



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

Number	Title
CFS-932	- Frozen Fish Report, November 1953, 8 p.
CFS-933	- Mississippi Landings, September 1953, 2 p.
CFS-934	- New Jersey Landings, September 1953, 2 p.
Sep. No. 363	- Fishing Vessel Live-Bait Equipment.
Sep. No. 364	- Salt Content of Salmon Canned from Brine-Frozen Fish.
SSR-Fish. No. 105	- Length Composition of California Commercial Catch of Pilchard, 1919-51, by Margaret M. Calderwood, 83 p., processed, September 1953. Data contained in this paper have been compiled from source files and are presented for use by fishery scientists for study of complex relationships which exist between age classes of a pelagic fishery. Presents a series of tables which represent the length composition, so far as obtainable, of the commercial catch of sardines, <i>Sardinops caerulea</i> (Girard) 1854, in California from the 1919/20 season through the 1950/51 season.
SSR-Fish. No. 111	- Attempts to Guide Small Fish with Underwater Sound, by Clifford J. Burner

and Harvey L. Moore, 43 p., illus., processed, September 1953. A resume of what has been accomplished in attempting to guide fish by means of subaqueous sonic vibrations. It discusses the characteristics of sound and sound devices, and the equipment and methods of measuring the reaction of fish to sound. The conclusions in part were:

Guiding fishes by means of sound-generating equipment installed at dams and diversions would be desirable because of its freedom from physical floating equipment and ease of maintenance. Fishes have been conditioned to respond to sound as a signal for food, but the evidence of attraction to sound alone is rare and questionable. Certain fishes may be frightened momentarily by any noise, but adjust to disregard it (become conditioned) almost instantaneously. A total of 90 planned tests were made in addition to a number of exploratory and informal tests. Contingency tests applied to the data show the resulting distributions of control and sound tests to be significantly different. However, at no time did a sound frequency or intensity influence the action of trout enough to be utilized in guiding young salmon into safe passages around dams and diversions.

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

"A Century of American Fish Culture, 1853-1953," by Edward M. Wood, article, pp. 147-62. (From The Progressive Fish Culturist, vol. 15, no. 4, October 1953, processed, annual subscription \$1.25 domestic, US\$1.65 foreign.) A brief historical review of the progress in fish culture during the last 100 years. Developments in artificial propagation as applied to commercial fisheries, sport or game fisheries, fish cultural research, and fishery management are described. Also contains a long list of literature citations.

Indexes of Transportation Rates for Fishery Products, by Morton J. Garfield, Circular 23, 15 p., printed, 10 cents, 1953.

This circular traces the history of transportation rates for rail freight and railway express shipments of fishery products from 1939 through 1952 and motor carrier shipments of fishery

products from 1947 through 1952. It furnishes data with respect to the transportation rate trends in various categories of fishery products, such as canned fish, fresh and frozen fish, and fish meal and oil. A rather short and to the point text gives a general over-all picture of the competitive situation with respect to the various types of carriers.

Data with respect to transportation rates for fishery products are presented in the form of index numbers. The base year for the several series of index numbers is 1947, and the index numbers reflect percentage changes above or below the level of rates which prevail in that year. Although actual rates for the various routes included in the survey are available in the files of the U. S. Fish and Wildlife Service, they are not shown in this report, since the objective was to reflect only changes in rates over a period of many years.

--W. H. Stolling

MISCELLANEOUS PUBLICATIONS

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

The American Smelt, OSMERUS MORDAX (Mitchill), of South Bay, Manitoulin Island, Lake Huron, by N. S. Baldwin, 5 p., illus., printed. (Reprint from Transactions of the American Fisheries Society, vol. 78 (1948), pp. 176-180.) Fisheries Research Section, Department of Lands and Forests, Southern Research Station, Maple, Ontario, 1950. A smelt fishery established on the streams and freshets flowing into South Bay during the 1948 spawning run yielded a total of 51,382 pounds to local fishermen using dip nets and seines. The smelt taken averaged 5.7 inches in fork length and 0.73 ounce in weight. Age-group II comprised 54 percent of the catch and age-groups III and IV, 38 and 8 percent, respectively. Age-group II averaged 5.4 inches in length; age-group III, 6.1 inches, and age-group IV, 7.2 inches. The estimated egg content in five fish ranged from 9,650 to 27,600 and was not entirely dependent on size. Some general observations on the food and spawning behavior of the smelt are also presented and comparisons made with other populations.

