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Fishes

COMMERCIAL FISHERIES REVIEW



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COMMERCIAL FISHERIES REVIEW



A REVIEW OF DEVELOPMENTS AND NEWS OF THE FISHERY INDUSTRIES
PREPARED IN THE BRANCH OF COMMERCIAL FISHERIES

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THE FISH AND WILDLIFE SERVICE--TEN YEARS OF PROGRESS

By Albert M. Day*

HOOVER COMMITTEE RECOMMENDATIONS ON FISH AND WILDLIFE SERVICE

It is hardly proper for me as Director of the Fish and Wildlife Service, one of the agencies that is proposed for reorganization by the Hoover Commission,^{1/} to discuss whether that Commission's recommendations are sound and should be adopted. Rather, I prefer to make some general observations about the background of the Hoover Commission Report on this particular subject and explain what the Fish and Wildlife Service is attempting to do to aid in the broad development and utilization of the highly important fishery resources of this Nation.

In the first instance, it should be well understood that the final recommendations of the Hoover Commission resulted only after a great deal of conflicting and diverse testimony on this important subject had been given careful consideration. The whole problem is complex because fishery management is complex. It must always be woven into the intricate patterns of land and water uses and human needs in our expanding civilization. This fact is well emphasized when we recognize that the three different task forces studying the organization of the Government came out with three different recommendations when it came to fish and wildlife matters.



ALBERT M. DAY

The report of one committee would have dispersed the conservation agencies through the Government and would have put the Fish and Wildlife Service in a Public Works Department. The Agricultural Committee recommended a transfer to Agriculture of all major public land administration activities and functions, including the Fish and Wildlife Service. The task force on Natural Resources proposed to abolish the Interior Department and create in its place a Department of Natural Resources, among which would have been a division of the present Fish and Wildlife Service into a Fisheries Service and a Wildlife Service, each separately administered. The final recommendations of the entire Commission were that only the commercial fisheries activities of the Service should be transferred to the Department of Commerce. As evidence of the diversity of opinion among the members

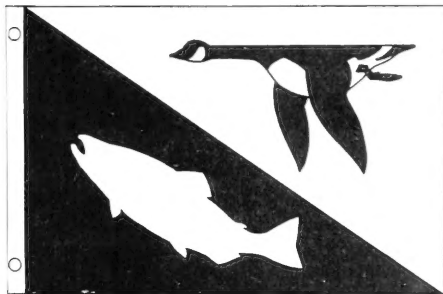
* Director, Fish and Wildlife Service, U. S. Department of the Interior.

^{1/}See Commercial Fisheries Review, April 1949, pp. 21-4.

Note: This article was adapted from an address ("Ten Years of Fishery Activities Under the Fish and Wildlife Service") delivered by the author at the 43rd Annual Convention of the National Cannery Association, Atlantic City, N. J., January 28, 1950.

of the Commission, it should be noted that dissents to this proposal were expressed by Vice-Chairman Dean Acheson and Commissioners James Forrestal, James K. Pollack, and James H. Rowe, Jr.

With this divergence of opinion among the members of the Hoover Commission and the various task forces as to the proper place in Government for the Federal



FLAG OF THE FISH AND WILDLIFE SERVICE.

responsibility for fishery activities, it is not surprising that the resultant reactions of the public also have been mixed. The American Fisheries Society, organized in 1872 and now the oldest scientific biological organization in the United States, at a meeting in Winnipeg, Canada, last September, passed a resolution endorsing the task force recommendations of the "Report on Natural Resources," with the exception that the Society opposed that portion of the report which recommends the separation of fisheries administration from wildlife administration.

Likewise, a meeting of the International Association of Game, Fish, and Conservation Commissioners, also meeting in Winnipeg, in September, passed a resolution endorsing the general purposes of the Natural Resources task force report, but also stated that they opposed the recommendation of the report which would separate fisheries from wildlife in the present Fish and Wildlife Service. Within the past few weeks, the Executive Officers and the Legislative Committee of the International Association again reaffirmed to Secretary Chapman their strong opposition to this proposal. The International Association is made up of representatives of all of the State conservation departments in the country, the great bulk of which administers both fisheries and wildlife in a single organization of the State. In fact, of the 48 States, only 8 have separate departments devoted to commercial fisheries. In the other 40, commercial and sport fishery and wildlife management activities are all in the same department. The same, of course, is true, in Alaska.



SPENCER F. BAIRD, ONE OF THE THREE VESSELS WHICH HAS RECENTLY COMPLETED A FIVE-YEAR STUDY OF THE SOUTH PACIFIC FISHERIES IN CONNECTION WITH THE REHABILITATION OF THE PHILIPPINES.

To the contrary, the Pacific Fisheries Conference, composed largely of members of industry operating on the West Coast and in Alaska, by action taken at a recent meeting in California, adopted the following resolution, and I quote:

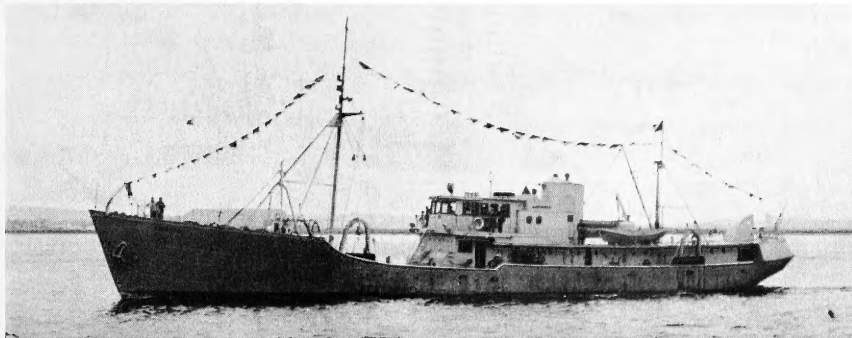
"Whereas, the consolidation by Executive Order of the former Bureau of Fisheries and the former Bureau of Biological Survey into one Bureau in the Department of the Interior, called the Fish and Wildlife Service, has been demonstrated as unsound, illogical and ineffective, and has not served to further the sound, efficient administration of fisheries, and whereas the Commission for the reorganization of the Executive Branch of the Government, commonly referred to as the Hoover Commission, recommended that the administration of fisheries should be separated from the administration of wildlife: Now, Therefore,

"Be it resolved, that the Conference heartily endorses the recommendation that such separation should be made and also urges that the re-established Division of Fisheries should be transferred in toto to the Department of Commerce or to a new Department of Natural Resources if such a Department should be created and now, in whichever Department placed, fisheries should be under direct charge of an officer of the rank of Assistant Secretary."

It is to the assertion of the Pacific Fisheries Conference that the present organization has been demonstrated as "unsound, illogical, ineffective, and has not served to further the sound, efficient administration of fisheries" that I wish to direct my remarks today. I challenge that statement as incorrect and I call upon the drafters of the resolution to furnish proof of their assertions. The present organization is sound, it is logical, and it is effective. In the ten years it has been in effect, it has done more to further the interests of fishery management, conservation, and utilization than was accomplished in the three or four decades previously.

CONSOLIDATION OF BUREAU OF FISHERIES AND BUREAU OF BIOLOGICAL SURVEY

Memories about public affairs and previous events are short, and I feel that many are unfamiliar with the background and do not know the original reasons for the consolidation of the Bureau of Fisheries and the Bureau of Biological Survey. Such moves are seldom made without good reasons, as was the case in this instance. At the time of the merger in 1940, both of these predecessor agencies were weak and to a considerable extent were discredited in the public mind. The Biological

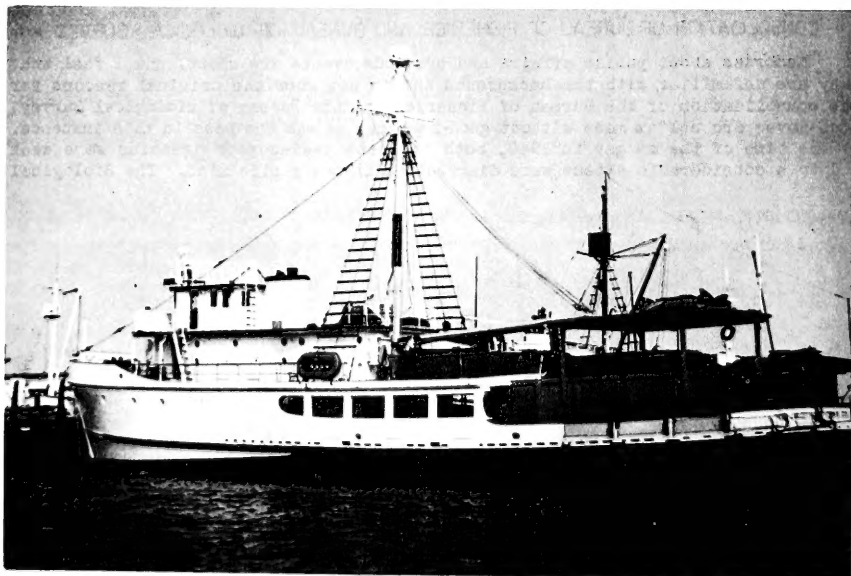


ALBATROSS III, A SERVICE RESEARCH VESSEL CARRYING ON INVESTIGATIONS IN THE ATLANTIC OCEAN FROM THE GRAND BANKS TO THE CAROLINAS.

Survey, which I joined in 1918 and in which, together with the present Fish and Wildlife Service, I have served continuously ever since, had suffered from weak administration for several years prior to the merger.

Waterfowl, coming under Federal regulation under a treaty with Canada, had been consistently declining over a period of years. The only remedy that the Bureau seemed to be able to prescribe was ever-shortened seasons and ever-smaller bag limits. Because of resultant public dissatisfaction and clamor, President Roosevelt appointed a special committee of citizens to study the problem and to recommend remedies. "Ding" Darling, the famous cartoonist, prominent in conservation circles in the Midwest, served on this special study committee. It recommended a positive action program--the acquisition and restoration of marshes along with severe restrictions on the take by hunters. Darling was induced to serve as Chief of the Biological Survey, an organization that had been virtually leaderless since the disability retirement of the previous bureau chief. He remained less than two years and was succeeded by Dr. Ira N. Gabrielson, an outstanding scientist and able administrator, but in 1940, when the merger came about, the public had not yet regained confidence in the efficiency of the administration of the Biological Survey.

A similar situation existed in the Bureau of Fisheries. It was a small organization and the morale of its employees, as well as the confidence of the public, suffered severely because of the quality of its leadership. Controversy raged, particularly in the Alaska fisheries field, where the Bureau then had, and still



THE HENRY O'MALLEY, ONE OF THE THREE SERVICE VESSELS DOING EXPLORATORY FISHING IN THE WATERS OF THE SOUTH PACIFIC.

has as the Fish and Wildlife Service, sole regulatory authority over the extremely valuable salmon and herring fisheries. We are still trying to live down some of the things that happened in Alaska in those days.

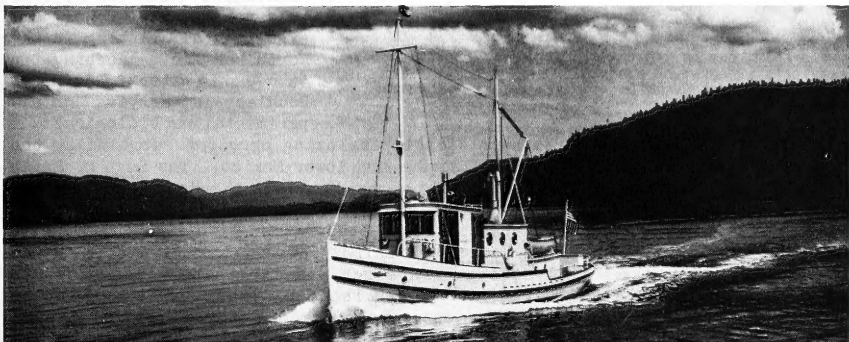
Government reorganizers concluded that there might be a strengthening of the administration of both fisheries and wildlife programs if the two closely related small bureaus were merged into one larger group. This has been the trend of government for many years and, with the exception of the recommendations for the transfer of the commercial fishery activities to the Department of Commerce, was also the philosophy of the Hoover Commission.

When the merger of the Biological Survey and the Bureau of Fisheries came about in 1940, the Biological Survey was on its way back into public esteem under the leadership of Dr. Gabrielson. It was, therefore, logical that he should become the first Director of the new Fish and Wildlife Service. As a minor employee in Washington at the time of this "shotgun wedding" of the two Bureaus, with Secretary Ickes, incidentally, holding the old double-barreled gun on us, I can personally testify that it was an unpopular move with the employees of both Bureaus, particularly those who revere tradition and the "good old days" of the past. I also know that the proposal to return to those "good old days" does not fall upon completely unsympathetic ears with some of the present organization. It is difficult to understand their philosophy, because I cannot think of a single individual who has not personally benefited in rank and salary by the creation of a larger and more important agency. With some, tradition is truly a potent factor.

But, of more importance to you and the other people we are paid to serve, did the mandatory trip to the altar pay off? Let us merely check the records.

APPROPRIATIONS FOR FISHERY WORK

First, let's review the appropriations for fishery work for the past 20 years--the ten years of operations under the present Fish and Wildlife Service and the ten years immediately preceding. Granted that during recent years, the costs of operations have risen and appropriations have been more liberal to take care of these factors, appropriation figures are probably still the best over-all yardstick to measure the services the Government gives its citizens in matters pertaining to the fisheries.



A FISH AND WILDLIFE SERVICE PATROL BOAT (BLUE WING) IN ALASKA.

In 1930, Federal fishery appropriations amounted to \$2,498,550; in 1940, \$2,421,075. That represents a decrease during the 10-year period of almost \$100,000. The average for that period was approximately \$2,000,000 per year. The fishery appropriations for the fiscal year 1950 amount to \$10,975,251. Of even greater significance, the Budget which the President sent to the Congress recently and which Fish and Wildlife Service representatives justified before the Appropriations Committees several weeks ago carries proposed appropriations for fishery items amounting to approximately \$12,000,000 for the fiscal year beginning next July 1.

To be more specific as to items in which you are most interested, the work of the Branch of Commercial Fisheries received \$229,540 in 1940; \$668,500 in 1950. The Branch of Fishery Biology received \$390,835 in 1940 as compared with \$1,546,000 in 1950; Alaska Fisheries, including the Pribilofs, from \$516,460 to \$1,480,100 in those 10 years. And the wildlife appropriations have likewise increased at the same time. In 1940, they amounted to \$6,149,343, almost three times the then appropriated sums for fishery activities. For 1950, they amounted to \$16,502,049. This sum included Duck Stamp and Pittman-Robertson revenues.

EXPLORATORY FISHERIES RESEARCH

At the time of the merger, not a single research or exploratory vessel was owned and operated by the Bureau of Fisheries. Now, the Albatross III is carrying on investigations extending from the Grand Banks to the Carolinas on the Atlantic Coast. Within recent months, two vessels, the Oregon and Alaska, have been acquired through special legislation and appropriations and are now stationed in the Gulf of Mexico. One will do exploratory fishing and the other will do biological research. A new vessel, the John N. Cobb, was commissioned at Seattle, Washington, in January 1950 to carry out exploratory and experimental fishing in the North Pacific, reaching far into Arctic waters. The Black Douglas is carrying on experimental and biological work



THE OREGON, ONE OF TWO VESSELS RECENTLY ACQUIRED FOR THE SERVICE'S EXPLORATION PROGRAM IN THE GULF OF MEXICO, IS NOW UNDERGOING CONVERSION AT PASCAGOULA, MISS.

in an effort to find answers to some of the perplexing problems surrounding the pilchard fishery off the coast of California and lower Mexico. The Hugh M. Smith is conducting biological and oceanographic research, while the Henry O'Malley and the John R. Manning are doing exploratory fishing in the waters of the South Pacific in a program that has been developed in close cooperation with the tuna fishing industry of the West Coast. The Spencer F. Baird, the Theodore N. Gill, and the David Starr Jordan, three well-equipped research and exploratory vessels, are now completing a five-year study of the South Pacific fisheries in connection with the rehabilitation of the Philippines. It is planned that the Theodore N. Gill will soon be stationed in the Great Lakes to undertake the difficult study of the decline in that great fishery, made possible by special legislation and appro-

priations passed by this Congress. And that adds up to 11 large vessels compared with not a single one at the time of the merger.

In the entire previous history of the Bureau of Fisheries, reaching back to 1871, in fact, there were never at one time more than three ships doing that sort of work and that occurred for only two years. None had been in service since 1932--eight years before the merger.

FISHERIES LABORATORIES REHABILITATED

Ten years ago, the famous laboratory at Woods Hole, steeped in traditions of fishery research and oceanography since the days of Spencer Fullerton Baird, had been virtually abandoned. Within the past two years, we have rehabilitated the station, have transferred the scientific staff of the New England area there for headquarters, and the Albatross III is now berthed at Woods Hole.

The Laboratory at Beaufort, North Carolina, is being reconditioned and important studies in cooperation with the Atomic Energy Commission are being conducted at that point.

A new laboratory is being constructed in Hawaii and the technology laboratory at Ketchikan, Alaska, has within recent months been enlarged and expanded. During that decade, a small laboratory was constructed in Puerto Rico, and fisheries research in the Caribbean area was carried on. In addition, the research stations at College Park, Maryland; Milford, Connecticut; Seattle, Washington; and Pensacola, Florida; have been expanded.

SERVICE PARTICIPATES IN INTERNATIONAL FISHERIES MATTERS

Never in the 80 years of Government participation in matters pertaining to the fisheries has there been such great activity in the international field as there has been during the past few years. That is perfectly logical because of the increasing influence of the United States in world affairs. I should like to cite some of the more recent developments, however, as proof that fishery matters are not suffering at the hand of the present organization.

The Northwest Atlantic Fisheries Convention, concluded just a year ago and ratified by the President last September 1, brings 11 Nations having common interests in the North Atlantic fishing grounds under Treaty arrangements for the first time in history. The fisheries of this great area have been the battleground for some exceedingly tough international problems that date back to days prior to American independence.

A Convention between the United States and Mexico for the establishment of an International Commission for the Scientific Investigation of Tuna was signed at Mexico City in January 1949, and has been ratified by the President. A similar Convention between the United States and Costa Rica for the establishment of the Inter-American Tropical Tuna Commission was signed at Washington in May 1949, and was ratified by the President on September 1, 1949.

Three years ago, 22 nations, including Canada and the United States, met in Washington and arrived at an international agreement which established the International Whaling Commission, empowered to conduct investigations and regulate whaling throughout all the marine waters of the globe.

In 1946, a Treaty was negotiated with Canada for the protection and management of the Great Lakes fisheries. This, so far, has been the least effective of the Treaty programs because of opposition of one or two States surrounding the Great Lakes.

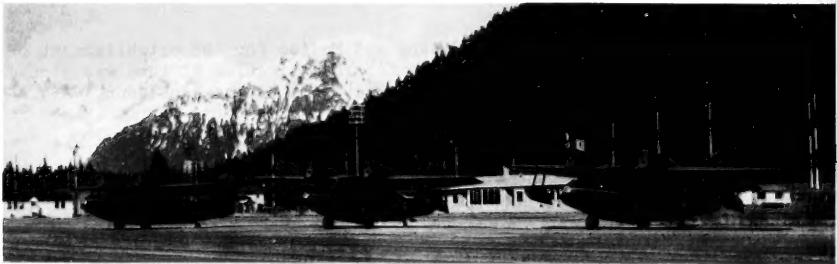
I have mentioned some of the more recent developments, but I should record also the continuing activities in connection with the Sockeye Salmon Commission which came into being in 1936, and which has now assumed regulatory powers after the first ten years of investigation. This has included the construction of the \$2,000,000 fishway at Hells Gate on the Fraser River. I serve as one of the American members of this Commission. Assistant Director James is a member of the Halibut Commission, established in 1937, which has done a remarkable job of restoring the stocks of halibut along the stretches of the North Pacific Coast.

ALASKA FISHERIES MANAGEMENT

In the field of management of the fisheries of Alaska, I am proud of the progress that is being made. For the first time in history, we are now developing a closely integrated program, using all available manpower and equipment for enforcing both the fishery and wildlife laws and regulations in a joint operation. Enforcement of the fishery regulations is now vastly improved because of the use of Alaska game agents as well as about a dozen transferred from the States each season.

During the war years, the fishing regulations were probably more liberal than they should have been. This was due to the pressure for food for our own people and our allies. Many of our trained personnel were in the Army and Navy and many Service ships were devoted to military uses. Inadequate observations and patrol, together with overfishing, created a serious depletion in the Alaska fishery. I am happy to say that it looks as though the situation is improving rapidly. Following severe restrictions during the past three years, the South-eastern Alaska pack of pink salmon responded to the point where the pack last year not only returned to but also exceeded the previous normal 20-year average.

Two large vessels have recently been secured by transfer from the Navy to augment our Alaskan fleet, and several smaller ships have been built as a result of new appropriations by the Congress. In the Service's combined Alaskan operations, there are now owned and operated 18 vessels ranging from 40 feet to 150 feet in size, with 11 additional patrol vessels ranging from 30 to 40 feet. There are also about 100 speed boats used in fishery patrol. Within the past three months, the Service has taken over from the Army one of the best equipped



THREE SERVICE PATROL AIRCRAFT USED IN ALASKA. SHOWS PLANES AT JUNEAU AIRPORT.

marine shops on the Pacific Coast. It is located at Juneau and is valued, at least, at \$500,000. Surplus planes have been made available since the end of the war, and we now have a very excellent fleet of 20 planes which services both fishery and game agents in the Territory. Congress, last year, appropriated \$250,000 for a new airplane hangar and shop at Anchorage, and as a result our facilities for observation and patrol will be much improved in future years. Moreover, Alaska regulations are now being made and enforced without fear or favor.

CORRELATION WITH OTHER GOVERNMENT AGENCIES

Ten years ago, there were no effective means of correlating the needs of fish and wildlife with the construction programs of the Army Engineers and the Bureau of Reclamation. That is not the case today. The Fish and Wildlife Service maintains a River Basin staff whose responsibility it is to review the plans of the construction agencies while the projects are in the making. We work in close coordination with these two bureaus. Much has been done to protect and increase the fishery potentials in the reservoirs because of this service.

The relations of the Fish and Wildlife Service with the Congress and the Bureau of the Budget are excellent. The needs of both fisheries and wildlife are given sympathetic attention both as to appropriations and as to legislation. This, in my opinion, is due in large part to the fact that practically every member of the Congress has a personal interest in something that the Fish and Wildlife Service is doing. I doubt that there is another single agency of Government that has such wide interest for so many people as do the varied activities of the Fish and Wildlife Service.

SPORT FISHING AND HUNTING

Last year, there were 15½ million people who bought fishing licenses and almost 13 million who bought hunting licenses. Another 2 million bought duck stamps to hunt ducks and geese. Many probably purchased all three kinds of licenses, but yet the fact remains that approximately one out of every five people in the United States is influenced in some degree by the activities of this Service. As such, the single organization known as the Fish and Wildlife Service wields much more power and influence than either the Bureau of Fisheries or the Biological Survey ever did before or would ever do again, if they were reconstituted separately.



