

# TRENDS AND DEVELOPMENTS

## Alaska

SILVERS RETURN HOME TO KETCHIKAN HATCHERY: A total of 114 adult silver (coho) salmon had returned up to September 8, 1958, to the pond at the Ketchikan Deer Mountain Hatchery according to the Director of the Alaska Department of Fish and Game.

These salmon could be identified as they were all marked by the removal of the adipose and left ventral fin when they were released from the hatchery as fingerlings in 1957. The fish are the progeny of eggs taken from seven female silvers at Reflection Lake in October 1955.

The District Biologist in the Ketchikan area who has been in charge of this project said that more silvers are now in Ketchikan Creek and would probably be entering the hatchery pond for at least another month.

The salmon returning to the hatchery from salt water enter Ketchikan Creek and proceed upstream to a ladder which leads the fish by a series of pools into the hatchery pond. These are the same ponds in which the fish were reared to downstream migrants. The ladder was constructed by the Alaska Department of Fish and Game in 1957 to take advantage of the fact that salmon normally return to the area in which they were hatched and reared. This procedure saves much time and costly effort over the usual weir installations and seining used by most hatcheries. The fish are held in the pond areas until ripe when the eggs are taken from them.

The returning silvers are part of an experiment to determine if a suitable brood stock can be produced to return to the hatchery and thus provide a surplus of fry. These salmon fry will be used to start runs in areas which have been opened by fishways and in planting lakes which have been chemically treated to remove the competing and predaceous fish.

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SOUTHEASTERN LAKE SYSTEMS REHABILITATED FOR USE IN SALMON REARING: Six lakes were chemically treated during the late summer by the Alaska Department of Fish and Game in the Petersburg-Wrangell and Ketchikan areas to remove all resident fish, the Director announced on September 8, 1958.

These lakes, three in Ideal Cove and three in the Tsa Cove system in George Inlet, will be planted with salmon when clear of the chemical (toxaphene). These experiments will test the capabilities of the lakes for rearing salmon with the competing and predaceous fish removed. The Alaska Commercial Fisheries Division inaugurated this series of applied research experiments to determine the feasibility of using toxaphene as a tool in salmon management. "It is conceivable that a whole new concept of fresh-water salmon rearing will result from experiments such as these," the head of Division stated.

A previous experiment performed in the Afognak Island area using a different chemical, rotenone, indicated production can be raised as much as 30 times. Toxaphene, which was used in the Southeastern Alaska experiments has the advantage

over rotenone of costing about one-fiftieth as much to treat the same amount of water.

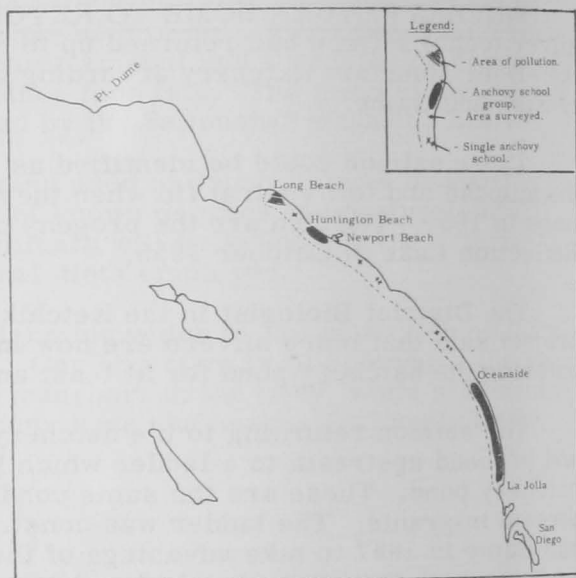


## California

**PELAGIC FISH DISTRIBUTION AND ABUNDANCE OFF SOUTHERN CALIFORNIA SURVEYED (Airplane Spotting Flight 58-8):** The mainland coast from Long Beach to La Jolla, Calif., was surveyed on the afternoon of May 28, 1958, by the California Department of Fish and Game Beechcraft plane to observe the distribution and abundance of pelagic fish schools. Only 1½ hours of flight time was possible, so only a cursory inspection could be made of the inshore area from Long Beach to La Jolla.

Scattered schools of anchovies were observed at most localities between Seal Beach and La Jolla, but school groups were noted only in the Huntington Beach-Newport Beach and Oceanside-La Jolla areas. The Huntington Beach-Newport Beach concentration consisted of 60-80 schools in a band extending from the surf line to one mile offshore. The Oceanside-La Jolla group contained 150-200 schools and was located between the surf line and a point about two miles offshore. In both groups, the offshore schools were typically small and medium in size while those in the surf zone were larger. Some of the size differences noted between inshore and offshore schools may have been a reflection of horizontal dispersal of fishes within a school in the shallow inshore areas as compared to a vertical distribution in deeper water.

As the result of a recent Signal Hill refinery fire, heavy oil and chemical pollution was in evidence at the mouth of the San Gabriel River.



Airplane Spotting Flight 58-8 (May 28, 1958).

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**AERIAL SCOUTING CONTINUED TO STUDY PELAGIC FISH POPULATIONS AND CENSUS OF COMMERCIAL AND SPORT FISHING:** Inshore Area from San Diego to San Francisco Bay (Flight 58-10, Cessna "170" 1359D): The inshore area from San Diego to San Francisco Bay was surveyed by the California Department of Fish and Game airplane spotting flight 58-10 between June 17-20, 1958. The survey was designed to determine the distribution and abundance of pelagic fish schools, and to assess the numbers and distribution of clammers, abalone pickers, skin divers, and hook-and-line fishermen.

With the exception of one day, during which visibility was poor, weather conditions were good, both for low-level shoreline counts and higher-level pelagic fish spotting. Pelagic fish spotting was conducted during the entire four-day flight. During the last two days low-level shoreline and pier surveys were made along most of the coast from Point Arguello to San Francisco.

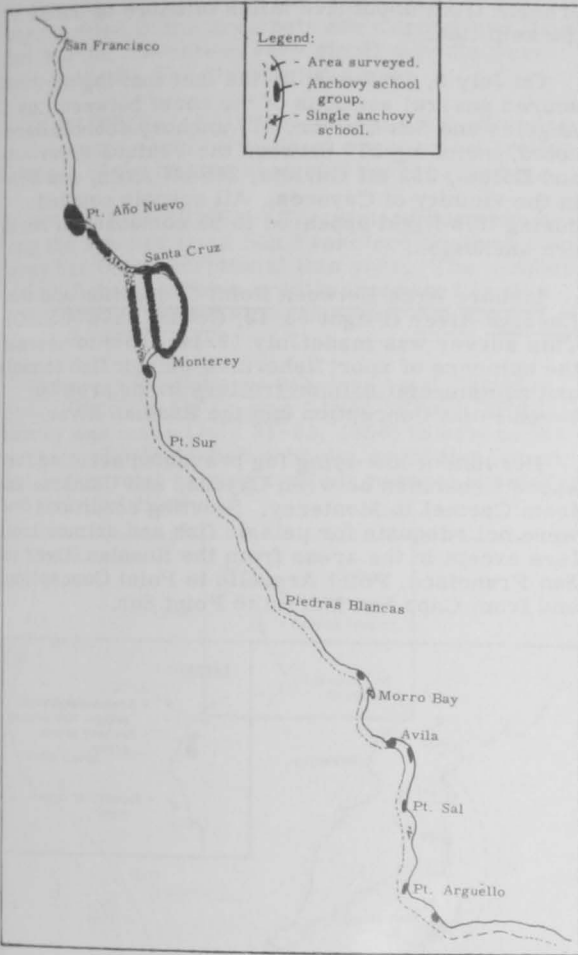
**PELAGIC FISH:** On the first day of the survey, scattered anchovy schools were observed from San Diego to Point Vicente. The only area in which schools occurred in large numbers was between Long Beach and Newport Beach where 250 schools

were counted. These schools were concentrated very close to shore, and many appeared as large, irregular spots in the surf. The Los Angeles-Long Beach harbor contained a scattering of large schools, with a particularly good concentration outside the Fish Harbor breakwater.

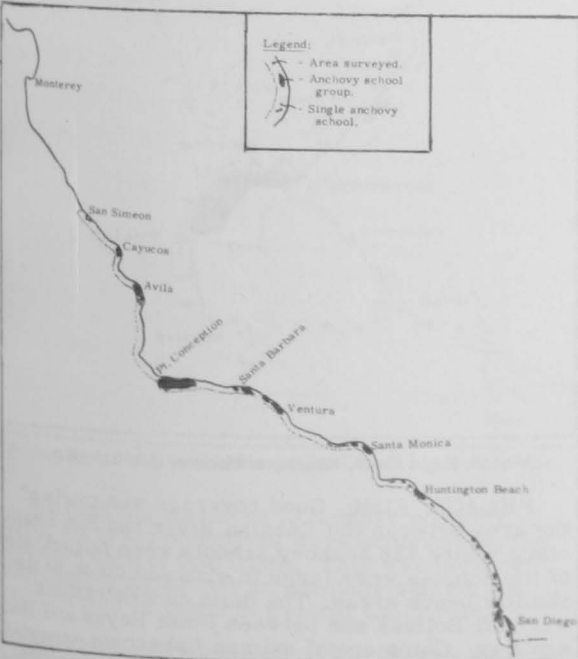
Poor visibility during the morning of June 18 made it impossible to scout the area from Point Vicente to Point Mugu. Small school groups were scattered between Point Mugu and Morro Bay, and moderate-sized groups (80-150 schools) were seen at Ventura, Oceano-Pismo Beach, and Avila.

No schools were seen between Morro Bay and Carmel, but a very heavy concentration was observed throughout Monterey Bay and north to Pigeon Point. Over 2,000 schools were tallied in this area. This major concentration could very well be the result of a southern movement of the large school group reported off San Francisco and Point Reyes during May. The final day of scouting did not reveal any fish from Pigeon Point to San Francisco.

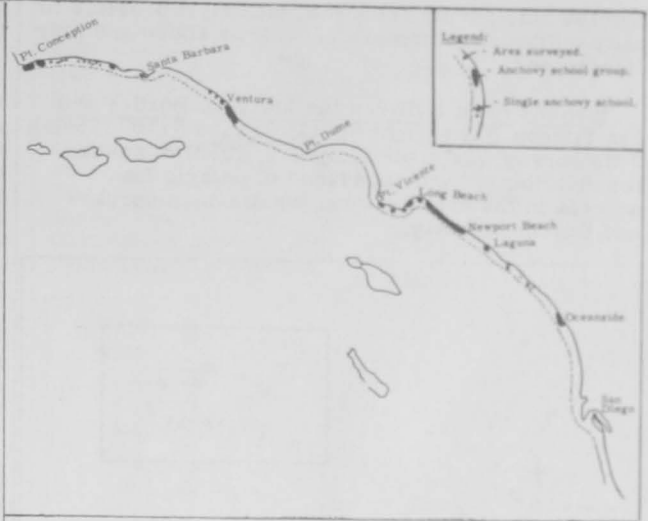
**SHORELINE AND PIER SURVEY:** During the two days devoted to a survey of shoreline activities



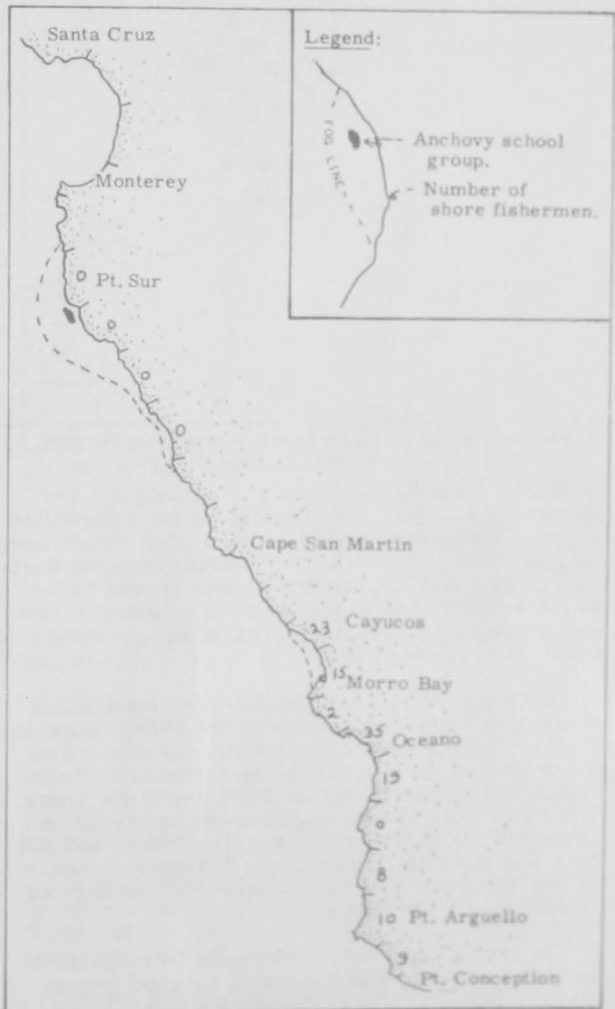
Airplane Spotting Flight 58-10 in Central California area (June 17 through 20, 1958).



Airplane Spotting Flight 58-11 (July 7 through 9, 1958).



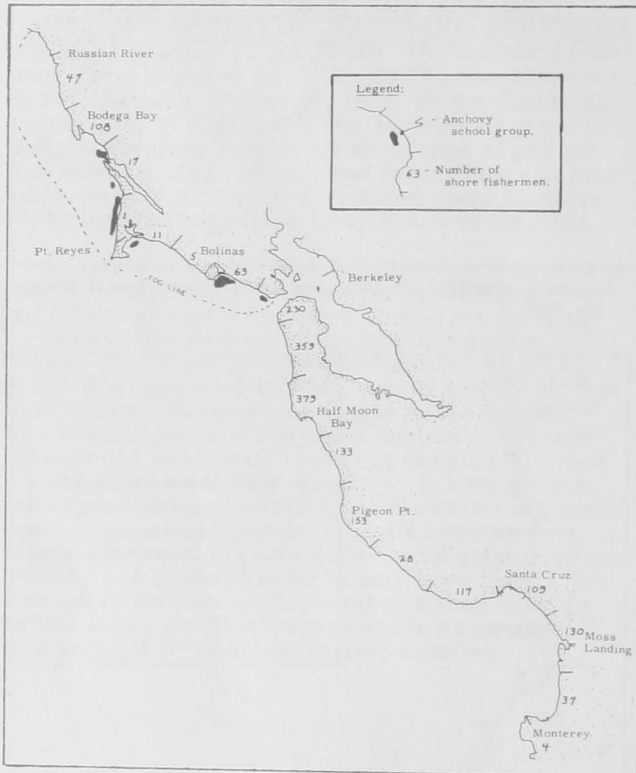
Airplane Spotting Flight 58-10 in lower California area (June 17 through 20, 1958).



Airplane Flight 58-12, Santa Cruz to Point Conception (July 12, 1958).

one low tide period occurred, making it possible to tally the beach clammers as well as shore and pier fishermen.

