



Recent publications of interest to the commercial fishing industry are listed below.

### 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.  
 FL - FISHERY LEAFLETS.  
 SSR.- FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).  
 SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

- | Number            | Title   |
|-------------------|---|
| CFS-939           | - Massachusetts Landings, September 1953, 8 p.  |
| CFS-946           | - Texas Landings, November 1953, 3 p.   |
| CFS-947           | - Massachusetts Landings, October 1953, 8 p.  |
| CFS-948           | - Frozen Fish Report, January 1954, 8 p.  |
| CFS-949           | - Mississippi Landings, November 1953, 2 p.   |
| CFS-950           | - Maine Landings, November 1953, 5 p.   |
| CFS-951           | - Florida Landings, November 1953, 6 p.   |
| CFS-953           | - Fish Meal and Oil, December 1953, 2 p.  |
| CFS-954           | - Massachusetts Landings, November 1953, 8 p.   |
| CFS-955           | - Texas Landings, December 1953, 3 p.   |
| CFS-956           | - Frozen Fish Report, Annual Summary 1953, 14 p.  |
| CFS-957           | - Mississippi Landings, December 1953, 2 p.   |
| CFS-960           | - Maine Landings, December 1953, 5 p.   |
| FL -9             | - Available Leaflets on Fisheries, 17 p.<br>A list by subject of various publications on fisheries issued by the Fish and Wildlife Service (revised).   |
| FL-336s           | - Quarterly Outlook for Marketing Fishery Products, January-March 1954, 32 p.   |
| FL-415            | - Pasteurization of Crab Meat, 7 p. A reproduction of articles that appeared in <u>Fishery Market News</u> in 1942, describing the results of studies dealing with the pasteurization of crab meat and specific methods of procedure.   |
| Sep. No. 368      | - Shellfish Explorations in the Yakutat Bay Area, Alaska, by the <u>John N. Cobb</u> , Spring 1953.   |
| SSR-Fish. No. 109 | - Utilization of Alaskan Salmon Cannery Waste, Parts I and II, by Maurice E. Stansby and Associates, 108 p., illus., processed, September 1953. (Reprint of original reports published by the Industrial Research and Development Division, Office of Technical Services, U. S. Department of Commerce. Part I-December 1947. Part II-December 1948.) |

Part I gives the results of the preliminary industrial and economic surveys, and discusses the studies on the use of the salmon cannery waste to prepare vitamin A oils and as a source of food for hatchery fish. The projects included in both the first and second reports were made possible by a research grant from the Industrial Research and Development Division of the Office of Technical Services to the Alaska Fisheries Experimental Commission. Experimental work was under the general supervision of the Pacific Coast and Alaska Investigations of the Branch of Commercial Fisheries, and investigations were carried out in Seattle, Wash., and Ketchikan, Alaska. Originally, a long-term research program was planned, but because of the liquidation of the Industrial Research and Development Division, the projects had to be terminated within one year. The phases of the program discussed in Part II include the collection of raw materials in Alaska; utilization of salmon eggs for the production of cholesterol, protein, and industrial fat; the addition of salmon head oil to canned salmon; the vitamin content of fish waste products which were used for hatchery foods; and the processing of the cannery waste to obtain vitamin A oils.

SSR-Fish. No. 110 - Biological Effects on Hard Clams of Hand Raking and Power Dredging, by John B. Glude and Warren S. Landers, 47 p., illus., processed, October 1953. Describes an experiment to determine the relative biological effects of power dredging as compared with hand digging on a population of hard-shell clams. The use of the term "biological effects" should be emphasized since no attempt was made to investigate the economic, sociological, or legal phases of this problem. Therefore, the information presented in this report must not be considered as the final answer to the power versus hand-digger controversy, but rather as information on the biological phase alone. Describes in detail the fishing methods used, methods for conducting the experiment, and analysis of results. This experiment shows no biological basis for restricting either method of fishing.

