

# TRENDS AND DEVELOPMENTS

## Alaska

### EARTHQUAKE--PRELIMINARY APPRAISAL:

Damage to Fishery Industry: The fishing industry in central Alaska was adversely affected by the earthquake and resulting tidal waves of March 27, 1964. The U. S. Bureau of Commercial Fisheries reported that damage was centered in the Prince William Sound, Cook Inlet, and Kodiak Island areas which have important salmon, crab, and shrimp fisheries.

From the standpoint of damage to fisheries, Kodiak Island was hardest hit. In the Seward area the salmon, shrimp, and king crab fisheries were severely damaged. The salmon and Dungeness crab industries of Prince William Sound were hard hit. The damage to the fishing industry in Cook Inlet appeared to be relatively light.

As of mid-April the total damage to the Alaskan fishing industry could not be estimated. The earthquake raised the land mass 6 to 10 feet in Prince William Sound, making water depths inadequate at many docks, marine ways, and boat anchorages. On the other hand, in the Kodiak Island and Cook Inlet areas the land mass dropped and the sea level has been raised 5 to 8 feet, flooding or threatening dock installations and vessel facilities. It was believed that spring high tides might further damage fishery facilities.

Preliminary reports indicated little damage on the Alaska Peninsula, Aleutian Islands, and Bristol Bay. Equipment in Southeastern Alaska below Yakutat was virtually unaffected. Since the earthquake occurred during the off-season for most fisheries, operators had a little time for assessment and planning. It was believed there would not be too much difficulty in getting salmon canning into operation in the major areas by mid-June. But probably more difficulty would be experienced in resuming king crab industry operations on a normal scale. The production of canned salmon in Alaska this year should not be se-

riously affected. The halibut fleet was not affected by the earthquake.

It is too early to predict the long-range effect on the actual fishery resources of Alaska. The Federal and State Government are marshalling their forces to help rebuild Alaska's fishing and other industries affected by the earthquake.

The Alaska Department of Fish and Game announced on April 2 that the deadline for licensing of salmon fishing nets and vessels in the Kodiak, Prince William Sound, and Cook Inlet registration areas was extended by emergency regulation to May 15, 1964. This was done to give all fishermen and the industry a month in which to assess damage and losses which occurred to vessels and gear in those areas so they may license according

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Salmon Harvest Not Jeopardized: Alaska fishing vessel and gear losses in the Cook Inlet, Kodiak, and Prince William Sound areas have not jeopardized the ability of fishermen of the State to harvest the salmon runs during the 1964 season, according to the Alaska Commission of Fish and Game.

The effects of the earthquake and resulting tidal wave on the fishing fleet have been assessed by preliminary surveys. Information received by the Alaska Fish and Game Department indicates that the available Alaska fishing gear will be able to harvest in an orderly manner the pink, red, and other salmon runs of Kodiak, Prince William Sound, Cook River, and Cook Inlet.

Nonresidents were being advised that local gear is fully capable of taking the run. Any significant increase of nonresident salmon gear would compound management problems and would result in greatly reduced fishing time for everyone. It would not be in

...est interest of the resource or the commercial fishermen to have an influx of gear from outside of Alaska during the coming season, the Alaska Commissioner of Fish and Game stated. (Alaska Department of Fish and Game, April 13, 1964.)

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**FOREIGN FISHING ACTIVITY OFF ALASKA, LATE MARCH 1964:**

By the end of March 1964, the Soviet fishing fleet believed to be trawling for Pacific ocean perch in the Gulf of Alaska southwest of Yakutat had increased to about 30 vessels.

Another Soviet fleet began fishing in the vicinity of Chirikof Island with indications that it also was trawling for Pacific ocean perch. This second fleet was estimated to consist of about 18 trawlers, 1 factoryship, and at least 2 reefers and support vessels.

The Soviet fleet in the northeastern Bering Sea was believed to consist of at least 125 trawlers, 15 reefers, about 4 factoryships, and about 3 cargo vessels. Major fishing emphasis was believed to have shifted from herring to Pacific ocean perch and, to a lesser degree, flounder and sole.

Two Japanese king crab factoryships, each accompanied by 6 catcher vessels, were reported to have left Japan on March 1 for the Bristol Bay king crab fishery. This year they began the season two weeks earlier than last year. Their combined catch quota of 235,000 cases of canned king crab is the same as in 1963.

The Japanese shrimp factoryship Chichibu Maru, accompanied by 12 trawlers, was reported in March to be fishing for shrimp in the area northward of Unimak Pass in the Bering Sea. Although fishing operations were primarily for shrimp, Pacific ocean perch and herring are included as part of the production goal of the fleet.

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**NEW VESSELS BEING BUILT FOR ALASKAN FISHERMEN:**

Six new fishing vessels of modern design are being built at shipyards in the State of Washington for delivery to Alaskan fishermen. Three of those vessels are being financed with replacement loans and 3 are being built under the Mortgage Insurance Program

of the U. S. Bureau of Commercial Fisheries.

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**CANNED FISHERY PRODUCTS PACK, 1963:**

The total wholesale value of the Alaska canned pack of crab, shrimp, clams, and salmon in 1963 was \$75.9 million as compared with the Alaska canned pack value of about \$100.9 million in 1962, according to preliminary data from the Alaska Department of Fish and Game.

The canned salmon pack in 1963 was 2,652,922 cases (48 1-lb. cans), down 858,190 cases from the 3,511,112 cases packed in 1962.

The king crab pack in 1963 amounted to 255,881 cases (48 7½-oz. cans) as compared with 187,112 cases in 1962, 152,719 cases in 1961, and 100,105 cases in 1960. The Dungeness crab pack in 1963 amounted to 15,650 cases (48 6½-oz. cans) as compared with 16,322 cases in 1962.

The shrimp pack in 1963 amounted to 61,950 cases (48 5-oz. cans) as compared to 86,184 cases in 1962.

The clam pack in 1963 amounted to 5,960 cases (48 4⅔-oz. cans) as compared to 10,200 cases in 1962.

Note: See Commercial Fisheries Review, July 1963 p. 28.



**Alaska Fishery Investigations**

**TAGGED KING CRAB RETAINS TAG OVER SIX YEARS:**

Intensified king crab fishing in the Kodiak Island area yielded a return of 178 tags during March 1964. This was the largest monthly return of tags since November 1962. Most of the returns were from inshore locations. On January 28, 1964, a tagged crab was caught near the Shumagin Islands, which had been released within 10 miles of the area six and one-half years earlier. This is the longest period between release and recapture recorded to date. During that time the crab grew from 4.1 to 7.6 inches in carapace width. The tag probably remained on the crab through 5 or 6 molts.

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### SOUTHEAST PINK EGG SURVIVAL RATE CONSIDERED GOOD:

The winter survival of salmon eggs was measured during March by egg-pump sampling at Little Port Walter, Traitors Cove, and Olsen Bay. Survival rates of pink salmon eggs and fry in Little Port Walter and Traitors Cove streams were good. Above the medium high-tide level survival ranged from 9 to 43 percent. Only 0.5-percent survival was noted for Traitors Cove chum salmon which had been subjected to severe post-spawning low flows. Olsen Bay sampling in Prince William Sound showed a fair survival of preemergent pink fry and a good survival of chum fry. The effects of the severe earthquake on preemergent fry survival was unknown. Sampling was being done in March by the Alaska Department of Fish and Game to obtain postquake fry abundance in Prince William Sound. The Bureau's Auke Bay Laboratory biologists were to sample Olsen Bay again since it was near the center of the disturbance. This may give some indication as to the effects of the earthquake.

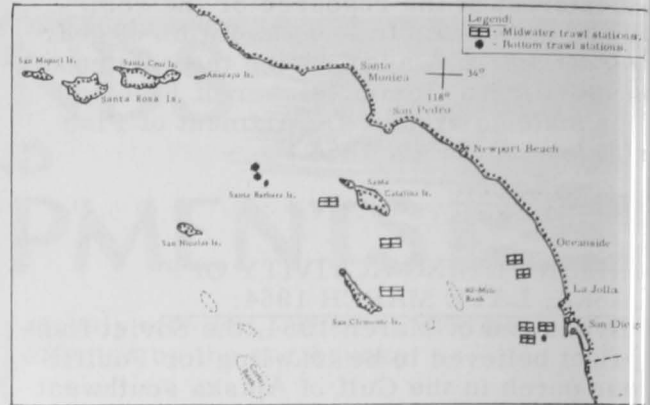


## California

### BOTTOM-TRAWLING EXPLORATIONS OFF SOUTHERN CALIFORNIA:

M/V "N. B. Scofield" Cruise 64-S-1 (February 25-March 11, 1964): The objectives of this cruise by the California Department of Fish and Game research vessel N. B. Scofield were to: (1) conduct ecological surveys of representative areas and to evaluate methods and goals for possible future work; (2) continue exploration of offshore areas for bottom-trawling grounds; and (3) collect a sample of kelp bass (Paralabrax clathratus) for reproduction studies. The area of operations was in the southern California coastal waters from northern Channel Islands to the California-Mexican boundary.

Because of continual gales it was not possible to occupy trawling stations during more than half of the cruise period. Eight midwater trawling stations and 3 bottom-trawling stations were occupied. All tows were for 30 minutes, although the total time from beginning to completion of a deep mid-depth haul is at least  $2\frac{1}{2}$  hours. Where possible, all fish and invertebrates were identified and enumerated and common fish species were measured. Unidentified and unusual



Shows station pattern of M/V N. B. Scofield Cruise 64-S-1, February 25-March 11, 1964.

marine specimens were saved for specialists. A number of rare cephalopods were obtained for a special study sponsored by California Department of Fish and Game. A large pelagic octopus of the genus Alloposus was caught off San Diego, and may be a first for California waters. Other bathypelagic fish species including lanternfish, lightfish, and an anglerfish were collected on this cruise.

Santa Barbara Island Area: Bottom trawls were made in depths of 220-245 fathoms. Fauna numbers of Dover sole (Microstomus pacificus), a few sablefish (Anoplopoma fimbria) and ratfish (Hydrolagus colliei) as well as longnose skates (Raja rhina) were caught along with a few other flatfish and a fair number of rockfish. This area appears to be generally trawlable on the basis of two exploratory cruises. A number of unusual cephalopods, and large catches of bathypelagic fishes were made. Work had to be terminated in this area as weather and sea conditions worsened and could not be resumed until conditions improved seven days later off San Diego.

San Diego Area: Bottom trawl work was discontinued near the end of the cruise when the net was torn up west of Pt. Loma. Several midwater hauls were made off San Diego and La Jolla which yielded a number of interesting bathypelagic fish and invertebrates. A night haul was made west of Pt. Loma with 200 fathoms of cable out which produced results comparable to those obtained with 700 fathoms in daytime hauls.

Santa Catalina and San Clemente Islands Area: Good collections of deep-water fish and invertebrates were made off Santa Catalina Island and between there and San Clemente.



Island. Good kelp bass fishing at Santa Catalina Island yielded a sample of kelp bass collected by the Department's Sportfish Project studies in reproduction.

Kelp bass fishing at San Clemente Island poor

See Commercial Fisheries Review, February 1963 p. 20.

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#### PELAGIC FISH POPULATION SURVEY CONTINUED:

Aerial surveys to determine the distribution and abundance of pelagic fish schools were continued during flights over the inshore area off the California coast by aircraft of the California Department of Fish and Game. The following airplane spotting flights were made from February 10 to April 1964:

Airplane Spotting Flight 64-3 (February 11, 1964): Cessna "182" 9042T scouted inshore area from Point Ano Nuevo to the United States-Mexican Border during the survey flight.

Weather conditions were quite variable on the days of this survey. From Point Sur north, visibility was hindered by low clouds and rain squalls. South of Point Sur, conditions improved and were generally good for the balance of the survey.

On February 10 the area from Point Ano Nuevo to Point Vicente was scouted. One Pacific sardine (Sardinops caeruleus) and northern anchovy (Engraulis mordax) schools were seen between Point Sur and Miras Blancas.

On February 11, the area from Point Vicente to the United States-Mexican Border was scouted. Only six small anchovy schools were seen that day, all in the general area of Los Angeles-Long Beach harbor.

Airplane Spotting Flight 64-5 (February 11, 1964): Beechcraft N5614D surveyed inshore and offshore waters from Long Beach, Calif., to Point Eugenia, Baja California, during this flight.

On the first day's flight the area from Long Beach to Point Eugenia-Cedros Island was scouted. Air and water visibility were exceptionally good but at Cedros Island a cloud cover and strong ground winds caused poor water visibility. Those conditions persisted during the return flight along

the eastern shore area of Sebastian Viscaïno Bay, north to Point San Antonio. From that Point north to Long Beach, aerial spotting conditions were excellent.

