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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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OFFSHORE SALMON EXPLORATIONS ADJACENT TO THE ALEUTIAN ISLANDS, JUNE-JULY 1953

By Edward A. Schaefers* and Francis M. Fukuhara**

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SUMMARY

The U. S. Fish and Wildlife Service's exploratory fishing vessel John N. Cobb was assigned in 1953 to salmon-fishing explorations in the offshore waters adjacent to the Aleutian Islands, Alaska. Actual fishing operations were carried on between June 9 and July 28. From June 9 to July 17 the vessel fished on the Pacific Ocean side of the Aleutians, from Unalaska Island to near Agattu Island at distances ranging from 15 to 60 miles offshore. From July 17 to July 28 it fished on the Bering Sea side from Umnak Island to Kiska Island at distances ranging from 3 to 45 miles offshore.

Gill nets, a floating long line, a nonstationary floating trap, and trolling gear were fished; except for one salmon taken on the long line, all were taken by the gill nets. None was taken by the trolling gear or the trap. A total of 1,175 salmon was caught in offshore waters during this exploration.

In the Pacific Ocean fishing, 679 salmon were taken in 17 gill-net sets, and only 1 salmon was taken in 4 long-line sets. This catch consisted of 32 percent red, 3 percent silver, 26 percent pink, and 39 percent chum. Catches ranged from 0 to 18 and averaged 6.4 salmon per 100-fathom shackle. Based on random samples weighed at sea under adverse conditions, the average weights of these salmon were as follows: red 5.1 pounds, silver 5.6 pounds, pink 3.6 pounds, and chum 4.9 pounds.

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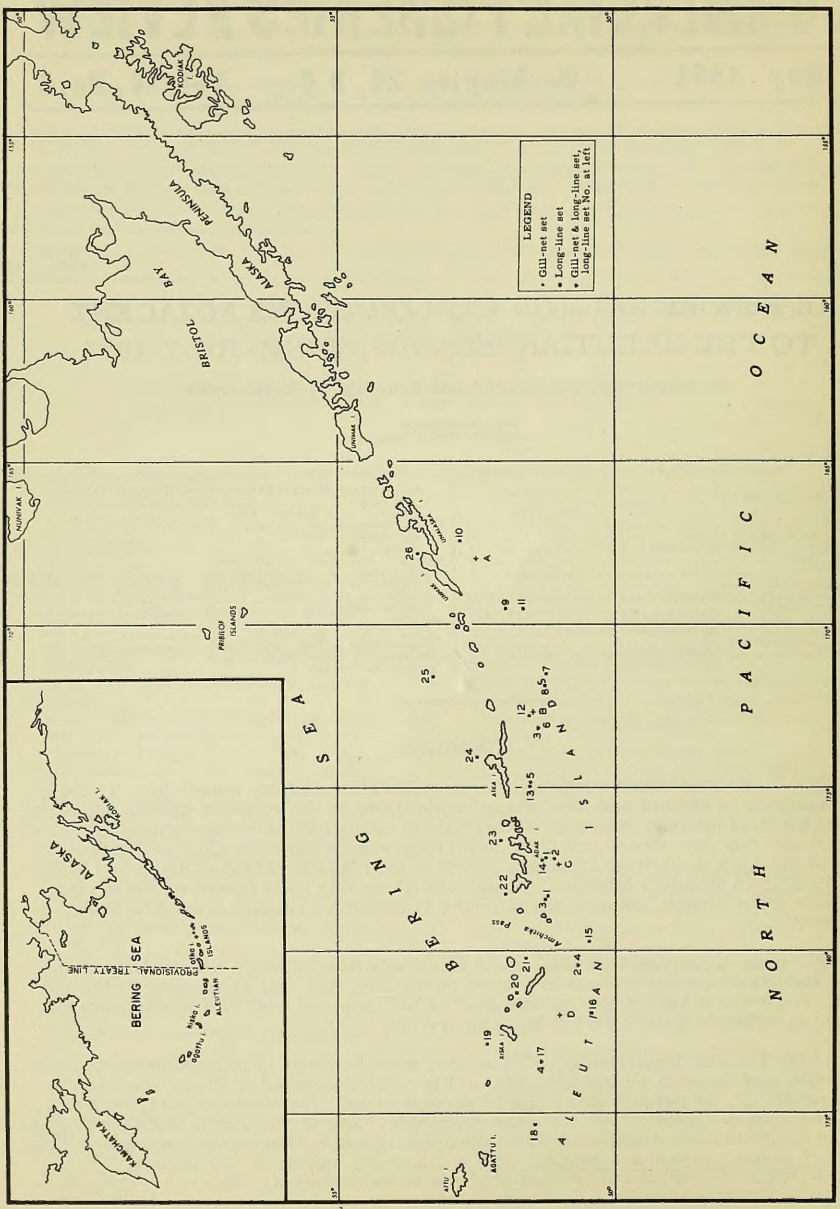


Fig. 1 - Aleutian Islands area showing fishing locations.

In the Bering Sea fishing, 495 salmon were taken in 8 gill-net sets. This catch consisted of 2 percent red, 1 percent silver, 3 percent pink, and 94 percent chum. Catches ranged from less than 1 to 28 and averaged 11.2 salmon per 100-fathom shackle. Based on random samples weighed at sea under adverse conditions, the average weights of these salmon were as follows: red 4.1 pounds, silver 6.2 pounds, pink 4.3 pounds, and chum 4.9 pounds.

Although salmon were observed enmeshed from near the top to the bottom of the net, most of them were enmeshed in the upper portion. (The gill nets were 75 meshes deep, $5\frac{1}{4}$-inch mesh, stretched measure.) No evidence was found that the net tended to fish better in certain parts of its length. Red and pink salmon tended to be spaced individually or in pairs at irregular intervals along the length of the net. Chum salmon tended to occur in groups of up to 8 fish along the net. Insufficient silver salmon were caught by the net to warrant conclusions.

The sea conditions caused the gill nets to deteriorate rapidly. Of 19 shackles on board the vessel at the start of the trip, 10 were lost at sea and only $5\frac{1}{2}$ were in serviceable condition at the end of the trip.

Weather conditions seriously curtailed fishing operations during June. During July the weather improved and interruptions to fishing activities were infrequent.

The results of the exploration show that salmon were present over a large area. However, the number of fish taken in individual gill-net sets was small. No attempt was made by the vessel to stay in areas of best fishing, and no conclusions can therefore be drawn as to what the total catch might have been if the vessel had operated only in such areas.

Most of the red, pink, and chum salmon were enmeshed at the nape or the back. Most silver salmon were enmeshed at the head--including gills.

As the net came aboard, the number of dead and live fish was recorded by species. An attempt was made to judge which of the live fish were suitable for tagging. Of the 1,140 fish observed, 875 were dead or nearly dead, and of the live fish, 136 were judged to be taggable and 63 to be possibly taggable and no judgment was made concerning 66 of them. Red salmon appeared to exhibit the most vitality.

Measurements and scale samples were obtained from 1,172 specimens. Fork lengths were obtained from 1,107 salmon. Of these, 179 were red salmon, 706 chum salmon, 197 pink salmon, and 25 silver salmon. The mean length of each species was 564.6 mm., 559.4 mm., 497.9 mm., and 574.7 mm., respectively.

Streams were inspected for salmon in four areas on Unalaska Island and one area on Adak Island. Salmon fry were collected at these localities; however, at the time streams were inspected adult salmon were observed in only one stream. Three male and 2 female chum salmon and 1 male pink salmon were taken in the Chernofski Bay Lagoon stream.

BACKGROUND INFORMATION

The U. S. Fish and Wildlife Service's exploratory fishing vessel John N. Cobb was assigned in 1953 to salmon-fishing explorations in the offshore waters adjacent to the Aleutian Islands, Alaska. The work was part of the preliminary salmon research by the Service in connection with the International Convention for the High Seas Fisheries of the North Pacific Ocean. Actual fishing operations were carried out between June 9 and July 28. The explorations were conducted jointly by personnel and facilities of the Service's Branches of Commercial Fisheries and Fishery Biology. A biologist from the Fisheries Research Institute at the University of Washington also accompanied the vessel.

This report is divided into two parts: Part I pertains to exploratory fishing and Part II to biological aspects of the explorations.

OBJECTIVES

The objectives of the explorations were as follows:

1. to gain as much knowledge as possible regarding the distribution, abundance, life history, and racial composition of North Pacific and Bering Sea salmon in offshore waters;

2. to test and evaluate the effectiveness of various types of gear for catching salmon on the high seas;

3. to determine the most practical and efficient method of catching salmon in the open sea in suitable condition for tagging;

4. to collect as many specimens as possible for detailed biological studies of sex ratios, stomach analyses, length frequencies, and other morphological and physiological characters; and

5. to inspect, as time permitted, accessible streams in the Aleutian Islands for salmon fingerlings and/or adults.

GENERAL PLAN

The general plan was to fish in the approximate area of four predesignated stations on the Pacific side of the Aleutian Chain starting approximately June 1, and after each station had been occupied at two different time intervals, to fish on the Bering Sea side of the Islands. The four stations on the Pacific side were located at intervals between Unalaska Island and Kiska Island, at distances of approximately 40 to 50 miles offshore. Their positions, from east to west, were (A) 52°30' N. 168°00' W., (B) 51°30' N. 172°40' W., (C) 51°00' N. 177°20' W., and (D) 51°00' N. 178°00' E. (fig. 1).

Part I - Exploratory Fishing

DESCRIPTION OF GEAR AND FISHING METHODS

Gill nets, floating long line, a nonstationary floating trap, and trolling gear were fished. Except for one salmon caught on the long line, all were taken by the gillnets. None were taken by the trolling gear or the trap.

GILL NETS: The gill nets (fig. 2) were made up in 100-fathom shackles. The netting was 6-thread linen, $5\frac{1}{4}$-inch mesh (stretched measure), 75 meshes deep. The cork line was cotton rope, 7/16-inch in diameter, 100 fathoms long. The lead line was cotton rope, $\frac{1}{4}$-inch in diameter, 105 fathoms long. Breast lines were 54-thread soft-laid cotton twine. Hanging twine was soft-laid cotton, 40 thread on the cork line, and 32 thread on the lead line. Floats were cedar gill-net floats, $3\frac{1}{2}$ x 6 inches, spaced every fourth hanging. Leads were 2 ounces spaced on 10-inch centers. The net was hung 2 meshes to the hanging on the cork and lead lines. It was hung-in 50 percent on the cork line and 47.5 percent on the lead line. Before the net was hung, the netting and twine were treated with a brownish-green preservative; all lines were tanned and run; and the floats were dipped twice in a water-repellent preservative.

Nineteen shackles of gill net were on board the vessel at the start of the trip. Because of losses and wear, only $5\frac{1}{2}$ shackles of serviceable gear remained at the completion of the trip.

For the first two gill-net sets, 5 shackles were tied together and fished as a string, which measured one-half nautical mile in length. The string was then in-

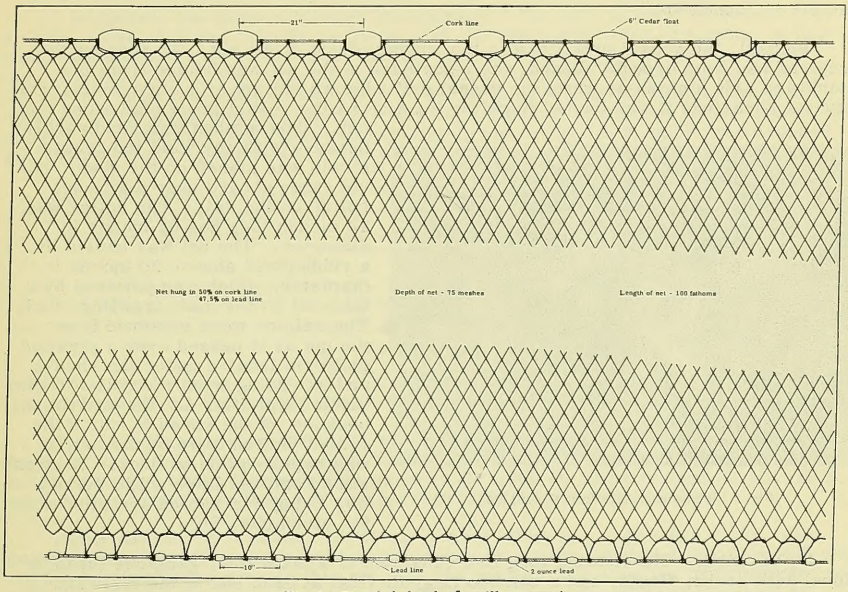


Fig. 2 - Detailed sketch of a gill-net section.

creased for subsequent sets to 10 shackles, which measured one nautical mile in length. After the 10-shackle string was lost in adverse weather, a new string of 5 shackles was fished. Eight sets with these nets left them in poor condition. As much usable gear as possible was salvaged from the worn gear, which combined with the remaining 4 new shackles provided a string of $5\frac{1}{2}$ shackles. The $5\frac{1}{2}$-shackle string was fished for the remainder of the trip.

All sets were made in the evening, usually just before dark. A manila line, 10 fathoms long, with two fabric floats bent on its free end, was attached to one end of the net by means of a bridle. In setting, this end of the net was started out, and as the vessel moved slowly ahead, the rest of the net was allowed to pay out over the stern. A lighted bamboo flagpole and buoy was attached to the other end of the net,

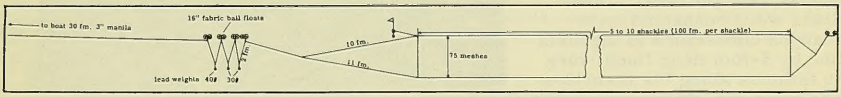


Fig. 3 - Sketch of gill net and "bumper" assembly.

and a bridle from the cork line and lead line was attached to a 3-inch circumference manila line. This manila line was rigged with 16-inch inflated fabric floats and 30- and 40-pound lead weights to act as a "bumper" in order to keep the strain off the net (fig. 3). The line was then made fast to the stern of the John N. Cobb. The net was set with the wind, and was held fast to the John N. Cobb at the downwind end. The net was

attached to the vessel instead of being allowed to drift free, in order to keep it from being lost in fog and heavy weather. Since the vessel tended to drift at a faster rate than did the net, hanging on to the net prevented, to a great extent, the tendency of the net to "bunch up."

To haul, the vessel proceeded to the windward end of the net. As soon as the free end had been brought aboard, the remainder of the net was hauled from the starboard side amidships while the vessel drifted down the net at a right angle. On several occasions it was hauled from the lee side as the vessel proceeded along the net. This method was used rarely because with any wind too great a strain was placed on the gear. The net came aboard over a gill-net roller on the rail. The roller was 28 inches long and $6\frac{1}{2}$ inches in diameter. The net was hauled by a rubberized sheave 20 inches in diameter, which was powered by a take-off on the main trawling winch. The salmon were removed from the net as it passed over a plywood platform located under the sheave and extending from the roller to the hatch cover (fig. 4). Several times, because of the speed at which the vessel drifted down on the net, it was rapidly piled on deck. The fish were removed later while the net was being overhauled and piled near the stern (fig. 5).

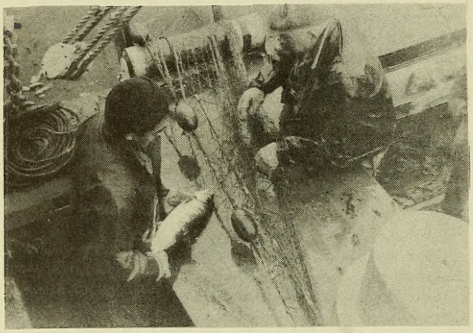


Fig. 4 - Removing salmon from the gill net.

LONG LINE: The floating long line consisted of a main line, gangions (branch lines) with hooks, floats, and a bamboo flagpole float at each end of the main line (fig. 6). The main line was of preformed stainless steel wire 5/64-inch in diameter. It was made of five 200-fathom sections of wire, connected together by bronze trolling swivels, to make an over-all length of 1,000 fathoms. Every 3 fathoms, 2 bronze marking beads were swaged on the main line 4 to 6 inches apart to serve as line stoppers for the gangions. The main line was floated by means of inflated 16-inch diameter fabric floats. These floats were connected with snap-on connectors to the main line by 6-foot drop lines every 30 fathoms along the main line. The gangions, which were made of wire or nylon, had a snap-on connector with a swivel at one end and a hook at the other end. The wire gangions were made of preformed stainless steel, 3/64-inch in diameter and 6 feet in length. The nylon gangions were made of 15- or 20-pound test monofilament and were 5 feet in length. Assorted ringed hooks were affixed to the gangions--size 7/0 to 10/0 on the wire gangions and 4/0 or 5/0 on the nylon gangions.

Fig. 5 - Piling the gill net on the stern.

The main line was spooled on a 19.5-inch diameter galvanized reel having a core 10.7 inches in diameter and 3.5 inches in width.

A large bolt was passed through the opening in the core of the reel to serve as an axle. The reel was then set in place near the hatch and braked by hand. A flagpole buoy was attached to the main line and thrown overboard. While the vessel moved slowly ahead, the main line payed out into the water over a halibut chute on the stern. Men stationed on each side of the main line, just forward of the chute, snapped on gangions baited with either herring or pieces of salmon as the line stops passed by. When the main line was completely out, a second flagpole was dropped overboard, and the gear was allowed to drift freely for the desired amount of time.

Before the gear was hauled, the reel was attached to the power take-off on the winch. One end of the main line was brought in over the gill-net roller on the star-

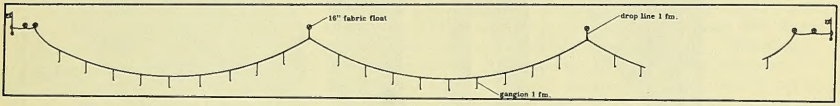


Fig. 6 - Sketch of floating long line.

board rail and secured to the reel, whereupon hauling was commenced. As the main line was reeled in, the gangions were unsnapped as they reached the roller.

No difficulty was encountered in hauling, and few snarls were encountered when the gear was set in the manner described. The main line was fairly slack in the water and some of the buoys drifted together as much as 30 percent at times. It is estimated that the gear fished from approximately 2 to 12 fathoms deep.

Three daytime sets of approximately 5-hour duration each were made, with negative results. One silver salmon was taken on a wire gangion and a 7/0 hook during the only nighttime set. In this set, the gill net and long line had been attached together, and the long line was secured to the boat. Since the gill net captured 24 salmon, it is certain that salmon were present in the area the long line was fishing. In this set many gangions became snarled, especially the nylon gangions. It is likely the snarling occurred because in this instance the long line had not been allowed to drift freely.

FLOATING TRAP: The floating trap consisted of a wooden frame, a heart, a spiller, and a lead of netting (fig. 7). Attached to the wooden frame was a framework made of pipe for a small jigger on each side. The heart and the spiller areas were connected by a tunnel of netting. The wooden frame was made of 6-inch by 12-inch spruce timbers and was 16 feet wide and 32 feet long. Each jigger frame was made of 3/4-inch pipe; it extended outward in triangular shape from each side near the heart entrance.

All netting used in the trap was 12-thread cotton netting, 3-inch mesh, stretched measure. The heart and the spiller walls were 30-feet deep, and were lashed to the frames. The heart and the spiller had bottoms cut to the required dimensions established by the frame.

To maintain the rigidity of the walls, lead weights of from 10 to 40 pounds were used. These weights were suspended from manila line that was in turn threaded through seine rings that were attached to breast lines at various places on the trap walls. Lighter weights were used at the jigger and the heart entrances; heavier weights elsewhere.

To keep the tunnel properly set, 2 wooden poles, each 20 feet long, were threaded through seine rings at each side of the spiller entrance. These poles were spread

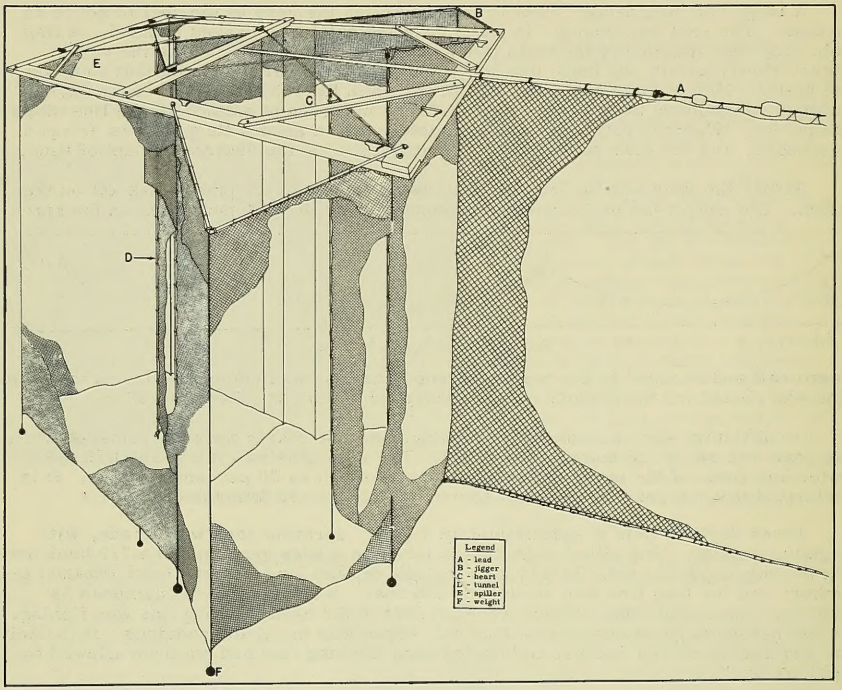


Fig. 7 - Sketch of floating trap.

15 inches apart at the bottom of the tunnel by means of a short spreader stick secured to them horizontally and lashed with seine leads. The poles were spread 15 inches apart at the top by means of lines running from them to the trap frame.

The lead for the trap was made of $3\frac{1}{2}$-inch mesh (stretched-measure) cotton webbing, 150 meshes deep. Its total length was 500 fathoms, and it was made up in 125-fathom shackles. The cork line was hung-in 25 percent, and the lead line was hung-in 21 percent. The trap lead was hung 3 meshes to each hanging on the cork and lead lines. The cork line was 18-thread manila and the lead line was 15-thread manila. Hanging lines were 24-thread medium cotton-seine twine. Cedar gill-net floats $3\frac{1}{2}$ by 6 inches were spaced 3 per fathom on the cork line as were 4-ounce seine leads on the lead line. The breast lines were 9-thread manila rope. The various lines were tanned and run before being made up into the trap lead. The web of the trap and trap lead were both green in color from the preservative used.

The lower part of one end of the lead was attached to the trap at the bottom of the heart entrance, and the upper part was lashed to a pole that extended 12 feet past the heart-end timber of the trap.

Because of adverse weather conditions, the large fishing area to be explored in limited time, and the large size and complicated nature of the trap, it was set in offshore waters only once and for a short time. The trap frame was completely assembled ashore on a dock, and the web was secured to the frame. The trap was then hoisted aboard the vessel, which proceeded to sea. When the vessel reached the testing location, the trap was hoisted over the side. The lead was passed to men in the motor launch, who made it fast to the trap. As the men were lowering the lead weights and poles, the lead was payed out from the stern of the vessel. There was no wind when the trap was set, and it was necessary to straighten out the free end of the lead with the motor launch. After the trap had been set for 5 hours, a strong wind commenced. This made it necessary to haul the trap, and it was retrieved with considerable difficulty. Two sets were made later in protected waters, neither of which caught salmon. Since the trap was set for an insufficient length of time, the tests of the trap are considered inconclusive.

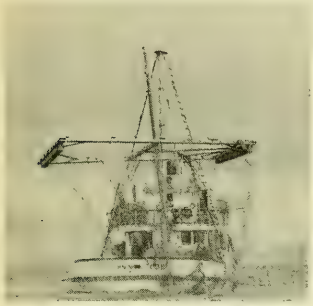


Fig. 8 - Hoisting the floating trap aboard the John N. Cobb.

TROLLING GEAR: The trolling poles were of fir, 40 feet long, mounted on the bulwarks just aft of the main house. One side of the vessel was equipped with hydraulic gurdies and was rigged with wire trolling gear. The other side was rigged for hand trolling with cotton line. Two main lines were fished from each pole; the main lines connected to tag lines made of $\frac{1}{4}$-inch diameter wire of sufficient length to extend from the poles to the after deck; and tag lines connected to spring shock absorbers which were secured to the poles.

The wire main line was 1/16-inch stainless steel and had paired line stops spaced every five fathoms of its length to permit snap-on attachment of individual leaders. On the outer line a 20-pound and on the inner line a 30-pound "cannon ball" lead was used. Five individual leaders were fished from each main line. Standard leaders consisted of a snap-on connector, a 14-inch trolling rubber, a swivel, a 3- to 4-fathom length of 60-pound cuttyhunk, a swivel, 3 to 4 feet of No. 12 stainless steel wire, and a lure with hook. Artificial lures (assorted types and sizes of spoons and plugs) and bait (whole herring or strips of salmon) were used. Leader variations were also tried; these were 10- to 20-pound test monofilament nylon in lieu of No. 12 wire, and braided nylon without cuttyhunk.

In the case of the hand gear, an inhaul line was connected to a swivel and spreader bar at the end of the tag line. The main line for the hand gear was made up as follows: 60 to 70 feet of No. 96 hard-laid cotton halibut line ran to a spreader bar, a swivel, and a 5-pound trolling lead. Tied to the ring at the bottom of the lead was 4 fathoms of 300-pound-test nylon line, which ran to a spreader bar, a swivel, and a 10-pound trolling lead. In the same manner, 4 fathoms of additional line ran to the final 10-pound lead; however, there was no spreader bar. Leaders were the same as for the wire gear but were without snap-on connectors. The first two were secured to the spreader bars, and the third to the ring at the bottom of the last lead. Three leaders were fished on each main line.

Trolling was carried on at depths ranging from near the surface to more than 200 feet. Occasionally fishing near the surface was tried with rods and light tackle. The time spent trolling was limited by the great amount of time required to run full speed between stations and by unfavorable weather conditions.

Table 1--Gill-Net Catch Data, 1953

Set No.	Date	Position of set	Station	No. hours net soaked	No. 100-fathom shackles	Number of salmon caught				Total Salmon	Wind direction and force 1/	Surface temperature	Incidental catch
						Red	Silver	Pink	Chum				
1	6/9 - 6/10	51°17' N. 177°09' W.	C	11½	5	42	0	4	14	60	SE-2-S-5	42.6° F.	--
2	6/10 - 6/11	51°03' N. 177°10' W.	C	10	5	25	0	5	9	39	SW-5-E-6	43.0° F.	--
3	6/13 - 6/14	51°17' N. 178°25' W.	C	11	10	41	0	15	21	77	W-3-NW-3	42.5° F.	--
4	6/14 - 6/15	50°41' N. 179°33' E.	D	9½	10	41	0	12	45	98	WSW-4-WSW-6	42.2° F.	--
5	6/20 - 6/21	51°33' N. 174°52' W.	B	11¾	10	23	0	41	114	178	SE-3-S-3	44.5° F.	--
6	6/21 - 6/22	51°24' N. 173°11' W.	B	10	10	11	0	36	39	86	SSE-3-SE-4	45.0° F.	1 mackerel shark, 1 greenling
7	6/22 -	51°14' N. 171°31' W.	B	Net lost	10	--	--	--	--	--	SE-5-7	44.0° F.	--
8	6/27 - 6/28	51°17' N. 171°47' W.	B	9⅜	5	0	0	0	0	0	SE-3-2	46.0° F.	--
9	6/28 - 6/29	51°58' N. 169°30' W.	A	9¼	5	2	0	0	1	3	E-2-5	47.5° F.	--
10	7/6 - 7/7	52°48' N. 167°27.5' W.	A	10½	5	3	1	0	6	10	SW-3-4	52.2° F.	1 handsaw fish escaped
11	7/7 - 7/8	51°39' N. 169°31' W.	A	10	5	1	0	2	1	4	N-2-NW-3	50.0° F.	1 steelhead
12	7/8 - 7/9	51°34' N. 172°47' W.	B	10½	5	2	0	2	0	4	SW-2-WNW-3	48.0° F.	1 mackerel shark, 1 rockfish
13	7/9 - 7/10	51°34' N. 174°59' W.	B	10¼	5	1	0	3	1	5	E-2-3	49.0° F.	1 mackerel shark
14	7/11 - 7/12	51°19' N. 177°13' W.	C	10	5	4	2	3	1	10	NE-3	50.0° F.	1 mackerel shark escaped
15	7/12 - 7/13	50°28' N. 179°44' W.	D	10	5	1	5	33	2	41	N-5-6	46.8° F.	1 steelhead, 1 mackerel shark
16	7/14 - 7/15	50°26' N. 178°06' E.	D	10	5⅛	1	2	13	1	17	SW-4	46.8° F.	--
17	7/15 - 7/16	51°20' N. 176°36' E.	D	13⅜	5⅛	9	6	8	1	24	O-Var.-2	48.5° F.	--
18	7/16 - 7/17	51°27' N. 174°39' E.	D	10	5⅛	7	6	3	7	23	NW-3-WNW-3	48.2° F.	--
19	7/17 - 7/18	52°19' N. 177°08' E.	-	12¼	5⅛	2	2	2	54	60	WSW-2	48.7° F.	--
20	7/18 - 7/19	51°49' N. 178°13' E.	-	10½	5⅛	2	0	4	2	8	SW-3-S-2	41.9° F.	--
21	7/19 - 7/20	51°37' N. 179°47' E.	-	9⅜	5⅛	0	0	0	2	2	S-3-SSE-4	43.0° F.	--
22	7/21 - 7/22	52°00' N. 178°16' W.	-	10¾	5⅛	0	2	0	77	79	S-5-SW-2	42.3° F.	--
23	7/24 - 7/25	52°06' N. 176°36.5' W.	-	11	5⅛	3	1	4	148	156	WSW-4	43.0° F.	--
24	7/25 - 7/26	52°29' N. 174°05' W.	-	11⅜	5⅛	0	0	2	146	148	W-4-E-3-W-4	48.9° F.	--
25	7/26 - 7/27	53°17' N. 171°34' W.	-	11½	5⅛	1	1	4	33	39	W-4-WSW-2	49.9° F.	--
26	7/27 - 7/28	53°33' N. 167°51' W.	-	9	5⅛	2	0	0	1	3	Var.-1-0	44.5° F.	--

1/Wind force is according to Beaufort scale.

Table 2--Long-Line Catch Data, 1953

Set No.	Date	Position	No. hooks	Bait	Time soaked	No. salmon	Wind direction and force 1/	Surface temperature	Incidental catch
1	6/13	51°14' N. 178°20' W.	257	Herring, 184 whole, 30 cut; salmon, 43 pieces	4 hrs. 45 min.	0	SW-4-W-4	42.5° F.	1 Alaska pollock
2	6/14	50°41' N. 179°33' E.	264	Herring, 179 whole, 40 cut; salmon, 45 pieces	5 hrs. 20 min.	0	NW-3-WSW-4	42.3° F.	1 mackerel shark, 2 Alaska pollock
3	6/21	51°24' N. 173°11' W.	265	Herring, 220 whole; salmon, 45 pieces	4 hrs. 55 min.	0	S-3-SSE-3	45.5° F.	---
4	7/15 - 7/16	51 20' N. 176 36' E.	262	Herring, 81 whole, 131 cut; salmon, 50 pieces	11 hrs. 25 min.	1	O-Var.-2	48.5 F.	2 handsaw fish

1/Wind force is according to Beaufort scale.

FISHING RESULTS

Fishing operations were carried on from June 9 to July 17 on the Pacific Ocean side of the Aleutian Chain and from July 17 to July 28 on the Bering Sea side (tables 1 and 2). A total of 1,175 salmon 1/ were caught during this exploration.