FISH FACTS

DO YOU KNOW . . .

That more than half of all species of vertebrates (animals with backbones) are fish . . .

--Fishery Leaflet 132

A NEW FISHERY FOR GROOVED SHRIMP IN SOUTHERN FLORIDA

By Clarence P. Idyll*

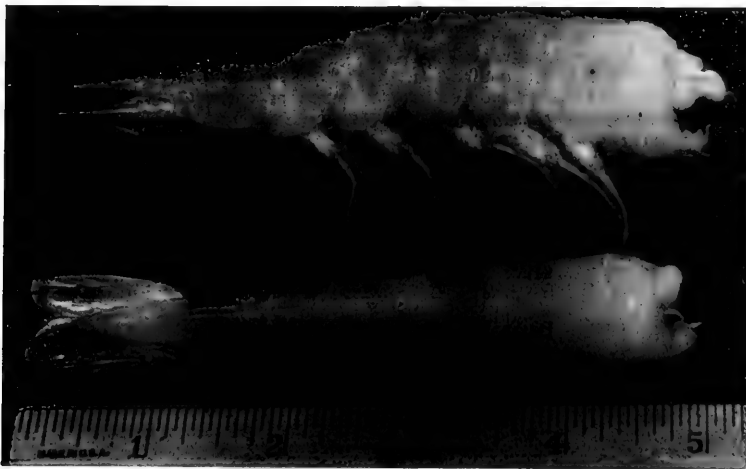
INTRODUCTION

In early February 1950, reports were received of large landings of grooved shrimp at Key West, Florida. At the request of the Florida State Board of Conservation, a preliminary investigation of this new fishery was made by the Marine Laboratory of the University of Miami. The purpose of the survey was:

- (1) To establish the taxonomic identity and size of the shrimp being caught.
- (2) To determine the location and extent of the new grounds and the type of bottom being fished.
- (3) To estimate the volume of the landings and the number of boats fishing.

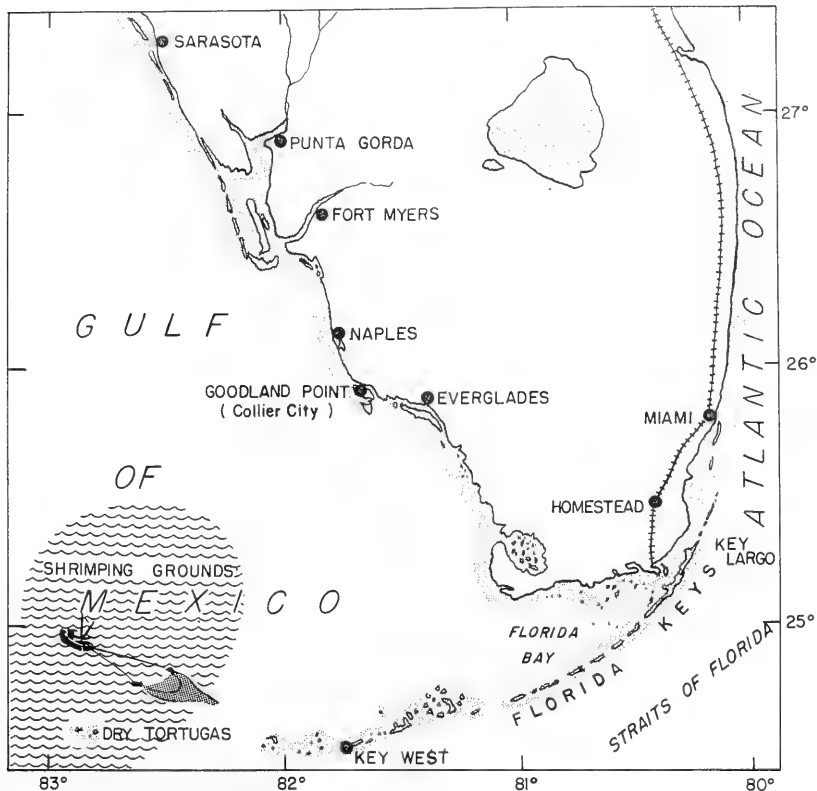
Recommendations were requested concerning the possible need of regulation of the fishery by the State of Florida. The report of this survey was submitted to the Board of Conservation on February 14 (Idyll, 1950, 1).

The present paper incorporates the material of the above report and brings the situation up-to-date concerning landings, the area fished, and other particulars.



HEADED GROOVED OR BROWN SHRIMP (PENAEUS DUORARUM), SHOWING SIDE AND TOP VIEW AND INDICATING ACTUAL SIZE. (MIAMI DAILY NEWS.)

*Research Associate, Marine Laboratory, University of Miami.



NEW GROOVED SHRIMP GROUNDS IN SOUTHERN FLORIDA ARE LOCATED NORTH OF A LINE DRAWN FROM KEY WEST TO LOGGERHEAD KEY IN THE DRY TORTUGAS GROUP. THE AREA PRESENTLY BEING FISHED EXTENDS A FEW MILES WEST OF LOGGERHEAD KEY, AND IS ABOUT 70 MILES LONG BY ABOUT 15 TO 20 MILES WIDE.

LOCATION AND EXTENT OF THE FISHING GROUNDS

The new shrimp grounds are located north of a line drawn from Key West to Loggerhead Key in the Dry Tortugas group. The area presently being fished extends a few miles west of Loggerhead Key, and is about 70 miles long by about 15 to 20 miles wide. When the fishery began, in January and early February, it was concentrated on the westerly part of the above area, near Loggerhead Key. More recently, many of the boats have begun to fish closer to Key West, some within 15 miles of the city.

A small amount of successful fishing has been done outside the area described above. One boat is reported to have made a small catch in the daytime

close to Everglades City. It appears from this that expansion of the grounds is possible and it is likely that the area fished will be extended in the future.

KIND AND DESCRIPTION OF THE SHRIMP CAUGHT

The species of shrimp being caught is Penaeus duorarum, Burkenroad. This is commonly called the grooved, "Brazilian," brown, brown-spotted, or channel shrimp. In Key West, it is called the pink or coral shrimp because of its characteristic rosy color. It is marketed as the "Golden Brazilian" and "Golden Imperial Shrimp." The color varies from nearly white to a deep pink. Newly molted individuals tend to be the lightest in color. The red or pink spot on the side, which is characteristic of the species (Burkenroad, 1949; Broad, 1949) is distinct in most freshly-caught individuals, although in a few examined it was missing. The spot fades after death, and most shrimp did not show it by the time they were shipped from Key West.

Of 131 shrimp examined aboard a trawler, 75 (57.2%) were males and 56 (42.8%) were females.

The shrimp caught are of a large size, with those landed averaging from about 26 to 31 to the pound, heads off. This size has remained the same since the fishery began. Part of the catch is discarded as being too small to sell, but the proportion of undersized individuals is not large, so that there is little waste, at present, from this source.

MARKETING OF SHRIMP

Wholesale prices asked by dealers, who usually own and outfit the boats, started out at 55 cents a pound f.o.b. docks; towards the end of February this price dropped to 45-50 cents a pound. Retail prices in some Northern markets were originally about 79-85 cents a pound, and these prices fell somewhat as the volume of landings increased.

The shrimp being caught on the new grounds are firm and of good quality. They are said to keep well on ice and may be carried for a somewhat longer time without spoiling than the white shrimp (P. setiferus). The market demand for them has been good.

FISHING CONDITIONS AND GEAR USED

The shrimp boats operating on the new Key West grounds have encountered certain difficulties associated with a strange area, night-fishing, and the type of bottom encountered. The shrimp are found on white coral sand with some mud and shell and outcroppings of live and dead coral. The latter has caused the loss of a considerable amount of gear. Some boats have torn or lost several nets, in some cases, two in a single night. These nets cost in the neighborhood of \$300 each.

Fishing has been done mostly in depths of between 15 and 25 fathoms, with the favored depths being around 18 to 20 fathoms.

Fishing is done at night, in contrast to the practice in the fishery for the common or white shrimp (P. setiferus). Some grooved shrimp are caught in the daytime, but catches at night are said to be at least three times greater. Grooved-shrimp fishing in North Carolina and Texas is done at night also. The different

behavior of the grooved shrimp as compared with that of the white shrimp, which makes this night-fishing necessary, is not fully understood.

Standard fishing practice is employed. A try net, in the form of a miniature trawl, is dragged on likely ground until concentrations of shrimp are located. Then the big trawl is put out. Try-net hauls are of about 5 to 15 minutes duration, regular hauls are of 2 to 3 hours duration. Three-hour hauls are possible in this fishery because of the comparatively small number of "trash" fish and other organisms caught with the shrimp. Three to five, usually four, hauls are made in a night.



SHRIMP BOAT UNLOADING GROOVED OR BROWN SHRIMP AT KEY WEST, FLORIDA. (MIAMI DAILY NEWS)

After sorting, the shrimp are headed aboard the vessel in most cases. Then they are iced in the hold. Five to ten tons or more of ice are carried by each boat. The boats stay out from about 3 to 7 days per trip.

At first, no boats carried sonic depth recorders, but several vessels have recently installed them and many more are expected to do so. These instruments are almost a necessity in this fishery. There are models at present on the market which operate in water up to a depth of 200 or 300 feet (33.3 to 50 fathoms) which will detect depth differences of less than two feet. The use of these should enable the boats to avoid many of the coral rocks which now cause loss of gear.

Originally all the shrimp boats were based at Key West, which is 1½ to 6 hours from the fishing grounds. During February, some boats landed their catches at Everglades City, Goodland Point (Collier City), Naples, Fort Myers, Fort Myers Beach, Punta Gorda, and Sarasota. These ports are about 7 to 16 hours running time from the fishing grounds. Shallow channels have made it difficult for the shrimp boats to land at Everglades City and Naples, but deeper channels are expected to be dredged.

The boats range from about 45 to 80 feet in length with most of them about 55 feet long. One Texas boat of over 100 feet has been fishing.

Limited ice-making facilities and lack of dock space have handicapped operations so far. Ice has been shipped by truck from Homestead and Miami. The present rapid expansion in facilities is expected to overcome these difficulties.

LANDINGS AND NUMBER OF BOATS

Except for small catches, which were the result of experimental fishing, the first landings of shrimp from the new grounds were made on January 12. January landings amounted to 25,000 pounds of headed shrimp, equivalent to about 42,000 pounds with heads on (using the standard conversion factor which calculates headed shrimp to be about 60 percent of the whole animal by weight).

In early February, the number of boats began to increase rapidly and landings rose in proportion. During the month of February, an estimated 865,000 pounds (1,442,000 pounds, heads on) were landed at Key West and 405,000 pounds (675,000 pounds, heads on) at west coast Florida ports. This is a total of 1,270,000 pounds (2,117,000 pounds, heads on) for February. The total Florida landings of shrimp for all 12 months of 1948 was just under 17 million pounds (heads on).

The wholesale value of the January and February landings from the new grounds is about \$647,500, calculated at 50 cents a pound, heads off.

The average catch per boat has been about 3,000 to 3,500 pounds per trip. This average has been maintained since the fishery started, except in mid-February when bad weather interfered with fishing.

Two boats made the first landings in January and by the end of that month, only four were fishing. By February 8, an estimated 50 boats were operating. Three days later, about 125 to 175 boats were on the new grounds and more were arriving daily. By March 1, it is estimated that 250 to 300 boats were fishing the new grounds, but this figure may be in error since it is difficult to obtain an accurate count while conditions are changing so rapidly.

Boats are known to have come to the new fishery from North and South Carolina; Georgia; the Florida shrimp centers of Fernandina, St. Augustine, and Pensacola; Alabama; Mississippi; and Texas. No certain reports from Louisiana are at hand, making it the only South Atlantic and Gulf State not known to have contributed to the Key West shrimp fishing fleet.

HISTORY OF THE FISHERY

Several accounts of the finding of the Key West shrimp grounds are related, but the generally accepted story is that the grounds were discovered and explored by S. Salvador Sons, of St. Augustine, associated with Mr. E. L. Peterson. Experimental fishing was begun in September 1949 on the basis of accounts of successful night-fishing for "red" or grooved shrimp in Texas. Results were encouraging and two boats began commercial operations in January 1950. News of the good catches was soon spread and the rapid expansion followed.

Shrimp populations have doubtless always been present in this area. They were not discovered before because the presence of coral reefs discouraged serious trials with commercial gear. In addition, night-fishing was not attempted on a large scale until recent years, and these shrimp are caught in large numbers only at night.

POSSIBILITY OF EXTENDING THE FISHERY BY EXPLORATION

Charts show that there appear to be suitable shrimp areas north of the present fishing grounds. Exploration of these should be carried out and it is conceivable that a considerably greater area than is now being fished may prove to be productive. The boats are at present reluctant to trawl in unproven areas where coral rock may cause the loss of gear, but the pressure of the increasing number of boats will make new exploration essential.

The desirability of exploration between Key West and Apalachicola was mentioned in a report to the Florida State Board of Conservation (Idyll, 1950, 2). Between Dry Tortugas and Apalachicola, at varying distances offshore, in 15 to 30 fathoms of water, lie unexplored bottoms, many of which are believed to be potential sources of shrimp. These bottoms have been examined in some instances by divers for sponge and by members of the Marine Laboratory staff during a brief survey of the sponge industry. While some areas are unsuitable, there are nevertheless others with undoubted shrimping potentiality. The shrimp possibilities are also borne out by the presence of shrimp in the stomachs of red snapper taken from this area.

Exploration of such grounds as these is, as a rule, beyond the financial ability of the individual fishing operator and it is probably the function of the State, to which the industry pays taxes both directly and indirectly, to undertake such work.

The investigation of new grounds should not be undertaken without the use of the proper type of sonic depth sounder.

PROBABLE FUTURE OF THE FISHERY

It seems likely that this newly discovered fishery will be of a permanent nature. Landings per boat may begin to fall off soon. This is to be expected, since up to now, fishing has been on a virgin stock and fishing operations cannot help but thin out the population. Expansion of the area fished should keep the landings at a high level for some time, however, and later a fairly stable fishery should result.

There is probably no reason to fear a sudden collapse of the fishery. So much of the area is protected from fishing gear by coral that a natural brake is applied to fishing intensity. Furthermore, the shrimp is essentially an annual

crop and the catch does not depend on the accumulation of several age groups, as is the case in most scale or fin fisheries.

The life history of P. duorarum is not as well known as that of P. setiferus but it is believed to be similar for both species. Spawning takes place offshore and the larval stages later drift to inshore nursery areas. As growth takes place the shrimp move offshore again. In general, the bigger individuals occur farthest from the shore.

REGULATION OF THE FISHERY

At present, there appears to be no necessity to regulate the fishery. If, later, it appears that small shrimp dominate the catches at certain times, it might be advisable to impose closed seasons. No size limits are necessary now, since the fishery is taking mostly large individuals.

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OUR OYSTER INDUSTRY



That oysters of varying species are found along almost every seacoast of the world wherever the water at some period of the year reaches a temperature of 70 degrees F. or above.

OYSTERS IN THE SHELL ARE BARRELED FOR SHIPMENT AT A DOCK ON LONG ISLAND.

VITAMIN A IN 155 GRAYFISH LIVERS

By F. Bruce Sanford,* Gilbert A. Holland,** and Glenn C. Bucher***

ABSTRACT

Data are presented on the analyses of 155 livers taken from grayfish (*Squalus suckleyi*) caught in otter-trawl gear that was being operated in the Gulf of Georgia, Washington, May 15, 1945. The male fish averaged 26.1 inches in length, and 33 percent were mature. The female fish averaged 30.1 inches in length, and 7 percent were mature.

The analytical data conformed to the findings of earlier studies; that is, the oil content of the livers and the vitamin A potency of the liver oil tended to increase as the fish increased in size. It was also confirmed that the vitamin A potency of the liver and of the liver oil varies greatly from one grayfish to another.

Three conclusions were drawn from the work:

1. Care should be taken in sampling grayfish livers, as otherwise the sample may not be representative of the lot.
2. There are factors associated with the vitamin A content of the grayfish livers that have not yet been determined.
3. The taking of small grayfish is not economically sound.

INTRODUCTION

At present, knowledge of the factors associated with the vitamin A potency of grayfish livers is based upon measurements made on less than 1,500 individual specimens. Because of the great variation in the vitamin A content of the individual fish livers, and the large number of other variables involved, it is difficult to determine the true factors controlling the vitamin A content of the livers. For this reason, data on grayfish caught May 15, 1945, although based upon only 155 specimens, are presented here in the belief that they will help in the eventual clarification of the various vitamin A relationships.

Table 1 - Number, Size, Maturity, and Sex of Grayfish (<i>Squalus suckleyi</i>) Taken in Individual Otter-Trawl Drags Made in the Gulf of Georgia, May 15, 1945			
Drag Number	No. of Fish Caught	Average Length of Fish Inches	Relative Number of Mature and Immature Fish
			Percent Mature
M A L E S			
1A	7	27.4	43
2A	11	26.3	45
2B	10	28.0	60
2C	29	25.1	17
Average	14	25.1	33
F E M A L E S			
1A	9	35.4	33
2A	39	28.9	0
2B	25	29.9	8
2C	25	29.9	8
Average	24	30.1	7

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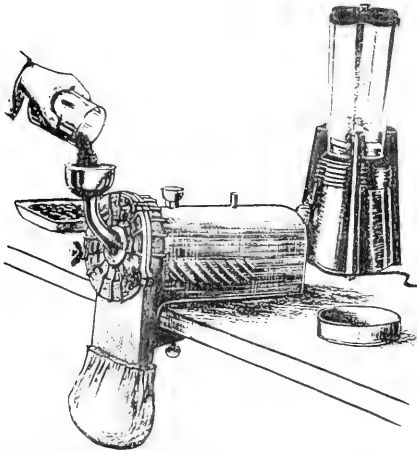
*** Chemist, Formerly with the Branch of Commercial Fisheries.

The data are a result of a cooperative project by members of the Washington State Department of Fisheries and the Seattle Technological Laboratory of the Fish and Wildlife Service.

SOURCE OF SPECIMENS

Specimens used in this study were obtained by commercial fishermen who were employing otter-trawl gear in the Gulf of Georgia, a short distance from Blaine, Washington. Data on the fishing trials are given in Table 1. After the first drag (1A) had been made, one of the cables attached to an otter-trawl board broke. Observers immediately transferred to a second trawler from which the next three drags (2A, 2B, and 2C) were made. Each drag required about two hours and averaged 38 grayfish. Almost all of the fish were small, and only 17 percent were mature.

PREPARATION OF LIVERS



Earlier work (Pugsley 1943; Sanford and Bonham 1947; Swain 1947) had shown that the size, sex, and sexual maturity of the grayfish are variables that must be considered if other factors associated with the vitamin A content of their livers are to be evaluated. Therefore, in the present study, the sex, sexual maturity, and length of each fish were noted. The livers were weighed and then ground individually in a meat chopper, using a plate containing holes one-eighth inch in diameter. The material was further comminuted in a Waring blender.

MEASUREMENT OF OIL AND VITAMIN A

The oil and vitamin A were extracted using the "shaking method." Specifically, this method is as follows: Four grams of the liver were weighed into a tared, 2-ounce bottle. Exactly 25 milliliters of petroleum ether and about 15 grams of anhydrous sodium sulfate were added, and the bottle and its contents were agitated for 1 hour by means of a shaking machine. The bottle was centrifuged and an aliquot portion of the petroleum ether solution was diluted with isopropanol to such a volume that the optical density of the resulting solution was within the range 0.2 to 0.8. The density readings were made using a Beckman spectrophotometer.

To determine the oil content of the liver, a 5-milliliter aliquot portion of the petroleum-ether solution in the shaking bottle was pipetted into a tared, 50-milliliter Erlenmeyer flask. The solvent was evaporated by passing a gentle flow of air over the solution while the flask was immersed for about 10 minutes in a water bath at a temperature of 80° to 90° C. The flask and its contents were allowed to cool at room temperature for 45 minutes and was then weighed.

1/A female was judged to be sexually mature if it had eggs or embryos in the uteri. A male was judged mature if sperm was present in the seminal vesicle.

Samples were run in duplicate to guard against gross error.

GROUPING OF DATA

Because of the large variability in the properties of the individual livers, the trends in the measurements can best be seen by grouping the data and considering averages rather than individual values. The bases for grouping the data obtained in this study were the sex, sexual maturity, and length of the fish from which the livers were taken. The length groupings chosen were arbitrarily set at 2-inch intervals. Thus, for the immature males, the first group was composed of livers from fish 18.0 to 19.9 inches in length; the second group was composed of livers from fish 20.0 to 21.9 inches in length; the remaining livers were similarly grouped.

RESULTS AND DISCUSSION

Results are given in Table 2. In general, the data show that both the oil content of the liver and the vitamin A potency of the liver oil increase as the fish grow in size. However, in spite of grouping the data, these trends are somewhat obscured. For example, the 31.1-inch males yielded a liver oil of higher vitamin A potency than the 32.7-inch males.

When the groupings are made larger, the trends become apparent. Thus, when a weighted average of the data was taken, the oil content of the livers of the immature males was 54.7 percent in contrast to 58.9 percent for the livers of the mature males. The immature females had livers containing an average of 65.2 percent oil as compared to 67.7 percent for the mature females.

The difference between the vitamin A potency of the liver oil of the mature fish and immature fish was considerable. Liver oil from the immature males averaged 2,810 units of vitamin A per gram whereas the oil from the mature males had an average potency of 5,270 units. Liver oil from the immature females averaged 4,320 units in comparison to the oil from mature female fish livers which averaged 19,350 units of vitamin A per gram. Thus, while there was great variability between individual livers, a comparison of the weighted averages for the immature and mature fish brings out the trends clearly.

The great variability between individual livers or between small groups of livers should serve as a warning to those in the trade that it is extremely difficult to obtain a sample that is representative of the lot.

This variability, after the fish have been separated on the basis of sex, sexual maturity, and length, shows that there are other factors associated with the vitamin A content of the livers that have not yet been determined.

Of particular interest to the fishermen is the column in Table 2 showing the average vitamin A content per liver, because it enables him to estimate the value of the individual fish. For example, the smallest females averaged 0.016 million units of vitamin A per liver; assuming that the current price of vitamin A is 16 cents a million units, these livers were worth 1/4 cent apiece.

The large grayfish are more valuable than the small ones. This is because three factors are operating concurrently as the fish increase in size:

1. The livers become larger.
2. The livers tend to contain more oil.
3. The oil tends to contain more vitamin A.

Thus, the largest female reported in Table 2 had a liver which contained 8.36 million units of vitamin A, whereas the smallest females had livers containing an average of only 0.016 million units. Hence, the fishermen would have to catch, handle, and remove the livers from 523 of the small fish to obtain the same amount of vitamin A as is found in the liver of this one large female--dramatic evidence that the taking of small grayfish is not a sound policy.