Analysis of Factors Affecting the Production of Chum Salmon (ONCORHYNCHUS KETA) in Tillamook Bay, by Kenneth A. Henry, Contribution No. 18, 37 p., illus., printed. Fish Commission of Oregon, Portland, Oregon, September 1953. This paper deals with the factors affecting the production of chum salmon. It is quite important in the proper management of any fishery to have a thorough understanding of the relative importance of the various factors affecting the production of the fishery and then, if possible, to isolate the factor, or factors, which appear to have the greatest influence on the resulting production. It was the search for some method of predicting the yearly production of chum salmon that provided the basis for this study. This report includes a brief resume of the commercial salmon fishery on Tillamook Bay, particularly regarding the magnitude of the catches. It summarizes briefly the life history of the chum salmon and the factors affecting production. Also discusses an attempt to discover some means of predicting the size of the chum salmon run returning to the spawning grounds each year.

The Bottom Fauna of Louisa and Redrock Lakes, Algonquin Park, Ontario, by Kenneth G. Wood, 10 p., printed. (Reprinted from Transactions of the American Fisheries Society, vol. 82 (1952), pp. 203-212.) Fisheries Research Section, Department of Lands and Forests, Southern Research Station, Maple, Ontario, 1952. Bottom-fauna surveys of Louisa and Redrock Lakes were carried out to supplement previous investigations of the fisheries. The average weight per animal and the depth distribution of the various organisms are discussed. Migrations of Chaoborus larvae are demonstrated. The average quantity of bottom fauna in Louisa Lake was 1.64 pounds per acre, dry weight, in August and 2.15 in October. Redrock Lake contained 2.73 pounds per acre in September and an estimated 3.28 pounds per acre in October. There was little difference in the amounts of bottom organisms at comparable depths between the two lakes at the same time of year. The

greater relative area of the highly productive 0- to 15-foot depth zone in Redrock Lake accounted for its larger average bottom fauna. The feeding of the lake trout upon the bottom fauna was also in proportion to the relative areas of shallow bottom in each lake.

(California) A Review of California's Progress in Fish and Game Conservation, 15 p., illus., printed. California Department of Fish and Game, Sacramento, Calif., September 1, 1953. A brief, factual report on the work of the Department of Fish and Game, and how it has dealt and is dealing with some of the many problems of fish and game conservation presented in the last few years. It does not pretend to be a complete report of the Department's progress, but to present briefly and objectively some of its work. The report describes the expansion of the Department during the last decade, and discusses, among other subjects, the development of new fisheries, research techniques, and cooperative research programs. The section on inland fisheries discusses trout hatchery expansion, the warm-water fish program, improvements in hatchery operations, trout investigations, stream improvement, the striped bass program, and the Dingell-Johnson catfish project.

(Canada) Fisheries Statistics of Canada, 1951 (Nova Scotia), 8 p., printed, French and English, 25 Canadian cents. Department of Trade and Commerce, Dominion Bureau of Statistics, Ottawa, Canada. Consists of tables giving the production and landed and marketed values of the principal species of fish and shellfish landed in Nova Scotia in 1949-51; quantity and value of manufactured fishery products for 1950-51; vessels used in the sea fisheries; capital equipment in the primary fisheries operations; and the number of persons engaged in the fisheries.