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

Effect of Dissolved Organic Substances on Oysters, by Albert Collier, S. M. Ray, A. W. Magnitzky, and Joe O. Bell, Fishery Bulletin 84 (From Fishery Bulletin of the Fish and Wildlife Service, vol. 54), 22 p., illus., printed, 20 cents, 1953. In the course of prolonged and detailed studies of the effects of industrial wastes on oysters, Crassostrea virginica (Gmelin), at

Pensacola, Fla., continuous recordings of the activities of several oysters were made simultaneously. The oysters tended to behave in a parallel fashion which could not be correlated with any of the factors customarily measured. The work reported here presents an effort to define the cause or causes. Sea water contains unknown substances in minute quantities which respond to the N-ethyl-carbazole test for carbohydrates. Pumping rates and shell gapes of several oysters recorded simultaneously indicated a parallel reaction to the concentration of carbohydrates in sea water. The oysters responded to increases in the carbohydrate concentration by pumping increasing amounts of water, and exhibited thresholds of lower limits below which they did not pump. Higher water temperatures elevated this threshold. Analysis of shell movements revealed three phases of gape: Phase I, preliminary and equal to about one-third total gape; phase II, transitional; and phase III, induced only by a carbohydrate concentration above the threshold value. Study of the behavior of the substances in sea water stored under controlled conditions established that light and air increase their production, and that they remain constant in the dark and in filtered water. There is an inverse, noncausal relation to salinity in natural estuarial water.

Pacific Salmon--Hatchery Propagation and Its Role in Fishery Management, by William Hagen, Jr., Circular 24, 60 p., illus., printed, 30 cents, 1953. How salmon hatchery operations on the Pacific coast are helping to maintain this valuable commercial and sport fishery resource is discussed in this report. It describes briefly the species of Pacific salmon and their characteristics, reviews present-day methods of the artificial propagation of the Pacific salmon, outlines the human factors endangering the maintenance of the fishery, and explains the role of the hatchery in the attempt to maintain the fisheries at their highest possible level. Throughout the development of the Pacific Northwest and Alaska, salmon have played an important part. Today the salmon fisheries are essential in the economy of these two regions. But population growth and industrial increase have intensified the problems of salmon-fishery maintenance. Natural propagation has been interfered with by pollution and by dams that cut off the salmon from their natural spawning grounds. On the Pacific coast, industrial advancement and its demands upon water for power has discouraged and will further discourage the natural reproduction of salmon. This report points out the need for hatchery-reared salmon to overcome, at least in part, the losses incurred by man-made deterrents to natural reproduction.

"The Use of a Graphic-Recording Echo Sounder on Maine Lakes," by Kendall Warner, article, The Progressive Fish Culturist, vol. 15, no. 4 (October 1953), pp. 170-74, illus., processed (annual subscription \$1.25 domestic, US\$1.65 foreign). One of the most time-consuming parts of a survey is the manual measurement of water depths with a sounding line. As a step toward economy of time, a recorder echo sounder was procured by the Fishery Research and Management Division of the Maine Department of Inland Fisheries and Game in the spring of 1952 for use in the biological survey of Maine lakes. This article describes the recording fathometer,

the steps involved in mounting the instrument, the sounding operation, interpretation of recorded results, and transfer of soundings from fathometers to the outline map of a lake.

## 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.

Crisis in the Fishing Industry, by Everett S. Allen, 27 p., printed. Seafood Producers' Assoc., 60 No. Water Street, New Bedford, Mass., December 1953. A series of seven articles, reprinted from The New Bedford Standard Times, on the future of the fishing industry in Massachusetts, and specifically, in the port of New Bedford: "Destruction of Fishing Industry Predicted as Costly Suits Boost Insurance Rates;" "Dishonesty, Unique Liberality of Jones Act Cost Insurance Company \$3,000,000 Deficit;" "McHugh, AFU Leader, Blames Insurance Interests for Boost in Costly Damage Suits;" "Three-Fourths of Fleet Here Can't Meet Repair Costs;" "Harassed by Fewer Fish and Increasing Costs, Prominent Dealer Considers Move Out of U. S.;" "Future Abundance of Fish Uncertain, Figures Show;" and "S. P. Jason Charges Both Fishermen's Union, Industry with 'Short-Sighted, Selfish' Policies." Basis of these articles are the views of persons long prominent in the development of the fishing business, as well as authorities in allied fields.

Directory of Combination Export Managers, Section I--Food, Feed and Fertilizer, 35 p., printed. Office of Small Business, Mutual Security Agency, Washington 25, D. C., August 1953. This directory is one of five, each covering a different broad category of commodities. The combination export managers, listed in this directory, represent suppliers of commodities, including fish and fish products (except fish meal and fish oil), classified under the broad category of Food, Feed and Fertilizer. The directory is divided into two parts: Part One--Commodity Listing contains the various commodities and the names of the combination export managers who represent suppliers of these commodities; and Part Two--Alphabetic Listing of Combination Export Managers gives details on the combination export managers, including the names and addresses of the suppliers he represents.