Inshore Area Between the Mexican Border and San Simeon Bay (Flight 58-11, Cessna "170" 1359D): This survey was made (July 7-9, 1958) to assess the distribution and abundance of pelagic fish schools in the area between the Mexican border and San Simeon Bay.



Airplane Flight 58-12, Russian River to Monterey (July 13, 1958).

Weather conditions were poor throughout the range of the flight. Low clouds and haze prevailed between Santa Monica Bay and San Diego while low clouds and fog hindered observations between Santa Monica Bay and San Simeon. Some breaks in the weather made spotty observations possible in certain areas, but in general, good coverage of the coast was not possible.

On July 7, 1958 a total of 520 anchovy schools was counted between San Diego and Point Mugu, including 155 very close to shore in the vicinity of Santa Monica harbor, 138 close to shore at Huntington Beach, and 87 off La Jolla and Point Loma. The remainder of the schools were scattered in groups of 30 or fewer between San Onofre and Del Mar and in Santa Monica Bay. Extensive patches of red water were observed between Los Angeles Harbor and Point Loma.

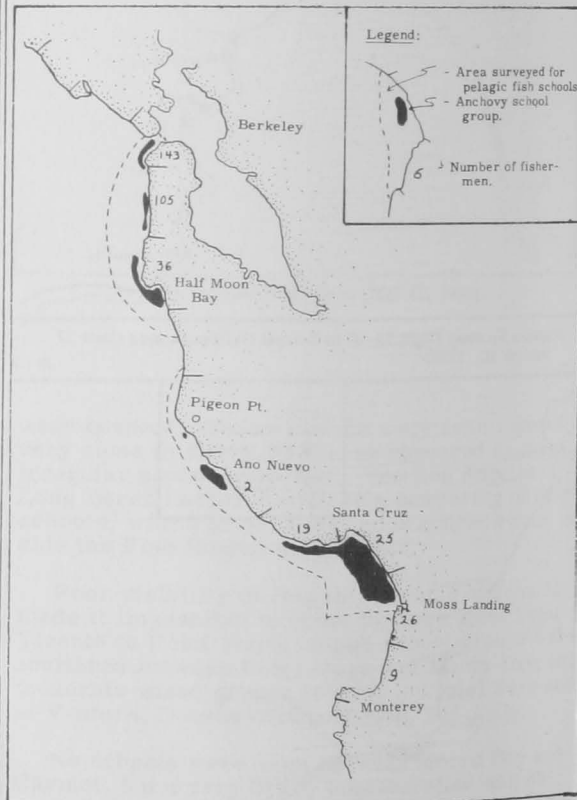
On July 8, 1958 only in the area from Gaviota to Point Arguello was the visibility good enough to permit aerial observations. No fish schools were seen between Point Conception and Point Arguello, but 442 anchovy schools were tallied between Gaviota and Point Conception. These schools varied in size from small to quite large and were

present from about five miles offshore to inside the kelp line.

On July 9, 1958 despite the fact that fog obscured several sections of the coast between Los Angeles and San Simeon, 817 anchovy schools were noted, including 277 between the Ventura River and Goleta, 262 off Gaviota, 215 off Avila, and 58 in the vicinity of Cayucos. All schools counted during this flight appeared to be composed of northern anchovies.

Inshore Area Between Point Conception and the Russian River (Flight 58-12, Cessna "170" 1359D): This survey was made (July 12-14, 1958) to assess the numbers of sport fishermen, pelagic fish schools, and commercial salmon trollers in the area between Point Conception and the Russian River.

Persistent low-lying fog prevented scouting for shore fishermen between Cayucos and Cambria and from Carmel to Monterey. Scouting conditions were not adequate for pelagic fish and salmon trollers except in the areas from the Russian River to San Francisco, Point Arguello to Point Conception, and from Cape San Martin to Point Sur.



Airplane Flight 58-13, Berkeley to Monterey (July 21, 1958).

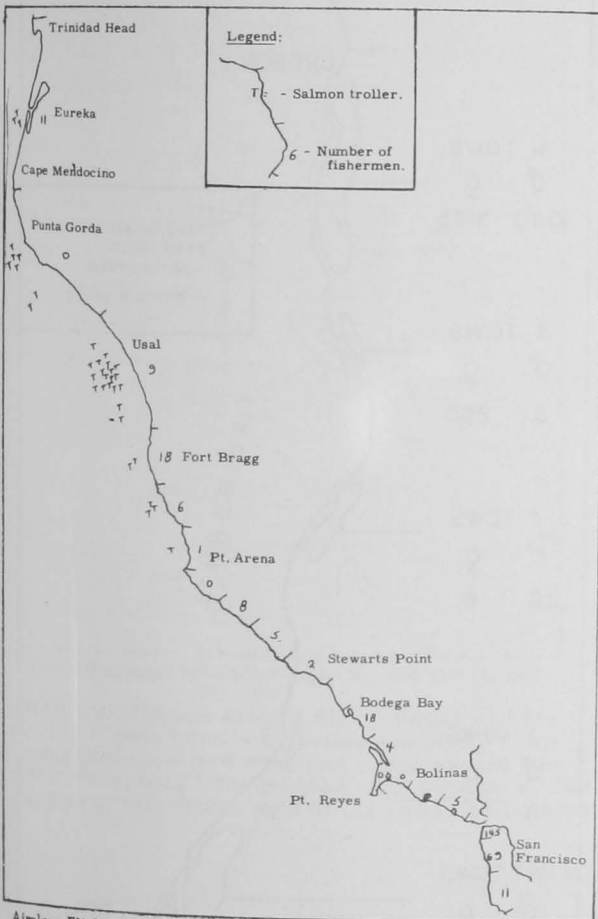
**PELAGIC FISH:** Good coverage was made of the area between the Russian River and San Francisco where 726 anchovy schools were tallied. Most of the schools were large in size and close to the shallow beach areas. The main concentrations were off Bolinas and between Point Reyes and Bodega Bay. Commercial salmon fishermen reported these schools to be of the same size composition (0- and 1-age group) as in the past two months.

For the first time in five years anchovy schools were sighted in the area between Carmel and Cape San Martin. Seventeen very small schools were seen in the Pt. Sur-Partington area.

**COMMERCIAL SALMON TROLLERS:** No adequate census could be made of commercial trollers as much of the fishing area was covered by fog.

**SPORT FISHERMEN:** The striped bass run along the beaches from San Francisco South to Monterey has been exceptional this year. The numbers of surf fishermen have greatly increased in this area--almost tenfold since the week-end flight of March 2, 1958.

**Inshore Area Between Monterey and Trinidad Head (Flight 58-13, Cessna "180" 3632C):** This survey was made (July 21-23, 1958) to assess the numbers of pelagic fish schools, sport fishermen, and commercial salmon trollers between Monterey and Trinidad Head.

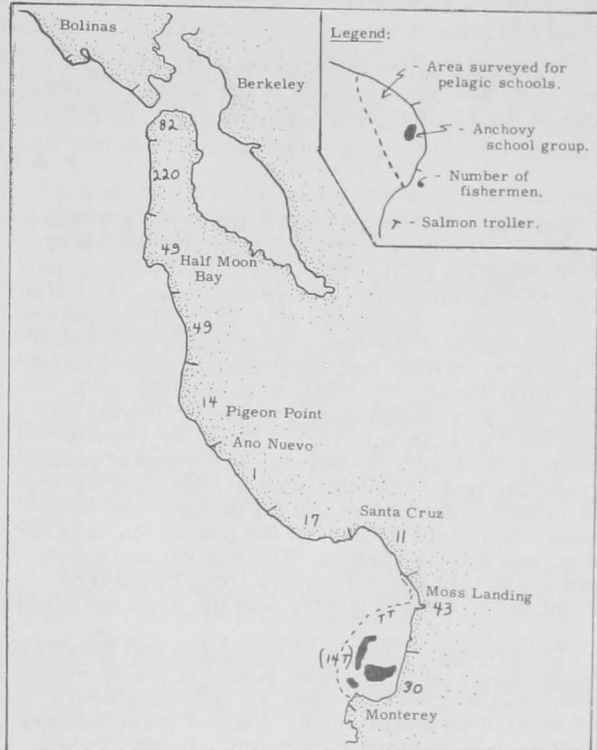


Airplane Flight 58-13, Trinidad Head to San Francisco (July 22, 1958).

Although fog continued to hamper scouting activity, all of the objectives were achieved during the three days of this flight. This was the first time since May 22 that an adequate pelagic fish census could be made in Central California.

The results of flights 58-4, 58-10, and the present flight indicate a possible movement of the greater mass of young anchovies from the Bodega Bay region south into Monterey Bay. No sardine schools were observed.

**PELAGIC FISH:** An extremely large concentration of anchovy schools was sighted in Monterey Bay. Nearly the entire area from the surf zone to five miles offshore contained schools. The heaviest concentrations were observed off Santa Cruz where over 4,000 schools were tallied. Bait fishermen operating in Monterey Bay report these schools to be composed of small fish (0- and 1-age group). Similar size anchovies have been reported from all along central California (Point Conception to Eureka) by commercial and ocean sport fishermen.



Airplane Flight 58-13, Berkeley to Monterey (July 23, 1958).

The number of schools tallied on this flight cannot be directly compared to the numbers sighted on previous flights this year as the average size of the most recently observed schools was much larger. Actually, the increase in abundance since May is considerably greater than is indicated by the slight increase in number of schools.

The behavior of anchovies to first appear as small schools several miles from the shoreline in spring and then gradually form into large masses and move into the shallow beach areas has been noted for several years in southern California. This phenomenon was observed in central California in 1954 and again this spring.

**COMMERCIAL SALMON TROLLERS:** Relatively few commercial trollers were noted on this flight. In all, 51 were sighted: 16 in Monterey Bay and 35 in the area from Elk to Eureka.

**SPORT FISHERMEN:** Striped bass fishermen were observed in large numbers along the beaches from the Golden Gate south to Pigeon Point. On July 23, 371 surf fishermen were tallied in this area. There were 115 surf fishermen on May 2 before the striped bass run had fully materialized and 1,019 on July 13.

**CHANNEL CATFISH SPAWNING EXPERIMENTS SUCCESSFUL:** Channel catfish have been spawned successfully for the first time at the Central Valleys Warmwater Fish Hatchery at Elk Grove, according to the California Department of Fish and Game.

The Department's channel catfish production program was unsuccessful until a mechanical device was developed which "fans" the eggs until they are hatched. In nature, the female keeps the eggs in motion by fanning them with her tail until they are hatched. From egg to fry usually takes about 3 or 4 days.

Fish used in the experiment were mostly 4-year-olds and were trapped in the Honcut Slough area of the Feather River and the Sutter Bypass.

The fish were paired and placed in 14 pens in one of the hatchery ponds. Each pen contained a length of tile 2 feet long by 18 inches in diameter. When the eggs, which are all loosely connected, floated to the surface, they were removed to the artificial incubator where they were hatched.

The Department hopes to obtain 130,000 eggs from which to hatch fingerlings for experimental planting in suitable waters throughout the State. Already 21,000 catfish fingerlings have been scheduled for planting in Southern California.

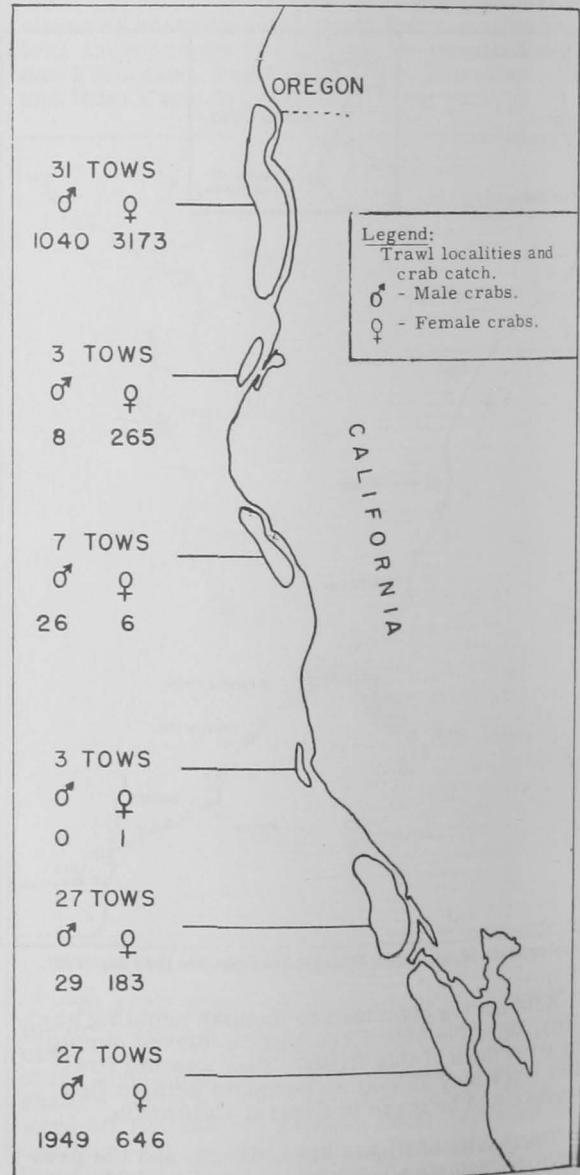
Fingerlings will be distributed to other regions for similar experimental plantings as soon as they are large enough to be planted. Central Valleys Hatchery does not have facilities to hold these fish beyond the fingerling stage.

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**DUNGENESS-CRAB DISTRIBUTION, ABUNDANCE, AND SIZE STUDIES CONTINUED (M/V N. B. Scofield Cruise 58-S-3-Crab):** To investigate the distribution, relative abundance, and size composition of dungeness crab (*Cancer magister*) in areas beyond the operational range of the commercial crab fleet was the principal objective of the April 15-May 27, 1958, cruise of the N. B. Scofield, a research vessel of the California Department of Fish and Game. Other objectives were (1) to determine the relative savings of small crabs for traps equipped with 4-, 4 $\frac{1}{4}$ -, and 4 $\frac{1}{2}$ -inch circular escape ports; and (2) to tag crabs with suture-type tags as part of the population, migration, and growth studies. The central and northern California coastal waters from Pescadero Point to the Oregon border was the area surveyed.

**Distribution, Relative Abundance, and Size Composition:** Seventy-two tows made with otter-trawl gear caught 3,052 male and 4,274 female crabs; 26 other tows caught none. Each of these 98 tows averaged 30 minutes in duration. Depths fished ranged from 9 to 134 fathoms with the majority of tows made in depths between 20 and 40 fathoms. Best catches of male crabs were made off San Francisco in 30 to 45 fathoms and off Trinidad Head in 25 to 30 fathoms. Female crabs were in greatest abundance in depths of 16 to 30 fathoms between Trinidad Head and the Klamath River. Shoulder widths (straight-line distance across the carapace and immediately anterior to the outermost spines) of trawl-caught males ranged from 77 to 213 millimeters. Twelve percent of the males were legal (at least 160 mm. in shoulder width or 7 inches in greatest width) and 88 percent were sublegal. Shoulder widths of females ranged from 78 to 180 millimeters with the modal group at 142 millimeters.