(Canada) 1950 Landings of Fresh Groundfish by Offshore Vessels at Nova Scotia Ports, by George Sullivan, Statistical Series No. 4, 8 p., illus., processed. Fisheries Research Board of Canada, Atlantic Biological Station, St. Andrews, N. B., October 1953. This circular, the fourth in a series, presents data for fresh groundfish landings by offshore vessels at Nova Scotia ports for the year 1950. Statistics of catch by species and size are recorded by months in relation to fishing method and fishing effort. Catch and effort statistics for part of the offshore fleet are listed by quarters in relation to area fished. Special reference is made to flounders with a graphic presentation of the long-term increase in total landings by all countries from the Gulf of St. Lawrence, Nova Scotia Banks, and Newfoundland Banks.

The Culture of Tilapia in Rice Paddies in Taiwan, by Tung-Pai Chen, Fisheries Series: No. 2, 32 p., illus., printed in English. Chinese-American Joint Commission on Rural Reconstruction, Taipei, Taiwan, August 1953. Describes the culture of Tilapia in certain countries and its introduction into Taiwan; habits of Tilapia mossambica; culture of fish in rice paddies; and methods of paddy culture of Tilapia.

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Also discusses experiments, extension, and evaluation of results of paddy culture of Tilapia in Taiwan in 1952.

Economic Values of Salmon and Steelhead Trout in Oregon Rivers, by Wesley C. Ballaine and Seymour Fiekowsky, 61 p., printed, \$1. School of Business Administration, University of Oregon, Eugene, Ore., August 1953. This publication covers the same subject as the publication entitled Economic Values of Anadromous Fishes in Oregon Rivers reviewed in the November 1953 issue of Commercial Fisheries Review. However, it covers that subject in much greater detail. The authors point out that the earlier report "was designed to answer, as specifically as possible, questions relating to the contributions to the economy of Oregon made by salmon and steelhead sport angling and by commercial fishing for these and other anadromous species." The writers believe that another treatment of the same study which would amplify the discussions relating to the techniques used and the economic analyses involved would be of value. Accordingly, they have written this bulletin which is a revision of the earlier report given to the interim committee. The factual data remain the same, but the emphasis has been shifted.

Estimates of the economic values to Oregon of the commercial and sport fisheries for anadromous fishes are again given, but in greater detail. As in the earlier publication, income or expenditure estimates are given. In this more detailed publication the authors also present some capitalized value data which are not given in the earlier report.

--W. H. Stolting

(Florida) Summary of Florida Commercial Marine Landings for 1952, by Irving J. Cohen and Billy F. Greer, 27 p., processed. The Marine Laboratory, University of Miami, Coral Gables, Fla., September 1953. A summary of Florida's marine fish and shellfish landings for 1952 by species and by counties. Also includes a summary and comparisons of the landings and ex-vessel value of fish and shellfish for Florida's east coast and west coast. In addition to marine landings, some landings of fresh-water catfish have been summarized, but this is only a small portion of the state's commercial catch of fresh-water species. Statistical summaries of fresh-water commercial fisheries may be obtained from the Florida Game and Fresh Water Fish Commission in Tallahassee.

International Fish Journal (For the Fish Industries and Trade), no. 1, September 1953, 32 p., illus., printed, in English and Spanish, D. Kr. 25 (US\$3.60) annual subscription. International Fish Journal, 6A Urtehaven, Copenhagen-Valby, Denmark. This is the first issue of a new magazine to be published bimonthly. The publishers state that the journal is issued "...with the thought to serve international interests and to be a connecting link between the fish industries and the fish trade of all countries of the world..." English and Spanish will be the languages regularly used, but articles, texts of advertisements,

etc., may occasionally be printed in any other language or languages desired. The first issue was sent to 80 countries and territories producing, exporting, and importing fishery products.