Concentrations of northern anchovies (Engraulis mordax) were found in the Dana Point, Oceanside, and Carlsbad areas where none had been seen on the previous week's flight. South of the United States-Mexican Border a large concentration of mixed anchovy and Pacific sardine (Sardinops caeruleus) schools were encountered at Cape Colnett. The largest concentration of sardines (41 schools) was between Point Eugenia and Scammons Lagoon.

Gray whales (Eschrichtius glaucus) were common along most sections of the coastline. At Scammons Lagoon over 30 whales were counted just inside the mouth. That lagoon is one of their major breeding areas.

On February 21 the southern California Channel Islands area was scouted. Strong desert winds off southern California precluded flights the day previous. The 21st was clear except for the Santa Catalina Island area where a low haze limited visibility to between 5 and 8 miles. Despite poor visibility around the island, 83 anchovy schools and several schools of Pacific bonito (Sarda chiliensis), jack mackerel (Trachurus symmetricus), and other unidentified pelagic fish were seen. Over 100 Pacific pilot whales (Globiocephala scammoni) comprising 15 schools were sighted along the western side of the island.

On this flight four small sardine schools were found near Santa Barbara Island. Seven gray whales and one unidentified mammal were seen near Santa Rosa and Santa Cruz Islands; 16 individual gray whale and two pilot whale schools were spotted in the vicinity of San Clemente Island.

Airplane Spotting Flight 64-6 (March 9-11, 1964): Cessna "182" 9042T surveyed the inshore area from Moss Landing, Monterey Bay, to the United States-Mexican Border on this flight.

On the first day's flight the area from Moss Landing to Point Vicente was scouted. Weather conditions were fair to poor. Rain squalls were encountered north of Moss Landing and broken, scattered clouds south to Mussel Point. A smoky haze severely limited aerial visibility from Santa Barbara to Point Vicente.

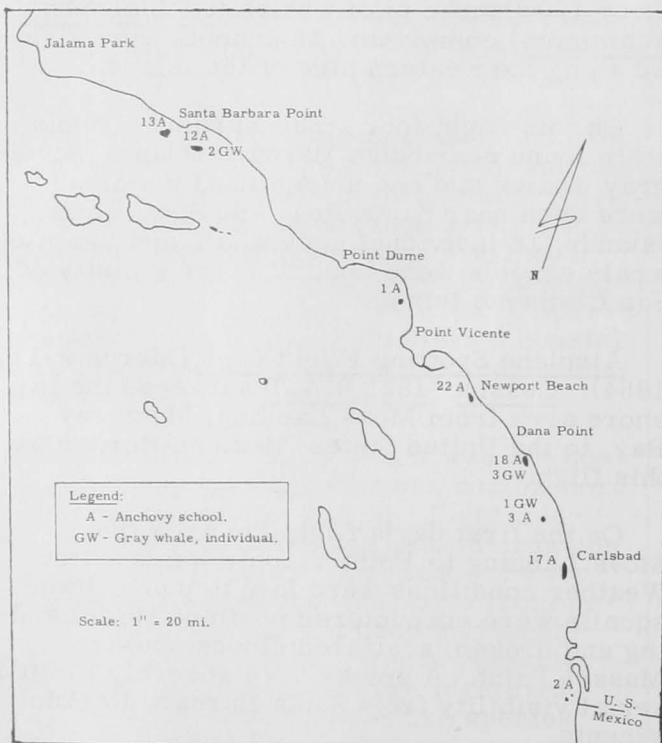


A total of 8 northern anchovy (*Engraulis mordax*) schools were sighted between Santa Barbara and Point Vicente and 29 gray whales (*Eschrichtius glaucus*) were seen between Santa Barbara Point and Monterey Bay.

The area between the Mexican Border to Point Vicente was scouted on the second day's flight. Air and water visibility were generally good with the exception of the San Diego area where rain squalls were encountered. The largest anchovy school group encountered this year (247 schools) was sighted between Laguna Beach and Point Vicente.

The area from Point Vicente to Piedras Blancas was scouted on the last day of this survey. Thick smoke and haze persisted south of Jalama Park. Low broken clouds were encountered until reaching Estero Point and thereafter rain squalls prevailed. Despite very limited visibility, anchovy school groups were located off Port Hueneme and in Santa Monica Bay.

Airplane Spotting Flight 64-7 (April 1-3, 1964): Cessna "182" 9042T surveyed the in-shore area from Pigeon Point, San Mateo County to the United States-Mexican Border during this survey flight. No scouting was done on April 1, the first day of the survey, because of poor weather.



Pelagic Fish Survey Flight 64-7, April 1-3, 1964.

The area from Pigeon Point to Point Vicente was scouted on April 2. High winds caused rough seas throughout the area flown and no fish schools were seen.

On the last day of the flight the area from the United States-Mexican Border to Jalama Park was surveyed. Water and air visibility were generally good. Northern anchovy (*Engraulis mordax*) school groups were seen near Newport Beach, Dana Point and Carlsbad in the morning. One other group of anchovy was sighted at Santa Barbara Point. The anchovy school group sighted near Newport Beach in March had diminished to only a few scattered schools.

Note: See Commercial Fisheries Review, February 1963 p. 12 and April 1964 p. 12.

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HEARINGS ON EXPERIMENTAL ANCHOVY INDUSTRIAL FISHERY:

The California State Fish and Game Commission held a special meeting in Monterey, Calif., May 11, 1964, to hear public comment on a proposed experiment to allow commercial fishermen to take a maximum of 13,000 tons of anchovies for reduction purposes during the 12-month period beginning April 1, 1964, and ending March 31, 1965. (California Department of Fish and Game, April 6, 1964)

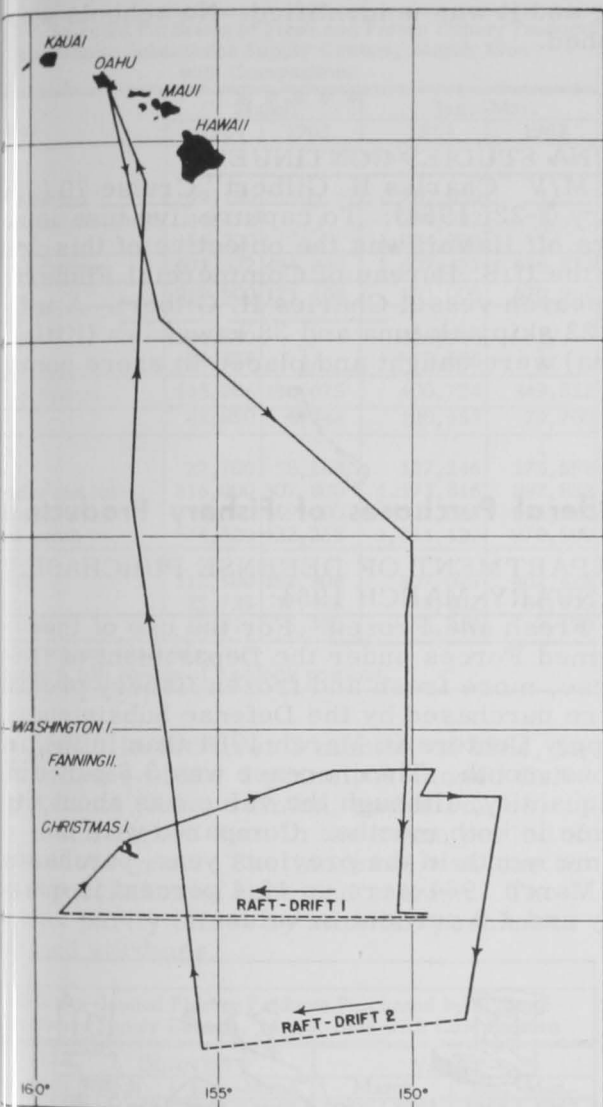


Central Pacific Fisheries Investigation

PELAGIC FISH POPULATION STUDIES CONTINUED:

M/V "Charles H. Gilbert" Cruise 71 - PART I (February 3-6, 1964): To select fish for small skipjack for visual acuity studies and small yellowfin for sound perception studies was the principal purpose of Part I of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Charles H. Gilbert. During 3 days of fishing in an area 3 to 5 miles off Makapu, Oahu, a total of 3 skipjack tuna, 82 yellowfin tuna, and 26 mackerel were caught and brought back to shore tanks. The captured fish ranged in size from 1 1/2 to 2 pounds.

PART II (February 14-March 27, 1964): To make observations on the ecology and behavior of the marine community in the area of a drifting raft and to collect specimens from the raft community were the main objectives of Part II of this cruise by the Charles H. Gilbert.



Charles H. Gilbert Cruise 71--Part II, February 14-March 1964.

On February 22, 1964, a raft was launched in an area of upwelling close to the Equator at latitude 00°09' N., longitude 149°35' W. to begin drift #1. Over a period of 193 hours and 31 minutes it drifted due west for 576 nautical miles at an average rate of 2.5 knots until it covered March 1, 1964, at latitude 00°10' N., longitude 159°12' W. It was decided not to duplicate drift #1 as specified on the cruise plan, but to start drift #2 at latitude 4° N. near the boundaries of the South Equatorial and Equatorial Counter Currents, an area where tuna had been sighted earlier. Poor visibility and rough seas prevented launching a raft in that area, so drift #2 was started south of the Cromwell Current at latitude 02°33' S., longitude 148°143' W. During drift #2 the raft drifted over a period of 215 hours 30 minutes for 395 miles at an average rate of

1.8 knots. Drift #2 was terminated March 20, 1964, at latitude 03°26' S., longitude 155°18' W.

Fish species observed during the drifts were: skipjack (*Euthynnus pelamis*)--adults and juveniles; yellowfin (*Neothunnus macropterus*)--small adults and juveniles; wahoo (*Acanthocybium solandri*); common dolphin (*Coryphaena hippurus*)--adults; little dolphin (*C. equiselis*)--adults and juveniles; mackerel scad (*Decapterus pinnulatus*); rainbow runner (*Elegatis bipinnulatus*); pilotfish (*Naucratus ductor*); rudderfish (*Psenes cyanophrys*); man-of-war fish (*Nomeus gronovii*); shark-sucker (*Remora remora*); puffer (*Arothron* sp.); flying-fish (*Exocoetidae*); blue shark (*Prionace glauca*); whitetip shark (*Pterolamiops longimanus*); whale shark (*Rhincodon typus*); and manta ray (*Manta* sp.). In addition, single specimens of an unidentified shark, free swimming remora, juvenile carangid, turtle, and porpoise were seen.

A greater variety and larger number of most species were observed around the raft during drift #2 than during drift #1. No fish accumulated around the raft in commercial quantities. A large percentage of the rudderfish and pilotfish which collected at the raft were caught with the raft purse net at the end of each drift. The only other fish captured at the raft was a single mackerel scad. Attempts to capture dolphin, wahoo, and other mackerel scad were unsuccessful.

Nineteen hundred feet of 16 millimeter color and black-and-white movie film and 548 color and black-and-white still pictures were taken of the marine life sighted from the raft and of general operations. Detailed field notes were kept during the 90 hours and 31 minutes of observation during drift #1 and 100 hours and 30 minutes of observation during drift #2. Attempts to track individual fish with sonar were unsuccessful, but the presence of fish beneath the raft out of visual range was monitored with the sonar during drift #2 for 15 minutes out of every hour during daylight hours.

Other experimental work during the cruise included efforts to sample tuna schools by live-bait and long-line fishing; to tag tuna when possible; and to collect larval and juvenile forms of tuna and tunalike fish with night-light fishing and plankton tows.

Five long-line stations were occupied with 5-basket 6-hook gear while the raft was drifting. During drift #1, the Cromwell Current set the long-line gear to the east while the raft drifted west, making it necessary to take the gear in early in order to keep the raft in sight. While long lining during drift #2, the research vessel was tied to the gear for part of the time to increase the duration of the set. A total of six whitetip sharks was caught but none was tagged. Six additional whitetip sharks were caught by hand-line and tagged. Two common dolphin were caught with squid hooks from the vessel. No other fish were caught from the vessel in the drift area. Two skipjack tuna, 2 wahoo, and 1 dolphin were caught by trolling.

Sixteen 1-hour night-light fishing stations were completed from the vessel while the raft was drifting. No tunalike fish were captured or seen. Several species of dolphin (*Coryphaena*) were collected. A total of 53 plankton tows was made.