Directory of Organizations and Officials Concerned with the Protection of Wildlife and Other Natural Resources, by Carl D. Shoemaker, 48 p., printed. National Wildlife Federation, 232 Carroll Street NW., Washington 12, D. C., July 1, 1953. A directory of organizations and officials concerned with the protection of wildlife, including mammals, birds, and fishes, as well as their habitat. Organizations dealing with soils, waters, trees, wildlife, and recreation are listed. This directory is designed to meet the needs of officials charged with the administration and enforcement of fish and game laws and also for the convenient use of persons desiring to communicate with officials in organ-

izations concerning wildlife and fishing conditions in the several states and territories, the Canadian provinces and territories, Mexico, the West Indies, Central America, South America, and the Philippines.

"An Economic Approach to the Optimum Utilization of Fishery Resources," by H. Scott Gordon, article, Journal of the Fisheries Research Board of Canada, vol. X, no. 7 (September 1953), pp. 442-57, illus., printed, C\$3.25 per volume. This theoretical study is a valuable contribution to the science of "Fishery Management." Whether the econometric methods applied by the author will solve the problems of the economically best feasible fishing efforts in a "biologically self-sustained area" is, however, questionable. One may agree with the author that "the economic optimum is at a level of fishing intensity somewhat less than that which would produce the maximum physical landing." But as The Economist (vol. CLVIII, no. 5573, 17 June 1950, p. 1317) cleverly says: "There is a perpetual chance of a windfall for a small man willing to back his own judgment and this will always help a number of both fishermen and merchants hanging on to the industry by the skin of their teeth, cherishing their independence and living on hopes." Enforcing the economic optimum depends, according to the author, on regulatory measures, which would either divide up a fishery into private property rights or subject the fishery to limitations which constantly may be changed due to biological and technological conditions. One new way of government control is suggested by the author, which may surprise members of the fishing industry, namely, control by taxation.

--R. A. Kahn

An Experimental Program in Shellfish Management, by Robert L. Dow, Fisheries Circular No. 10, 11 p., illus., printed, Department of Sea and Shore Fisheries, Augusta, Maine, March 1953. A chronological outline of the various phases of an experimental shellfish management program conducted in the Wells area of Maine. This is the first experimental shellfish management program ever attempted in Maine on any diversified basis. The program included (1) reconnaissance of the several areas; (2) area, population, and production surveys; (3) meetings and conferences with town officers and fishermen; (4) transplantation of seed stocks; (5) hydrographic modification experiments; (6) public hearings; (7) geological reconnaissance of the area with the State geologist; (8) geological-biological study with the Maine Geological Survey; (9) predation studies; (10) experimental marine farming with the U. S. Fish and Wildlife Service; (11) field classification of sediments; (12) photographic recording of flat and hydrographic conditions; (13) closures; (14) establishment of periods of harvest; (15) measurement of digging efficiency; (16) measurement of digging mortality (breakage); (17) keeping detailed catch records; (18) organization of cooperative responsibility between state and municipality; (19) action taken by municipality on recommendations made by the State; and (20) growth and survival experiments.

"Fish Sticks," article, Food Engineering, January 1954, vol. 26, no. 1, pp. 44, 202-203, illus., printed, single copy 35¢. Food Engineering, Subscription Service, 99-129 N. Broadway, Albany 1, New York. Describes in detail and illustrates the operations involved in the preparation of the quick-frozen precooked (deep-fat fried) breaded fish sticks. This new item, of uniform size and shape, has won enthusiastic reception in key-test markets.

"Fisheries and Weather," by G. L. Kesteven, article, FAO Fisheries Bulletin, July-August 1953, vol. 6, no. 4, pp. 109-18, printed, single copy 30 U. S. cents. Food and Agriculture Organization of the United Nations, Rome, Italy. (For sale by International Documents Service, Columbia University Press, New York 27, N. Y.) This review separates the problems of craft, gear, and fishing operations from those of fish stocks, as related to climate and weather. It considers (1) the bearing which general, long-range meteorological information has on such matters as the design of craft, and the distribution and abundance of fish; (2) how short-term, seasonal information and predictions may affect the planning of fishing operations, and how such information may be made use of in predicting the behavior of fish stocks; and (3) the use of day-by-day weather forecasting in the conduct of fishing operations and especially in relation to safety at sea. Lastly, it considers these matters from the points of view of: (a) the use which is made of available meteorological information in these various connections; (b) the better use which could be made of information which is at present available; and, (c) how meteorological services could be improved for the benefit of the fisheries industries.