Marine Fouling and its Prevention, prepared for Bureau of Ships, Navy Department, by Woods Hole Oceanographic Institution (Contribution No. 580), 398 p., illus., printed, United States Naval Institute, Annapolis, Maryland, 1952. This well-illustrated report presents the results of investigations from 1940-1946. Periods of war have always increased interest in the prevention of fouling, especially on naval vessels. Fouling is the results of animal and plant growths on the submerged surfaces of objects. On ships it reduces speed, increases cost of fuel, and entails losses in time and money. It is also destructive and costly to buoys, mines, nets, piping, etc. Recent progress in development of antifouling paints by the Bureau of Ships has enabled vessels to remain at sea up to 18 months with practically no loss of efficiency and with no increased costs due to fouling, has decreased the fuel consumption of the fleet by 10 percent, reduced the number of tankers needed to service the fleet, and reduced corrosion on ship's hulls. The essential remedy is to prevent the growth of the organisms. Studies have revealed that about 2,000 species of plants and animals are involved in fouling. Barnacles, tunicates, hydroids, marine plants, and bryozoa are among the chief offenders. Water temperature seems to be the principal natural factor in the growth and reproduction of fouling species, which is seasonal in many parts of the world. The history of attempts to prevent fouling dates back to the fourth century B.C., when the ancient Phoenicians, Carthaginians, and Greeks, among others, used various liquids and compounds, and possibly copper, on their ship's bottoms. Lead sheathing was also an early preventive. However, it was not until the late 18th Century that copper sheathing became the first antifouling surface to receive general recognition and use. Introduction of iron-hulled ships necessitated the discontinuance of copper because of the corrosion of the iron by the copper, and eventually lead to the search for effective antifouling paints. Necessary qualities for effective antifouling paints include durability, adhesion, smoothness, and ease of application in addition to the ability to prevent attachment or growth of fouling organisms. Tests of antifouling paints are carried out in numerous field stations, as well as in the laboratory, and these techniques are described and illustrated. In addition to the chapters on the effects of fouling, the principal fouling organisms, the history of fouling prevention, the design of antifouling paints and their testing, the report contains an entire section on the biology of fouling, and chapters on such technical aspects as ship resistance, invention of protective devices, factors influencing attachment and adherence of fouling organisms, prevention of fouling with toxics, characteristics of antifouling coatings, fouling of metallic surfaces, and the interaction of antifouling paints and steel. The report should be of interest to vessel owners and operators, naval architects and engineers, paint

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manufacturers, and various individuals or groups involved in the upkeep of ships and other underwater surfaces.

--D. E. Powell

(Maryland) Summary of Maryland Laws Relating to Plants and Animals, by William H. Bayliff and Ruvette Stanis Morton, Bulletin 5, 40 p., illus., processed, 30 cents. Board of Natural Resources, State Office Bldg., Annapolis, Md., June 1, 1953. A brief summary of the laws which apply to plants, animals, and fish of Maryland, and the reason for each law. Describes specifically the laws which apply to fish in tidal waters, fish in non-tidal waters, oysters, clams, terrapin (turtles), and frogs.

(New Zealand) Marine Department Annual Report for the Year 1952-53, 53 p., printed. Marine Department, Wellington, New Zealand, 1953. The first section of this report covers New Zealand's registration of vessels; vessel survey data; a discussion of navigational aids and safety measures in New Zealand ports; and a statement on the inspection of boilers, lifts, and cranes. The second section covers New Zealand's fisheries for the calendar year 1952. Total production figures and comparative data are given by species and by port, including information on number of vessels and personnel, and methods of capture. Included are statistics on fish-liver oil production, whaling, oysters, toheroa (a marine bivalve), mussels, whitebait, and quinnat salmon. Fresh-water fisheries, fresh-water fishery research, marine fishery research, and foreign trade in fishery products are also reported upon.