Table 2 - Data on Grayfish (<i>Squalus suckleyi</i>) Caught in Strait of Georgia, May 15, 1945						
Number of Specimens in Each Group	Average Length of Specimens	Average Weight of Livers	Average Oil Content of Livers	Average Vitamin A Potency of Liver Oil	Average Vitamin A Potency of Livers	Average Vitamin A Content per Liver
	Inches	Pounds	Percent by Weight	"Spec" Units/ per g. Oil	Millions of "Spec" Units per lb. of Liver	Millions of "Spec" Units per Liver
IMMATURE MALES						
1	18.3	0.040	44.7	440	0.09	0.004
3	21.0	0.062	44.9	2040	0.42	0.026
9	23.0	0.097	53.1	2530	0.63	0.061
18	24.7	0.147	56.5	2830	0.73	0.107
4	26.5	0.154	58.3	2300	0.61	0.094
3	26.9	0.177	57.0	5460	1.41	0.250
MATURE MALES						
3	27.2	0.224	62.6	2260	0.64	0.143
9	28.5	0.209	58.6	3740	1.00	0.209
3	31.1	0.221	52.1	14380	3.40	0.751
4	32.7	0.318	62.0	4160	1.17	0.372
IMMATURE FEMALES						
2	15.2	0.068	53.8	950	0.23	0.016
1	20.7	0.096	48.6	560	0.12	0.012
4	22.5	0.100	55.7	1610	0.41	0.041
10	24.5	0.159	61.3	1940	0.54	0.085
19	26.9	0.201	58.1	3560	0.94	0.189
20	28.7	0.288	64.2	4580	1.33	0.383
15	30.6	0.390	68.8	7100	2.22	0.866
10	32.7	0.607	73.7	5090	1.70	1.03
2	34.7	0.717	72.1	5560	1.82	1.30
8	36.4	0.992	77.7	4670	1.64	1.62
1	40.4	1.68	79.4	4400	1.59	2.68
MATURE FEMALES						
2	37.9	0.721	65.1	25000	7.39	5.33
2	42.4	0.838	64.8	21100	6.20	5.20
1	43.7	1.83	77.2	10500	3.68	6.75
1	45.5	1.99	69.0	13400	4.20	8.36

1/2000 x e (1%, 1 cm., 320 mm., isopropanol).

CONCLUSIONS

- (1) There is a great variability in the vitamin A content between individual grayfish livers or between small groups of the liver; therefore, unless special techniques are followed in sampling grayfish livers, the sample may not be representative of the lot.
- (2) There are major factors associated with the vitamin A content of the grayfish liver that have not yet been determined.
- (3) The taking of small grayfish is not economically sound.

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TROTLINE CONSTRUCTION, OPERATION, AND MAINTENANCE

(CHESAPEAKE BAY TYPE)

Trotlines, as used in the Chesapeake Bay area, are usually made of 3/8-inch diameter cotton rope and vary from one-quarter of a mile to one mile in length. At each end of the line an anchor is placed in the form of an iron chain weighing about 10 pounds and a colored buoy for identification and location of the set. Chain is used instead of a grapnel because it will allow for slight adjustments in "running out" the line and because it can be stored in or near the line barrel without entangling the line.



--Fishery Leaflet 291



RESEARCH

IN SERVICE LABORATORIES

JANUARY 1950

REFRIGERATION: An initial examination was made of the five packs of canned sockeye salmon prepared for the study of methods of handling frozen salmon for later canning. These packs included the controls prepared from the fresh fish and packs prepared from glazed and unglazed frozen fish stored for 6 and 16 weeks.



RED OR SOCKEYE SALMON
(*ONCORHYNCHUS NERKA*)

In each examination, the control samples were compared to samples of an experimental pack. Although the examinations are to be repeated several times in order to obtain representative judgments, the following observations indicate the trend in the samples examined:

1. Control packs received the highest average score in all cases. There was little difference between the control samples and those prepared from salmon frozen, glazed, and stored for 6 weeks.
2. Sockeye salmon which was canned after being frozen, glazed, and stored for 16 weeks was approximately equivalent in quality to salmon which was canned after being frozen and stored for 6 weeks with no glaze. Both were significantly lower in quality than control samples.
3. Sockeye salmon which was canned after being frozen and stored for 16 weeks with no glaze received the lowest score and was judged of poor quality because of excessive curd and discoloration on the surface flesh, an undesirable dry texture, and presence of off-flavor in the skin and fat.

* * *

Approximately 100 packages of frozen oysters have been prepared for studies on the darkening which reportedly occurs in frozen oysters during storage. Included in methods of preparation are ascorbic acid dips, added ascorbic acid and citric acid, and glazes with water and ascorbic acid solution.

* * *

After 10 months of storage at 0° F., the pan-dressed striped bass that were first wrapped in vegetable parchment, then dipped in water, followed by wrapping in moisture-vapor-proof material and freezing, are still well coated with ice and show no discoloration and desiccation. Fish prepared by the usual methods show considerable localized desiccation, extreme drying of the skin, and discoloration.

* * *

Tests on frozen pink salmon after 5 months of storage indicate:

1. There were no significant improvements in quality of the product by using polyethylene bags or wraps compared to plicofilm bags and cellophane wraps.
2. Fillets dipped in 0.5% ascorbyl palmitate showed a marked improvement when compared to undipped fillets.
3. Fillets glazed with 1% ascorbic acid show no improvement in quality compared to fillets glazed with plain water.
4. Fillets dipped in 2% ascorbic acid show a marked improvement when compared to undipped fillets.

* * *

PRESERVATION: Tests on use of benzoates and substituted benzoates for preservation of salmon eggs at low temperatures are continuing and it appears that these preservatives which were relatively ineffective at the high (99° F.) accelerated storage temperatures may be practical at temperatures of 60° F. or less.

* * *

SANITATION AND QUALITY CONTROL: The pH determinations have been conducted on the oyster liquor, ground individual oysters, three oysters ground together, and six oysters, ground together. The average pH values of the samples examined so far, taken immediately after blowing, are as indicated to the right.

Sample	Standards	Selects
Single oyster	6.55	6.52
Three oysters	6.58	6.62
Six oysters	6.54	6.64
Liquor	6.76	6.82

The range in pH of the ground fresh meats is staying within rather narrow limits, being between 6.50 and 6.62 for the standards, and 6.56 and 6.68 for the selects. At the same time, the range in pH of the liquor has been between 6.70 and 6.82 for the standards, and 6.80 and 6.82 for the selects.

Blowing seemingly has very little effect on pH of the oysters, since the values for oysters taken prior to blowing fall within the ranges given above for blown oysters. The water used for blowing at one point has a pH of 7.82 but this value drops to about 7.10 after a few minutes of blowing.

A gradual drop in pH occurs during storage of the shucked oysters at ice temperature. As before, the values stay within a rather narrow range for any particular lot. Spoilage has occurred so far at a pH between about 5.9 and 5.7.

* * *

NUTRITION: Samples of hatchery feed now in use by Washington State Fisheries Department were procured and gross chemical composition is being run. This work is being undertaken in connection with that portion of the hatchery program dealing with the State and Federal hatcheries trying out each others standard diets.



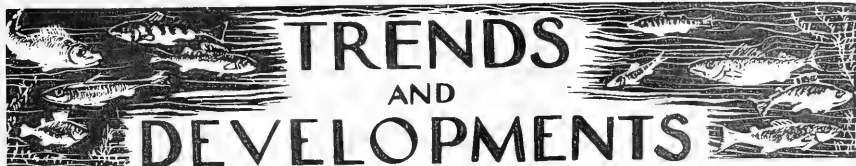
CLAM FRITTERS



1 cup clams, ground	1 egg, beaten
1 cup sifted flour	$\frac{1}{2}$ cup milk
$\frac{1}{2}$ teaspoons baking powder	1 teaspoon melted fat
$\frac{1}{2}$ teaspoon salt	

Sift dry ingredients together. Combine the beaten egg, milk, and fat. Add gradually to the dry ingredients, then add the clams. Heat fat to 375° F. Drop the mixture by spoonfuls into the hot fat, and fry until golden brown (2 to 3 minutes). Remove fritters and drain on absorbent paper. Serves 6.

A Fish and Wildlife Service tested recipe. This is one in the series of recipes using fishery products tested and developed in the Service's test kitchens.



TRENDS AND DEVELOPMENTS

Additions to the Fleet of U. S. Fishing Vessels

First documents as fishing craft were issued for 63 vessels of 5-net tons and over during December 1949--4 more than in December 1948, according to the Bureau of Customs of the Treasury Department. Virginia led with 9 vessels, followed by South Carolina and California with 7 vessels each. Vessels documented during 1949 totaled 1,002, compared with 1,184 during 1948.

Section	December		Total	
	1949	1948	1949	1948
	Number	Number	Number	Number
New England	3	3	35	52
Middle Atlantic	2	-	44	40
Chesapeake Bay	12	3	87	59
South Atlantic and Gulf ..	33	30	369	541
Pacific Coast	9	11	327	348
Great Lakes	-	5	38	51
Alaska	4	4	96	81
Hawaii	-	3	5	12
Unknown	-	-	1	-
Total	63	59	1,002	1,184

Note: Vessels have been assigned to the various sections on the basis of their home ports.



Alaska Commercial Fishery Regulations Revised for 1950

Changes in the regulations for the protection of the commercial fisheries of Alaska for 1950 were issued by the Secretary of the Interior on March 4.

The new regulations are based upon investigations and recommendations of Fish and Wildlife Service personnel, testimony presented at public hearings conducted by the Service at 10 places in Alaska and at Seattle, Washington, and upon written briefs submitted by those interested in the Alaska fishing industry.

BRISTOL BAY POWER BOATS: Under the new regulations, commencing in 1951, the use of motive power will be permitted for Bristol Bay fishing boats of less than 32 feet in length. Advisability of replacing the traditional fleet of gill-net sailboats with motorboats has been the subject of controversy for several years. The Fish and Wildlife Service now possesses sufficient enforcement facilities and scientific knowledge to protect the runs against undue depletion, despite the type of motive power utilized in the fishing boats. The amended regulation merely permits, and does not require, the use of power; the one-year delay is provided to give everyone equal and ample opportunity to effect the change-over, if desired.

FISHING SEASONS: In three major areas, fishing seasons have been shortened and in two others, they have been slightly liberalized. A uniform closure will apply to the entire Kodiak Area from July 15 to 31, with the limited exception of certain recognized red salmon localities. Seasonal opening and closing dates in Kodiak otherwise remain the same as last year. The fishing season in Resurrection Bay Area will open July 1 instead of June 1, as previously. The general Yakutat fishing season will open July 1, although the king salmon fishery in Dry Bay will be permitted to commence on June 1. Seine and trap fishing in Southeastern Alaska is permitted from August 15 to September 3, much the same as last year.



ALASKA (SEE OTHER CUT FOR SOUTHEASTERN ALASKA)

HERRING FISHERY: A new principle is inaugurated this year in the management of the herring quota areas of Kodiak and Resurrection Bay-Prince William Sound. Instead of frequent quota adjustments, based on predictions of availability of supply resulting from analysis of catch data from preceding seasons, these two areas will operate under annual quotas, which are stabilized for a three-year period

and are largely based on previous average productivity. The Kodiak quota is set at 275,000 barrels of herring and the Resurrection Bay-Prince William Sound quota is 180,000 for each of the years, 1950, 1951, and 1952. The quota-season has also been shortened in each area; Kodiak's will end September 30 and at Resurrection Bay-Prince William Sound's, August 10. Herring may be caught subsequent to these dates without regard to the quota limit because the fall runs are believed distinct and not sufficiently in need of such protection. This situation has been emphasized by the herring operators of the Kodiak Area, and it will be observed closely in the coming season, during which further adjustments can be made if desirable.

The herring fishery of the Southeastern Alaska Area will continue to be managed according to principles previously in use; that is, annual adjustment of quotas based upon developments in the years immediately preceding. A currently prevailing natural scarcity of herring in this area makes it necessary to hold the 1950 quota to the comparatively low limit of 150,000 barrels.

Lesser amendments relating to the herring fishery include removal of the prohibition against use of pounds on herring spawning grounds, although such a restriction continues specifically on the Fish Egg Island grounds, near Craig. The area closed to herring fishing along the western shore of Admiralty Island is extended to include the entire side of the Island between Point Gardner and Point Retreat in order to protect small populations of fish in two Bays at the northern end.

GENERAL REGULATIONS OF TERRITORY-WIDE APPLICATION: Other significant amendments to this year's regulations are listed below according to the regulatory areas in which they are effective:

In addition to the previously required registration of fishing boats and processing operations in advance of seasonal activities, operators are now required to notify the Fish and Wildlife Service before moving to a new area or district. An accurate registration system will give the Service current knowledge of the amount of fishing gear in operation in each district, thus making possible effective management of fisheries. Local representatives of the Service will serve as registration agents and are defined according to the towns at which they are stationed.

In conformance with the standardized winter-troll closure recommended by the Pacific Marine Fisheries Commission for the entire Pacific Coast, trolling for king salmon in the outside waters of Alaska is prohibited from November 1 to March 15, and for coho salmon from November 1 to June 15. The fall-troll closure in inside waters has now been shortened to extend only from September 20 to October 5 to conform to the special seining season which opens in several places in Southeastern Alaska on October 5. The prohibition against the taking of undersized king salmon, which formerly applied only to trolling, is now extended to all forms of gear. Identifying names and numbers on fishing boats and net floats must consist of lines at least one-inch wide so that they may be readily distinguished.

Three general regulations pertaining to fish traps have been entirely deleted: one prescribing the rights of natives to trap-site privileges on land set aside for their special occupancy, another requiring the filing of trap-site locations with the Fish and Wildlife Service, and a third specifying methods of determining priorities of applicants for the same trap site. Further, a trap is now defined specifically so that any net or other device which is set or operated in the manner of a trap shall be subject to all the regulations pertaining to traps.

The minimum legal size of king crab is increased from 5-1/2 to 6-1/2 inches in width of shell.

Bering Sea: The use of motors in gill-net fishing boats is no longer prohibited in the Kotzebue-Yukon-Kuskokwim Area.

Bristol Bay Area: The regulation pertaining to the Hagemeister regulatory district has been deleted inasmuch as no commercial fishery has existed in that section for many years. Methods of marking and registering fishing boats have been amended to require that the numbers and letters be at least 12 inches in height and that each boat be lettered to indicate the district in which it operates. Boats must not only be registered prior to the fishing season with the Fish and Wildlife Service but must also reregister in advance of moving to another district. To counteract the growing tendency to operate set nets far offshore on shallow beaches, it is now illegal to set any net at a distance greater than 150 yards from the mean high tide mark.

Regulations for 1950 are based on the premise that no more than the recommended maximum of 426 drift gill-net boats will be operated in the entire Bristol Bay Area.

Alaska Peninsula Area: No change is made in the fishing season from the dates of last year; except for Port Moller, fishing will end throughout the district on August 5 unless escapements are so good as to warrant local extensions. Motive power is no longer prohibited in the gill-net boats of the Chignik Area. Thin Point Cove has been closed to commercial fishing to protect its runs of red salmon. Canceo Bay is closed to king crab fishing because it is recognized as a spawning and nursery ground for that species.

Kodiak Area: A closed season is established from July 15 to 31 generally throughout the Kodiak Area in order to protect the runs of pink salmon, which have been showing a distinctly downward trend in recent years. Exceptions to the closure will apply only to certain predominantly red salmon localities where the catch of that species is controlled by weir counts and where the abundance of pink salmon is not an important factor. Kaiugnak Bay and Sukhoi Lagoon are closed to commercial salmon fishing.

Cook Inlet Area: No change is made in the seasonal dates normally governing even-year operations and the weekly closed period will remain the same as last year. However, the tremendous increase in amount of fishing gear which has come into the Inlet during the last two years is causing grave concern for the conservation of the salmon runs. A complete analysis of the situation is now being made for the purpose of determining the amount of closed time which should be applied to fishing each week to compensate for any further increase in total amount of gear during 1950. Compensatory weekly closing restrictions will be imposed if there is any increase in intensity of fishing over that of 1949. Nets must now be marked with letters at least 6 inches high instead of the 4 inches previously required. Drift, as well as fixed, gear must never be operated less than 600 feet from any other gear.

Resurrection Bay Area: Catches of red salmon in this locality have dwindled to such an extent that the species is being accorded almost complete protection from commercial capture by keeping the season closed until the first of July, one full month later than in previous years.

Prince William Sound and Copper River

Areas: The closing date for red salmon fishing on Copper River is changed to June 20, 5 days later than last season. Port Chalmers on Montague Island is closed to all salmon fishing. Catches of set nets in the Eshamy section must be reported daily to the Fish and Wildlife Service after the general trap and seine season closes August 7 on Prince William Sound. This special reporting procedure is intended to prevent use of this locality's special late season as a loophole for declaring catches taken illegally elsewhere. In order to make the annual quota of razor clams more completely available to industry, the fall sub-quota is reduced from 3,000 to 1,000 cases and the difference is added to the spring subquota. The closed season on crab fishing in the waters of Orca Inlet, near Cordova, is extended to October 31 to prevent fishing during a period of low quality.



SOUTHEASTERN ALASKA

Yakutat Area: Yakutat no longer constitutes a District in the Southeastern Alaska Area, but is now a distinct Area by itself. The regulations are completely revised to reflect its new status and to provide more realistic and effective management of the salmon runs under present conditions. Because of the serious shortage of red and king salmon in the major streams, due in large part to over-fishing, the season opening has been delayed approximately two weeks to increase early escapement. Although Dry Bay will open on June 1, the rest of the Area will remain closed until July 1. Numerous minor adjustments are made in the regulations specifically affecting this fishery; these include reopening of Ankau Inlet to fishing, increasing the maximum allowable length of set nets in Yakutat Bay to 75 fathoms, and increasing the size of the closed area at the mouth of the Situk River.

Southeastern Alaska Area: The opening date for all trap and seine fishing will be August 15. This is the same date on which fishing began last year, and it is hoped that similarly beneficial results will accrue to pink salmon escapements. The Fish and Wildlife Service will keep a close watch on the various districts prior to August 15, and earlier local openings will be permitted if supplies of salmon surplus to spawning needs are available without jeopardy to less favored runs.

Consistent with the policy of permitting gill-netting in all localities susceptible to legitimate exploitation by this form of gear, the Port Snettisham region and the Stikine District have been enlarged to provide larger fields of operation. Likewise, Burroughs Bay, at the mouth of the Unuk River, is declared open to gill-netting during the seining season in the Southern district. A considerable increase in the number of gill-netters fishing the Port Snettisham region has made it necessary to reduce the maximum length of nets to 150 fathoms, the same limit that applies in nearby Taku Inlet.

Beach seining, which is permitted only in Wrangell Narrows, is more rigidly described in order to prevent confusion with gill-netting operations. No change

has been made in the provisions affecting the special fall-seining areas, except that reporting of catches to the Fish and Wildlife Service has been liberalized to a daily instead of an immediate requirement. Although the current amendments to the regulations affecting the Southeastern Alaska area are quite numerous, most of them are for purposes of simplification and clarity only and little or no change in substance or meaning is involved.



Chesapeake Bay Fisheries Trends for 1949

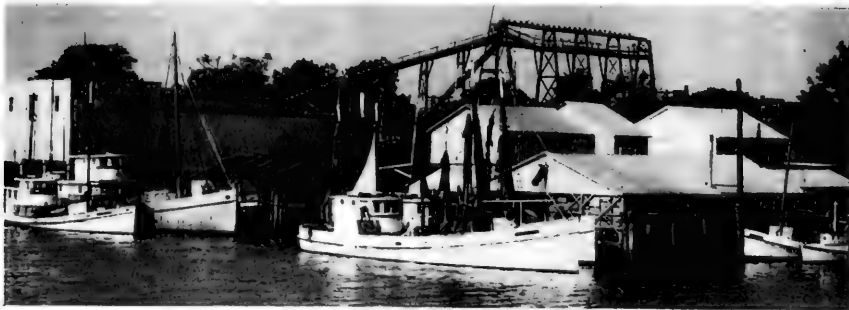
Economic conditions in the Chesapeake Bay fisheries were unsettled during 1949, according to the Service's Fishery Marketing Specialist stationed in Virginia. This was due, in some cases, to a shortage of fish and increased competition from other sections of the country. Prices at the beginning of 1949 generally held up better than expected.

MENHADEN INDUSTRY: Virginia's menhaden production by 18 vessels during 1949 amounted to 134 million pounds (200 million fish). In spite of the use of planes during the year to scout for fish, the production was less than for 1948 when 19 vessels caught 153 million pounds (228 million fish). In 1947, the catch was 178 million pounds (266 million fish). A greater number of fish during 1949 were found in the Bay than for several previous years when most of the fishing took place in the ocean.

Menhaden oil prices dropped from the 1948 high of \$1.40 a gallon to 40 cents a gallon and remained at that level in 1949. However, lower oil prices were partly compensated by an increase in scrap prices to \$150 per ton--\$50 over the 1948 price.

Two versions of a floating trawl were developed independently by menhaden operators, but tests were suspended at the close of the season due to negative results.

Two of the six menhaden plants operating in the State installed equipment for manufacturing fish solubles from stickwater. Other plants are planning to install this equipment also.



FISHING CRAFT DOCKED AT HAMPTON, VIRGINIA. ON THE LEFT ARE TWO OYSTER DREDGERS; IN THE CENTER, TWO DRAGGERS; AND ON THE EXTREME RIGHT, TWO CRAB BOATS.

CROAKER FISHERY: Although the catch of croakers during 1949 was still in the millions of pounds, its sharp decline from its position among the volume leaders was impressive. Occasional large catches were still made, but they were spotty. Ocean trawlers brought in only a comparatively small amount, but the catches of porgy and sea bass from the same fishing areas were abundant.

OTHER FISHERIES: The shad run, which consisted mainly of small fish (seldom exceeding $3\frac{1}{2}$ pounds) spawning for the first time, was moderate but not as large as expected. Roe shad at the beginning of the season sold as high as 52 cents per pound at the dock.

Alewives or river herring were present in Virginia waters in the greatest numbers since 1943. Canning, salting, and pickling plants worked at capacity. As the season advanced, fishermen were forced to take price cuts of more than 50 percent in order to sell their catches. Cannerymen reported that lack of demand might force them to market canned and salted alewives at a sacrifice. According to the packers, lack of demand was due to increased supplies of imported herring and canned sardines, and larger available supplies of domestically-canned sardines, salmon, and tuna. Canned roe, however, found a ready market.

Pearl-essence processing plants in this area reopened during the year since the heavy production of alewives yielded a sufficient supply of scales.

Some sectional shortages were experienced by the oyster industry, but packers, in these areas were able to operate by obtaining oysters from other localities.

Acreage leased by the State of Virginia for oyster planting increased steadily during the year to a total of 100,000 acres, while Maryland's private oyster-planting beds totaled only 8,000 acres.

Since soft and hard crabs were plentiful in 1949, at times, supplies reached glut proportions, and prices paid to the crabbers dropped. Winter dredgers were forced to limit their crab catches in December in order to keep from oversupplying the crab-picking plants.