Bathythermograph casts were made and surface salinity readings were taken at 3-hour intervals on all cruise tracks and at 6-hour intervals when drifting. In an effort to determine variability in an area where internal waves may be important, hourly bathythermograph casts, salinity samples, and surface temperatures were taken during a 24-hour period which began on February 24 at latitude 00°09' N., longitude 152°27' W. and terminated on February 25 at latitude 00°10' N., longitude 153°38' W.

The thermograph was operated continuously while at sea.

Drift cards were released with each bathythermograph cast north of latitude 12° N. on the outbound and inbound tracks and when each drift began and ended. A total of 920 drift cards was released.

A secchi and forel color reading were made at noon each day while drifting.

Flyingfish which landed on deck were collected for stomach analysis.

A standard watch for fish, birds, and aquatic mammals was made during daylight hours while under way and when the raft was drifting. A total of 4 skipjack schools and 11 unidentified schools were sighted. Of those, only one school was seen while drift-

ing and it was unidentified. No schools were fished.

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TUNA STUDIES CONTINUED:

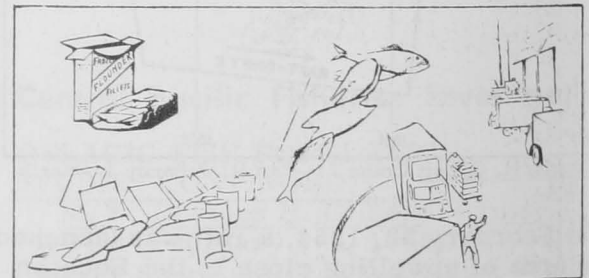
M/V "Charles H. Gilbert" Cruise 70 (January 3-22, 1964): To capture live tuna in waters off Hawaii was the objective of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Charles H. Gilbert. A total of 23 skipjack tuna and 38 kawakawa (little tuna) were caught and placed in shore ponds



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-MARCH 1964:

Fresh and Frozen: For the use of the Armed Forces under the Department of Defense, more fresh and frozen fishery products were purchased by the Defense Subsistence Supply Centers in March 1964 than in the previous month. The increase was 3.6 percent in quantity, although the value was about the same in both months. Compared with the same month in the previous year, purchases in March 1964 were up 15.4 percent in quantity and 4.9 percent in value.



Total purchases in the first 3 months of 1964 were up 11.0 percent in quantity but down 6.3 percent in value from those in the same period of the previous year. In 1964, there were larger purchases of flounder fillets, scallops, oysters, and clams, but smaller purchases of cod fillets, haddock fillets, and halibut steaks.

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, March 1964 with Comparisons

QUANTITY				VALUE			
March		Jan.-Mar.		March		Jan.-Mar.	
1964	1963	1964	1963	1964	1963	1964	1963
..... (1,000 Lbs.) .....				..... (\$1,000) .....			
2,382	2,064	6,790	6,117	1,236	1,178	3,555	3,792



Table 2 - Selected Purchases of Fresh and Frozen Fishery Products by Defense Subsistence Supply Centers, March 1964 with Comparisons

Product	March		Jan.-Mar.	
	1964	1963	1964	1963
	..... (Pounds) .....			
Headless	99,150	1/	282,050	1/
Head and deveined	46,472	1/	231,222	1/
Shrimp	456,200	1/	1,094,200	1/
	601,822	494,290	1,607,472	1,626,633
	299,900	171,168	691,000	570,968
	121,530	1/	326,918	1/
	21,676	1/	73,806	1/
Oysters	143,206	156,075	400,724	349,522
	43,850	8,744	120,358	79,700
	22,700	58,360	127,246	175,598
Whiting and sole	316,000	307,800	1,173,816	987,852
Black	217,650	189,300	2/577,894	684,220
Perch	348,520	422,258	1,011,120	970,590
But	112,500	152,308	307,025	402,428
Ann	25,735	17,405	49,302	51,535
Fish	2,610	6,130	5,310	9,180

1. Shutdown not available.  
2. Includes 8,650 pounds of haddock portions.

anned: In the first 3 months of 1964, to-  
purchases of the 3 principal canned fish-  
e products (tuna, salmon, and sardines)  
much higher than in the same period of  
previous year. The increase was due to  
lar purchases of tuna and salmon. The  
was partly offset by smaller purchases  
canned sardines.

Table 3 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, March 1964 with Comparisons

Product	QUANTITY				VALUE			
	March		Jan.-Mar.		March		Jan.-Mar.	
	1964	1963	1964	1963	1964	1963	1964	1963
	..... (1,000 Lbs.) .....				..... (\$1,000) .....			
	529	686	1,457	696	236	352	644	358
	1/	-	679	6	2/	-	416	4
	19	49	79	143	8	22	30	61

than 500 pounds.  
than \$500.  
(1) Armed Forces installations generally make some local purchases not included in the data given; actual total purchases higher than indicated because data on local purchases are not obtainable.  
(2) See Commercial Fisheries Review, May 1964 p. 16.



**Seals**

**RES FOR ALASKA SKINS AT  
NG 1964 AUCTION:**

he spring auction in 1964 (April 16-17)  
ited States Government-owned fur seal

skins yielded \$2.28 million. The average price per skin received for male fur seal skins (dyed Black, Kitovi, and Matara) was \$105.45 and for female skins (dyed Black, Kitovi, and Matara) the average price was \$71.16. At the fall 1963 auction, male and female skins were offered in mixed lots and the overall average price for the three colors of skins was \$111.72. Of a total of 10,311 Black skins sold at the October 1963 auction, 10,137 were male and the average price for those, including the small number of female skins, was \$126.13. At the spring 1963 auction, the three colors of male skins brought a record high average price of \$122.52.

The average price received for both male and female fur seal skins (dyed Black, Kitovi, and Matara) at the April 1964 auction was \$90.60. Lakoda, or female sheared seal skins, brought an average price of \$48.82, or much higher than the average of \$40.63 received at the fall 1963 auction, and more than the average of \$43.09 received at the spring 1963 auction.

Average prices per skin received for processed male fur seal skins at the spring 1964 auction were: Black, \$107.65; Kitovi, \$88.42; Matara, \$108.77. Average prices for both male and female dyed skins at the spring 1964 auction were (average for fall 1963 auction in parentheses): Black, \$92.47 (\$126.13); Kitovi, \$81.66 (\$95.58); Matara \$91.58 (\$103.94).

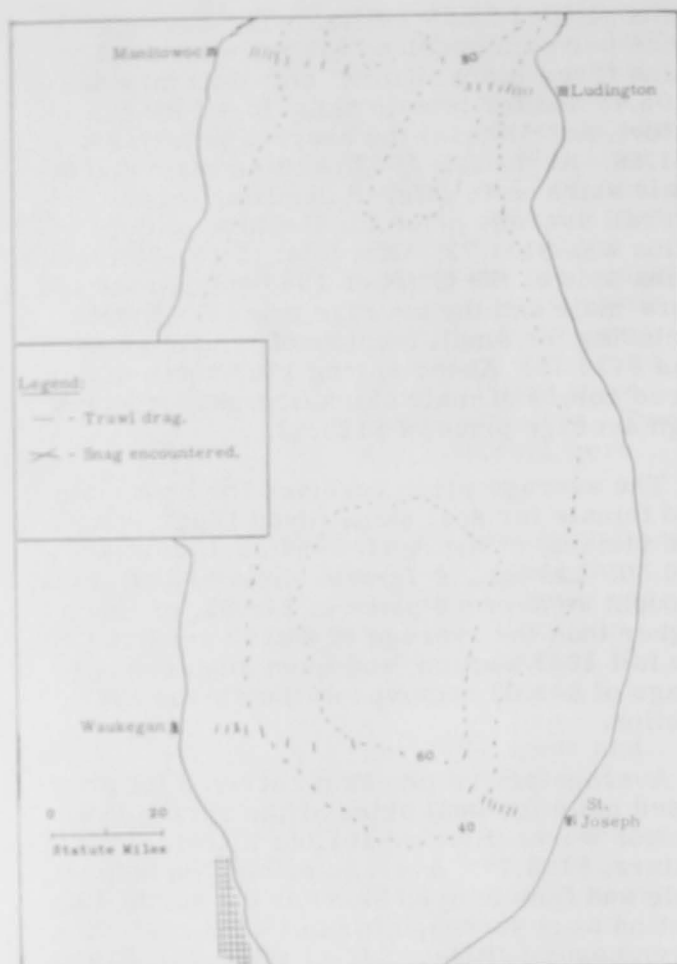
Note: See Commercial Fisheries Review, December 1963 p. 25 and June 1963 p. 24.



**Great Lakes Fisheries Exploration  
and Gear Research**

**SEASONAL DISTRIBUTION AND  
ABUNDANCE OF ALEWIFE AND CHUB  
STOCKS IN LAKE MICHIGAN STUDIED:**

M/V "Kaho" Cruise 16 (March 31-April 9, 1964): To extend knowledge of the seasonal distribution and abundance of alewife and chubs and their availability to bottom trawls was the primary objective of this cruise in central and southern Lake Michigan by the U. S. Bureau of Commercial Fisheries exploratory fishing and gear research vessel Kaho. Particular attention was given to determining the differentials in east-west and north-south distribution and commercial potential of those fish stocks. Other activities of the cruise



Lake Michigan explorations M/V *Kaho* Cruise 16 (March 31-April 9, 1964).

were concerned with collecting length-frequency data on alewife and chubs to supplement material collected earlier, and collecting samples of fish, water, and bottom materials for laboratory analysis relating to special studies.

**FISHING OPERATIONS:** A total of 34 trawl drags were completed with a 52-foot (headrope) fish trawl in 6 days of operation--8 drags were made from 20 to 60 fathoms off St. Joseph, Mich., and 8 from 20 to 60 fathoms off Waukegan, Ill.; 9 drags were made from 20 to 70 fathoms off Manitowoc, Wis., and 9 from 20 to 70 fathoms off Ludington, Mich. All drags were of 30 minutes duration and were made in one direction only. Minor gear damage occurred during one drag at 30 fathoms off Waukegan. Bottom topography and vertical distribution patterns of fish were continuously recorded with a high-resolution depth-recorder.

**FISHING RESULTS:** The investigations completed along the lakewide transects be-

tween St. Joseph and Waukegan, and between Manitowoc and Ludington revealed significant differences in depth distribution, abundance, and species interrelationship from both southern and central Lake Michigan and from one side of the lake to the other. The most noteworthy feature observed was the almost total absence of alewife from trawl catches off Manitowoc

Alewife dominated the catches from 25 to 35 fathoms off St. Joseph, and also from 40 to 50 fathoms off Waukegan, and at 40 fathoms off Ludington. The best alewife catch was 100 pounds made in a 30-minute drag at 50 fathoms off Waukegan.

Good catches of chubs (310 to 405 pounds per 30-minute drag) were made in 40 and 45 fathoms off St. Joseph, in 35 and 40 fathoms off Waukegan, and in 35 fathoms off Ludington.

Echo-sounder operations revealed good to excellent concentrations of alewife and chub in midwater depths at 35 to 50 fathoms off Ludington.

Only limited catches of species other than chub or alewife were taken during the cruise.

Other Species Taken in Lake Michigan by M/V <i>Kaho</i>			
Species	No. of Drags Yielding	Pounds/Drag	Combined Catch (Pounds)
Herring	3	6-47	60
Sculpin	19	6-160	647
Smelt	5	2-105	124
Sucker	1	1	1
Trout-perch	2	4-17	21
Whitefish	1	3	3
Sea lamprey	1	1	1

**HYDROGRAPHIC DATA:** Bathythermograph casts were made at key stations, and air and surface water temperatures were recorded continuously. Surface water temperatures ranged from 34° to 35° F. during the cruise.

Note: See *Commercial Fisheries Review*, May 1964 p. 15.

## Hawaii

### FISHERIES LANDINGS, 1962-1963:

Commercial landings of fish and shellfish in the State of Hawaii in 1963 were down 10 percent in quantity and 4.9 percent in value from those in the previous year, due mainly to a drop in landings of skipjack tuna and big-eyed tuna.