With only one boat, each area could not be simultaneously sampled, and results varied from area to area and within areas at different time intervals. It is possible that if the four stations could be fished at the same time, results would be different from those obtained by the John N. Cobb--both as to total catch and number of each species making up the catch.

PACIFIC OCEAN SIDE OF ALEUTIAN CHAIN: The vessel fished from Unalaska Island to near Agattu Island at distances ranging from 15 to 60 miles offshore.

A total of 679 salmon was taken in 17 gill-net sets, 2/ and only 1 salmon was taken in 4 long-line sets. This catch consisted of 32 percent red (Oncorhynchus nerka), 3 percent silver (Oncorhynchus kisutch), 26 percent pink (Oncorhynchus gorbuscha), and 39 percent chum (Oncorhynchus keta). Catches varied considerably in the gill-net sets, ranging from 0 to 18 and averaging 6.4 salmon per 100-fathom shackle.

The results of fishing operations in each of the four predesignated fishing stations were as follows:

Station C: Fishing operations in the approximate area of Station C commenced on June 9. Three gill-net sets between this date and the morning of June 14 averaged 8.8 salmon per 100-fathom shackle. The catch consisted of 61 percent red, 14 percent pink, and 25 percent chum. A gill-net set in this area on July 11 averaged 2 salmon per 100-fathom shackle. This catch consisted of 4 red, 2 silver, 3 pink, and 1 chum. Negative trolling results were obtained at this station as well as at all other localities where trolling was carried on during this exploration. A single long-line set on June 13 failed to catch any salmon.

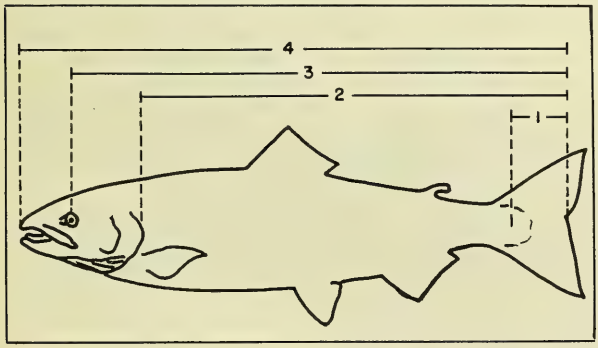


Fig. 9 - Measurements taken of salmon in the catch of the John N. Cobb, 1953. Brackets indicate measurements from fork of tail to: (1) posterior margin of hypural plate, (2) leading edge of cleithrum, (3) middle of eye, and (4) tip of snout.

Station D: A gill-net set on the night of June 14 averaged 9.8 salmon per 100-fathom shackle. This catch consisted of 42 percent red, 12 percent pink, and 46 percent chum. Four gill-net sets between July 12 and July 17 averaged 4.9 salmon per 100-fathom shackle. The catch consisted of 17 percent red, 18 percent silver, 54 percent pink, and 11 percent chum. On the night of July 15 weather conditions were ideal and $5\frac{1}{2}$ 100-fathom shackles of gill net were attached to one mile of long line, allowing both types of gear to fish simultaneously. A total of 24 salmon were caught in the gill nets, and 1 salmon was caught on the long line. The latter, a silver, was the only salmon taken on the 4 long-line sets made during this exploration.

1/ Includes only offshore catches.

2/ Set number 7 is not included as the gear was lost.

Station B: One June 20 and 21, two gill-net sets were made in the general area of this station. An average of 13.2 salmon per 100-fathom shackle were taken in these two sets. The catch consisted of 13 percent red, 29 percent pink, and 58 percent chum. Ten shackles of gill net were lost on the night of June 22 when the net broke loose from the vessel in adverse weather. A set was made on the night of June 27 near where the net was lost, with negative results. This was the only gill-net set of the exploration that failed to catch any salmon. Gill-net sets were again made on July 8 and 9 and averaged only 0.9 fish per 100-fathom shackle. The total catch of these two sets was 3 red, 5 pink, and 1 chum.

Table 3 - Depth at which Salmon Entered the Gill Nets

Species of Salmon	Portion of Net where Salmon were Enmeshed		
	Upper 30 Meshes	Middle 15 Meshes	Lower 30 Meshes
	..... (Number)		
Red	149	25	35
Silver	19	0	4
Pink	136	13	27
Chum.....	480	73	114
Totals 1/.	784	111	180

1/ Of the total caught by the John N. Cobb, the depths at which 99 salmon entered the gill nets were not observed.

Station A: Gill-net operations in the general area of this station were carried out on June 28 and again on July 6 and 7. The first set caught 2 red and 1 chum. The two sets in July yielded 4 red, 1 silver, 2 pink, and 7 chum.

Weights of random samples taken at sea under adverse conditions that precluded accurate weighing indicated that on the Pacific side red salmon averaged 5.1 pounds, silver 5.6 pounds, pink 3.6 pounds, and chum 4.9 pounds.

BERING SEA SIDE OF ALEUTIAN CHAIN: On the Bering Sea side of the Aleutian Chain, no predesignated fishing stations were selected, and it was decided to begin operations in these waters after Station D had been fished for the second time. Gill-net sets commenced on July 17 off Kiska Island, and seven more sets were made at localities along the Chain as the vessel headed eastward. The final gill-net set was made on July 27 off the eastern end of Umnak Island. These sets were made at distances ranging from 3 to 45 miles offshore. During this time, 495 salmon were taken in 8 gill-net sets. The catch consisted of 2 percent red, 1 percent silver, 3 percent pink, and 94 percent chum. Catches ranged from less than 1 to 28 and averaged 11.2 salmon per 100-fathom shackle.

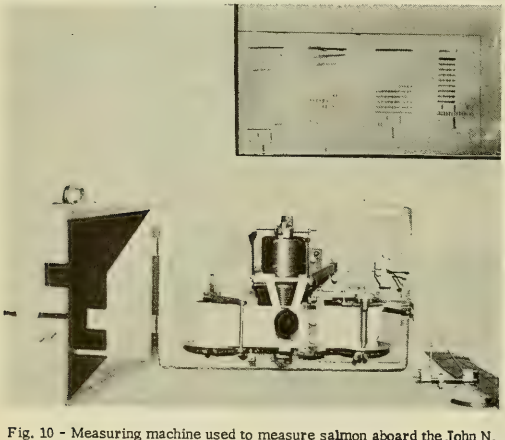


Fig. 10 - Measuring machine used to measure salmon aboard the John N. Cobb. The enlarged inset (upper right) shows the tape on which lengths were recorded.

Each set consisted of $5\frac{1}{2}$ 100-fathom shackles of gill net. The initial set off Kiska Island captured 60 salmon, consisting of 2 red, 2 pink, 2 silver, and 54 chum.

Two sets off Amchitka Island produced a total of only 10 salmon. As operations shifted eastward, fishing improved in the vicinity of Tanaga, Adak, and Atka Islands, and sets in these localities yielded 79, 156, and 148 salmon, respectively. Of the 383 salmon taken in these three sets, 3 were red salmon, 3 silver, 6 pink, and 371 chum. A set north of Amukta Island on July 26 caught 39 salmon, mostly chum. The final gill-net

set and the closest to land of any during the exploration caught only 2 red and 1 chum salmon.

Weights of these salmon taken at sea under adverse conditions averaged as follows: red 4.1 pounds, silver 6.2 pounds, pink 4.3 pounds, and chum 4.9 pounds.

The results of the exploration show that salmon are present over a large area. Only one gill-net set failed to take fish. However, the number of fish taken in individual gill-net sets was small. It should be remembered that no attempt was made by the John N. Cobb to stay in areas of best fishing, and no conclusions can be drawn as to what the total catch might have been if the vessel had operated only in such areas. Much more work is required to determine if United States fishing vessels could economically exploit salmon stocks in the offshore waters adjacent to the Aleutian Islands.

RELATED OBSERVATIONS

Various observations were made as the net came aboard: the depth at which the various species entered the net (table 3), the place on the body at which they became enmeshed, their vitality, and their number per shackle. These observations were verified as the individual salmon were removed from the net. Data concerning the place on the body at which salmon became enmeshed and their vitality are presented in Part II.

DEPTH AT WHICH THE VARIOUS SPECIES BECAME ENMESHED: Although salmon were observed enmeshed from near the top to the bottom of the net, most of them were enmeshed in the upper portion. The observations indicated that a net of less depth would be practical, but comparative tests with nets of various depths should be made before definite conclusions are drawn as to the most suitable depth.

Fig. 11 - Measuring salmon aboard the John N. Cobb.

DISTRIBUTION OF THE VARIOUS SPECIES OF SALMON BY SHACKLES: A record was kept of the catch by species for each shackle of the gill net for all sets. No evidence was found that the net tended to fish better in certain parts of its length.

Red and pink salmon tended to be spaced individually or in pairs at irregular intervals along the length of the net. Chum salmon tended to occur in groups of up to 8 fish along the net. Insufficient silver salmon were caught by the net to warrant any conclusions.

SELECTIVITY OF THE GILL NETS: As the gill nets used were of only one mesh size, $5\frac{1}{4}$-inch (stretched measure), the catches by these nets were probably selective. Experimental fishing with nets of various mesh sizes is required to establish the proper sizes to adequately sample the salmon population in these areas.

DETERIORATION OF GILL NETS: The sea conditions during these explorations caused the gill nets to deteriorate rapidly. As the cork line worked in the sea, the hanging line quickly frayed the meshes. After a maximum of 4 sets the top row of

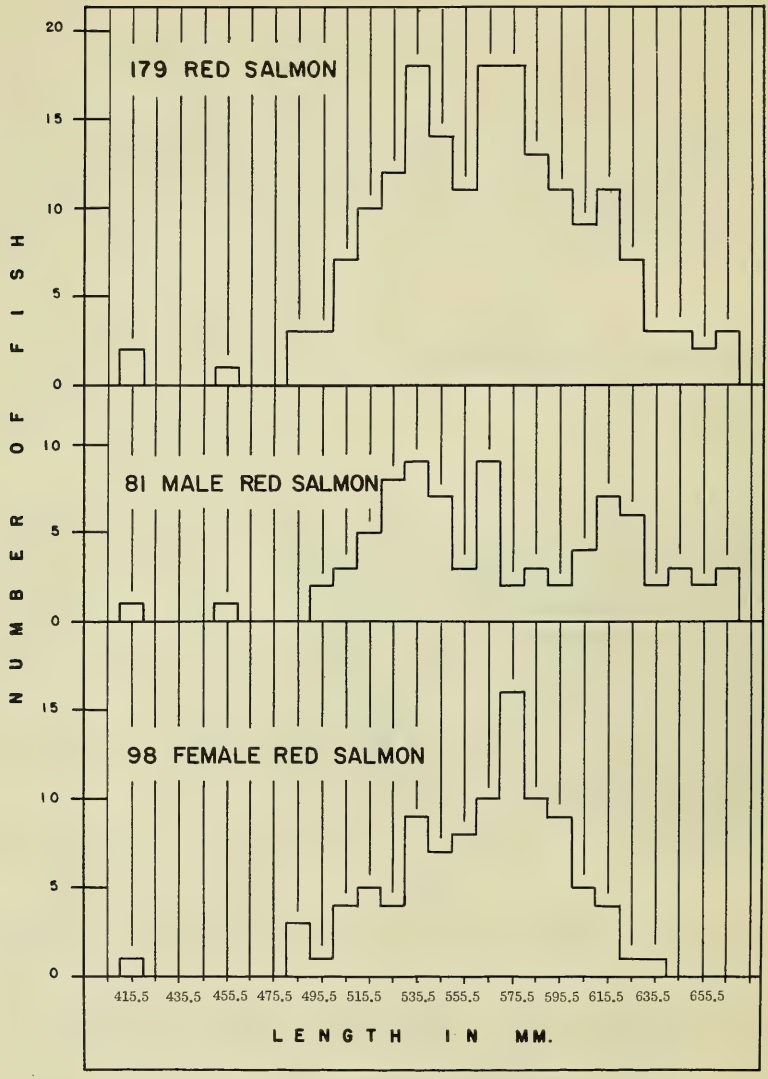


Fig. 12 - Red salmon length frequencies.

meshes had parted at close intervals along the hanging line. This damage was hastened by the strain placed on the nets as they were being hauled. Corks frequently hung up on the roller, and as the vessel rolled in the sea, meshes were ripped loose from the hanging line. To help eliminate this difficulty, the use of a "double"

Table 4 - Vitality of Various Species of Gill-Net Caught Salmon

Species	Total Catch 1/	Observed 1/	Dead or Nearly Dead	Taggable	Possibly Taggable
	Number	Number	Number	Number	Number
Red	224	217	124	68	25
Silver	28	27	24	1	2
Pink	196	188	158	2/11	2/ 7
Chum	726	708	569	56	2/29
Totals	1174	1140	875	136	63

1/ Errors in observation account for the difference between the total catch and the observed catch figures.
2/ In addition to these, 11 taggable and 7 possibly taggable pink salmon, some or all of 12 other live pink salmon might have been so classified. In addition to these, 56 taggable and 29 possibly taggable chum salmon, 54 other live chum salmon might have been so classified. Owing to difficulties encountered at the time of their capture, observations were not made as to whether these other live pink and chum salmon were taggable. No data could therefore be entered for them here.

cork line should be tried in the future. This "double" cork line would be formed by running a heavy line along the actual cork line and lashing the two together at frequent intervals. In hauling, the strain would be borne by both lines instead of the cork line alone. It is possible that this method would lessen the tendency of the meshes of the net to rip loose from the hanging line.

Fraying of meshes by action of the sea might be alleviated by removing the corks from the cork line and attaching them to it by drop lines a foot long. The net would then be slightly beneath the surface while fishing and therefore subject to less fraying action.

Table 5 - Place on Body at which Various Species of Salmon Became Enmeshed in Gill Nets

Species	Head Including Gills	Nape	Back	Loose
	(Number of Fish)			
Red	52	91	60	4
Silver	18	7	2	None noted
Pink	6	41	139	None noted
Chum	191	276	225	None noted
Totals 1/	267	415	426	4

1/ Of the total caught by the John N. Cobb, 62 salmon were not observed as to place of enmeshment and are not included in this table.

In an attempt to reduce wear on the net in hauling, a typical Bristol Bay hydraulic gill-net roller was tried. Although the roller operated properly, it proved unsatisfactory; the large size of the John N. Cobb prevented adequate control of its angle with the net and its rate of drift.

INCIDENTAL CATCHES: Few fish other than salmon were caught in the gill nets. Several mackerel shark (Lamna ditropis), 1 greenling (Hexagrammidae), 2 steelhead trout (Salmo gairdneri), and 1 rockfish (Sebastodes melanops) were caught. One handsaw fish (Alepidosaurus aesculapius) escaped from the net. On the long line a total of 3 Alaska pollock (Theragra chalcogramma), 1 mackerel shark, and 2 handsaw fish were taken.

WEATHER: Weather conditions seriously curtailed fishing operations during June. Gale force winds occurred frequently. During July the weather improved and interruptions to fishing activities were infrequent.

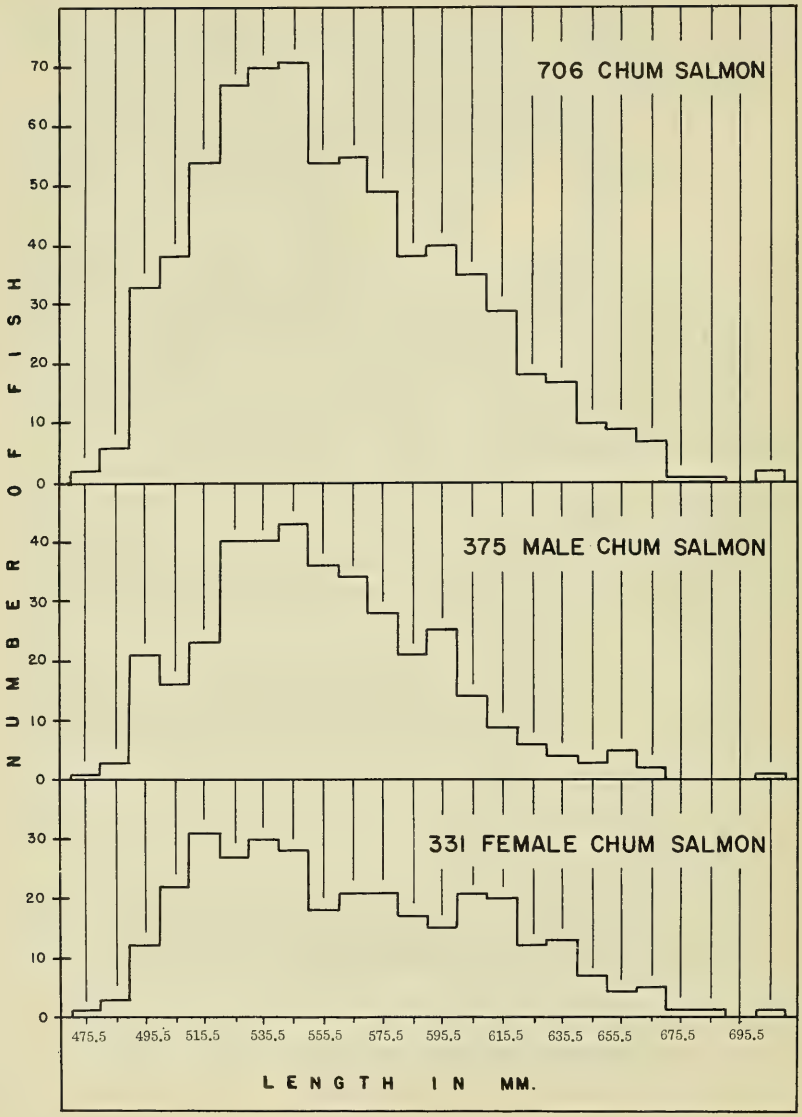


Fig. 13 - Chum salmon length frequencies.

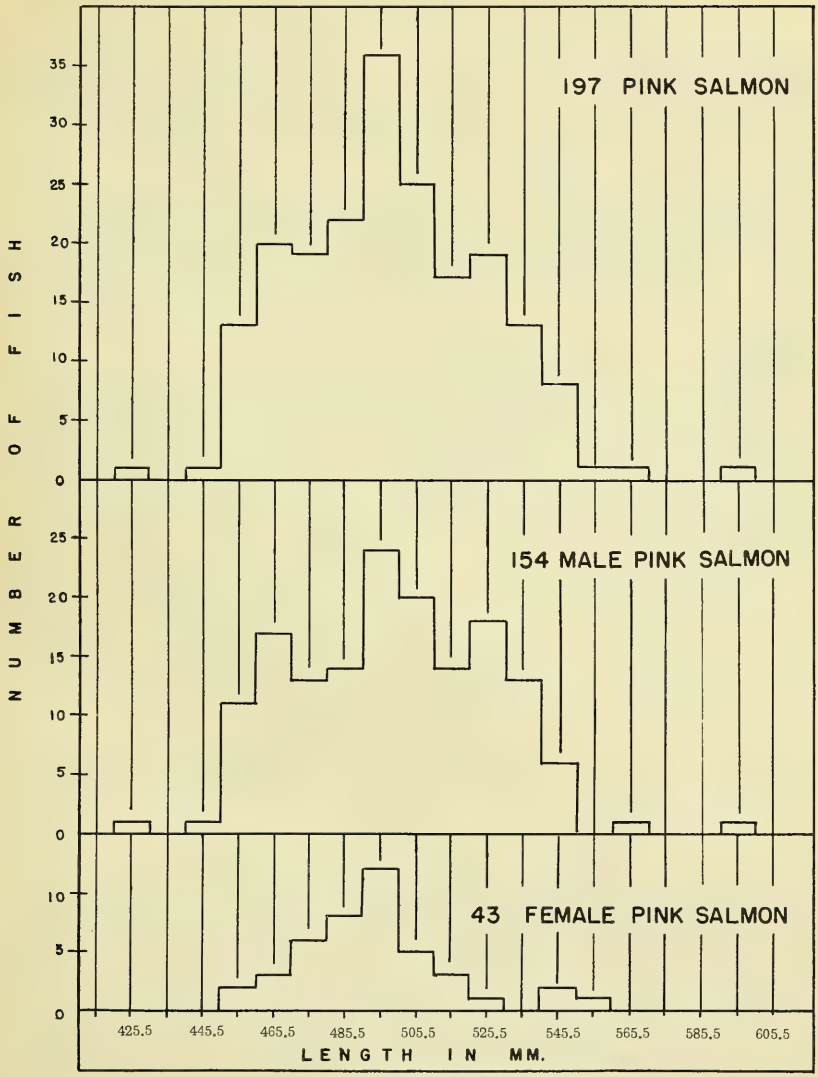


Fig. 14 - Pink salmon length frequencies.

Part II - Biological Observations

COLLECTION OF BIOLOGICAL DATA

OBSERVATIONS DURING GEAR HAULING: Enumeration and identification of species was accomplished by an observer stationed at a vantage point forward of and above the roller over which the gear was retrieved. The vitality of the specimens, the depth of enmeshment, and the position on the body at which the fish became enmeshed were carefully noted.

MEASURING OF SPECIMENS: All measurable specimens (i.e., salmon with heads and tails intact) were measured. In anticipation of subsequent comparisons of length frequencies and proportional measurements with those obtained by organizations at various inshore areas, four measurements were made on each fish.

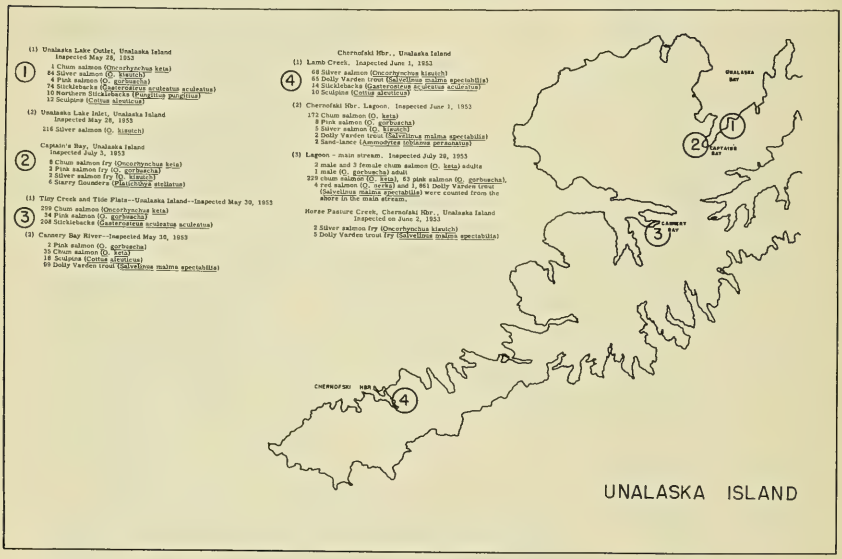


Fig. 15 - Dates, locations, and results of stream inspections on Unalaska Island.

These were from the tail fork to (1) the posterior margin of the hypural plate (marked by an incision at this point), (2) the leading edge of the cleithrum (marked by an incision cut at a right angle to the lateral line), (3) the middle of the eye, and (4) the tip of the snout (fig. 9). Measurements were made on the left side of the fish, i.e., with the fish lying on its right side after coming out of rigor mortis.

All measurements were made with a measuring machine, 3/ lengths being recorded by the machine on a roll of double carbon tape (fig. 10). Scales were obtained from all specimens from an area between the dorsal fin and the lateral line. Occasionally badly descaled specimens were encountered in which scales were taken either from an area between the lateral line and the pelvic fin or from the region between

3/ Developed by Dr. W. F. Thompson of the Fisheries Research Institute.

the back and the lateral line behind the dorsal fin. All scales were dry-mounted on glass slides and their surface sculpture was impressed on plastic plates.

Positive identification of the sex of each fish was made by cutting a small (1- to 2-inch) incision below the lateral line just posterior to the tip of the pectoral fin, and examining the gonads.

After measurements were made and scale samples collected, the salmon were placed in the sharp-freeze compartment and later glazed and stored for shipment to Seattle. Approximately 1,035 specimens were collected. The viscera from most fish not in the collection were preserved in formalin or frozen.

STREAM INSPECTIONS: On occasions when the vessel was "weathered in," several streams on Unalaska and Adak Island were inspected. Whenever salmonoids were seen the area was seined with a 25-foot minnow seine ($\frac{1}{2}$-inch stretched-measure mesh). Juvenile specimens were preserved in formalin. Adult salmon were frozen and placed in the collection.

RESULTS

VITALITY OF VARIOUS SPECIES: As the net was hauled aboard, the number of dead and live fish was recorded by species. An attempt was made to judge which of the live fish were in suitable condition for tagging. This was done before the fish were removed from the gear and represents the judgment of the recorder. These data are summarized in table 4.

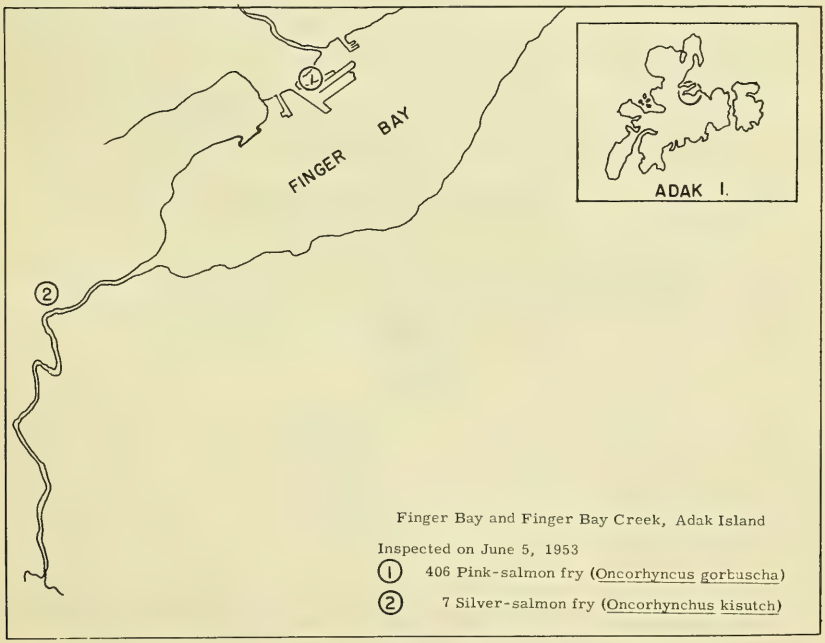


Fig. 16 - Location and results of sampling on Adak Island.

Red salmon appeared to exhibit the most vitality of the various species. Of the 1,140 fish observed, 875 were dead or nearly dead. Of the fish caught in live condition, 136 were judged to be taggable and 63 to be possibly taggable.

ENMESHMENT OF VARIOUS SPECIES: The place on the body at which salmon became enmeshed was noted for as many individuals as possible in order to determine the effect of this factor on the vitality of the salmon. However, variables such as sea conditions and the length of time the salmon were in the net also affect their vitality. Since these variables and their effect could not be evaluated the results are inconclusive. In general, most of the red, pink, and chum salmon were enmeshed at the nape or the back. Most silver salmon were enmeshed at the head (table 5).

MORPHOMETRIC MEASUREMENTS: A total of 1,172 salmon were measured from the catch of the John N. Cobb, of which 219 were red salmon, 725 chum salmon, 201 pink salmon, and 27 silver salmon. However, fork lengths could not be obtained for all specimens due to the absence of or damage to heads and tails of some specimens.

The fork-length frequency distributions of 179 red salmon are shown on the histograms in figure 12. The range in lengths was from 420 mm. to 667 mm. with a mean length of 564.6 mm. Females ranged from 420 mm. to 635 mm. with a mean length of 561 mm. and the males ranged from 420 mm. to 667 mm. with a mean length of 569 mm.

Chum salmon fork-length frequencies are shown in figure 13. Their lengths ranged from 475 mm. to 705 mm. with a mean of 559.4 mm. The females ranged from 475 mm. to 705 mm. and the males ranged from 475 mm. to 705 mm. The mean lengths of the females and males were 564 mm. and 555.4 mm., respectively.

The fork lengths of pink salmon are shown in fig. 14. Pink salmon ranged from 425 mm. to 595 mm. with a mean length of 497.9 mm. The females ranged from 455 mm. to 555 mm., and the males from 425 mm. to 595 mm. The mean lengths were 493.9 mm. and 499 mm., respectively.

The fork length of 25 silver salmon ranged from 544 mm. to 633 mm. The mean length was 574.7 mm.

STREAM INSPECTIONS: The locations of sampling areas on Unalaska Island are shown in figure 15. Sampling areas on Adak Island are shown in figure 16. The results of stream sampling are summarized on the respective figures.

Progress on Projects, April 1954

FEDERAL SPECIFICATIONS FOR FISHERY PRODUCTS: The proposed revision of the Federal Specification PP-S-311a, "Shrimp; Canned," was submitted for industry review. This draft, dated February 4, 1954, and prepared by the Fish and Wildlife Service in cooperation with the Quartermaster Corps Food and Container Institute has not been approved and is subject to modification. Industry review of this specification is being handled by the National Canners Association and the National Fisheries Institute.

An Interim Federal Specification PP-F-00381c (GSA-FSS),"Fish; Fresh (Chilled) and Frozen" was issued by the General Services Administration. This Interim Federal Specification is based upon currently available technical information, but has not been approved for promulgation as a regular Federal Specification. It is subject to modification, and pending its promulgation as a regular Federal Specification, it is for optional use by all Federal agencies.

Proposed Amendment-1 to Federal Specification PP-O-956b, "Oysters, Raw, Shucked (Fresh and Frozen)," was submitted for industry review through the Oyster Institute of North America. The amendment was proposed primarily to reflect the new definitions and standards of identity for Pacific oysters (Federal Register, November 19, 1953) and to reconcile revised military requirements. Amendment-1 also has not been approved and is subject to modification.

A proposed cancellation of Federal Specification PP-F-401, "Fish: Salted or Smoked," has been submitted to the various Federal agencies for comment.

(Washington D. C.)

* * * * *

COMPOSITION OF FISH: The proximate composition of 16 chub (Leucichthys sp.) was determined. The fish were caught in Lake Michigan near Port Washington, Wisconsin, in August 1953. The results follow:

Characteristics	Unit	Maximum	Minimum	Average
Length of fish	Centimeters	27	23	25
Weight of edible meat	Grams	150	110	134
Moisture	Percent	80.3	73.7	77.2
Fat	Percent	10.5	3.3	7.6
Protein	Percent	17.4	12.8	15.1
Ash	Percent	1.13	0.78	0.96

(Seattle)

* * * * *

CANNING MAINE SARDINES: A new and cooperative project was initiated by the Service's Branch of Commercial Fisheries and The Maine Sardine Industry, an industry association. The purpose of the research study is to develop recommendations

for the industry in order to promote production of uniform-quality standard products. A fish-canning technologist has been appointed to head the project from headquarters at Boothbay Harbor, Maine. The study will be carried out under the general supervision of the Boston Fishery Technological Laboratory.

(Boston)

CRAB SALADS MAKE WONDERFUL SUMMER MEALS

Hot summer days are salad days. Vary your summer menus and satisfy your hungry family at the same time by serving a molded crab salad.

A molded salad is an easy way to turn out a hearty and attractive meal with little fuss. Molding it in the shape of a fish, with eyes of sliced, stuffed olives, and arranging on a platter garnished with parsley, gives you a summer salad pretty as a picture.

Here's the recipe for a delicious and nutritious salad that can be made from fresh, frozen, or canned crab meat now plentiful on the market according to the Fish and Wildlife Service.