The number of crab pots operated in Virginia increased to 50,000 and in Maryland to about 25,000--both all-time records.

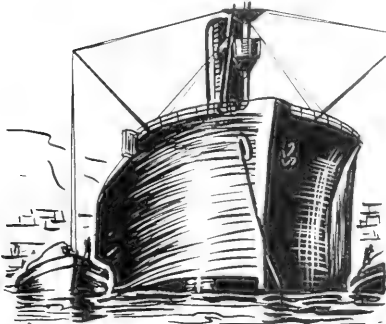
FREEZING OF FISHERY PRODUCTS: Some filleting, freezing, and packaging of fish took place in this area, but it was still in its preliminary stages, according to some producers. Production of frozen oysters and clams increased moderately.



ECA Procurement Authorizations for Fishery Products

There was only one transaction for fishery products among the procurement authorizations for commodities and raw materials announced by the Economic Cooperation Administration during January 1950. This transaction was an authorization of \$593,000 for the purchase of fish oil (menhaden) from the United States and Possessions for shipment to the Federal German Republic. The U. S. Department of Agriculture was the procuring agency.

A total of \$35,804,911 was authorized for fishery products (including fish meal and oils) by ECA from April 1, 1948 (the beginning of the ECA program) through January 31, 1950.



Western European countries took a long step toward the solution of their economic difficulties during the third quarter of 1949 by drastically devaluating their currencies and thus bringing their price levels more nearly in line with those prevailing in the hard currency areas, ECA reported during January in its sixth report to Congress, covering the period from July 1 to September 30. ECA pointed out that this action paved the way for a direct attack on the chief problems of the Marshall Plan countries—the gap in their balance of payments with the hard currency areas, the inconvertibility of their currencies, and the obstructions to the movement of trade. The rise in domestic prices since devaluation in almost all cases has been

modest thus far. Almost all of the rise has been the result of the increased cost of imports in domestic currencies. Improvement in the diet of the European peoples both in quantity and quality, is also manifest.

ECA's Office of Small Business is providing small firms with advance information on purchases to be made in this country by Austria, France, Germany, Italy, and Turkey. With this information, American concerns have leads as to where there are opportunities to market their products abroad. However, to date no fishery products have been included. A January 12 ECA release reported that more than 250 banking and business service leaders in 29 States now are serving as unofficial Marshall Plan field counselors to small businessmen.



Federal Purchases of Fishery Products

DEPARTMENT OF THE ARMY, December 1949: Fresh and frozen fishery products purchased by the Army Quartermaster Corps during December 1949 for the U. S. Army, Navy, Marine Corps, and Air Force for military feeding and a small amount for relief feeding amounted to 1,430,900 pounds (valued at \$495,747). Although December's purchases were practically at the same level as the previous month, the value of December's purchases was 2 percent below the corresponding month a year ago.

Purchases of Fresh and Frozen Fishery Products by Department of the Army (December and Totals for 12 Months, 1949 and 1948)							
Q U A N T I T Y				V A L U E			
December		January-December		December		January-December	
1949	1948	1949	1948	1949	1948	1949	1948
lbs.	lbs.	lbs.	lbs.	\$	\$	\$	\$
1,430,900	1,262,459	17,873,642	16,495,000	495,747	479,268	5,862,011	5,957,000

Total purchases for the year 1949 totaled 17,473,642 pounds (valued at \$5,862,011), compared with 16,495,000 pounds (valued at \$5,957,000) in 1948.



Fishery Biology Notes

ANNUAL INVENTORY OF OYSTERS ON PUBLIC BEDS OF MARYLAND AND VIRGINIA: Annual inventory of oysters on public beds of Maryland and Virginia was made during the last quarter of last year in cooperation with the Chesapeake Biological Laboratory and Virginia Fisheries Laboratory, according to the Service's Chesapeake Bay Investigations.

Maryland: About 150 stations on different bars in the Chesapeake Bay and major tributaries were examined (Table 1). This did not complete the coverage planned but gave sufficient information for drawing some preliminary conclusions.

Recruitment, indicated by spat count, for most of the Bay and tributaries was sufficient to replace oysters removed during the 1949 harvesting except on isolated bars. This was true also in 1948. Effect of the low rate of recruitment for two years will be reflected undoubtedly in reduced oyster yields in reduced oyster yields in two and three years hence.

Table 1 - Summary of the Maryland Oyster Distribution, 1949

Location	No. of Stations	Average No. Oysters Per Bushel		
		Market	Small	Spat
Chester River ...	11	54.0	54.5	1.6
Eastern Bay	14	118.0	336.7	63.4
Choptank River ..	16	61.6	40.0	18.9
Holland Straits ..	2	34.0	143.0	562.0
Tangier Sound ...	23	66.6	57.0	90.6
Chesapeake Bay:				
Upper	16	32.3	39.1	24.0
Middle	10	51.0	67.3	38.0
Lower	23	65.1	52.6	140.5
Potomac River & tributaries }		Have not been analyzed		

The relative failure of setting in 1949 in Eastern Bay (one of the major seed areas) will reduce seed available for transplanting. Setting in other seed areas, Holland Straits and St. Marys River, was adequate and offsets to some extent the failure in Eastern Bay. The development of three major seed areas at widely separated locations was designed originally to lessen the possibility of complete loss of seed in any one year. This premise has been borne out in this and other years. In 1948, Eastern Bay produced adequate seed, 776 spat per bushel of shell, while the set of 293 in Holland Straits was not sufficient for seed use.

For the current season, the available crop of oysters is less than that harvested in 1948, and the developing crop to be harvested in 1950-51 (as shown by the number of small oysters) suggests another low yield.

Virginia: In four of the major tributaries on the western side of Chesapeake Bay, 51 stations were examined (Table 2).

Setting of oysters on natural beds in the Rappahannock River was not abun-

Table 2 - Summary of the Virginia Oyster Distribution, 1949

Location	No. of Stations	Average No. Oysters Per Bushel		
		Market	Small	Spat
Rappahannock River	21	28.2	34.1	82.3
Piankatank River..	6	66.3	248.3	746.3
Corrotoman River..	4	46.5	304.5	262.0
James River:				
Public Tonging..	3	64.0	120.0	1158.0
Seed Area	17	40.7	826.4	1502.6

dant but adequate for minimum replacement on tonging beds. The Corrotoman and Piankatank Rivers had much higher setting rates. Conditions in the two latter rivers showed excellent potentialities for development of seed beds. These three rivers converge at Chesapeake Bay, the Corrotoman north and the Piankatank south at the entrance of the Rappahannock. Common to these three rivers and characteristic of many of the tributaries of Chesapeake Bay is the gradual diminishing of the numbers of spat as the beds are located farther away from the entrance of the rivers into the Bay. Setting rate was reflected in the number of older oysters in the population.

In the lower part of each river, marketable oysters were found in sufficient quantity to yield a fair harvest for the present season. The number of small oysters indicated at least the same amount available for the 1950-51 season. To predict beyond that on the basis of the 1949 recruitment would not be reliable because of lack of accumulated records on survival of spat. Fewer large and small oysters are found in the upper part of each river. This survey represents initiation of an inventory program for Virginia.

Natural oyster beds in the James River are divided as follows: beds below the bridge producing large oysters for the regular oyster trade and beds above the bridge producing seed oysters for transplanting. These latter beds represent the most prolific and sustained seed source in the world, yielding annually more than 1,500,000 bushels of fine seed oysters on natural cultch.

The 1949 spatfall was substantial and well distributed, although again in this river setting was more numerous on the beds in the lower portion of the seed area. Average 1949 set per bushel of bottom material was about 1,500. Beds in the lower portion had an average set of about 2,500 spat per bushel, while the set on beds of the upper portion was 300. The 1949 recruitment was supplemented by a substantial residue of small oysters from the previous years' setting. In the lower portion this was approximately 1,000 and in the upper portion slightly more than 300. Supply of seed, which is a combined population of small oysters and 1949 set, is substantial and in 1950 should provide a large source of seed for the extensive private oyster industry in the State. This should be a factor in maintaining high production for the harvest several years hence.

Public tonging beds below the bridge had a relatively high 1949 recruitment, a good supply of large oysters for the 1949 harvest, and a sufficient number of small oysters for the 1950-51 yield.

Barring spring freshets and extensive predator damage, the current and future production of both seed and marketable large oysters from the James River should be good.

The Virginia Fisheries Laboratory, the Service's Chesapeake Bay Investigations, and the Chesapeake Bay Institute of Johns Hopkins University, have planned a hydrographical and biological study of the James River seed area. The work, which will start in June, should answer some questions that have long eluded research workers studying factors controlling oyster setting.

RUN OF RED SALMON AT KARLUK, ALASKA (1949): Readings of scales collected at Karluk, Alaska, during the 1949 field season were completed, according to a January report from the Service's Alaska Fishery Investigations. From these readings were determined the age composition, by weeks, of the 1949 run and the contribution to this run made by the various preceding broods.



RED OR SOCKEYE SALMON

The total run of red salmon at Karluk in 1949 was 1,141,000 fish, somewhat less than the average for the past few years. It was found that 53 percent of the 1949 run was composed of 5-year fish, deriving from the 1944 seeding, while 40 percent were 6-year fish, deriving from the 1943 seeding. The contribution from the 1943 seeding was considerably less than had been anticipated, and this factor appears to have been the cause of the run being less than that forecast.

EXPERIMENTS ON THE EFFECT OF TAGGING ON VARIOUS KINDS OF FISH: The initiation of a series of experiments on the effect of tagging on various kinds of fish was announced by the Service's Middle and South Atlantic Fishery Investigations. Various species of fish will be kept in small concrete ponds at the Beaufort Laboratory and the various types of tags will be compared as to their durability and their affect upon fish. Results will be important in carrying out the expanded program of shad investigations now being started.

1949 BLUEBACK SALMON AND TROUT RUNS ABOVE ROCK ISLAND DAM: An outstanding factor of the 1949 blueback salmon and trout run was the small number of fish which eventually reached the two important spawning areas (Wenatchee and Osoyoos Lakes) above Rock Island Dam in Washington, according to a December 1949 report from the Service's North Pacific Fishery Investigations.

This was due in part to the fact that only 50 percent of the fish escaped the commercial and Indian fishery and got past Rock Island Dam, while in 1946, 1947, and 1948 the percentages were 73, 67, and 76, respectively. Of the fish which did pass Rock Island Dam only relatively few could be accounted for on spawning grounds. Less than 40 percent of the 18,682 fish passing Rock Island Dam in 1949 could be accounted for either at the hatcheries or on the spawning ground, after allowances had been made for progressive spawning. No satisfactory explanation is available of the cause of this situation.

During the blueback salmon spawning surveys in the Osoyoos Lake region, the Service learned that the Canadians are contemplating an elaborate flood control program in the Okanogan River system. The proposed project would, among other things, involve widening and straightening the Okanogan River in the 20 miles now utilized for spawning purposes by bluebacks. Eleven weirs would be placed across the river in this region in connection with the project. This project could have a very serious affect on production of blueback salmon in the Okanogan River and will require careful consideration by West Coast fishery interests. The Service has furnished the Washington State Department of Fisheries with the data obtained in the studies of this region.

For analysis of 1947 and 1948 fyke net data, a system of linkage of depth catches to surface catches to compensate for varying abundance was used. Preliminary analysis demonstrates that downstream migrating chinook fingerlings may be found in quantities at depths of 45 and 55 feet as great as or greater than those at the surface. Some evidence, though not clear-cut, shows that yearling chinooks (fish in their second year) are more abundant in surface water than at greater depths.



FAO Committee on Commodity Problems Holds Organization Meeting

The 14-nation FAO Committee on Commodity Problems, established by the Fifth Session of the FAO Conference, held its first meeting in Washington on January 12 and 13.

The Committee devoted its time to questions of organization and methods to be used in its work. At this first meeting, it elected N. G. Abhyankar of India as Chairman and Dr. G. S. H. Barton of Canada as Vice-Chairman.

The following countries are members of the Committee:

Australia	Egypt	Netherlands	United States of America
Brazil	France	Pakistan	Uruguay
Canada	India	Poland	
Cuba	Indonesia	United Kingdom	

The Committee on Commodity Problems is an advisory body which will direct its attention to commodity surplus problems caused by current difficulties in international finance (See Commercial Fisheries Review, December 1949, p. 23).

The Committee will meet again in Washington at the call of the Chairman.



Gulf Fishery Investigations

Pascagoula, Mississippi, has been chosen as headquarters for the Service's Gulf Exploratory Fishery Program. The port will also be the base for the 100-foot troller Oregon.

The Oregon, after a 27-day voyage from Seattle, Washington, arrived at Pascagoula, Mississippi, on January 5. After repair and conversion, the vessel will start its exploratory work. Congress made available a sum of \$83,000 for the ship's overhaul and subsequent operations. After conversion has been completed, exploratory fishing work will be undertaken in the Gulf of Mexico and, at present, it is expected that about three months' fishing can be conducted before the end of the fiscal year (June 30, 1950).

Exploration and development of the potential fishery resources in the Gulf of Mexico, especially those existing in offshore waters, are the main objectives of the program. Exploratory work is the best possible means of maintaining the fishing industry of the Gulf of Mexico on a sound basis. The present fishing

fleet in that area is now expanded to the point where vessel operations are becoming unprofitable, and the strain of the intense fishing effort is noticeable in the diminished size of the catches taken in the presently exploited fisheries.

Diversion of fishing effort resulting from the development of new fisheries and the location of new grounds will materially aid in relieving the stress on the known fish populations, and in providing a new source of supply for those vessels now unable to operate profitably.

There is reason to expect that the operations will reveal the location of substantial new deep-water shrimp grounds. Various species of tuna have been reported, but no specific information is available on their abundance and availability on a commercial scale. Menhaden may be found in areas other than those now fished. The further development of the red snapper, Spanish mackerel, flat fish, and king mackerel fisheries also hold promise. The potential fishery resources of the Gulf are unknown.

The Gulf States Marine Fisheries Commission has appointed a committee to make suggestions concerning the exploratory work. The Fish and Wildlife Service will also consult the fishing industry in an effort to maintain a balance in the operations and fairly represent all interests.

The Oregon is one of four vessels originally constructed by the Reconstruction Finance Corporation for the Pacific Exploration Company, and it was subsequently turned over to the Fish and Wildlife Service.



Gulf of Mexico Fisheries Trends, 1949

Generally, the commercial fisheries of the Gulf States have experienced a good year, according to a report from the Service's Fishery Marketing Specialist surveying the fisheries of those States.

Menhaden Fishery: This industry continued to show a steady growth in the Gulf area. A new menhaden plant was built at Cameron, Louisiana, and began operations in midseason. At the end of 1949, there were 7 plants in operation in the Gulf and 2 more are scheduled to be completed in time for operation in 1950. A third plant at Port Arthur, Texas, is contemplated and may be built in time for the opening of the season.

In general, most of the menhaden operators felt they had expended a little more effort to get the same number of fish taken in 1948.

With narrowing margins of profit, resulting from the depressed fats and oils market, more attention was directed toward utilization of stickwater. Further expansion of the stickwater recovery probably will take place in 1950.

Shrimp Fishery: Production of shrimp during 1949 was probably the highest since 1945, but it is not known yet whether or not the catch reached that year's total. Alabama is believed to be the only State showing a catch below 1948. Alabama reported shrimp scarce, with most of the catches made up of small-sized shrimp.

During 1949, the most important development in the shrimp fishery was increased production of grooved (brown) shrimp. Fishermen have been bringing in grooved shrimp in small quantities for many years. However, the production of this variety during 1948 increased, and in April 1949, large quantities were landed. Craft out of Brownsville, Texas, shrimping 30 miles or more south of that city, in depths of 18 to 27 fathoms, began taking considerable quantities of grooved shrimp.

The development of the grooved shrimp fishery seems to have been the result of two main trends:

1. Increased construction of more modern, larger trawlers capable of remaining at sea longer.
2. Seeking of new shrimp grounds because the catch per boat on the old beds has declined.



SORTING SHRIMP ABOARD A SOUTHERN SHRIMPING VESSEL.

Elsewhere along the Gulf Coast, the grooved shrimp was taken with varying degrees of success. Mississippi reported that a substantial part of its 1949 summer catch was grooved shrimp.

Development of a peeling and heading machine for raw shrimp indicated that mechanization continued in the shrimp industry during the year.

Oyster Fishery: Fresh Gulf oysters continue to have difficulty in competing with Eastern stock. Shucking houses, therefore, operated on a limited basis during 1949. Alabama, which has experienced a very good season, had difficulty meeting the East Coast competition even with fresh, high quality oysters.



Indo-Pacific Fisheries Council Accepted by Korea and Indonesia

The Governments of the Republic of Korea and the United States of Indonesia have accepted the Agreement reached at Baguio, Republic of the Philippines, February 28, 1948, for the formation of the Indo-Pacific Fisheries Council. Notification was received by the Food and Agriculture Organization on January 19 and 31, respectively.

To date the following Member Governments have accepted the above Agreement:

Australia	France	Netherlands	United Kingdom
Burma	India	Pakistan	United States of America
Ceylon	Indonesia	Philippines	
China	Korea	Thailand	

The next meeting of the Indo-Pacific Fisheries Council is scheduled for April in Australia.



Michigan's Commercial Fisheries Production, 1949

Commercial fisheries production from the Michigan waters of the Great Lakes dropped from an above-normal 30,000,000 pounds in 1948 to a slightly below-average 24,964,000 pounds in 1949, according to preliminary figures released by the Fish Division of Michigan's Conservation Department. A 26,000,000-pound-year is considered near average. The value of the 1949 catch was around \$5,100,000.

More chubs, yellow pike, and smelt, but a smaller amount of all other species were produced.

The biggest decline was in whitefish--production by Lake Huron fishermen alone was about 2,400,000 pounds less. Whitefish landings in 1949 (mainly from Lake Michigan) were 3,875,000 as compared with 7,721,000 pounds in 1948.

Herring again led all species, but 1949 landings of 8,388,000 pounds were somewhat lower than 1948 (9,038,000 pounds). The largest catch (4,052,000 pounds) was in Lake Superior.

Over 2,500,000 pounds of chubs, mostly from Lake Michigan, were netted as against 2,257,000 pounds in 1948. The increase was attributed to a concentration on chub fishing, due to the scarcity of lake trout.

Increased fishing pressure may have been responsible for a smaller comparative drop in the take of lake trout in Lake Superior--2,129,000 pounds taken last year contrasted to 2,161,000 pounds in 1948. With 220,000 pounds from Lake Michigan and 1,000 from Lake Huron, Michigan's Great Lakes total was down from 2,754,000

pounds in 1948 to 2,350,000 pounds in 1949. The sea lamprey is blamed for the continued smaller take of at least the lake trout. Still this species accounted for the fourth largest take.

Michigan's commercial fishermen reported 2,013,000 pounds of white suckers and mullets, 500,000 pounds less than in 1948.

Yellow pike increased from 1,229,000 pounds in 1948 to 1,250,000 pounds in 1949. Lake Michigan's take, (primarily Green Bay) shot up from 599,000 pounds in 1948 to 1,045,000 pounds in 1949.

Fishermen also recorded better catches of smelt--1,059,000 pounds (practically all from Lake Michigan), compared to 627,000 pounds in 1948.

Carp production dropped more than 1,000,000 pounds--982,000 pounds last year in comparison to 2,055,000 in 1948.



National Fisheries Trends for 1949 and Outlook for 1950^{1/}

A moderate decline in business activity and a consequent slight weakening in consumer demand for fishery products is forecast for 1950. However, many fishery products are in a favorable domestic market situation for the first quarter of 1950.

PRODUCTION: The first quarter of the year is a period of generally low production in the fisheries of the country, but as spring approaches, catches increase.

Commercial production of fishery products in 1949 was slightly higher than the previous year. Landings in the New England ports, a very important wholesale distribution area for fresh and frozen fish in the United States, were smaller than in 1948.

STOCKS: Cold-storage stocks of frozen fish on January 1 appear to be sufficient for domestic needs until early spring when the usual seasonal expansion of commercial fishing operations will take place.

Commercial freezing of fishery products in continental United States for human consumption was about 5 percent greater than the 241 million pounds frozen in 1948. However, domestic cold storage stocks of fish for food use at the end of 1949 were slightly lower than a year earlier.

Stocks of the popular species of canned fish in the hands of packers and their selling agents at the beginning of 1950 were somewhat higher than a year earlier, and are expected to be large enough to meet the anticipated domestic and foreign demand for canned fish at prices somewhat below the previous year until the 1950 pack begins to move to market in large volume late next summer.

The 1949 pack of canned fishery products was slightly higher than that of the preceding year. Production of canned salmon (especially pink salmon) and pilchards

^{1/} Based mainly on a report issued early in February by the Bureau of Agricultural Economics, Department of Agriculture, and prepared in cooperation with the Fish and Wildlife Service.

was larger than last year, while the pack of tuna was not much different from the record output of 1948. Mackerel and Maine sardine packs in 1949 did not differ much from those of a year earlier.

CONSUMPTION: Civilian per capita consumption of fishery products in 1950 probably will continue at about the rate of the past two years. Retail prices are expected to average lower than in 1949.

Per capita consumption of fishery products by United States civilians in 1949 did not differ much from the preceding year. Demand for fresh and frozen fish was relatively stable throughout most of the year.

Military acquisitions of fishery products were less in 1949 than in the preceding year. Procurement of frozen fish was more than 5 percent above the 16.5 million pounds bought in 1948, but not as much canned fish was bought.

FOREIGN TRADE: Prospects for international trade in edible fishery products are not considered favorable. Foreign trade of the United States in fishery products in 1950 may be slightly different from the previous year's pattern. Exports, mainly of canned fish, probably will remain low relative to the levels reached during the immediate postwar period. Imports of frozen fish fillets and canned fish are expected to be somewhat larger than in 1949.

Imports of edible fishery products for 1949 (464,993,798 pounds, valued at \$111,714,320) were slightly smaller than for 1948. Receipts of fresh, frozen, and canned fish from foreign countries were less than in 1948, but those of cured fish were greater.

Exports of fishery products for human consumption in 1949 (149,670,640 pounds, valued at \$30,415,657) were almost 50 percent greater than in 1948, with increases reported for fresh and frozen fish, canned, and cured products.



Northwest Pacific Exploratory Program

SHAKEDOWN CRUISE SCHEDULED FOR "JOHN N. COBB:" The John N. Cobb, exploratory fishing vessel of the Service's North Pacific Exploratory Fishery Program, left Seattle, Washington, on March 19 for a shakedown cruise in the waters of Southeastern Alaska. The cruise will last approximately four weeks.

In addition to thoroughly testing the general vessel equipment and scientific and navigational instruments, exploratory work will be carried on in the inland waters of Southeastern Alaska in an attempt to locate concentrations of shrimp in the hope of establishing an off-season fishery in Alaska waters.