Hawaiian Commercial Fisheries Landings and Ex-Vessel Value, 1962-1963				
Species	1963		1962	
	Quantity	Value	Quantity	Value
	1,000 Lbs.	\$1,000	1,000 Lbs.	\$1,000
<b>and Tunalike Fish:</b>				
Core . . . . .	15.0	4.7	16.7	4.0
Eye . . . . .	948.3	501.7	1,220.8	598.1
Lowfin . . . . .	384.9	153.2	396.8	143.0
Jack . . . . .	8,099.3	1,089.8	9,415.4	1,174.0
to or little tuna . . . . .	60.2	8.3	13.3	2.4
al tuna and tunalike fish	9,507.7	1,757.7	11,063.0	1,921.5
fish and shellfish . . .	2,248.9	924.3	2,106.7	897.8
fish and shellfish . . .	11,756.6	2,682.0	13,169.7	2,819.3

The Island of Oahu was the State's leading fishery center in 1963 with a catch of 8,630,351 pounds. The Island of Hawaii was in second place with a catch of 1,651,787 pounds, followed by the Island of Maui with a catch of 1,225,536 pounds. The remainder of the catch was landed at ports on the Islands of Kauai, Lanai, and Molokai. (Hawaiian Department of Land and Natural Resources, March 30, 1964.)

See Commercial Fisheries Review, June 1963 p. 33.



**Industrial Fishery Products**

**OBSERVATIONS ON FISH MEAL USE IN ANIMAL FEED:**

Some research results that showed that fish meal added to all-vegetable laying rations resulted in small body weight increases, increased egg production, and improved efficiency were presented by the head of the Department of Poultry Science, Texas A. and M. University. The results were presented at the National Fisheries Institute (NFI) Symposium and the Maryland Nutrition Conference held at Washington, D. C., on March 11, 1963, and March 12-13, respectively. Least cost for feed per unit of production was achieved with 5-percent fish meal in the rations. The results of the research suggest that both amino acids and unidentified growth factors contributed to the improved performance with fish meal. The results also demonstrated that not all fish meals of like nitrogen content are of equal value in egg production.

At the Maryland Nutrition Conference, a researcher from the Poultry Science Department, University of Maryland, gave some results of experiments in which solvent-extracted fish meal was used at relatively high levels in broiler rations. The objective of the experiments was to determine the feasibility of using solvent-extracted (low fat)

fish meals instead of regular fish meals when price structures of feed ingredients are such as to result in maximum profit when fish meal is used at levels as high as 15 percent of the ration. The objective of substituting solvent-extracted fish meal for regular fish meal under such conditions is to avoid the relatively high levels of fish oil in the rations that may accompany the use of regular fish meal at high concentrations. The trials demonstrated that solvent-extracted fish meal even at levels as high as 15 percent of the ration (highest level tested) yields results equal to those with regular fish meal and, consequently, that solvent-extracted fish meal can be substituted for regular fish meal in poultry rations whenever, in the judgment of the ration formulator, it is advisable to do so.

Two nutritionists of the U. S. Bureau of Commercial Fisheries Technical Advisory Unit visited feed mills in North Carolina, Tennessee, and Virginia, and scientists at the Universities of North Carolina and Tennessee the latter part of March. Their observations were:

The mean levels of fish-meal utilization in the area visited appear to be: (1) in broiler starter rations 5 percent; (2) in broiler finisher rations 3.5 percent; (3) in breeder rations 2.5 percent; and (4) in laying rations 0.5 percent. Those are fairly liberal fish-meal allowances and that may be attributed in part to the fact that most of the mixed feed producers visited by the Bureau's nutritionists are able to obtain fish meal in bulk truck shipments directly from the fish-meal plants.

One feed producer in North Carolina stated that he is marketing a pullet ration containing only 10 percent protein, a level 2 percent lower than the minimum recommended by nutritional authorities at his State Experiment Station and equal to only five-eighths of that recommended by the National Research Council. The net effect of the low-protein ration is to delay egg production by about 3 weeks and to lower feed costs somewhat during the pullet year. The use of less than the recommended levels of protein conceivably could have unfortunate long-term effects.

Trials completed recently at the University of Tennessee suggest that cattle can utilize menhaden oil at a level equal to 2 to 3.5 percent of the ration if an all-grain ration is fed, or in amounts equal to the oil that would be consumed under such conditions if some or all of the feed is given as roughage. The re-



sults of those trials will be published if plans made at that time are carried out. The importance of those results rests upon the fact that fat at a level equal to 2 percent of the feed consumed is often sprayed upon the roughage fed cattle in fattening operations. Stabilized vegetable and animal fats are presently used, but it appears that fish oil could be used more conveniently than fats that must be heated before spraying on the feed. However, at prevailing prices, fish oil was considered too valuable for that use.

Poultry trials have been carried out at the University of Tennessee in which growing chicks responded equally well to 1-, 2-, or 5-percent fish meal in rations that were 25 percent protein. At a protein level as high as that, it is doubtful that "extra" methionine and lysine of fish meal were influential in promoting growth. Therefore it is logical to conclude that the growth-promoting effect observed was due to UGF (unidentified growth factors) in the meal used in the trials and that the level of UGF was high enough to meet requirements even when fish meal was fed at the 1-percent level.

Findings of the Bureau's nutritionists based on their observations demonstrate that a number of problems exist in the industrial fish products market. Examples of those problems are:

1. A number of mixed feed producers pointed out that if the price of fish meal continues to advance, the product may be "priced off the market."
2. Some feed mill operators expressed dissatisfaction with the fact that they are able to obtain domestically-produced fish meal throughout the year.
3. Some feed men pointed out that the quality of imported fish meal is extremely variable and that most such meal has been very "dusty" (low oil content) during the past year.
4. Many producers use less fish meal in mixed feeds than research findings have shown to be optimum.

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U. S. FISH MEAL, OIL, AND SOLUBLES:  
Production by Areas, March 1964: Preliminary data on U. S. production of fish meal,

oil, and solubles for March 1964 as collected by the U. S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the table.

Area	Meal Short Tons	Oil 1,000 Pounds	Solubles .. (Short Tons)	Homogenized
<b>March 1964:</b>				
East & Gulf Coasts . . . . .	762	66	186	-
West Coast <sup>2/</sup> . . . . .	2,240	270	1,111	-
Total . . . . .	3,002	336	1,297	-
Jan. -Mar. 1964				
Total . . . . .	6,946	3,025	3,245	-
Jan. -Mar. 1963				
Total . . . . .	7,800	1,168	4,179	300

<sup>1/</sup>Does not include crab meal, shrimp meal, and liver oils.  
<sup>2/</sup>Includes American Samoa and Puerto Rico.  
<sup>3/</sup>Includes condensed fish.



**Maine Sardines**

CANNING SEASON OPENS:

The 94th consecutive Maine sardine canning season opened April 15, 1964, but no production of any consequence was expected until late May, when the fish usually arrive in inshore waters in adequate numbers for canning. Twenty-five canneries were put into operating condition to be ready for the school of herring.

The size of the pack will depend upon the fish supply and market conditions and it is too early to predict either of those factors, according to the Executive Secretary of the Maine Sardine Council. He said that inventories held by the canners were slightly larger than normal but not enough so as to be burdensome. (Editor's Note: Canners' stocks of Maine sardines amounted to 1,063,000 standard cases on January 1, 1964, and 1,092,000 standard cases on January 1, 1963, according to the U. S. Bureau of the Census, Canned Fish Report, January 1, 1964.) The Secretary further stated that Maine sardines now held more than 50 percent of the total U. S. sardine market and had been making a steady gain each month from the low point of 28 percent which occurred in 1961 and 1962 following the unusually small Maine sardine pack in 1961. (Maine Sardine Council, April 16, 1964.)

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**WORLD'S FAIR DISPLAY:**

The Maine Sardine Council is participating in an outdoor food exhibit on the grounds of the New England Pavilion at the New York World's Fair, and the industry's products are displayed in the Pavilion's Country Store and restaurant.

The outdoor setting features the products of New England food manufacturers through the use of large (4 x 6 feet), lighted photographs mounted on raised triangles of unusual design. The Council's message to the public is Maine sardines as "the little brother of the Maine lobster" and advises that the product is healthful and nourishing and that more than 50 brands are on sale everywhere in the United States. The photograph shows numerous ways in which sardines may be prepared and served; boiled lobsters with fishing and other gear are depicted in the background.

A sizable display of sardines is placed in a typical New England Country Store while the product is on the restaurant menu as a permanent item and is also served in the retail room as an appetizer. Recipe books and other material on Maine sardines are distributed at the State's information center in the New England Pavilion buildings.

The Maine State Department of Sea and Fisheries is cooperating with the Council on the outdoor exhibit. (Maine Sardine Council, April 18, 1964.)

**National Fisheries Institute****PROPOSALS TO UNITED STATES FISHING INDUSTRY PROPOSED AT CONVENTION:**

Additional measures are needed to bolster the nation's fishing industry, Under Secretary James K. Carr of the U. S. Department of the Interior said April 25, 1964, at the National Fisheries Institute (NFI) Convention in Seattle, Wash. Citing an earlier arid land reclamation program, the Under Secretary suggested the possibility of federally financed low-cost loans for construction of modern fishing vessels that would meet certain strict standards on size of vessel and equipment to make Americans more competitive with foreign fishermen.

The Under Secretary called upon members of NFI to consider some means of using Federal help along with other measures to revitalize the United States fishing industry.

He told the group if a man wants to build a \$150,000 vessel in Canada, he can go into business with a cash outlay of \$9,000. He said that even under legislation pending before the United States Congress to provide additional assistance, an American fisherman-owner would need a considerably larger cash outlay to put the same vessel in the water in competition with his Canadian neighbor.

The Interior Under Secretary said that in five years the catch of United States fishermen has dropped from second to fifth place in worldwide competition. He told the fish industry representatives, "now the United States is trailing Japan, the Soviet Union, Red China, and Peru." He declared the United States fishing fleet is antiquated in comparison to some modern fleets of other nations.

He pointed out that more than half of the world's population suffers from malnutrition or undernutrition, and that the importance of fish food proteins grows with each passing month. He told the group that the life-giving food from the sea will be the great arsenal in the future battles against poverty, hunger, and disease. He also said, "In 1963, for the first time in the history of the Republic, over half (56 percent) of the United States fishery supply was derived from imports. In contrast, less than 14 years ago (in 1950), only 25 percent of the supply was imported."

**North Atlantic Fisheries Exploration and Gear Research****OCEAN PERCH GILLING****BY TRAWL NETS STUDIED:**

M/V "Delaware" Cruise 64-1 (January 23-February 1, and February 5-27, 1964): To investigate the gilling effects upon ocean perch of 3-inch synthetic mesh trawl cod ends (approximately equivalent to 3.5-inch doubled manila mesh) as compared to commonly used 2.3-inch manila-twine cod ends was the principal purpose of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. The tests were made as part of a study to determine the effects of

a minimum-size 3-inch mesh on the fishing industry and on the fishery resources.

The two sizes of cod ends were changed and measured every 2 tows throughout the cruise to permit evaluation of ocean perch gilling. A total of 39 of the 63 tows made during the cruise caught sufficient fish to be of value in the study. Bad weather throughout the entire cruise and poor fishing in many areas limited the number of tows and the size of catches.

All tows were made off the coast of Nova Scotia with the majority taking place in in-shore waters ranging in depth from 72 to 100 fathoms. Some tows were also made in depths of 100 to 235 fathoms. The length of tows varied from 45 minutes to 2 hours. All fish gilled in the cod end were measured; males and females were weighed in separate groups. A random sample was taken from the fish free in the cod end for weight and length measurements.

Because of the adverse conditions and limited time, sufficient tows were not made to establish conclusive evidence on the difference between the gilling effects of the two cod ends. However, the test tows indicated that the 3-inch nylon cod end gilled more fish than the 2.3-inch double manila cod end. But the 3-inch nylon net allowed a relatively higher escapement than the 2.3-inch double manila. For complete analysis, all results were turned over to a representative of the International Commission for the Northwest Atlantic Fisheries.

\* \* \* \* \*

#### ELECTRICAL TRAWLING TESTS CONTINUED:

M/V "Delaware" Cruise 64-2 (March 11-April 3, 1964): To continue to test and evaluate the effect of an electric field upon the catch of a commercial otter-trawl net when the field is used as an adjunct to the net was the main purpose of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. Work during the cruise was devoted to gear improvement and the determination of whether fish-size selectivity is possible through the use of varying pulse frequencies.

In accordance with the experience gained during Delaware Cruise 63-9, the electrical unit was successfully modified to provide a

pure pulse frequency throughout the electric field. In addition, heavy coaxial conductive cable was used as the towing warp. A modification to the earlier method of attaching doors also improved the handling quality of the gear and helped to eliminate previous difficulties.

The net transformers were mounted on the net headrope during the latter part of the cruise. That shift in position, from the rope, appeared to be worthwhile. Not only were some electrical problems reduced but net handling was made easier.

Fishing operations were seriously hampered by weather conditions; however, 40 tows were made during the cruise.