Twenty-seven traps with no provision for escapement, set in the Crescent City-Trinidad Head area, caught 463 crabs. Thirty-two (7 percent) were legal males, 30 (6 percent) were sublegal males, and 401 (87 percent) were females. Thirteen similar traps in the Big Flat-Usal area caught 225 crabs. Of this total, 6 (3 percent) were legal males; 66 (29 percent) were sublegal; and 153 (68 percent) were females.



M/V N. B. Scofield cruise 58-S-3 (April-May 1958).

**Escape Opening Studies:** Fifty-seven sets each were made with crab traps equipped with 4-, 4 $\frac{1}{4}$ -, and 4 $\frac{1}{2}$ -inch escape ports. The results indicated a reduction of only 16.7 percent in the catch per trap of legal-size male crabs, but 87.5 percent less sublegal male crabs per trap was caught in the 4 $\frac{1}{2}$ -inch escape ports as compared with the 4-inch escape ports.

**Crab Tagging:** A total of 1,054 male crabs was tagged with the "Van Engle" suture tag. This tag consists of stainless steel suture wire with a Peterson disc and is attached along the epimeral line (line of separation of the carapace at time of molting). The advantage of this tag is that it is not lost at time of molting. Sizes of tagged crabs ranged from 118 to 185 millimeters in shoulder width. The majority of tagged crabs had shoulder widths between 140 and 170 millimeters.

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**YELLOWFIN TUNA AND SKIPJACK TAGGED ALONG BAJA CALIFORNIA COAST (M/V Independence Cruise 58-C-1-Tuna):** Fishing was conducted (May 3-July 15, 1958) along the coast of Baja Cali-

skipjack as a part of population, growth, and migration studies; to test a monel metal clamp, for securing the ends of "spaghetti"-type tags, in an effort to shorten tag application time; to collect marine organisms associated with the tuna fishery; and to make limited oceanographic observations.

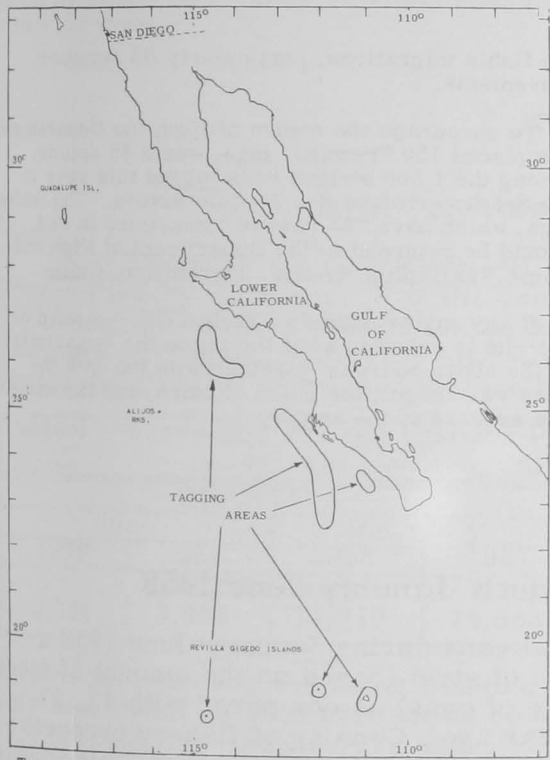
A total of 1,713 yellowfin and skipjack tuna was tagged and released during this cruise along the coast of Baja California and offshore the Revilla Gigedo Islands. The yellowfin tuna were measured to the nearest one-half centimeter, but the skipjack were not measured. By the end of the cruise, 31 of the tagged yellowfin and 10 skipjack had been returned to the California State Fisheries Laboratory. The most significant of these tag returns was a yellowfin which was tagged at the Revilla Gigedo Islands and recovered 46 days later off Baja California, approximately 300 miles to the north. This movement indicates that there may be an interchange of fish between these two important fishing areas.

A small monel metal clamp was used in place of a knot to secure 436 of the tags used on this cruise. This clamp was considered superior in ease of application to other clamps tried previously, but was slower to apply than a knot. There was no obvious evidence that the holding quality of the clamp is better than a knot.

Marine organisms were collected from live-bait hauls, night-light stations, and by hook and line at 21 different stations.

Sea-surface temperatures were recorded at all fishing and baiting areas. There was no obvious relationship between the catch of tuna and the surface temperatures (64.6° to 80.1° F.) encountered on the fishing grounds. Surface temperatures in the baiting areas ranged from 62.1° to 70.2° F. Most successful bait hauls were made at the lower end of the temperature range.

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Tuna-tagging cruise 58-C-1-Tuna (April 30, 1958-July 15, 1958).

fornia and offshore around Alijos Rocks and the Revilla Gigedo Islands by biologists of the California Department of Fish and Game aboard the commercial tuna fishing vessel *Independence*. The purpose of this cruise was to tag yellowfin tuna and

by the U. S. Fish and Wildlife Service is nearing the end of the second year of a two-year program.

The screen was designed and built by the U. S. Bureau of Reclamation after four years of research conducted by the Bureau and U. S. Fish and Wildlife Service, with the California Department of Fish and Game also assisting in the research.

The screen utilizes the biological fact that fish fry float down stream tail first, instinctively avoid-

**NEW TYPE FISH SCREEN PROVES SUCCESSFUL:** The Tracy Fish Screen, which is located at the Tracy Pumping Plant on the Delta-Mendota Canal in Central California and is designed to keep very small fingerling fish from the destructive maws of the giant pumps, is reported to be operating efficiently.

Preliminary reports on tests of the screening system, an innovation in fish-saving facilities, have shown that the device is doing exactly what it was intended to do. Evaluation of the system

ing obstructions in their paths. Designed like a giant venetian blind with vertical louvers, the screen is placed at a 15° angle to the flow of water. Each individual louver is placed with its broad side 90° to the water flow.

The tiny fish, warned by the water turbulence set up by the louvers, are able to swim against the slow moving current while maintaining their downstream progress until they float into a bypass channel which takes them past the dangerous pumps. Collected, they are returned to the river at a downstream point, away from the pumps.

In the first year of testing, from February through September of 1957, an estimated 3,541,000

Note: Also see Commercial Fisheries Review for March 1957 p. 28 and November 1956 p. 49.

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**TAG RETURNS SHOW INCREASE IN STRIPED BASS FISHING:** Ocean striped bass fishing in the San Francisco area has not been merely exceptional this year--it has been sensational, the California Department of Fish and Game states.

In all the previous striped bass tagging programs, the Department has received only two tags from ocean fishermen. A total of 76 tags has been returned from the 1958 tagging program alone--10 tags from beach-side anglers.

The Department hopes to learn whether present regulations adequately safeguard the popular striped bass fishery. It is also trying to learn more about

fish, most of them as small as five-eighths of an inch long, were rescued from the pumps. This year, in only two months of testing, the U. S. Fish and Wildlife Service reported 3,437,000 fish rescued.

Some 23 species of fish have been recognized in the fish-holding tanks. The major species are striped bass, catfish, salmon, and shad, but freshwater perch and smelt, as well as sturgeon also have been rescued. Striped bass and catfish are mostly in the fry category, averaging about five-eighths of an inch in length, but they have ranged up to 6-8 inches. Salmon rescued are from 1½ inches to 5 inches long and sturgeon from 6 to 8 inches.

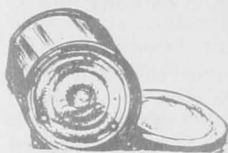
the fish's migrations, particularly its summer movements.

To encourage the return of tags, the Department has placed 150 "reward" tags, worth \$5 apiece, among the 4,500 striped bass tagged this year in the Sacramento and San Joaquin Rivers. The white tags, which have "\$5 reward" imprinted in red, should be returned to the Department of Fish and Game, 722 Capitol Avenue, Sacramento, Calif.

If any angler catches a tagged fish--reward or not--he is asked to send the tag to the Department at the above address, together with the date the bass was caught, the place of catch, and the name and address of the angler.



## Cans--Shipments for Fishery Products January-June 1958



Total shipments of metal cans during January-June 1958 amounted to 47,211 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 62,127 tons in the same period a year ago. Canning of fishery products in January-June this year was confined largely to tuna. Also packed were light for shrimp, mackerel, and sardines during the first six months of 1958.

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.



## Croakers

**CROAKER TAGGING PROGRAM IN CHESAPEAKE BAY:** The possibility of catching a fish tagged with a red disc in Tidewater Virginia is "pretty good," biologists claim, for during the past spring and summer 4,093 marked croakers have been released in Virginia rivers by fishery biologists of the Virginia Fisheries Laboratory, Gloucester Point. Each disc carries a serial number and return address. When a tag is returned to the Laboratory, its number can be checked against records

by the scientists, allowing them to determine the direction in which the fish has moved and how long it has avoided capture. This information is sent promptly to the fisherman who has returned the tag, and for his services, he receives a small reward.

In general, croakers move up-river and up-bay during the spring. Tagged fish released in the Lower



er Chesapeake Bay in April of this year have been caught in Mobjack Bay, Lynnhaven Beach, and Beach Point on the Rappahannock River. One fish released at Tue Marsh Light, just off the mouth of the York River, was caught 12 days later at Parrott's Island in the Rappahannock River.

Croakers made their longest runs in the Bay during May. Fish tagged at the mouth of the Rappahannock were later caught in Maryland near Cove Point--above Patuxent River--Choptank River on the Eastern Shore, Annapolis, and Baltimore. One that wandered south was caught in a haul-seine near Walnut Point, N. C.

In summer most croakers do not move far from the tagging locality. Last summer, one tagged at Gloucester Point was recaptured on hook and line on the same spot by the same fisherman three times within six weeks.

In mid-August over 600 croakers were tagged and released in Chesapeake Bay with the hope that many of them will be caught this fall and winter, and the tags returned, enabling biologists to trace the fall migration. Croaker wintering grounds in the ocean may be identified by recaptures from trawl fishermen working on the continental shelf. If 1958 tags are recaptured in Chesapeake waters next summer this will suggest that the same population of croakers returns to the Bay from season to season. A few 1957 tags were recaptured this summer in local waters.

The following numbers of fish have been tagged this year: York River, 2,092; James River, 734; Rappahannock River, 546. Fifty-five of these tagged fish have been recovered by sport fishermen and the tags returned to the Laboratory. The cooperation of every fisherman contributes to increasing knowledge of fish movements and habits.



### Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-JULY 1958: Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, 3.0 million pounds (value \$1.8 million) of fresh and frozen fishery products were purchased in July by the Military Subsistence Market Centers. This exceeded the quantity purchased in June by 30.6 percent and was 0.7 percent above the

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Market Centers, July 1958 with Comparisons

QUANTITY				VALUE			
July		Jan.-July		July		Jan.-July	
1958	1957	1958	1957	1958	1957	1958	1957
(1,000 Lbs.)				(\$1,000)			
2,984	2,963	14,579	14,988	1,809	1,490	8,409	7,635

amount purchased in the same month a year ago. The value of the purchases this July was higher by 38.5 percent as compared with the previous month and higher by 21.4 percent from July a year ago.

For the first seven months of 1958 purchases totaled 14.6 million pounds, valued at \$8.4 million--a decrease of 2.3 percent in quantity, but higher by 10.1 percent in value as compared with the same period of 1957.

Table 2 - Canned Fishery Products Purchased by Military Subsistence Market Centers, July 1958 with Comparisons

Product	QUANTITY				VALUE	
	July		Jan.-July		July	Jan.-July
	1958	1957	1958	1957	1958	1958
	(1,000 Lbs.)				(\$1,000)	
Tuna . . .	779	-	2,562	1,450	398	1,288
Salmon . .	-	9	1,400	1,001	-	768
Sardine . .	10	20	52	106	4	19

Prices paid for fresh and frozen fishery products by the Department of Defense in July 1958 averaged 60.6 cents a pound, about 3.4 cents more than the 57.2 cents paid in June, and 10.3 cents higher than the 50.3 cents paid during July a year ago.

Canned Fishery Products: Tuna was the principal canned fishery product purchased for the use of the Armed Forces during July 1958.

Note: Armed Forces Installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated, because it is not possible to obtain local purchases.



## Great Lakes

MORE MICHIGAN STREAMS TO BE CHEMICALLY TREATED TO DESTROY SEA LAMPREY LARVAE: The U. S. Bureau of Commercial Fisheries has been granted permission to chemically treat 18 additional streams in the upper peninsula of Michigan for the purpose of destroying sea lamprey larvae. Permission was given August 20, 1958, by Michigan's Conservation Department Director. The permit expires November 30, 1958.

The 18 new streams, all tributary to Lake Superior, bring to 30 the number of Michigan rivers and creeks where lamprey poisoning may be conducted. Earlier permits covered 5 streams flowing into Lake Superior, 5 flowing into Lake Huron, and 2 tributaries to Lake Michigan.

The Chief of the Great Lakes Fishery Investigations of the U. S. Bureau of Commercial Fisheries said the possibility of treating a number of streams this fall is likely, with minimal stream runoff and favorable weather. Several rivers and creeks have been treated during the last year.

The permit stipulates "that no substance harmful to humans, domestic livestock, or wildlife at concentrations required in the streams will be used; also that rigid controls will be exercised in the interest of protecting desirable wildlife."

Covered under the newest permit are: Waiska and Betsy Rivers, Chippewa County; Little Two Heart and Two Hearted Rivers, Luce County; Seven Mile and Beaver Creeks, and Miners and Au Train Rivers, Alger County; Big Garlic, Iron, and Pine Rivers, Marquette County; Huron River, Baraga County; Little Gratiot River, Keweenaw County; Traverse and Salmon Trout Rivers, Houghton County; Misery, Firesteel, and Cranberry Rivers, Ontonagon County.



## Great Lakes Fishery Investigations

SURVEY OF WESTERN LAKE ERIE FISH POPULATIONS CONTINUED BY M/V "CISCO:" Cruise 7: Trawling was conducted at 13 stations in western Lake Erie during the July 29-August 11, 1958, cruise of the U. S. Bureau of Commercial Fisheries research vessel Cisco. Adult yellow perch and sheepshead were common in nearly every drag, as were fry of several species. The most abundant fry were yellow perch, white bass, and smelt, but occasionally sheepshead, alewives, and gizzard shad were also numerous. No adult smelt were taken except at the easternmost and deepest station where there was a bottom layer of cold water. Very large numbers of smelt were caught there (3,600 in one 10-minute tow). The largest catch of a single species was of emerald shiners of which more than 10,000 were caught in a 10-minute tow, but this species was sometimes scarce. Some

emerald shiners and an occasional sheepshead were in spawning condition. The following species were also caught in the trawls: carp, goldfish, spottail shiner, silver chub, trout-perch, logperch, channel catfish, brown bullhead, smallmouth bass, and very few yellow pike (walleye). White crappie and mooneye were caught in Sandusky Bay only.

A limited amount of nighttime midwater trawling was done southeast of Kelly's Island. Smelt fry, emerald shiners were fairly numerous at midlevel and white bass fry, gizzard shad, spottail shiner and yellow perch were also present.