If quantities of large shrimp can be found in the deep-water channels near Ketchikan, an additional source of income will be opened to small-boat operators in Southeastern Alaska after the salmon season closes. As the channels are rocky and trawls cannot be used successfully, the Service hopes to devise and test other methods of fishing for shrimp.

The John N. Cobb will return to Seattle before June 1 for a checkup. The vessel will sail in early June to the seamount area, approximately 500 miles due

west of the Columbia River and wait there for the first albacore tuna of the season to arrive. Then it will proceed to Dellwood Hills (an undersea plateau) and to other seamounts off Southeastern Alaska to trace the tuna's migration and determine patterns of abundance. This exploratory work may help to establish an important tuna fishery for Alaska.

While searching for tuna, the vessel will broadcast information to the fishing fleets, and render incidental services, such as, giving bearings and weather reports. These services will follow the pattern set by the US FWS Oregon while exploring for tuna last fall.

Commissioning of the new exploratory fishing vessel took place on February 18 in Seattle, Washington, with more than 500 people attending the ceremonies.



Pacific Coast Purse-Seining Methods Tried in East Coast Menhaden Fishery

In an effort to cut the production costs of the raw product going into fish meal and oil, Pacific Coast methods of purse seining were tried by menhaden operators in the North Carolina area during January this year.

Since difficulty was being experienced by the operators, they asked the Fish and Wildlife Service for assistance. Two experienced West Coast fishermen were detailed by the Service's Branch of Commercial Fisheries to Morehead City, North Carolina, from aboard the vessel Oregon, now at Pascagoula, Mississippi. These fishermen assisted in conducting experimental menhaden fishing with the Pacific Coast purse seine.

The Air Hawk, the vessel used in the project, returned to Morehead City to have certain necessary alterations made in the West Coast purse seine which it was using without any success.

The purse seine was 250 fathoms long (hung, before shrinkage), 15 fathoms deep, with a stretched mesh of 2-1/4 inches. Weight of twine in the seine at the bottom was 9-thread, graduated to 12-thread at the top, and the bunt was 15-thread. Some 1,100 pounds of lead was placed along the lead line. The number of rings was increased to 160. All mid-seine plastic floats were removed and the breast was shortened. A 3-3/4-inch purse line and 8 one-inch sheaves were installed to facilitate handling the net. In addition, more corks were placed on the cork line and the after-end of the seine was tapered. The gear at present has fine web to the lead line, but it was suggested that when time permitted, the seine should have approximately 15 meshes of large mesh netting (5-inch mesh) on the bottom to prevent the seine from rolling up.

On January 16, the gear was in operating condition, but the weather was too rough to permit its use. Operation of the net was again tried on January 20, but it was still too rough to permit fishing. A haul was made in shallow water on January 21, and, although some roll-up was experienced, the operation was straightened out to permit a complete set. The following day, the weather improved and an extensive search was made for fish from Cape Hatteras south to Charleston, but none were found except a few schools of very small size. Since these small-sized fish would gill in the net and would have afterwards required a tedious cleaning of the net, no attempt was made to make a set. A haul was made on January 23

in the late afternoon. The net was set without difficulty and without delay, but this was a dry run.

The exploratory operation was concluded on January 24 and the Service's specialists' returned to the Oregon at Pascagoula, Mississippi.



Pacific Marine Fisheries Commission Discusses Salmon-Marking Program^{1/}

A large-scale salmon-marking program along the entire Pacific Coast was the main subject for discussion at the meeting of the Pacific Marine Fisheries Commission held at Portland, Oregon, on December 12, 1949.

The subcommittee dealing with salmon and trout marking reported that it favored a large-scale salmon-marking program along the Pacific Coast; and that if adequate information concerning salmon migrations is to be obtained, at least 2,000,000 chinook salmon and 800,000 silver salmon should be marked.

California, Oregon, and Washington indicated their plans for an all-out effort both in marking and recovering the marked fish during the first year of operation of this program.

In regard to chinook salmon, the State of Washington proposes to mark 600,000 fish in Puget Sound and 200,000 in the Columbia River, using four sets of marks. Oregon will mark 200,000 in the Columbia River and 400,000 in the coastal streams, using three marks. California plans to mark 200,000 chinook salmon from the waters of northern California and 400,000 from the Central Valley, using three sets of marks. No chinook salmon-marking program is planned by Canada or Alaska at this time.

With reference to silver salmon, the State of Washington proposes to mark 200,000 fish in Puget Sound and 100,000 in other streams, using three marks; Oregon will mark 200,000 in the Columbia River and 200,000 along the coast, using 4 marks; California will mark only 100,000 in coastal streams, using one mark.

In conjunction with these studies, the salmon subcommittee recommended the establishment of a library of salmon scales that would be available to all concerned through the Commission's Research Coordinator office.

All agencies interested in fish marking are to be invited by the Commission to an annual meeting to discuss suggestions concerning salmon and trout marking.

Since the marking program originated after the budget was drawn up, little or no funds are included in the Commission's budget for a marking program. The Commission arrived at no definite solution of the budgetary problem presented by this marking program.

The Commission also recommended that the Tri-State Committee should endeavor to organize industry and fight as a unit to protect salmon throughout the entire Pacific Coast. In the discussion which preceded this motion, it was indicated that the Commission is not opposed to dams in general but is opposed to the construction of any dams which will be in direct conflict with salmon migrations in Pacific Coast streams.

^{1/}Also see Commercial Fisheries Review, December 1949, p. 27.

In addition, at this meeting a Research Coordinator was appointed and it was announced that a headquarter's office for the Commission had been established in Portland.



Pacific Oceanic Fishery Investigations

"HUGH M. SMITH" FINDS TUNA (Cruise No. 2): The Service's research vessel Hugh M. Smith left Pearl Harbor on January 16 on its second cruise, according to the Director of the Pacific Oceanic Fishery Investigations at Honolulu. The vessel returned to its base on March 2, after a 44-day voyage through the waters lying west and south of the Hawaiian Islands. The vessel traveled from Honolulu to French Frigate Shoals, south to the Phoenix Islands, east to the Line Islands, and then back to Honolulu.

The primary mission of the voyage was to gather data concerning the oceanography of the Pacific Ocean between the Hawaiian Islands and the Equator. At each of the 50 stations occupied for this purpose and spaced along the route mentioned, water temperatures and samples of water were taken at various levels from the surface to a depth of approximately 4,500 feet. Although stormy weather was encountered, the ship completed this portion of the mission successfully.

The temperature and chemistry of the water is known to exert a tremendous influence upon the growth and behavior of fish. The migrations of tunas and, therefore, their availability to the fishermen, depend strongly upon water temperature. In order to predict with any success the time and place of the occurrence of tunas, it will be essential to first acquire a detailed knowledge of the oceanography of the region. The amount of food available for the tunas is directly linked with the composition of the water. Sea water, which is rich in nutrient salts, can be expected to produce an abundance of food organisms. Moreover, there is some reason to believe that the survival of young tunas, and therefore, the abundance of marketable tunas, may be closely connected with the richness of the water.

Collection of samples of plankton and young fish at each hydrographic station was the secondary object of the cruise. The plankton (consisting of fish eggs, fish larvae, and other very small animals) were taken in the search for tuna-spawning grounds and to get an estimate of the quantity of marine life in these sections of the Pacific Ocean. It is believed that the young of the tunas may be considerably more widespread in distribution than is known at the present time.

A brief reconnaissance was made of tuna resources in the Phoenix Islands. Although fishing was not a primary objective of the cruise, two days were spent at Canton Island in the Phoenix Group for a preliminary survey of the tuna and bait-fish resources. On the day fishing operations for bait were conducted, 85 scoops (about 650 pounds) of small fish suitable for tuna bait were caught. Part of this bait was used in an attempt to fish schools of tuna near the Island. A school of skipjack (aku) was raised, but were too wild to be caught successfully. Shortly thereafter, a school of large yellowfin tuna (ahi) rose to the bait. In neither case was any large quantity of tuna caught. It is also of interest to note that a large school of skipjack was encountered in the open ocean--1,100 miles southwest of Honolulu. These data will be of use in clarifying the seasonal changes which occur in the distribution of tunas.

An observer from the U. S. Weather Bureau was taken aboard at Canton Island, and the expedition obtained both meteorological and hydrographic data near the Equator.

"HENRY O'MALLEY" EXPLORES FOR BAIT: The exploratory fishing vessel Henry O'Malley returned to Honolulu on February 10 after 17 days of exploring for bait at French Frigate Shoals. The vessel sailed on its second cruise on January 21 and was not scheduled to return until March 21. However, main-engine failure forced the vessel to return to port for repairs. This cruise was planned to extend down through the various islands of the Line Island group for tuna fishing and additional prospecting for bait.

Severe weather conditions at French Frigate Shoals allowed only two days of baiting operations. Strong winds up to 40 knots, and heavy seas, caused severe tide rips making operations most difficult. The crew managed to capture 14 buckets of bait which lived quite well in the bait tanks. A portion of this bait is being used for physiological research by a graduate student at the University of Hawaii.

THE "JOHN R. MANNING" SAILS: The motor vessel, US FWS John R. Manning, sailed from Seattle on February 20 via San Pedro for Honolulu where it will undertake exploration for tuna together with the other two vessels of the Investigations—Hugh M. Smith and Henry O'Malley.

The John R. Manning, which is of wooden construction, is 86' 6" in length, 22' 6" in breadth, and 12' 8" in depth. The vessel, whose cruising speed is 9 knots, is equipped with two Diesel generators for auxiliary power, and has a cruising range of 8,000 miles which is in excess of the typical West Coast purse seiner. A large cruising range is necessary because of the vast authorized area of operations—13,000,000 square miles with very few refueling points. The vessel is equipped with such modern navigational equipment as Loran, radio direction finder, 250-watt radio telephone and telegraph transmitter, and an automatic steering pilot.

This vessel will be primarily concerned with experimental purse-seine fishing for tuna on a commercial scale in the tropical and subtropical seas between Hawaii and the Palaus. Not only are the features of a West Coast purse seiner included in the vessel, but experimental features, such as, live-bait tanks and numerous gurdies for deep trolling and long-line fishing also have been installed.

TUNA FISHERY IN HAWAII: After a lull in activity during the New Year holidays, the Hawaiian flag-line fleet returned to the regular pursuit of tuna, according to a January report from the Pacific Oceanic Fishery Investigations at Honolulu. Big-eyed tuna (P. mebachii) was still the major species in the catch during the month, but fishing did not seem quite as remunerative as it was in December 1949. A few yellowfin tuna (N. macropterus) are being taken and the catch of striped marlin has increased somewhat. During the latter part of the month, a 962-pound black marlin (M. magara) was caught.

TAGGING TUNAS: Investigation of methods of tagging tunas has continued, but no final decision has been reached concerning methods of release and recovery. A number of standard units for recovery of metal particles from a production line have been examined. It appears that such installations could be depended upon to detect all tags at the cannery.



Puget Sound Salmon Fishery, 1949



PURSE SEINE VESSELS OFF SAN JUAN ISLAND, PUGET SOUND.

PRODUCTION: The largest commercial salmon fishing fleet in 30 years operated in Puget Sound during the 1949 season, according to the Washington State Fisheries Department. Some 320 seiners, 641 gill netters, and 137 reef netters were engaged in catching salmon. The fleet caught 9,996,000 fish during 1949, compared to 2,911,417 in 1948, and 10,709,867 in 1947 (see table). The sockeye catch jumped 50 percent over the brood year 1945—a fact attributed to the success of the International Pacific

Salmon Fisheries program on the Fraser River. Although the pink catch was substantially under the 9,015,000 fish caught in 1947, the 1949 catch has been exceeded only four times since 1913. Of the other species of salmon, silver showed the most gain, while king and chum catches were approximately equal to those of the parent cycles.

Puget Sound Catch and Pack of Salmon by Species, 1947-49 ^{1/}						
Species of Salmon	C A T C H			P A C K		
	1949	1948	1947	1949	1948 ^{2/}	1947 ^{2/}
 (Number of Fish) (Standard Case ^{4/}) ..		
Red or sockeye	1,110,000	1,087,039	90,117	30,547	90,441	8,119
Pink	7,455,000	294	9,015,375	527,478	1,502	607,330
Chinook or king	234,000	191,425	245,183	5,922	22,387	13,248
Silver or coho	790,000	596,175	735,083	57,950	65,744	65,722
Chum or keta	407,000	935,484	621,094	14,904	94,233	93,749
Total	9,996,000	2,911,417	10,709,867	686,811	274,312	793,168
^{1/} Does not include pack from salmon imported from Alaska and Canada.						
^{2/} Includes 3,536 cases from 1947 frozen chinooks; 3,807 cs. from 1947 frozen chums; 726 cs. from 1947 frozen pinks; and 5,795 cs. from Columbia River chinooks.						
^{3/} Includes 10,235 cases custom pack and reprocessed.						
^{4/} One standard case equals 48 one-pound cans.						

Prices paid by packers for salmon averaged about one-third under the previous year. Fishermen received 20 cents a pound for sockeye, 12½ cents for king and silver, 10 cents for pink, and 8 cents for chum.

PACK: Approximately 686,000 standard cases of canned salmon were packed during 1949 from the Puget Sound catch (see table). Valued at approximately \$13 million, the pack was the second largest since 1933. In addition, 140,000 standard cases of fish imported from Alaska and Canada were canned by Puget Sound canneries.

Although Puget Sound canned salmon generally found a ready market during the year, prices were under those of 1948.



Wholesale and Retail Prices

Average wholesale market prices of all commodities on January 10, 1950, were 0.1 percent above December 13, 1949, but 6.3 percent lower than on January 11, 1949, the Bureau of Labor Statistics of the Department of Labor reported. Food prices, on the other hand, declined 0.4 percent and 6.5 percent, respectively.

Wholesale canned pink salmon prices during January this year were the same as those which prevailed in December 1949, but were still 33.3 percent below January 1949. Red canned salmon prices, on the other hand, rose slightly (0.1 percent) above the previous month, but were 1.8 percent below the corresponding month a year ago.

Wholesale and Retail Prices				
Item	Unit	Percentage change from--		
		Jan. 10, 1950	Dec. 13, 1949	Jan. 11, 1949
<u>Wholesale: (1928 = 100)</u>				
All commodities	Index No.	151.2	+0.1	-6.3
Foods	do	155.9	-0.4	-6.5
<u>Fish:</u>				
Canned salmon, Seattle:		Jan. 1950	Dec. 1949	Jan. 1949
Pink, No. 1, Tall	\$ per doz. cans	3.94	0	-33.3
Red, No. 1, Tall	do	6.526	+0.1	-1.8
Cod, cured, large shore, Gloucester, Mass.	\$ per 100 lbs.	15.00	-0.8	-2.4
<u>Retail: (1935-39 = 100)</u>				
All foods	Index No.	Jan. 15, 1950	Dec. 15, 1949	Jan. 15, 1949
Fish:		196.0	-0.7	-4.3
Fresh, frozen and canned	do	301.9	+1.0	-9.0
Fresh and frozen	do	272.2	+1.9	-0.1
Canned salmon:				
Pink	¢ per lb. can	46.6	-1.1	-24.1

Retail food prices declined 0.7 percent between December 15, 1949, and January 15, 1950, and they were 4.3 percent below January 15, 1949. However, fresh, frozen and canned fish prices advanced 1.0 percent between December 15, 1949, and January 15, 1950, but were still 9.0 percent below January 15, 1949. The biggest increase occurred in fresh and frozen fish since these prices advanced 1.9 percent above December 15, 1949, but they were still 0.1 percent below a year ago. Canned pink salmon prices on January 15, 1950, dropped 1.1 percent below a month ago, and were 24.1 percent lower than on January 15, 1949.



Brazil

WHALING: Two land stations have been engaged in whaling operations in Brazil for more than thirty years, according to information obtained from the Brazilian Division of Hunting and Fishing of the Ministry of Agriculture and as reported by a January 11 American consular dispatch from Rio de Janeiro. The larger of these is located at Cabedelo, Estado da Paraiba do Norte. The second, is located at Imbituba, Estado de Santa Catarina.

The company at Cabedelo is reported to be well equipped with modern processing machinery, including boilers and autoclaves. At present, they have only one sea-going vessel but a new one is promised for early delivery. The concern employs several Norwegian specialists, and catches an average of about 40 whales per year. The 1949 catch was 32. The size of the whales caught varies from 42 to 60 feet in length, and the distribution by sex is, roughly, 66 percent male and 34 percent female. No information is available regarding the amount of oil produced, the quantity and type of byproducts, or the species of whales taken.



British Guiana

STATUS OF FISHERIES: There is only one commercial fishing company operating in British Guiana, a January 6 American consular dispatch from Georgetown reports.

This firm maintains a fleet of six schooners (sail and auxiliary) for deep-sea fishing. Red snapper is the leading species caught. Demand exceeds supply and there is no export. The firm has large cold storage facilities and also manufactures ice.

Several hundred individual fishermen are active in inshore waters, taking small fish and shrimp, and a large number of farmers and others, regularly take fresh-water shrimp in canals and creeks. The Fisheries Division of the British Guiana Department of Agriculture is endeavoring to organize fishing on a more regular basis and is encouraging the formation of a fishermen's cooperative for improved equipment and methods in the fishing and for the marketing of the catch.

The Government Produce Depot has recently made a few trial shipments of locally-produced shrimp meal for stock feed to the near British West Indian islands, and small amounts of fish glue are occasionally exported to the United Kingdom by a local firm.



France

FISHING FLEET: France is rebuilding its fishing fleet. During the war, the French fishing fleet lost 60 percent of its vessels, and most of the vessels remaining are worn out as a result of war service, according to the January 14 issue of The Fishing News, a British periodical. The rebuilding program provides for the construction of 170 trawlers, including 142 motor vessels and 28 steamers. French shipyards built or are building most of these vessels, while 76, already delivered, were built in England, the United States, Canada, and Belgium.

All the new fishing vessels have a distinctive appearance with slightly raked bows, cruiser-type sterns, streamlined superstructures and rather squat funnels. All are fitted with one of three types of electrically-driven trawl winches of French make.

Towards the end of 1949, a typical large motor trawler (Magdalena) was launched. This was the fifth of six ordered from a shipyard at Rouen. Four had already been delivered and the sixth will be finished in February. These trawlers are equipped for cod fishing off Newfoundland, 241 ft. 2 in. in length, with a beam of 48 ft. 7 in., a depth of 20 ft. 8 in., and a loaded draft of 18 ft. 1 in. Capacity of the fish hold is 2,240,000 pounds. Constructed with one continuous deck, the hull is divided into eight watertight compartments. Most of the crew are accommodated in the forecastle, which is 49 ft. 3 in. long and 7 ft. 7 in. high, while the balance of the crew are accommodated aft or in the bridge structure. A recreation room for the crew and drying rooms are provided.



FRENCH TRAWLER LEAVING THE DOCK AT MARSEILLES, FRANCE.

Propelling machinery consists of a six-cylinder, four-stroke, single-acting reversible-type engine, developing 1,100 h.p. at 170 r.p.m., giving a speed of 11 knots. Its speed can be reduced to 50 r.p.m. when handling the trawl. Auxiliary engines are driven by current supplied by two single-acting, two-stroke oil engines of 250 h.p. each, driving a 115 kw. generator for the trawl winch and a 44 kw. generator for general service. There is also a 44 kw. emergency set, driven by a single-acting four-stroke engine. Though all auxiliary machinery is electrically driven, steam is necessary for deck use, as well as for liver processing, domestic heating, and washing.



German Federal Republic

DEVELOPMENT OF GERMAN FREE-SWIMMING TRAWL: Expenditures of DM 80,000 (≈24,000 at predevaluation rate of exchange) for the development and testing of a free-swimming trawl was authorized by the committee controlling the Bremerhaven Equalization Fund in the summer of 1949, according to an American consular dispatch from Bremerhaven dated January 26. Tests on the use of the recording-marine sounder with this trawl will be conducted in conjunction with these experiments. It was hoped that the combined use of the free-swimming trawl and the recording-marine sounder would make possible the use of the older trawlers in the hitherto untouched pelagic fishery.

The use of the recording-marine sounder in the high-seas fishery is a novelty in Germany and much attention is being given to new applications of the device. During the 1949 German herring season, for example, a special observer from Germany's National Fisheries Research Institution was stationed on board the fisheries protection boat Frithjof to evaluate sounder charts. Sounder technique proved to be very useful on many fishing grounds, but was a failure off Iceland as already-located fish schools there seemed to disappear within a few minutes.

Although the value of the recording sounder seems to be established in Germany, even for ground trawling, the free-swimming trawl has yet to prove itself.

The Hamburg trawler Stralsund, typical of the 25-year-old German type, is being used for the tests of the new technique, and made one voyage in September and a second at the end of November 1949. These first two trials produced little fish as they primarily were intended to provide data on interrelationships between weight of the net, towing-line angle, towing-line length, towing speed, engine power, and trawl depth, which latter was measured by an electrically-controlled pressure gauge.

The net being used in the Stralsund experiments is basically the Danish Larsen net (Atom Trawl), with the addition of special otter boards so that a single trawler, rather than two separate vessels, may pull the net. The special otter boards, invented by the German Sueberkrueb, are hydrodynamic foils in contrast to the plane surfaces of the usual otter boards. At the present time, the depth of the net is determined only by the weights put on the otter boards, or after the net is in the water, by the speed of the vessel. But if found desirable, air tanks may be attached to the otter boards so that the trawling depth can be set independently of the trawling speed. The fact that the free-swimming trawl has much less drag than a trawl resting on the ocean bottom means that even the small, older trawlers designed for ground trawling in not too deep waters have a reserve of power when using a free-swimming trawl.

A very important explanation for the smallness of the catch made by the Stralsund on its first two test voyages is that few if any schools of pelagic fish were located by the sounder either in the North Sea or in the English Channel. Local officials would like to have a sounder which would detect fish not only under the vessel but also ahead or to one side of it. However, research on such projects is prohibited for reasons of military security by the occupying powers. But the idea of using even the present imperfect sounders with a free-swimming trawl has not been given up, and the Stralsund will be used this year for voyages to other fishing grounds.

FISHING INDUSTRY TAXES REDUCED: A further reduction of taxes on the German fishing industry took place on January 1, 1950, when the rationing tax (Lenkungsabgabe) on sea fish and fishery products was abolished completely. First levied in 1936, this tax was intended to provide the Government with funds to meet the out-of-the-pocket cost of its fish-rationing measures, a January 19 American consular report from Bremerhaven reports. No part of this tax could be passed on to the consumer. In view of the almost complete ineffectuality of the Government-controlled distribution system in the summer and fall of 1949, these taxes were cut 50 percent for the first time on November 1, 1949.

Abolition of the rationing tax is consistent with the German Government's plan not to maintain special controls on the fishing industry after March 1, 1950. However, the Bonn Government hopes that it will be legally possible for the industry itself to achieve a so-called "market order" (Marktordnung), or a distribution of fish landings between the various fishing ports which will minimize price fluctuations. But fisheries authorities do not believe that such a distribution can be achieved by allowing individual vessels complete freedom in selecting a discharging port. However, the plan to allow the fishing industry to form a body having widespread controls over individual firms has seemed to American officials to approach the legalization of conspiracy in restraint of trade, and consequently has met with American opposition.