"Poisonous Fishes and Fish Poisoning," by Bruce W. Halstead, article, Research Reviews, November 1953, pp. 23-25. Office of Naval Research, Department of the Navy, Washington, D. C. Poisonous fishes, widely distributed throughout all warm seas, are particularly numerous around certain island areas in the tropical Pacific. According to reports received from the Japanese, more than 400 of their military personnel succumbed to fish poisoning in Micronesia during World War II. It has been estimated that there are about 300 species of toxic fishes in the central Pacific Ocean. Among the total poisonous fish population of the world, this number is undoubtedly considerably higher.

Apparently fishes become toxic as a result of their feeding habits. Hence any reef or shore fish is potentially poisonous if captured in an endemic area. Fishes commonly found to be poisonous are such species as: red snapper, pompano, barracuda, surgeonfish, goatfish, moray eels, grouper, sea bass, puffers, triggerfish, trunkfish, etc. A commercially valuable species in one area may be deadly poisonous in another. Puffers (also known as globefish, swellfish, or blowfish) are usually extremely toxic. Ingestion of an ounce of the liver or flesh of some puffers has been known to kill a man within 17 to 20 minutes. In general, the visceral organs--the liver, intestines, and roe--of a fish are more likely to be toxic than the musculature and should never be eaten.

The chemical and pharmacological properties of most fish poisons are unknown. Puffer poison, in its purified state, is a white hygroscopic powder, readily soluble in water and insoluble in the ordinary organic solvents. The exact chemical structure and source of the poison are still unknown. Moreover, it is not known whether the poisons found in such fishes as snapper, grouper, moray eel, etc., are related to puffer poison, or whether they are a different compound.

Most fish poisons (exclusive of puffer poison) appear to have a composite physiological action on humans. Many of the symptoms are similar in nature to those produced by compounds such as aconitine, muscarine and curare. Whether or not ordinary fish toxins are true alkaloids remains to be seen. These fish toxins are water soluble and relatively heat stable. Ordinary cooking procedures do not destroy or appreciably alter the virulence of the poison. Also, the state of freshness of the fish has no bearing on the production or the virulence of the toxin, since putrefaction is not a contributing factor in this disease.

Native peoples have numerous methods by which they attempt to distinguish a poisonous fish from an edible one. Methods involving silver coins, color of fish, condition of the gills, position of the scales--and so on, ad infinitum--are based upon local superstition and not scientific fact. You cannot detect a poisonous fish by its appearance. Moreover, there is no known simple chemical test whereby you can determine the edibility of a fish. The most reliable methods involve the preparation of tissue extracts which are injected intraperitoneally into mice.

Proceedings of the Gulf and Caribbean Fisheries Institute, Fifth Annual Session, Miami Beach, November 1952, 174 p., illus., printed, \$1. The Gulf and Caribbean Fisheries Institute, The Marine Laboratory, University of Miami, Coral Gables, Fla., April 1953. Contains all of the papers presented at the fifth annual session of the Institute. At the Commercial Fisheries Session, the papers presented dealt with the outlook for the menhaden industry of the Atlantic Coast; an outline of the menhaden industry; some technological aspects of menhaden products; tomorrow's byproducts; "quality control" in the fisheries; and the economic effect of the importation of fishery products on U. S. standards. Papers for the Technology and Exploratory Fishing Session discussed exploratory fishing in Bermuda waters; shrimp exploration of the M/V Antillas; problems of exploitation of tuna in the Gulf and Caribbean; some practical aspects of electric fishing in the sea; holding fresh shrimp in refrigerated sea water; and practical aspects of shrimp freezing. Subjects of the papers presented at the Economic Session included: fisheries in the Netherlands Antilles; some preliminary observations relative to a study of the marketing problem of the Florida fisheries; survey of household consumer preferences for fish and shellfish with particular emphasis on the southern region; what determines fish prices and an approach to the