In order to collect fish larvae, half-meter, large-mesh (no. 32 grid gauge) plankton nets were towed alongside the boat, and a smaller net was often attached to the headrope of the trawl. Lar

were fairly numerous near the surface in several areas. These fish larvae are as yet unidentified, but are believed to be mostly emerald shiners.

Thermal conditions in western Lake Erie during this cruise were little different from those of the previous cruise, except for slightly higher surface temperatures, which ranged mostly from 23°-25° C. (73.4°-77.0° F.). Extremes were 22.0° C. (71.6° F.) and 26.7° C. (80.1° F.). There was no pronounced stratification in water of depths less than 6 fathoms. Oxygen concentrations remained low (as low as 2.8 p.p.m.) below the thermocline in the deeper areas visited. Concentrations of oxygen at a depth of 12 meters appeared to undergo little diurnal changes.

The M/V *Cisco* and M/V *Musky* of the U. S. Bureau of Commercial Fisheries, and the vessel SP-2 from the Ohio Division of Wildlife, cooperated in three synoptic surveys of western Lake Erie during August 5-7. The vessels followed the courses established during the synoptic surveys of May 13-15 (cruise 3). Similar synoptic cruises are scheduled for the fall of 1958. Surface temperatures and water samples were obtained at 2-mile intervals by each vessel. At intervals, 195 drift bottles were released among the islands, especially near the Detroit and Maumee River mouths and in Pelee Passage. Analyses for total alkalinity and turbidity were made on most water samples taken by the *Cisco*. Bathythermograph lowerings were made at 4-mile intervals from the *Cisco*, and at 5 stations by the *Musky*. Fluorescein dye was released from the SP-2 to obtain additional knowledge of the complex currents around the islands. Wind velocity and direction, wet and dry bulb temperatures, barometric pressure, sea state, and cloud coverage were recorded. Similar data were to be obtained from various shore weather stations.

Of the total 195 drift bottles released, 21 have been returned. Bottles released in the Detroit River channel traveled eastward and were recovered along the north shore from Colchester to the Leamington, Ontario, light. Bottles released near North Harbor Island Reef and 8 miles east were found near Pelee Point. The recovery of several bottles on Kelly's and South Bass Islands indicated a northeast movement from their points of release.

Preliminary analyses of turbidity, total alkalinity, and surface temperature measurements indicate that the main outflow of the Detroit River passed between Colchester and Middle Sister Island on August 5. The southern edge of this current extended further south on the second day and was 2 miles north of West Sister Island by August 7. Detroit River water could be detected by its slightly lower temperature, 23.2°-24.0° C. (73.7°-75.0° F.), lower turbidity (3.2-4.3 p.p.m.), and total alkalinity (78-83 p.p.m.). The higher turbidity (10-16 p.p.m.) and total alkalinity (93-122 p.p.m.) northwest of Maumee Bay suggests a movement of Maumee River water into this area. Dye released among the islands moved in a northeasterly direction substantiating the movement established from return of drift bottles. Exceptionally higher turbidity (92 p.p.m.) and total alkalinity (128 p.p.m.) occurred at the mouth of the River Raisin. This was undoubtedly due to the dredging being done in the area during the synoptic surveys.

On August 6 the *Cisco* was caught in a violent storm off Maumee Bay. Wind gusts of 70 m.p.h. were recorded. Although the water depth was 15 feet, turbulence extended to the bottom within 20 minutes since the surface turbidity increased from 11.7-16 p.p.m. and total alkalinity from 101-121 p.p.m. during this time.

Cruise 8: Fishing operations, principally trawling, and collection of hydrographic data were continued in western Lake Erie by the U. S. Bureau of Commercial Fisheries research vessel *Cisco* during the August 19-30, 1958, cruise. All areas of previous cruises were visited and additional trawling was conducted in Sandusky Bay and in deeper water of the western basin.

Fish continued to be scarce in the far northwestern corner of the lake. Sheepshead and 2-year-old yellow perch were abundant in most of the other areas. Yellow pike (walleyes) were scarce at all locations. Emerald shiner catches were irregular, but large schools were occasionally encountered throughout the island region. Channel catfish were also common in the island area. Large carp were present south of Middle Sister Island where a 10-minute tow took 10 carp weighing 117 pounds. Smelt, other than fry, were still absent from the warmer waters of the western basin and were confined to a habitat near the thermal discontinuity layer in deeper water. Several perch and one sheepshead were caught at a station north of Lorain, Ohio, where the oxygen content was only 1.0 p.p.m. at 10 fathoms. Nearby at 9 fathoms, the discontinuity layer was very close to the bottom with ample oxygen of 6.7 parts per million present. A large catch of smelt and yellow perch was obtained. Other species included alewife, brown bullhead, gizzard shad, logperch, smallmouth bass, silver chub, silver lamprey, white bass, and white crappie.

Small fish fry were collected with large-mesh plankton nets towed beside the boat and also attached to the headline of trawls. Fry of most species were large enough to elude the plankton nets, and were collected in the trawl. These catches indicated an abundance of alewife, gizzard shad, sheepshead, and yellow perch. White bass fry were exceptionally plentiful with catches of 1,000-4,000 in a 10-minute tow.

Experimental nylon gill nets (mesh sizes 2-, 2½-, 3-, and 4-inch) were set at three stations. All sets were "canned up" so the float line was 6 feet below the surface. A gang set at 5:45 p. m. southeast of Kelly Island and lifted at 11:00 p.m. the same evening caught white bass, yellow pike (walleye), channel catfish, and carp. This net was reset at 11:30 p.m. and lifted at 11:00 a.m. the following day to gain information on the nocturnal habits of fish. The second lift caught more fish of each species, especially channel catfish, with the appearance of a few alewives and gizzard shad but without any carp.

Surface temperatures in the open lake ranged from 20.8° C. (69.4° F.) to 24.3° C. (75.7° F.). A low of 20.6° C. (69.0° F.) was recorded in Sandusky Bay during the latter part of this cruise. Thermal stratification was observed with the metalimnion just off the bottom in areas as shallow as 9 fathoms.

WESTERN LAKE SUPERIOR HERRING AND GENERAL FISHERY SURVEY  
CONTINUED BY M/V "SISCOWET:" The fishery and environmental study of Western Lake Superior was continued by the U. S. Bureau of Commercial Fisheries Great Lakes Fishery Investigations.

Cruise 3 (July 21-30, 1958): The three index stations established during cruise 1 were visited during cruise 3 to obtain a midsummer measure of fishery and environmental conditions. These stations are located (1) north of Little Girls Point, Mich., and (2) southeast of Stockton Island, and (3) northeast of Bear Island (two of the Apostle Islands, Wis.). In addition to these, a fourth station was established just northwest of the Porcupine Mountains, Mich.

Fish were collected with gill nets and trawls at each station, and samples were taken for analyses of plankton, bottom fauna, and water chemistry. Bathythermograph casts were made at each station.

Trawl tows were made in very shallow water at depths of 1 to 3 fathoms in an effort to collect fry or fingerling whitefish. Tows made over sandy bottom southeast of Stockton Island caught several menominee whitefish and smelt fingerlings. Even more common in the catch were the slimy muddler, ninespine stickleback, trout-perch, and johnny darters. Tows were made in deeper water at depths of 7-10 fathoms in the same area with essentially the same catch composition. Several tows were made at depths of 3-30 feet with an outboard-powered boat pulling a small trawl in Big Bay on the east side of Madeline Island. Catches consisted of johnny darters, trout-perch, slimy muddlers, and smelt fry. No lake trout were taken in trawl tows during this cruise.

Gill-net catches at the three index stations were similar to the catches made during cruise 1. In water over 20 fathoms chubs dominated the catch. In shallow water at depths of 2-18 fathoms, the menominee whitefish was dominant. A gang, consisting of 7 nets with mesh sizes from 1-3½ inches, set off the southeast shore of Stockton Island in water from 2-13 fathoms made an interesting catch. The smaller meshed nets were set in shallow water with the larger meshed nets in deeper waters. The menominee whitefish was the dominant fish in the 1½-, 2¼-, and 2¾-inch nets. These fish varied in length from 3-18 inches. Many small (4-8 inch) whitefish were taken in the small mesh nets. Large whitefish, lake trout, longnose suckers, and a few large menominee whitefish were taken in the larger meshes.

Two identical gangs of gill nets were set at the station off the Porcupine Mountains, one at depths from 10-13 fathoms and the other at depths of 47-50 fathoms. The mesh size of the nets varied from 1½-3½ inches. The shallow set (38 fish) caught nigripinnis (blackfin), burbot, longnose suckers, lake trout, and herring. The deeper catch (168 fish) was much larger with chubs dominating and a few herring.

There was a marked temperature drop between the surface and bottom at each station but sharp thermoclines appeared at stations off Little Girls Point and off the Porcupine Mountains. Surface temperatures at all stations were in the 60's (61.2°-68.0° F.) and bottom temperatures varied from 39.7°-43.5° F.

A newly-established station northwest of the Porcupine Mountains was worked primarily for current determinations. On July 26 and 27 surface and subsurface currents were determined at two stations, one inshore ¾ miles northwest of the shoreline below the Porcupine Mountains and one offshore 2 miles northwest of the Porcupine Mountains. Surface currents at the two stations were determined by using fluorescein dye and specially-designed metal drags that could be followed by attachment to a surface float. Subsurface currents were determined solely by the metal drag technique. On both days the surface current was flowing to the northeast at approximately 0.50 miles an hour. The subsurface current at the inshore station at 50-foot depth was approximately 0.20 miles an hour. At the offshore station the subsurface currents ranged from 0.24 miles an hour at 50 feet to 0.12 miles an hour at 200 feet. Subsurface currents flowed generally in the same direction as surface currents. Currents in the area determined from the geopotential topography also showed the north-easterly drift. One hundred drift bottles were released, 10 at each of 10 stations one mile apart on a line from the shore at the Porcupine Mountains to the northwest. By August 18, 28 cards from these releases had been returned and indicated drift to the northeast at velocities of approximately one-half mile an hour. One bottle was recovered 8 miles east of Marquette, Mich., 190 miles from its release point.

Cruise 4 (August 4-13, 1958): This cruise was the second of four cruises planned to study the distribution of lake herring during the summer and fall. That portion of Lake Superior just outside the Apostle Islands was covered at all depths in search of herring. Areas covered were (1) northwest of Sand Island, (2) northeast of Devil's Island, (3) north of Outer Island, (4) Squaw Bay southwest of Eagle Island, and (5) northwest of Madeline Island in the North Channel. Various types of gill-net sets were made; floating bull nets at 6 feet and 26 feet below the surface, oblique sets with conventional 2¼-inch gill nets from the surface to 180 feet, and oblique sets using three bull nets of 2¾-inch mesh in the upper portion of the gang and bottom sets with conventional 2¼-inch nets. Trawl tows were made where possible at each station.

Trawl tows made at 30 fathoms north of Outer Island caught three species of chubs, pygmy whitefish, and slimy muddlers. Smelt were predominant in the tows made in 5 fathoms at Squaw Bay. Trout-perch, ninespine stickleback, longnose sucker, and menominee were also taken in Squaw Bay. Fish appeared on the fish finder at depths up to 30 feet below the surface in 180 feet of water at one station northeast of Devil's Island. An attempt to capture these fish with the trawl was unsuccessful.

Lake herring were not taken in abundance at any time during the cruise. At the station northwest of Sand Island where herring were taken abundantly during cruise 2, an identical set was made with bull nets but only 26 herring were taken. A few chubs were taken in nets set 26 feet below the surface in 240 feet of water. An oblique set

was made at this station using 3 bull nets at the shallow end of the gang at depths of 0 to 90 feet and conventional nets at depths of 90 to 180 feet. Only 5 herring were taken in this set. Smelt were taken at depths to 45 feet, chubs were taken throughout the entire net, and 1 herring was taken at 165 feet. At Squaw Bay 3 bull nets were floated 6 feet below the surface in water of 8 fathoms. Three conventional nets were set parallel to the shore and 3 nets set perpendicular to shore on the bottom at 36-39 feet. Only 1 herring was taken from the 2 gangs set on the bottom. The bottom set caught 90 menominee whitefish, 21 whitefish, 12

lake trout, and a few smelt and burbot. There appeared to be no difference in the catch in the nets set parallel or perpendicular to shore. The floating bull nets caught mostly smelt, with lesser catches of chubs and longnose suckers.

Fish taken in sets near Outer Island and Madeline Island were predominately chubs and smelt.

Surface temperatures during cruise 4 ranged from 62.2° to 74.8° F. Bottom temperatures remained at about 40° F.



### Irradiation Research in Foods

Four leading United States firms in the food and allied industries--Armour & Co., Continental Can Co., Food Machinery & Chemical Corp., and General Food Corp.--have joined forces with the U. S. Army Quartermaster Corps in setting up

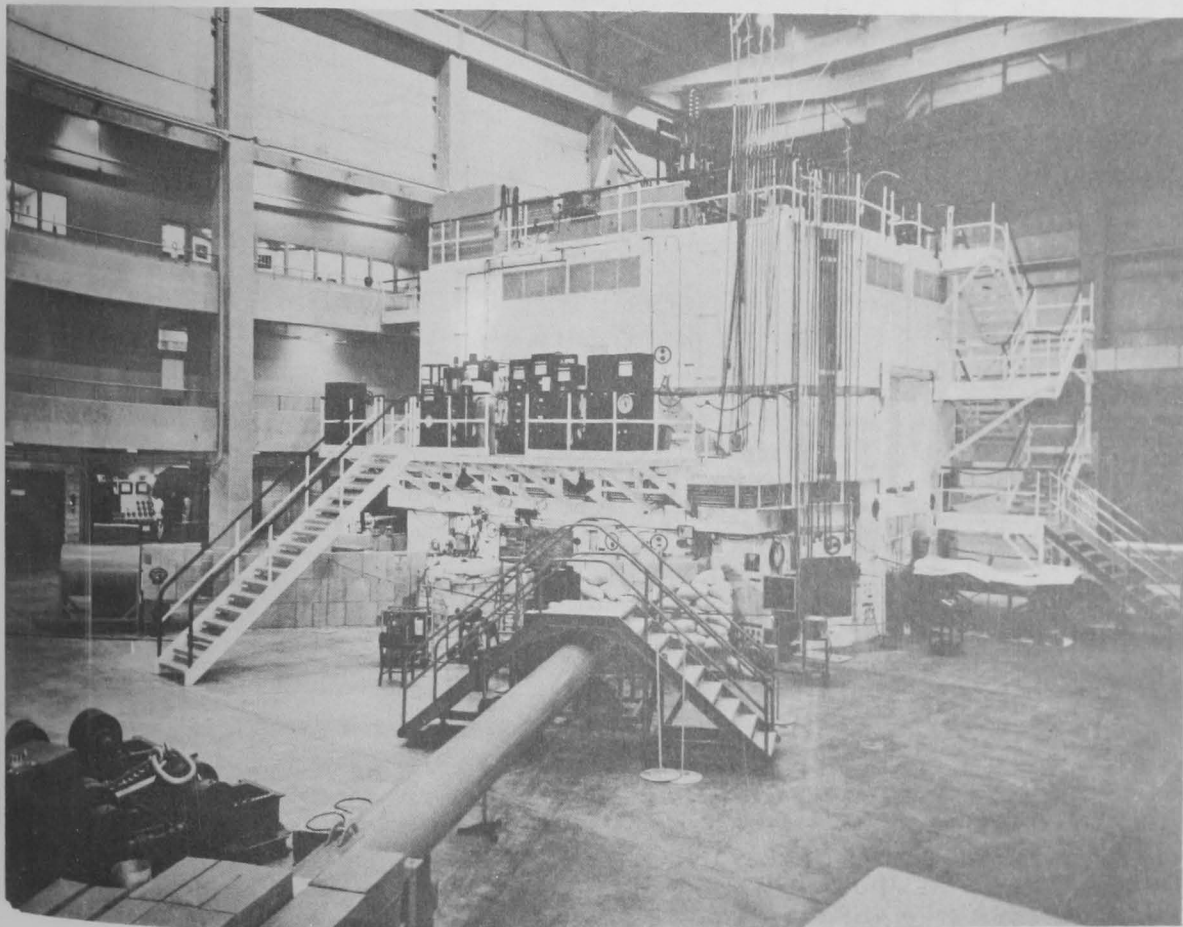


Fig. 1 - Typical gamma reactor used for research purposes.

the world's first food radiation center, it was announced by the Defense Department. This U. S. Army Ionizing Radiation Center (USAIRC), under a contract awarded by the Quartermaster Corps, will be built at Sharpe General Depot, Lathrop, Calif.