A further reduction of taxes imposed on the fishing industry will be made on March 1, 1950, when the equalization-fund tax (Ausgleichsabgabe) will be abolished. This tax, which is levied to further fish production, fish consumption, and fish meal production, may be passed on to other levels of distribution. The tax varies from approximately \$0.48 to \$47.60 per metric ton, depending upon the type of fishery products and whether or not they are domestic or imported. Proceeds of the equalization-fund tax are held in separate equalization funds maintained in each of the major fishing ports. It is estimated that this tax brought about \$952,000 into the various funds. Although no complete report has been published to date of the use made of these funds, it is known that the funds have been used primarily to subsidize the older and less economic trawlers in order to prevent these vessels from being withdrawn completely from operation. The Bremerhaven fund has also been used to finance fisheries research projects, three of which are: free-swimming trawl (\$19,040), electro-fishing (\$14,280), and refrigerated hold for cutters (\$5,950).

Even though the equalization-fund tax imposed by the State will be abolished on March 1, 1950, it is expected that participants in the German fishing industry will continue to pool funds to promote domestic fish consumption. However, the era of subsidization of over-age and uneconomic trawlers will be over, and such trawlers will be retired as rapidly as the large trawlers now planned, under construction, or soon to be purchased, are put into operation.

NOTE: Values converted on the basis of the postdevaluation rate of exchange of 1 Western Deutsche mark equals 23.8 cents U. S.

TUNA CATCH, 1949: During 1949, 337,861 pounds of tuna (670 fish) were auctioned in German fishing ports for DM 258,003 (approximately \$44,700 at predevaluation rate of exchange). The number of tuna caught by German fishing vessels and eaten on board is not known but may bring the total catch up to 1,000 fish, a January 26 American consular dispatch from Bremerhaven states. This 1949 catch is the largest landed by German vessels in many years. In 1938, 535 fish, weighing 269,738 pounds, were landed.



GERMAN TRAWLER ALONGSIDE AUCTION HALL X, BREMERHAVEN, GERMANY. BASKETS AT SIDE ARE USED TO DISCHARGE FISH AND HOLD ABOUT 50 KILOGRAMS OF FISH.

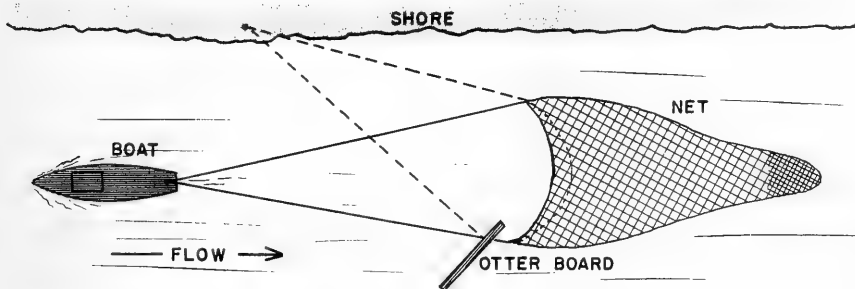
SUBSIDY FOR TRAWLERS: A subcommittee of the German Bundestag has approved a subsidy of DM 8,000,000 (approximately \$1,904,000 at postdevaluation rate of exchange) for German ocean-going ships using coal, among which are many fishing trawlers. This subsidy is intended to lower the cost of coal to German vessels by about DM 15.00 (\$3.57) per metric ton, which would reduce the cost of operating a typical German trawler about DM 150.00 (\$35.70) per day.

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NEW FISHING NET: A fishing net, chiefly used for catching eels, has been developed for use in rivers where traffic density had formerly prohibited the use of nets. The net can be set either from a ship or from land and can be pulled in and removed from the water in a few minutes, a January 20 American consular report from Bremen states.

The new net, sponsored by the Landesfischereiverband Weser-Ems, is actually based on a net invented shortly before the war by Hugo Koethke from Gorleben bei Danneberg, Elbeland, and the German patent on which is held by the Netzfabrik Kleiss, Hamburg-Altenwerder. For the first time this winter, the net is being used in the Weser, and good results are said to have been obtained.

The net can be used only where the current flow, tidal or otherwise, is sufficiently strong. It is in the form of a bag, with a 60-70 mm. (2.4-2.8 inches) mesh at the mouth and 20-25 mm. (.8-1.0 inch) mesh in the cod end. Depending upon river depth and current flow, the net opening varies between 8 x 8 meters (26 x 26 feet) and 12 x 12 meters (39 x 39 feet). The novel part about the gear is the steerable single otter board, weighing about 1 to 1.5 metric tons, which keeps the mouth of the net open. In spite of its weight, the board can be pulled in quickly either from a boat or from the shore since it is steerable.



NEW-TYPE NET FOR USE IN RIVERS WHERE TRAFFIC DENSITY HAD FORMERLY PROHIBITED THE USE OF NETS.

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OPERATION OF AMERICAN TRAWLERS IN GERMANY: All of the United States motor trawlers purchased by the U. S. Army for use in the German fisheries have proven very useful and profitable during the herring season, a February 6 American consular dispatch from Frankfort reports. However, it must yet be proven how these boats will stand the test in catching fresh fish on the more remote fishing grounds and in deeper waters.

The first of the twelve United States boats to fish under German charter was the Surf (started on August 3, 1948), and the last to be put in operation was the Swell (started on September 7, 1949). All of these boats ceased fishing on December 15, 1949, at the end of the herring run. Production for 93 trips totaled 17,656,830 pounds.

In the meantime, nine of the largest boats have had liver-extraction units installed, and eight of these are currently fishing for cod, with the remaining four scheduled to leave some time in February.

No boats have proven unsatisfactory as yet although the three smallest may have to be lengthened and liver-extraction units installed to be economical on distant fishing trips.

Experience during the herring and cod fishing season may economically justify the use of these vessels as part of the German fishing fleet. However, in view of present opportunities and the desirability of increasing imports of fish

and herring from trade-agreement countries, and the building, leasing, or purchasing of additional trawlers from agreement sources, it is believed that there is no objection to returning any or all of these vessels to the United States.



Greenland

DEVELOPMENTS IN DANISH FISHERY IN GREENLAND: Processing the fish, and not the catching of the fish, is the problem that confronts the Danish fishery in Greenland, stated one of the directors at the December meeting of the Greenland Company. This statement was according to newspaper reports quoted in the January 26 Fiskets Gang, a Norwegian periodical. It was pointed out that a freezer-equipped vessel is necessary to operate in cooperation with the shore freezers. Quick-frozen Greenland cod fillets were reported to have had an excellent reception in France. It was also suggested that a fish meal plant be constructed so that Denmark could become self-sufficient with respect to fish meal.

In addition, it was recommended that the large resources of Greenland shrimp be utilized. New York buyers were reported to be willing to take as much as could be delivered at the quoted price of 39½ cents per pound.

If the necessary capital investment were made, it is believed that in 10 years the value of the Greenland fisheries would reach approximately \$14,500,000 annually.

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SHRIMP FISHERY: At present there is some commercial shrimp fishing in the fjords near Holsteinborg from the month of May until the end of September each year, states an American consular report dated January 21 from Copenhagen, Denmark.

Provisional investigations in the years 1946-49 established that there are large quantities of shrimp in the various fjords in the district of Julianehaab, as well as in Disco Bay in northern Greenland. Three large shrimp areas have been found in Disco Bay--one at the west side and two at the east side. The western area is about 25 miles in length and 4-6 miles in breadth, and each of the two eastern areas is 10 miles in length and 5-6 miles in breadth.

Commercial shrimp fishing near Holsteinsborg has shown that the yield per haul has varied from one year to another and from one period in the season to another. In this area, since the war, the shrimp stock has diminished considerably and smaller-sized shrimp are caught.

In the summer of 1949, no shrimp were found in the fjords near Holsteinsborg (attributed to the icy water encountered near the bottom), therefore, shrimp fishing has been carried on in the southeastern part of Disco Bay off Christianshaab, and the catch transported to the factory near Holsteinsborg for processing. Experimental trawlings in the areas of Disco Bay have established that the average catch per hour is 176-275 pounds, using an ordinary shrimp trawl.

The bottom of the shrimp grounds consists of clay without stones and the depth varies from 191 to 219 fathoms. Since the shrimp spawn about the middle of August, they are taken before as well as after spawning.

The average age of the shrimp varies from 3-5 years. From the experimental trawlings conducted in Disco Bay, it appears that generally the shrimp taken near the coast are younger and smaller than those taken farther offshore. The Greenland shrimp's biology is similar to those taken near Spitsbergen—during the first two years of its life the shrimp is not ripe; during the next two years, the shrimp acts like a ripe male and then changes its sex. The Greenland shrimp is similar to the northern shrimp found along the North American coast from Cape Cod to Nova Scotia.



Iceland

TRAWLERS TO BE EQUIPPED WITH REDUCTION EQUIPMENT: Ten new trawlers being built by the Icelandic Government in Great Britain will be equipped with fish reduction equipment, according to an Icelandic newspaper report reprinted in Fiskets Gang. It is possible that similar equipment will be installed in the trawlers already delivered. The reduction equipment will handle 25 to 30 metric tons of raw material each 24 hours, producing 6 to 7 tons of meal. Due to the limited space available on the trawlers, installation presents certain problems.



India

MARINE INVERTEBRATE FAUNA SURVEY: A three-man expedition will survey the waters of the Indian Ocean bordering peninsular India for marine invertebrate fauna (giant clams, mollusca, crustaceans, etc.), according to a January 30 American consular report, which quotes the January 24 Bombay Times of India.

Organized by the Bombay Natural History Society, the expedition is the first of its kind in India. It will leave Bombay for Madras in mid-February to survey the Krusadai Islands in the Gulf of Mannar, the shark beds off Rameshwaram coast, and the pearl fisheries of Tuticorin. An artist is accompanying the expedition to make color sketches of the marine fauna.



Japan

FISHERIES LAW ENACTED: The Fisheries Law was enacted by the Diet November 29, 1949, the Natural Resources Section of SCAP reports in its Weekly Summary of December 3, 1949. The purpose of this law is to democratize Japanese fisheries, giving the working fisherman control over the source of his means of livelihood by placing the fishing rights in his hands. The law becomes effective on the date of its promulgation.

The new legislation eliminates absentee ownership of fisheries rights and excessive concentration of ownership. Bureaucratic government control is minimized.

This law presents solutions for fisheries rights problems, many of which at present are peculiar to Japan. It adapts democratic procedures to the unique fisheries rights system which evolved in Japan as a result of the crowded con-

ditions of coastal waters and the intensive search for food. As the world's population increases and its food supply decreases, similar problems can be expected to develop in other countries. Japan's experience with the fisheries rights program will serve as a guide to other nations in meeting such problems in the future.

REVIEW OF FISHERIES DURING 1949: A review of the Japanese fisheries during 1949 indicates considerable improvement, according to the January 14 Weekly Summary.

Fish production in 1949 reached about 7,000,000,000 pounds compared to less than 6,000,000,000 in 1948. This was made possible by the hard work of the Japanese fishermen and the increased quantities of cotton and manila fiber, fuel oil, and other supplies for Japanese fisheries which were paid for by the American people and turned over to the Japanese Government by SCAP.

The production of the Antarctic whaling fleets, which returned to Japan in April, totaled 57,350 metric tons of whale products and was the greatest since the surrender. Efficiency of operations, as shown by the quantity of oil and meat produced per whale, and the excellent record in observing international conventions, are the best performances ever recorded by Japanese whalers in the Antarctic.

On September 21, 1949, the Supreme Commander for the Allied Powers extended the authorized fishing area eastward to the 180th meridian, thus opening a large area to fishing operations. This action was in recognition of the good work of the Japanese Government and members of the fishing industry in controlling violations of the fishing area and establishing a program for correcting over-exploitation, particularly in the East China Sea.

Notable progress was made in the democratization of fisheries with the elimination of the old control associations and the establishment of democratic cooperatives. Passage on November 29 of the Fishing Rights Bill also contributed to democratization.

JAPANESE GOVERNMENT



Liberia

STATUS OF FISHERIES: Fishing in Liberia is still conducted on a primitive basis, states a January 26 American consular dispatch from Monrovia. Equipment consists of native-made canoes, home-made fishing nets, and raphia fishing lines. The fishing hooks are imported.

Each fishing canoe carries a complement of from two to four Kru or Fanti fishermen, depending on the size of the canoe. Fishing is done daily during the season (approximately 6 months) within a 30-mile belt off the coast. Seldom is the daily catch more than the local market can consume immediately. Thus, very little surplus is accumulated for the months when fishing cannot be carried on. At present, the small surplus occasionally occurring is either sun-dried or smoked over a crude Fanti oven and sold during the non-fishing season at exorbitant prices. The population during the non-fishing months must depend on imported fish (smoked and dried fish), coming principally from Norway and the United States.

There would seem to be a good opportunity for the establishment of a modern fishing operation in Liberia. A new cold storage plant in Monrovia, the capital city, can now supply ice to fishing boats, and also take the surplus catch for freezing.

It is estimated that there are 525 fishing canoes operating along the Liberian Coast with a complement of 1,200 fishermen, consisting mostly of members of the Fanti and Kru tribes. The Fantis immigrate into Liberia from the Gold Coast during the fishing season, returning to their native country at the end of the season. The annual catch will approximate a few hundred metric tons of the following varieties: bonies, barracuda, gruppa, cavalla, mullet, oysters, snapper, cassava, shark, cat, mackerel, sword, butternose, salmon, crawfish, salt-water turtle, shrimp, crabs, spiny lobster, clams, pike, and eel. All of the above are caught in sizable quantities and consumed locally.

No scientific study has yet been made of the potential fishery along the Liberian Coast. If properly explored, an important source of protein food might be developed.



Mexico

APPROVES INTERNATIONAL FISHERY AGREEMENT: The Mexican Government's approval of the Convention for the Establishment of an International Commission for the Scientific Investigation of Tuna, signed at Mexico City on January 25, 1949, by plenipotentiaries of the United States of America and the United Mexican States, was published in the Diario Oficial of February 16, 1950, according to a February 17 report from the American Embassy at Mexico City. The Decree approving the Convention was actually issued on December 30, 1949.

This Convention was ratified by President Truman on September 1, 1949, after the Senate on August 17 had previously unanimously advised and consented to the ratification of this fishery agreement.



Norway

EXPERIMENTS WITH ARTIFICIAL DRYING OF FISH: Norwegian producers of salted dried fish are becoming increasingly interested in using specially built drying plants rather than the old sun-drying method for processing the fish, a January 28 report from the Norwegian Information Service states.

Several such plants are already in operation and the Kristiansund Industrial Laboratory is at present constructing an experimental plant for testing the effect of variations in the atmosphere, humidity and temperature in the drying process. The object is to ascertain if a better quality can be obtained through artificial drying, as drying plants offer a much larger capacity than the old method.

LEATHER FROM FISH SKIN: Tanned fish skin is reported to make an excellent leather for brief cases and bookbindings. The Norwegian Government's fish filletting plant in northern Norway is now disposing of its fish skins, mostly cod, to

a tanning plant nearby. The plant can turn out about one metric ton of fish skins a day.

Modern technical methods make it possible for the Norwegian fishing industry to make use of every particle of the fish in one way or another. Whatever fish is not consumed either in fresh, frozen, salted or canned form can be converted into meal for animal fodder and into oil for margarine and cosmetics. Fish waste is also being processed into plastic, while the scales on the herring are being used to make artificial pearls.

HERRING FACTORY SHIP: Norway's first floating herring factory ship (Clupea) officially went into production the early part of February, according to a February 11 report.

The 6,000-metric-ton vessel has a production capacity of up to 5,000 barrels a day, can receive 15,000 barrels of herring under deck and 5,000 barrels above deck (see Commercial Fisheries Review, January 1950, p. 49).

When in full operation, the ship will employ 100 men, of whom 75 can be accommodated on board. Powered by two steam engines of 2,600 h.p. each, the ship is capable of a speed of 16 knots.

PLASTIC FROM FISH WASTE:^{1/} Production of plastic moulding powders from fish waste has been known to be theoretically possible for some time, but the practical realization of the idea was only recently attempted in Norway, according to a February 25 report.

By submitting fish protein to a special process, a Norwegian firm has now succeeded in producing a plastic moulding powder which is distinguished by moulding properties fully equal to those possessed by other moulding powders now on the market. It is a well-established fact that moulding compounds containing protein give the moulded articles an exceptionally fine finish and a very attractive appearance, in addition to the usual properties found in articles made from other moulding compounds. The powder can be made in opaque and transparent colors.

The Norwegian firm at Bergen has been able to install the necessary machinery. Since high quality raw material in desired quantities is easily obtainable at a low cost, the firm is able to offer its moulding powder at prices comparable with those demanded for the cheaper kinds of moulding material now on the market.

^{1/}See Commercial Fisheries Review, December 1949, p. 47.

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Norwegian Export to Poland	
Product	Quantity (Metric tons)
<u>Herring:</u>	
Fresh and frozen	5,000
Salted	13,000
Salted, Iceland	3,000
Fish meal	500
<u>Liver Oil:</u>	
Medicinal	400
Industrial	1,500
Refined fish and herring oil .	4,000
Hardened whale oil	3,000

NORWEGIAN-POLISH TRADE AGREEMENT:

A protocol containing an agreement for trade (which included fishery products) between Norway and Poland during 1950 was concluded at Oslo on December 21, 1949. The accompanying Payments Agreement signed at the same time states that settlement of payments of the two countries is to be made in Norwegian kroner. These agreements will expire December 31, 1950, unless previously cancelled by either party, according to a January 26 American consular report from Oslo.

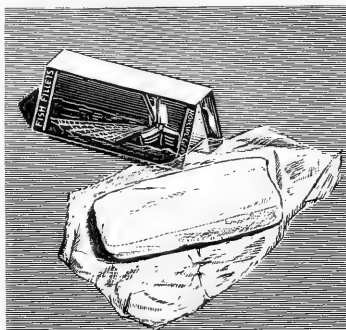
Included among the Norwegian exports to Poland are the fishery products given in the table.

In addition, Norway is scheduled to ship to Poland \$42,000 worth of fish hooks.

Poland's contemplated exports do not include any fishery products.

TRAWLING: The Norwegian Government not only intends to liberalize regulations on trawling, but will also establish and finance a company to operate fish-freezing plants in northern Norway, states a February 2 American consular dispatch. This was brought out in the King's "Speech from the Throne" outlining the Government's economic policy for 1950-51 on the occasion of the opening of the 94th Storting on January 18. Extensive use of trawlers by Norway will represent a radical departure for Norway's fishing industry.

EXPORTS OF FROZEN FILLETS: Exports of frozen fillets to the United States this year will be more than double the amount shipped during 1949 (over 500 metric tons). Shipments of frozen fillets began in May 1949 when a test shipment of 150 metric tons was made to the United States. Italy was the largest purchaser of Norwegian frozen fillets during 1949 (5,000 metric tons), followed by Israel (2,500 tons).



ONE-POUND PACKAGE OF NORWEGIAN FROZEN FISH FILLETS DESTINED FOR THE SWISS OR FRENCH MARKET.

HERRING FISHERY: As a result of increased demand and prices for herring meal, the production of salted herring has become relatively less profitable. Only 250,000 barrels of large herring and probably not more than 200,000 barrels of spring herring will be salted this year, states the Norwegian Directory of Fisheries. This will be less than half the quantity salted from last year's catch.

The Director of a herring oil factory at Bergen states that the potentialities of the herring oil and meal industry should be emphasized. The export price of Norwegian herring meal has increased from 700 kroner to 900 kroner per metric ton (\$140 to \$180 per metric ton at predevaluation rate of exchange). He also indicated that research should be continued on methods of fully recovering the available animal protein factor from herring.

STOCKFISH: The Stockfish Exporters' Association hope to meet 1950 export demand and have expanded production facilities accordingly. However, production is dependent on the Lofoten cod catch which scientists predict will not be large this year.

EFFECTS OF DEVALUATION: A survey published by the Norwegian Association of Canning Factories points out the effects of the devaluation of the Norwegian krone on exports of Norwegian fish to the United States. Inability to compete with Canadian prices, evident in the early part of 1949, is reported to have been at least temporarily overcome though production costs have increased, especially

for canning, with prices within the industry showing a tendency to rise. However, the survey adds that even after the devaluation, American importers have continued to buy cautiously, maintaining small inventories.

NEW RESEARCH VESSEL: A modern marine research vessel, the G. O. Sars, was placed into service by the Norwegian Government this month. It cost approximately 4 million kroner (approximately \$560,000) and is equipped with Asdic apparatus, supplemented by two echo sounders to be used for locating fish schools.



Pakistan

NORWAY TO AID PAKISTAN FISHERIES DEVELOPMENT: The Pakistan Government has asked the Norwegian Government for assistance in developing the Pakistan fisheries, according to a January 28 report from the Norwegian Information Service.

Norway announced late in January that it has decided to send a biologist, a technologist and a practical fisherman to Pakistan. The technologist would be a chemical engineer with knowledge of freezing, and fish meal and canning processes; the fisherman would have knowledge of all the main fishing methods.



United Kingdom

BILLINGSGATE FISHERY RECEIPTS DECLINED IN 1949: Receipts of fishery products in 1949 at the Billingsgate Market (considered the largest wholesale fish market in the world) in London dropped to 383,988,400 pounds, compared with 427,897,400 pounds in 1948. This was a decline of 43,909,000 pounds from 1948 and 47,158,600 pounds less than in 1947, according to the January 21 issue of The Fishing News. Average monthly receipts totaled 33,069,000 pounds in 1949 as against 35,443,400 pounds in 1948 and 35,935,000 pounds in 1947.

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NEW ALUMINUM PACKAGE DEVELOPED IN GREAT BRITAIN SHOWING FRESH COMPACTLY-PACKED DRESSED FISH.

NEW ALUMINUM FISH PACKAGE DEVELOPED: Considerable interest has been displayed by Great Britain's fishery industry in the development of a new non-returnable aluminum package for fishery products. The new package, which has been thoroughly tested, is a very light, pure aluminum package. Made in various sizes, consumer packages hold from 1 to 3½ pounds of fishery products, and trade packages hold 7 and 14 pounds, according to the January 7 issue of Fish Trades Gazette, an English periodical.

Cost of the new package, it is claimed, is considerably less than an equivalent paper or cardboard container, and in the case of the 14-pound size, less than that of the ordinary wooden one-stone (14-pound) box in wide use.

Advantages listed for the package are:

1. Quicker and more efficient freezing.
2. Can be sealed virtually airtight.
3. Can be opened by piercing and running an ordinary knife round the lid and since the metal is soft, it does not leave cutting edges.
4. After the packing ice has disappeared, the contents are protected from deteriorating action from the outside air, and the contents remain at a much lower temperature for a longer period than with other types of packages.