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problem; and the importance of the "exempt truck" to the fisheries industry. Papers for the Shellfisheries Session discussed bacteriological standards for oysters grown in a semitropical climate; importance of local environment in oyster growth; effects of dredging operations upon shell and shellfish; the vertical distribution of setting of oysters in North Carolina; some experiments in the production and transplanting of South Carolina seed oysters to certain waters of the Chesapeake area; quantitative measurement of effect on oysters of disease caused by "Dermocystidium marinum;" distribution of oyster larvae in relation to hydrographic conditions; and present biological research on oysters. Subjects of the papers presented at the Caribbean and General Session included: a suggested reorganization of the Florida marine fisheries laws; distribution of fishery resources in relation to hydrographic conditions in North Carolina estuaries; computed ocean currents in the Gulf of Mexico; proposed new regulations for the northwest Florida mullet fishery; and a review of the Caribbean Fisheries Conference held in Trinidad in March 1952. The Summary of Sessions presents discussions on the problems of the commercial fishing industry; trends in exploratory fishing and technological research; and the emphasis in oyster research in past years. An appendix includes a brief review of the work of the Atlantic States Marine Fisheries Commission; activities of the Gulf States Marine Fisheries Commission for October 15, 1951-October 15, 1952; a summary of significant economic trends in the Gulf and Caribbean fisheries; and a summary of Caribbean and general sessions.

Rail Freight Rates and the Fish and Seafood Industry, by J. W. Bourke, 39 p., processed. Production and Marketing Administration, U. S. Department of Agriculture, Washington 25, D. C., October 1953. This publication contains detailed information about carload railroad freight rates for the transportation of fresh, frozen, and canned fishery products. It shows the rates for these products and can be used to form the basis of intensive study of the railroad carload freight-rate structure for these products. Various rate groups and mileage distances under which these products are shipped are shown. It also contains rates for other food products, such as eggs, cheese, poultry, meats, etc., with which the fresh, frozen, and canned fishery products rates can be compared.

The rates shown in the study are those prevailing on July 1, 1953, and include the full increase authorized by the Interstate Commerce Commission in Ex Parte Number 175 (Increased Freight Rates and Charges-1951). In addition, supplemental data with respect to records of receipts of fishery products at Chicago, Illinois, and New York, New York, by various modes of transport are shown. These data were taken from the U. S. Fish and Wildlife Service's Fishery Market News Service records. Population data from the Bureau of Census and Interstate Commerce Commission freight commodity statistics are also shown.

--W. H. Stolting

(Colony of Singapore) Report of the Fisheries Department, 1952, by T. W. Burdon, 95 p., illus., printed, British Malaya \$1 (approximately 30 U.S. cents). Government Publications Bureau, General Post Office, Fullerton Building, Singapore, 1953. Contains a general review of the fishing industry of Singapore during 1952. Discusses the availability of fresh fish; inventory of the fishing industry (number of fishermen, licensed fishing boats, details of power-propelled fishing boats, licensed fishing gear, and pond cultivation of fish); transportation and marketing; fresh-fish prices; prices of materials used to produce fishing gear; trade in salted and dried fish; and trade in other marine products.

A Study of the Lake Trout, SALVELINUS NAMAYCUSH, in Two Algonquin Park, Ontario, Lakes, by Nigel V. Martin, 27 p., illus., printed. (Reprint from Transactions of the American Fisheries Society, vol. 81 (1951), pp. 111-137.) Fisheries Research Section, Department of Lands and Forests, Southern Research Station, Maple, Ontario, 1952. A study was made of the depth distribution, feeding, and growth of the lake trout (Salvelinus namaycush) in Lake Louisa and Redrock Lake, Ontario, in 1947. In the spring the trout were widely dispersed in Redrock Lake but as surface waters warmed to 14° or 15° C. (57°-59° F.) in mid-June they moved into deeper waters. During the summer months the Redrock lake trout concentrated in the lower thermocline and upper hypolimnion while those in Lake Louisa were more widespread. Both populations frequently penetrated the 15- to 20-foot zone in mid-summer up to the 18° C. (64° F.) isotherm. In each lake the smaller trout had a deeper distribution. In both Redrock and Louisa the food was varied in the spring months. Insects, particularly the immature stages, were eaten extensively at this time. During the summer the Louisa trout fed on plankton as there was no other available food. The Redrock trout fed almost exclusively on the yellow perch, Perca flavescens, the distribution of these two species overlapping in the 12° to 18° C. (54°-64° F.) zone. In both lakes a large number of empty stomachs occurred in the early fall. Small trout ate more plankton and insects and less fish than did the larger trout. Food competition and cannibalism were of little importance. Lake Louisa trout grow more slowly than those in Redrock Lake. This difference is correlated with the difference in feeding habits. The Lake Louisa fish have a growth rate similar to other plankton-feeding populations in Algonquin Park while the Redrock trout have a growth like that of piscivorous populations. The lake trout of both lakes grow slowly as compared with many growth rates reported for the species. Maturity is reached at age V in both lakes. Variation in year class strength is evident in both Redrock and Louisa lakes.