The Fisherman's Handbook - 1954, 382 p., illus., printed, \$1. Fisherman Press, Inc., Oxford, Ohio, 1954. This nicely printed and well-illustrated Handbook has been prepared only with the needs of sports fishermen in mind. But there are some portions which commercial fishermen may find of interest, especially those who use small boats, lines, and lures. The major sections of the Handbook cover such subjects as Fish and Fish Biology, with descriptions of many common game fish and a glossary of fish terms; Natural Baits for both fresh and salt water; Where to Fish by States, Territories, Provinces, and National Forests and Parks; Fishing Methods (primarily casting), including fishing fundamentals; Tackle, including rods, reels, lines, leaders, lures, hooks, and other accessories; and finally Boats and Motors, especially outboards. In addition to the substantial amount of information in the text proper, there are illustrations and data in about equal amount in the accompanying advertisements of what appears to be most of the manufacturer's supplying the sports fisherman's requirements.

#### Food Processing and Research Bibliographies

Three bibliographies prepared by the Office of Technical Services, U. S. Department of Commerce, on as many phases of food processing and problems have been recently revised and released. These present very brief descriptions of technical

studies prepared here and abroad on such problems as food deterioration and preservation; freezing, cold storage and refrigeration; processing and preparation; canning and dehydration; substitutes and synthetics, and marketing and packaging.

Bibliography of Reports on Fish and The Fish Industry, Code No. IB-142, 5 p., June 1953.

Bibliography of Reports on Meat and Poultry (Including Sausage Casings), Code No. IB-143, 6 p., May 1953.

Bibliography of Reports on Food Preservation and Preservatives, Code No. IB-190, 4 p., May 1953.

These bibliographies are available at 10 cents per copy from the Offices of Technical Service, U. S. Department of Commerce, Washington 25, D. C.

(FOA) Conclusions and Recommendations of the International Development Advisory Board, 27 p., processed. Foreign Operations Administration, Office of Public Reports, Washington 25, D. C., December 1953. A report to Harold E. Stassen, Director of Foreign Operations, regarding the United States participation in Technical Cooperation programs for underdeveloped countries.

(FOA) Monthly Operations Report (Data as of July 31, 1953), 63 p., illus., processed. Division of Statistics and Reports, Foreign Operations Administration, Washington 25, D. C. This issue, which contains data through July 31, 1953, summarizes the activities of the Mutual Security Agency and the Technical Cooperation Administration prior to the establishment of the Foreign Operations Administration on August 1, 1953. Charts and appendix tables on the European Program cover MSA/ECA operations beginning with April 3, 1948. Charts and appendix tables on the Far East Program cover MSA/ECA operations under the China Area Aid Act of 1950. A section of the report deals with the military assistance program.

Freezing Meat, Poultry, Fish, Seafoods, and Game, Extension Bulletin 732, 17 p., illus., printed. Federal Cooperative Extension Service, Oregon State College, Corvallis, Oregon, January 1953. Describes the preparation of clams, fish, oysters, crabs, and other food items for freezing. Also describes the kinds of packaging materials available, the importance of selecting the proper packaging material, and methods of wrapping and labeling.

Handbook of Freshwater Fishery Biology with the First Supplement, by Kenneth D. Carlander, 437 p. with alignment charts of monographs, printed, \$6.50. Wm. C. Brown Company, Dubuque, Iowa, 1953. (A publication of the Iowa Cooperative Fishery Research Unit, sponsored by the Iowa State Conservation Commission and the Industrial Science Research Institute of Iowa State College.) Primarily a quick-reference source book to data on fresh-water fish. Consists mostly of tabular material for which conservationists and biologists have frequent need, and it will aid research workers as a biblio-

graphical guide to original investigations. Data on growth, length, weight, and various length relationships on all species of fresh-water fishes found in the United States and Canada are presented. Anadromous fishes have not been included unless they have at one time or another become established in fresh water. This edition brings up to date a previous edition published in 1950. The book consists of instructions for reading the tables, suggestions for conducting a simple age and growth study, life histories by species, population data, conversion tables, and literature cited. This edition has the first supplement which contains the new data published since the 1950 edition was issued as well as some earlier data which were missed in the earlier edition. The supplement includes a small amount of data on fresh-water fishes in other parts of the world but the coverage of foreign literature is not comprehensive. Over 40 percent as many papers (covering 1950-1952) are included in the supplement as were in the original Handbook.