In a joint statement explaining their interest in supporting the project, the presidents of the four stockholder companies said:

"We share the conviction that the irradiation of foods opens an important new frontier having significant possibilities not only for the Armed Forces, but for the civilian population as well. We believe that it is important in the national interest that the use of radiation in the handling, processing, packaging, and protecting of food be developed as rapidly as possible, as is proposed by the Quartermaster Corps. Furthermore, we believe that the skills of private industry should be made available for this purpose in cooperation with the Government.

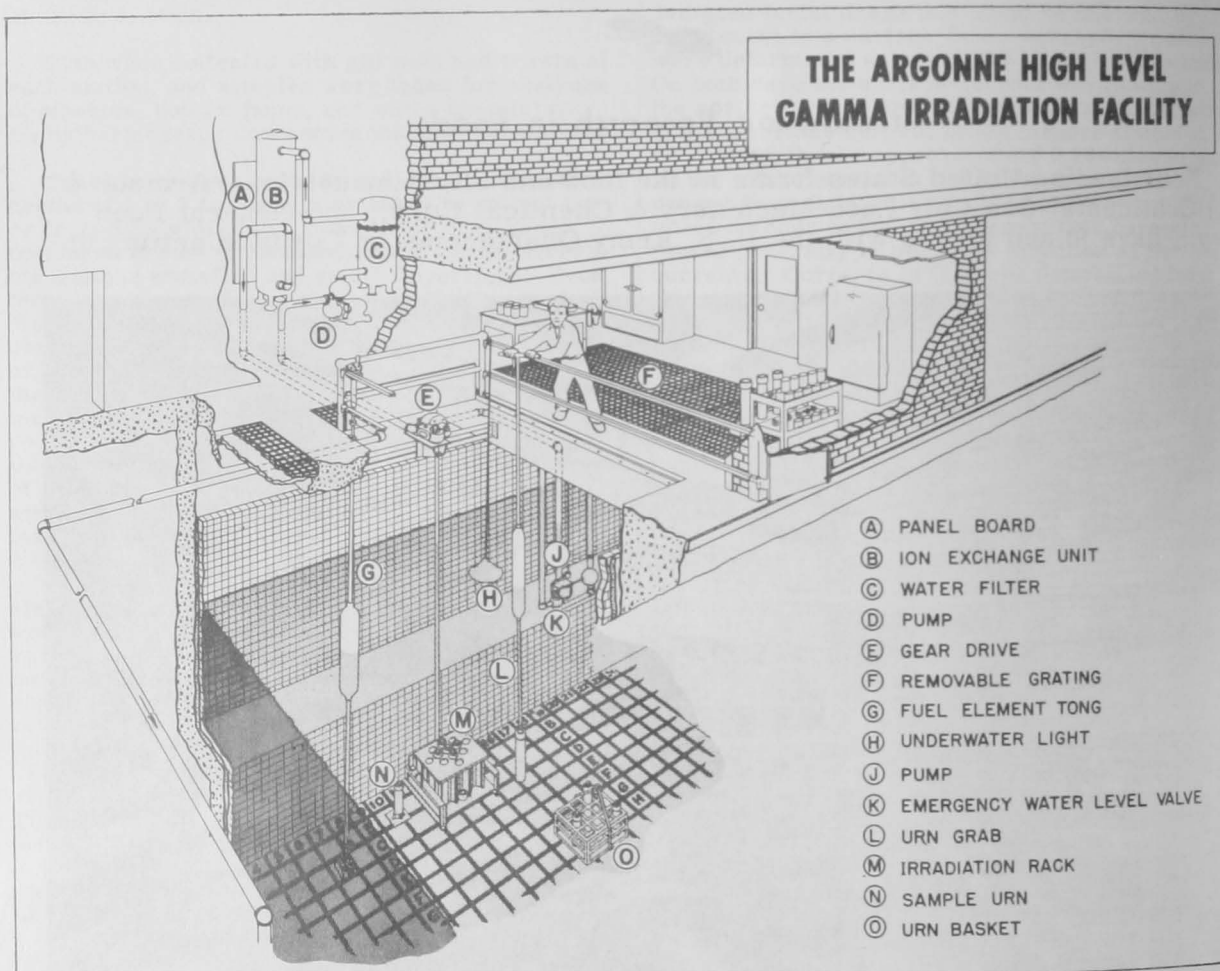


Fig. 2 - Cutaway drawing of Argonne National Laboratory high-level gamma irradiation facility. It is assumed that the one being built at Lathrop, Calif., will be along similar lines.

"Because of our conviction as to the significance of this project and the propriety of private industry sharing its resources of personnel and experience with the Government to carry out the project, we are willing to detach skilled employees from the important work they are now doing for our own companies in order to make them available for employment by IPI."

It is anticipated that approximately 150 employees will be required to operate the center during its first year. Employment in the second year is expected to reach 250.

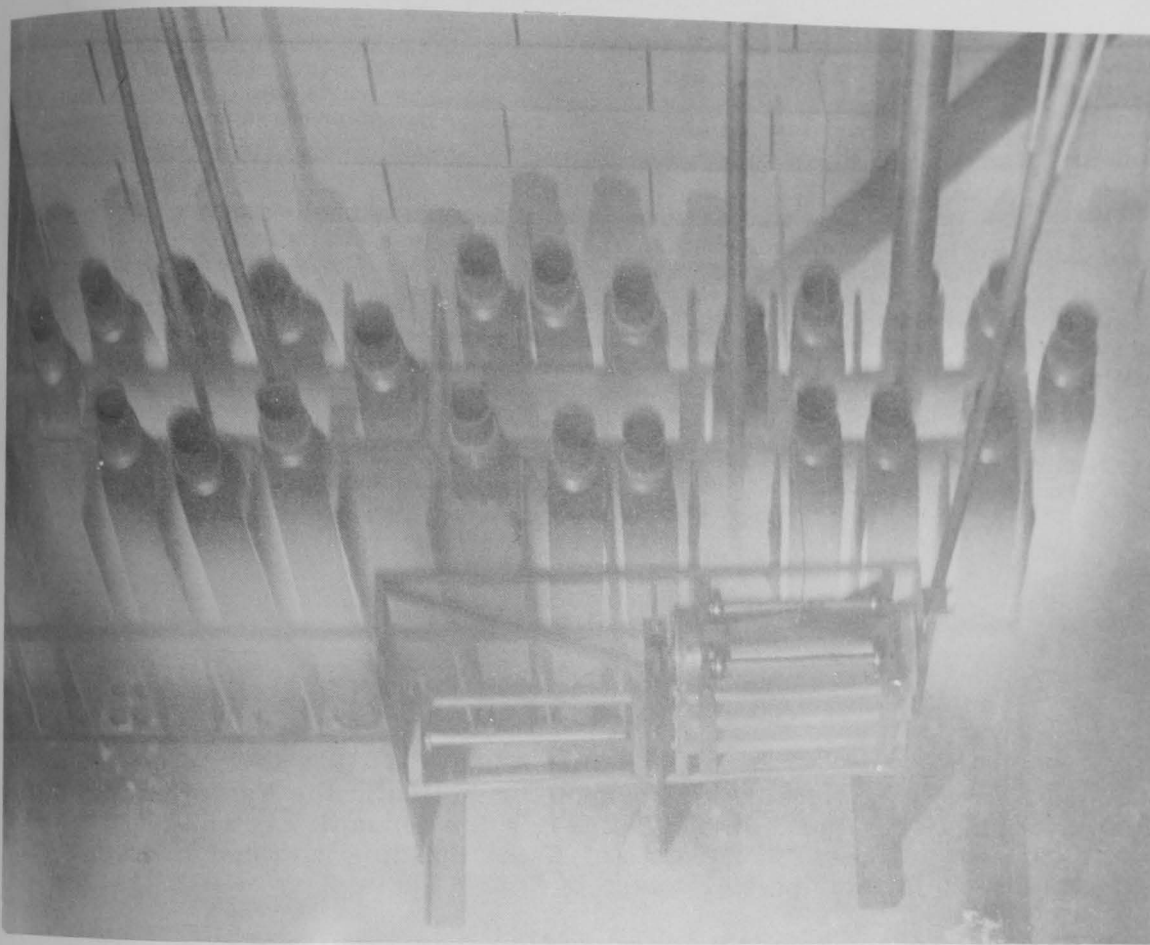


Fig. 3 - View looking down into water-filled canal of Materials Testing Reactor at the National Reactor Station. Cylinder holding can of food being irradiated is on rotating rig in front of gamma-emitting used reactor fuel elements.



## Louisiana

**SHRIMP REGULATIONS REVISED EFFECTIVE JULY 1, 1958:** The Louisiana Wild Life and Fisheries Commission in a notice to shrimp trawlers summarized the new regulations on shrimp fishing in Louisiana waters effective July 1, 1958, as follows:

If you have already obtained a vessel license, it will be necessary for you to apply for a 1958 trawl license for \$10.00, \$15.00, or \$20.00 as indicated below, depending on the size of trawl in use. Be sure to show the length of your trawl as measured along the cork line on the application. Your application must be sent in immediately if you are now trawling in outside waters.

If you do not trawl in outside waters, your application must be sent in and license obtained before you begin operations. Inside waters will be open starting August 18, 1958.

Please observe these regulations carefully. The penalty has been increased in order to preserve the shrimp in Louisiana waters. Penalties for viola-

tions will be as follows: (1) Illegal, unlicensed, or improperly-tagged tackle shall be confiscated and destroyed. (2) First Offense: \$200 minimum fine, \$500 maximum fine or 15-30 days in jail, or both. (3) Second Offense: \$500 minimum fine, \$1,000 maximum fine and 60-90 days in jail. (4) Third Offense: \$750 minimum fine, \$1,000 maximum fine and 90-120 days in jail, and the license shall be revoked and shall not be reinstated at any time during the period for which it has been issued and for one year thereafter.

Shrimp Regulations (as per House Bill No. 572):  
**LENGTH OF TRAWL:** Netting along cork line--  
 50 feet maximum inside waters.

**OUTSIDE WATERS:** (a) 3 miles beyond Continental Coast Line; and (b) except Cameron Parish, which will be the Shore Line.

**CLOSED SEASON:** (1) December 21 through April 20, inclusive; and (2) July 1 to third Monday in August.

**DURING CLOSED SEASON:** (1) All trawls prohibited from inside waters; and (2) cast nets, dip nets, bait traps, or shrimp seines less than 100 feet may be used. (To be manually operated on foot only. No mechanical means or devices may be used).

**MINIMUM SIZE COUNTS:** (1) May 1-June 30: No minimum size limitation; (2) 3rd Monday in August-November 14: 68 count on all species; (3) November 15-December 20: 68 count on all species, except no minimum count on brown or Brazilians; (4) Sea Bobs: No minimum size limitation during open season; and (5) Bait Shrimp: No minimum size limitation during open or closed seasons if taken with cast net, dip net, bait traps, or seine 100 feet or less.

**GENERAL TRAWL AND SEINE RESTRICTIONS:** (1) Only one trawl may be used at a time in inside waters; (2) Maximum trawl length, 50 feet;

(3) Mesh,  $\frac{3}{4}$  inch square or  $1\frac{1}{2}$  inches stretched; (4) Trawls prohibited in inside waters during closed seasons; (5) Trawls prohibited in closed waters; (6) Maximum length seine, 3,000 feet; and (7) No trawl or boat license required for sportsmen using trawls 16 feet or less for own bait purposes and consumption only. Maximum of 100 lbs.

**LICENSE FEES: COMMERCIAL** (1) Trawls: 16 feet or less, \$10; 16 feet-40 feet, \$15; and 40 feet-50 feet, \$20. (2) Shrimp Seines: 100 feet or less, \$10; 100 feet-500 feet, \$15; 500 feet-2,000 feet, \$25; and 2,000 feet-3,000 feet, \$30. (3) Vessel: Fish or Shrimp: 40 feet or less, \$5; and over 40, \$10. (4) Shrimp Freight Vessel: 40 feet or less, \$5; and over 40 feet, \$10.

Further information may be obtained from the Louisiana Wild Life & Fisheries Commission, 126 Civil Courts Building, New Orleans 16, La.



## Maine Sardines

**NEW-STYLE CANNED PACKS EXHIBITED AT FAIR:** Several new-style canned sardine packs were tested for consumer reaction at the Eastern States Exposition in Springfield, Mass., by the Maine Sardine Council. Actual consumer tests were conducted at a booth in the State of Maine Building with people selected at random from the crowds participating.

The Council is seeking facts on consumer acceptability of experimental packs of sardines in a variety of different flavored oils and sauces as compared with the present standard-style packs. Those that show promise will be market-tested in the hopes of expanding the State's sardine sales.

The tests were conducted in the Maine Department of Sea and Shore Fisheries exhibit under the direction of a New Products Specialist and a Merchandising Specialist, both of the Council's staff.

Participants were served the sardines and a careful record of reactions and comments maintained for evaluation of the tests. An effort was made to select a good cross-section of people of all ages, nationalities, income levels, occupations, and other factors.



## Massachusetts

**JULY-AUGUST 1958 BOSTON LANDINGS LOWEST IN 36 YEARS:** Total landings of fish at the Boston Fish Pier during July-August 1958 were the lowest since 1922. A haddock shortage on Georges Bank was added to the old ills of Boston's fishing industry--fewer vessels, continually increasing operating expenses, and foreign competition. Prospects are not bright for the immediate future and it is estimated that 1958 landings at Boston will fall below the already low level of 1957.