MOLDED CRAB SALAD

1 pound crab meat
1 teaspoon gelatin
1/4 cup cold water
1/2 cup boiling water
1/2 cup chopped celery
2 tablespoons chopped sweet pickle
2 tablespoons chopped stuffed olives
2 tablespoons lemon juice
1/2 cup mayonnaise or salad dressing
1/4 cup catsup
1/4 teaspoon salt

Remove any shell or cartilage from the crab meat. Soften gelatin in cold water for 5 minutes. Add boiling water and stir until dissolved. Add remaining ingredients. Place in a mold; chill until firm. Unmold on salad greens. 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

A total of 56 vessels of 5 net tons and over received their first documents as fishing craft during January 1954--17 more than in January 1953. Florida west coast led with 21 vessels, followed by Louisiana and Texas with 7 vessels each.

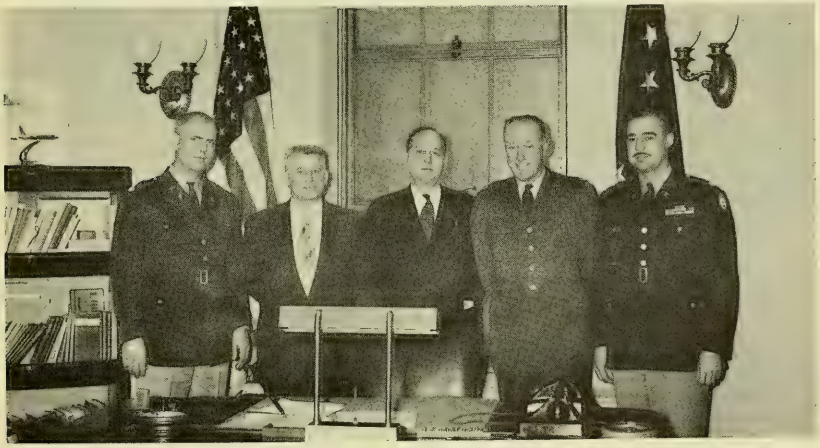
Vessels Obtaining Their First Documents as Fishing Craft, January 1954 and Comparisons

Section	January		Total	Section	January		Total
	1954	1953	1953		1954	1953	1953
	Number	Number	Number		Number	Number	Number
New England ..	-	2	20	Pacific	4	4	164
Middle Atlantic	-	-	19	Great Lakes.	1	-	7
Chesapeake ...	8	4	83	Alaska	3	2	53
South Atlantic .	5	8	116	Hawaii	-	-	3
Gulf	35	19	264	Total	56	39	729

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

Alaska

MILITARY PROCUREMENT PROCEDURE FOR FRESH AND FROZEN FISH: As a result of a series of meetings between military representatives, the Governor of



Left to right: Lt. Col. Allen T. Burke, QM Supply Officer; F. W. Hipkins, Fishery Marketing Specialist of U. S. Fish and Wildlife Service; Waino E. Hendricksen, Secretary of Alaska; Lt. Col. James C. McIntyre, Veterinary Officer; Captain James N. Carter, Alaska General Depot; attended meeting held in the Governor's office in Juneau, Alaska, on March 3 & 4, 1954.

Alaska's office, and the Service's fishery marketing specialist stationed in Ketchikan, the military is revising its bid procedure for fresh and frozen fishery products for delivery to Alaskan posts. Hereafter, the bids will call for the fish on a "delivered" basis, and the military will consider the freight costs involved in the delivery of the fish to the military post where the fish is to be used. Under this arrangement the fish will be procured in Alaska from qualified Alaskan suppliers unless the over-all cost, including transportation, exceeds that of the Stateside bidders.

In order to qualify as bidders, interested firms are advised to inform the Commanding General and Veterinary Officer at the Quartermaster Market Center, Seattle, Washington, that they desire to be placed on the bidders' list, and also request veterinary inspection of their plant facilities.

Since a large part of the Fish and Wildlife Service's market development program has been devoted to encouraging the military to increase its consumption of fishery products, this current development is considered as being of particular significance. Also, it offers new possibilities to many of the fishing centers in Alaska that have been experiencing economic troubles as a result of short production during the 1953 salmon fishing season.

* * * * *

BERING SEA KING CRAB FISHERY STUDIES CONTINUED: A Fish and Wildlife Service biologist aboard the commercial trawler Deep Sea is continuing the study of king-crab fishing and crab populations in the Bering Sea. The vessel sailed from Seattle, Wash., late in March. Studies on the king crab were first started in 1953 when the same Service biologist accompanied a Japanese crab fleet fishing in the Bering Sea offshore of Alaska to investigate the biology of the king crab. The decision to continue the studies was made following the first meeting of the International North Pacific Fisheries Commission which was held in Washington, D. C., from February 1 to 12, 1954.

This Commission is composed of representatives from Japan, Canada, and the United States, and was established to promote proper utilization of crabs, salmon, and other fish caught on the high seas of interest to the three countries. Service Director Farley is one of the United States commissioners.

The king crab, only known in the cold waters of the North Pacific Ocean and Bering Sea, is one of our most important sources of crab meat. The most spectacular and commercially important feature about king crabs is their size. Male crabs with an over-all spread of 4 to 5 feet and weighing 15 or more pounds are not uncommon in Alaskan waters south of the Alaska Peninsula.

In 1953 U. S. and Japanese fishing fleets caught more than 1,500,000 king crabs in the Bering Sea adjacent to Bristol Bay. The U. S. part of the catch is picked and quick frozen aboard the fishing vessel.

California

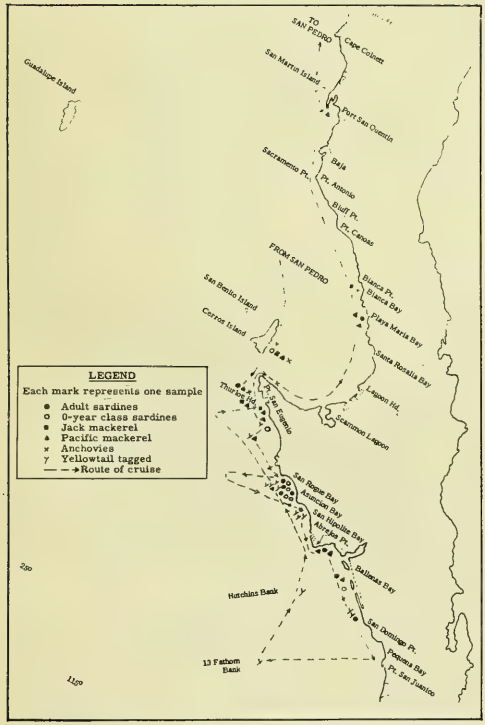
COMMERCIAL FISHING VESSELS NOW NEED LICENSE: Every boat used for commercial fishing in California, whether it's a rowboat or a sea-going clipper, must be registered with the Department of Fish and Game this year, according to that Department's April Outdoor California. The registration fee set by the 1953 Legislature is $10.

The new law became effective April 1. Its purpose is to spread the cost of fisheries surveys and management more equally among users of the State's fish resources.

The law applies not only to full-time commercial fishermen but also to seasonal operators who fish commercially only during the peak times of the year.

* * * * *

YELLOWTAIL TAGGED AND SARDINE POPULATION SURVEYED BY "YELLOWFIN" (Cruise 54-Y-2): A total of 462 yellowtail was tagged between San Cristobal Bay and 13 Fathom Bank by the California Department of Fish and Game's research vessel Yellowfin. The vessel was on a 19-day cruise along the coast of central Baja California from Cabo Colnett to Pt. San Juanico. In addition, tests were made with the blanket net in sampling fish populations; and a survey was made of the sardine population in the area between Pt. Eugenia and Hopolito Bay from 20 to 50 miles offshore. The Yellowfin returned to Los Angeles on February 14.



M/V Yellowfin (Cruise 54-Y-2) January 26-February 14, 1954. Each mark represents one sample.

Of the 462 yellowtail tagged, 394 were tagged with vinylite tubing tags and 68 with jaw tags. An effort was made to get a better condition factor on yellowtail marked with jaw tags by taking the weights to the nearest quarter pound. Although 49 marked yellowtail were weighed, the roll of the ship and activity of the live fish make the results of doubtful value. Scale samples were kept from 230 of the tagged fish. Chromatograms were made from yellowtail which were casualties.

Approximately 15,000 sardines were taken in a single set with the blanket net, and 7 sets yielded more than 1,000 sardines per set. Approximately 5,000 northern anchovies were taken in one set. Other species taken included: jack smelt, round herring, needlefish, queenfish, saury, California barracuda, California bonito, halfmoon, and squid.

Sardines in a spawning condition were collected with the blanket net 2 miles ESE. of Pt. Abreojos. The sea surface temperature at this station was 18.2° C.(64.8° F.). Sardines were taken along the entire coast surveyed with the greatest concentration occurring in the vicinity of Asuncion Bay.

The Yellowfin traveled 175 miles while scouting for fish between Pt. Eugenia and Hipolito Bay from 20 to 50 miles offshore. No schools of fish were observed in this region. Three light stations were occupied in this offshore area, but no sardines were seen or collected. Squid and juvenile sauries were present under the light at these three stations.

After a trial run during the day to adjust the high-speed net, a haul was made at night in an area where schools of fish were sighted before and during the haul. The entire net was torn from the ring during this one-hour haul.

Cans--Shipments for Fishery Products, January 1954

Total shipments of metal cans for fish and sea food during January 1954 amounted to 4,131 short tons of steel (based on the amount of steel consumed in the manufacture of cans), compared to 3,875 short tons in January 1953. The increase in shipments is principally due to the larger pack of canned tuna in January 1954.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.

Chesapeake Bay Fisheries,Trends, 1953

Fisheries in the Chesapeake Bay were generally good in 1953, reports the Service's Fishery Marketing Specialist in that area. There was a good production of menhaden, alewives, hard and soft crabs, scup, sea bass, and Boston mackerel. Moderate catches of shad, striped bass, spot, flounder, wolffish, clams, and oysters were reported, while croaker, bluefish, butterfish, and gray sea trout catches were light.

There was a perceptible falling off in pound-net fishing and haul-seining, especially in Virginia; but gill-netting continued about as usual, as did oyster and crab fishing in both Maryland and Virginia. The ocean-trawl industry at least remained stable, showing no spectacular losses or gains, but in some cases of trawling failure the boats were sustained by switching to profitable Boston mackerel gill-netting, and to surf-clam dredging in a limited area off Ocean City, Maryland.

In Virginia the leasing of ground for private oyster growing continued steadily, though at a somewhat reduced pace from 1952. Sail-dredging oyster beds in Maryland after reaching the low point during 1950-52, experienced a gain. The much publicized Smith's Island Oyster-Growing Cooperative began to pay off, with nearly 100 power boats working profitably on 3,000 acres.

Prices for oysters, both shell stock and shucked, hovered around the highest in history. This was due mostly to large orders from the Armed Forces. Prices were gratifying to the fishermen, provided they caught enough fish. Alewives at times glutted the food market and the surplus was used by the reduction plant. The sale of canned alewives was stimulated by the failure of the California pilchard fishery. The marketing of salted and pickled alewives remained uncertain.

A gradual branching out into specialty lines was noted as more and more members of the industry strove to solve the uncertainties of Chesapeake Bay fish and shellfish with the possible exception of oysters. New canned and frozen lines included

quality soups, ready-to-cook crab cakes, and "seafood dinners," breaded oysters or shrimp, and pan-ready fish. There was a vast emphasis on packing frozen fish, as well as salted fish, under private supermarket labels.

Recent changeovers to new gear proved worth continuing: sea-bass pots were productive in Maryland-Virginia ocean waters; an attempt to gill net sturgeon in the Atlantic was successful. The ingenious soft-clam dredging apparatus introduced on Maryland's Eastern Shore in 1950 continued harvesting available beds in Talbot and Queen Anne's Counties, but at year's end operators were looking desperately for new beds. The menhaden industry continued its inquiries into labor-saving devices. Further developments along this line are likely to occur during 1954.

Although Virginia's seed-oyster fishery remained closed to export in order to take care of domestic demand, no envisioned scarcity materialized. The beds offered highly profitable employment to many hundreds of tongers from all over the State who might otherwise have felt the pinch because of the steady deterioration of their own local tonging grounds.

Maryland, forced to supply all its own seed oysters after being cut off from the source in Virginia, stepped up shell planting in areas where spatfall had been judged most favorable. Reassuring results were reported. Both States increased the quota of shells required to be held by shucking houses at the disposal of the conservation authorities for propagation: Maryland up to 50 percent, Virginia to 20 percent. This move promised little relief for the squeeze on manufacturers of oyster-shell grit and lime. The largest producer operated mainly with reef shells from Alabama.

Additions to the fishing fleet continued light. The new boats represented replacements rather than increased vessel-building activity.

Federal Purchases of Fishery Products

FRESH AND FROZEN FISHERY PRODUCTS PURCHASED BY DEPARTMENT OF THE ARMY, FEBRUARY 1954: The Army Quartermaster Corps in February 1954 purchased 2,421,724 pounds (valued at $1,011,558) of fresh and frozen fishery products for the military feeding of the U. S. Army, Navy, Marine Corps, and Air Force (see table). This was 82.3 percent greater in quantity and 69.3 percent higher in value than purchases in January; compared with a year ago, February purchases were greater by 63.3 and 16.8 percent, respectively.

Purchases of Fresh and Frozen Fishery Products by Department of the Army
(February and the First Two Months of 1954 and 1953)

QUANTITY				VALUE			
February		January-February		February		January-February	
1954	1953	1954	1953	1954	1953	1954	1953
Lbs.	Lbs.	Lbs.	Lbs.	$	$	$	$
2,421,724	1,483,034	3,750,223	3,041,206	1,011,558	866,229	1,609,010	1,706,245

Fresh and frozen fish purchases by the Army Quartermaster Corps during the first two months in 1954 totaled 3,750,223 pounds (valued at $1,609,010)--23.3 percent more in quantity, but 5.7 percent lower in value as compared with the similar period a year earlier.

The over-all average price paid for fresh and frozen fishery products by the Department of the Army in February was 41.8 cents per pound, compared with 45.0 cents in January and 58.4 cents in February 1953.

In addition to the purchases of fresh and frozen fishery products indicated above, the Armed Forces generally make some local purchases which are not included in

the above figures. Therefore, actual purchases are somewhat higher than indicated, but it is not possible to obtain data on the local purchases made by military installations throughout the country.

* * * * *

U. S. ARMED FORCES IN GERMANY BUY NORWEGIAN OCEAN PERCH FILLETS: The U. S. Armed Forces in Germany recently purchased 100 metric tons of frozen ocean perch and haddock fillets from Norway, a March 19 U. S. Embassy dispatch from Oslo reports. While this sale was considered relatively small, it was gratifying to the Norwegian cooperative fish exporting company because sales on this market have been infrequent.

The major hindrances to increased fish sales by Norway to the U. S. Army in Europe have been the poor catches of the last three years and the need to send available supplies to the developing U. S. market, according to a Norwegian trade source. Another handicap has been the requirement that the U. S. Army inspect the fish during processing. This prevents the Norwegians from selling fish out of stocks on hand, and makes it difficult for the selling organization to guarantee delivery on a fixed date.

Gulf Exploratory Fishery Program

"ECHOGRAPH" DEPTH SOUNDER TESTED BY "OREGON" (Cruise 21): A newly-installed "Echograph" depth sounder was used by the Service's exploratory fishing vessel Oregon on a 3-week exploratory shrimp trawling cruise completed at Pascagoula, Mississippi, on March 23. The "Echograph" allowed the vessel to avoid major obstructions, such as large coral heads, loggerhead sponge patches, and rock outcroppings. Trawling was carried out in the area between Cape San Blas and Tampa Bay, Florida.

Approximate locations of shrimp trawl drags made by the Oregon. This chart shows distribution of fishing.

During the cruise 51 trawling stations were made east and southwest of Cape San Blas, chiefly over bottoms which previous observations had shown to be a poor trawling area, generally too hazardous for trawling with standard type gear. All of the drags were made without loss of gear. This may be attributed, at least in part, to the use of extra heavy duty shrimp trawls protected with bull hide chafing gear. Also, very precise bottom delineation was provided by the "Echograph" depth sounder.

The catches were phenomenally low. The average amount of fish and scrap obtained was the lowest for any area in the Gulf of Mexico

covered by the Oregon. A few drags made west of Cape San Blas on this cruise produced the usual large amount of scrap.

Pink shrimp were taken in very small numbers inside of the 15-fathom curve between Cedar Key and Tampa Bay. Outside the 15-fathom curve not a single shrimp of a commercially valuable species was taken.

Although all drags throughout the Cape San Blas to Tampa Bay area produced few fish, "Echograph" depth sounder recordings inside the 10-fathom curve near Tampa Bay indicated the presence of schools of small fish. Most of these were not identified but some were found to be made up of small pinfish.

The Oregon sailed from Pascagoula on March 31 on Cruise 22 and was scheduled to work on the continental slope of the west coast of Florida between Tampa Bay and Dry Tortugas. The Oregon was due to return to Pascagoula on April 23.

The objectives of this cruise were to: (1) to make exploratory drags for pink shrimp chiefly in the 15- to 25-fathom range between the Tampa Bay and the northern limits of the Tortugas pink shrimp fishery; (2) extend exploratory dragging on three east-west lines extending from the shore to the edge of the continental shelf in the approximate latitudes of Venice, Boca Grande, and Everglades, Florida; (3) continue tests of gear trawls for rough bottom, bottomless trawls, and depth sounder shrimp locating devices where conditions require use of special gear; (4) set baited long lines for tuna during the final four days of the cruise off the western tip of Florida and, on the return trip to Pascagoula, wherever depth sounder indications show the probable presence of tuna.

* * * * *

SHRIMP EXPLORATIONS, 1952/53: Shrimp explorations in the Gulf of Mexico during 1952 and 1953 have resulted in discoveries of one extensive new fishing area for brown-grooved shrimp near the Mississippi Delta which was immediately utilized by the commercial fishing fleet; and one extensive area for deep-water red shrimp, a kind that has not yet been fished commercially.

Explorations by the Service's exploratory fishing vessel Oregon through 1953 for brown-grooved shrimp have been sufficiently comprehensive to define all of the major areas of possible production along the Gulf Coast of the United States and to point out that the only presently unworked area of importance is the 35- to 50-fathom depth range on the coast of Louisiana and Texas between the 91st and 95th meridians.

Explorations for pink-grooved shrimp have produced good catches on, or quite near, the major pink shrimp fishing grounds off Tortugas, Florida, and Campeche, Mexico, but in no other areas. The eastern Campeche Bank and the Florida west coast, believed to offer possibilities for good production of pink-grooved shrimp, are bad trawling bottom areas and profitable trawling operations in them require development of new gear or methods.

Red shrimp, a kind of shrimp not yet entering the commercial fishery, was found in 150 to 375 fathoms between Tampa and Aransas Pass. Catches show production possibilities if improvements in the methods of handling shrimp trawls in deep water can be worked out.

No evidence of stocks of white shrimp other than those now known to the shrimp fishery were found by the Oregon.

This is a summary of a report on shrimp explorations in the Gulf of Mexico by the Service's exploratory fishing vessel Oregon prepared for the meeting of the Gulf States Marine Fisheries Commission, held in New Orleans on March 18 and 19.

Hawaii

COMMERCIAL FISH CATCH, 1953: The commercial fish landings for the Territory of Hawaii during 1953 totaled 18,798,536 pounds, valued at $3,758,217 to the fishermen--an increase of 35.7 percent in volume and 10.2 percent in value as compared to 1952 (see table). This increase is principally due to the large skipjack tuna (aku) catch which started in early spring and continued through the late summer months. The skipjack tuna catch in 1953 amounted to 12,059,406 pounds, valued at $1,593,744--65.4 percent more in weight and 49.9 percent more in value than the catch of the previous year.

Hawaiian Commercial Fish Catch and Value by Species, 1953 and 1952

Species		1953		1952	
		Quantity	Ex-vessel Value	Quantity	Ex-vessel Value
English	Hawaiian	Lbs.	$	Lbs.	$
Ocean Catch:					
Amberjack	kahala	94,706	17,796	168,076	39,975
Big-eyed scad	akule	314,458	201,831	382,302	231,988
Dolphin	mahamahi	162,554	66,728	178,601	68,954
Goatfish	weke-ula, weke, moana, kumu	163,967	109,669	164,226	103,677
Jack crevalle	ulua	297,106	94,530	231,426	84,196
Mackerel	opelu	248,727	92,983	248,416	90,977
Sea bass	hapuupuu	74,168	20,583	91,913	31,422
Snapper:					
Gray	uku	73,514	29,761	67,024	26,085
Pink	opakapaka	214,831	87,383	300,658	120,484
Swordfish	a'u	953,376	220,145	938,961	304,509
Tuna and tunalike fishes:					
Albacore	ahipalaha	49,407	8,552	104,721	23,823
Big-eyed	ahi	2,826,172	761,251	2,206,231	688,218
Yellowfin	ahi	621,654	156,961	855,655	260,127
Skipjack	aku	12,059,406	1,593,745	7,291,851	1,063,454
Bonito	kawakawa	24,639	4,820	54,428	11,710
Miscellaneous	-	619,851	291,479	570,326	259,295
Total Ocean Catch	-	18,798,536	3,758,217	13,854,815	3,408,894
Pond Catch:					
Bonefish or ladyfish	oio	2,446	1,239	2,078	872
Clam	olepe	9,746	2,111	7,043	1,495
Crabs	-	3,889	1,477	1,836	880
Milkfish	awa	9,465	3,827	11,798	5,460
Mullet	amaama	29,855	26,065	29,734	26,715
Tenpounder	awaawa	3,228	1,253	5,179	2,212
Miscellaneous	-	5,240	3,650	3,806	2,896
Total Pond Catch	-	63,869	39,622	61,474	40,530
Grand Total	-	18,862,405	3,797,839	13,916,289	3,449,424

The flag-line fishery for the large tunas (big-eyed and yellowfin tuna, ahi) swordfishes (a'u), and other pelagic fishes, such as the wahoo (ono) and dolphin (mahimahi), totaled 4,693,845 pounds, valued at $1,231,400. This represents a 7.6 percent increase in weight, but a decrease of 10.2 percent in value. A large part of this increase in volume in the flag-line catch is due to the increase in the catch of big-eyed tuna. The catch for this species totaled 2,826,172 pounds, a 28.1 percent increase over that of the previous year. The decrease in value is caused by the large amount of big-eyed and yellowfin tuna (ahi) caught, plus a highly competitive situation between two marketing organizations which auction most of the fresh fish in Honolulu.

Maryland

SURVEY REVEALS FEWER OYSTERS IN CHESAPEAKE BAY: Market-size oysters in the Chesapeake Bay were fewer in 1953 than in 1952, according to a survey of 132 oyster bars in the Maryland portion of Chesapeake Bay and tributaries during the fall of 1953. The survey was the latest cooperative annual examination of the area by the Chesapeake Bay Shellfish Investigations of the Maryland Department of Tidewater Fisheries, the Maryland Department of Research and Education, and the U. S. Fish and Wildlife Service's Branch of Fishery Biology. Small oysters were found to be fewer than market size, which may mean a smaller harvest for 1954/55. Spatfall in all places, except some Eastern Shore tributaries, was sparse and will certainly be responsible for a continued low yield of oysters from Maryland.

* * * * *

STRIPED BASS SURVEY EXTENDED: The Maryland Department of Tidewater Fisheries recently appointed two biologists to conduct a survey of the spawning habits of striped bass in Maryland and to coordinate research, especially that at the Chesapeake Biological Laboratory with that of the Fisheries Commission.

The study, designed to supplement existing research conducted by the Department of Research and Education, is financed in part by Federal funds made available through the Dingell-Johnson Act. Four objectives are included in the new study: (1) delimit the spawning areas of striped bass in major rivers in the State; (2) determine the season and duration of spawning; (3) compare the production of each river to the Maryland striped bass population; (4) and determine the effect of net fishing on the spawning ground.

With the cooperation of the North Carolina Wildlife Resources Commission, the Chesapeake Biological Laboratory will continue studies in an attempt to evaluate the 15-pound top limit on striped bass in Maryland waters. A preliminary report already has been published which treats of egg production versus size and age of striped bass. The work in North Carolina, now entering its second season, attacks the problem of comparative viability of eggs from young and old striped bass.

Massachusetts

NEW BEDFORD FISHERIES PRODUCTION, 1953: The New Bedford production of fish for human consumption was down in 1953 due to: (1) a general scarcity of fish, (2) conversion of ten medium otter trawlers to scallopers, and (3) the departure of 21 vessels for the shrimp fisheries in the Gulf area during the last quarter of the year.

Production of yellowtail flounder, once the mainstay of the local small vessel fleet, reached the lowest point since 1938. The majority of yellowtail landed at New Bedford since 1949 was Georges Bank fish caught by the larger vessels. Prior to 1949 most of the fish were from the Block Island-Nantucket Lightship area, and were landed by the small inshore vessels. This latter area is now virtually barren of yellowtail flounder except for a small run during the winter months, reports the Service's Fishery Marketing Specialist in New Bedford.

Landings of groundfish and other flounders declined because of the conversion of the larger vessels to scallop fishing. The remaining large vessels concentrated on fluke and tilefish during the first quarter of the year as these species were relatively more abundant and brought higher prices.

Sea-scallop production in 1953 reached the highest peak yet recorded, but during the last quarter of the year frozen inventories were piling up, and the price was unstable.

Landings of trash fish increased and prices were higher than in 1952.

Minimum Mesh Regulation Benefits New England Haddock Fishery

New England trawler fishermen are benefiting at the rate of $1 million per year by the new mesh regulation which went into effect on June 1, 1953, Secretary of the Interior McKay stated on March 22.

The regulation was promulgated by the United States at the recommendation of the International Commission for the North Atlantic Fisheries, which was organized three years ago to study the conservation of groundfish in the Northwest Atlantic--an area fished by ten countries.

The regulation requires a minimum size of $4\frac{1}{2}$ inches for trawl nets used in haddock fishing. Before regulation, the average size used was 2-7/8 inches.

The regulation is designed to conserve undersize haddock which were previously destroyed at sea. The saving of these small fish is expected to increase the sustained yield of the haddock stocks by about 30 percent. Over and above this benefit, the large-mesh nets are proving more efficient in capturing the larger size of haddock and other fish.

During the first seven months of regulation, eight control or study boats were licensed to fish with the old small-mesh nets. Using these as a basis of comparison, it was found that the vessels which had converted to large mesh discarded almost no undersized haddock, but at the same time landed more pounds of haddock and other groundfish.

During a three-month study period (October to December 1953), the average catch per trip by the study boats was 68,000 pounds, while the average catch per trip of the converted boats was over 75,000 pounds. The catch of the study boats was down 10 percent from the 1952 period, while the catch of the converted boats held steady.

The landings of groundfish at Boston alone during the three-month period amounted to about 33 million pounds, worth about $3 million ex-vessel. Had the regulations not been in effect, this amount would have been about 10 percent less, or down by about $300,000. There is every indication that the advantage enjoyed by large-mesh vessels will continue throughout the year, when the benefit to the fishery will be at the rate of $1 million annually.

Scientists of the Woods Hole, Mass., Laboratory of the U. S. Fish and Wildlife Service conducted the research leading up to the regulation, and are at present pursuing intensive research to test the effect of the law. The Service is required to report annually to the International Commission. Service observers are sent to sea on commercial trawlers regularly throughout the year to measure the sizes, ages, and quantities of fish caught and of fish discarded at sea by both the regulated boats and the study group.

Pacific Halibut Regulations for 1954 Signed by President

The Pacific Coast halibut fishing regulations for the 1954 season proposed by the International Pacific Halibut Commission were approved by President Eisenhower on April 9, 1954. The 1954 regulations appeared in the April 22, 1954, issue of the Federal Register.

The opening date for halibut fishing in all areas established by the Commission is 12:01 a.m., May 16.

Pacific Oceanic Fisheries Investigations

ALBACORE TUNA DISCOVERED NORTH OF HAWAII BY "JOHN R. MANNING" (Cruise 19): An important discovery of albacore tuna, which may foretell a new industry of the future for Hawaii, was made by the POFI research vessel John R. Manning on an 18-day cruise completed at Pearl Harbor, T.H., on February 6, Part I of Cruise 19. These fish were caught at 34° N. latitude along 160° W. longitude. Albacore tuna had never been taken in these open ocean waters before.

Fishing was carried out by the long-line method, the vessel employing about 13 miles of line with baited hooks every 100 feet. The lines were hung from flagged buoys and sunk to depths of about 300 feet below the surface. Sets were made in the early morning and the line hauled in the afternoon. Although fishing only experimental amounts of gear, over one ton of albacore tuna was caught in one day before heavy weather set in preventing further fishing.

Although many attempts were made to locate the depth of fishing gear by the use of the "fathometer," no success was attained and the depths at which the fish were taken will have to be indirectly calculated.

A total of 47 albacore tuna, 69 big-eyed tuna, 3 yellowfin tuna, 4 skipjack tuna, 40 sharks, and 26 miscellaneous fishes were taken in the 9 days of fishing. An unexpected high concentration of big-eyed tuna was encountered just south of where the albacore tuna were caught, being centered at 31° N. latitude.

The concentration of small big-eyed tuna was a distinct surprise. Since this is the first time any numbers of 50- to 60-pound big-eyed tuna have been taken in central Pacific waters, the question arises as to whether this region is a nursery grounds for the smaller big-eyed. The large albacore, ranging from 45 to 75 pounds, were larger than expected. The tagging of these and subsequent albacore tuna may answer the question as to whether these fish contribute to the Japanese fishery--possibly at another time of the year.

It was of interest to find that these large albacore, reaching 75 pounds in weight, were in a nonspawning condition. The reproductive organs in all were very small, decidedly months from active spawning condition. The big-eyed appeared to be in an early maturing condition. The skipjack were not in a spawning condition.

Since so many of the big-eyed tuna and albacore tuna were alive, the opportunity afforded itself to tag these viable fish. Thus, 30 big-eyed tuna and 26 albacore tuna were tagged.

To test the acceptability of the tuna for canning, 16 small big-eyed less than 100 pounds in weight and 18 albacore were frozen and canned in Honolulu. The albacore made a very good pack with no green albacore but a small amount of blood streaks. The small big-eyed were fair; the meat color was light but some blood streaks were noted.

In order to study the food and feeding habits of the tunas found north of Hawaii, 12 albacore, 20 big-eyed, 3 yellowfin, and 3 skipjack stomachs were preserved for study in the laboratory. The fish were feeding actively and food seemed abundant. The tunas were feeding on sauries, hatchetfish, lancetfish, squid, shrimp, and a host of other forage organisms. Temperature records were continuously taken; a preliminary examination indicates the large adult albacore tuna were found between 58° F. and 62° F. surface water temperatures. For racial studies a series of morphometric measurements were taken from 18 albacore tuna, 32 big-eyed tuna, 3 yellowfin tuna, and 4 skipjack tuna, in addition to 3 sharks.

No surface schools of tunas were seen on this cruise outside the sight of the Hawaiian Islands, although careful wheel watch was maintained for bird flocks and school signs.

These studies of potential tuna fisheries resources are being carried on simultaneously with similar studies by the Pacific Coast states, and the California research vessel N. B. Scofield is now exploring the region east of the area being surveyed by the John R. Manning to extend our knowledge of the high-seas tunas to the west coast of the United States. Despite very bad weather the John R. Manning performed well and was due to leave Honolulu within a week to continue further research in the more northern waters.

The vessel left Pearl Harbor on February 16 on Part II of Cruise 19 and fished 7 stations along 155° W. longitude from 29° to 35°16' N. latitude; one station at 34°02' N., 150°26' W.; and another at 35°57' N., 147°00' W. Because of very bad weather conditions, the remaining stations along 147° were abandoned. The vessel returned to Pearl Harbor on March 10.