A preliminary examination of fish-size selectivity data indicated that the electric discharges applied during the cruise did not give the desired results. Future work will probably be conducted with an increase in the number of electrodes. Efforts to further reduce power requirements and to attain size selectivity by species will be continued.

Note: See Commercial Fisheries Review, Jan. 1964 p. 21.

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#### TUNA AND SWORDFISH SURVEY CONTINUED:

M/V "Delaware" Cruise 64-3 (April 16-June 5, 1964): The U. S. Bureau of Commercial Fisheries exploratory vessel M/V Delaware began a 51-day cruise on April 16 to continue a systematic survey of the distribution and abundance of tuna and swordfish in the North Atlantic. This is the eleventh long-line cruise in the series. During this cruise, special attention was given to work off the Middle Atlantic Bight between the 100-fathom curve of the Continental Shelf and the western edge of the Gulf Stream. Emphasis was placed on giving coverage to the areas which have not been surveyed during previous investigations.

Operations of the Delaware included day and night sets of long-line gear to sample tuna and swordfish below the surface; daytime surface trolling to sample tuna in the upper water layer; bathythermograph transects to examine thermal relationships; tagging in cooperation with the Woods Hole Oceanographic Institution to study seasonal tuna movements; and tuna blood sampling in cooperation with tuna subpopulation studies.



... conducted at the U. S. Bureau of Commercial Fisheries biological laboratory in Honolulu, Hawaii.

Plans called for a commercial tuna-fishing vessel to cooperate with the project by fishing in the general area of the investigation and comparing its results with those of the Albatross IV.

Visiting scientists were aboard the Delaware as guest cooperators during the cruise. Report calls were scheduled at Norfolk,

See Commercial Fisheries Review, Aug. 1963 p. 36.

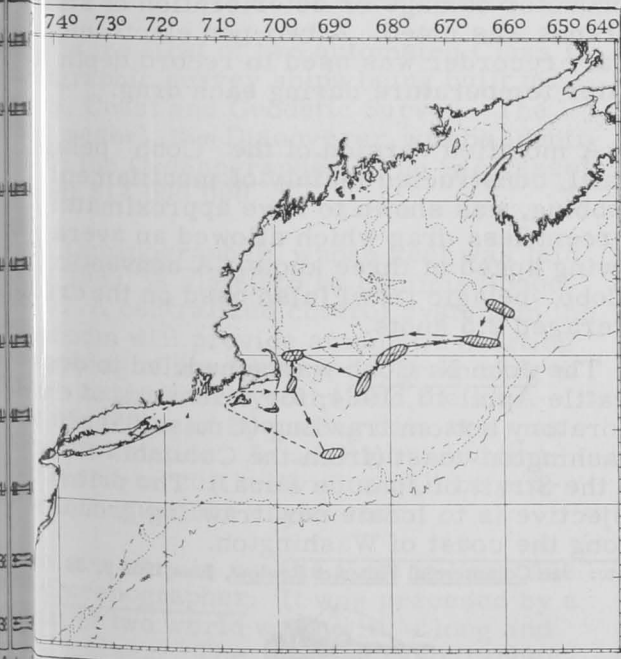


### Atlantic Fisheries Investigations

#### HADDOCK SPAWNING AND MATURITY INVESTIGATED:

M/V "Albatross IV" Cruise 64-3 (March 15, 1964): To collect blood samples from spawning populations of haddock, to record haddock maturity, and to collect live haddock. The objectives of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Albatross IV. The area of investigation was Nausets, Chatham, Cultivator, North Edge and Browns Bank.

Trawling at 15 stations (23 tows) was made on a 12-hour a day basis. Blood samples



Sampling areas for Cruise 64-3 of the research vessel Albatross IV, March 17-26, 1964.

were taken from 25 haddock at each of the first 10 stations and tested with antisera for blood type. A total of 41 bathythermograph casts were made during the cruise.

Agglutination responses for 250 haddock were tabulated and the state of maturity was noted. Fertilized haddock eggs and live haddock were brought back to the Bureau's Biological Laboratory at Woods Hole, Mass.

Note: See Commercial Fisheries Review, April 1964 p. 23, February 1964 p. 36.

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#### HADDOCK COLLECTION:

M/V "Albatross IV" Cruise 64-4 (April 6-8, 1964): To obtain live haddock for experimental purposes was the objective of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Albatross IV. A search was conducted on fishing grounds off Massachusetts, but haddock were not located where they could be hand-lined so no live specimens were obtained. Two trawl collections of haddock were made.

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#### FLOUNDER TAGGING:

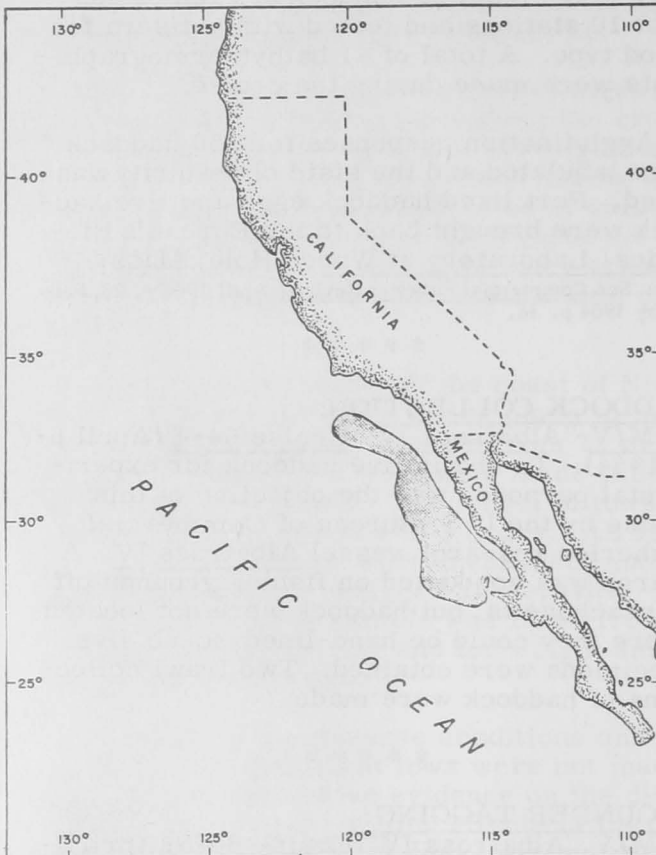
M/V "Albatross IV" Cruise 64-5 (April 8-14, 1964): To tag blackback flounder off New England in the area of Nantucket Shoals, Nauset Beach, and Georges Bank was the main objective of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Albatross IV. Blackback were caught by otter trawl at selected stations and tagged with Petersen disc tags. A total of 1,315 were tagged at Nantucket Shoals, 550 at Georges Bank, and 15 along Nauset Beach. Fin ray counts were made on some tagged and untagged blackbacks, and information on blackback spawning was also obtained. The cruise was cut short by mechanical difficulties.



### North Pacific Exploratory Fishery Program

#### DISTRIBUTION AND ABUNDANCE OF ADULT HAKE OFF SOUTHERN CALIFORNIA AND NORTHERN MEXICO STUDIED:

M/V "John N. Cobb" Cruise 64 (February 5-March 19, 1964): Pelagic trawling for adult hake (Merluccius productus) during a predicted period of peak spawning was one of the principal objectives of this six-week cruise



Shows area of operations during John N. Cobb Cruise 64, February 5-March 19, 1964.

off southern California and northern Mexico by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb. Other objectives of the cruise were to: (1) attempt capture using standard and modified versions of the "Cobb" pelagic trawl; (2) evaluate three independent depth telemetry systems and a new type dual-frequency echo-sounding machine; and (3) determine configuration, drag ratio, and general utility of monofilament webbing in trawl construction.

A predetermined trackline and station pattern was followed during most of the cruise. Echo-soundings were made continuously along tracklines and during drags made at stations. Maximum depth tows to 250 fathoms were made at those stations where echo-soundings indicated an absence of marine life. Whenever echo-soundings indicated presence of marine life, tows were made at the indicated depth. Whenever relatively good echo-soundings were encountered, the station pattern was interrupted to allow repetitive drags and possible correlation of soundings with catches of hake.

Severe weather conditions during most of the cruise limited the number of drags to a total of 35. Adult hake in amounts up to 350 pounds per 1-hour tow were taken in five of the drags. Two drags made through a fair showing of fish during the latter part of the cruise yielded 300 and 150 pounds of hake, respectively. The concentration, centered 250 fathoms, dispersed in the evening hours and attempts to relocate the shoal on the following day were fruitless.

A correlation was apparent between the vessel's hake catches and the occurrence of hake eggs and larvae as determined by the Bureau's research vessel Black Douglass. Good catches of eggs and larvae were made at stations adjacent to hake-producing drags.

Incidental fish catches were limited to small amounts of anchovies, bonitos, and deep-sea varieties such as lanternfish, fang viperfish, and snipe eels.

Accurate determination of depth of tows was provided by three independent depth telemetry systems. Two of the systems utilized electrical core towing cable and one of the systems functioned via acoustic transmission. All three systems functioned well during the entire cruise. Variation of indicated depth as shown on each system was less than 2 percent. Performance of a new type electrical towing cable was excellent as no evidence of conductor damage or deterioration of steel strands was noted. A two-pen electronic chart recorder was used to record depth and water temperature during each drag.

A modified version of the "Cobb" pelagic trawl, constructed mainly of monofilament webbing, was shown to have approximately 50 percent less drag which allowed an average towing speed of three knots. A conventional "Cobb" pelagic trawl (also used on the cruise) averaged 2.5 knots.

The John N. Cobb was scheduled to depart Seattle April 13, 1964, for six weeks of exploratory bottom trawling (Cruise 65) off the Washington coast (from the Columbia River to the Strait of Juan de Fuca.) The primary objective is to locate new trawling grounds along the coast of Washington.

Note: See Commercial Fisheries Review, June 1963 p. 38.



### Oceanography

#### RESEARCH VESSEL "OCEANOGRAPHER" LAUNCHED:

The Oceanographer, the largest and most modern oceanographic research vessel ever built in the United States, was launched April 15, 1964, at Jacksonville, Fla. The 303-foot

Built in 1897, it was commissioned by the Navy in World War I and was credited with sinking an enemy submarine. Again, in World War II, it saw service with the Navy in the Pacific. Between the two wars, the vessel was engaged in oceanographic research for the Coast and Geodetic Survey. The original Oceanographer was decommissioned in 1944



Artist's conception of the research vessel Oceanographer.

is the first of two automated Class I oceanographic survey ships being built for the U.S. Coast and Geodetic Survey. The second vessel, the Discoverer, will be identical with the Oceanographer. The two vessels will cost \$14,000,000.

The Oceanographer, whose keel was laid in 1963, is slated to be commissioned in 1965. A centralized control system in the engine room will provide automatic starting and stopping of machinery, programming of fuel and ballast system, and the automatic recording of operating data at a master control station. In addition to automatic closed-circuit television will be provided throughout the engine room.

The new ship is not the first to bear the name Oceanographer. It was preceded by a ship of two world wars with a long and illustrious career. The first Oceanographer was originally a \$3-million luxury yacht.

and subsequently scrapped. (U.S. Coast and Geodetic Survey, April 15, 1964.)

Note: See Commercial Fisheries Review, Aug. 1963 p. 43.



### Pollution

#### USE OF PESTICIDES ENDANGER COMMERCIAL FISHERIES SAYS INTERIOR SECRETARY:

Growing evidence of widespread environmental contamination from pesticides was cited by Secretary of the Interior Stewart L. Udall, who testified before a special Senate subcommittee called by Senator Ribicoff of Connecticut during early April 1964. The Secretary called for a nationwide pesticide monitoring program and an end to the use of highly toxic chemicals whose spread cannot be controlled. He said the problem of pesticides had become even more acute in recent



months and that new data were strengthening earlier warnings and demonstrating new hazards to man and wildlife.

The Secretary noted new evidence that DDT is responsible for the failure of lake trout to reproduce, and that it reduced reproductive success among several species of birds including pheasants, eagles, and black ducks. The most disturbing evidence now being accumulated, the Secretary said, points to the widespread existence of chemical pesticides following their use under "normal" and "controlled" conditions. Much data including that relating to recent fish kills on the lower Mississippi River does not relate to accidents or deliberate misuse, but are the apparently uncontrollable effects of widespread "normal" pesticide application.