Landings at the Fish Pier in July-August 1958 totaled only 19.9 million pounds for the two months, the lowest summer landings since 1922. In that summer landings



totalled 18.1 million pounds, but then Boston's fishing industry was still undergoing the transition from the less efficient line vessel to the more productive otter trawler. Much progress has been made in the Nation's economy in these past 36 years, but the Boston Fish Pier landings have gradually declined from a peak of 339.2 million pounds in 1936 to the 1957 level of 135.6 million pounds.

The light landings at Boston this summer caused higher ex-vessel prices. The total value received by vessel owners and fishermen was higher than in the past few years, but hardly sufficient to keep pace with increased operating and living expenses.

For both summer months this year landings were poor--the July total was only 9.8 million pounds and August 10.1 million pounds. Ten years ago in 1948, the total was 36.2 million pounds. Record landings for the two months were 62.1 million pounds in 1936. The total in 1957 was 25.8 million pounds.

For the first eight months of 1958 fishery landings at Boston amounted to only 91.8 million pounds, 6 percent less than last year when 97.4 million pounds were landed in the first 8 months.

Haddock is now almost the sole support of the Boston Fish Pier--only 12.3 million pounds were landed in July and August as compared with 19.3 million pounds, in the same two months of 1957. Bureau of Commercial Fisheries biologists at Woods Hole have been for many years studying the haddock on Georges Bank where the bulk of Boston's haddock originates. In a recent release, they reported "The stocks of Georges Bank haddock have been fished down to the point where the catches depend upon large numbers of comparatively small fish. . . . In terms of age, the fishery was once supported in large part by fish 5-9 years old but in recent years 2-4 year-old fish have dominated the catches. The depletion of large fish has placed the fishery in a precarious position."

--John J. O'Brien, Supervisory Market News Reporter,  
Branch of Market News, Division of Industrial Research and Services,  
U. S. Bureau of Commercial Fisheries, Boston, Mass.



## National Fish Week

FISH PROMOTION CAMPAIGN AIDED BY INTERIOR DEPARTMENT: An industry-government program to direct the attention of the consumer to the uses of fresh and frozen fishery products this fall will again have the support of the U. S. Bureau of Commercial Fisheries, Assistant Secretary of the Interior Ross Leffler announced on September 12, 1958.

This nationwide program, titled "National Fish 'n' Seafood Parade," will be aimed at both institutional and home-consumer markets and will have its climax during October 6-12.

The Assistant Secretary said that the Bureau will aid the industry effort with schools, institutions, and food-trade groups. Educational activities will be increased to stimulate consumer response.

\* \* \* \* \*

FISHING INDUSTRY PROMOTES FISH AND SEAFOOD WEEK: The national campaign of advertising and publicity for Fish and Seafood Week, October 6-12, was in full swing by that date. Local committees in every section of the country had

laid the groundwork for food stores and restaurants to feature fish and shellfish during the promotion.

According to the Chairman of the National Committee, the interest of the fishing industry and the food trade in the 1958 Fish & Seafood Week (more popularly known as Fish 'n' Seafood Parade) was far beyond expectations, and the nationwide interest was reflected in chain stores everywhere.

As an illustration of local activities, the Philadelphia committee of fishing industry and food store members held a luncheon at the famous Bookbinders Restaurant on September 12 for food editors. This was followed by similar activities throughout the country culminating with a dinner in Boston on October 2, at which time "Miss Seafood of 1958" was selected for the Commonwealth of Massachusetts.

A large fishery firm advised the National Committee in mid-September that they were insuring their dealers for \$5,000 during the Fish & Seafood Week to protect them from being trampled to death by customers who were expected to buy their products.

\* \* \* \* \*

FISH WEEK SUPPORTED BY WHITE HOUSE: On September 11, President Dwight D. Eisenhower sent the following message to the National Fish and Seafood Committee:

"The White House, Washington, D. C., Sept. 11

"F. M. Bundy, Chairman, National Fish and Seafood Week Committee, 1514 Twentieth St. NW., Washington, D. C.

"The Fishing Industry has long played a vital part in the life and economy of our Nation. As our population continues to grow and as our land becomes more fully utilized, we will turn to the sea for more and more of the nutritive food requirements needed to maintain our American standard of living.

"During National Fish and Seafood Week, I salute the members of this industry for a job well done and urge them to utilize every possible means of making their products available as an increasingly attractive and abundant food for every American family."

/s/ "Dwight D. Eisenhower"



### North Atlantic Fisheries and Gear Research

SAFETY PROGRAM AND GEAR RESEARCH STUDIES (M/V Delaware Cruise 58-4): A combined safety and gear research four-day cruise to the South Channel-Western Georges Bank area was made by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. The cruise ended on August 28, 1958.

Representatives of a New York firm, engaged in the current fisheries safety program, accompanied the boat and snapped over 100 photographs depicting various phases of otter-trawl fishing and operating equipment.

Tests were completed of the new double-barrelled winch head, pilothouse-operated main engine throttle control, aluminum radar target, plastic floats, and towing characteristics of trawls equipped with 3" and 4½" stretched mesh size

cod ends. Lookout watches for tuna schools were maintained during daylight hours.

The new winch head worked perfectly when operated with the messenger wire to lead the trawling cables to the towing block. Leading directly from the after fairlead to the winch head, the messenger was hooked over the drum holding-stud, enabling the winch operator to control the speed and draw the wire smoothly and evenly up to the towing block. The fish tackle, used to hoist bags of fish up to 5,000 pounds, can also be operated from this drum, precluding manual handling of wires entailing two hazardous operations.



Fig. 1 - Safety equipment demonstration was conducted on the dock and aboard the exploratory fishing vessel Delaware in mid-August before this cruise.

While presently adapted for reversible trawl winches, it appears that only slight modifications in design are needed to allow the device to be fitted on all types of winches.

The main engine throttle control was thoroughly tested for emergency stops during normal cruising runs and under actual fishing conditions. Almost instantaneous action resulted when the pilothouse lever was actuated. In addition to the safety aspect, this device could prove extremely valuable in

trawl net hang-ups on bottom obstructions when prompt action in slowing the vessel's headway could avert excessive damage to the net.

The aluminum radar target was attached at a height of 12 feet above the water to a bamboo staff while radar visibility tests were conducted. Results indicate that this target would be extremely valuable for marking fishing buoys and for small wooden craft during periods of low visibility. Conventional fishing buoys, with cloth markers, cannot be picked up on the radar scope.

Submersion tests of a plastic-type float were made by securing the float to the trawl net head rope during fishing tows conducted in depths ranging from 51 to 96 fathoms. The float presented no exterior change in appearance during the tows in the upper depths, but was compressed considerably when subjected to pressures found in the depths below 57 fathoms. Results indicate that the float is suitable for pelagic fishing gear and has a relatively limited depth range.

With the exception of a few small pods of tuna, sighted about 25 miles southeast of Cape Cod Light during the homeward passage on August 28, no tuna schools were found during the trip. Rainy weather prevailed most of the time--not conducive to tuna spotting.



## North Atlantic Fisheries Investigations

VERTICAL DISTRIBUTION OF POST-LARVAL OCEAN PERCH IN GULF OF MAINE STUDIED (M/V Albatross III Cruise 116): Fifty-two tows were made at 11 stations in the southwest part of the Gulf of Maine with the Isaacs-Kidd mid-water trawl. This cruise (completed August 1, 1958) of the U. S. Bureau of Commercial Fisheries research vessel Albatross III was made to investigate the vertical distribution of post larval ocean perch and other associated species in the Gulf of Maine.

Depths from 10 meters to 80 meters were sampled at 10-meter intervals. A few tows were made with a one-meter plankton net. A bathythermograph drop was made at each station.

Very few postlarval ocean perch were found, about 2 percent of the numbers taken at similar stations last year. Extremely large numbers of young-of-the-year haddock were taken, some at every station, with concentrations at 10 and 20 meters. The haddock were at least 10 times as numerous as at the same stations last year. The evidence is strong enough to suggest the presence of a very good year-class from the 1958 spawning.



### North Pacific Exploratory Fishery Program

EXPLORATORY FISHING FOR SHRIMP OFF ALASKAN COAST (M/V John N. Cobb Cruise 39): Pink cocktail-size shrimp and larger varieties such as sidestripe and coonstripe were reported abundant in the bays and inlets of Kodiak Island, Lower Cook Inlet, and along the southeast side of Kenai Peninsula by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb, during an exploratory cruise which ended September 5, 1958.

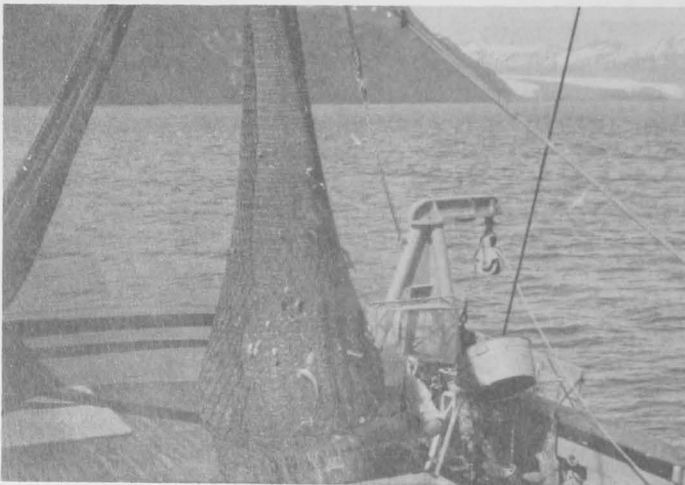


Fig. 1 - Landing a catch of 700 pounds of shrimp aboard the exploratory fishing vessel John N. Cobb in Nuka Passage, Kenai Peninsula, Alaska.

Best catches in the Lower Cook Inlet area were in Kachemak Bay which yielded shrimp at rates of 1,480 to 3,540 pounds an hour. These catches were composed of pink shrimp averaging 150 to the pound (all counts heads on) and a good quantity of large sidestripe and coonstripe shrimp ranging from 27 to 53 to the pound. Other good catches made in the Cook Inlet-Kenai Peninsula area were as follows:

Cape Douglas: Up to 1,200 pounds an hour of mixed shrimp, mostly pinks averaging 112 count.

Nuka Passage: Catches up to 1,560 pounds an hour composed of about 50 percent pinks ranging from 80 to 96 count, 40 percent sidestripes from 44 to 68 count, and 10 percent coonstripes from 20 to 27 count.

Nuka Bay: Catches at rates up to 900 pounds an hour consisting predominately of pink and sidestripe shrimp ranging from 67 to 109 and 23 to 59 count, respectively.

Port Dick: Catches at rates to 1,440 pounds an hour. Pink shrimp, which dominated these catches, ranged from 75 to 93 count, while sidestripes averaged 47 count.

During the last half of the cruise explorations were conducted in the bays, inlets, and offshore waters surrounding Kodiak Island. Excellent catches were made in Marmot Bay, Izhut Bay, Kukak Bay, Raspberry Strait, Uganik Bay, and Alitak Bay as follows:

**Marmot Bay:** Catches at rates to 2,800 pounds an hour of pink and sidestripe shrimp. The pinks were relatively large, running 59 to 172 count. Sidestripes in these catches ranged from 23 to 51 per pound.

**Outer Izhut Bay:** Catches at rates up to 2,600 pounds an hour, predominantly pinks, ranging from 134 to 172 count.

**Kukak Bay:** A catch of 950 pounds of mixed shrimp in a 34-minute tow was composed of approximately half pinks and half sidestripes with counts of 117 and 32, respectively.

**Uganik Bay:** One 30-minute tow yielded 1,000 pounds of pink shrimp averaging 117 count.

**Alitak Bay:** Catches at rates to 1,800 pounds an hour of pinks, sidestripe, and coonstripe shrimp. The average size of pinks was 118 to the pound, while the sidestripes and coonstripes averaged 41 and 63 count, respectively.

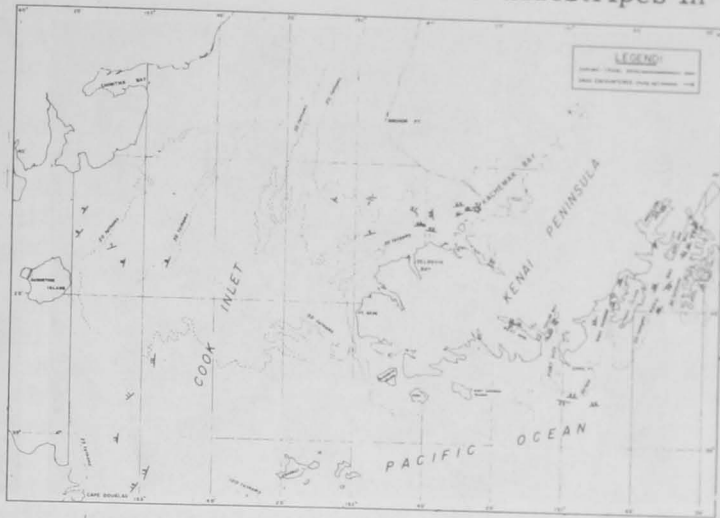
**Raspberry Strait:** A 30-minute tow yielded 650 pounds of pink shrimp averaging 115 count.

**Shelikof Strait:** Best catches were made between Shuyak Island and Cape Douglas. Sidestripe and pink shrimp, averaging 50 to 67 count, respectively, were taken at rates to 600 pounds an hour.

Catches made during the explorations demonstrated that large concentrations of shrimp are available in Central Alaskan waters. Good catches of larger shrimp were taken in contrast to the shrimp grounds off Washington and Oregon, which yield only small pink shrimp.

A total of 109 shrimp drags was made during the explorations, at depths ranging from about 15 to 150 fathoms. Most drags were 30 minutes with a 43-foot Gulf-of-Mexico shrimp trawl; however, a 70-foot shrimp trawl was used occasionally.

The shrimp exploration was the fourth to be conducted by the Bureau of Commercial Fisheries



M/V John N. Cobb cruise 39 (July-August 1958).



M/V John N. Cobb cruise 39 (August-September 1958).

in 1958; three previous cruises were conducted offshore from the Washington and Oregon coasts earlier this year.



Fig. 2 - Spilling catch of shrimp on sorting table on deck of John N. Cobb in Lower Cook Inlet, Alaska.

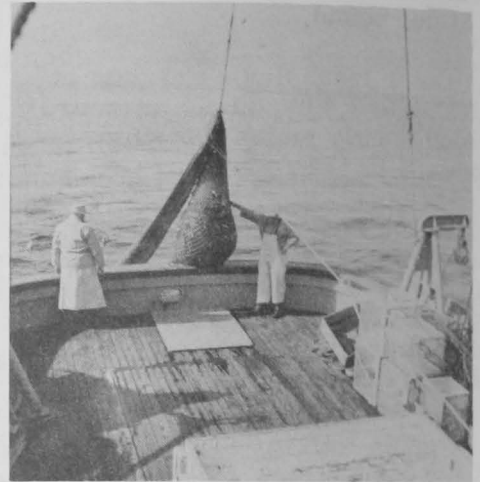


Fig. 3 - Cod end of shrimp trawl on the John N. Cobb with catch of shrimp from Marmot Bay, Kodiak Island, Alaska.