In nine days of fishing, 22 big-eyed tuna, 1 skipjack tuna, 2 broadbill swordfish, 61 sharks, 1 sting ray, and 86 lancetfish (Alepisaurus sp.) were caught. No albacore were taken during this portion of the cruise.

Fishing along 155° W. longitude was conducted in waters with surface temperatures ranging between 68° F. and 57.5° F. The remaining two stations further to the east were occupied in the 61° and 58.1° F. surface isotherms, respectively. The lowest temperature in which big-eyed tuna was taken was 61° F.

No surface schools of tunas were seen in the areas fished. Two hours of standardized surface trolling (using 5 lines) along the long-line set at each station resulted in no catch.

Attempts at locating the depth of the gear by the use of the "fathometer" met with failure. Between the 2 types of gear used (30 baskets with 5-fathom float line, 30 baskets with 15-fathom float lines) no differences were seen in the catch with the possible exception of the big-eyed tuna, only 7 of the 22 fish being caught on the shallower-fishing 5-fathom float-line gear.

Eleven big-eyed tuna were measured, tagged, and released. These tagged fish varied from 105 to 167 cm. in total length.

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TWO-VESSEL EXPEDITION CATCHES 100 TONS OF TUNA OFF CHRISTMAS ISLAND ("North American" and "Alrita," 1st Concurrent Cruise): Two commercial vessels--North American and Alrita--fishing for 31 days with long lines off Christmas Island, caught a total of 103 tons of yellowfin tuna. The vessels sailed from San Diego on January 12, fished in the vicinity of Christmas Island (2° N., 157° W.) January 28 to February 28, and arrived at Honolulu on March 7. A POFI fishery research biologist accompanied the cruise as observer.

The North American is an 86-foot live bait clipper, originally constructed as a purse seiner, and it normally fished for tuna out of San Diego. The Alrita is a 70-foot combination boat normally fishing for halibut and albacore along the North Pacific Coast. Each vessel carried a complement of 7 men.

The two vessels fished a combined total of 59 boat-days, fishing an average of 56 baskets of long-line gear per day per boat. The gear used had a 1,620-ft. main line per basket and 15 hooks per basket. Most of the fishing was done within 30 miles of Christmas Island.

The average catch was 1.9 tons of fish per day excluding sharks. Of this 1.8 tons was yellowfin tuna, with a few albacore, big-eyed, and skipjack. In addition to the tuna, a few marlin and many sharks were captured.

The yellowfin tuna averaged about 82 pounds. The catch was actually comprised of two groups of fish, one averaging about 55 pounds, and making up 41 percent of the total weight, and a second group averaging about 135 pounds, comprising 59 percent of the catch.

The North American delivered 116,200 pounds of tuna to the cannery at Honolulu, and the Alrita delivered 89,910 pounds. In addition, the two vessels combined landed 5 tons of marlin, big-eyed, wahoo, and other species that entered the local trade channels in Honolulu. Rejections at the cannery resulted in a 4 percent penalty against the Alrita's fish, and 21 percent for the North American. The reason for the variation in percentage of rejection is not yet apparent since both catches were taken in the same area.

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ARTIFICIAL TUNA BAIT STUDIES IN 1953: Tuna kept in captivity respond vigorously to extracts of tuna flesh, viscera, or blood, or to the extract of squid or shrimp, it was disclosed in a summary of the studies by POFI in 1953 on the response of tuna to chemical stimuli. Studies of mechanics of the response show that part of the response is a "conditioning" of the fish in the pond.

Considerable sea testing of chemical extracts indicate no measurable attraction. It was concluded that the sense of smell by itself plays little part in the feeding of tuna in their natural environment.

A study of the response of tuna to visual stimuli showed the tuna to be momentarily attracted to shiny objects but the visual artificial lures were not successful in holding the school behind the boat. Another attempt is being made to develop an artificial lure imparting motion as well as appearance.

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HAWAIIAN SKIPJACK TUNA DISTRIBUTION STUDIED: A study by the Service's Pacific Oceanic Fishery Investigations of the distribution of skipjack schools in Hawaiian waters based on the 1953 scouting has revealed that the abundance of schools continued high from close inshore to a distance of 350 miles south and west of Oahu. At the same time the Hawaiian sampan fleet was catching three-fourths of its catch within 20 miles of land, according to a quarterly report by POFI.

Trials of airplane scouting for tuna proved disappointing; about 10 times as many schools were seen over comparable areas by the vessel when compared with the plane. Since practically all fish schools are located by observing bird flocks over them, it was concluded that the dark-colored shear-waters and terns probably are an important contributing factor in the differences in scouting efficiency between vessel and plane.

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OCEANOGRAPHIC STUDY OF ALBACORE TUNA GROUNDS COMPLETED BY "HUGH M. SMITH" (Cruise 25): A 53-day oceanographic cruise to the potential albacore tuna fishing grounds north and east of Hawaii was completed on March 17 at Honolulu by the Service's research vessel Hugh M. Smith. The vessel made detailed observations of the chemical and physical characteristics of the area. This completes the survey which included the recent experimental fishing trip of another Service vessel, the John R. Manning.

This is the most thorough oceanographic study that has ever been made of this area. It is expected that the information collected on this cruise will add greatly to a better understanding of the fish productivity and complicated current systems in the area.

The Hugh M. Smith occupied 89 hydrographic stations at which water samples for chemical analysis were collected at 13 depths between 0 and 4,000 feet. Net hauls were made at each station between the surface and 600 feet to sample zooplankton. At each station and at frequent intervals between stations, bathythermograph lowerings were made to determine subsurface temperature structure and the surface currents measured by means of an underway current meter.

Puerto Rico

MARINE LABORATORY UNDER CONSTRUCTION: A new marine laboratory was nearing completion at Mayaguez, Puerto Rico, according to a March 29 report from the University of Puerto Rico. There are seven spacious aquarium tanks on one side of the building; the tanks will eventually contain live fishes for study and public display. There will also be some smaller tanks inside for small fishes and for photography of larger fishes. At the western edge of the island there is a large corral for fishes with a three-sided pier around the outside so that visitors may walk all around and observe the sea turtles, sharks, and bright-colored coral reef fishes.

Several lines of fishery studies might be carried out as follows: (1) establish a small museum by a representative collection of preserved fishes with adequate series of different sizes of fishes for each species; (2) study of the color patterns of certain coral reef fishes which are known to change considerably with age; (3) study of the migrations of fishes through tagging or the clipping of fins; (4) keep records of the stomach contents of certain fishes to determine their food habits; (5) study the spawning habits of fishes in their natural habitat under water or in the artificial habitat of an aquarium; and (6) maintain records of any occurrences of fish poisoning or ciguatera that may occur and possibly conduct feeding experiments with laboratory animals.

U. S. Foreign Trade in Edible Fishery Products

JANUARY 1954: United States imports of fresh, frozen, and processed edible fish and shellfish during January 1954 totaled over 59 million pounds (valued at $15.1 million), according to the January United States Foreign Trade, a Department of Commerce publication (table 1). This is an increase of 9 percent in quantity but one percent lower in value as compared with December 1953 imports of over 54 million pounds (valued at $15.4 million). Compared with a year earlier, January imports were up 19 percent in quantity and 4 percent in value.

Exports of processed edible fish and shellfish (excluding fresh and frozen) in January 1954 totaled over 4 million pounds (valued at $1.0 million)--higher by 13 percent in quantity but unchanged in value as compared with December exports of slightly less than 4 million pounds (valued at $1.0 million). However, January exports were down 25 percent in quantity and 29 percent in value from a year earlier.

Table 1 - United States Foreign Trade in Edible Fishery Products, January 1954 With Comparisons

	January 1954		December 1953		January 1953	
	Quantity	Value	Quantity	Value	Quantity	Value
	1000 Lbs.	Million $	1000 Lbs.	Million $	1000 Lbs.	Million $
Imports:						
Fish and shellfish: fresh, frozen, and processed 1/	59,263	15.1	54,219	15.4	49,954	14.5
Exports:						
Fish & shellfish: processed 1/ only (excluding fresh and frozen)	4,248	1.0	3,769	1.0	5,673	1.4

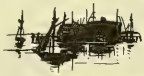
1/Includes pastes, sauces, clam chowder and juice, and other specialties.

Table 2 - United States Foreign Trade in Edible Fishery Products, 1953 and 1952

	1953		1952	
	Quantity	Value	Quantity	Value
	1000 Lbs.	Million $	1000 Lbs.	Million $
Imports:				
Fish & shellfish: fresh, frozen & processed 1/.....	724,656	193.2	705,118	183.1
Exports:				
Fish & shellfish: processed 1/ only (excluding fresh and frozen)	58,920	14.4	56,604	13.5

1/Includes pastes, sauces, clam chowder and juice, and other specialties.

YEAR 1953: United States imports of fresh, frozen, and processed edible fish and shellfish during 1953 amounted to over 724 million pounds (valued at $193.2 million), an increase of 3 percent in quantity and 6 percent in value, compared with 1952 when imports totaled 705 million pounds (valued at $183.1). Exports in 1953 totaled almost 59 million pounds (valued at $14.4 million) as compared with over 56 million pounds (valued at $13.5 million) in 1952 (table 2).



Washington State

FISHERIES SCHOOL OFFERS SCHOLARSHIPS: The University of Washington School of Fisheries recently announced offers of financial assistance to outstanding graduate students, undergraduate students, and high school seniors in the form of scholarships with awards from $250 to $500 per school year, and by assistantships and part-time employment with stipends ranging from $600 to $2,000 per year.

The assistantship or part-time employment usually is, but need not necessarily be, on research leading to an advanced degree. Both summer and part-time employment are usually available in a number of fisheries research organizations located on or near the University Campus at Seattle, Washington,

Further information may be obtained from Dr. Richard Van Cleve, Director, School of Fisheries, University of Washington, Seattle 5, Washington.

Wholesale Prices, March 1954

Because of the usual seasonal increase in production, wholesale prices for fresh and frozen drawn, dressed, or whole finfish from February to March dropped; but this decline was more than completely offset by higher prices for processed fish and shellfish products. The March 1954 over-all edible fish and shellfish (fresh, frozen, and canned) wholesale index was 107.4 percent of the 1947-49 average (see table)--0.2 percent more than the February index and 4.5 percent above that of a year earlier.

Among the drawn, dressed, or whole finfish, the sharp drop (20.4 percent) in the ex-vessel price of offshore drawn large haddock from February to March was almost solely responsible for the drop (4.5 percent) that occurred in this subgroup index. However, prices for drawn large haddock this March were 30 percent higher than in the same month last year, and the index for this subgroup was still 17.3 percent higher.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, March 1954 and Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices1/ ($)		Indexes (1947-49=100)			
			Mar. 1954	Feb. 1954	Mar. 1954	Feb. 1954	Jan. 1954	Mar. 1953
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					107.4	107.2	114.0	102.8
Fresh & Frozen Fishery Products:					112.2	114.1	125.6	105.7
Drawn, Dressed, or Whole Finfish:					111.2	116.5	131.3	94.8
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.09	.12	95.4	119.8	170.1	73.4
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.31	.31	97.0	94.9	95.9	102.1
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.56	.51	125.8	115.2	109.0	109.6
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.65	.61	161.1	151.2	150.0	100.4
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.63	.74	126.4	148.6	131.5	73.8
Lake trout, domestic, No. 1, drawn, fresh	Chicago	lb.	.65	.64	133.2	131.1	124.0	129.1
Yellow pike, L. Michigan, rnd., fresh	New York	lb.	.60	.60	140.7	140.7	117.2	129.0
Processed, Fresh (Fish & Shellfish):					114.9	112.6	123.4	122.1
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.33	.39	113.1	132.7	139.5	102.1
Shrimp, lge. (26-30 count), headless, fresh or frozen	New York	lb.	.72	.64	113.0	101.2	114.2	130.4
Oysters, shucked, standards	Norfolk	gal.	4.75	4.88	117.5	120.6	129.9	117.5
Processed, Frozen (Fish & Shellfish):					110.5	108.3	108.7	112.7
Fillets: Flounder (yellowtail), skinless, 1-lb. pkg.	Boston	lb.	.38	.40	98.2	103.4	108.7	115.7
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.34	.34	105.1	111.4	102.0	76.2
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.29	.29	117.8	114.8	110.7	114.4
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.73	.68	113.0	104.5	110.3	127.3
Canned Fishery Products:					100.4	96.9	96.9	98.5
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	case	18.70	17.70	99.1	93.9	93.9	104.4
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	case	14.20	14.20	102.4	102.4	102.4	92.4
Sardines, Maine, keyless oil, No. 1/4 drawn (3-1/4 oz.), 100 cans/cs.	New York	case	8.70	8.20	92.6	87.3	87.3	81.9

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs.

Lower March prices for fresh haddock fillets and shucked oysters were more than offset by higher quotations for shrimp. Therefore, the March fresh processed subgroup index rose 2.0 percent above the previous month, but was down 5.9 percent from March 1953. Demand for fresh shrimp in March was better than in February.

Although March quotations for processed frozen fish and shellfish were 2 percent higher than the same month a year earlier, they were 2 percent below the previous month's prices. From February to March, lower prices for frozen flounder

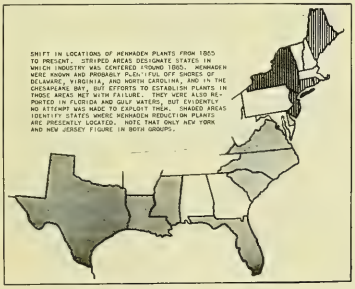
and haddock fillets were more than offset by higher prices for frozen ocean perch fillets and frozen shrimp. Market conditions for frozen shrimp were better in March than in February.

The subgroup index for canned fishery products during March rose 3.6 percent above February and was 1.9 percent higher than in March 1953. Because stocks of canned pink salmon and Maine sardines were practically sold out, March prices for these products were somewhat higher than the previous month and substantially higher than a year earlier. On the other hand, although the California tuna pack during January-February this year was 70 percent greater than in the same period in 1953, a brisk demand stabilized canned tuna prices at the January level.

MENHADEN INDUSTRY--PAST AND PRESENT

A review of the history of the menhaden fish meal and oil industry dating back to its beginning in New England in the last century appears in Menhaden Industry--Past and Present, Fishery Leaflet 412.

In the early 1870's the total investment in menhaden processing plants and fishing vessels was less than $3 million. Oil prices ranged usually from 35 to 45 cents per gallon, while press cake or guano brought $6 to $11 per ton. The value of the oil produced was approximately $1 million annually, and an estimate of the value of the meal, based on $11 per ton, was in the range of $500,000 to $600,000. These estimates are based on an average catch of 500 to 600 million fish.



The menhaden industry in 1950 handled almost 1.5 billion fish or about $2\frac{1}{2}$ times the catch of 75 years ago. Oil production was 10.2 million gallons, over three times the yield of the 1870's, due in part to more efficient oil recovery methods. Meal production of 103,365 tons was about double the amount of 75 years ago.

The menhaden industry has come into its own in the years 1949 and 1950, since vitamin B_{12} was discovered to be an important constituent of the so-called animal protein factor. This is present in menhaden and other fish meals whose importance as a feedstuff ingredient was again emphasized.

Publicity about the industry has also included a nation-wide radio broadcast from a menhaden boat, the film "The Story of Menhaden," and a short article on menhaden in a widely-read popular magazine. More people than ever now know something about menhaden, but even so, many individuals closely connected with the industry itself are unaware of its early history, development, and phenomenal growth.

Free copies of Fishery Leaflet 412 are available from the Division of Information, U. S. Fish and Wildlife Service, Washington 25, D. C.

International

PILOT PLANT TO MAKE FERTILIZER FROM SEA WATER

A pilot plant for the extraction of potassium fertilizer from sea water was recently completed at Ijmuiden, near Amsterdam, Holland, the Norwegian Information Service announced on February 4. A Norwegian electro-chemical concern and a Dutch company cooperated in the construction of the pilot plant.

Initial output of the pilot plant will be 1,600 metric tons a year. Eventually, separate plants will be built in Norway and the Netherlands. Other countries may also be licensed to use the patented process. By then the Norwegian firm will be able to produce all ingredients required for complete fertilizers, with the exception of phosphorus. Potassium nitrate, the chemical extracted from sea water under the new process, contains two key plant nutrients--potassium and nitrogen--and is thus superior to potassium chloride and potassium sulphate as raw material for fertilizers.

As an indication of the potential significance of the new venture, in 1952 Norway spent Kr. 32 million (US$4.8 million) of foreign exchange to import 45,000 metric tons of potassium fertilizer, while the Netherlands imported 160,000 metric tons of the same product valued at Kr. 115 million (US$16.1 million).

The Norwegian engineer, who pioneered the promising process, began to study methods of extracting potassium nitrate from sea water many years ago. To test his findings, the Norwegian firm built an experimental plant in Heroya in the late 1930's. However, this plant was blown up in a bombing raid during World War II.

Production will be based on a new process originated by the chief chemical engineer of the Norwegian firm and subsequently developed by Dutch and Norwegian industrial scientists. Further research and evaluation of the results are required before a decision can be reached on commercial exploitation of the invention. Meanwhile, patents on the revolutionary method have been filed in nearly all countries.

At the end of the war, independent research on the same problem was started by a Dutch nitrate firm. After a year or so the Dutch firm contacted the Norwegian company in an effort to seek a common approach. Eventually, a joint research organization was set up in Oslo to develop the process. The result of the combined efforts is called the Norduco process.

INDONESIAN-COMMUNIST CHINESE TRADE AGREEMENT INCLUDES FISHERY PRODUCTS

An Indonesian-Communist Chinese trade agreement was signed in Peking on November 30, 1953, by representatives of the two Governments.

List of items usually exported were exchanged. Schedule A--List of Exportable Commodities from China, includes the following fishery products: Squid, dried and salted fish, dried prawns and shrimp, beche-de-mer, compey, and awabi.

Schedule B, A List of Exportable Commodities from Indonesia, includes pearl and troca shells, fish and fish products, and fertilizer from shellfish and other mollusks.

The contracting parties will take all appropriate measures to promote trade between the two countries in all possible ways, a U. S. Embassy dispatch from Djakarta points out.

U. S.-CANADA COMMITTEE ON TRADE AND ECONOMIC AFFAIRS

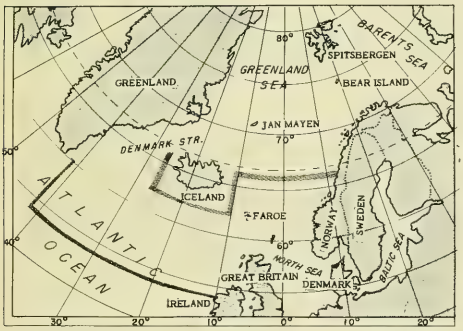
FIRST MEETING IN WASHINGTON: The Joint United States-Canada Committee on Trade and Economic Affairs held its first meeting in Washington, D. C., on March 16, the Department of State announced on February 26. Arrangements for the establishment of the Joint United States-Canada Committee were made in an exchange of notes on November 12, 1953. It will be recalled that the suggestion for a Joint Committee was originally made during the visit of Canadian Prime Minister St. Laurent to Washington on May 8, 1953.

The United States members are Secretary of State Dulles, Secretary of the Treasury Humphrey, Secretary of Agriculture Benson, and Secretary of Commerce Weeks. The Canadian members of the Committee consist of C. D. Howe, Minister of Trade, Commerce and Defense Production; J. G. Gardiner, Minister of Agriculture; D. C. Abbot, Minister of Finance; and L. B. Pearson, Secretary of State for External Affairs.

The activities of the Joint Committee constitute one aspect of the efforts of both countries to promote satisfactory trade relations on a multilateral basis.

NORTH EUROPEAN INTERNATIONAL FISHERIES CONVENTION

MESH REGULATIONS FOR NORTHWEST EUROPEAN FISHERIES: On April 15 this year the 12 countries which are signatories of the (North European) International Fisheries Convention of 1946 were expected to put into effect agreed measures for the protection of the white-fish stocks. The countries which are acting together are Belgium, Denmark, France, Iceland, the Irish Republic, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, and the United Kingdom. It is hoped and expected that Western Germany will be joining these countries, points out The Fishing News (January 29), a British trade periodical.



North European International Fisheries Convention Area. Shaded lines show subareas covered by new minimum mesh regulations.

The fishermen of all these countries will be required to observe agreed minimum sizes for meshes of trawl and seine nets, and minimum size limits for fish retained on board and landed for sale.

In the waters around Iceland, off Northern Norway, and at Bear Island and beyond, the minimum mesh sizes will be 100 mm. (3.9 inches) for seine nets and 110 mm. (4.3 inches) for trawls.

In the rest of the Convention area, including the waters around the British Isles, the North Sea, the English Channel, the Irish Sea, and the waters around the Faroes,

the minimum size of mesh will be 70 mm. (2.8 inches) for seine nets and 75 mm. (3 inches) for trawl nets; but after a transitional period of two years the minimum size for trawl nets for these waters will be raised to 80 mm. (3.2 inches).

A joint press announcement concerning the new mesh regulations in effect after April 5, 1954, was issued late in January by the British Ministry of Agriculture and Fisheries, the Scottish Home Department, and the Home Office.

The British regulations provide that the minimum size is to be measured by means of a flat gauge 2 millimeters thick, and a net is stated to be of the appropriate minimum size if such a gauge of the specified breadth (70, 75, 80, 100, or 110 mm.) will pass easily through the net when it is wet and when the mesh is stretched diagonally lengthwise of the net. The mesh must be not less than the minimum size in all parts of the net. In addition, the regulations prohibit devices, such as covering the net with canvas, for the purpose of evading the restrictions. However, the minimum size mesh will not apply to nets used solely for the purpose of fishing for mackerel, clupeoid fishes (including herring, sprats, and pilchards), smelt, eels, great seevers (Trachinus draco), shrimp, prawn, nephrops, or mollusks.

The regulations contained in the British order--The Sea-Fishing Industry (Fishing Nets) Order, 1954--apply to all fishing vessels registered in the United Kingdom operating within the territorial waters of the United Kingdom or on the high seas.

Note: Also see Commercial Fisheries Review, March 1954, pp. 34-35; June 1953, p. 42; April 1953, pp. 35-36.

U. S. AND PHILIPPINES AGREE TO CONSULT ON 1946 TRADE AGREEMENT

The U. S. Government is prepared to consult with the Philippine Government on possible modification of the 1946 Trade Agreement after reviewing the Philippine proposals relating to the provisions on trade, finance, treatment of investment, and immigration. The President of the Philippines was so advised by the U. S. Embassy in Manila, according to a March 22 announcement from the State Department.

The United States is also prepared to consider commercial matters not covered by this Agreement which may be of mutual interest to both countries. In agreeing to such consultations, however, the United States indicated that, while it is prepared to consider possible alternative tariff arrangements, it does not believe that the selective free trade proposal advanced by the Philippine Government in its note of May 5, 1953, offers a satisfactory basis for future trade relations.

Any change of the existing Agreement would require action by the Congresses of both Governments.

In conjunction with the decision to enter into consultations, the President of the Philippines requested that the reciprocal free-trade period provided for in the present Agreement be extended for 18 months beyond July 3, 1954. It was agreed that the Congresses of both countries would be requested to enact appropriate legislation implementing this request.

Australia

CANNED SALMON IMPORT RESTRICTIONS WILL BE RELAXED: The Australian Government is planning to relax its import restrictions on canned salmon, which means the partial reopening of the Australian market to Canadian canned salmon, the Canadian Minister of Trade and Commerce stated in the House of Commons on

February 18. Canadian canned salmon has been excluded from Australia since 1947. Further details, including the amount involved, should be forthcoming from the Australian Government, a U. S. Embassy dispatch (dated February 19) from Ottawa declares.

In his statement the Minister said further:

"While the total quantities involved may not be large, this renewed opportunity for trade will undoubtedly be welcomed in British Columbia and elsewhere in Canada as evidence of progress in returning to more normal conditions of world trade. Canned salmon is one of our major export products. Immediately before the war Canada had a market for canned salmon in Australia which amounted to C$1\frac{1}{2}$ million or C$2 million per year. Since then these exports have been much reduced, until in recent years the quantities have become negligible. The Australian decision will, therefore, permit the Canadian industry to return once more to this traditional market."

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FIRM PURCHASES RUSSIAN CANNED FISH: A Melbourne (Australia) firm made a contract with the Soviet Union to import canned salmon and crab meat, valued at £A1,600,000 (US$3,600,000), for the Australian market. This is reported to be the largest contract made for the importation of Russian canned sea foods and will cover the bulk of Russia's surplus pack in 1954, presumably after its exports to Great Britain, reports a U. S. consular dispatch from Sydney.

Although no quantity was announced, a local trade source estimates that some 65,000 cases of 48 8-ounce cans are involved. Canned salmon has been imported previously into Australia but, though a profitable business, has not been completely satisfactory. Russian canning allegedly does not meet the quality standards of Canada, the principal source of Australia's supply before the dollar shortage developed. Also Russian canned salmon is a high-cost, slow-moving item in retail stores. Previous imports have taken up to $1\frac{1}{2}$ years to move; and the canned crab meat is reportedly especially slow moving.

In the fiscal year 1952/53 (July-June) Australia imported a total of 2,689,127 pounds of canned salmon from Russia, valued at £A534,360 (US$1.2 million).

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JAPANESE-AUSTRALIAN PEARL-SHELL FISHING DISPUTE REFERRED TO INTERNATIONAL COURT: Australia has agreed that issues raised by Japan in connection with the Pearl Fisheries Act should be submitted to the International Court of Justice, subject to the Japanese Government's undertaking that pending the Court's decision Japanese pearling in waters within the scope of the Act will be conducted in conformity with the Australian Government's policy of regulation and conservation. The Japanese Government has pledged itself to abide by the Court's decision, according to the December 1953 Fisheries Newsletter, of the Commonwealth Director of Fisheries.

In September, Australia proclaimed her sovereign rights to explore and exploit the natural resources of the sea bed and subsoil of the continental shelf, and Parliament passed legislation for the licensing of pearling in proclaimed shelf waters irrespective of nationality. Japan contends that such measures are not applicable to Japanese vessels outside Australian territorial waters.

Announcing on November 2 Australia's conditional agreement to reference of the matter to the International Court, the Minister for Commerce and Agriculture

said the Australian Government did not accept the Japanese contentions but agreed that the issues did involve the interpretation of international law.

Since World War II the Japanese Government had not yet been accepted as a party to the Statute of the International Court of Justice. Therefore, while Japan might be able to make an application to the Court, she could not, without Australia's consent, invoke with full effect the jurisdiction of the Court in this dispute.

The Australian Government had two alternatives: to prevent for as long as possible submission of the issue to the Court and meantime enforce its legislation by all means within its power; or to approve, subject to certain conditions, the Japanese Government's proposal to submit the matter to the Court.

The Australian Government was confident that its legislation as applied to Japanese pearling was in accord with the international law of the continental shelf as developed in recent years. In the wider aspect of international relations, there was much to be said for encouraging Japan and other countries to settle their international differences through the International Court. The Australian Government had always advocated that international legal issues of this kind should be settled by the recognized judicial bodies and not by resort to measures of enforcement which might disturb friendly international relations.

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SHORE-BASED WHALING SEASON, 1953: The 1953 Australian shore-based whaling season was the most successful since this type of whaling was resumed in 1949. Four stations operated at Point Cloates, Carnarvon, Albany, and Tangalooma, and for the first time all reached their quota as the season closed on September 18.

Australian Shore-Based Whaling, 1949-52

	Unit	1953	1952	1951	1950	1949
Stations	Number	4	4	2	2(1 part time)	1
Whales	Number	2,001	1,787	1,224	387	190
Whales lost	Number	-	7	4	1	-
Whales processed ...	Number	2,001	1,780	1,220	386	190
Oil production	Barrels	102,354	91,360	56,051	16,494	5,700
Oil yield/whale	Barrels	51.2	51.1	45.9	42.8	30.0

A total of 2,000 humpback whales and one finwhale were treated (see table). Production consisted of approximately 102,000 barrels of whale oil, virtually all of which was exported, 4,750 tons of whale meal, and 1,809 tons of solubles. The value of these products was approximately £1¾ million (US$3.9 million), according to the January 1954 Fisheries Newsletter, an Australian fishery magazine.

The average length of the whales taken was slightly less than in 1952, although the average length of the females was slightly higher. The percentage of females in the catch also increased slightly.

The oil yield per whale in 1953 was maintained at practically the same level as in 1952.

During the season export permits were granted for quantities of whale meal surplus to local requirements. The meal was sold in the United Kingdom at a very satisfactory price and this increased the export earnings of the industry.

Burma

JAPANESE INTRODUCE DEEP-SEA FISHING: The first company to operate deep-sea fishing was organized in Burma in September 1953. The company is owned and managed jointly by Burmese (60 percent) and Japanese (40 percent), with the Japanese suppling the only deep-sea fishing vessel in operation in Burma. The vessel operates with an all-Japanese crew; however, the company hopes to replace non-officer personnel with Burmese as rapidly as feasible, a January 29 U. S. Embassy dispatch from Rangoon points out.

Commencing in November 1953 the vessel made regular trips to the Gulf of Martaban and catches were generally excellent. However, marketing problems have so far not been completely solved. As Burmese consumers are not familiar with deep-sea fish, they have been hesitant to buy the quantity offered, and the vessel has been forced to sell alternate trips at Singapore. Sale of the catch in Rangoon is also complicated by a shortage of refrigerated storage and transport as well as by an inadequate marketing organization.

This venture by the Japanese marks the first major investment of foreign capital in Burma since independence and early indications are that it will be a success in spite of the difficulties in recruiting satisfactory seamen in Burma.

Canada

NEW FRESH FISH SHIPPING CONTAINER TESTED: Fresh (unfrozen) fillets of haddock and cod arrived in Ottawa in top-quality condition after a 100-hour trip from Newfoundland by boat and rail recently. This is believed to be the first time that fresh Newfoundland groundfish fillets have arrived in such prime condition after being shipped for such a distance, states the January 1954 Trade News, a Canadian Department of Fisheries publication. The test shipment was made by the Canadian National Railways using the recently developed fish shipping container.

Fish from the inshore waters adjacent to Isle aux Mortes on the south coast of Newfoundland were landed at Port aux Basques. The fillets cut from these fish were plant-chilled prior to shipment, and held in the containers at a constant temperature of 29° F. in transit. Both the haddock and cod fillets were moist and firm and tests showed them to be perfect in condition, color, taste, and freshness when they arrived at Ottawa.

A test group of senior officials of the Department of Fisheries examined the fish and sampled it after it was cooked in the Department's Home Economics kitchen. Uncooked samples were also delivered to a selected number of people in Ottawa, who all reported that the quality was excellent and equal in freshness and flavor to fresh-caught fish.

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BASIC RAIL RATES CHANGED: Canadian equalization of freight rates between the Pacific Coast and New Brunswick go into effect March 1, 1955. An equalized scale of basic freight rates for Canada was issued by the Board of Transport Commissioners on March 2, 1954.

By the new scale Western rates are generally cut and those in Central Canada are raised to bring regional levels closer together. The Board's order directs equalization between the Pacific Coast and the Quebec-New Brunswick border of the railways' "class" rates. However, all traffic within the Atlantic Provinces is exempted from equalization.

The Board also ordered that effective on the same date (March 1, 1955), a Board-directed general reduction of 5 percent on previous ceiling rates within Western Canada will be wiped out. The reduction went into effect November 15, 1953, as an "interim" measure pending prospective reductions in the equalized scale. The railways had also received permission last November to boost Ontario-Quebec class rates by a compensating 10 percent, and this boost also will be rescinded March 1, 1955.

