.

PEARLS

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several commercial fisheries in the country, including the trawl fishery and the tuna fishery. Several tables include data on the number of fishing vessels registered, landings by trawlers and by species, fish prices, a survey of the distribution of fish within the country, census of fishing gear, and fish imports and exports. Data are reported also on catch per unit of effort.

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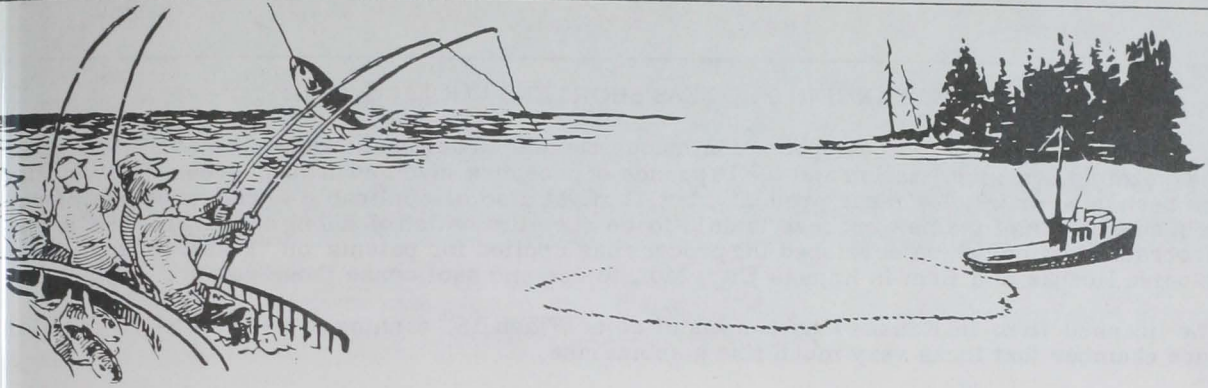
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STORING LIVE FISH AT SEA

The Soviet Union has been conducting experiments whereby it appears to be commercially feasible to store fish alive aboard fishing vessels at sea. This is done by transferring the live fish directly from the nets into specially built tanks in the hold of the vessel. These tanks contain sea water cooled by powerful refrigeration equipment. In addition, the sea water is monitored and treated by special bactericidal equipment. In recent experiments fish have been held alive in these tanks for as long as three days, thus assuring their delivery in prime condition to factoryships or ashore. Early experiments did not use refrigeration equipment but instead employed specially installed pumps and piping to draw cold, deep water from a considerable depth beneath the ocean's surface. Fish stored in tanks containing this water remained in first-class condition for a period of 24 hours. The experiments were conducted aboard the Soviet trawler Leshch and proved equally successful on two separate voyages. This method is now employed aboard the trawlers of the Sevastopol Administration of Marine Fisheries. This method has proved less expensive than conventional refrigeration, in terms of both initial and operating costs. It is hoped that future research will lead to storage times of up to a month or two. . . . or, perhaps, for as long as half a year. This research is pioneered by V. Sepochkin of the Azov-Black Sea Marine Fisheries Administration. (Geo-Marine Technology, March 1966.



A fish is a cold-blooded, aquatic animal with fins, permanent gills (used for breathing in water), a backbone, and a skull. A shellfish is an aquatic animal with a shell, but it lacks fins, skull, and vertebrae.

Some fishing terms.--Fish are "commercial" when they are caught for the market; "sport" when they are caught for fun; and "rough" when they appear in abundance where not wanted. For example, a carp is a commercial fish in some areas where it is an article of food; a sport fish in some places where the usual sport fish are scarce; and a rough fish in many lakes and streams where it is crowding out trout and bass or other more desirable sport fish. Salmon, shad, and striped bass are commercial fish to some people and sport fish to others.

Fish can be classified as anadromous, catadromous, salt-water, or fresh-water. Anadromous species--salmon, alewives, striped bass, shad, steelhead trout--are hatched in fresh-water lakes or streams but mature in salt water and come back to fresh water to spawn, and some, like salmon, die after spawning. Catadromous species--like the American eel--live in fresh water and go to sea to spawn. Some fish, like halibut, tuna, and cod, spend their entire lives in the sea; others, like pike, smallmouth bass, and some trout, live only in fresh water.