The 14-pound aluminum package was tested by packing with wet fillets. Tests were carried out under scientific control and in controlled temperatures. Fillets of identical quality were packed with and without ice and placed in temperatures up to 70° F. for 24 hours and 48 hours, in the new aluminum packages and in the ordinary wooden boxes. In all cases, fish taken from the aluminum packages and tested anonymously (by number and without knowledge from which pack it had been taken) was pronounced to be in the best condition of all. Further tests were then carried out with fish supplied, packed, opened, and inspected by merchants. In every test, using wet and dry fillets and kippers, the results were exceedingly satisfactory.

Containers have a scrap recovery value and the manufacturers have proposed to the trade that where the packages could be collected (crushed in a wooden box) approximately one cent per pound would be paid.

In addition, for wholesale and retail deliveries in bulk a returnable aluminum liner has been developed which can be used in a light wooden frame with a hinged lid.

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SHARK FISHING FACTORY SHIP: The first shark fishing factory ship in the world is being built in a Grimsby shipyard, England, the December 1949 issue of The South African Shipping News and Fishing Industry Review reports. The vessel is a former four-masted schooner built in Denmark in 1920. It is being converted to conduct shark fishing off the coast of West Africa all the year round.

In the after section of the vessel will be five factories, one equipped to extract vitamin oil from the shark liver, another to process fish meal, an air-drying section to handle selected cuts of shark for making fillets (to be sold on the West African food market), a canning plant, and a refrigeration plant.



International

FIRST LATIN AMERICAN CONGRESS OF OCEANOGRAPHY, MARINE BIOLOGY, AND FISHERIES: In order to set up a permanent Latin American Committee For Marine Research to encourage all countries to recognize, appreciate, and protect the resources of the sea, the First Latin American Congress of Marine Biology was called. The

purpose of the Congress is to establish and foster relations between similar institutions in the American Republics and to encourage the study of the utilization of products from the sea for food and industrial purposes. The Congress was held at Valparaiso and Vina Del Mar from October 10 to 15, 1949, according to a January 5 report from the American Embassy at Santiago, Chile.

Representatives from the Argentine Republic, Brazil, Chile, Ecuador, Dominican Republic, Mexico, Panama, Peru, and Uruguay attended.

The following five committees were formed:

1. General and Marine Biology.
2. Physical and Chemical Oceanography.
3. Zoology.
4. Fishing and Fishery Biology.
5. International Organization and Marine Biology Stations.

The Plenary Sessions of the Congress approved resolutions presented by the Fishing and Fishery Biology Committee on the following subjects:

1. Establishment of international zones in which neighboring countries shall be permitted to fish.
2. Control of unrestrained fishing by vessels from foreign countries.
3. Protection of exploitable marine resources and the intensification of the scientific study thereof.
4. Establishment of the name "Latin American Congresses of Oceanography, Marine Biology and Fisheries" as final.
5. Standardization of fishery statistics.

In addition, among the numerous other resolutions of general interest presented by the other committees and accepted by the Plenary Sessions were resolutions on the following subjects:

1. Need for international exchange of biological data gathered simultaneously in the various countries.
2. Revision of the methods of research in the sea, making them uniform for all oceanography, marine biology and fishery stations.
3. Preparation of a catalog of the marine fauna of Latin America.
4. Emphasizing the value of libraries specializing in oceanography, marine biology, and fishery, and the fostering of their development by requesting the aid of public funds.
5. Urgent need for the establishment of Marine Biology Stations in all of the Latin American countries.
6. Concentration of facilities for work and research in one Institute which will serve all the Stations.

7. Need to have the (respective) governments adopt adequate measures for the effective conservation of natural resources, protecting their common interests by means of regional agreements.
8. Approval of the statutes of the Standing Latin American Committee on Oceanography, Marine Biology and Fisheries.

The next Congress, which is to meet every three years, will be held at the City of Montevideo. The Uruguayan Committee is to propose the opening date. Place of holding the Congresses will be alternated between the Member Countries on the Atlantic and Pacific coasts. Extraordinary Congresses may be convened at the decision of the Standing Committee. The official languages will be the scientific languages, and Spanish and Portuguese; only the last two are working languages.

At this Congress, the Standing Latin American Committee on Oceanography, Marine Biology, and Fisheries was organized. The Marine Biology Station of the University of Chile in Montemar near Valparaiso, Chile, was designated as the permanent seat of the Standing Committee.

The Standing Committee, which shall consist of five members appointed by each Congress, shall have an international status, and shall be recognized by the adhering Governments and financed by them yearly by means of quotas proportionate to their population and the total volume of fishing done by them in the previous year. It shall meet at Montemar at least once a year, and will have a salaried Secretary-General.

Functions of the Standing Committee will be as follows:

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| <ol style="list-style-type: none"> 1. To stimulate, plan, and coordinate oceanographic, marine-biological and piscatorial research in the countries of Latin America. 2. To standardize and disseminate working and research methods in that field in the countries of Latin America. 3. To coordinate, organize, and publish the results obtained from oceanographic, marine-biological and piscatorial research in Latin America. 4. To favor the establishment of common training stand- | <ol style="list-style-type: none"> ards for marine biologists, ichthyologists and fishing experts. 5. To compile a file on information relative to oceanography, marine biology and fishing, and publish the minutes, documents, and papers of the Congresses. 6. To facilitate the exchange of researchers, and of working and scientific materials among the various Latin American countries. 7. To form commissions to study specific problems of common interest to various Latin American countries. |
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In addition, the Congress appointed a chairman of the National Committee, which is to function in each Member Country, who was charged with the organization and operation of the Committee. Each National Committee shall consist of the same number of members as the Standing Committee and its Secretary shall be chosen by the respective Governments.

Functions of each National Committee are:

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| <ol style="list-style-type: none"> 1. Discharge in its country, the functions pertinent to the organization to which it belongs, and it shall fulfill or conduce to the fulfillment of the decisions of the Congress and of the Standing Committee. 2. Answer the inquiries made by its Government in matters relative to oceanography, marine biology, | <ol style="list-style-type: none"> fishing and kindred subjects. 3. Prepare, in the role of Organizing Committee, for the next Latin American Congress on Oceanography, Marine Biology and Fishery to be held in its country. 4. Maintain constant relations with the Standing Committee and the other National Committees. |
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During the initial organization stages, each National Committee was requested to give preferential attention to and act on the following:

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| <ol style="list-style-type: none"> 1. To seek the ratification by each country of the agreement creating the Standing Committee, and their financial support thereof. 2. To coordinate and organize existing material resources and manpower. 3. To organize or create at least one Marine | <p>Biology Station in those countries where there is none.</p> <ol style="list-style-type: none"> 4. To promote the training of the necessary scientific personnel for marine research and exploitation, striving to place them in such financial circumstances as will enable them to devote themselves wholly to their task. |
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All authority and rules governing all the activities of the Standing Latin American Committee and the National Committees emanate from the Latin American Congresses.

Special committees also may be appointed by the Congresses or by the Standing Committee for a definite purpose and shall report on their work to the body which appointed them.

Numerous papers were presented at this Congress, and the following are some of those directly related to fisheries:

Scales and Biology of Fish

Canning Industry

Starfish and their Threat to the Industry

Permeability of Woods

Fish Breeding

Sea Fishing in Brazil and Sao Paulo

Biology of Fishing and Marine Biology Stations

Useful Fish

Ichthyologic Population

Marine Biologists and Fishery Biologists

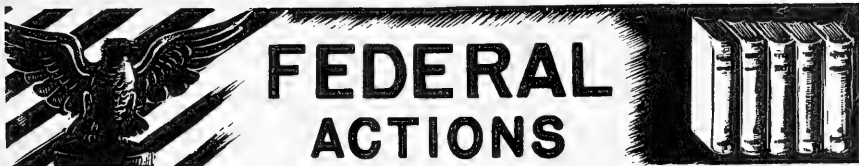
Mexican Fishery Resources

The Need to Create an International Organization for the Study of Oceanography

Marine Biology and Fisheries

Territorial Waters and Cooperation of Ships of the Merchant Marines and Navies in these Studies





Department of Commerce

BUREAU OF FOREIGN AND DOMESTIC COMMERCE

CERTAIN COMMODITIES DELETED FROM POSITIVE LIST: Certain additional commodities were deleted from the Positive List effective December 29, 1949, according to the Department of Commerce. Among the deleted commodities was "...fish meal for feed...", Schedule B No. 119900. This was the only item deleted of interest to the fishing and allied industries. (See Commercial Fisheries Review, January 1950, p. 54; and November 1949, p. 68).



Federal Trade Commission

COMMERCIAL COLD STORAGE INDUSTRY TRADE PRACTICE CONFERENCE HELD: A commercial cold storage industry trade practice conference was called by the Federal Trade Commission on March 23, and announced in the Federal Register of March 2. The conference was held at Chicago.

The conference was and further proceedings will be directed toward the eventual establishment and promulgation by the Commission of trade practice rules for the industry under which unfair methods of competition, unfair or deceptive acts or practices, and other trade abuses, may be eliminated and prevented.

All persons, firms, corporations and organizations engaged in the business of renting, leasing or otherwise providing refrigerated storage space for foods and other products, issuing warehouse receipts for such products, and in supplying services and facilities in connection with such storage, were invited.



Department of State

OBJECTIVES AND PRINCIPLES OF CARIBBEAN COMMISSION REAFFIRMED: The four Member Governments of the Caribbean Commission (France, the Netherlands, the United Kingdom, and the United States) issued a statement on March 6 reaffirming the Member Governments' continuing support of the objectives and principles of the Caribbean Commission and announcing policies on certain recommendations of the West Indian Conference (Third Session), according to the United States Department of State.

In this statement, which was issued simultaneously March 6 in the Caribbean Area, Paris, London, and The Hague, the four Governments reaffirm the principles that the Caribbean Commission is an agency of the Member and Territorial Governments

for the collection of factual information and statistics on problems of regional significance (including fisheries); a clearing house for the dissemination of such information and statistics; and an agency for reporting and making recommendations on specific problems of economic and social development. In its role as a coordinating agency, the Commission will place at the disposal of the Caribbean territories as wide a range of technical assistance as possible by such means as sponsoring the exchange of scientific and technical information, and by developing scholarship arrangements and direct exchange of technical workers.

So far as future joint action is concerned, the Governments pledge their continued support to the principle of industrial diversification appropriate to the economies of the various Caribbean territories, as a means of supplementing and diversifying their economies. Further, the Governments express interest in seeing that trade barriers are kept to a minimum with a view to promoting trade.

The Caribbean Commission is an outgrowth of the former Anglo-American Caribbean Commission which was established March 9, 1942, for the purpose of encouraging and strengthening social and economic cooperation between the United States and the United Kingdom and their non-self-governing territories in the Caribbean area.

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UNITED STATES-COSTA RICA INTER-AMERICAN TROPICAL TUNA COMMISSION:^{1/} The Convention between the United States and Costa Rica for the Establishment of an Inter-American Tropical Tuna Commission, signed at Washington, May 31, 1949, entered into force on March 3, upon the exchange by representatives of the two countries of the respective instruments of ratification.

This Convention is the result of increasing evidence during recent years that the United States and Costa Rica should undertake cooperative scientific investigation of the yellowfin and skipjack tuna in the waters of the eastern Pacific Ocean fished by nationals of the two countries, the kinds of fishes commonly used as bait in the tuna fisheries, and other kinds of fish taken by tuna fishing vessels. The scientific information presently available is not sufficiently extensive to indicate whether or not tuna stocks are now in danger of depletion. Accordingly, the Convention has for its purpose the making of a joint study and the gathering and interpretation of factual information with a view to maintaining the populations of the fishes covered by the Convention at a level which will permit maximum utilization year after year without depletion. This will be done through a joint Commission composed of a United States section and a Costa Rican section. Inasmuch as the fisheries concerned in the Convention present problems of interest to a number of countries besides the signatories, a provision was inserted making possible adherence by other countries whose nationals participate in the fisheries involved.

This Convention is similar to the conventions between the United States and Canada regarding sockeye salmon and halibut, which were signed on May 26, 1930, and January 29, 1937, respectively, in that the objectives are to be attained through a Commission composed of representatives of both Governments and which shall have investigatory powers. Unlike the salmon and halibut commissions, however, the Inter-American Tropical Tuna Commission is a purely investigatory body and any regulatory measures which are indicated by the study would have to be the subject of future negotiations between the two countries.

^{1/}See Commercial Fisheries Review; November 1949, pp. 71-2; June 1949, pp. 59-62.

Eighty-first Congress (Second Session)

FEBRUARY 1950

Listed below are public bills, resolutions, etc., introduced and referred to committees, or passed by the Eighty-First Congress (Second Session) and signed by the President during February 1950, which affect in any way the fisheries and fishing and allied industries. Public bills, resolutions, etc., are mentioned under this section only when introduced and, if passed, when they are signed by the President.

PUBLIC BILLS AND RESOLUTIONS INTRODUCED AND REFERRED TO COMMITTEES:House of Representatives:

- H. R. 7209 (Bonner) - A bill authorizing and directing the United States Fish and Wildlife Service of the Department of the Interior to undertake a continuing study of the shortage of white shad, herring, and other fish in the Albemarle and Pamlico Sounds and tributaries with respect to the biology, propagation, and abundance of such species to the end that such Service may recommend appropriate measures for arresting the decline of valuable food fish for increasing the abundance and promoting the wisest utilization thereof; to the Committee on Merchant Marine and Fisheries.
- H. R. 7441 (Thompson) - A bill to promote development and improvement of standards for frozen fishery products and to provide for voluntary grading, inspection, and certification of such products, and for other purposes; to the Committee on Merchant Marine and Fisheries.

The following bills introduced prior to February 1, 1950, were not previously shown under this section:

- H. R. 6835 (Herter) - A bill to promote the foreign policy of the United States and to authorize participation in a cooperative endeavor for assisting in the development of economically underdeveloped areas of the world; to the Committee on Foreign Affairs.
- H. R. 6902 (Scudder) - A bill to provide for the determination of peril points with respect to foreign trade agreements; to the Committee on Ways and Means.
- H. R. 6905 (Stockman) - A bill to require the establishment of a classification of freight and a scale of class rates, for application to transportation of property by railroad, so adjusted as not to discriminate among regions or territories in the United States; to the Committee on Interstate and Foreign Commerce.
- H. R. 7062 (Furcolo) - A bill to aid in the use, conservation, and development of the natural resources of the New England Resources Survey Commission; to the Committee on Public Works. (Same as S. 2847.)

Senate:

- S. 3123 (Johnson) - A bill to amend section 5 of the act of February 26, 1944 entitled "An act to give effect to the Provisional Fur Seal Agreement of 1942 between the United States of America and Canada; to protect the fur seals of the Pribilof Islands; and for other purposes;" to the Committee on Interstate and Foreign Commerce.

The following bills introduced prior to February 1, 1950, were not previously shown under this section:

- S. 2847 (Green) - Same as H. R. 7062; to the Committee on Public Works.
- S. 2905 (Thye) - A bill to extend until July 1, 1951, import control powers with respect to fats and oils and rice and rice products; to the Committee on Banking and Currency.
- S. 2917 (Saltonstall) - A bill to promote the foreign policy of the United States and to authorize participation in a cooperative endeavor for assisting in the development of economically underdeveloped areas of the world; to the Committee on Foreign Relations.



NOTES ON SHRIMP FISHING ALONG THE NEW ENGLAND COAST

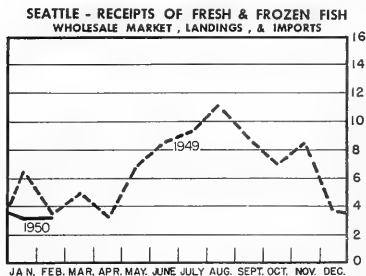
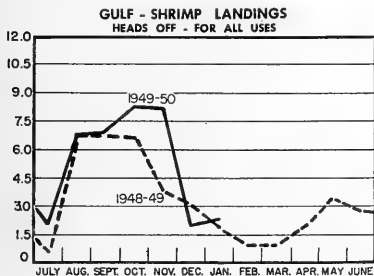
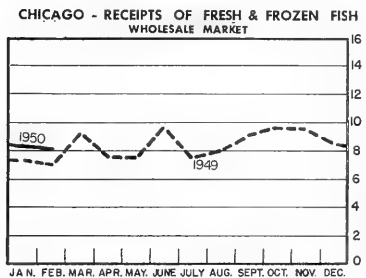
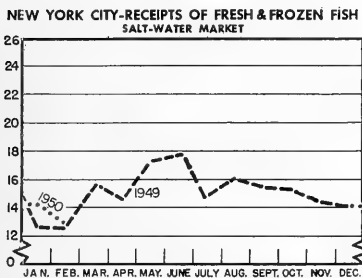
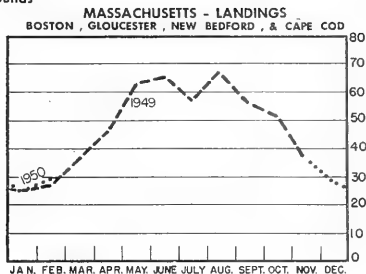
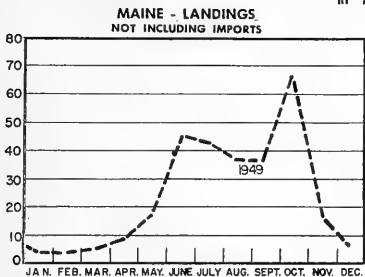
There lives along the North American coast from Cape Cod to Nova Scotia a large population of northern shrimp. Found in depths of 35 to over 400 fathoms, they are very different in appearance from the small shrimp of shallow brackish sloughs or from the large ones of the Gulf of Mexico. They are the largest shrimp of the New England coast, reaching a total length of about eight inches, and the most brilliantly colored, being deep pink to bright red all over the body.

They are most commonly found in water of 60 to 100 fathoms in depth, usually (though not always) on soft mud. During the late winter, however, they move inshore to spawn in depths of 20 to 50 fathoms. At that time, they are often taken incidentally in lobster pots or in flounder trawls. Some time in late spring or early summer they return to their usual haunts in deeper water. They may be taken on the bottom only during the day and in greatest quantities on brightest days. They are usually found in regions where several kinds of bottom-living fishes are also abundant. Hence, catches of shrimp are nearly always associated with large quantities of rosefish (bream), whiting, hake, flounders, etc.

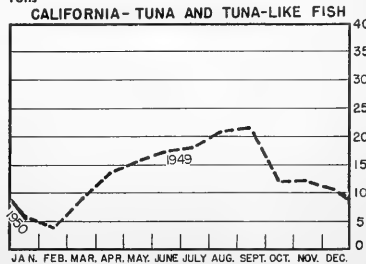
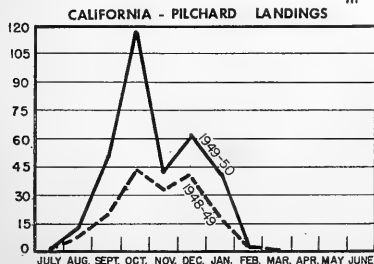
Although it has long been known that northern shrimp are probably commercially abundant, their habits are such that special gear and methods are needed to catch them in profitable quantities.

LANDINGS AND RECEIPTS

In Millions of Pounds



In Thousands of Tons

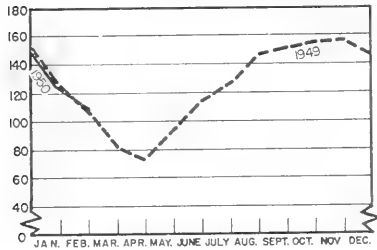


..... ESTIMATED

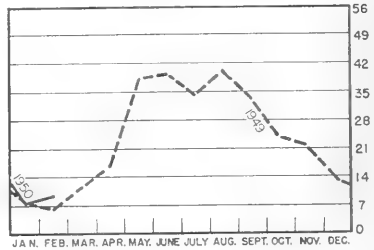
COLD STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS

In Millions of Pounds

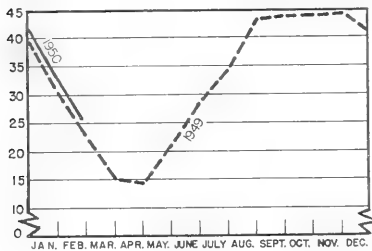
U.S. & ALASKA - HOLDINGS OF FROZEN FISH



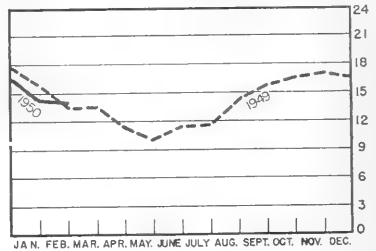
U.S. & ALASKA - FREEZINGS



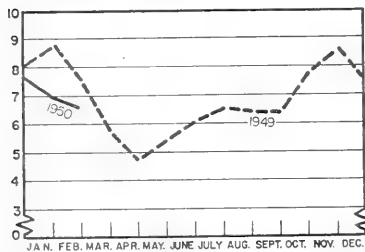
NEW ENGLAND - HOLDINGS OF FROZEN FISH



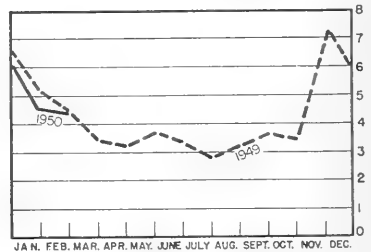
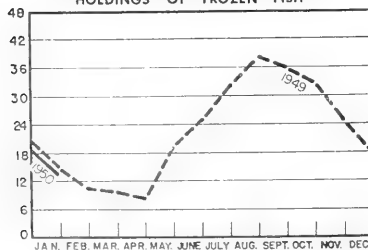
NEW YORK CITY - HOLDINGS OF FROZEN FISH