The new rates will have a sharper "rate of taper" on long-haul traffic. This means that the charge-per-mile will drop more as the haul lengthens, cutting down the spread in charges between short and long hauls. This is expected to be of particular benefit to Saskatchewan, Alberta, and British Columbia in the shipment of their products to the East Coast and in shipments from the East Coast to those Provinces.

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NEW ATLANTIC SALMON RESEARCH METHODS: New methods of research are being applied to the study of Atlantic salmon in Port-Daniel River, Quebec. A ten-year project is being carried out by the biologists of the Province of Quebec's Department of Game and Fisheries, which expressed a desire to participate actively in the general program approved by the Co-ordinating Committee on Atlantic Salmon. Studies will be made in Newfoundland, the Maritimes, and Quebec, according to Trade News (December 1953), a Canadian Department of Fisheries publication.

Atlantic Salmon (Salmo salar)

A large barrier was erected across the Port-Daniel River. Upstream and downstream from this barrier special cages were built, the whole construction forming a fish trap to provide means of counting the smolts going down to sea in May and the adults traveling upstream during the summer to spawn in fresh water.

When the smolts enter the upper part of the fish trap, they are marked for future identification. In 1953, 4,039 six-inch smolts were thus marked. Next summer, a channel will be dug at the mouth of Port-Daniel River on Chaleur Bay. This channel will regulate the flow of water and eliminate every obstacle to the salmon moving upstream five miles to the fish trap. A circular has been sent to all salmon fishing clubs and commercial fishermen in the area, asking them to report the number of marked salmon taken by rod and net. With the help of this information, the biologists will establish the percentage of Atlantic salmon, born in Port-Daniel River, that returns to the river to spawn. It is hoped that the project will, in the course of a few years, provide an answer to the question as to whether Atlantic salmon always spawn in the river in which they were born.

The program also includes a detailed study of salmon behavior and the reproductive potential of a salmon river. The toll of young salmon taken by predatory birds such as kingfishers and mergansers is being carefully noted. The predatory habits of sea trout in relation to smolts will also be studied.

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FISHERMEN'S INDEMNITY FUND OPERATING: Since its introduction in mid-1953, a total of 1,369 fishing vessels, valued at C$1,767,928, were insured as of January 15, 1954, under the Canadian Fishermen's Indemnity Fund. The Fund is administered by the Canadian Department of Fisheries, according to its January 1954 issue of Trade News.

Fifteen claims totaling C$13,515 have been paid. Of these, 10 were for total loss and 5 were for partial damage. The largest of the claims paid to date was for the loss of the long-liner Edward Humby of Grand Bank, Newfoundland, which went ashore at High Beach, Lamaline, Newfoundland.

When a vessel covered by the Fund is declared a total loss, indemnity payment is 60 percent of its appraised value. In the case of the Edward Humby, the appraised value was C$7,400, and the claim paid was C$4,440. The vessel was covered by the Fund in November at a cost of only C$74 to its owner.

The number and valuation by areas of the vessels covered by the Fund are as follows: Newfoundland, 809 vessels, valuation C$588,688; Maritimes, 316 vessels, valuation C$571,580; Quebec, 100 vessels, valuation C$81,290, and British Columbia, 144 vessels, valuation C$526,370.

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TRAWLING TESTED IN LAKE WINNIPEG: Canada's fisheries scientists are trying out a deep-sea fishing method in Lake Winnipeg to see if it can be adapted to inland fishing. A flounder otter trawl such as is used in the Atlantic Ocean was tested in August 1953 in Lake Winnipeg near Elk Island. This is believed to be the first time that an otter trawl has been used in fresh water in Canada, the Canadian Fisherman (February 1954) reports.

An official of the Central Fisheries Research Station at Winnipeg, Man., in February told the annual meeting of the Fisheries Research Board of Canada that although results so far do not indicate the flounder drag would be a successful way of taking commercial fish in Lake Winnipeg, the gear proved quite successful for getting specimens for experimental purposes.

Chile

U. S. FIRM TO INVEST IN FISH CANNERY: A San Diego, California, fish-canning firm is arranging to invest 117 million pesos (US$1.1 million) in a Chilean fish cannery, a February 10 U. S. Embassy dispatch from Santiago states. The California firm has had a survey vessel operating in Chilean waters since December 1953.

This is the first large investment of United States capital in the Chilean fishing industry, and it is believed to be an indication of the success of the recent decree-law on foreign investment in attracting foreign capital.

Costa Rica

PUNTARENAS FISHING INDUSTRY DECLINES: In recent years Puntarenas was a reasonably active fishing port for tuna fishing boats, mostly foreign operated, a January 28 U. S. Embassy dispatch from San Jose points out. The catch landed was of such volume that a U. S. firm constructed a freezing plant. Now the industry has suffered a heavy decline (especially during the past two years) and the freezing plant operates greatly below capacity. Puntarenas was also a jumping-off place for shrimp fishing vessels.

Costa Rican sailboat for hook-and-line fishing

The causes of the industry's decline are: (1) lack of conservation; (2) disappearance of bait although the Government recently restocked the waters in the hopes of restoring the situation; (3) changes in areas of fish concentration.

Although some are about ready to write off fishing as a dead industry in the area, they are resentful that the Ministry of Agriculture and Industry has given permission for Japanese boats to fish in Costa Rican waters. A Japanese boat docked late in January in Puntarenas. It was fishing for shrimp and according to the skipper fishing was poor. They argue that the Japanese boats with larger nets offer unbeatable competition to the local fishermen. The Japanese, they say, will denude the waters of what small amount of fish remains and will exploit the resources without concern for the future. Further, they contend that the Japanese fishing boats give negligible return to Costa Rica. They are protesting to the Ministry of Agriculture and Industries.

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PUNTARENAS FISHERMEN SIGN CONTRACT WITH GOVERNMENT: A contract signed by the Costa Rican Minister of Agriculture and the principal fishermen of Puntarenas reveals that the Government has compromised very little on the question of Japanese fishermen. The contract, published in La Gaceta of January 24, calls for the licensing of all Costa Rican-manned boats, but excepts "foreign technicians who have their permanent base in Costa Rica." It also allows the Government to license "other persons or entities," should local fishermen fail to provide the desired volume of fish. The Japanese fishing boats at Puntarenas have discreetly retired, temporarily, to Panamanian waters. They will return to Costa Rican waters shortly, but for the first two months will confine their operations to waters off the extreme northwest coast.

The Japanese plan to establish a fish-reduction plant in Puntarenas, a January 29 U. S. Embassy dispatch from San Jose reports.

The fundamental problem confronting the Ministry is that of providing the Central Plateau with regular supplies of sea food, and of educating its inhabitants, who constitute the majority of Costa Rica's population, in the proper preparation and appreciation of sea food. Refrigeration facilities of the National Production Council are being used, and the Pacific Railway recently announced plans to build a refrigerator car. The Ministry has published newspaper advertisements urging sea-food consumption and is printing recipes for the cooking of certain local fish.

Denmark

REVIEW OF THE FISHERIES, 1953: The 1953 fishing season was characterized as satisfactory. Preliminary estimates point to a total catch of 328,000 metric tons, slightly above 1952 and more than 30 percent above the 1949 catch. The trend of recent years towards larger catches of fish for reduction at the expense of fish for human consumption was reported to have continued, a recent U. S. Embassy dispatch from Copenhagen states. Of the 1953 catch, 181,000 tons were utilized for reduction and 147,000 tons for food, as compared to 53,000 and 188,000 tons respectively in 1949.

Exports of fish for human consumption were estimated at 130,000 tons as compared to 122,000 tons in 1952, but because of slightly lower prices the value in 1953 was estimated at 202 million kroner (US$29 million) as compared to 206 million kroner (US$30 million) in 1952. The United Kingdom continued in 1953 to be Denmark's largest customer, taking 55 million kroner (US$7.9 million) worth of fish. The United States ranked fifth with an estimated 16 million kroner (US$2.3 million) as compared to 16.5 million kroner (US$2.4 million) in 1952.

Production of fish oil and fish meal increased sharply in 1953 over 1952. The United States and Holland were the largest purchasers of Danish fish meal exports.

The Danish Minister of Fisheries stated that while he still hoped that the terms of the North Sea Convention, effective April 5, 1954, will speedily be changed so that Danish fishing will not be hampered, he cautioned the industry that in the long run the danger of overfishing in Danish waters calls for closer cooperation between the fishing industry and marine scientists.

Ecuador

FISHERY PATROL VESSELS AND PLANES: Two hydroplanes and six motor launches are scheduled to arrive in Ecuador for use in patrolling fishery operations in Ecuadoran territorial waters, according to a recent statement made by the Minister of Economy to the Quito press. One of the hydroplanes was due to arrive early in February and the six launches were scheduled for delivery in April. The Minister indicated that the launches would be German made, but he did not state where the aircraft would be purchased, or when the second hydroplane would be delivered, a U. S. Embassy dispatch (January 26) from Quito points out.

Financing for the purchase of this patrol equipment will be provided by reassigning fishing license revenues which have heretofore been dispersed among various Ecuadoran municipalities. A decree to effect this redistribution of revenues has now been approved by the National Council of Economy and is expected to be promulgated as law in the near future.

French Morocco

REVIEW OF THE FISHERIES, 1953: Canning Industry: It was estimated that the production of canned fish in French Morocco during 1953 would total about 1.4 million cases, compared to the 1952 production of 1.7 million cases, a January 8 U. S. consular dispatch from Casablanca reports. It was predicted that the 1953 pack would

be marketed as follows: The French duty-free import contingent of 600,000 cases of sardines would be filled, and additional sardines sold in that country at prices

Fish canneries at Safi, French Morocco.

Removing a bluefin tuna from a fish trap.

advantageous to the local industry. Roughly 400,000 cases would be sold to the French Armed Forces and to other markets in the French Union, including Indo-China and French West and Equatorial Africa, at lower prices decidedly less favorable than those obtained on the metropolitan market. Finally, there would remain some 400,000 cases to be sold on markets outside the franc zone at world market prices which would not be profitable to many Moroccan producers still in operation; particularly those who have not joined one of the several producer combines that have been artificially created to cut costs through the closing of the less efficient factories in each group. At the insistence of the combines, the entire industry accepted the principle of a ceiling price level for this last category of exports, which, while preventing acceptance of occasional higher price offers, nevertheless has the advantage of insuring that Moroccan products are everywhere competitive.

Unloading sardines at a dock in Safi.

Byproducts Industry: The continuing uncertainty in the fish canning industry has led to the increasing use of fish in byproducts for feeds and fertilizers. The growth of this relatively new industry has been rapid, and its products have found a ready market abroad, particularly in the United States. However, the use of catches for byproducts only increases the difficulties of the fishing boat owners, since the price paid for such catches is one-quarter to one-third of that paid by the canneries. Even the latter prices are far from encouraging to the fishermen.

The progress of the byproducts industry is illustrated at Agadir ("first port of the fishing industry"). From the beginning of the fishing season in May through November 15 a total of 40,236 metric tons of sardines were delivered and only 239,000 cases of canned fish were produced. At Safi ("first city of the fish canning industry") some 853,000 cases of fish were produced from 38,000 tons of sardines de-

livered during the same period. The emphasis on the production of byproducts at Agadir promises to become a permanent feature of the economy of that city.

Canned Sardine Exports: Exports of canned sardines from French Morocco in 1953 were less than in more prosperous years, notably 1951, but continued at a steady pace and appeared to have become established in many markets. These outlets can be expected to widen gradually in the future. Unofficial reports indicated that total canned fish exports during the first half of 1953 totaled 799,000 cases, compared to 807,000 cases in 1952.

German Federal Republic

TARIFF REDUCED FOR NORWEGIAN CANNED FISH: German tariff reductions on imports from Norway of canned sprats and small herring (brisling and sild) are provided in a German-Norwegian Tariff Agreement signed at Bonn, Germany, on December 30, 1953. This was reported in the January 4 issue of the German newspaper, Die Welt, according to a recent consular dispatch from Bonn. The ad-valorem duty reductions are from 20 percent for sild and 25 percent for brisling to 15 percent, respectively.

The agreement is the result of bilateral negotiations recommended to the German Federal Republic and Norway by the Court of Arbitration of GATT, as the result of a Norwegian complaint filed at the Seventh Session at Geneva in October 1952. This complaint charged discriminatory treatment of Norwegian canned fish imported into Germany in view of the fact that the tariff rates levied on Norwegian sprats and small herring were higher than those levied on like Portuguese sardines. It had further been alleged that the Norwegian products were subjected to an increased turnover-compensation tax rate of 6 percent as compared with the 4-percent rate levied on Portuguese sardines. In this connection, it is noted that as of June 1, 1953, a turnover-compensation tax rate of 6 percent is applicable to the Norwegian and Portuguese products alike.

Hong Kong

FISHERIES EXHIBITION: The second annual Hong Kong fisheries exhibition was held from February 2 to 4 at the Wholesale Fisheries Market, Aberdeen. Attendance by the public, particularly fishermen, was very good (about 60,000 as compared to last year's 15,000), and exhibition authorities considered that the show made considerable progress over the past year both in the scope of the exhibition and in giving impetus to the mechanization-of-fishing-junks program.

Strong Government backing for this program was noted by the Colonial Secretary when he revealed that a loan of HK$800,000 (US$140,000) had been secured from the Colonial Development and Welfare Fund for moderization. The Secretary also promised that Hong Kong Government authorities would continue exploring means of introducing more modern fishing methods, including newly designed vessels particularly suited to local fishing conditions, reports a February 23 U. S. consular dispatch from Hong Kong.

Practically all aspects of the fishing industry were covered at the Exhibition. Authorities expressed gratification that a very high percentage of equipment on exhibit was sold to interested fishermen. Among the displays were those devoted to marine engines, fuel injection equipment, storm lanterns, fishing gear of all kinds

(nets, hooks, marine varnishes and paints), scientific equipment (echo sounders and nautical equipment), ropes, pumps, electric hoists, radios, and specimens of marine products and machinery used in fish processing.

India

FISHERY PRODUCTS IN REVISED LIST OF FREELY EXPORTABLE ITEMS: A revised list of items that are "decontrolled" and require no license from the Indian export trade control authorities was released December 29, 1953, by the Indian Deputy Chief Controller of Exports. Many fishery products are included in the schedule of "decontrolled" items that require no export license to all "permissible" destinations, the U. S. Consulate at Bombay reports in a January 14 dispatch. Domestic fishery products listed in the schedule are:

Agar-agar
Fish, all sorts other than fish spawns
Marine glue
Oil, animal (including whale oil, fish oil, and seal oil)
Prawns

Indo-China

STATUS OF THE FISHERIES: While fish is next to rice as the most important component of the diet of the average people of the States of Cambodia and Vietnam, it has only been very recently that significant steps have been taken in both states to bring fish production back to prewar levels, and to encourage private fishing companies to undertake this enormous task. In Vietnam alone production of all types of fish (salt water and fresh water) dropped from a high of 180,000 metric tons in 1940 to a low of 30,000 tons in 1953.

Cambodian fisheries have been somewhat more successful, and last year produced an estimated 120,000 to 130,000 tons of fresh-water fish, mainly from the Grand Lac du Tonle Sap. No figures are available for Laos, a January 25 U. S. Embassy dispatch from Saigon reports.

In both Vietnam and Cambodia, a serious lack of adequate fishing equipment and trained personnel has been the main deterrent to progress, aside from the insecure condition of certain fishing areas, particularly along the coast of Vietnam.

United States economic aid and Japanese technical assistance--sponsored by the U. S. Operations Mission (STEM)--have aided greatly in remedying these deficiencies. STEM aid has furnished the following to the Vietnamese Government: 12 fishing patrol boats used by the Service des Peches Maritime du Vietnam; 2 purse seiners with Japanese training crews; and 6 small (55-foot) sloops.

The introduction of the Tilapia "miracle fish" into the fish culture of the Associated States with STEM aid may prove to be one of the turning points in increasing fish production in both Cambodia and Vietnam. Three plantings of these fast breeding fish in Vietnam and one in Cambodia last August have already produced encouraging results.

The inauguration last October on the Saigon-Cap St. Jacques route of a refrigerated van of 10-ton capacity to bring in fish from the coastal fishing center of Baria to

Saigon has opened a new possibility for furnishing an adequate supply of fresh fish to the Saigon-Cholon area at lower cost. This area alone consumes an estimated 880,000 pounds of fish daily, valued at 1.2 million piasters (US$34,000). Spoilage from usual trucking and junk transportation cut the fish dealers' margin of profit, and substantially increase the cost. This refrigerated van, imported from the United States under the STEM Commercial Import Program at a cost of 300,000 piasters (US$8,600), has already justified its use, and it is understood that several of the larger Saigon-Cholon fish importers have made requests for import authority to the American Aid Committee for this type of equipment.

The Regie de Chemins de Fer of Vietnam is also now using isothermic cars to transport fresh fish under intense refrigeration, principally from Phantiet to Saigon. Recent figures indicate that 480 metric tons of all types of fish have been transported by rail every month over this railway route, with 15 tons carried in each isothermic car.

A most important development in increasing fish production in Vietnam was the opening on December 22, 1953, of the first hatchery in South Vietnam. It is located at Thuduc (Giadinh), about 6 miles from Saigon. It is expected that this station will be ready to begin distribution of fingerlings about June 1954.

During the period two important new private fishing companies were organized: a Vietnamese firm, capitalized at one million piasters (US$29,000), will confine its activity to the rivers and lakes of South Vietnam and the China Sea, and engage in producing certain fish byproducts, and a French firm which will engage in freshwater and deep-sea fishing in all the Associated States and the French Union, and prepare fish and fish products for export.

Note: Currency exchange rate: 35 piasters = US$1.00.

Iran

STURGEON EXPORTS TO U. S.: A shipment of 30 tons of frozen sturgeon arrived at New York on January 15 from Iran in perfect condition, a January 26 U. S. Embassy dispatch from Tehran points out. A previous shipment of 40 tons arrived in New York some two weeks earlier. The New York importer is enthusiastic over the potential market in the United States for fisheries products from the Caspian Sea, according to reports.

Further interest in the Caspian fisheries is being shown by a Clifton, New Jersey, firm, which is interested in a 5-year contract for 500,000 pounds of frozen sturgeon at the rate of 100,000 pounds per year. They are also interested in caviar when it becomes available, presumedly sometime after the Caspian Fisheries Company's indebtedness to the Soviets has been liquidated. This latter company plans to invest in refrigerated trucks because of the inadequacy of transport by railroad and the shortage of refrigerator cars.

During its first year of operation, ending January 31, 1954, the Government-owned Iranian Fisheries Company paid off 77 percent of its indebtedness to Soviet Russia.

It was pointed out in the annual report of the Iranian Fisheries Company that the better quality caviar was being sold to U.S.S.R. at 672.45 rials per kilo (about US $3.20 per pound), whereas domestic sales were being made at 450 rials per kilo (about US $2.13 per pound). As there was no accurate information on prices for fishery products in foreign markets, advertisements were published asking for bids on three separate occasions. Each time one ton of caviar (whole egg) and one ton of pressed

caviar were offered. On the basis of the independent bids received, the sale price to U.S.S.R. and on the local market was increased 138 percent and 253 percent, respectively.

Prices of other fishery products also were increased in the same proportion and these prices were then fixed for both deliveries to the U.S.S.R. against the account for their former properties and for exports to other countries as well. Since the Fisheries Company had no export division, a part of the caviar production and fish were exported by private Iranian exporters. Through their activities the Company was able to introduce some Iranian products into foreign markets. For the domestic sale of fish, however, the Company was unable to put increased prices into effect as was true for caviar. Under the Government regulations the Company was obliged to sell fish costing 10.50 rials per kilo (about 5 U.S. cents per pound) to the public at 10 rials (about 10 U.S. cents) a piece. The Company had also to absorb the transportation costs.

Note: Rials converted to U. S. currency on the basis of 96.50 rials equal US$1.

Japan

CANNED-TUNA-IN-BRINE PRICES INCREASED AGAIN: Another increase in the price of canned white-meat tuna in brine, f.o.b. Japan, effective February 20, was announced by the Tokyo Canned Tuna Sales Company, according to a dispatch (March 5) from the U. S. Embassy at Tokyo. Increases range from 30 to 50 U. S. cents per case above the prices which became effective on January 26. New prices are as follows: 48 7-oz. cans, $12.20 per case; 24 13-oz. cans, $11.10; 6 2-kg. (4.4 pounds) cans, $13.00; 48 3½-oz. cans, $6.75.

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EXPORTERS SELL CANNED TUNA BELOW "FLOOR" PRICES: Japanese tuna exporters have been selling canned tuna at prices lower than the check ("floor") prices established by the Japanese Government, a January 28 U. S. Embassy dispatch from Tokyo reports. It is believed that Japanese exporters have been rebating the difference between the Japanese "floor" or invoice prices and the actual selling prices to United States importers of canned tuna.

Reports indicate that a situation has arisen whereby United States importers of Japanese canned tuna into California have become liable to penalties for violation of Section 592 of the United States Tariff Act of 1930 by buying tuna at prices lower than those shown on consular invoices and receiving rebates for the difference.

The Embassy at Tokyo pointed out that the Japanese Government, in its concern to keep and increase its tuna market in the United States, is most anxious to avoid any implication of "dumping" canned tuna in that market. To this end it has voluntarily imposed both quota and floor-price limitations on its tuna exporters. The floor prices, which are normally intended to be slightly under the prevailing market prices, must be shown on the consular invoices in order to secure export licenses.

It would appear that the Japanese Government's export system is not sufficiently flexible to permit quick adjustment to market fluctuations and that on occasion the floor price has been higher than the going market price. In such cases the exporters were obliged to refund the difference to the importer and the consular invoice became a "false statement" within the language of Section 592, even though the revenues suffered no loss.

The establishment of floor prices was a voluntary act on the part of the Japanese Government, intended to preclude "dumping" of Japanese canned tuna at prices out of line with United States prices for domestic tuna. However, in its administration, through lack of flexibility, it has involved the importer in violations of the United States' tariff laws under circumstances beyond his control and without intent on his part to deceive or defraud. The Embassy is discussing this with the appropriate officials of the Japanese Government in an effort to obviate future difficulties of a similar nature.

The San Francisco Chamber of Commerce has requested the U. S. Secretary of the Treasury to refrain from enforcing Section 592 in these cases.

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SPECIAL LOANS PROPOSED FOR FISHING VESSELS SEIZED BY KOREA: A special bill has been introduced in the Diet authorizing the Japanese Government to loan up to 90 million yen (US$250,000) to replace fishing vessels seized by the Republic of Korea for violation of the Rhee Line. The loans, which will bear interest at 5½ percent, are expected to provide for the construction of 50 fishing vessels, a February 12 U. S. Embassy dispatch from Tokyo states.

Republic of Korea

STATUS OF THE FISHERIES: The Korean fishing industry is in poor condition, according to a February 1 dispatch from the U. S. Embassy at Seoul. Exports are low, catches are small, and the standard of living of most fishermen is very low and still declining. Domestic demand for fish, which supplies 80 percent of the protein in the Korean diet and is therefore essential from a nutritional point of view, is falling because of high prices. Yet the return to the fisherman on his catch is small.

The current fishing season (from October 1953 to April 1954) has been poor. The catch consists primarily of sea bream, croaker, and halibut. The total catch during the last quarter of 1953 amounted to 4,500 metric tons, compared to a normal catch of about 6,400 tons for the same period.

Approximately US$3 million worth of fish products are now exported annually, compared to an estimated potential export figure of US$7 million. The chief reason for the low export total is that Korean prices are higher than those generally prevailing in Far Eastern markets. Therefore, Korean exports are largely confined to special items, such as agar-agar, laver, and sea bream. The high cost of transportation, labor, and fishing supplies resulting from the inflation is responsible for high costs in hwan. The Government's foreign exchange policies, based on official exchange rates substantially overvaluing the hwan, have been a further handicap to exports. Also, methods and techniques used by the fisheries industry, particularly with regard to the handling and processing of fish for export, are markedly inferior to those in use in Japan.

In the domestic market the cost of fish to the consumer is about twice the price which the fisherman receives. This distribution spread is an important cause of low demand, and low return to the fisherman. Most plans for rehabilitating the Korean fishing industry have concentrated on raising production. It is now being pointed out, especially by foreign observers, that adequate facilities for landing, storing, transporting, processing, and marketing fish must also be provided in order to improve internal distribution and thus gain access to a domestic market capable of consuming the increased catch.

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UNKRA AID FOR FISHERMEN: Small-boat fisherman in Korea can now receive direct financial aid from a 50-million hwan (about US$270,000) fund established by the United Nations Korean Reconstruction Agency (UNKRA) to improve equipment. From this fund, the only one of its kind in Korea, fishermen can borrow money to obtain part of the price of a new boat on repayment terms extending over periods of from 6 months to 3 years; and can get credit for up to 6 months on part of the cost of equipment, such as nets, ropes, and other items of fishing gear.

Already 23 fishermen have been granted loans to build medium-sized wooden fishing boats, and more than 200 requests have been received for aid in replacing various types of equipment, a February 24 United Nations release announces.

The fund is controlled by the Special Fisheries Control Committee, which was set up by agreement between UNKRA and the ROK Government in May 1953. This is part of UNKRA's US$1,400,000 current program to rehabilitate the fishing industry, which is so vital to both Korea's internal and export markets. To obtain the necessary hwan without inflationary result, UNKRA has imported supplies of oakum, linseed oil, wire rope, abaca, cans for fish preserving, calcium chloride, ammonia gas, fibre, fish nets, and other materials essential to the industry.

Another phase of the program is a loan of 5,300,000 hwan (US$29,000) to enable a start to be made on the rebuilding of the war-damaged fish markets at Seoul and Inchon.

Malaya

FISHERY PRODUCTS CONSUMPTION, JANUARY-SEPTEMBER 1953: Next to rice, fish is certainly the most important food in Malaya, states a U. S. consular report from Singapore. Fish is also the chief source of protein. Except possibly for a few vegetarian Hindus, fish is consumed by all racial groups in Malaya. The rate of consumption among the Chinese inhabitants probably averages somewhat higher than for the other racial groups. However, this seems to be due mainly to the fact that marketing facilities favor urban inhabitants, where most of the Chinese live.

Fresh and dried fish make up the bulk of the quantity consumed. Frozen fish is still not generally acceptable by local consumers. This dietary problem has posed somewhat of a difficulty to local officials in their efforts to expand offshore fisheries. Canned fish are normally consumed by the higher income groups, located in the more important urban centers.

The estimated fishery products supply position for the first nine months of 1953 was about as follows:

	Long tons
Estimated stocks, January 1, 1953	2,000
Estimated production (Jan.-Sept. 1953) ..	117,000
Net imports	8,165
Estimated supply	127,165
Estimated stocks, October 1, 1953	2,000
Estimated Disappearance	125,165

Disappearance during the first nine months of 1953 approximated 14,000 tons monthly. This indicates an annual total of about 168,000 tons, of which about 156,000 tons will consist of domestic output. Per-capita daily availability in 1953 should

average about 2.4 ounces per day, which is equivalent to 85 calories and roughly 12 grams of available protein.

Malayan commercial fish supplies are likely to improve during the next few years. Considerable attention is being given to offshore operations, which the local governments are actively supporting. There is also a good extension program operating within the Fisheries Department, which involves the training of fishermen in modern techniques. As a further inducement, the Rural and Industrial Development Authority (RIDA) is providing loans to fishermen with which to purchase fishing equipment.

Mexico

SINALOA SHRIMP EXPORTS TO U. S., OCTOBER-DECEMBER 1953: Total exports of shrimp to the United States from the Sinaloa district of the west coast of Mexico in the period October-December 1953 amounted to 8,266,611 pounds (see table), compared to 4,556,565 pounds in the same period in 1952, reports a January 4 U. S. consular dispatch from Mazatlan. The shrimp season on the west coast of Mexico generally opens October 1.

Sinaloa (Mexico) Shrimp Exports to the United States, October-December 1953 and 1952

Port	October-December	
	1953	1952
	Lbs.	Lbs.
Mazatlan	3,591,074	2,741,795
Topolobampo[1]/	3,039,455	1,814,770
La Reforma[2]/	725,088	-
Culiacan[2]/	655,994	-
Escuinapa	255,000	-
Total	8,266,611	4,556,565

1/September 1 to December 22. Also includes shrimp caught in the State of Sonora but processed in Topolobampo. Shrimp season opened September 1 instead of October 1, 1953.
2/September 1 to December 22. Shrimp season opened September 1 instead of October 1, 1953.

The shrimp catch in Sinaloa was considerably greater in 1953 than a year earlier. Although freezing plants in Mazatlan reported that the December 1953 shrimp catch was 50 percent less than in November, the plant operators and fishermen are not concerned because they claim such a decline usually occurs at that time.

Netherlands

FISHERIES PROSPECTS FOR 1954: All possible Government assistance will be given to the Netherlands fishing industry, according to the Netherlands Minister of Agriculture and Fisheries in his explanatory notes to the 1954 budget. The Central Laboratory for Fisheries Research at Ymuiden, construction of which was started in 1953, will be of great value. In addition to the present vessel for biological and technical experiments, a second vessel will be put into service for this purpose on May 1, 1954.

Sorting fish prior to icing aboard a Dutch vessel.

The regulations guaranteeing the fishermen certain minimum prices, which had a favorable effect during the past year, will continue in 1954. Fishing conditions in inland waters will be improved.

In general, prospects for the Netherlands fishing industry for 1954 are not unfavorable, although exporters will have to make every effort to maintain their present sales, according to the March 6 Foreign Trade, a Canadian Government publication.

Norway

CANNED SARDINE PROMOTION PROGRAM IN U.S.: The Norwegian Canners Association has effected a tie-in with four major United States cracker companies to promote the sale in the United States of Norwegian canned sardines and crackers during the Lenten season, the Norwegian Information Service advises in a February 25 release.

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WINTER HERRING FISHERY SETS NEW RECORD CATCH: The Norwegian winter (large) herring fishery ended on February 14 with a new record catch of 960,000 metric tons, valued at 177.7 million kroner (US$24.9 million), a February 19 U. S. Embassy dispatch from Oslo reports. This catch was about 10,000 metric tons greater than the combined winter and spring herring fisheries of the record year 1951.

This year's spring herring season began on February 15. Good results were anticipated as the weather was fine in the Alesund fishing districts.

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EX-VESSEL PRICES SET FOR 1954: Norwegian ex-vessel fish prices for 1954 have been agreed upon after lengthy negotiations, according to the February 10 issue of Fiskaren, a Norwegian trade paper. A new regulation provides that large cod, which are easiest to sell on the world market, will bring a higher price than small cod and certain other varieties. The price for large cod, which includes Lofoten fish, has been established at 61 øre per kilogram (3.9 U.S. cents per pound) to the fisherman as compared with 58 øre (3.7 U.S. cents) last year. The price for smaller fish has been adjusted downwards; for example, the haddock price will be 55 øre per kilogram (3.5 U. S. cents per pound).

Subsidies on fishing gear will continue. However, the production bonus to factories will be removed, but the bonus on raw material will remain in effect. There will be an increase of about six percent in fishing-gear prices. Funds for subsidizing will be taken from the price regulation funds for fish.

Pakistan

FIRST QUICK-FREEZING FISH PLANT: Pakistan's first modern quick-freezing plant for fishery products was to start production at Karachi in January, reports a December 28 U. S. Embassy dispatch from Karachi. Operating with both Pakistani and U. S. capital, the processing and quick-freezing plant at West Wharf in Karachi was constructed with the most up-to-date equipment. Principal products will be shrimp, lobster, and turtle meat; and freezing capacity is 5 metric tons per 20-hour day.