"Improving the Fisheries Contribution to World Food Supplies," article, FAO Fisheries Bulletin, September-October 1953, vol. 6, no. 5, pp. 159-96, illus., printed, single copy 30 cents. Food and Agriculture Organization of the United Nations, Rome, Italy. (For sale by International Documents Service, Columbia University Press, New York 27, N. Y.) This paper seeks to indicate something of the pattern of evolution and development which might be displayed by the fishery industries within the next few decades; and, chiefly, it is devoted to an examination of the main problems which must be faced if a substantial rise in fish production is to occur to meet targets such as those set for 1960. Under the section on the growth of the fisheries, it discusses present production and utilization, past developments, and factors influencing past development. The section on the basis for expansion discusses the productivity of waters, the technical aspects of realizing these possibilities, fish finding, catching, handling, fish culture and inland fisheries management, and an appraisal of these possibilities. Also discusses weakness in the economic background, ineffective demand, defects in the organizational setting of the fishery industries and their administration, problems in financing the industries, barriers in international trade, shortcomings in the orientation and conduct of research, deficiencies in knowledge and skill, and inadequate planning for fishery developments. A series of conclusions on which any efforts to increase the world's fish food production should be based are summarized. Includes a chart of marine fisheries of the world, showing areas of established fisheries, those intensely exploited, and those under-exploited or entirely neglected.

Institut des Peches Maritimes du Maroc (Marine Fisheries Institute of Morocco), by J. Furnestin, Bulletin No. 1, 61 p., illus., printed in French, 375 francs (US\$1.10). Institut des Peches Maritimes du Maroc, Casablanca, Morocco, September 1953. Describes sonar (ultra sonic) sardine fishing in Morocco and the experiments of the exploratory fishing boat, Jean-Francois.

Briefly outlines all the vessel trips and presents numerous maps and sonar echograms.

Jahresbericht über die Deutsche Fischerei 1952 (Annual Report of the German Fisheries 1952), 363 p., illus., printed in German. Unterabteilung Fischwirtschaft, Bundesministerium für Ernährung, Landwirtschaft und Forsten, 72 Neuer Wall, Hamburg 36, West Germany, in cooperation with Mitwirkung des Statistischen Bundesamtes. (Publisher: Mann Brox., Berlin, Germany), October 1953.

This Annual Report has importance over and above the statistical material which is included. The report is divided into four parts. Each part contains several independent articles dealing with developments and noticeable events in the German fishing industry during 1952. Some articles give historical surveys. Others describe local fisheries and fishing ports.

Part 1 contains six articles. The first one (written by Dr. G. Meseck, the Director of the Fishery Division of the Ministry of Nutrition, Agriculture and Forestry) deals with "fishery economic policies" in 1952. This article gives interesting details on the nutritional values of fish and other food products as compared with the respective prices. In 1952 a slight reduction of the catch as compared to 1951 was noticeable, which was mostly due to smaller runs of fish. The importation of fishery products in Germany during 1952 was liberalized; however, it is significant for the increased standard of living in Germany in that year that the main increase in imports was in Norwegian sardines in oil, a comparatively expensive product. Other articles in part 1 refer to detailed catch figures, the development of the fishing fleet, foreign fishery trade, and the organization of the fishery industry.

Part 2 contains articles on auxiliary services rendered by the Government to the fishing industry. Three articles refer to medical services given by so-called "fishery protection vessels." The Government maintains two such vessels, on which physicians are employed. These vessels cruise among the fishing fleet ready to assist fishermen. These vessels may transport sick fishermen to nearby land hospitals or call by radio for airplanes to do the transporting. Other articles in this part refer to research--biological, technological, and nutritional problems. It also discusses research on aquatic plant life, pond fisheries, and fish sicknesses.

Part 3 describes the deep-sea trawling fishery, herring fishery, coastal and inland fisheries, and the fisheries in Lake Constance. Also included are articles on the sea-food wholesale business, the fish-meal industry, fish promotion and advertising, and consumer education.

In part 4 foreign fisheries are considered. A separate article deals with whaling.

This report will be a valuable addition to any library interested in general economics or in food economics. The United States reader will

find some interesting references and remarks which may be helpful.