In addition to routine exploratory work, samples of shrimp and fish were collected for biological and technological study. Oceanographic and meteorological data were recorded throughout the cruise.



### Oysters

JOINT RESEARCH PROGRAM ON STANDARDS: Three participants--Oyster Institute of North America, U. S. Food and Drug Administration, and the U. S. Bureau of Commercial Fisheries--have agreed to a joint research program to develop standards for oysters.

The oyster industry through the Institute agreed to bear its share of the cost of the studies and to serve on a joint Committee of three to follow through on the program.

Under this program all data available will be pooled and the entire work will be under the direction of one outstanding scientist appointed jointly by the participants. A Steering Committee of three persons--one from each organization--has been appointed to select a director, obtain a site for the work, and develop the aims of the study and the projects to be studied. The Committee is composed of Charles Butler, Chief, Branch of Technology, U. S. Bureau of Commercial Fisheries; Jonas L. Basen, Asst. Chief, Program Planning and Review of the U. S. Food and Drug Administration, and David H. Wallace designated as the industry representative.



### Pacific Oceanic Fishery Investigations

ALBACORE TUNA SURVEY IN CENTRAL NORTH PACIFIC COMPLETED: (M/V Hugh M. Smith Cruise 46): The return of the U. S. Bureau of Commercial Fisheries research vessel Hugh M. Smith to Honolulu on September 9, 1958, from a 51-day cruise to the central North Pacific brought the Pacific Oceanic Fishery Investigations (POFI) study of the distribution and abundance of albacore tuna to a

close for the current season. The other vessel which participated in the survey, the M/V Paragon, had returned to Seattle on September 7. The Hugh M. Smith was primarily engaged in the collection of oceanographic and biological data while the Paragon was engaged in an actual attempt to determine whether the albacore were sufficiently abundant for gill-netting on a commercial scale.

The results of the survey were disappointing from the standpoint of the area's potential as a commercial fishery, especially after the promising results of surveys during the summers of 1955 and 1956. The catch of the Paragon was very small, averaging less than one-half ton a day. There were only one or two small areas where the catches approached commercial quantities.

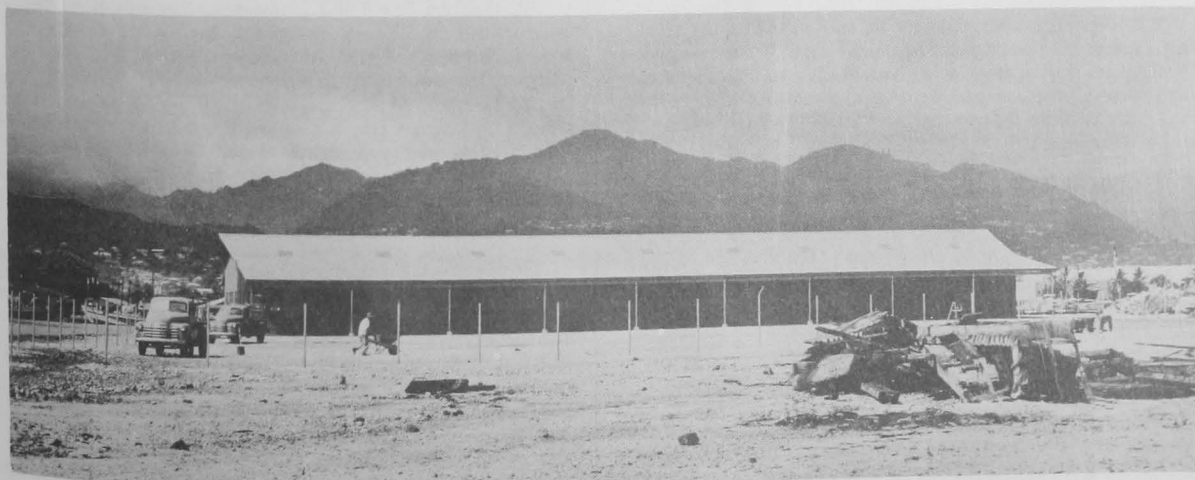
The biological and oceanographic studies provided some explanation as to the decline of fish. The environmental conditions were vastly different from those of 1955 and 1956. The most prominent of these differences was the lower surface water temperatures in the area which resulted in a southerly shift in the area having a suitable temperature for albacore.

The Paragon chartered to test the commercial feasibility of gill-netting albacore in mid-ocean, began gill-netting operations on July 27, 1958, at 41°42' N. latitude and 157°10' W. longitude, or roughly 1,800 miles west of southern Oregon. The gill-netting for albacore was continued through August in an area between 155° and 160° W. longitude, and a disappointing total of some 15 tons of fish was taken.

Catches of albacore made by salmon gill-netters which fished along the northern border of albacore water during 1955 were impressive. The survey conducted by POFI in 1956 and in the same general area again showed good results, particularly along 175° W. longitude. However, these earlier indications of the presence of large concentrations of albacore were at variance with the relatively poor catches during August of the Paragon. Obviously albacore were not in this area in the same abundance as was true of the previous years when surveys were made. Oceanographic conditions were also unusual and this may be the explanation of the poorer than expected catches. This year the general distribution of albacore in the North Pacific seems to have changed. Independent evidence of this is available from the localities where the best albacore catches are now being made along the Pacific coast. In general the coastal catch localities of good fishing have shifted northward.

\* \* \* \* \*

**NEW DOCKSITE FACILITY OPENED:** The Pacific Oceanic Fishery Investigations of the U. S. Bureau of Commercial Fisheries and the Hawaiian Board of



POFI'S new docksite facilities under construction at Kewalo Basin.

Agriculture and Forestry formally opened their new \$70,000 Kewalo Basin docksite facility August 11 with dedication ceremonies and a public open house. There were about 20 scientific and fishing exhibits on bait fish, deep-sea fish, skipjack (aku) research, oceanography, tuna behavior, and fishing methods.

Built by the Territorial Board of Harbor Commissioners, the docksite is located on the small peninsula of land on the Diamond Head side of the Kewalo Basin channel entrance on the Island of Hawaii. Work was started early this year and installation of fish tanks was about completed the first part of September.

Three research vessels will moor alongside the new facility: the Charles H. Gilbert and Hugh M. Smith of the Bureau's Pacific Oceanic Fishery Investigations, and the Hawaiian Fish and Game research vessel Makua.

Previously, the Bureau's vessels were docked at Pearl Harbor and the Makua at Pier 12. The new docksite puts the Bureau's Investigations and the Territory Division of Fish and Game in the center of island commercial fishing activities and close to areas for tuna behavior studies. The move also eases the coordination of scientific projects between the two agencies.

The Bureau's Investigations has offices, a scientific laboratory, electronics laboratory, net loft, machine shop, and warehouse in the new building while the Territory of Hawaii has offices, laboratory, and storage space.



## Sport Fishing

**PROGRAM FOR IMPROVING SPORT FISHING:** A program designed to help meet the need for improved recreational opportunities in the form of sport fishing is being given impetus by the U. S. Fish and Wildlife Service.

The program, conducted by the Bureau of Sport Fisheries and Wildlife, consists of helping other Federal agencies develop better fishing through the use of better management methods, rendering technical assistance to states and public conservation agencies when such assistance is needed, and in cooperating with states in fish restoration projects where a pooling of efforts is especially beneficial.

The Service recognizes at the outset that the regulation of sport fishing is primarily a responsibility of the states and that Federal effort is designed to complement that of the states and to help make available information gained from research and experience.

Among the numerous things about which fishery management is concerned are: aquatic weed control techniques; stocking with the proper numbers and species of fish to fit water conditions; proper methods of fertilization; eradication of trash fish or the reestablishment of a proper ratio between game and forage fish; and recognition of common danger signals on such things as fish population imbalance, evidence of disease, and pollution.

Management biologists assist in the formulation of cooperative fish-stocking programs and have a continuing responsibility to insure the best possi-

ble use of fish produced at the Federal hatcheries. It is extremely important that all efforts, both in hatcheries and in the field, contribute materially to fish restoration and better fishing.

A large part of the fishery assistance effort is directed at such Federal installations as the Veterans' Administration hospitals where fishing has a therapeutic value in convalescence; military installations where it serves recreational functions; national parks and forests where fishing vacations are popular; and Indian reservations where both fishing and the sale of fishing permits have an economic meaning.

Statistics for 1957 show that technical advice was given in 137 such areas, including 40 Air Force bases. Eglin Air Force Base, Fla., for example, has developed an outstanding cooperative sport fishing program. In addition to preexisting ponds and streams, 12 new ponds have been created and managed for fishing under carefully prepared plans. The public is allowed to fish upon payment of a small permit fee and the receipts from such fees go to support and enlarge the program.

Somewhat similar services were rendered at 33 Army bases including Ft. Sill, Okla., where there are 52 ponds; and at 16 Navy and 4 Marine Corps installations. Numbers of other Federal areas upon which recommendations on managing the fisheries have been made include: Veterans' Administration, 8; national forests, 7; national parks, 4; Indian reservations, 13; and national wildlife refuges, 12. Such public conservation agencies as the Upper Mississippi River Conservation Commit-



tee and the Steering Committee for Roanoke River Studies also were given certain technical assistance.

Farm pond demonstrations were given in Arkansas, North Carolina, New Hampshire, and Ohio.

Among the state-Federal cooperative programs is one in Kentucky involving a study on the effects of strip-mining on streams and the plant and animal life normally supported by streams.



## Swordfish

EVIDENCE THAT BROADBILL MAY BE WIDE-RANGING: Another indication that the broadbill swordfish may be as wide-ranging a fish as any in the ocean has been noted by California Department of Fish and Game biologists at Terminal Island. A long-line hook, used by Japanese fishermen, was recovered by a California commercial fisherman July 17 off Santa Cruz Island. The hook was imbedded in the jaw of a 350-pound broadbill caught by a fisherman from Corona Del Mar.

California biologists say the hook, about a size 8-0, can tell them almost as much as a tag recovery can. The unique gear appears to be hand-forged and is definitely the type used by Japanese west of Hawaii and in the long-line fishery around Wake and Midway Islands. The fish apparently had been hooked by a Japanese fisherman but escaped by breaking the line. (News release of August 22 from the California Department of Fish and Game.)



## Tuna

TAG RETURNS REVEAL MIGRATION OF ALBACORE IN PACIFIC: Two more albacore tuna, tagged by the California Department of Fish and Game, have spanned the vast Pacific to shed new light on a life history once thought impossible to record. These fish traveled several thousand nautical miles to participate in the ocean fishery of two great continents. California marine biologists tagged them near the California coast, one in September 1956 and one in July 1957. Both were caught off Japan in June 1958 and their tags returned to the California Department by Japanese fisheries agencies.

For many years, fisheries workers believed that the albacore resource in the North Pacific was made up of three main populations--one that lived along the west coasts of Baja California and the United States, another near the Hawaiian Islands, and a third off the coast of Japan. Conclusive proof of this theory was difficult to obtain, but feelings on the matter were pretty firm.

Then in 1952, marine biologists developed a tag with such tremendous staying qualities that for the first time in research history it became possible to study the migratory habits of the mysterious oceanic albacore. California biologists began to use these tags during 1952 and early returns revealed the first of the albacore's well-kept secrets--during the summer and fall it migrated northward from southern Baja California and swam on up the California coast.

As it had during previous years, the coming of winter marked the disappearance of the schools from California waters and the end of the fishery for another season. Where they had gone was anyone's guess.

This riddle remained unsolved until June 23, 1953, when a Japanese fisherman captured one of California's tagged albacore in the waters near Japan. This history-making occasion blazed the trail for a whole new trend of thinking regarding North Pacific albacore stocks. One transpacific recovery, however, did not constitute positive proof that there was free mixing between the California and Japanese populations. Neither did it prove that Pacific albacore had usurped, from the Atlantic eels, the title for the lengthiest migration ever known in the fish world.

In 1954, two additional tagged albacore were recaptured near the Hawaiian Islands, demonstrating an even more closely knit relationship. Now for the first time, a close association had been found between the California stocks and those fished in the central Pacific.

Subsequent tagging has shed further light on these inter-relationships.

By July 1958, a total of five albacore, tagged in California's coastal fishery, had traversed this planet's greatest ocean and been recaptured in the Japanese coastal fishery, and two had been recovered near the Hawaiian Islands. In addition, 17 albacore had been recaptured on our coast one and two years after they had been tagged and released here, further pointing up theories that had been thought unprovable, that these Pacific wanderers will visit California during several successive seasons. (California Department of Fish and Game news release, August 15, 1958.)



**U. S. Foreign Trade**

**GROUND FISH FILLET IMPORTS, AUGUST 1958:** During August 1958, imports of groundfish and ocean perch fillets and blocks amounted to 13.5 million pounds. Compared with the same month of 1957, this was a drop of 1.1 million pounds or 7 percent.

Canada continued to lead all other countries with 10.1 million pounds or 74 percent of the month's total imports. Iceland was second with over 2.5 million pounds or 19 percent of the total. Imports from Denmark, West Germany, Miquelon and St. Pierre, the United Kingdom, Norway, and the Netherlands made up the remaining 926,000 pounds or 7 percent.

During the first eight months of 1958, imports of groundfish and ocean perch fillets and blocks amounted to 100.0 million pounds--3.6 million pounds or 4 percent above the quantity imported during the same period of 1957. Imports from Canada represented 71 percent of the 1958 eight-months total. Iceland accounted for 16 percent, Denmark 8 percent, and the remaining 5 percent came from eight other countries.

Note: See Chart 7 in this issue.

\* \* \* \* \*

**EDIBLE FISHERY PRODUCTS, MAY 1958:** Imports of edible fresh, frozen, and processed fish and shellfish into the United States during May 1958 were up 9.8 percent in quantity and 14.4 percent in value as compared with April 1958. The increase

Item	Quantity			Value		
	May		Year	May		Year
	1958	1957	1957	1958	1957	1957
Imports:	(Millions of Lbs.)			(Millions of \$)		
Fish & shellfish:						
Fresh, frozen & processed <sup>1/</sup> . . . . .	72.4	59.3	837.0	22.3	20.4	248.4
Exports:						
Fish & shellfish:						
Processed only <sup>1/</sup> (excluding fresh & frozen) . . . . .	1.4	5.5	69.7	0.3	1.0	16.8

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

was principally due to more imports of frozen groundfish and other fillets, shrimp, sardines canned in oil, fresh and frozen sea scallops, canned and frozen spinning lobsters, and canned tuna in brine.

Compared with May 1957, the imports this

May were higher by 22.0 percent in quantity and 9.3 percent in value because of more arrivals of frozen groundfish and other fillets, canned sardines, canned salmon, frozen shrimp, frozen tuna, and canned tuna in brine.

United States exports of processed fish and shellfish in May were up 7.7 percent in quantity and unchanged in value as compared with the preceding months. Compared with the same month in 1957, the exports in May 1958 were lower by 74.5 percent in quantity and 70.0 percent in value, due primarily to below-normal packs of California sardines, mackerel, and anchovies which curtailed the export of these products.