Particular attention to the danger posed by pesticides to the commercial fisheries of the lower Mississippi and Gulf Coast areas was pointed out by the Secretary. Shrimp and other shellfish are almost unbelievably sensitive to certain pesticides, he said. The fishing industry--like the consumer in the supermarket--has no control over the way in which pesticides reach his product. Tens of thousands of jobs and millions of dollars of valuable fishery products may ultimately be at stake, Secretary Udall emphasized. He stated that "unlike farmers, our commercial fishermen do not use the pesticides themselves and they must depend on effective governmental action to prevent damage to the resources they depend upon for a living."



## Preservation

### IRRADIATION PRESERVATION OF FOOD STUDIED FOR COMMERCIAL IMPLICATIONS:

An extensive study of the commercial implications of the preservation of food by irradiation was announced April 2, 1964, by the U. S. Department of Commerce.

"Cooperative efforts among various governmental agencies including the Department of Defense and the Atomic Energy Commission have clearly indicated that the irradiation of food for the purposes of preserving it is perfectly safe and has many economic advantages," said the Administrator of the Commerce Department's Business and De-

fense Services Administration, which will coordinate the study. Explaining the purpose of the study, he stated, "The widespread use of such foods in the relatively near future will affect processing, storage, distribution, and marketing techniques for a great many food products. We want to learn in depth as soon as possible just what the implications are."

Aspects of the subject which will be studied include (1) the potential use of irradiated food in providing proteins to developing areas which do not have conventional food storage facilities; (2) the question of winning consumer understanding and acceptance of irradiated food; and (3) the impact of the irradiation food preservation technique upon other advanced methods of food processing such as freeze-drying.

The Department of Commerce is a member of the Interdepartmental Committee on Radiation Preservation of Food which has been collating promising developments in the field of food irradiation techniques. (U. S. Department of Commerce, April 2, 1964.)



## Salmon

### FRASER RIVER SOCKEYE LOSSES INVESTIGATED:

Studies into the environmental factors related to the serious mortality of unspawned Fraser River sockeye in 1961 and 1963 were carried out during the winter of 1964 by the staff of the International Pacific Salmon Fisheries Commission. The investigations revealed that several factors are involved in any excessive mortality regardless of the actual cause of death.

High or above normal temperatures and early arrival of the sockeye on the spawning grounds appear to be closely associated with any excessive loss of unspawned fish. Early timing in migration, while related to high temperature, appears to be the more important of the two factors. Density of spawner has been found to be a major factor when other influences are adverse, but seems of little importance when those influences follow a normal pattern.

Because of the complexity of the problem, fishery biologists need the advice of experts in other scientific fields. Once an understanding is reached of the cause or causes

mature death in sockeye spawners, suitable controls possibly can be designed and placed in operation. While the costs of such controls may be high, the economic losses already sustained are also high. Remedial measures required to prevent such losses in the future could be economically justifiable.

In an attempt to develop a program to solve the problem, the Commission called a special meeting in New Westminster, B. C., Canada, April 20, 1964, which was attended by experts in the fields of biochemistry, physiology, ecology, pathology, and medicine. (International Pacific Salmon Fisheries Commission, April 15, 1964.)

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**NORTHWEST RIVERS RECEIVE RECORD PLANTS OF SILVER AND SPRING CHINOOK YEARLINGS:**

In early April 1964, over 5.5 million yearling silver salmon fingerlings weighing a total of 160,000 pounds were released in rivers of Washington and Oregon. The fish were raised in three National Fish Hatcheries operated by the U. S. Fish and Wildlife Service. The plant included 590,000 silver salmon fingerlings which were released in Eagle Creek from the Eagle Creek National Fish Hatchery, near Estacada, Oreg. The Columbia River received the remainder of the fish, which included 2,300,000 from the Willard National Fish Hatchery, Willard, Wash., and 2,700,000 from the Little White Salmon National Fish Hatchery, Cook, Wash.

The April release was the largest plant of silver salmon fingerlings in the Northwest since from National Fish Hatcheries.

Northwest rivers also received a record amount of yearling spring chinook salmon from National Fish Hatcheries in April 1964 when 1.5 million spring chinook fingerlings were released from the Carson National Hatchery on the Wind River near Stevenson, Wash., and a total of 1,600,000 were released from the Eagle Creek National Hatchery into the Cowlitz River, its tributary--Eagle Creek, and the Molalla River. The spring chinook fingerlings were spawned by the 1962 runs of fall spring chinook salmon that ascended the new fishways on Eagle Creek and Wind River. Those streams became accessible to migrant salmon when fishways were constructed to bypass falls that were impass-

The young salmon will migrate to the Pacific Ocean, where they will spend several years. Upon reaching maturity and returning to the Columbia River system, they will contribute to both the sport and commercial fisheries.

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**SITE OF FIRST PACIFIC COAST SALMON CANNERY DESIGNATED NATIONAL HISTORIC LANDMARK:**

The site of the first Pacific Coast salmon cannery, built in Sacramento, Calif., 100 years ago, has been designated a National Historic Landmark, Congressmen Robert L. Leggett (Vallejo) and John E. Moss (Sacramento) of California announced this past April.

The site, which was determined by historians of the National Park Service of the U. S. Department of the Interior, is on the Yolo County side of the Sacramento River opposite the foot of Sacramento's K Street. A commemorative plaque was to be unveiled at the location on April 28, 1964. The principal speaker was to be Senator Bartlett of Alaska, a member of the Senate Merchant Marine and Fisheries Subcommittee. Lloyd Turnacliff, a fish wholesaler in Sacramento and also a former vice president of the National Fisheries Institute, was to be master of ceremonies.

The forerunner of today's multimillion dollar Pacific salmon canning industry was begun in the spring of 1864 by three former Maine fishermen, two of whom were brothers. One of the brothers entered the fishing business in Sacramento in 1852 and was joined by his brother four years later. The business at first was limited to the sale of fresh and salted salmon. The third member to join the enterprise was a tinsmith as well as a fisherman and had experience canning lobster and salmon in New England. The newly formed company was short on capital, so he brought along some crude can-making equipment to Sacramento with him.

In the spring of 1864, the three partners enlarged the original cabin and purchased a large scow for additional factory floor space. They added an 18 by 24-foot extension to the cabin of the scow for a can-making shop. The salmon were packed in salted water, and the cans were boiled about an hour at 230 degrees. Later a pickle was added to each can to replace the salt. The cans were painted a bright red with a combination of red lead, turpentine,

and linseed oil. As a result, the consumer identified canned salmon only by the flaming red can even when there was no label.

The new company had a difficult time at the beginning. The equipment they had was crude and every operation had to be done by hand. At least half the cans manufactured in the first year burst at the seams. Despite the handicaps, the company sold 2,000 cases at \$5 per dozen cans the first year, and the business was launched. Because of the success of this first cannery, numerous other canneries sprang up. By 1882 there were 20 canneries along the Sacramento River producing about 200,000 cases of salmon a year. After that peak year the industry declined because of a sharp reduction in the number of salmon entering the Sacramento River. The shortage of fish was attributed to silting of the river by hydraulic mining and salmon canning on the Sacramento River was discontinued after 1919.

The original and first salmon-canning company was gone long before the peak pack of 1882. A decline in salmon runs in the Sacramento in 1865 started the partners of that first cannery looking for a better source of supply. The following year they moved to Eagle Cliff, Wash., and established a cannery there.

Today's \$100 million salmon-canning industry in the United States is a direct outgrowth of the pioneering efforts of that first salmon-canning enterprise in Sacramento. The Alaska canned salmon pack in 1963 totaled 2.7 million cases, or about 80 percent of the total United States canned salmon pack of 3.3 million cases. The remainder was packed by canneries in Washington and Oregon.



### Shrimp

#### UNITED STATES:

Breaded Production, 1963: Breaded shrimp production during the fourth quarter of 1963

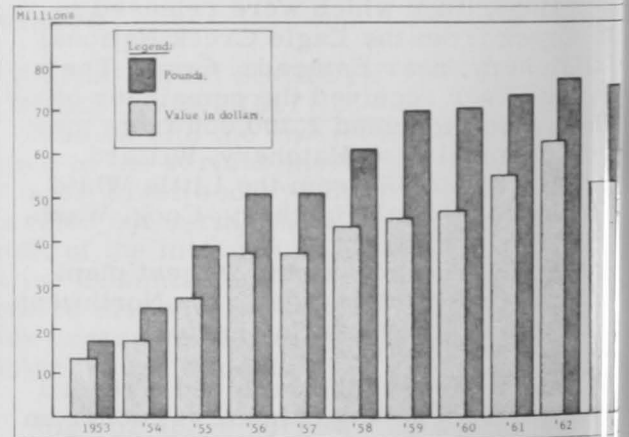
Month	Quantity 1,000 Lbs.
October . . . . .	7,390
November . . . . .	6,129
December . . . . .	5,513
Total . . . . .	19,032

Area	No. of Plants	1963		
		October	November	December
Atlantic States . . . . .	19	2,175	1,962	1,414
Gulf and Inland States	16	4,715	3,680	3,514
Pacific States . . . . .	8	500	487	487
Total . . . . .	43	7,390	6,129	5,513

State	No. of Plants	1,000 Pounds	1,000 Dollars
Massachusetts, New York, and New Jersey . . . . .	8	2,029	17.1
Pennsylvania and Virginia . . . . .	4	623	5.3
Georgia . . . . .	6	14,298	120.8
Florida . . . . .	10	22,992	191.6
Louisiana and Alabama . . . . .	6	3,016	25.1
Texas . . . . .	9	26,535	221.1
Arizona and California . . . . .	9	5,546	46.2
Total . . . . .	52	75,039	627.2

was 19 million pounds and for the entire year it was 75 million pounds, according to preliminary data.

Breaded shrimp production has gradually increased over the years. From production of 6.6 million pounds in 1950 with a wholesale value of \$4.2 million, the quantity increased



U. S. production and value of breaded shrimp 1953-63

to 77.3 million pounds with a value of \$62.7 million in 1962--a record year. Compared with the peak year, production in 1963 was three percent less in volume and 16 percent less in value.

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Supply and Disposition, 1961-1963: The available United States shrimp supply in 1963 was 16.7 percent greater than in 1962 and increased 30.4 percent from 1961. United States shrimp imports again were at a record high



U. S. Supply and Disposition of Shrimp, 1961-63

Item		1/1963	2/1962	1961
..... (1,000 Lbs. shell-on) .....				
Shrimp landings	heads-on	240,300	191,105	174,494
"	(heads-off)	(150,244)	(119,154)	(103,865)
Shrimp product of U. S.	heads-on	-	479	-
"	(heads-off)	(-)	(301)	(-)
Shrimp supply	heads-on	266,205	242,580	213,957
"	(heads-off)	(167,344)	(152,504)	(134,564)
Shrimp supply	heads-on	506,505	434,164	388,451
"	(heads-off)	(317,588)	(271,959)	(238,429)
Shrimp (approximate)				
Shrimp	heads-on	6/	253,935	238,901
"	(heads-off)	(6/)	(159,708)	(147,625)
Shrimp (includes cooked) <sup>2/</sup>	heads-on	6/	81,959	81,107
"	(heads-off)	(6/)	(51,045)	(49,810)
Shrimp (includes cooked) <sup>5/</sup>	heads-on	6/	15,202	8,114
"	(heads-off)	(6/)	(9,568)	(4,830)
Shrimp	heads-on	6/	77,698	74,717
"	(heads-off)	(6/)	(48,950)	(44,505)
Shrimp	heads-on	6/	1,011	574
"	(heads-off)	(6/)	(692)	(342)
Shrimp frozen	heads-on	399,060	342,240	318,428
"	(heads-off)	(250,474)	(214,693)	(196,524)
Shrimp	heads-on	68,266	56,522	41,484
"	(heads-off)	(42,479)	(35,604)	(24,872)
Shrimp	heads-on	7,531	3,296	4,499
"	(heads-off)	(4,730)	(2,069)	(2,722)
Shrimp	heads-on	27,000	25,000	24,000
"	(heads-off)	(16,981)	(15,723)	(14,286)
Shrimp	heads-on	4,648	7,106	40
"	(heads-off)	(2,924)	(4,469)	(25)

domestic craft, principally in waters off Central America, and shipped to the United States. by the U. S. Bureau of the Census as "Products of the American Fisheries."  
 Distribution of imported shrimp was compiled from data assembled by the U. S. Bureau of the Census, and the U. S. Bureau of Commercial Fisheries Market News Service. Field of-ports by commodities listed below were converted to heads-on weight by multiplying the quan- headless shrimp by 1.59, meat by 2.04, breaded by 1.00, canned by 3.21, dried by 7.69, and head by 1.59.