--R. A. Kahn

Hong Kong Annual Departmental Report by the Director of Agriculture, Fisheries & Forestry (for the Financial Year 1952-53), 93 p., illus., printed. The Government Printer, Hong Kong, 1953. This publication contains the annual reports of the various divisions of the Department of Agriculture, Fisheries, and Forestry. Included in the report of the Fisheries Division is a review of its activities during the year, which were directed mainly to (a) promotion of mechanization of the fishing fleet; (b) teaching of fishermen for Marine Department certificates of competency as masters of mechanized vessels; (c) preparation of forms and registers for the general survey of the fishing industry; and (d) other surveys of the marine and freshwater fisheries.

(Iowa) Synopsis of Iowa Commercial Fishing Laws and Related Statutes, 1952-1953, 8 p., processed. State Conservation Commission, East 7th and Court, Des Moines 9, Iowa. A brief summary of Iowa's commercial fishing laws and related information pertaining to mesh size, nets, and seines; equipment; open seasons; and size limits. License requirements for wholesale fish markets and fish peddlers, and laws pertaining to the taking, catching, or killing of mussels are also included.

(Louisiana) Directory Commercial Fish Dealers, 46 p., printed. Industrial Services Section, Louisiana Wild Life & Fisheries Commission, 126 Civil Courts Bldg., New Orleans 16, La. This directory classifies all of the fish dealers (producers, wholesalers, brokers, retailers, etc.) in Louisiana under the following items: crabs; crab meat; crawfish; canned and frozen creole specialties; fish; frozen fillets; menhaden products; shrimp; shrimp bran; and breaded, canned, cooked, dried, frozen, and peeled shrimp. This booklet should be of value to handlers of fishery products all over the country as well as U. S. exporters of fishery products.

"Menhaden and the Purse Seine," by Joseph P. Breuer, article, Texas Game and Fish, December 1953, vol. XII, no. 1, pp. 16-19, 24-25, illus., printed, single copy 10 cents. State Game and Fish Commission, Walton Bldg., Austin, Texas. This article describes the use of the purse seine in the menhaden fishery. A series of photos, picturing the crew and purse seine in action, shows how the small boats leave the parent boat, surround the menhaden school with the seine, and then transfer the catch from the net to the hold of the larger boat.

Methods to Reduce Borer Damage to Lobster Traps, by Robert L. Dow and Frederick T. Baird, Jr., Technical Bulletin No. 3, 15 p., illus., printed. Department of Sea and Shore Fisheries, Augusta, Maine, May 1953. This paper deals with the chemical and preservative treatment of lobster traps to reduce borer damage and the

effects of such treatments on the fishability of the trap. The authors state that "Although the results of these tests should not be considered absolute, we believe the following conclusions are reasonable: (1) The average cost of treatment is sixty cents, and the average time consumed in treatment is 35 minutes; (2) borer incidence is at least nine times greater in untreated traps than in those that have been treated; (3) the life of any trap will be greatly increased by treatment to prevent borer damage, however, where high losses of traps from storms and other conditions occur, these causes may outweigh the benefits of treatment; (4) any treatment used seems effective; (5) treatments applied by brush should be renewed periodically--probably once a year at least; and (6) creosote-base preservatives appear definitely to reduce the catchability of the trap."

"Observations on the Canning of Pacific Coast or Dungeness Crabmeat," by Lionel Farber, article, Food Technology, November 1953, vol. 7, no. 11, pp. 465-68, illus., printed, single copies of periodical: domestic US\$1, foreign US\$1.15. The Garrard Press, 119 West Park Avenue, Champaign, Ill. (Published by the Institute of Food Technologists.) Discusses the various factors which influence the quality of canned Dungeness crab meat and means to minimize or eliminate them. The four factors concerned in the canning of Dungeness crab meat are shrinking, blueing, toughening, and scorching or browning of the meat during and subsequent to the heat sterilization process. "By suitably bleeding the live crabs, adequately cooking the raw crabs, thoroughly washing the cooked crab meat, substituting sodium citrate for citric or other acids, and water cooling the cans after the heat sterilization treatment," according to the author, "a canned product very much like freshly-cooked crab meat in color, texture, and taste can be produced."