Fish are also classified as food fish and industrial fish. Sometimes industrial fish become human food indirectly. Meal made from industrial fish is used in poultry feed and certain byproducts, or "solubles," are fed to young pigs.

About 200 species of fish and shellfish are used for food. American fishermen harvest 5 billion pounds of fish each year, about the same as do Russian and Chinese fishermen, but slightly less than half the catch of Japanese fishermen.

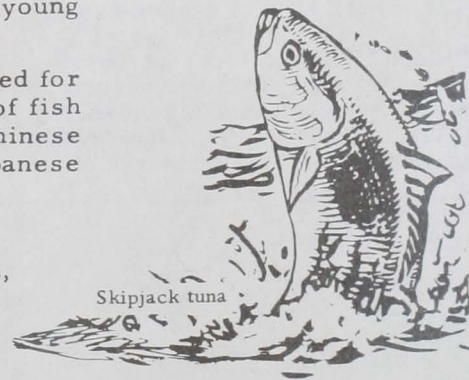
--Excerpt from "Our Commercial Fisheries," Conservation Note 2, Fish and Wildlife Service, U.S. Department of the Interior, Washington, D.C.



American shad



Blue crab



Skipjack tuna

NEW CANNING PROCESS SHORTENS COOKING TIME

A meat packing firm has developed a continuous canning process known as "Flash 18." The name denotes the rapid heat sterilization and the 18 pounds of pressure involved in the process. So far, "Flash 18" has been used mainly for meat products, but it might also be applicable to fish products. One of the main advantages of the new process is said to be the elimination of a long cooking time in the canning process. The firm which developed the process has applied for patents on "Flash 18" and issued an exclusive license to a firm in Kansas City, Mo., to use and sublicense those patents.

The licensed firm in Kansas City has installed a "Flash 18" canning system in a 110-foot-long pressure chamber that looks very much like a submarine.

Canning has been defined as the process of sterilizing food by heat, and preserving the food in hermetically-sealed containers. An important step in the conventional canning process has been the use of retorts (pressure cookers) for heat sterilization.

Under the new canning process, conventional retorting is completely eliminated. The "Flash 18" system installed by the Kansas City firm includes a continuous custom-built stuffer which feeds the product mixture under normal atmospheric pressure into pipelines which in turn feed into a pressure chamber. In the pipelines, and still outside the chamber, the mixture is raised to selected sterilization temperatures.

The rapid heating to above sterilization temperature in the pipelines does away with the necessity for a prolonged cooking period. The food moves from the pipelines into the pressure chamber. As it enters the chamber, the product goes into a deaerator. This is a device for removal of some of the air or oxygen from the product. With the removal of this air, volatile (readily vaporized) materials also are expelled. This is another important step in attaining homelike flavor and texture in canned products. It helps eliminate the characteristic "canned" flavor or harshness, sometimes related to the spices of strong-tasting components of canned items.

Within the pressure chamber, cans are filled and sealed by conventional machinery. The pressure in the room permits filling and sealing at 250° to 255° F. The cans are then fed to a lower level within the pressurized tank, to a "hot" chamber, where the residual heat is maintained for a short period to complete the process. After moving through this chamber, the sterilized cans are transferred mechanically to a precooling chamber, still within the pressure room. They then move out of the pressure chamber for final cooling.

A control room is a key factor in the new canning system. From the control room, operators direct product flow by means of modern regulators, temperature recorders and controllers, and automatic direction-control valves. Through microphones and telephones, control-room operators can talk to people inside the pressure chamber.

There are two main control boards. The first control board is concerned with product controls. The second control board is involved with the operation of the pressure system itself, room compressors, temperatures in the main chamber and personnel locks, and the status of the locks for introduction of materials on the side of the chamber.

The overall control system has numerous safety devices, including an evacuation alarm warning.

"Flash 18" is a continuous system. Although there is a "batching" of components, the product mixture is continuously blended, heated, and filled into cans moving through the pressure chamber. The elaborate control system regulates and adapts cooking time for each product passing through the system. The new process is said to retain delicate flavors and homemade texture and appearance to an exceptional degree in a large variety of canned foods.