Item	1963 (prel.)	1962 (rev.)	1961
..... (1,000 lbs.) .....			
Shrimp:			
Headless	111,717	108,628	101,208
Meat, raw	29,460	{ 22,703	{ 22,287
Meat, cooked	2,547	{ 1,995	{ 2,287
Breaded	484	421	922
Canned	4,120	2,911	1,659
Dried	279	56	167
Unclassified	2,923	4,469	25
Total	151,530	141,183	126,268

some fresh products.

1963 having increased 9.7 percent from previous year and were up 24.4 percent from the 1961 imports.

domestic shrimp landings for 1963 were the highest in many years -- 25.7 percent more than in 1962 and up 37.7 percent from 1961. 1963 shrimp landings at ports in the Gulf of Mexico were the largest since the collection of detailed statistical records was begun in 1966 by the U. S. Bureau of Commercial Fisheries. Louisiana's 1963 shrimp landings were slightly more than 90 million pounds (heads-on weight) were double those of the previous year, but the ex-vessel value increased only about 30 percent from 1962. But 1963 landings for the year at South Atlantic ports were the lightest in many years.

See Commercial Fisheries Review, May 1963 p. 42.

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Supply Indicators, March 1964:

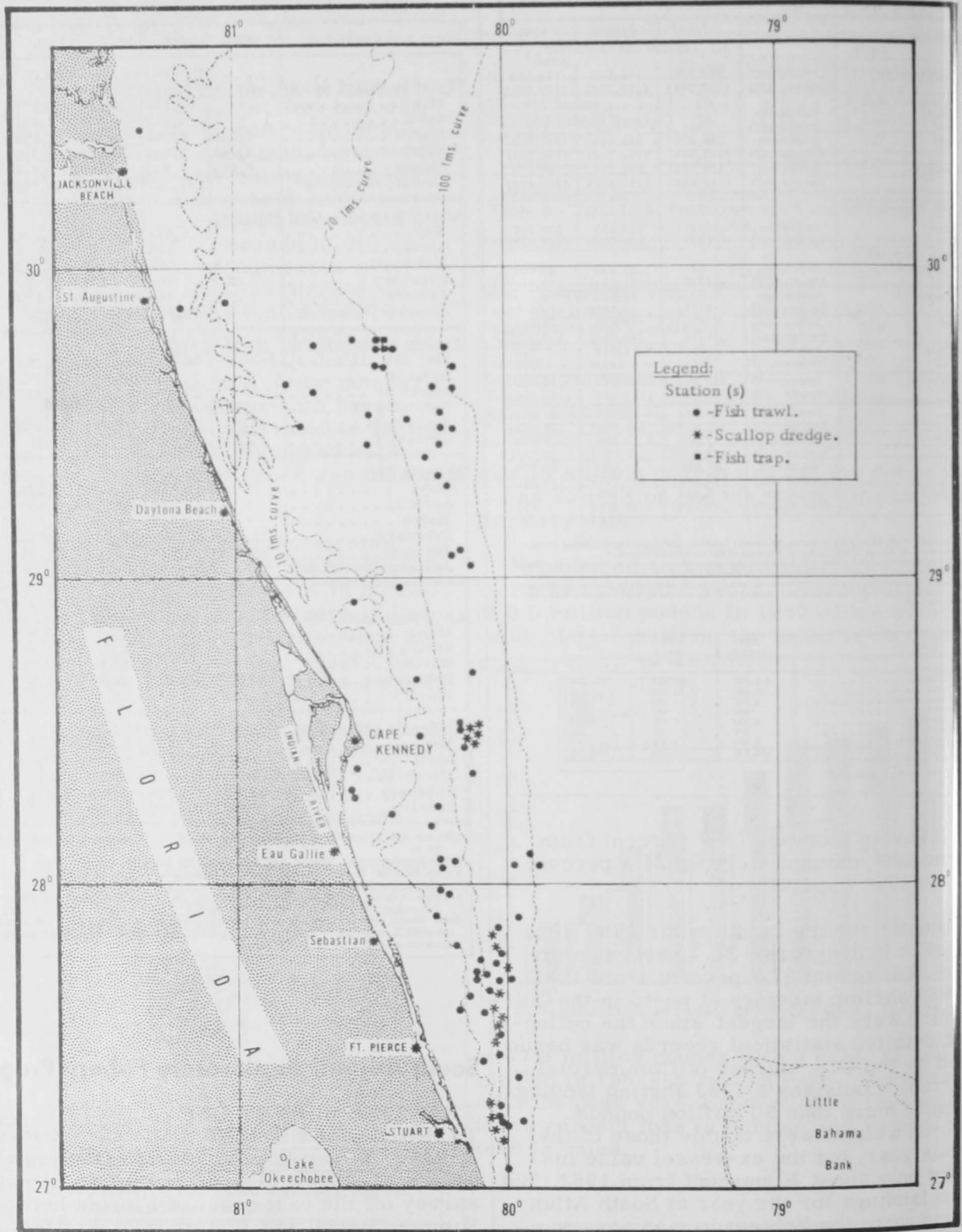
Item and Period	1964	1963	1962	1961	1960
..... (1,000 Lbs. Heads-Off) .....					
<b>Total landings, So. Atl. and Gulf States:</b>					
May	-	10,152	6,186	5,276	6,335
April	-	4,427	3,358	3,171	4,728
March	4,700	3,632	3,331	4,754	4,099
February	4,249	3,986	4,123	3,910	3,784
January	6,160	3,993	3,840	5,686	5,402
January-December	-	138,281	105,839	91,396	141,035
<b>Quantity canned, Gulf States 1/:</b>					
May	-	3,831	1,794	1,208	1,461
April	-	105	12	9	66
March	12	92	86	35	117
February	309	301	241	90	204
January	325	449	492	183	266
January-December	-	29,468	23,322	14,500	26,394
<b>Frozen inventories (as of end of each mo.) 2/:</b>					
May 31	-	24,053	13,904	24,696	17,540
April 30	-	24,954	15,637	27,492	20,502
March 31	-	27,970	16,607	31,345	23,232
February 29	35,303	28,039	19,012	37,612	29,063
January 31	43,752	28,487	21,328	37,842	34,332
January 1	45,335	31,577	19,755	40,913	37,866
<b>Imports 3/:</b>					
May	-	11,110	11,020	8,278	9,902
April	-	11,082	10,210	9,208	7,733
March	-	13,616	9,658	10,347	8,545
February	11,690	12,100	10,599	8,932	7,657
January	13,272	13,139	12,907	12,338	8,596
January-December	-	151,530	141,103	126,268	113,418
..... (¢/lb., 26-30 Count, Heads-Off) .....					
<b>Ex-vessel price, all species, So. Atl. and Gulf Ports:</b>					
May	-	80.9	83.7	52.8	62.9
April	-	83.6	82.2	55.4	60.6
March	4/57-61	85.5	80.9	56.0	56.3
February	4/57-62	85.7	78.9	53.5	51.8
January	4/57-69	85.0	76.3	52.5	49.5
<b>Wholesale price, froz. brown (5-lb. pkg.) Chicago, Ill.:</b>					
May	-	100-103	96-103	67-69	74-77
April	-	100-105	94-97	69-70	74-75
March	72-75	102-106	94-95	69-71	65-68
February	73-82	102-106	93-95	69-71	65-67
January	78-83	102-106	91-94	69-71	64-66

1/Pounds of headless shrimp determined by multiplying the number of standard cases by 30.3.  
 2/Raw headless only; excludes breaded, peeled and deveined, etc.  
 3/Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.  
 4/Range in prices at Tampa, Fla.; Morgan City, La.; area; Port Isabel and Brownsville, Tex. only.  
 Note: March 1964 landings and quantity used for canning estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.



South Atlantic Exploratory Fishery Program

TRAWLING SURVEY OFF FLORIDA EAST COAST:  
 M/V "Silver Bay" Cruise 55 (February 26-March 13, 1964): To conduct a fish trawling survey off the east coast of Florida between Summer Haven and Jupiter Inlet was the primary objective of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Silver Bay.

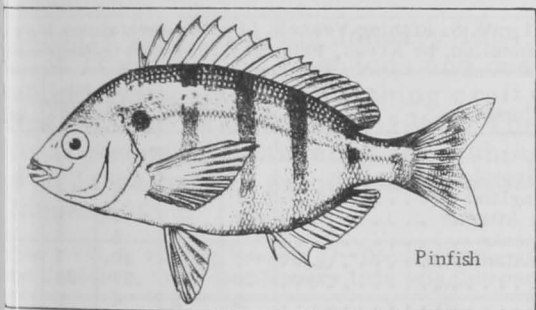


Area investigated off Florida's east coast during Cruise 55 of the M/V Silver Bay, February 26-March 13, 1964.

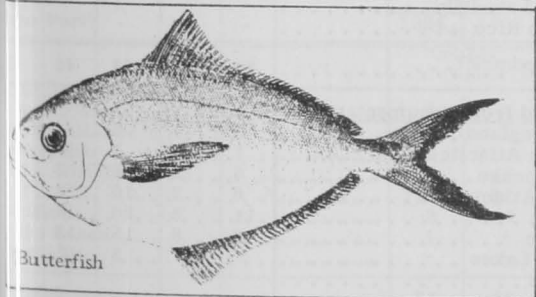
A total of 105 exploratory fishing stations were occupied in that area ranging from depths to 110 fathoms. Exploratory gear consisted primarily of 50/70 foot 4½-inch mesh, roller-rigged fish trawls fished on 8-foot bracket doors with 15-foot leg lines. Cod were 1½-inch mesh. Trawling conditions were favorable throughout the area except at the edge of the Continental Shelf in 60 fathoms. Most catches were small with only occasional captures of commercially important species.

Only moderate numbers of sharks and were taken from 8 drags in depths less than 10 fathoms.

A total of 36 drags was made in the 11- to 20 fathom depth range. In those depths, moderate catches of butterfish (*Poronotus*), grunts (*Emulon*), and pinfish (*Lagodon*) were made



Pinfish



Butterfish

Bethel Shoals. Catches of from 750 to 1,000 pounds of small (2- to 4-count) spots (*Leiostomus*), croakers (*Micropogon*), and snappers were made off Cape Kennedy. Extensive fish-school tracings were recorded with the depth-recorder off Summer Haven in 60 fathoms. Several drags in that area showed that the fish schools consisted of filefish (*Paranolepis hispidus*). One 90-minute drag yielded 8,000 pounds of that species. On the same drag, 475 pounds of red, grey, and black snappers (*L. aya*, *L. griseus*, and *L. xanthurus*), and 125 pounds of large porgies and pompanos were also taken. That area appeared to be the southern boundary of the

extensive "broken bottom" areas previously delineated by the Silver Bay off northern Florida.

In depths greater than 21 fathoms, only occasional small catches of snappers, groupers, or other commercially-valuable fish were made. Fish-searching transects and catch results both indicated that large fish concentrations were not present in those depth ranges during the survey period.

Calico scallops (*Pecten gibbus*) were taken throughout the survey area. Samples of commercial-size scallops requested by industry were provided for machinery tests. At the time of this cruise the scallop population comprised two size groups--the 50- to 55-millimeter (2- to 2¼-inch) mature size group, and the 35- to 45-millimeter (1½- to 1¾-inch) maturing size group. The best scallop catches (4 to 5 bushels of shell stock per 30-minute tow) were made in the following areas: 16 fathoms off New Smyrna, 26 fathoms east of Cape Kennedy, 25 fathoms southeast of Bethel Shoals, and 20 fathoms east of St. Lucie Inlet.

Night catches of rock shrimp (*Sicyonia brevirostris*) were made with the large-mesh fish trawls in several areas. Best catches were made in 20 fathoms east of St. Lucie Inlet, where up to 110 pounds of 31-36 count (heads-on) shrimp were taken per 90-minute tow. A 40-pound catch of that shrimp species was made in 14 fathoms east of Hetzel Shoal.

Note: See Commercial Fisheries Review, May 1964 p. 32.



### U. S. Fishing Vessels

#### FISHERIES LOAN FUND AND OTHER FINANCIAL AID FOR VESSELS, JANUARY 1-MARCH 31, 1964:

From the beginning of the program in 1956 through March 31, 1964, a total of 1,384 loan applications for \$38,155,392 were received by the U. S. Bureau of Commercial Fisheries, the Agency administering the Federal Fisheries Loan Fund. Of the total, 710 applications (\$15,929,360) have been approved, 473 (\$11,729,849) have been declined or found ineligible, 160 (\$6,106,422) have been withdrawn by the applicants before being processed, and 41 (\$2,685,170) are pending. Of the applications approved, 282 were approved for amounts less than applied for. The total reduction was \$1,704,591.