"The Pacific Mackerel Fishery in the 1951-52 and 1952-53 Seasons," by Phil M. Roedel and David C. Joseph, article, California Fish and Game, January 1954, vol. 40, no. 1, pp. 55-59, printed. California Department of Fish and Game, Sacramento, Calif. The purpose of this paper is to bring up to date the catch statistics for the Pacific mackerel (Pneumatophorus diego) fishery, with particular reference to the Los Angeles region. The outstanding feature of the two seasons was the continued decline of the scoop fishery in 1951/52 and its virtual disappearance in 1952/53, when only 325 tons of scoop-caught mackerel were landed. At its peak in 1944/45 the scoop fishery produced over 30,000 tons. Detailed statistical data are presented for the two seasons with cumulative totals.

(Pacific Marine Fisheries Commission) Sixth Annual Report of the Pacific Marine Fisheries Commission for the Year 1953 (To the Congress of the United States and to the Governors and Legislatures of Washington, Oregon, and California), 16 p., printed. Pacific Marine Fisheries Commission, Portland, Oregon. Describes briefly the activities of the Commission and contains a short resume of the one meeting of

the Commission during 1953. Also included are summaries of reports submitted by the participating agencies on the research conducted in 1953 on the following marine species and fisheries: ocean salmon, albacore tuna, sablefish (black cod), the otter-trawl fishery, and pollution research. In addition, a financial report of the Commission appears in the report.

"The Pacific Sea Lamprey," by G. C. Pike, article, Progress Reports of the Pacific Coast Stations, No. 97, December 1953, pp. 3-5, illus., printed. Fisheries Research Board of Canada, Pacific Biological Station, P. O. Box 6, Nanaimo, B. C. Describes briefly the Pacific sea lamprey (Entosphenus tridentatus) or lamprey "eel," as it is sometimes erroneously called. "It is not possible with our limited knowledge of the Pacific lamprey to assess its economic importance," states the author, "especially with regard to the extent of the damage it does to commercially-important food fishes. In the Great Lakes, the Atlantic sea lamprey has devastated many of the important fisheries and its control presents a serious problem. No commercial use is made of the lamprey in British Columbia. Only the Indians utilize it as food. Since 1941 a small lamprey fishery has been in operation at Willamette Falls, Oregon, where up to 200 tons are taken each year for reduction purposes during the annual spring migration. In atonement for its unsightly appearance and destructive behaviour, the lamprey has partly redeemed itself by delighting the appetites of epicures for centuries. History tells us that the wise King Henry I of England did so love the lowly lamprey that he met his inglorious death by eating too many at one sitting."

Preliminary Investigations in Marking Marine Worms, by Alton H. Gustafson, Research Bulletin No. 9, 8 p., printed. Department of Sea and Shore Fisheries, Augusta, Maine, April 1953. The lack of adequate methods for marking sample populations of most motile marine organisms coupled with the scarcity of exact data concerning the movements of commercially important marine worms suggested that an exploration of methods of marking be undertaken, using worms as subjects. This report describes several types of adhesives, paints, and fluorescent compounds that were tested without finding a suitable agent. The subjects were immersed in and injected with thirteen dyes in varying concentrations without finding one which might serve as a marker.

Safety of Life in Indian Waters, by U. Shanker Rao, 23 p., printed. U. Shanker Rao, 25 A. Palit Street, Ballygunge, Calcutta, India, 1950. The aim of this pamphlet is to create popular interest in the safety of life in Indian waters, to improve present measures of safety, and to prepare the way for the establishment of a Marine Rescue Service in India similar to the Royal National Life Boat Institution of England and the U. S. Coast Guard Service. Appendix I contains extracts from the Annual Report of the Royal National Life Boat Institution, and Appendix II covers technical descriptions of motor life boats.

Small Business Administration--What It Is--What It Does, 15 p., processed. The Office of Information and Managerial Assistance, Small Business Administration, Washington 25, D. C., December 1953. The Small Business Administration (SBA) is the first comprehensive peace-time independent Governmental agency in history created for the sole purpose of advising, counseling, assisting, and protecting small business enterprises. The SBA also has been assigned the function formerly held by the Reconstruction Finance Corporation of granting business loans to small firms and the humanitarian mission of granting disaster loans to rehabilitate the homes and businesses of victims of natural catastrophes such as floods and tornadoes. This booklet describes the creation and establishment of the Small Business Administration, the policy of Congress with regard to American small business and the new small business agency, and the definition of small business. Organization of SBA and its functions are also described. A list of the Regional and Branch Offices of the SBA is included.