The 1944 Year Class of Lake Trout in South Bay, Lake Huron, by F. E. J. Fry, 15 p., illus., printed. (Reprint from Transactions of the American Fisheries Society, vol. 82 (1952), pp. 178-192.) Fisheries Research Section, Department of Lands and Forests, Southern Re-

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search Station, Maple, Ontario, 1953. The 1944 year class of lake trout (*Salvelinus namaycush*) supported a significant sport fishery in South Bay, Manitoulin Island, during 1948 to 1950, inclusive, at a time when that species was absent in any numbers in adjoining Lake Huron. The evidence from tagging indicates that this population of lake trout in South Bay was a resident one. These trout reached a length of 20 inches and a weight of 4 pounds as age-group VI. Growth data based on scale reading are presented for age-groups II to VII and confirmed by observations on marked fish. Estimates of the size of the lake trout populations and of the survival of groups marked in different years were made by fin clipping and tagging through the years 1948 to 1951. The population was estimated to consist of some 21,000 fish in 1948 and to have fallen to 600 fish in 1951, the highest mortality rates coming after 1949. Only 3,124 lake trout were recorded as removed by angling during that period and it is believed that the creel census covered more than 90 percent of the fishery. It is suggested that the sea lamprey (*Petromyzon marinus*) was responsible for the death of most of the remainder of the population and evidence is presented to show that the incidence of scarred fish greatly increased in the years when the estimates of mortality were also high.

(Union of South Africa) Food Industries of South Africa Year Book and Buyer's Guide 1953, 183 p., illus., printed, £2 (US\$5.60). United Trade Press S.A. (Pty.) Limited, Ardis House, 16 Bree Street, Cape Town, South Africa, 1953. This is the first edition of the Food Industries Year Book. Articles of particular interest in this issue are: Technical Developments in the South African Canning Industry; Developments in the Technology of Food Manufacture; Spoilage in Canned Foods and Its Prevention; Dehydration and Quickfreezing for Food Preservation; and The Significance of pH in the Manufacture of Food. Also contains a report on scientific and industrial research in South Africa; a selection of mathematical, physical, chemical, and processing data used in the food industries; a section on the development of modern packaging in South Africa; and a buyer's guide. The buyer's guide gives brand names, a classified list of supplies, external trade representatives of the

Union, and addresses of various firms connected with the food industries. Fish canning, fish spoilage, the fishing industry, and fishery products, are mentioned in several sections although there is no one section devoted entirely to fishery products.