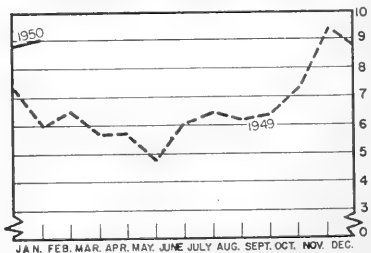
CHICAGO - HOLDINGS OF FROZEN FISH



GULF - HOLDINGS OF FROZEN FISH

WASHINGTON, OREGON, AND ALASKA
HOLDINGS OF FROZEN FISH

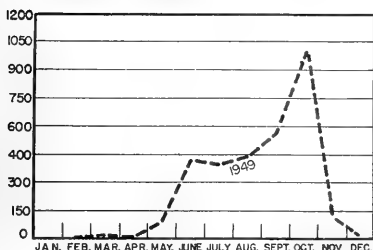
CALIFORNIA - HOLDINGS OF FROZEN FISH



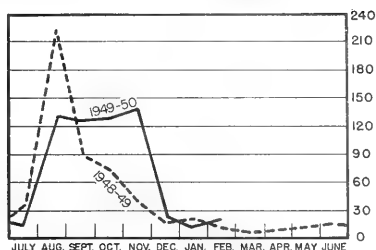
CANNED FISHERY PRODUCTS

In Thousands of Standard Cases

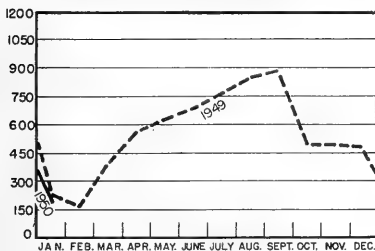
MAINE - SARDINES, ESTIMATED PACK



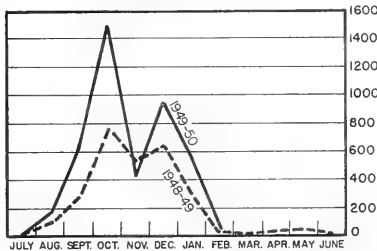
UNITED STATES - SHRIMP



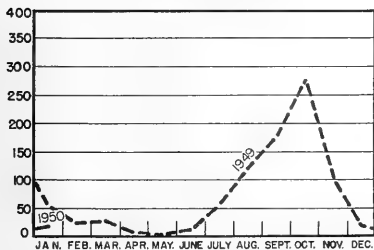
CALIFORNIA - TUNA AND TUNA-LIKE FISH



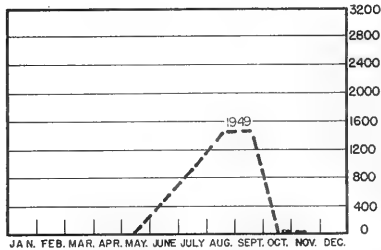
CALIFORNIA - PILCHARDS



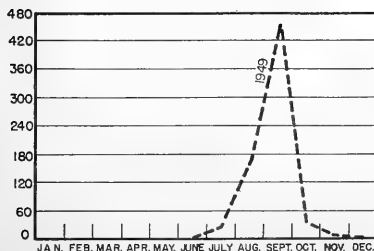
CALIFORNIA - MACKEREL



ALASKA - SALMON



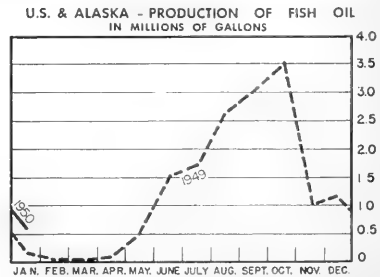
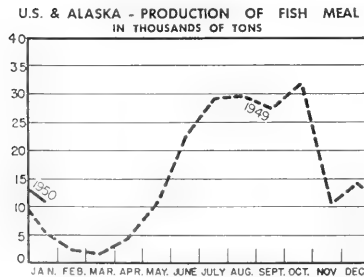
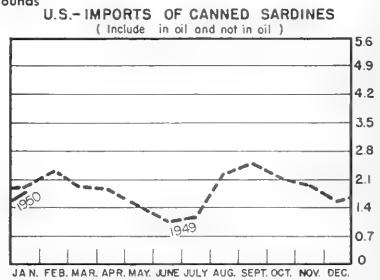
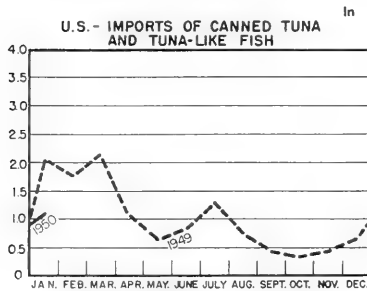
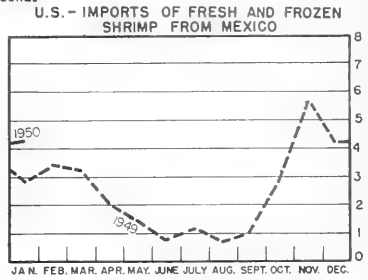
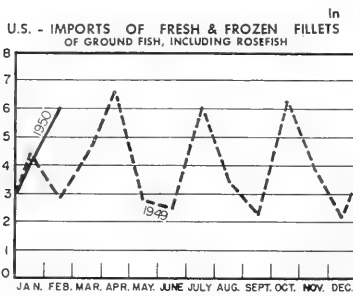
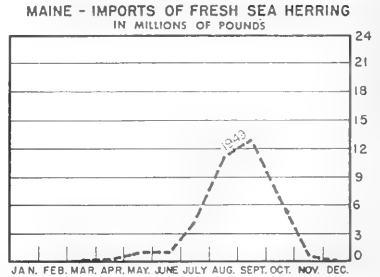
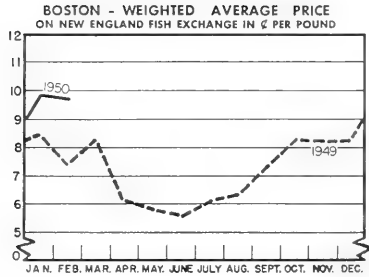
WASHINGTON - PUGET SOUND SALMON

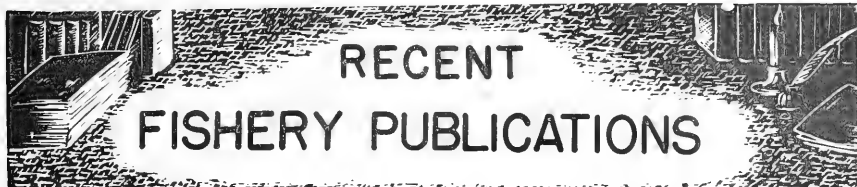


STANDARD CASES

Variety	No. Cons	Can Designation	Net. Wgt.
SARDINES	100	1/4 drawn	3 1/4 oz.
SHRIMP	48	—	5 oz.
TUNA	48	No. 1/2 tuna	7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
MACKEREL	48	No. 300	15 oz.
SALMON	48	1-pound tall	16 oz.

PRICES, IMPORTS and BY-PRODUCTS





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

FISH AND WILDLIFE SERVICE PUBLICATIONS

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

- CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
- FL - FISHERY LEAFLETS.
- MDL - MARKET DEVELOPMENT SECTION LISTS OF DEALERS, LOCKER PLANTS, ASSOCIATIONS, ETC.
- SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
- SL - STATISTICAL SECTION LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.

Number	Title
CFS-505	- Massachusetts Landings, 1947 Annual Summary, 16 p.
CFS-506	- Massachusetts Landings, 1948 Annual Summary, 14 p.
CFS-516	- Frozen Fish Report, 1949 Annual Summary, 14 p.
CFS-517	- Frozen Fish Report, January 1950, 10 p.
CFS-518	- Lake Fisheries, 1947 Annual Summary, 8 p.
CFS-520	- Meal and Oil, December 1949, 2 p.
CFS-521	- Texas Landings, December 1949, 4 p.
CFS-522	- Massachusetts Landings, September 1949, 14 p.
CFS-524	- Chesapeake Fisheries, 1947 Annual Summary, 4 p.
SL-3	- Wholesale Dealers in Fishery Products, Massachusetts, 1949, 9 p.
SL-17	- Wholesale Dealers in Fishery Products, Alabama, 1950, 3 p.
FL-336c	- Quarterly Outlook for Marketing Fishery Products, January-March 1950, 38 p.
FL-363	- Egyptian Fisheries, 12 p.
FL-364	- The Mussel Resources of the North Atlantic Region, 34 p.
MDL-51 (Revised)	- Officials of Refrigerated Locker Plant Associations, 3 p.
Sep. 245	- Gallic Acid Ester Anti-Oxidants for Fish Oils Feeding Tests with Gallic Acid Ester Anti-Oxidants

MISCELLANEOUS PUBLICATIONS

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

Annual Report of the Federal Security Agency 1949 (Food and Drug Administration), 47 p., printed, 20 cents. Food and Drug Administration, Federal Security Agency, Washington, D. C. (For sale by Superintendent of Documents, Washington 25, D. C.), 1950. This publication contains only the annual report of the Food and Drug Administration, covering the period from July 1,

1948, to June 30, 1949, reprinted from the Annual Report of the Federal Security Agency. Actions taken on foods, including sea food, are listed in this booklet. Included is a short report on the sea-food inspection service, court interpretations (including one on canned oysters), and a report on scientific investigations conducted by the agency (including crab meat, oysters, and frozen shrimp).

Food Composition Tables for International Use, by Charlotte Chatfield, FAO Nutritional Studies No. 3, 61 p., printed. Food and Agriculture Organization of the United Nations, Washington, D. C., October 1949. Among the important responsibilities of FAO is a periodic appraisal of the world food situation. For such appraisals, the basic material includes "food balance sheets" for individual countries. Preparation of food balance sheets involves three steps: (1) the collection by governments of data on available food supplies; (2) calculation of the amounts of the various foods and food groups available on a per capita basis made by dividing the total supplies by the number of people in the population; (3) calculation, based on step 2, of the calories and certain nutrients available on a per capita basis. Up to the present, the only nutrients or classes of nutrients considered in drawing up food balance sheets have been proteins and fats, including fishery products. The main purpose of the tables contained in this booklet is to facilitate the last step in the process of drawing up food balance sheets with a greater degree of uniformity. For fishery products, as well as for other foods, the food composition in terms of retail weight ("as purchased") and composition of the edible portion and refuse in the material as purchased are given. The Handbook for the Preparation of Food Balance Sheets, which indicates the methods which Member Governments may follow in carrying out the first two steps in the process of preparing food sheets, has already been issued.

How to Sell to the United States Army, 36 p., printed. Procurement Information Center, Department of the Army, Room 3D 745, The Pentagon, Washington, D. C., 1950. Explains how both large and small firms may enter the Army procurement field and gives continuing assistance to businessmen who have dealt with the Army in the past. Detailed information on where purchasing is accomplished and how procurement matters are handled by the Army is contained in the pamphlet along with other pertinent material. In addition, the list of items purchased (includes preserved or prepared fish and shellfish and edible animal oils) by the Army and respective purchasing locations have been brought up to date and included as an appendix. Another appendix, regarding procedure for local purchases, will be of value to fishery firms interested in supplying fresh and frozen fishery products to the Army.

"New Information on the Essential Amino Acid Content of Canned Fish," by E. J. Cameron, article, N.C.A. Information Letter (Convention Issue), no. 1271, February 4, 1950, pp. 34-8, illus., printed, free. Fishery Products Division, National Cannery Association, 1739 H St., NW, Washington 6, D. C. A brief explanation of the role protein plays in human nutrition is given, as well as a summary of the canned-fish protein studies sponsored by the National Cannery Association-Cannery Manufacturers' Institute. The procedure for determining the minimum daily requirements of essential amino acids developed by Dr. W. C. Rose is described. Three tables are presented showing (1) the minimum and recommended intakes of essential amino acids for normal man (tentative values), (2) protein and amino acid contents per servings of canned fishery products, and (3) contribution by canned fish servings to protein and amino acid requirements. Nine figures are given: one showing the protein content of various fish and eight showing the amino acid content of the following canned fishery products: fish flakes, Atlantic mackerel, Pacific mackerel, salmon, sardines in oil, sardines in tomato sauce, shrimp, and tuna. It was found that the essential amino acid patterns for various fishery products are very similar. Lysine and threonine predominate in all samples. Three others, isoleucine, leucine, and valine follow fairly closely, and the remaining three, methionine, phenylalanine, and tryptophan run somewhat below 50 percent but are present in substantial quantities. The data obtained in the studies add greatly to the knowledge of the nutritional value of fish and fishery products. A bibliography of 11 references is also included.

Pearl Industry in Japan, NKH Research Monthly, No. 12, July-August 1949, 8 p., printed, free. The Nippon Kangyo Bank, Ltd. (The Hypothec Bank of Japan) No. 1, 1-chome, Uchisaiwai-cho, Chiyoda-ku, Tokyo, Japan. In a brief historical sketch, this publication outlines the development of the pearl industry in Japan. It points out that recovery of the industry to prewar levels is expected to take several years because of the scarcity of materials and higher costs. Discusses cultivation (operation, equipment, materials, yield of completed pearls, prevention of natural disasters); export and production; and cultured and natural pearls.

"The Pilchard Situation in Oregon," article, Fish Commission Research Briefs, December 1949, vol. 2, no. 2, pp. 17-22, printed, free. Fish Commission of Oregon, Portland, Oregon. A brief analysis of the data collected during the 1948 season in the cooperative study of pilchards (Sardinops caerulea) being conducted by the Pacific Coast fishery research agencies and the Fish and Wildlife Service is presented in this article. It shows how the average lengths of the pilchards for both sexes and in all time periods were greater in 1948 than in 1947. The analysis indicates that the Oregon pilchard

fishery in 1947 and 1948 was dependent on the larger, older fish--the younger age classes are not entering this fishery in sufficient numbers to support a heavy catch. Prospects for the future of the pilchard fishery in Oregon are not bright, according to the authors.

Point Four (Cooperative Program for Aid in the Development of Economically Underdeveloped Areas), Economic Cooperation Series 24, Publication 3719, 177 p., illus., printed, 40 cents. Department of State, Washington, D. C., January 1950. (For sale by Superintendent of Documents, Washington, D. C.) The purpose of this document is to explain the nature, purpose, scope, and operating arrangements for the proposed Point Four Program and its relation to the United Nations program. Fisheries are mentioned specifically in several instances. Under the scope of the program, fisheries are discussed with reference to development of resources and industries. What cooperative fisheries assistance to date has accomplished in Mexico, Chile, Guatemala, Peru, and Venezuela is also included.

Report on the Present Status of the Franklin County Shrimp Industry, by Clarence P. Idyll, 14 p., processed. Marine Laboratory, University of Miami, Florida State Board of Conservation, Coral Gables, Fla., February 1950. This report discusses a survey conducted by the author in order to determine whether or not the shrimp fishery of Franklin County, Florida, has declined. It lists the kinds of shrimp caught, outlines the life history of the shrimp, gives total landings for the County, and includes recommendations made by the author. Among the recommendations for investigations leading to a more efficient exploitation of the shrimp resources are the following: (a) a search for offshore grounds inhabited by jumbo shrimp and the testing of new methods for capture of these shrimp, using sonic sounding gear and mid-water trawls; (b) testing of night fishing for red or grooved shrimp ("hoppers"); (c) development of uses and markets for the "sea bob" shrimp which occur in large quantities. The cost of such exploratory work, if carried out in cooperation with the United States Fish and Wildlife Service, should not exceed \$15,000, according to the author.

"Should the Hoover Commission's Fishery Recommendations be Adopted," was the subject of four addresses presented at the Fishery Products Conference at the 43rd Annual Convention of the National Cannery Association, Atlantic City, N. J., January 28, 1950. They were delivered by the following: Robert O. Beatty, Conservation Director, Izaak Walton League of America, Inc., (News Release 1950 C-5, 5 p.); C. R. Guterthuth, Vice President, Wildlife Management Institute, (1950 C-7, 5 p.); Donald P. Loker, Chairman, Fishery Products Committee, N.C.A., (1950 C-8, 10 p.); and Albert M. Day, Director, U. S. Fish and Wildlife Service, (1950 C-6, 7 p.); see pp. 1-9 of this issue. Copies of these news releases are available

from the National Cannery Association, Information Division, 1133 20th St., NW, Washington 6, D. C.

"Skin Lesions Among Fishermen at Houkman's Abrolhos, Western Australia, with an Account of Erysipeloid of Rosenbeck, by Keith Sheard and Harold Griffiths Dicks," 4 p., printed. Reprinted from The Medical Journal of Australia, vol. II, no. 10, September 3, 1949. Commonwealth Scientific and Industrial Research Organization, Australia. Examination of 43 fishermen at the Abrolhos Islands, Western Australia, during 1947 showed the presence of many lesions resulting from the infection of superficial wounds by staphylococci, streptococci, and erysipelothrix, among other agents. This is a report on an investigation carried out on these 43 fishermen. The report describes the working conditions of the workers, the generalized clinical picture, prevention, and treatment.

"Small Boat Stabilizers," article, California Fish and Game, January 1950, vol. 36, no. 1, pp. 53-4, printed, Division of Fish and Game, Department of Natural Resources, San Francisco, Calif. Describes a device for holding a fishing vessel (trollers) steady by reducing the roll of the boat in heavy seas. The use of this device is said to increase the fish catch of the boat by permitting fishing in rough seas that would otherwise drive the small trolling vessels to shelter.

Supplement II (Cumulative) to United States Import Duties (1948), Miscellaneous Series, TC 1.10: Im 7/4/948/supp. 2, 25 p., processed. United States Tariff Commission, Washington, D.C., January 1950. (Persons who already have the original document can obtain copies of the supplement without cost on request to the Commission. Original document is for sale by the Superintendent of Documents, Washington, D.C., at \$2.00.) This supplement brings the "United States Import Duties (1948)" TC 1.10: Im 7/4/948, up to date as of January 1, 1950. The original document, released in June 1948, shows all United States import duties as of June 15, 1948. The current supplement is cumulative and replaces the first supplement issued in August 1948. The basic document together with the second supplement includes all United States duty changes negotiated under the trade agreements procedure and which were in effect January 1, 1950. Of the changes negotiated at Anney, France, during the summer of 1949, only the rates of duty negotiated with Haiti were in effect as of January 1, 1950. The other rates negotiated at Anney are not covered by the supplement. Certain fishery products are listed in the latest supplement.

"Studies on Australian Marine Algae, V, (Observations on and Geographical Records of Various Species, Particularly Those of

the *Gelidium* Complex), by Valerie May, 8 p., printed. Reprinted from the Proceedings of the Linnean Society of New South Wales, vol. LXXIV, Parts 3-4, pp. 196-202, October 21, 1949. Commonwealth Scientific and Industrial Research Organization, Australia. This paper is concerned mainly with species of the genus *Gelidium*, various observations, and new records of distribution being reported. In addition, extended geographical ranges are recorded for certain other algae and the occurrence of tetrasporic material is noted in a species normally found only in a sterile condition.

"Trends in Supply and Demand 1949," article, Fisheries Bulletin, January-February 1950, vol. III, no. 1, pp. 3-7, processed, 30 cents per issue. Food and Agriculture Organization of the United Nations, Washington, D. C. Discusses primary world production of fishery products, fishing fleets, international trade, prices, processing, and trends. It contains an appraisal of the data and information made available to FAO through the first half of December.

Report of the FAO Fisheries Mission for Thailand, 79 p., illus., processed. Food and Agriculture Organization of the United Nations, Washington, D. C., December 1949. An FAO Special Fisheries Mission (which arrived in Thailand on November 1, 1948, and stayed until December 13, 1948) made extensive tours of fresh-water, brackish, and marine fisheries, visiting fishing villages, fishing grounds, fish markets, and other places of interest in Thailand, from Chhengmai in the north to Songkla in the south. The report discusses in a general way the fish fauna and aquatic resources of Thailand, and then gives the present status of and the nature of governmental action in the fresh-water fisheries, brackish-water cultural fisheries, marine fisheries; marketing; handling, storage, and processing; and fisheries organizations, including cooperatives. The Special Mission gives its conclusions and recommendations on individual aspects of a fisheries program. According to the Mission, the status of the Thailand fishing industry and of governmental activity is extremely low, its prospects of development are considerable, and the need for governmental action is urgent. Although many understandable factors doubtless contribute to this situation, it is nonetheless surprising in view of the importance of the product in the Thailand diet and of the industry as a source of employment and income. This present report and the earlier Report of the Mission for Siam, published in 1948 after the visit to Thailand of FAO's economic and technical (agricultural and forestry) mission, complement each other.

A Report on Factors Affecting the Cost of Ice in the Philippines, by Harry B. Hinkle and Justo C. Aquino, 61 p., processed. Philippine Fishery Program, U. S. Fish and Wildlife Service and Philippine Bureau of Fisheries, Manila, Republic of the Philippines, December 1949. This report

examines the factors affecting the cost of ice in the Philippines and how they seriously affect the orderly production and marketing of fishery products in that country.

Report on a Fisheries Project for Costa Rica, by Mogens Jul, 128 p., processed, limited distribution. Food and Agriculture Organization of the United Nations, Washington, D. C., September 1949. In April 1949, the International Bank for Reconstruction and Development requested the FAO to undertake a brief study of a plan for fisheries development in Costa Rica which had been prepared and submitted to the Bank by the Costa Rican Government. The author visited Costa Rica from May 12-20, 1949. This publication reports on the findings made on this trip and the material collected. The project consists of plans for the development of fishing and distribution for fresh fish consumption; tuna fishing and freezing for export; a fish meal plant; and fish canneries. Contains information on the present fishing industry of Costa Rica and the possibilities for its development, including fisheries administration, statistics, legislation, operations and resources, shore installations; domestic market for fresh fish; markets for tuna and shark; canning of fish; production of fish meal; and other fish processing. The author in his conclusion and recommendations states that it seems desirable for Costa Rica to attempt to develop fishing activities and related industries there; and that there are good possibilities for doing this on an economically sound basis. The author reports that increased local participation in tuna operations carried out in Costa Rica should be studied and proposals made for one type of vessel to be acquired for this purpose and tested. Annexes include tables of fishery products production and foreign trade, the plan prepared by the Costa Rican Government, and Costa Rican legislation affecting the fisheries.

"Studies on the Biology of the Edible Oyster, *Ostrea rhizophorae* Guilding, in Puerto Rico," by N. T. Mattox, 16 p., illus. (Reprinted from Ecological Monographs, October 1949, vol. 19, pp. 339-56). Department of Biology, University of Puerto Rico, College of Agriculture and Mechanic Arts, Mayaguez, P. R. This is a report on an investigation which was conducted to obtain a knowledge of the environmental and biological factors involved in relation to the edible oyster, *Ostrea rhizophorae* Guilding, in the waters of Puerto Rico. The validity of the name *O. rhizophorae* is discussed and the differences between this species and the closely related *O. virginica* are given. Included are hydrographic observations (temperature, dissolved oxygen, hydrogen ion concentration, salinity), biological observations, plankton, and growth studies. In discussing the possible expansion of commercial activities, the author points out that the fecundity and rapid growth rate of these oysters permit an all-season industry.

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MEXICAN FISHERY LAW OF DECEMBER 31, 1949

Fishery Leaflet 283 (revised), Mexican Fishery Law of December 31, 1949, was recently issued by the Service. It is an additional supplement to Fishery Leaflet 260, Mexican Fishery Legislation, and is a verbatim translation of the revised Mexican fishery law of December 31, 1949, which was published in the Mexican Diario Oficial of January 16, 1950. This new law is a revision of the law of December 31, 1947.



The new law entered into effect 60 days after the date of publication; however, it is optional for holders of concessions and permits issued under previous laws to retain them in force under such laws until expiration or to have the new law apply to them. Regulatory measures based on the new law must be issued within 180 days from January 16, 1950, according to the law.

Although the new law is generally more specific than the 1947 law, which it replaces, it does not differ appreciably from current practice.

Fishery Leaflet 260, Mexican Fishery Legislation, mentioned above, consists of a discussion of Mexican fishery legislation enacted prior to September

1947 which was of interest to the American fishing industry, and it also includes the texts of the most important laws and orders.

Copies of both of these leaflets are available free upon request from the Division of Information, U. S. Fish and Wildlife Service, Washington 25, D. C.

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