Some Observations on the Dispersion of the Marine Worms NEREIS and GLYCERA, by A. H. Gustafson, Fisheries Circular No. 12, 8 p., printed. Department of Sea and Shore Fisheries, Augusta, Maine, June 1953. A report on observations on the dispersion of the clam worm or sandworm, *Nereis virens* Sars, and the bloodworm, *Glycera dibranchiata* Ehlers, and their habits. According to the author, "In *Nereis* the daylight crawling on exposed intertidal areas, the nocturnal swimming, the swarming and spawning, and particularly the pelagic development of considerable duration all indicate a considerable movement of any given population. These factors seem to be quite adequate to account for fluctuations in the populations and to account for the distribution and dispersal of the species. In *Glycera*, as far as is known, dispersal is accomplished largely by the breeding habits."

(Sport Fishing Institute) Highlights of 1953, Bulletin No. 26, 66 p., printed. Sport Fishing Institute, Bond Bldg., Washington 5, D. C., January 1954. Contains a brief discussion of the general fish conservation picture and statements on the program and progress of individual states and of several Federal agencies. Included under the Fish and Wildlife Service are discussions of the Federal Aid in Fish Restoration program; fishery biological investigations; and the fish-hatchery program.

A Study on the Effect of Recirculated Natural and Artificial Sea Water on the Mortality of Lobsters, by John S. Getchell, Research Bulletin No. 11, 23 p., illus., printed. Department of Sea and Shore Fisheries, Augusta, Maine, June 1953. Discusses an investigation made to study the effect of recirculated natural and artificial sea water on the mortality of lobsters and to ascertain the length of time lobsters could live in such a system; also to determine, if possible, the feasibility of handling lobsters commercially in such a system. This report is divided into six parts: Part 1--The preliminary work

as to tank construction and recirculation, temperature regulation, aeration, filtration, foaming, and feeding; Part 2--The five trial runs using natural sea water over a period of one year; Part 3--Preliminary investigation using various formulas for artificial sea water; Part 4--Three trial runs using artificial sea water from formulas which proved most economical in manufacture and ease of handling; Part 5--Conclusions and recommendations; and Part 6--Artificial sea water formulas. It was concluded (1) that lobsters were able to live in recirculated natural sea water for a period of 7 days without any appreciable mortality, and for 14 days with very little mortality; (2) that with the addition of fresh lobsters this cycle could be repeated using the same water for a year's time provided that the specific gravity was kept constant; (3) that artificial sea water would sustain the life of the lobster for from 7 to 12 days, and that it compared very favorably with natural sea water under the conditions of the experiment; and (4) that within the limits already stated, it is feasible to handle lobsters commercially in such a system.

Toxicities of Some Metals on Lobsters (H. AMERICANUS) in Natural and Artificial Sea Waters, by Donald M. Harriman, Fisheries Circular No. 11, 8 p., printed. Department of Sea and Shore Fisheries, Augusta, Maine, January 1953. An evaluation of the merits of artificial solutions in the presence of metals which might be found in tanks and fittings and to determine the toxicities of such metals on lobsters. Three factors were of interest in rating the sea salts. The most important was the viability of lobsters kept in them, then the cost of the solutions and the ease with which they might be prepared. Of the sea salts tested, sea water was the best medium for holding lobsters. The artificial solutions were nearly alike in their holding characteristics and all were adequate for commercial use, under sufficiently cool conditions, although certain mixes caused more rapid mortality than others. All metals tested show some toxic effect when compared to a soft-pine tank. Of these only copper was violently poisonous. Lead seemed least toxic. Although stainless steel, aluminum, and zinc could be in contact with the solutions without reducing the survival below a reasonable time for marketing, the plain wooden tanks were best. High temperatures increase the mortality rates due either to artificial solutions or to metallic ions.

(United Kingdom) Sea Fisheries Statistical Tables, 1952, 36 p. (mostly tables), printed, 2s. 6d. net (35 U. S. cents), Ministry of Agriculture and Fisheries, London, England, 1952. (Available from Her Majesty's Stationery Office, London.) Included in this leaflet are statistics on the quantity, total value, and average value of fish and shellfish production in England and Wales by species, region, and other categories for 1952. Breakdowns by first-class British vessels (steam trawlers), demersal landings, and pelagic landings are presented in the tables. Data on imports and exports are included. Also given are the number of fishermen, number and gross tonnage of vessels, and number of first-class vessels by stations and type of gear.