An American fisheries technician attached to the Foreign Operations Administration has already arrived in Pakistan, and one or two more may come in 1954, who will assist in the training of Pakistani technicians, all of whom have studied fisheries

in the United States under the U. S. Government-sponsored trainee program. The firm operating the plant is now negotiating the purchase of three 50-foot trawlers which will be commanded by United States or Danish fishing masters until Pakistani nationals are qualified to take over.

At the outset, at least, the greatest part of the plant's output of shrimp, spiny lobster tails, and turtle meat will be exported, by far the largest market being the United States. No doubt most of the frozen shrimp will be shipped to the United States. With the great wealth of fish life abounding in the waters off West Pakistan, competent authorities estimate that the export of frozen fishery products to the United States and other countries may well exceed several million dollars within three years, thus providing a completely new and important source of dollar foreign exchange for Pakistan.

Panama

INTER-AMERICAN TROPICAL TUNA CONVENTION RATIFIED: At a session of the National Assembly on February 16, Panama ratified the Inter-American Tropical Tuna Convention, a February 17 dispatch from the U. S. Embassy at Panama states. The President of Panama probably will sign the act of adherence in the near future, and the Government can be expected soon to designate the Panamanian members of the Tuna Commission.

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FISHERY LEGISLATION: The Panamanian National Assembly has granted extraordinary powers to the Executive Organ and the Permanent Legislative Commission to enact certain legislative measures while the Assembly is in adjournment. The authorization covers the bill to revise and codify all fisheries legislation and to extend Panamanian territorial waters to the outer edge of the continental shelf, a February 12 dispatch from the U. S. Embassy in Panama points out. Reports indicate that the legislative matters referred to will not be enacted by the present session of the Assembly, but that they probably will be considered by the Legislative Commission between February 18 and October 1 (when the Assembly reconvenes).

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WHALING CONVENTION RATIFIED: Panama's adherence to the International Convention for the Regulation of Whale Fishing was approved by the National Assembly, a U. S. Embassy dispatch of January 29 from Panama reports. The ratification was signed by the President of Panama on December 10, 1953, and published in Gaceta Oficial of January 20, 1954, as Law No. 34. The Convention was signed in London during 1953.

Portugal

NEW OYSTER PURIFICATION STATION: A new oyster purification depot has been completed across the Tagus River from Lisbon by the Portuguese Ministry of Marine at Rosario. The new depot is designed to purify Tagus and Sade River oysters, which have been outlawed since 1939 as polluted. It is the culmination of a six-year study of purification methods by the Office of Fish Studies of the Ministry of Marine. The project cost about 2,000 contos (US$70,000); funds were obtained from the recently established Fund for the Reconstitution of the Fishing Fleet and from the

Ministry of Economy. It will be run, at least for the first several months, by the Office of Fish Studies with advice from the Direction General of Health, but it may be turned over to an oyster-producers association if one should be formed at a later date.

The depot will confine its activities to the actual purification of the oysters. The collection of the oysters and their disposition after purification will be in the hands of private concessionnaires.

Purification will be by the following process. Water will be drawn from the river within 2 hours of high tide into a large tank. As the water enters the tank, it is blended with a quantity of calcium hypochlorite more than sufficient to purify the oysters. Sodium hyposulphite is then added to neutralize the chlorine to a point where it will not kill the oysters. The solution is then drained into five smaller tanks with a joint capacity of 5,000 oysters, and the live oysters are kept in the solution for about three days. An official of the Direction General of Health then examines the oysters to insure that they are under the fixed maximum bacteria content.

Most of the oysters will be consumed fresh in Portugal or possibly in nearby Spain and France. A French health official has already visited the depot and expressed some interest in possible French imports. It is probable, however, that some of the oysters will also be canned for export with the United States market in view. Canned oysters from Portimac and Vila Real de Santo Antonio in Southern Portugal are already being shipped to the U. S. in some quantity. With this in mind, the Office of Fish Studies has inquired as to the legal requirements in the United States for canned oysters, a February 23 U. S. Embassy dispatch from Lisbon states.

Saudi Arabia

NATIONAL FISHING COMPANY ORGANIZED: A national Saudi Fishing Company was established under the presidency of Prince Mita'ab Ibn Abdul Aziz, according to a press statement December 18. The company has been organized as a national corporation, with a capital of 12 million rivals (US$2,500,000), in order to make available to the Saudi Arabian consumers more fish at lower prices and to accumulate necessary surpluses for export to neighboring countries.

The announcement of the formation of the company is the culmination of survey work by the Food and Agriculture Organization. A former FAO employee has been making detailed surveys of the coastal waters along the Hejaz shore and has visited Rabegh, Yenbo, Wedj, and smaller ports along the coast south of Jidda to inspect present facilities and determine what will be needed for an expanded fishing program. FAO had earlier undertaken an experiment in which a shipload of fish was transported to Egypt using only ordinary ice refrigeration with approximately 20 percent loss during the ten-day voyage.

Saudi fishermen will be permitted to buy shares in the new company at half price, provided they submit a written acknowledgement they will discontinue fishing as an occupation. Fishermen who do not wish to join the company may continue their activities, provided that they do not use modern fishing equipment.

These latter provisions appear to be an attempt to minimize the hardship which small fishermen may be liable to through the disruption of their present small-scale activities by a large-scale fishing program which would force prices down and would make large quantities of fish available to the Saudi consumer. The attempt to make the company a national corporation seems aimed at maximizing the interest in the

success of the company by publicizing its activities throughout the Kingdom. This is the first attempt to form a Saudi corporation in Saudi Arabia on a national scale, a December 28 U. S. Embassy dispatch from Jidda announced.

The company, before embarking on any large-scale export acitivities, will attempt to improve distribution of fish to the populated areas of the Kingdom, i.e., establish markets where the fish can be kept under refrigeration, improve sanitary facilities for the handling of the catch, build open-air markets where the catch can be attractively displayed, and in general attempt to encourage the domestic consumption of fish. It was believed that establishment of a cannery and a subsequent drive for the export of surplus fish would not be considered until the domestic market is expanded to its maximum.

Spain

FISH CANNING TRENDS IN VIGO DISTRICT, JANUARY 1954: Fish-canning plants in the Vigo area of Spain purchased during January 280,000 pounds of fish, about 4 percent of the total catch landed at Vigo. This compares to 1,300,000 pounds in December 1953 and 395,000 pounds in January a year ago. The decline was due to smaller catches of varieties suitable for canning.

GOVERNMENT LOANS FOR FISHING EQUIPMENT AND VESSEL REPAIRS: A second loan--amounting to 25 million pesetas (US$640,000)--was recently allotted by the Government to the Fishing Syndicate of the Province of Pontevedra. This amount is to be made available immediately to all fishermen for new equipment and vessel repairs. Further loans have been announced.

Union of South Africa

DRIED FISH TO BE PRODUCED FOR EXPORT: The production of dried fish for export and the sale of quick-frozen fish in household and hotel packages are two relatively recent developments in the South African fisheries. Construction of two fish dehydration plants at Cape Town was begun in 1953, one to cost about £90,000 (US $252,000) and the other £60,000 (US$168,000).

One factory, expected to come into production soon, will dry hake in closed chambers in four days by a process said to be new to South Africa, reports the March 6 Foreign Trade, a Canadian Government publication. The main production will be unsalted dried fish which will resemble the Norwegian unsalted cod. The capacity of the plant will be about 500 metric tons of wet fish a month, with an expected yield of approximately 100 tons of the unsalted dried fish. All the output will be exported, mainly to Nigeria, the Gold Coast, and the Belgian Congo. The other factory should be completed in June and will replace one of the four existing plants.

United Kingdom

FIRST FISH SHIPMENT BEHIND IRON CURTAIN: The first export shipment of British processed fish to be sent behind the Iron Curtain was shipped from Grimsby and Hull recently, and it is hoped by British shippers that future contracts would be negotiated on a large scale. Almost 200 metric tons have already been sent in spe-

cial insulated railway cars brought from France for the purpose, according to the Fishing News (January 8), a British trade periodical. The country of destination was not revealed, but it is a Russian-dominated satellite.

The first shipment (made before Christmas 1953) consisted of quick-frozen cod fillets, smoked fish, and herring, and was a combined shipment made up by two large firms in Grimsby and Hull. Special precautions were taken to make sure that the order arrived in excellent condition in packages with the names of the firms and "Product of Britain" stamped on them.

In an interview with the press, the manager of one of the British firms stated: "We have been trying to get into these markets for a considerable time and we have every hope that other orders will follow. It is terribly important that we should find new export markets and some outlet for good-quality fish which is landed during periods of heavy fishing and which must be quick frozen. This has been the first venture of this kind and we have had very great help from all concerned in it."

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CONTROLS ON CANNED SARDINES END: British controls over price and distribution of canned sardines and sild, which have been in effect for 12 years, were removed at the end of December 1953, reports the December 12 issue of The Fishing News, a British fishery magazine. The announcement was made by the Minister of Food early in December. Private traders will now be allowed to import sardines and sild after December 28, 1953.

There are now ample supplies of canned sardines and sild and all other varieties of canned fish, except salmon and crab, says the Ministry. The last named will be the only two varieties of canned fish to be imported and controlled by the Ministry of Food.

Canned sild are imported from Norway; sardines from Portugal, Spain, French Morocco, Yugoslavia, and Brittany.

The Board of Trade also announced that arrangements have been made for private imports of canned sardines and sild under Open General Licence, on and after December 28, if consigned from and originating in one of the permitted countries. Preserved fish, not packed in airtight metal containers, are admissible under Open General Licence if taken by vessels registered in any of the permitted countries. Fish roe, other than canned, is included in the description "preserved fish."

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ICELAND STOPS SUPPLYING FISH TO LONDON BUSINESSMAN: The Icelandic Trawler Owners' Association announced on December 18 that no more fish would be supplied and no negotiations undertaken with the London businessman until he had fulfilled this contract, reports the British trade magazine The Fishing News (December 19). The Icelandic Vice-consul in Grimsby said: "The position is that he has repudiated his contract entered into with the Icelandic Trawler Owners' Association last May, and until he fulfills the terms of the agreement there will be no discussions of a new contract or any variation in the old one."

The London businessman's office in London issued this statement: the "contract with the Icelanders contained a clause that all matters in dispute should be settled by arbitration." The arbitration clause has been invoked, continued the statement, and "as the matter is therefore sub-judice it would not be proper to make any further comment at this stage." The staff of the London businessman's Pyewipe plant were dismissed--only a skeleton staff remains.

The President of the British Trawlers' Federation said he hoped that the exit of the London businessman from the fishing industry would result in a friendly settlement of the Icelandic dispute.

In a later statement to the press (Fish Trades Gazette, January 23), the London businessman stated that he had finished with the fish business. "I do not want any more to do with the Icelanders," he said, "not even if the arbitration proceedings I have invoked concerning my contracts with them go in my favor."

The London businessman has not yet decided what to do with his Pyewipe processing plant now that he has decided to quit the fish business. There is little doubt that he would sell if he could find a customer at a reasonable price. He also said that he had not been definitely approached about his plant by the Icelanders, but he understood that they had put out feelers with the object of purchasing it.

Rumors have been prevalent at Grimsby for some time that it was likely that the Icelanders would carry on where the London businessman left off in the fight against the British fishing industry ban on Icelandic-caught fish; and that they were considering the purchase of the Pyewipe processing plant.

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LONDON BUSINESSMAN QUITS FISH BUSINESS: The Pyewipe fish plant equipped by a London businessman to handle the "beat-the-ban" Icelandic fish was offered for sale on January 4, 1954. This marked the end of the London businessman's endeavors to enter the fish business by trying to market fish landed by Icelandic trawlers in Great Britain. The plant set up to handle Icelandic-caught fish boycotted earlier by Hull and Grimsby fish dealers was equipped with ice-making facilities and filleting and freezing equipment.

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ICELANDIC FISHING INTERESTS SEEK TO AGAIN LAND FISH IN BRITAIN: Icelandic fishing interests have approached the Grimsby (England) Dock Authority for a site to build a modern processing plant in their latest attempt to beat the British fishing industry ban on Icelandic-caught fish. A meeting was due to be held between Icelandic interests and the Humber Ports Authority in Hull when fuller discussions will take place, states the January 22 issue of The Fishing News, a British fishery magazine.

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SHRIMP SHIPPED BY AIR: For the past few months a Fleetwood, England, frozen foods firm has been flying shrimp (prawn) from Ireland and the Isle of Man to Fleetwood, the British fishery magazine The Fishing News (December 19) reports. The dealer claims this has improved the quality of his product 50 percent and the additional cost has been offset by the absence of loss of weight by shrinkage and the time saved in processing. The firm reports it also shipped consignments by air for export to points as far as the United States.

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U. S. CANNED SALMON PURCHASE: Great Britain recently purchased 31,750 cases (about 1,500,000 pounds) of canned salmon, valued at $800,000, in the United States, the British Embassy recently reported in Washington, D. C. This purchase was the result of the recent visit of Sir Andrew Jones to Seattle, Washington, in order to obtain offers of United States canned salmon for the British Ministry of Food.

While the total quantity involved is not large, this sale of canned salmon probably will be the last British Government purchase before resumption of prewar trade in this commodity between the United States and Great Britain. Prior to World War II Great Britain was a very important market for United States canned salmon.

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CONTRACT FOR LARGE ORDER OF CANADIAN CANNED SALMON: The United Kingdom has agreed to purchase C$5 million worth of canned salmon in Canada. According to the British press, the contract calls for delivery of 220,000 cases of unspecified types, 15,000 cases more than the 1953 contract. The total British Columbia salmon pack for 1953 was 1,820,000 cases.

This contract for bulk purchase of salmon by the British Government is believed to be the final one of this type, since it is expected that future trading will be done on a private basis. According to reports, the British decision to buy canned salmon was largely a result of a concerted effort by the British Columbia fishing industry to buy fishing gear and canning equipment from the United Kingdom under a gentlemen's agreement that the dollars earned from such purchases would be used to buy British Columbia salmon.

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HERRING TRAWLING TESTS SUCCESSFUL: Experiments in trawling for herring, carried out by the British Ministry of Agriculture and Fisheries have now been successfully concluded. Three vessels were used in the tests, reports the February 5 issue of The Fishing News, a British fishery magazine.

Results show that British fishermen should be able to catch herring in commercial quantities by this method, using vessels of 90 to 175 feet in length.

Although Continental fishermen have trawled herring with great success in recent years, British fishermen have made little headway with the method. It was with the purpose of solving problems connected with the method and to encourage British fishermen to enter this new field that the Ministry undertook the experiments.

The Ministry's press statement on the experiments is as follows: "Trawling for herring has become increasingly important in Germany, Holland, and France in the last few years. Not only has the total amount of herring caught by this method increased but the length of the season, because of the exploitation of new grounds, has also increased.

"Vessels which had been used in the past for herring trawling were mainly of the "distant water" type, of 175 feet B.P. or even larger. More recently smaller vessels of about 90 feet and 240 horsepower have been used throughout most of the season with considerable success, but not on all grounds.

"Since the war many attempts have been made to extend herring trawling but so far little success has been achieved by British fishermen in southern areas. It was with the intention of trying to solve some of the problems in herring trawling that the Ernest Holt, one of the Ministry's research vessels, was fitted out with a Dutch herring trawl in January 1953. Later in the year, trials with the herring trawl were repeated from smaller vessels to see whether the success achieved with the Ernest Holt could be repeated and herring trawling be carried out from the size of vessel normally carrying out demersal trawling in the southern North Sea. Three trips were made with the Platessa, a 90-foot M.F.V., and one with the Sir Lancelot, a 125-foot trawler. In addition, in order to see that the gear was working properly, photographs of the net were made while it was being towed by using an underwater frogman as observer.

"The combined results of these experiments show that it is possible to catch herring in commercial quantities from vessels of 90 feet to 175 feet in length.

"During the experiments two nets on the Dutch rig were used, one being a scaled-down version of the other. The larger net had a 63-foot headline and was worked from the Ernest Holt, while the smaller had a 54-foot headline and was used by the Sir Lancelot and Platessa. The nets were rigged in various ways and the specifications are available at the Fisheries Laboratory, Lowestoft.

"The gear as used by the Ministry's vessels might not be the most efficient net nor rigged in the best way but commercial quantities of herring have been caught with the trawl as used by the research ships and it is suggested that this rigging should be used as a start."

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NOVEL METHOD OF DETERMINING FRESHNESS OF FISH DEVELOPED: Experiments on judging the freshness of fish by the glaze in its eyes are being carried out at the Torry research station, Aberdeen, Scotland, reports the December 1953 Fish Industry, a British fishery magazine. The eyes of the fish are compared with a series of glass eyes, and it is claimed that this method is an accurate guide in determining how long a fish has been out of the water.

The glass eyes are filled with liquids of different cloudiness, each corresponding to the "eye-glaze" of fish for which accurate records have been kept on the length of time out of the water. The "eye-glaze" which matches the eye of the fish being examined reveals how long that fish has been out of water.

These experiments are being made to enable scientists to compare the efficiency of different methods of storing fish, and to check on the age of fish landed by fishing vessels.

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LOANS FOR FISHERMEN'S COOPERATIVES: A new plan of financial assistance to encourage cooperatives (especially among inshore fishermen) for the marketing of white fish was announced by the White Fish Authority. The plan has been drawn up after consultation with the White Fish Advisory Council, the Fisheries Organization Society, and the Scottish Agricultural Organization.

Financial assistance by way of grant will be available for the formation of new cooperatives; these grants will be given towards (1) the expenses of formation, and (2) certain costs of administration (including the services of staff) during an initial period.

Loans will be made to new cooperatives towards capital expenditures on activities to which Section 4 (1) (b) of the 1951 Act applies; that is, the selling of white fish or the buying of materials and other requisites for the industry (including gear, fuel, and stores for fishing vessels). Loans will also be made to existing cooperatives towards expenditure on developments embracing the same activities. Loans will be granted only on expenditure approved by the Authority.

The amount of the loans will not exceed 80 percent of the expenditure. The rates of interest until further notice will be 2-7/8 percent for loans for not more than 5 years, $3\frac{3}{4}$ percent for loans for more than 5 years but not more than 15 years, and $4\frac{1}{4}$ percent for loans for more than 15 years and not more than 20 years.

Loans made for the purpose of acquiring capital assets will be secured on those assets or by other equivalent security. Applications for loans for other purposes will be considered on their merits.

Although these arrangements are open to all persons engaged in the white fish industry, the Authority expects that they will principally be of interest to inshore fishermen. The Authority is most anxious to encourage voluntary cooperative organizations of inshore fishermen, and trusts that these offers of assistance will lead to the formation of more of them.

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FISH CONSUMPTION, 1952/53: The United Kingdom per-capita fish and fillet consumption in 1952/53 (July-June) amounted to 10.4 pounds edible weight, according to a February 25 report from the U. S. Embassy at London. This was a decrease of 11 percent from the prewar (1934-38) average of 11.7 pounds. The consumption for the next fiscal year, 1953/54, is forecast to drop to 10.0 pounds per person.

The per-capita consumption of whale meat in the United Kingdom during 1952/53 was 0.1 pound and the forecast for the next year is estimated at 0.05 pound.

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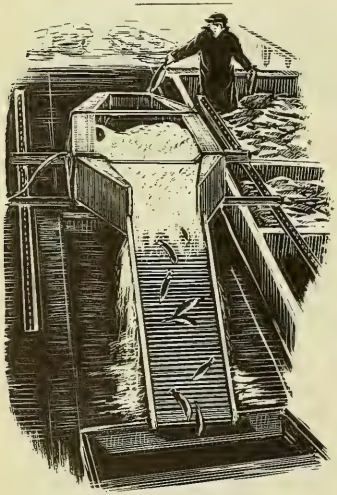
REVIEW OF THE FISHERIES, 1952: Sea-Fishery Landings: The total ex-vessel value of all sea-fishery landings of British-caught fish and shellfish in England, Scotland, Wales, and Northern Ireland amounted to £45,050,697 in 1952 (US$126.1 million) against £46,672,743 (US$130.7 million) in 1951.



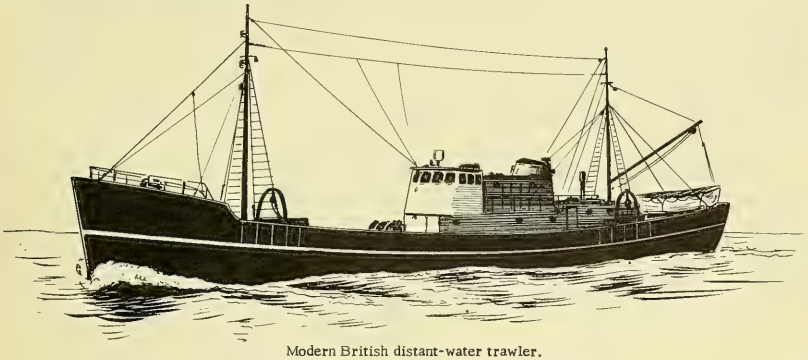
Fish-washing device for British trawlers.

Sea-fishery landings of wet fish in the United Kingdom of Great Britain and Northern Ireland in 1952 totaled 2,230 million pounds, valued at £43,863,321 (US$122.8 million) ex-vessel, compared with 2,127 million pounds, valued at £45,492,286 (US$127.4 million), in 1951. The ex-vessel value of shellfish landed amounted to £1,187,376 (US$3.3 million) in 1952--about the same as in 1951.

The sea-fishery landings by distant, near- and middle-water British vessels in England, Scotland, and Wales (excluding Northern Ireland) in 1952 totaled 2,219 million pounds of wet fish, valued at over £43,714,409 (US$122.2 million) ex-vessel, according to a report of the Ministry of Agriculture and Fisheries (table 1). This is an increase of 5 percent in quantity, but 4 percent less in value when compared with the 1951 landings of 2,115 million pounds, valued at £45,333,661 (US$126.9), reports a March 2 U. S. Embassy dispatch from London. In addition, 42.1 million pounds plus 19.8 million pieces of shellfish (valued at US$3.3 million ex-vessel) were landed in 1952, compared with 44.8 million pounds plus 20.5 million pieces (valued at US$3.3 million) in 1951.

Demersal species comprised 77 percent of the catch in England, Scotland, and Wales. Cod was the leading variety landed and comprised 38 percent of the wet-fish catch; followed by haddock, 11 percent; and whiting, 5 percent. Livers and roe accounted for 3 percent of the wet-fish total.

The drop in the ex-vessel value of fishery landings--in spite of the increased landings--was attributed to the Government decontrol of other food items which adversely affected the demand for fish.



Modern British distant-water trawler.

With Icelandic landings out of the picture since October 1952, it was expected that supplies of fish would be short and prices very high. However, supplies have

Table 1 - United Kingdom[1] Sea Fisheries Landings by British Vessels, 1952 & 1951
(Includes England, Scotland, and Wales)

Species	1952 Quantity	1952 Ex-vessel Value £	1952 Ex-vessel Value US$	1951 Quantity	1951 Ex-vessel Value £	1951 Ex-vessel Value US$
	Lbs.			Lbs.		
Demersal Fish:						
Catfish	15,293,040	277,445	776,800	14,526,848	209,182	585,700
Cod	847,454,048	16,211,185	45,391,300	833,353,584	16,751,539	46,904,300
Dogfish	28,225,008	436,812	1,223,000	28,474,880	453,253	1,269,100
Haddock	243,042,464	6,301,100	17,643,100	263,764,928	7,339,411	20,550,400
Hake	51,098,096	3,091,462	8,656,100	54,174,736	3,338,674	9,348,300
Ling	20,641,264	253,289	709,200	22,747,872	302,606	847,300
Plaice	65,446,416	3,257,630	9,121,400	63,116,816	3,502,558	9,807,200
Redfish	31,390,464	353,359	989,400	32,973,136	408,378	1,143,500
Saithe (coalfish)	76,095,824	877,251	2,456,300	71,585,696	749,102	2,097,500
Skates & Rays	39,690,448	1,077,361	3,016,600	43,349,152	1,215,278	3,402,800
Whiting	118,336,288	2,145,083	6,006,200	106,059,744	1,935,458	5,419,300
Other Species	92,081,808	3,849,724	10,779,200	99,044,848	4,189,065	11,729,400
Livers & roe	74,828,432	797,389	2,232,700	77,342,048	943,350	2,641,400
Total Demersal Fish	1,703,623,600	38,929,090	109,001,300	1,710,514,288	41,337,854	115,746,200
Pelagic Fish:						
Herring	462,516,880	4,359,523	12,206,700	367,695,888	3,628,433	10,159,600
Mackerel	14,648,592	170,656	477,800	13,938,064	179,359	502,200
Pilchard	10,588,816	145,517	407,400	12,793,536	131,116	367,100
Sprats	26,872,272	105,434	295,200	9,795,296	51,218	143,400
Total Pelagic Fish	514,626,560	4,781,130	13,387,100	404,222,784	3,990,126	11,172,300
Other Wet Fish	270,704	4,189	11,700	366,464	5,681	15,900
Total Wet Fish	2,218,520,864	43,714,409	122,400,100	2,115,103,536	45,333,661	126,934,400
Shellfish:	No. of Pieces			No. of Pieces		
Crabs	10,598,968	345,161	966,500	9,994,180	299,422	838,400
Crawfish (crayfish)	24,400	9,555	26,700	34,700	12,654	35,400
Lobsters	1,605,231	299,597	838,900	1,646,949	304,572	852,800
Oysters	7,630,101	140,624	393,700	8,881,000	165,342	463,000
	Lbs.			Lbs.		
Other Shellfish	42,112,000	388,500	1,087,800	44,873,000	394,174	1,103,700
Total Shellfish		1,183,437	3,313,600		1,176,164	3,293,300
Grand Total		44,897,846	125,713,700		46,509,825	130,227,700

1/EXCLUDES NORTHERN IRELAND.

been more than adequate and large quantities have found their way to the fish-meal factories and oil-reduction plants. Prices fluctuated between very high and very low, but these fluctuations followed abnormally stormy weather and were not caused by the absence of the Icelandic-trawler fish. There were complaints of the coarseness of the fish landed. British trawler owners explained that this was due to the Icelandic dispute which is keeping them from customary fishing grounds. The quality of the fish from Greenland, whose fishing grounds have been exploited by the British as an alternative to those of Iceland, is considered to be inferior. It is these waters which will continue to yield the bulk of the total catch, particularly when the ban on fishing off Russian coastal waters becomes effective in mid-1953.

Pelagic fish landings were very good as the summer season was unusually good. The fall season proved disappointing and culminated in the loss of valuable gear in storms which swept over the herring ports in November.

Landings by Foreign Vessels: Landings at British ports of fresh and frozen fish by foreign vessels during 1952 amounted to 278.4 million pounds, valued at £9,343,082 (US$26.2 million). These landings consisted of direct landings by foreign fishing vessels and landings by other than fishing vessels.

U. S. S. R.

NEGOTIATING FOR NEW FISHERY VESSELS: A group of British shipbuilders are negotiating with the Russian Foreign Trade Ministry on an order for new fishery vessels. Negotiations had reached the contractual stage. The order is likely to be for 20 trawlers and 7 factoryships, valued at between £10 million and £13 million (US$28-36.4 million). Earlier reports had indicated that the order might involve a total of 40 vessels, valued at £8 million (US$22.4 million). A spokesman for the British shipbuilders said: "As far as I am aware this is likely to be one of the biggest single orders for merchant ships ever placed, if not the biggest."

The vessels will be built at Lowestoft. Deliveries would have to be spaced over a considerable period and the final decision on delivery dates may be the most difficult part of the contract to settle, the January 29 issued of The Fishing News (a British fishery magazine) points out.

It was announced in the House of Commons in November 1953 that the British Admiralty had agreed to the sale of 30 fishing vessels to the Soviet Union.

Another group of British shipbuilders, headed by the general manager of an Aberdeen shipyard has also been seeking orders in Moscow. For 10 days they have held preliminary discussions with Russian leaders and hope eventually to negotiate orders for a number of fishing vessels.

A report from Copenhagen says that Denmark may offer to build five more refrigerated vessels for Russia during coming trade negotiations. Danish shipyards recently concluded an order for five refrigerated vessels, mainly for Soviet fisheries.

Refrigerating equipment for these last five new fish carriers built for the Soviet Union by a Copenhagen firm have been supplied by a Danish firm in Aarhus. The owners of the vessels specified that 50 tons of "uncut" salmon, cod, or flounder must be frozen daily in waters of 20° C. (68° F.) at an outside temperature of 30° C. (86° F.), and that the temperature in the center of the fish after it had been submerged for glazing should be no higher than -15° C. (5° F.). Other requirements were for a cargo-hold refrigerating plant to keep a temperature of -18° C. (0.4° F.) sufficient to maintain the frozen fish at between -15° C. and -18° C.

A German shipyard at Kiel has secured an order from a Soviet trade delegation in Berlin to build 10 fish factory vessels for the U.S.S.R., according to the West German economics news agency. The vessels will have an aggregate tonnage of about 30,000 tons, The Fishing News (February 5) points out. The order is worth 80 million marks (US$19 million). It has been approved by the appropriate international control commission. The vessels will be delivered over a period of two years, the first in February 1955. Each vessel is to be about 3,000 gross tons and approximately 260 feet long. Specially designed to process frozen and canned fish at sea, each vessel will be capable of turning out 30 tons of fish--canned or frozen--daily. Delivery of the first unit of the program has been set for February 1955, with an additional unit to follow monthly thereafter. The same Kiel shipyard reports that it has been asked to obtain the necessary licenses for the construction of 15 more vessels of this type for Russia. The vessels will be equipped with modern machinery, principally for the filleting of salmon and cod. Russia probably intends to operate the vessels near the Asiatic coast and in the Arctic. The vessels, each with a crew of 90 men, will not only prepare their own catches, but will be able to serve as processing and canning plants for the catches delivered by other fishing vessels. In addition to processing canning equipment, the vessels are equipped to produce cod-liver oil and fish meal. Under a stipulation of the construction contract, Russian personnel to operate these vessels will be trained in Germany.

Note: See Commercial Fisheries Review, October 1953, p. 62.

International

INTERNATIONAL NORTH PACIFIC FISHERIES COMMISSION

HEINTZLEMAN APPOINTED U. S. COMMISSIONER: B. Frank Heintzleman, Governor of Alaska, was appointed as the fourth United States Commissioner to the International North Pacific Fisheries Commission. The Commission (established pursuant to a Convention between Canada, Japan, and the United States) opened its first meeting in Washington on February 1, 1954. Mr. Heintzleman was appointed a few days after the appointment of the other three United States Commissioners was announced: E. W. Allen, Seattle, Wash.; M. E. Brooding, San Francisco, Calif.; and J. L. Farley, Director, U. S. Fish and Wildlife Service, Washington, D. C.

Note: See Commercial Fisheries Review, April 1954, p. 34.

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Compositors--Jean Zalevsky, Betty Coakley, and Kathlyn Brophy

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FEDERAL ACTIONS

Department of Commerce

BUREAU OF THE CENSUS

STATISTICS OF LOW-VALUE IMPORT SHIPMENTS NOW HANDLED DIFFERENTLY: Effective with the January 1954 statistics on imports reported by the Bureau of Census, all items for immediate consumption valued at $250 or less, reported on formal or on informal entries, will be included in the statistics on the basis of estimates based on a 5-percent probability sample of the items. These estimates will be presented in the monthly statistics in terms of commodity subgroups and in terms of countries, Customs Districts, and economic classes.

No information on imports reported on informal entries has been included in statistics for months prior to January 1954. Until September 7, 1953, the value limit for informal entries was $100. Under the Customs Simplification Act, effective on that date, the value limit for informal entries was raised to $250. Because of this, the continued omission of informal entries was considered undesirable due to the impact of the omission of an increased number of items on the statistics for individual commodities. The exclusion of informal entries continued through December 1953, even though the change in the value limit occurred in September. For certain fishery products, principally those imported from neighboring countries, it is believed that informal entry items frequently accounted for a larger volume than reported through formal entry. On most fishery products, however, the quantity imported on informal entry was believed to be relatively small. The increase in the valuation from $100 to $250 would tend to increase the quantity of items so reported and previously omitted from statistics.