\* \* \* \* \*

**IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:**

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1958 at the 12-1/2 percent rate of duty has been established as 44,693,874 pounds. Any imports in excess of this established quota will be dutiable at 25 percent ad valorem.

Imports from January 1-August 2, 1958, amounted to 26,636,243 pounds, according to data compiled by the Bureau of Customs. This leaves a balance of 18,057,631 pounds of the quota which may be imported during the balance of 1958 at the 12-1/2 percent rate of duty. Last year from January 1-August 3 a total of 22,518,460 pounds had been imported.

\* \* \* \* \*

**IMPORTS AND EXPORTS OF SELECTED FISHERY PRODUCTS, JANUARY-JUNE 1958: Imports: GROUND-FISH FILLETS AND BLOCKS:**

Imports of these products for the first half of 1958 were 1 percent higher than during the similar 1957 period. Imports of cod fillets were up 9 percent owing to greater receipts from Canada and Denmark, whereas imports of haddock, hake, pollock, and cusk fillets declined by 14 percent due to lower receipts from Norway and Canada. Imports of ocean perch fillets were 2 percent greater; increases in shipments from Canada more than made up for a sizable decline from Iceland. Imports of blocks or slabs increased by 5 percent with larger receipts of Danish products offsetting reduced Canadian shipments.

**FISH BITS:** Available data on blocks of bits and pieces of groundfish fillets showed almost 5 million pounds imported from Iceland during the first six months of 1958. During June, imports totaled 3.1 million pounds.

**FROZEN TUNA:** Imports for the first half of 1958 were 14 percent over the same 1957 period. Receipts in 1958 of frozen yellowfin and skipjack from Japan more than doubled, whereas receipts from Peru were slightly less than half. Imports of albacore tuna were 18 percent less than during the first half of 1957.

**TUNA LOINS AND DISCS:** Reflecting the voluntary restrictive measures imposed by the Japanese, imports January-June 1958 declined 53 percent from the similar 1957 period. However, trade reports from Japan indicate that exports to the United States may be resumed sometime in October 1958. Exports, under a check-price system, up to 3,000 short tons will probably be scheduled from October 1958 to April 1959. Imports of tuna loins and discs from Cuba continued to rise during June.

**CANNED TUNA:** For the first six months of 1958 imports were 5 percent above those of the comparable 1957 period. Larger imports of canned tuna, other than albacore, were responsible for the increase and also compensated for reduced imports of canned albacore. The six-months total for canned albacore imports was 27 percent less than in the similar 1957 period; the decrease was partly due to reduced summer albacore catches by Japan.

**CANNED BONITO:** Despite increased June receipts, imports from Peru for the first half of 1958 were 17 percent below the first half of 1957, principally due to a decline in brine-packed imports.

**FRESH AND FROZEN LOBSTERS:** Imports for the first half of 1958 were 4 percent less than for the first six months of 1957.

**FRESH AND FROZEN SHRIMP:** The continuing gains in shipments from Hong Kong, in particular, and Ecuador offset declines from Japan and Panama. Total January to June imports were 11 percent above a year ago.

**CANNED OYSTERS:** Owing to greatly increased receipts from Japan, imports during the first half of 1958 rose 100 percent over those of the same 1957 period.

**CANNED SARDINES:** A 13-percent drop in imports of sardines canned-in-oil during January-June 1958 was due mainly to a decline in receipts from Norway, the principal supplier. Imports of sardines not-in-oil in the same 1958 period were up 600 percent due mainly to the large gain in shipments from the Union of South Africa.

**CANNED SALMON:** Large shipments of canned salmon in June 1958 from Japan and Canada raised total imports during the first six months of 1958 to almost three times those of the same 1957 period.

**CANNED CRABMEAT:** Imports for the first half of 1958 were 9 percent below the same period of 1957.

**FISH MEAL:** Imports for the first half of 1958 were 16 percent above the 1957 period. Increased receipts from Angola, Peru, Chile, and the Union of South Africa more than offset the sharp decrease in receipts from Canada.

**Exports: CANNED SARDINES, MACKEREL, AND SARDINES:** Exports of these products January-July 1958 continued below those of last year. Declines reported were as follows: canned sardines, 60 percent; canned mackerel, 88 percent; and canned anchovies, 90 percent. The drop in exports was due to the light pack because of the scarcity of fish.

**CANNED SALMON:** June exports were greater than those of June 1957, but the half-year total was still 42 percent less than for the same 1957 period.

**FISH OIL:** The total of fish-oil exports for the first six months of 1958 were 45 percent below those of the same 1957 period. The large gain in shipments to Canada were not enough to offset sharp declines in shipments to West Germany and the Netherlands.

**Virginia**

**CRAB KILLS CAUSED BY LACK OF OXYGEN:** A high mortality of crabs in pots this summer hurt Virginia's crab industry. Biologists at the Virginia Fisheries Laboratory at Gloucester Point say that the kills have been caused by lack of oxygen in the water.

A member of the Laboratory's staff stated that crabs, oysters, fishes, and other aquatic animals, just like animals on land, need oxygen to breathe, but that their

oxygen had to be obtained from the water. In summer, the deeper waters of Chesapeake Bay and the lower parts of some of the larger rivers become almost stagnant, and the oxygen dissolved in these waters is used up rapidly by animals and bacteria. It is thought that this summer the situation was worse than ever before.

Three things have combined to produce unusually serious conditions this year, according to the Laboratory Director. He stated that (1) unusually heavy rains brought more organic material than usual down from the farms, woodlands, and marshes; (2) continued high-water temperatures speeded up the rate of decomposition of organic material and the respiration rate of animals in the water; and (3) calm weather prevented mixing by winds, the only way in which the deeper waters can renew their oxygen supply.

Working closely with the Chesapeake Bay Institute of the Johns Hopkins University, Virginia's biologists have found that the deeper waters of the Chesapeake Bay off Tangier Island and in southern Maryland are completely devoid of oxygen. Oxygen-poor water is also prevalent in the Piankatank and Rappahannock Rivers in Virginia and the Potomac and Patuxent Rivers in Maryland.

In the lower 30 miles of the Potomac, water deeper than 20 feet contains no oxygen at all. This is true also of deep water at the mouth of the Rappahannock. Below 30 feet in the Rappahannock, the water contains only one-tenth the amount of oxygen it could hold, and it is in this deep water that crabbers are suffering losses. Fish and crabs (not caught in traps) can move into shallower water to escape the adverse conditions.

Water over oyster grounds in the Rappahannock still contains enough oxygen, but conditions could rapidly become worse if heavy rains bring more organic material from land and hot weather continues. This combination of circumstances, following hurricanes "Connie" and "Diane" in 1955, caused disastrous oyster kills in the Rappahannock River.



## Washington

SALMON FISH FARMING SHOWS PROMISE: The Governor of the State of Washington announced in July 1958 that he has received an optimistic report on fish farming with salmon from the Director of the State Department of Fisheries.

Nearly 4 million salmon have been reared and released under a program that uses natural bays, estuaries, lagoons, ponds and lakes, the Director reported.

Since the State initiated the program in January 1958, the program has cost \$24,870, for land, construction, feed, and the eradication of predators.

The salmon are taken directly from fresh-water pools at the hatcheries and placed in ponds, sometimes directly into salt water. The mortality rate is low. The salmon are held in the natural basins until they reach the stage of growth where they would begin to migrate and then they are released.

In some of the basins two "crops" can be raised in one year. Seven lakes and lagoons have been planted with salmon or are ready to be planted. Thirty-five additional sites are under investigation or are in line for the construction of gates and hydraulic controls.

The success of fish farming will depend upon having sufficient spawn to incubate and rear large numbers of young fish and a number of suitable lakes and lagoons that are large enough and can be made ready for salmon rearing operations.

Areas under investigation are spread throughout the State, including Eastern Washington, so that the benefits therefrom may be distributed to the salmon fishing industry throughout the State.

The salt-water rearing program is expected to be accelerated following the acquisition of some 8 additional lagoons presently under survey. These areas comprise only those that have been converted to natural salmon rearing ponds or are concerned with fish-farm projects. As the program progresses, additional possible salmon rearing areas are expected to be found that will be suitable for the expansion of natural low-cost rearing areas.

The natural fish-farming program for salmon is carried out in conjunction with fish reared and released from the State's 19 hatcheries and 2 salt-water research stations (one at Pt. Whitney and the other at Bowman's Bay). This year's release of young salmon is expected to approximate 65 million fish. Additional plantings of salmon in Washington streams from Federally-operated stations amounted to about 48 million young salmon during 1957. This should be equalled this year.

Young fish marked and released from Columbia River, Grays Harbor, Willapa Harbor, and Puget Sound stations are showing up in fisheries from Central Alaska to Southern Oregon. A large percentage of Deschutes River-marked fish make up the sport catch in lower Puget Sound.

Note: Also see Commercial Fisheries Review, August 1958 p. 47.



## Wholesale Prices, August 1958

The August 1958 edible fish and shellfish wholesale price index remained close to the near-record level of the preceding months and was only 1.6 percent below the 11-year record of June 1958. Seasonal declines in the wholesale prices of fresh and frozen shrimp and a drop in ex-vessel prices for haddock were primarily responsible for the slight decline (one percent) in the index between July and August this year. These lower prices more than offset some increases in wholesale prices for fresh-water fish, frozen fillets, and canned tuna. The August edible fish and shellfish (fresh, frozen, and canned) wholesale price index (129.9 of the 1947-49 average) was 12.0 percent above the same month a year ago.

Although landings of groundfish (principally haddock) continued light in August, prices for large drawn haddock at mid-August were down about 13.6 percent from the preceding month; fresh Western halibut prices declined about 7.5 percent as the fishing season approached its peak and end. Increases of 5.7 percent in red king salmon prices, 40 percent for Lake Erie whitefish, and 9.3 percent for Great Lakes yellow pike more than offset the drop in haddock and halibut prices. Thus the index for the drawn, dressed, or whole finfish subgroup from July to August 1958 rose 1.1 percent. As compared with August 1957, the subgroup index this August was up 35.3 percent because August 1958 prices were substantially higher for all items in the subgroup except for Lake Superior whitefish (down 12.3 percent).

The fresh processed fish and shellfish subgroup index for this August declined 4.7 percent as compared with the preceding month, but was up by 6.3 percent from August 1957. Because landings of East Coast shrimp improved during

August, prices at New York dropped 8.1 percent from the previous month. Small haddock fillets at Boston were also lower (down 2.5 percent) due to the lower ex-vessel prices. But both of these items were priced higher this August (shrimp was up 7.7 percent and haddock fillets up 26.2 percent) than in August 1957.

The frozen processed fish and shellfish subgroup index was unchanged from July to August this year, but increased 1.8 percent from August 1957 to August 1958. Price increases from July to August of 2.5 percent for frozen haddock fillets and 4.7 percent for frozen flounder fillets were offset by a drop of 5.4 percent in the price for frozen shrimp at Chicago. Because of light production and very low inventories at the beginning of the season, all frozen fillets in the subgroup were priced higher (haddock up 20.8 percent) in August this year as compared with the same month a year ago, but shrimp was priced lower by 7.8 percent.

Canned fishery products prices this August were up from the previous month by 1.1 percent and from the same month of 1957 by 5.4 percent. Wholesale prices for canned pink salmon and Maine sardines were unchanged from July to August this year, but higher prices for canned tuna pushed this subgroup index up by 2.6 percent. All canned fishery products that make up this subgroup with the exception of pink salmon were priced higher in August 1958 than in August a year ago. The market remained firm for canned tuna and Maine sardines, but a drop in the wholesale prices of canned pink salmon was predicted as the month ended due to the good pack of this variety in Alaska. Future prospects for better catches of California sardines were good and the 1958 pack is expected to be substantially greater than in 1957.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, August 1958 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices <sup>1/</sup> (\$)		Indexes (1947-49=100)						
			Aug. 1958	July 1958	Aug. 1958	July 1958	June 1958	Aug. 1957			
			ALL FISH & SHELLFISH (Fresh, Frozen, & Canned) . . . . .								129.9
<u>Fresh &amp; Frozen Fishery Products:</u> . . . . .					147.2	150.0	150.4	127.0			
<u>Drawn, Dressed, or Whole Finfish:</u> . . . . .					152.7	151.0	147.2	112.9			
Haddock, lge., offshore, drawn, fresh . . . . .	Boston	lb.	.11	.13	113.7	131.6	121.6	80.6			
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.37	.40	114.5	123.8	123.8	99.0			
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.80	.75	178.7	169.1	168.5	133.7			
Whitefish, L. Superior, drawn, fresh . . . . .	Chicago	lb.	.54	.54	132.6	132.6	132.6	151.2			
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.88	.63	177.0	126.4	141.6	161.8			
Yellow pike, L. Michigan & Huron, rnd., fresh .	New York	lb.	.77	.70	179.4	164.1	129.0	152.4			
<u>Processed, Fresh (Fish &amp; Shellfish):</u> . . . . .					142.4	149.4	151.3	134.0			
Fillets, haddock, sml., skins on, 20-lb. tins . .	Boston	lb.	.39	.40	131.0	134.4	124.2	103.8			
Shrimp, lge. (26-30 count), headless, fresh . .	New York	lb.	.91	.99	143.8	156.4	163.5	133.5			
Oysters, shucked, standards . . . . .	Norfolk	gal.	5.75	5.75	142.3	142.3	139.2	142.3			
<u>Processed, Frozen (Fish &amp; Shellfish):</u> . . . . .					133.6	136.3	139.7	131.3			
Fillets: Flounder, skinless, 1-lb. pkg. . . . .	Boston	lb.	.41	.40	106.0	103.4	103.4	102.1			
Haddock, sml., skins on, 1-lb. pkg. . . . .	Boston	lb.	.35	.34	109.9	105.2	102.0	91.0			
Ocean perch, skins on, 1-lb. pkg. . . . .	Boston	lb.	.29	.29	114.8	114.8	116.8	108.8			
Shrimp, lge. (26-30 count), 5-lb. pkg. . . . .	Chicago	lb.	.89	.94	137.3	145.1	152.0	148.9			
<u>Canned Fishery Products:</u> . . . . .					105.7	104.6	104.7	100.3			
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. . .	Seattle	cs.	23.00	23.00	120.0	120.0	120.0	120.0			
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs. . . . .	Los Angeles	cs.	11.95	11.65	86.2	84.0	84.0	80.8			
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs. . . . .	Los Angeles	cs.	5.68	5.63	132.4	131.3	132.4	105.0			
Sardines, Maine, keyless oil, No. 1/4 drawn (3-3/4 oz.), 100 cans/cs. . . . .	New York	cs.	7.72	7.72	82.2	82.2	82.5	75.0			

<sup>1/</sup>Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.



### FISH ROE

In Canada, a satisfactory method has been worked out for utilizing roes of cod, haddock, and pollock which are usually thrown overboard. The proteins and lipids are separated, resulting in a tasteless and odorless roe meal with a high protein content, and an odorless fish-egg lecithin which is of value in the preparation of pharmaceutical products.

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