"A Whale-Marking Expedition," by N. A. Mackintosh, article, Nature, November 21, 1953, vol. 172, no. 4386, pp. 933-4, printed. Macmillan & Co., Ltd., St. Martin's Street, London, W.C. 2, England. Describes a whale-marking expedition in the Antarctic, organized jointly by the National Institute of Oceanography and the Norwegian State Institute for Whale Research. In the summer of 1953 a number of whaling companies (British, Norwegian, Dutch, and South African) agreed to share the cost of about a month's marking by the modern whale catcher Enern, owned by a Norwegian company. The Enern was expected to reach the edge of the pack-ice during the latter part of November, and to mark whales between the Greenwich meridian and South Georgia in the Dependencies of the Falkland Islands. The main object of this expedition is simply to increase the number of marked whales at large, and hence the number of marks recovered; but it is also intended to test the value of certain modifications to the standard "Discovery" mark, which have been devised to improve their effectiveness, and to estimate the chances of marks being overlooked when the carcasses are treated at the factories. "It is hoped," states the author, "that with improved efficiency in the recovery of marks, the ratio of marks recovered to marks fired will come nearer to the ratio of total whales killed to total whales in the population. The latter ratio is at present unknown, and it is naturally of great importance. Large numbers of recovered marks are needed, not only to make the ratio of recovered marks more significant but also for studies of migration, of the rate of dispersal or interchange between the populations of different regions, and of the age and rate of growth of whales. Of course, a single new marking voyage will not dispose of all these problems, but it is hoped that it will lead at least to some progress in the investigation of this interesting mammalian population and assist the work of the International Whaling Commission."



CRABS SHRINK QUICKLY DURING LIVE STORAGE

South African experiments have shown that crabs lose weight quickly during live storage, especially at high temperatures. The loss after 3 days at 15° C. (59° F.) was 25 to 32 percent, and after 4 days as much as 40 to 50 percent.

--World Fisheries Abstracts, March-April 1953.

FISHERIES OF THE UNITED STATES AND ALASKA, 1951

Fisheries of the United States and Alaska, 1951, C.F.S. No. 915, is a report on the surveys covering the 1951 catch of fish and shellfish in all areas except the Mississippi River and its tributaries. Data on the operating units were also collected in each of the areas canvassed, except in the Great Lakes States.

The catch of fishery products in all sections of the United States and Alaska during 1951 totaled approximately 4.4 billion pounds, valued at \$361 million to the fishermen. This represented a decrease of 10 percent in quantity, but an increase of 5 percent in value as compared with the landings of the previous year.

The following table, which contains recorded production for the areas in which surveys were made, and estimates for other regions, indicates the trend of the yield and value of the United States and Alaska catch during recent years.

Year	Pounds	Value to the fishermen	Average price per pound
1940	4,059,524,000	\$98,957,000	2.44¢
1941	4,900,000,000	129,000,000	2.63
1942	3,876,524,000	170,338,000	4.39
1943	4,202,000,000	204,000,000	4.85
1944	4,500,000,000	213,000,000	4.73
1945	4,575,500,000	269,900,000	5.90
1946	4,456,000,000	310,000,000	6.96
1947	4,344,000,000	307,600,000	7.08
1948	4,575,000,000	367,000,000	8.02
1949	4,796,000,000	339,000,000	7.06
1950	4,884,909,000	343,876,000	7.04
1951	4,414,045,000	360,996,000	8.18

Copies of C.F.S. No. 915 are available free upon request from the Division of Information, U. S. Fish and Wildlife Service, Washington 25, D. C.

DO YOU KNOW THAT:

In the commercial fisheries of the United States and Alaska, Pacific salmon are second only to tunas in economic value.

Salmon are rich in proteins, fats, and vitamins, and especially good for canning. Bulk of the catch is canned, though large quantities are sold on the fresh-fish markets, and considerable amounts are frozen, pickled, and smoked.

Adult salmon stop feeding when they enter fresh water. Stored fats provide sustenance for developing eggs and milt, and for energy for the upstream journey.

When salmon enter the rivers, their flesh is firm; when they are ready to spawn, the flesh is soft and undesirable.

Adult Pacific salmon can leap vertically 8 to 10 feet if water conditions are ideal, but such heights usually will block passage upstream.

For the sportsman, important salmon are the king or chinook and the silver or coho. They may be caught by trolling, spinning, or casting.