For formal entries, fully compiled information for items of all values was included in statistics through the month of June 1953. Effective in July 1953, full compilation was discontinued for items valued at less than $100 reported on formal immediate consumption entries, and information for these items was included in statistics on the basis of estimates made from a 10-percent random sample. This procedure was in effect for the months of July-December 1953.

The commodity by country detail in the annual statistics for 1953 will include formal-entry immediate-consumption items under $100 for only the months of January-June. The annual statistics will include no information on imports covered by informal entries. Presumably the value of informal entries excluded each month is greater during the last four months of the year than during the first eight months due to the increase in the value limit for informal entries.

In any use which is made of the calendar year import statistics in comparing 1953 with other years in terms of over-all totals, country totals, district totals, and economic class totals, it is believed that the difference in the handling of low-value shipments will have very little significance because of the small proportion of these totals which is made up of low-value shipments. For year-to-year use of the statistics on a commodity basis, the following comparison of handling of low-value shipments should be considered:

1952: Includes all formal entry items in full 7-digit commodity code by country detail, with no exclusion on a value basis and no sampling or estimating. Excludes all informal entry items. The value limit for informal entries was $100.

1953: Includes all formal entry items in full detail for first six months. Includes an estimate, only, for under $100 immediate consumption items on formal entries for last 6 months (under commodity numbers 9999100 and 9999200). The estimate is not distributed by commodity and is based on a 10-percent sample. Excludes all informal entry items. Up to September 7, 1953, the value limit for informal entries was $100. After that date, the limit was $250.

1954: Includes both formal and informal entry items, but informal entry items and formal entry immediate consumption items valued $250 or less are included in the form of estimates based on a 5-percent sample. Estimates are distributed to show some 4-digit commodity detail, and possibly some breakdown of these figures by country.

A detailed statement on the methods and procedures of handling of low-value import shipments in 1953, and effective with January 1954 import statistics, is published in the February 1954 issue of Foreign Trade Statistics Notes, published by the Foreign Trade Division, Bureau of Census, Department of Commerce, Washington 25, D. C.

Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

POLICY ON LABELING OF IMPORTED CRAB MEAT: The statement of general policy or interpretation on labeling imported crab meat issued by the Food and Drug Administration was published in April 8 Federal Register:

PART 3—STATEMENTS OF GENERAL POLICY OR INTERPRETATION

LABELING OF IMPORTED CRABMEAT

Pursuant to section 3 of the Administrative Procedure Act (60 Stat. 237, 238), the following statement of policy is issued:

§ 3.34 *Labeling of imported crabmeat.* (a) For many years canned crabmeat has been imported into the United States from Japan. Such imports have consisted primarily of a product designated as "King crabmeat." There have been limited importations of articles designated as "Korean crabmeat" and "Snow crabmeat." Two closely allied species of crab have been packed in Japan for export to the United States, under the designation "King crabmeat." These species are Paralithodes camtschatica (taraba-gani) and Paralithodes platypus (abura-gani). A third species of crab, Paralithodes brevipes, has been labeled either as "King crabmeat" or "Hanasaki crabmeat" when intended for export to the United States. The Department of Health, Education, and Welfare considers the term "King crabmeat" as an acceptable common name for the product prepared from any one of the three species Paralithodes camtschatica, Paralithodes platypus, and Paralithodes brevipes. The Department also considers the name "Hanasaki crabmeat" as an alternative common name for the product prepared from Paralithodes brevipes.

(b) Prior to World War II, there was a limited pack of crabmeat from the species Erimacrus isenbeckii at canneries located on the coast of Korea, but only a small quantity of this product was imported into the United States. To distinguish the product from the various species of Paralithodes and to connote its geographic origin, the article was designated by the name "Korean crab." For the past several years there has been a limited amount of the species Erimacrus isenbeckii packed in Japan or on Japanese factory ships operating in the Bering Sea. This species of crab is generally known in Japan as "Kegani." This product, packed in Japan, when offered for entry into the United States has been designated by a variety of names, including "Korean crabmeat," "Snow crabmeat," "Eliza crabmeat," "Kegani crabmeat," and "Zuwai crabmeat," with resulting confusion to importers and consumers. The term "Korean crab" is no longer applicable to the product as an indication of its geographic origin. The long absence of the product from the domestic market, until its recent reintroduction under a variety of names, has largely eliminated consumer recognition of the identity of the product under the name "Korean crabmeat." The Department therefore considers the designation "Korean variety crabmeat" or, alternatively, "Kegani crabmeat" as suitable common names for the product packed from the species Erimacrus isenbeckii.

(c) There has also been a limited pack of Chionoecetes opilio (zuwai-gani) offered for entry into the United States. This product has for many years been designated by the name "Snow crabmeat." The Department regards the designation "Snow crabmeat" as the common or usual name for the product when distributed in the United States.

(d) Section 403 (i) (1) of the Federal Food, Drug, and Cosmetic Act requires that the label of a food for which there is no definition and standard of identity shall bear the common or usual name of the food, if any there be. No definition and standard of identity has been established for crabmeat under the act. The Department of Health, Education, and Welfare regards the label designations for canned crabmeat prepared from the various species of crab as stated in paragraphs (a), (b), and (c) of this section as satisfactory compliance with section 403 (i) (1) of the act.

Dated: April 2, 1954.

Oveta Culp Hobby,
Secretary.

Department of the Interior

SURVEY OF FISH AND WILDLIFE SERVICE: The appointment of a team to survey activities of the U. S. Fish and Wildlife Service was announced by Secretary of the Interior McKay on April 7. The study was scheduled to commence on April 15. The team is composed of the following consultants: James R. Turnbull, Seattle, Wash.; Ross Leffler, Pittsburgh, Pa.; and John D. Pennekamp, Miami, Fla.; and M. George Goodrick of the Department's Division of Management Research; and John B. Bennett, Assistant Director of the Department's Technical Review Staff.

It will investigate the organization and operating procedures of the Fish and Wildlife Service in Washington, in the regional offices, and at the field installations, and present recommendations for improving the administration of the Service. The objectives of the survey are to determine what is being done, whether work is being accomplished in an efficient manner, and whether there are other means of accomplishing the work more effectively. The survey report is to be submitted by June 1.

Mr. Turnbull is vice president of Monsanto Chemical Company's western division with headquarters in the Pacific Northwest; Mr. Leffler is vice president of the United States Steel Corporation and chairman of the Pennsylvania State Game Commission; and Mr. Pennekamp is associate editor of the Miami Herald.

The report of the survey team will be submitted to Assistant Secretary Lewis June 1, 1954.

* * * * *

SURVEY OF ALASKA PROGRAM: The appointment of a four-man survey committee which will study the organization and procedures of the extensive Interior Department programs carried on in Alaska was announced on April 3 by Secretary of the Interior McKay. The survey committee conferred with Department officials in Washington and were scheduled to begin field studies in Juneau on April 15.

The committee is composed of: Glen Duncan, grain elevator operator, Haines, Oregon; Roy B. Earling, mining consultant, Seattle, Wash.; Gilbert H. Jertberg, attorney, Fresno, Calif.; and Robert Coote, member of the Department's Technical Review Staff.

The survey is part of Secretary McKay's program aimed to improve Department operations. Surveys have been completed in most of the bureaus and recommendations of nongovernment experts have in many cases resulted in substantial economies and increased efficiency in operations.

The Alaska committee will give particular attention to a study of the nature and scope of Bureau operations and to the location, functions, and staffing of regional and field offices. Existing policies with the view toward clearly defining the objectives of the Federal Government in the Territory and an examination of the Department's relations with Territorial, local government, and with other Federal agencies will be also examined.

The itinerary includes all sections of the Territory where there are Department installations and personnel.

White House

PRESIDENTIAL APPOINTMENTS TO INTERNATIONAL FISHERIES COMMISSIONS: The White House announced April 13 that the President made the following appointments:

John L. Farley, Director, Fish and Wildlife Service, Department of the Interior, to be United States Commissioner on the Inter-American Tropical Tuna Commission.

Farley replaces John L. Kask whose resignation was accepted on July 7, 1953.

John L. Farley

Arnie J. Suomela

Arnie J. Suomela, Assistant Director, Fish and Wildlife Service, Department of the Interior, to be United States Commissioner on the International Commission for the Northwest Atlantic Fisheries; and to be a member on the part of the United States of the International Pacific Salmon Fisheries Commission.

Suomela replaces John L. Kask on the International Northwest Atlantic Fisheries Commission and replaces Albert M. Day (whose resignation has been accepted) on the International Pacific Salmon Fisheries Commission.

Eighty-Third Congress
(Second Session)

APRIL 1954

Listed below are public bills and resolutions introduced and referred to committees or passed by the Eighty-Third Congress (Second Session) and signed by the President that directly or indirectly affect the fisheries and allied industries. Public bills and resolutions are shown in this section only when introduced and, if passed, when signed by the President; but also shown are the more pertinent reports, hearings, or chamber actions on some of the bills shown in this section from month to month.

DISTRIBUTION OF FISHERY PRODUCTS: The Senate Committee on Interstate and Foreign Commerce on April 14 in executive session, ordered favorably reported with amendments, S. 2802, to encourage further the distribution of fishery products in the development of research programs and increased markets (S. Rept. 1210), and recommended that the bill as amended be passed. On April 13 the Senate Committee on Interstate and Foreign Commerce Subcommittee on Fisheries and Wildlife had ordered the bill favorably reported to the full committee, with amendments.

The Committee made five amendments to the bill: (1) To broaden the term "fishery products" to include marine animals such as whales, seals, etc.; aquatic reptiles such as turtles; aquatic plants such as kelp, Irish moss, and agar-agar; and sponges; (2) to clarify the type of research to make it clear that the bill allows research on land or on the high seas, and not limited strictly to research directed particularly and directly at promoting "the free flow of domestically produced fishery products in commerce," provided the research pertains to the U. S. fisheries; (3) authorizes the Secretary of the Interior to appoint an advisory committee of the U. S. fisheries industry to advise him in the formulation of policy, rules, and regulations pertaining to requests for assistance, and other matters, but the power is made absolutely discretionary in the Secretary; (4) makes it clear that the retransfer of funds is in lieu of the funds heretofore made available for those purposes; (5) limits the annual accruals to $5 million at the end of any fiscal year.

Senate Report No. 1210, Encouragement of Distribution of Fishery Products (April 14, 1954, 83d Congress, 2d Session), 28 p., to accompany S. 2802. In addition to the amendments, the report also discusses general legislative background; scope of the bill; the difficult position of the fishing industry; the public interest involved; the remedy indicated; and that 30 percent of the fisheries' duties is the fisherman's due; also includes comments from government agencies and the conclusions of the Committee.

H.R. 8768 (King of California) - a bill to further encourage the distribution of fishery products and for other purposes; introduced in the House on April 8 and referred to the Committee on Merchant Marine and Fisheries. (This is a modification of similar bills--provides for the establishment at the discretion of and by the Secretary of the Interior of an advisory committee to cooperate with the Department in administering programs financed by the funds allocated from import duties.)

FOOD STANDARDS: Senate, on call of calendar, on April 5 passed H. R. 6434, to amend sections 401 and 701 of the Federal Food, Drug, and Cosmetic Act so as to simplify the procedures governing the establishment of food standards, and cleared bill for President. The bill was reported to the Senate on March 9, 1954, by the Committee on Labor and Public Welfares (S. Rept. 1060). Bill was passed in the House on July 30, 1953.

H. R. 6434 was signed April 15, 1954, by the President (P. L. 335). H. R. 6434, known as the Hale amendment to the Federal Food, Drug and Cosmetic Act, simplifies the procedure for the promulgation of regulations on the definitions and standards for food. Hearings will now be held only on those parts of an order to issue, amend or repeal such regulations to which objections are filed.

HAWAII STATEHOOD: H. Res. 509 (Saylor) - a resolution providing for sending to conference H. R. 3575, "An act to enable the people of Hawaii to form a constitution and State government and to be admitted into the Union on an equal footing with the original States;" introduced in the House on April 12; to the Committee on Rules.

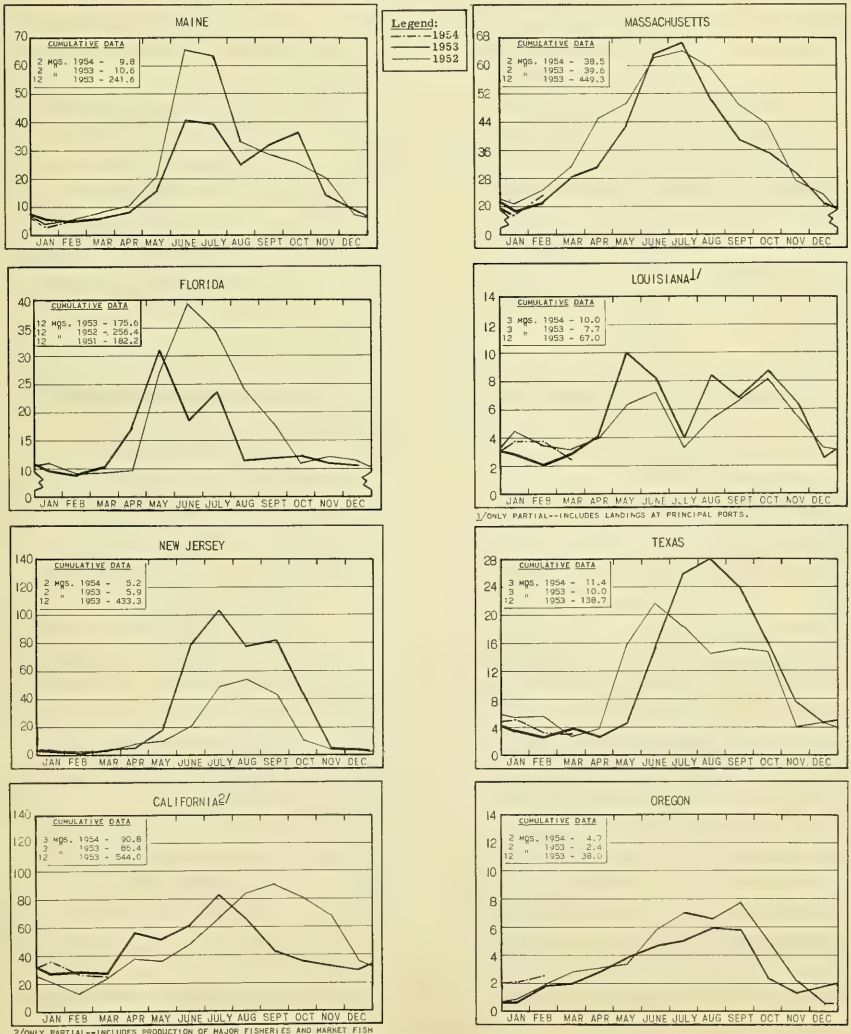
HAWAII-ALASKA STATEHOOD: On April 1 the Senate passed, with amendment, H. R. 3575, to provide statehood for Hawaii, after discharging Committee on Insular Affairs from further consideration of the bill and then amended H. R. 3575 by substituting for its text the language of S. 49, to provide statehood for Hawaii, as amended to include Alaska (including committee amendments). A motion to reconsider passage of the bill was tabled. Senate requested conference with the House and appointed as conferees Senators Butler of Nebraska, Millikin, Cordon, Murray, and Anderson.

INTERIOR DEPARTMENT APPROPRIATIONS: (Jensen) introduced on April 1, H. R. 8680, a bill making appropriations for the Department of the Interior (including the Fish and Wildlife Service) for the fiscal year ending June 30, 1955, and for other purposes; referred to the Committee on Appropriations. The bill was reported out on April 1 (H. Rept. 1460).

The House passed, by a voice vote on April 6, H. R. 8680. Prior to its passage amendments were adopted, including one which increased by $527,000 the moneys provided for the investigations of resources under the Fish and Wildlife Service and a provision that not more than $250,000 shall be available for the lamprey-eel program.

CHART 1 - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds

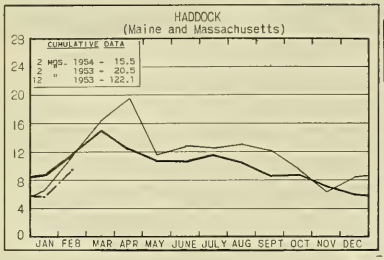


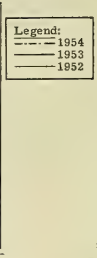
1/ONLY PARTIAL--INCLUDES LANDINGS AT PRINCIPAL PORTS.

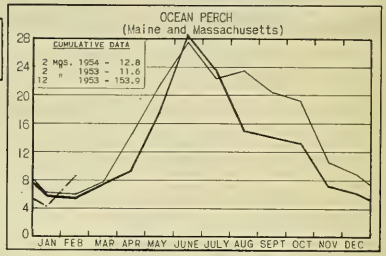
2/ONLY PARTIAL--INCLUDES PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds







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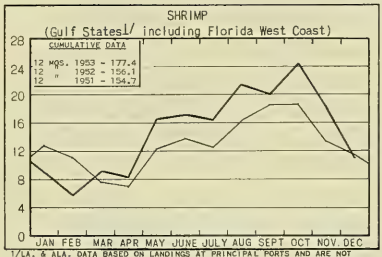

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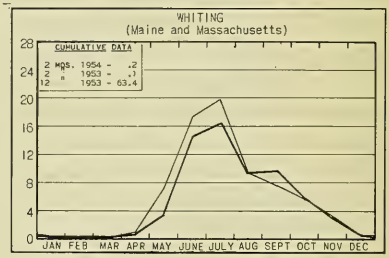
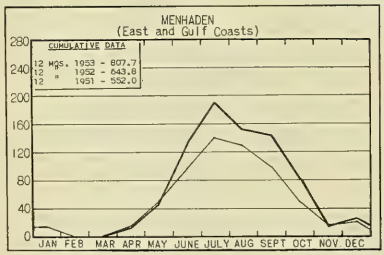
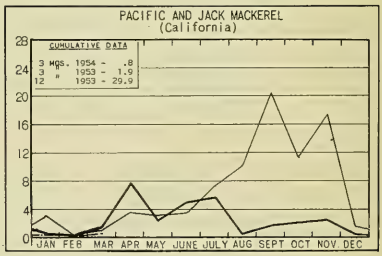
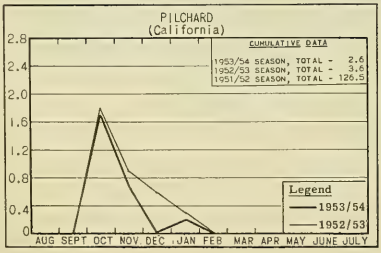


In Thousands of Tons





In Thousands of Tons



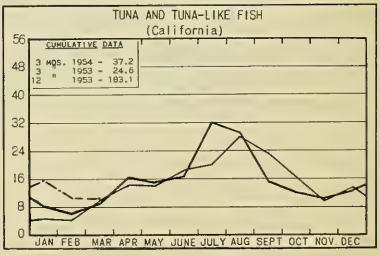
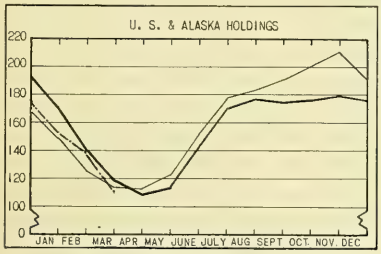
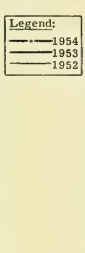
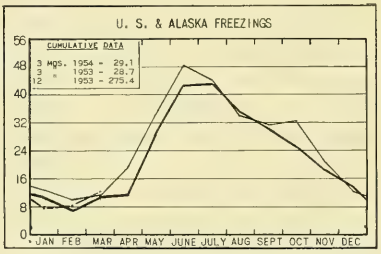


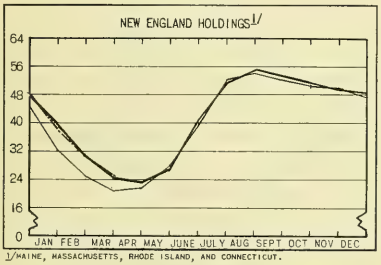
CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds

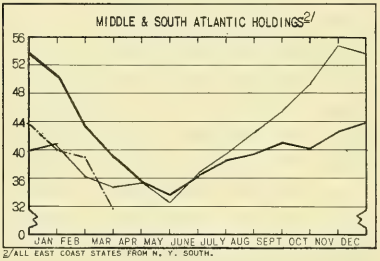




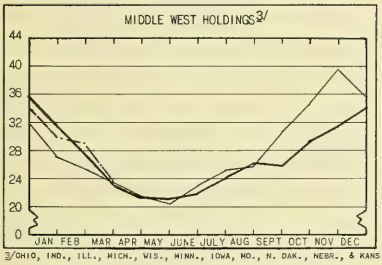




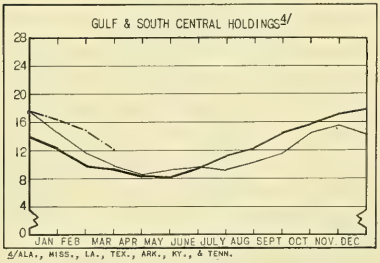
1/MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT.



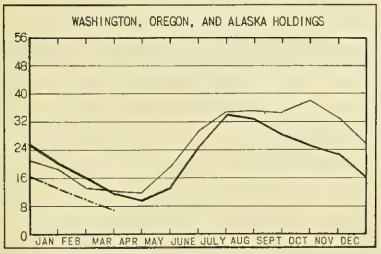
2/ALL EAST COAST STATES FROM N. Y. SOUTH.

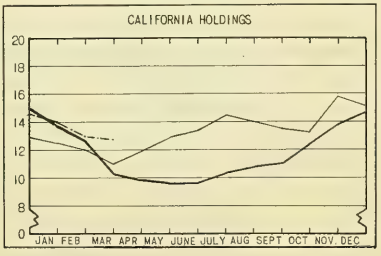


3/OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR., & KANS.



4/ALA., MISS., LA., TEX., ARK., KY., & TENN.





*Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pound

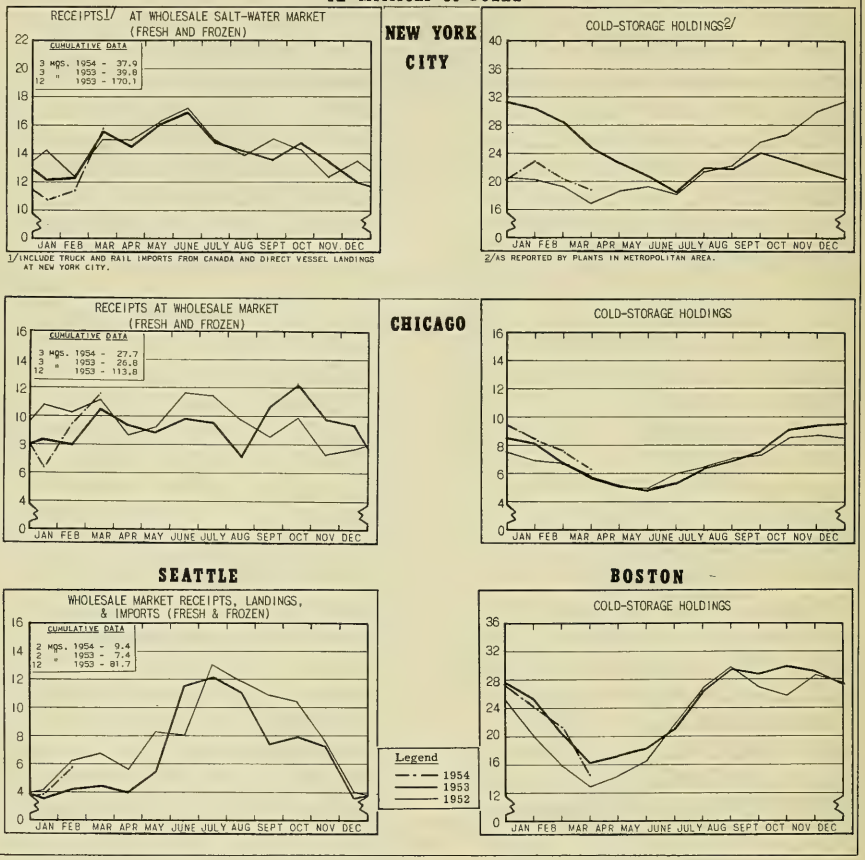


CHART 5 - FISH MEAL and OIL PRODUCTION - U.S. and ALASKA

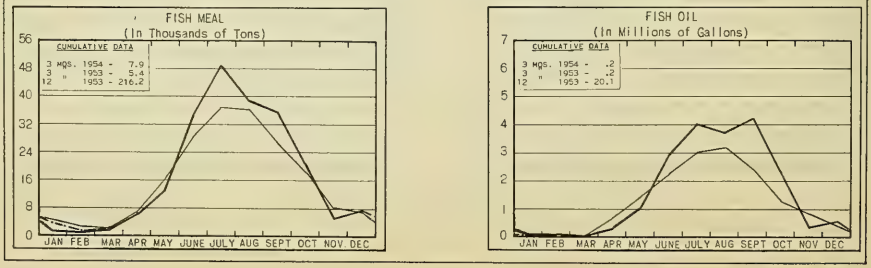
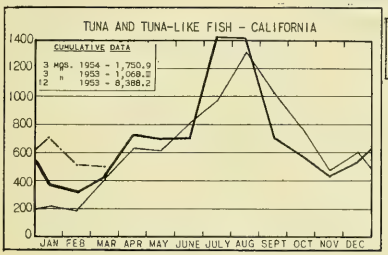
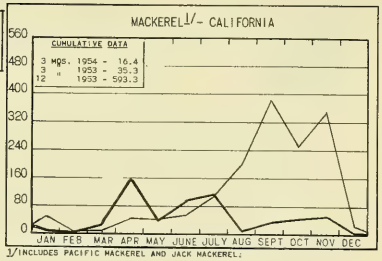


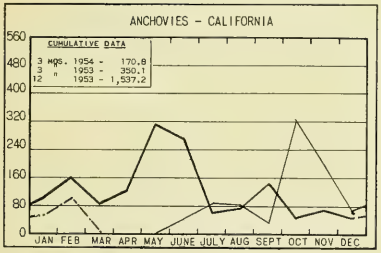
CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

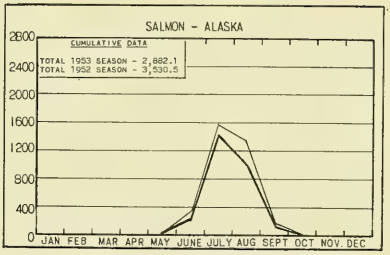
In Thousands of Standard Cases

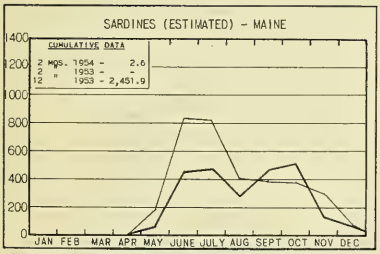




1/ INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.

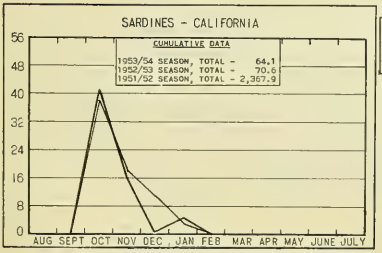






STANDARD CASES

Variety	No. Cans	Can Designation	Net Wt.
SARDINES	100	¼ drawn	3¼ oz.
SHRIMP	48	—	5 oz.
TUNA	48	No. ½ tuna	6 & 7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
SALMON	48	1-pound tall	16 oz.
ANCHOVIES	48	½ lb.	8 oz.



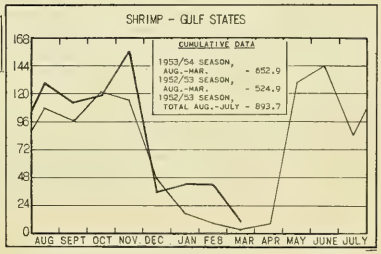
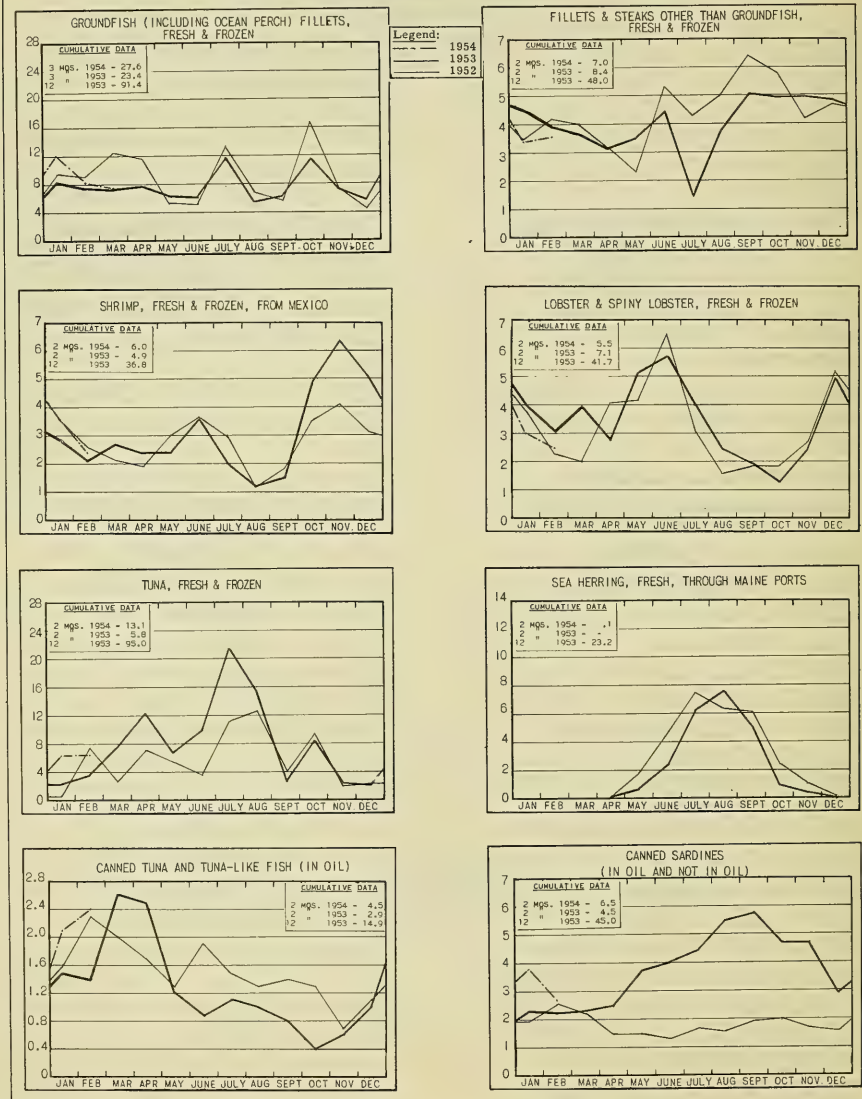


CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds



FISH AND WILDLIFE SERVICE PUBLICATIONS

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

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
FL - FISHERY LEAFLETS.
SL - STATISTICAL SECTION LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SSR.-FISH - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number Title

CFS-952 - New Jersey Landings, November 1953, 2 p.

CFS-958 - Frozen Fish Report, February 1954, 8 p.

CFS-959 - Mississippi Landings, January 1954, 2 p.

CFS-961 - Florida Landings, December 1953, 6 p.

CFS-962 - New Jersey Landings, December 1953, 2 p.

CFS-964 - Massachusetts Landings, December 1953, 9 p.

CFS-965 - Texas Landings, January 1954, 3 p.

CFS-967 - Maine Landings, 1953 Annual Summary by Counties, 10 p.

CFS-968 - Massachusetts Landings, 1953 Annual Summary by Ports, 16 p.

CFS-969 - Maine Landings, 1953 Annual Summary by Months, 6 p.

CFS-970 - Massachusetts Landings, 1953 Annual Summary by Gear and Area, 16 p.

CFS-971 - Florida Landings, 1952 Annual Summary by Months, 10 p.

CFS-972 - Frozen Fish Report, February 1954, 8 p. This issue contains data for February. Commencing with this issue (CFS-972), this publication will be dated with the month for which the data is included, and not the date of issue as in the past. A previous issue, Frozen Fish Report, February 1954 (CFS-958) covered data for January 1954, 8 p.

CFS-973 - Maine Landings, January 1954, 4 p.

CFS-974 - Massachusetts Landings, January 1954, 7 p.

CFS-975 - New Jersey Landings, January 1954, 2 p.

FL -292 - List of Fishery Cooperatives in the U. S. & Alaska (revised), 5 p.

FL -393 - Fisheries of the United States and Alaska, 1953--A Preliminary Review (revised), 22 p.

SL -16 - Wholesale Dealers in Fishery Products, Florida, 1954 (revised), 9 p.

Sep. No. 369 - Relative Productivity and Value of the Fisheries of the United States and Alaska, 1951.

Sep. No. 370 - California: Loss of Sardine Fishery May Become Permanent. Sardine Study Progress Report.

SSR-Fish. No. 95 - Morphometric Measurements of Pacific Scombrids, by Dorothy I. Y. Dung and William F. Royce, 171 p., processed, February 1953.

SSR-Fish. No. 106 - Use of Fish Products in Blueback Salmon Diets (Evaluation and Utilization of Cannery Wastes and Other Materials in Hatcheries), 59 p., illus., processed, November 1953. This report is divided into five parts: Part I--"Introduction: Review of the Problem and Scope of the Study," by G. Ivor Jones and Maurice E. Stansby; Part II--"Chemical Composition of Hatchery Feeds," by Neva L. Karrick and William Clegg; Part III--"Chemical Preservation of Salmon Eggs for Fish Hatchery Feed," by George Pigott and Maurice E. Stansby; Part IV--"Summary of Feeding Trials on Utilization of Fishery Products for Fish Food," by Roger E. Burrows, Leslie A. Robinson and David D. Palmer; and Part V--"Utilization of Alaska Salmon Cannery Waste as a Source of Feed for Hatchery Fish," by R. G. Landgraf, Jr., David T. Miyauchi, George Pigott, and Maurice E. Stansby. Microbiological methods of assay for niacin, riboflavin, biotin, and vitamin B_{12} were adapted to hatchery-feed materials. Data on composition of 49 hatchery-feed components and 42 mixed hatchery-fish diets are presented for the foregoing vitamins and for moisture, protein, oil, and ash. It was found that the component parts of salmon viscera vary widely in nutritive value for hatchery-fish feeding, and also the salmon eggs have by far the greatest nutritive value of any of these components. Other fish materials, such as halibut sawdust (the band-saw waste resulting from preparation of steaks from frozen halibut), whole rockfish, tuna viscera, tuna livers, and specially-prepared fish meals, were evaluated as possible hatchery-feed ingredients. Practical commercial methods of collecting, sorting, and packing of salmon-cannery waste were developed that allow shipment of the material from Alaska to fish hatcheries in the United States at economically feasible costs. A special container, consisting of a burlap sack with inner polyethylene bag liner, was developed for use with salmon viscera. Progress was made toward development of a cheap chemical preservative treatment for salmon eggs for use at salmon canneries which do not possess cold-storage facilities. A large-scale collection of

salmon viscera materials involving over 100,000 pounds of frozen products was made at Petersburg, Alaska. The material was shipped to Federal hatcheries in the State of Washington for actual production use. Cost records showed that salmon viscera and eggs can be shipped from Alaska to Washington State at costs competitive with other local hatchery feeds presently used.

SSR-Fish. No. 107 - Live-Bait Fishing for Tuna in the Central Pacific, by Isaac I. Ikehara, 23 p., illus., processed, July 1953. Since its inauguration in 1949 the Service's Pacific Oceanic Fishery Investigations (POFI) has undertaken various research projects to explore and develop the high-seas fishery resources of the various territories and possessions of the United States in the tropical and subtropical Pacific Ocean. One project was to conduct exploratory live-bait fishing in the central Pacific. The POFI vessels Hugh M. Smith and Henry O'Malley, both built along U. S. west coast tuna clipper lines, conducted exploratory live-bait fishing for tuna in the vicinity of the Line, Phoenix, and Hawaiian Islands during 1949-51. This report deals primarily with the observations made on these two vessels.

SSR-Fish No. 113 - Artificial Fertilization of Lakes and Ponds--A Review of the Literature, by John A. Maciolek, 43 p., processed, January 1954.

SSR-Fish. No. 114 - Experimental Transportation of Live Shad Past Susquehanna River Dams, by Charles H. Walburg, 15 p., illus., processed, January 1954. Describes experiments to determine the feasibility of transporting shad long distances and transplanting them, the success of spawning of the transplanted shad, the survival of young, and the mortality suffered by juveniles and adults in descending the dams. During the spring of 1952, 1,184 adult shad were transported from the head of Chesapeake Bay near Perryville, Maryland, to stocking locations above Conowingo and Safe Harbor Dams on the Susquehanna River. All but 19 fish were tagged before release. Five hundred shad were tagged and released at the head of Chesapeake Bay to serve as a control. Of the shad planted above Conowingo Dam, 89 percent survived to point of planting, while of those planted above Safe Harbor Dam, only 68 percent survived. Thus the survival rate of the shad decreased as the hauling distance increased. The investigators believe that a higher survival rate would have been obtained if the hauling tanks had been larger and arranged so that the shad could swim and respire in a normal manner. From tag recoveries it was determined that 51.6 percent of the shad present were taken by the commercial fishery during the 1952 shad season and that 77 of the planted shad passed downstream over Conowingo Dam. There was no significant difference between the survival rate of the shad planted above Conowingo Dam and that for the shad tagged at the head of Chesapeake Bay. It was estimated that somewhat more than 50 of the 967 shad planted at Columbia, Pennsylvania, successfully passed downstream over Safe Harbor, Holtwood, and Conowingo dams.

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

Fishes of the Gulf of Maine, by Henry B. Bigelow and William C. Schroeder, Fishery Bulletin 74 (From Fishery Bulletin of the Fish and Wildlife Service, vol. 54), 584 p., illus., printed, $4.25 (buckram), 1953. The various species of fish inhabiting Atlantic waters off New England, New Brunswick, and Nova Scotia are described in the new edition of Bulletin 40, which was published between 1925 and 1927 by the Bureau of Fisheries, predecessor of the U. S. Fish and Wildlife Service. The new edition presents material on distribution, abundance, life histories, and identification of the different fishes found in the oceanic bight between Nantucket Shoals, Mass., and Cape Sable, Nova Scotia. Rimmed on the seaward side by Georges Bank and Browns Bank, this area known as the Gulf of Maine is of great importance to commercial fishermen. Growth, reproduction, food habits, range, commercial importance, and other significant facts about these fishes are brought out in the bulletin's text and illustrations. More than 250 pen-and-ink drawings delineating the outer features of the different fishes make for easy and accurate species identification. Keys are provided for all species as a further aid to identification.

MISCELLANEOUS PUBLICATIONS

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

(Alaska) 1952 Annual Report, Report No. 4, 87 p., illus., printed. Alaska Fisheries Board and Alaska Department of Fisheries, Juneau, Alaska, 1953. Summarizes the activities of the Alaska Fisheries Board and the Alaska Department of Fisheries for 1952. Describes the biological research, inspection, predator control, sportfish, and watershed-management programs. This report also contains statistics on the value of canned salmon--initial price per case, approximate total value per species, and total for all species (1943-1952); total salmon pack and number of operating salmon canneries by districts (1943-52); number of salmon taken in 1951 by gear, species, and district; production (quantity and value to the fishermen) of fishery products for 1943-52; and production (quantity and value) of fishery products as prepared for market for 1943-52. Also contains a historical review of the herring fisheries of Alaska; a financial statement; and a discussion of the plans of the Department and its future outlook.

Biological Conservation with Particular Emphasis on Wildlife, by John D. Black, 342 p., illus., printed, $5. The Blakiston Co., Inc., 575 Madison Ave., New York 22, N. Y., 1954. Much has been written on conservation, but this book attempts to give a comprehensive viewpoint of conservation in general and biological conservation in particular. The author's emphasis is on building a background of information concerning renewable resources. "Wildlife"

is interpreted by the author in this book to include not only the game birds and mammals, but the nongame forms as well. The author points out: "Some special attention is paid to fishes because the aquatic forms of wildlife are so often neglected; consideration is given to significant invertebrate forms; and a special effort is made to set wildlife against a proper environmental background." Part III--Fish and Other Aquatic Animals--will be of particular interest to fishery workers, researchers, and others conscious of fishery conservation. This section includes chapters on game and panfishes, rough fishes, forage fishes, reptiles and amphibians, and invertebrates. However, the emphasis is on fresh-water forms because the author in his preface admits: "Marine forms are treated only incidentally because marine biology is a highly specialized field--a field of which our knowledge is so scattered and limited that the writing of a conservation book placing proper emphasis on marine biology is at this time out of the question." Part II--The Environment--discusses basic ecology, standing water, running water, grasslands and wildlife, and forests. Those interested in wildlife will find Part IV (Birds) and Part V (Mammals) quite comprehensive. These sections include chapters on upland game birds, ducks and geese, shore birds, predatory birds, songbirds and nongame birds, fur bearers, game mammals, predatory and other mammals. The basic considerations of conservation are adequately covered in Part I. The author presents a historical review, of conservation, and then discusses the need for conservation; essentials of life; soil; and water. Administration of conservation is covered in Part VI--Solving the Problem. The author in this section presents some food for thought. The various agencies concerned with wildlife conservation are indicated in this part of the book, and the activities of the agencies in this field are summarized briefly. Besides pertinent references at the end of each chapter, the book contains an appendix which consists of an annotated bibliography. In a short introduction to this bibliography, the author states: "These are the books which the author considers the core library for reference work in biological conservation." Another appendix is a directory of useful educational films related to wildlife. Very well illustrated and indexed, the book is a valuable asset to any student of conservation in general or wildlife conservation in particular. Although intended as a college text, this book is valuable to any individual who is interested in obtaining a basic foundation of facts and ideas on conservation.

--J. Pileggi

Bulletin of the Japanese Society of Scientific Fisheries, vol. 19, no. 4, 1953, 419 p., illus., printed in English and Japanese. The Japanese Society of Scientific Fisheries, Tokyo, Japan. In addition to many others, this bulletin contains the following scientific papers: "Study on the Netting Cords--V. On the Mechanical Properties of Twine," by Kenji Masuzaki and Fumio Fukazawa; "The Relation Between the Mouth Heightsof the Square Part of Small Trawl Net and Its Pulling Velocity," by Tihiro Miyazaki; "Mechanical Action of the Otter Board of the Trawl Net," by Tasae Kawakami; "On the Pull of Fish Caught by Fish Hook," by Yasuo Ohshima; "Ecological Analysis of Pelagic Shoals--I. Analysis of Salmon Gill-Net Association in Aleutian. II. Distribution of Fishes on the Gill-Nets," by Hiroshi Maeda; "Basic Study of Fish School Research by Fish Finders," by Takio Yokota, Toshio Kitagawa, and Tadahiko Asami; "On the Preservation Test of Fish Net by Antibiotic Fish Oils (Preliminary Report)," by Yukio Tomiyasu and Masamichi Toyomizu; "Microbiological Studies on the Weakening of Fishing Nets--III. The Microbiological Deterioration of Fishing Nets During Storage," by Hajime Kadota; "Handling Effect upon Biochemical Change in the Fish Muscle Immediately after Catch--I. Difference of Glycolysis in the Frigate Mackerel Killed by Various Methods," by Keishi Amano, Masamichi Bito, and Toshiharu Kawabata; and "Handling Effect upon Biochemical Change in the Fish Muscle Immediately after Catch--II. Changes of Acid-Solubles Phosphorus Compounds of Frigate Mackerel Muscle," by Masao Fujimaki and Kenzo Kojo.

Cooking Frozen Foods, by Hermina Dohogne, Circular 594, 8 p., illus., printed. Extension Division, Oklahama A. & M. College, Stillwater, Oklahoma. Contains instructions on the care of foods (including fish) when taken from the freezer, refreezing thawed foods, thawing frozen foods, and cooking frozen foods (including fish),

"Data on Dolphin, Yellowfin Tuna and Little Tuna from East Africa," by James E. Morrow, article, Copeia, February 19, 1954, No. 1, p. 14-16, printed. The American Society of Ichthyologists and Herpetologists, Baltimore 2, Md. In 1950 the Yale East African Expedition examined a few specimens of dolphin (Coryphaena hippurus Linnaeus), yellowfin tuna (Thunnus albacora Lowe), and little tuna (Euthynnus affinis Cantor), that were collected along the East African coast between Mombasa and Zanzibar. The weight-length relationship and various measurements made on these specimens are discussed. Although the data presented are fragmentary, the lack of biological knowledge concerning these fish together with the increasing interest in the biology of the tunas suggest that this brief report may be worthwhile.

Determinations of Free and Bound Ascorbic Acid in Fishery Products, by W. H. Hastings and C. Floyd Spencer, Contribution No. 3, 4 p., printed. (Reprint from Journal of Marine Research, vol. XI, no. 2, 1952, pp. 241-244.) School of Fisheries, University of Washington, Seattle 5, Washington. This is a preliminary report of a survey of ascorbic acid in fish and shellfish. Ascorbic acid is found in two different forms in fish tissue. One form, soluble in 95 percent ethanol, constitutes approximately 85 percent of the total vitamin C content; and the other form, which is insoluble in 95 percent ethanol, constitutes approximately 15 percent of the total. Certain fish products have sufficient ascorbic acid to be of importance as dietary sources. Retention of the vitamin on processing varies with different fish products.

Fishes of the Marshall and Marianas Islands, vol. 1--Families from Asymmetrontidae through Siganidae, by Leonard P. Schultz and Collaborators, Bulletin 202, 717 p., illus., printed, $2.75. Smithsonian Institution, U. S. National

Museum, Washington, D. C., 1953. (For sale by Superintendent of Documents, Washington 25, D. C.) This is a descriptive catalog of the fishes collected in the Marshall Islands in connection with, and after, the atom-bomb tests of Operation Crossroads in 1946. In addition, it includes material from the southern Marianas Islands and contains descriptions of new species and of new genera from various other areas of the tropical Indo-Pacific region, whenever these new forms were found and were needed in the clarification of the species of fishes encountered in the faunal area under investigation. The study of those specimens on which this report is based and their comparison with specimens from other faunal areas of the tropical Indo-Pacific region show conclusively: (1) that the vast Indo-Pacific fauna cannot be properly interpreted on a local basis, and that to approach a correct conclusion in identification, each species must be compared with all its close relatives from the east coast of Africa to the west coast of the Americas; (2) to place the correct scientific name on specimens usually required a tentative revision of the genus where no revision existed; (3) the investigator must study the original descriptions of each species, augmented by redescriptions of type specimens, and must not rely on unverified descriptions in the literature; and (4) no reliance can be placed on lists of fishes that are based entirely on collections from a single group of islands, or that lack supporting descriptions and figures. In the discussions following some of the family and generic names, information pertinent to the relationships of the genera and species, respectively, are included. In some instances, references to important literature have been included. In certain families and genera, in which the number of pelvic and branched caudal rays are constant for all species, these counts are noted in the discussion and omitted in the descriptions of the species.

(FAO) Program of Work and Budget for 1953 (As Approved by the Sixteenth Session of the Council), 175 p., printed. Food and Agriculture Organization of the United Nations, Rome, Italy, December 1952. Contains the Program of work and budget for 1953 and reviewed and approved by the Council at its Sixteenth Session. The organization's plans and work for fisheries are also included.

(Department of the Interior) 1953 Annual Report of the Secretary of the Interior (For the Fiscal Year Ended June 30), 425 p., illus., printed, indexed, $1.25. U. S. Department of the Interiro, Washington, D. C. (For sale by the Superintendent of Documents, Washington 25, D.C.) This publication contains the annual reports of the various agencies of the Department of the Interior, including the Fish and Wildlife Service. Included under Fish and Wildlife Service are summaries of its various activities. Specifically discussed are utilization of fishery resources (describes the activities of the Branch of Commercial Fisheries); administration of Alaska fisheries; Pribilof Islands fur-seal industry; maintenance of inland fisheries; research in fishery biology (coastal, inland, marine, and shellfish fisheries); Federal aid to state projects for the restoration of fish and wildlife; river basin development and wildlife needs; international cooperation in conservation (international conservation agreements and technical cooperation); and other activities.

Know Your Oklahoma Fishes, by H. C. Ward, 40 p., illus., printed. Oklahoma Game and Fish Department, Oklahoma City, Oklahoma. There are 23 known fish families and more than 150 species found in Oklahoma. Sixteen of the families and about one-third of the species are included in this booklet, with a brief discussion accompanying each species. This booklet should help the sportsmen and elementary and high school groups become more familiar with some of the important fishes of Oklahoma.

Norges Fiskerier, 1951 (Fisheries Statistics of Norway), Norges Offisielle Statistikk, Series XI, no. 149, 155 p., illus., printed in Norwegian with table of contents also in English, Kr. 3.50 net (50 U. S. cents). Fiskeridirektoratet, Bergen, Norway. (Printed by I Kommisjon Hos H. Aschehoug & Co., Oslo, Norway, 1953.) Contains the official annual fisheries statistics of Norway by districts. Includes quantity, value, and average prices for all species of fish caught commercially. Also gives statistics on number of fishermen and craft, and number and type of gear, as well as data on fish-processing plants. Information on utilization of catch and on participation by men and craft is also given from the most important sections of the fishing industry. Tables showing Norwegian fishermen's catch in the fisheries west of Greenland are also included. Also contains a list of scientific and common names (in four different languages) of fish, crustaceans, mollusks, and other aquatic organisms in Norwegian waters; drawings of the principal species of fish, crustaceans, and mollusks; and drawings of the different types of fishing gear.

"Postlarvae and Young of the Menhaden (Brevoortia tyrannus) in Brackish and Fresh Waters of Virginia," by William H. Massmann, Ernest C. Ladd, and Henry N. McCutcheon, article, Copeia, February 19, 1954, No. 1, p. 19-23, illus., printed. The American Society of Ichthyologists and Herpetologists, Baltimore 2, Md. Describes a study of the distribution and relative abundance of postlarval and young menhaden in the brackish and fresh waters of Virginia. Plankton samples from brackish and fresh waters in the James, Chickahominy, Pamunkey, and Mattaponi rivers established the presence of larval menhaden in the fresh waters of these rivers. Minnow-seine sampling in the Rappahannock River demonstrated that young menhaden were concentrated just above brackish waters. The distribution of young menhaden in surface-trawl hauls appeared to be similar to the distribution pattern deduced from minnow-seine samples. Menhaden averaging 94 mm. in standard length were most abundant immediately upstream from brackish water. Although menhaden were found 15 miles further upriver by surface trawl than by seine, the trawl obtained larger samples than did the seine; therefore, the wider distribution may have reflected more effective sampling.

Production and Harvest of Bait Fishes in Ponds, by Sheldon B. Hedges and Robert C. Ball, Miscellaneous Publication No. 6, 30 p., illus.,

printed. Michigan Department of Conservation, Ann Arbor, Mich., June 1953. Describes experiments conducted to determine the feasibility of raising bait fishes in farm-type ponds. These experiments demonstrated that many of our native bait fishes can be successfully raised in farm-type ponds, and as a result the bait dealer can reduce his transportation costs and have the bait available when the demand is highest. Thus by pond rearing of bait fishes, the demands of the fishermen for bait would in part be met and some of the pressure would be removed from natural waters. This report describes the ponds used in the experiments, the aquatic plants, and fertilization. It also includes spawning observations of four types of bait fishes, and discusses growth and production and value of fish produced. Describes several methods of removing the fish from a pond. "Of these methods," according to the authors, "the glass traps are the most flexible and have proven an effective way to remove fish from ponds. The glass traps can be used in any kind of pond and can be operated effectively and inexpensively by one man. The minnows taken in glass traps are less likely to be injured than those taken by other means and as a result the loss of glass-trapped minnows is lower." The authors point out that a large capital outlay is necessary to enter the minnow-rearing business on a scale that will afford a full-time income, and that the hazards of rearing, handling, and selling bait are great. They suggest that anyone establishing a bait-rearing business without previous experience should do so only after considerable study of methods and problems involved, and perhaps start it as a side line to some other occupation.

Production in Louisiana $33,000,000 (Shrimp, Oyster, Commercial Fish, Employing 31,000 Persons), 2 p., illus., printed. Louisiana Wild Life and Fisheries Commission, 126 Civil Courts Bldg., New Orleans 16, La. Contains a brief history of Louisiana's shrimp and oyster industries. Also includes some interesting facts about the salt-water and fresh-water fish industries of Louisiana.

Report on the Mauritius-Seychelles Fisheries Survey 1948-1949, Fishery Publications: vol. 1, no. 3, 1953, 145 pp. & 5 color plates, printed, US$9.00. British Colonial Office. Printed by Her Majesty's Stationery Office, London, England. (American Agents: British Information Services, 30 Rockefeller Plaza, New York 20, N.Y.) This is a report of the conclusions of a two-year survey (1948-49) made by the research vessel M.F.R.V. No. 1 in the Mauritius-Seychelles area. Included are ancillary notes and observations made by the schooner Sarcelle and other craft from the Seychelles (1947), and in small boats and pirogues at Mauritius from 1943-46. The purpose of the survey was to establish the productivity of the area between the Seychelles and Mauritius, and forming with them the arc of a circle, whose center, 600 miles away, is at the north end of Madagascar. In this area is located a chain of shallow banks—the Constant, the Fortune, the Saya de Malha, the Nazareth, and the Soudan. Part I (The Bottom Fishes of Economic Importance) deals with the inshore fishery of Mauritius, the fresh-water fishery, and the Seychelles fishery; the oceanic banks and dependencies; the bottom fishes of economic importance, the distribution of fish; the recording of fishes and sharks; the problem of poisonous fishes; fishing gear used by the vessel M.F.R.V. No. 1; disposal of the catches; and the fish potential. Part II (The Pelagic Fishes) describes the method of fishing, presents notes on the fishes, and discusses the seasonal abundance of pelagic fishes and catch of pelagic fishes. Part IV presents general considerations and conclusions. Part I, II, and IV were written by J. F. G. Wheeler. Part III, written by F. D. Ommanney, presents the meteorological observations recorded during the survey. A fascinating account of marine life in the depths of the Indian Ocean is presented in this report which should be of practical value to the fisherman and to the marine scientist. Descriptions of fishing grounds around the little-known remote islands of the Indian Ocean are included. Presented in the book are comprehensive notes on fishing gear, marketing of fish, sharks, and turtles. The book also includes five appendices.

Schedule A, Statistical Classification of Commodities Imported into the United States, January 1, 1954 Edition, 1063 pp., printed, annual subscription $3.50 to domestic subscribers and $4.50 to foreign subscribers; these rates include the supplemental bulletins and insert pages for at least one year. Bureau of the Census, U. S. Department of Commerce, Washington, D. C. (For sale by Superintendent of Documents, Washington 25, D. C.) Schedule A is the statistical classification of commodities imported into the United States used in compiling the official United States import statistics. It shows for each commodity description (including fish and fish products, etc.) the commodity code numbers to be shown on import entries and withdrawal forms. In addition it shows the country, customs district, subgroup, economic class, unit of quantity, and flag of vessel classifications used in compiling the statistics. This new edition supersedes the August 1, 1950 edition, corrected to May 1, 1952, and includes all changes made by supplementary bulletins since May 1, 1952. This reprint also provides for many combinations of classifications and some new classifications, resulting in a net decrease of approximately 600 in the number of import commodity classifications. Changes in presentation of the 1954 edition are as follows: (1) The new Schedule is printed in two parts. The first part includes information similar to that shown previously except that duty information is shown only for rates specified in the 1930 Tariff Act and trade agreement rates which are currently in effect. Trade agreement rates of duty which have been in effect since the 1930 Tariff Act, but are no longer in effect, are not shown in the Schedule but will be included in a separate supplement to the new Schedule A. The supplement, which will be of interest primarily to individuals desiring to study the history of changes in tariff duties since 1930, will be available early in the Spring of 1954. The majority of users of the Schedule who are interested in preparing the import documents and those interested in using the current import statistics will be primarily interested in the regular Schedule A. (2) The regular Schedule A is printed in loose-leaf form

and the pages are printed on one side only. This will permit users of the Schedule to put special notes regarding individual classifications relating to the commodities they are interested in on the blank side. In addition, it will permit the reprinting of fewer pages in the future, since it will be necessary to reprint only those pages on which changes have been made. In the past it has been necessary to reprint both the front and back of the page even though changes may have been made only on one side.

Status of the Crab, CHIONOECETES BAIRDI, in the Inshore Waters of Washington and British Columbia, by J. W. Slipp, Contribution No. 2, 5 p., printed. (Reprint from The Wasmann Journal of Biology, vol. 10, no. 2, summer 1952, pp. 235-239) School of Fisheries, University of Washington, Seattle 5, Washington. Summarizes data on the range and distribution of the crab, Chonoecetes bairdi, in the inshore waters of Washington and British Columbia. Contains a brief comment on the size and apparent distributional density of specimens encountered in this study.

"A Survey of the Poisonous Fishes of the Phoenix Islands," by Bruce W. Halstead and Norman C. Bunker, article, Copeia, February 19, 1954, No. 1, pp. 1-11, illus., printed. The American Society of Ichthyologists and Herpetologists, Baltimore 2, Md. This paper contains the results of the first of a series of field investigations on the poisonous fish fauna of the tropical Pacific. The purpose of this study is to provide more accurate data regarding the identification of poisonous fishes. Of the 93 identified species of fish that were tested, 27 species (or 29 percent) were found to be toxic. There were 18 identified toxic specimens in which both the musculature and viscera were tested; 94 percent of these fishes had toxic viscera, but only 28 percent had toxic musculature. Twenty-two percent of the specimens had both toxic musculature and viscera. According to the authors, "additional toxicity tests should be conducted on a larger series of reef fishes taken from representative areas in the Phoenix Islands. Although the aforementioned results cannot be considered conclusive, there is evidence to support the idea that a species may be poisonous in one area and edible in another." Much of the data presented in this report are preliminary in nature and the reader is cautioned about forming premature conclusions. In the opinion of the authors the public health significance of the poisonous fish problem has been grossly underestimated and is worthy of much greater attention than has been received to date.

Twelfth Annual Report of the Atlantic States Marine Fisheries Commission (to the Congress of the United States and to the Governors and Legislators of the Fifteen Compacting States), 45 p., printed. Atlantic States Marine Fisheries Commission, Mt. Vernon, N. Y., December 1953. In this annual report the Commission reports progress on fishery research projects initiated and carried on by the Commission and on its behalf by the U. S. Fish and Wildlife Service. Under the North Atlantic Section of the report are included discussions of projects dealing with lobsters, haddock, clams, ocean perch, shad, yellowtail flounder, Atlantic salmon, sea scallops, freezing fish in the round at sea, reconstruction of the Service's Woods Hole Laboratory, cooperative Federal-State striped bass program, exploratory tuna fishing catch statistics, fishery college in Massachusetts, dams in Connecticut River, dragging operations, and "trash fishing." Under the Middle Atlantic Section there is a discussion of projects dealing with shad, gray sea trout (weakfish), sea scallops, butterfish, Delaware River anadromous fisheries management bill, dams in Delaware River, cooperative Federal-State striped bass program, catch statistics, offshore waste disposal, dragging operations, trash fishing, New Jersey sport-fish inventory, and menhaden studies. The Chesapeake Bay Section includes discussions of projects concerned with croaker, blue crab, shad, Chesapeake Bay Institute, cooperative striped bass program; sport-fishing survey--Patuxent River, Potomac River oyster laws, and joint-legislature committee on migratory finfish. Under the South Atlantic Section a discussion of the following programs is included: shrimp, shad, bluefin tuna, carrying shrimp in refrigerated sea water, cooperative offshore research program, license fees and severance taxes, catch statistics, cooperative striped bass program, gear development, and the vessel Delaware. Another section of the report deals with the pollution project; state catch statistics; Northwest Atlantic fisheries; Amendments No. 1 and No. 2 to the Atlantic States Marine Fisheries Compact--Common Fisheries and Inland Waters; submerged lands bill S. 1901; fisheries research; legislation needed; activity by the fishing industry; statement on "social" legislation in the fisheries; and licenses for salt-water anglers.

TRADE LIST

The Office of Intelligence and Services, Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C., has published the following mimeographed trade list. Copies of this list may be obtained by firms in the United States from that office or from Department of Commerce field offices at $1 per list.

Canneries - United Kingdom, 7 p. (February 1954). Includes fishery products canneries--gives the size of the firm and type of product packed. The report points out that 21,000 metric tons of fish were canned in the United Kingdom in 1952.

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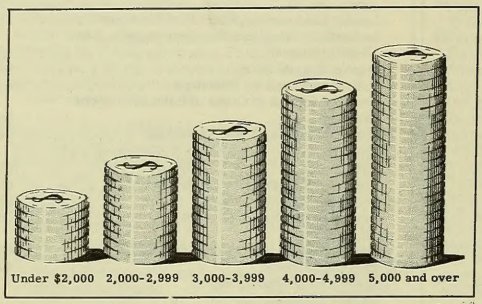
FISH AND SHELLFISH PREFERENCES OF HOUSEHOLD CONSUMERS--1951

PART III - Summary by Income Groups

Fishery Leaflet 409, Fish and Shellfish Preferences of Household Consumers--1951 (Part III - Summary by Income Groups), is the third in a series of reports resulting from a nationwide survey of fish and shellfish preferences of household consumers, conducted under the auspices of the Fish and Wildlife Service in October 1951. Of 2,473 persons questioned concerning their individual households, 2,335, or 94.4 percent, indicated that their households consumed some kind of fishery product, and only 138, or 5.6 percent, indicated that their households consumed no fishery product of any kind. Many of the latter were small 1- or 2-person households. It is interesting to note the high percentage of the population of the United States that used fishery products (regardless of volume) during the 12 months preceding the survey.



In those households where fish and shellfish were used in some form, questions in detail were asked about consumption of fish and shellfish, particularly frozen fish and shellfish. The questionnaire stressed the latter items because of the more pressing need for market expansion of those products and the trend in that direction. The frozen fish and shellfish market is plagued with problems of heavy imports, occasional oversupply of domestic products, misjudging of market demand, etc. Increased consumption offers a solution, at least in part, to these problems as well as a contribution to the well-being of consumers. The survey includes information of value to all segments of the domestic fishery industries concerned with increasing fish and shellfish consumption in the United States.

This report summarizes the information obtained from the survey on a national basis according to various income groups into which the respondents who provided family income data could be classified. In addition, data are shown for the group in the sample which furnished no information with respect to family income either because they did not care to, or did not know.

Free copies of Fishery Leaflets 409, 408, and 407 (Parts III, II, and I) are available from the Division of Information, U. S. Fish and Wildlife Service, Washinton 25, D. C.