The following loans were approved from January 1, 1964, through March 31, 1964:

New England Area: George F. Hume, Boothbay Harbor, Maine, \$5,000; Alfred S. Osgood, Vinalhaven, Maine, \$4,900.

California: Clark W. Washburn, Crescent City, \$6,570; Jack J. Riso, Monterey, \$11,212; and Dewey H. Vanderpool, Pinole, \$7,177.

Pacific Northwest Area: Ronald E. Bowhay, Bellingham, Wash., \$15,000; Howard V. Rawley, Ferndale, Wash., \$6,500; Charles R. Beechey, Ocean Park, Wash., \$2,500; Henry P. Wold, Quinault, Wash., \$7,500; Andreas Arntsen, Seattle, Wash., \$28,000; Harry A. Hebert, Seattle, Wash., \$13,500; William A. Monroe, Seattle, Wash., \$3,191; Sven H. Svenson, Seattle, Wash., \$15,000; and Charles M. Thatcher, Tacoma, Wash., \$2,800.

Alaska: Ernest J. Heald, Anchorage, \$8,450; Eugene D. Smith, Coho, \$3,600; Robert B. Sandstrom, Haines, \$12,400; Charles Simon, Jr., Kasilof, \$7,850; Johnie W. Huff and Lora Mae Huff, Ketchikan, \$8,400; Oral L. Burch and Alvin R. Burch, Seward, \$6,036; and George Rohrer, Sitka, \$9,534.

Under the Fishing Vessel Mortgage Insurance Program (also administered by the Bureau) during the first quarter of 1964, a total of 11 applications for \$429,858 were received and 7 applications for \$282,402 were approved. Since the program began (July 5, 1960), 50 applications were received for \$4,741,309. Of the total, 33 applications were approved for \$2,588,212 and 11 applications for \$672,895 were pending as of March 31, 1964. Since the mortgage program began, applications received and approved by area are:

New England Area: Received 11 (\$1,054,500), approved 8 (\$775,365).

California Area: Received and approved 1 (\$557,000).

South Atlantic and Gulf Area: Received 28 (\$81,228,815), approved 19 (\$708,301).

Pacific Northwest Area: Received 7 (\$1,846,250), approved 4 (\$507,546).

Alaska Area: Received 3 (\$54,744), approved 1 (\$40,000).

No applications for the Fishing Vessel Construction Differential Subsidy were received from January through March 31, 1964, as the authority to accept applications expired on June 12, 1963. Since the beginning of that program on June 12, 1960, 13 applications were received for \$1,101,770, of which 7 applications were approved for \$624,370, and 6 applications for \$477,400 were pending.

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DOCUMENTATIONS ISSUED AND CANCELLED:

February 1964: During February 1964, a total of 30 vessels of 5 net tons and over were issued first documents as fishing craft, as compared with 26 in February 1963. There were 36 documents cancelled for fishing vessels in February 1964 as compared with 23 in February 1963.

Table 1 - U. S. Fishing Vessels 1/--Documentations Issued and Cancelled, by Areas, February 1964 with Comparison

Area (Home Port)	Feb.		Jan.-Feb.		Total 1963
	1964	1963	1964	1963	
	..... (Number) .....				
<u>Issued first documents 2/:</u>					
New England .....	1	2	2	3	
Middle Atlantic .....	1	-	2	1	
Chesapeake .....	-	3	5	3	
South Atlantic .....	5	5	10	7	
Gulf .....	20	11	37	23	2
Pacific .....	3	5	6	9	1
Great Lakes .....	-	-	1	-	
Puerto Rico .....	-	-	-	-	
<b>Total .....</b>	<b>30</b>	<b>26</b>	<b>63</b>	<b>46</b>	<b>5</b>
<u>Removed from documentation 3/:</u>					
New England .....	5	1	6	2	
Middle Atlantic .....	1	6	3	10	
Chesapeake .....	5	2	9	3	
South Atlantic .....	6	3	10	10	
Gulf .....	11	5	20	10	1
Pacific .....	8	8	15	15	
Great Lakes .....	-	-	5	2	
Hawaii .....	-	-	-	-	
<b>Total .....</b>	<b>36</b>	<b>25</b>	<b>68</b>	<b>52</b>	<b>3</b>

Note: For explanation of footnotes, see table 3.

Table 2 - U. S. Fishing Vessels--Documents Issued and Cancelled, by Tonnage Groups, February 1964

Gross Tonnage	Issued 2/	Cancelled
	..... (Number) .....	
5-9 .....	1	7
10-19 .....	3	9
20-29 .....	4	8
30-39 .....	4	-
40-49 .....	-	5
50-59 .....	5	1
60-69 .....	5	1
70-79 .....	5	-
90-99 .....	2	1
120-129 .....	-	1
140-149 .....	-	1
200-209 .....	-	1

(Table continued on next page)

Gross Tonnage	Issued <sup>2/</sup>	Cancelled <sup>3/</sup>
	..... (Number) .....	
229 .....	1	-
259 .....	-	1
Total .....	30	36

Table 3 - U. S. Fishing Vessels--Documents Issued, by Vessel Length, February 1964

Length Feet	Issued <sup>1/</sup> Number
0-40 .....	6
40-50 .....	5
50-60 .....	5
60-70 .....	12
70-80 .....	1
80-120 .....	1
Total .....	33

Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.  
 There were no documented vessels in February 1964 previously removed from records. Vessels issued first documents as fishing craft were built: 21 in 1964; 7 in 1963; 1 in 1962; and 1 prior to 1951.  
 Includes vessels reported lost, abandoned, forfeited, sold alien, etc.  
 Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

\* \* \* \* \*

January 1964: During January 1964, a total of 33 vessels of 5 net tons and over was issued first documents as fishing craft, as compared with 20 in January 1963. There were 32 documents cancelled for fishing vessels in January 1964 as compared with 27 in January 1963.

Table 1 - U. S. Fishing Vessels <sup>1/</sup>--Documentations Issued and Cancelled, by Areas, January 1964 with Comparisons

Area (Home Port)	Jan.		Total 1963
	1964	1963	
Issued first documents <sup>2/</sup> :	..... (Number) .....		
New England .....	1	1	23
Middle Atlantic .....	1	1	18
Pesapeake .....	5	-	66
South Atlantic .....	5	2	77
Gulf .....	17	12	239
Pacific .....	3	4	160
Great Lakes .....	1	-	5
Puerto Rico .....	-	-	2
Total .....	33	20	590

Area	Jan.		Total 1963
	1964	1963	
Removed from documentation <sup>3/</sup> :	..... (Number) .....		
New England .....	1	1	48
Middle Atlantic .....	2	4	47
Pesapeake .....	4	1	25
South Atlantic .....	4	7	53
Gulf .....	9	5	118
Pacific .....	7	7	87
Great Lakes .....	5	2	15
Hawaii .....	-	-	3
Total .....	32	27	396

<sup>1/</sup>For explanation of footnotes, see table 3.

Table 2 - U. S. Fishing Vessels--Documents Issued and Cancelled, by Tonnage Groups, January 1964

Gross Tonnage	Issued <sup>2/</sup>	Cancelled <sup>3/</sup>
	..... (Number) .....	
2-9 .....	7	6
10-19 .....	6	15

(Table continued on next column)

Gross Tonnage	Issued <sup>2/</sup>	Cancelled <sup>3/</sup>
	..... (Number) .....	
20-29 .....	3	3
30-39 .....	1	2
40-49 .....	2	1
50-59 .....	1	-
60-69 .....	3	3
70-79 .....	9	1
80-89 .....	1	-
120-129 .....	-	1
Total .....	33	32

Note: For explanation of footnotes, see table 3.

Table 3 - U. S. Fishing Vessels--Documents Issued, by Vessel Length, January 1964

Length Feet	Issued <sup>1/</sup> Number
20-30 .....	3
30-40 .....	10
40-50 .....	5
50-60 .....	2
60-70 .....	13
Total .....	33

<sup>1/</sup>Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.

<sup>2/</sup>Vessels issued first documents as fishing craft were built: 5 in 1964; 2 in 1963; 1 in 1961; 2 in 1960; and 4 prior to 1951.

<sup>3/</sup>Includes vessels reported lost, abandoned, forfeited, sold alien, etc.

Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.



## U.S. Foreign Trade

### PROCESSED EDIBLE FISHERY PRODUCTS, FEBRUARY 1964:

United States imports of processed edible fishery products in February 1964 were down 27.4 percent in quantity and 26.4 percent in value from those in the previous month. There was a sharp drop in imports of fish blocks and slabs (decline mainly in shipments from Canada) and canned sardines not in oil (decline mainly in shipments from South Africa Republic). Shipments were also down for most other processed edible fishery products, except haddock fillets.

Compared with the same month in 1963, imports in February 1964 were down 8.6 percent in quantity and 6.3 percent in value. Imports of canned sardines not in oil were much lower this February. Imports were also down for most other canned fishery products, except canned sardines in oil. The decline was partly offset by heavier arrivals of groundfish fillets, flounder fillets, sea catfish fillets, and yellow pike fillets.

U. S. Imports and Exports of Processed Edible Fishery Products, February 1964 with Comparisons

Item	Quantity				Value			
	Feb.		Jan.-Feb.		Feb.		Jan.-Feb.	
	1964	1963	1964	1963	1964	1963	1964	1963
Imports <sup>1/</sup>	..... (Millions of Lbs.) .....				..... (Millions of \$) .....			
Exports <sup>2/</sup>	35.7	38.8	84.9	77.6	10.3	11.0	24.3	21.3
	5.0	4.2	9.4	7.9	2.2	1.3	3.7	2.9

<sup>1/</sup>Includes only those fishery products classified by the U. S. Bureau of the Census as "Manufactured foodstuffs." Included are canned, smoked, and salted fishery products. The only fresh and frozen fishery products included are those involving substantial processing, i. e., fish blocks and slabs, fish fillets, and crab meat. Does not include fresh and frozen shrimp, lobsters, scallops, oysters, and whole fish (or fish processed only by removal of heads, viscera, or fins, but not otherwise processed).

<sup>2/</sup>Excludes fresh and frozen.

In the first 2 months of 1964, imports were up 9.4 percent in quantity and 14.0 percent in value from those in the same period of 1963. During January-February 1964 there were larger imports of cod fillets, ocean perch fillets, flounder fillets, blocks and slabs, sea catfish fillets, yellow pike fillets, canned tuna in brine, and canned sardines in oil, but imports were down for haddock fillets, halibut fillets, swordfish fillets, canned sardines not in oil, and canned crab meat.

Exports of processed edible fish and shellfish from the United States in February 1964 were up 13.6 percent in quantity and 46.7 percent in value from those in the previous month. An increase in exports of canned squid and the higher-priced canned salmon and canned shrimp was partly offset by a decline in shipments of canned mackerel and canned sardines.

Compared with the same month of the previous year, the exports in February 1964 were up 19.0 percent in quantity and 69.2 percent in value. Exports of canned salmon and canned mackerel were up, while shipments of canned sardines and canned squid declined.

Processed fish and shellfish exports in the first 2 months of 1964 were up 19.0 percent in quantity and 27.6 percent in value from those in the same period of 1963. In January-February 1964 there were much larger shipments of canned mackerel and shipments of canned salmon and canned shrimp were also higher, but exports of canned sardines not in oil and canned squid were down sharply.

Notes: (1) Prior to October 1963, the data shown were included in news articles on "U. S. Imports and Exports of Edible Fishery Products." Before October 1963, data showing "U. S. Imports of Edible Fishery Products" summarized both manufactured and crude products. At present, a monthly summary of U. S. imports of crude or nonprocessed fishery products is not available; therefore, only imports of manufactured or processed edible fishery products are reported. The import data are, therefore, not comparable to previous reports of "U. S. Imports of Edible Fishery Products."

The export data shown are comparable to previous data in "U. S. Exports of Edible Fishery Products." The export data in this series of articles have always been limited to manufactured or processed products.

(2) See *Commercial Fisheries Review*, May 1964 p. 35.



## Washington

### STEELHEAD TROUT INCIDENTAL CATCH MINIMIZED BY LARGER MESH NETS:

An experimental 8-day gill-net fishery in Grays Harbor, Wash., conducted by the Washington State Department of Fisheries during the first 2 weeks of December 1963 gave strong evidence that the use of nets with large mesh ( $7\frac{1}{2}$  inches or larger) definitely minimizes the incidental catch of steelhead trout. During the test, a total of 359 silver salmon and 22 steelhead trout were caught.

One chartered vessel using standard ( $6\frac{5}{8}$ -inch) mesh during 3 days in early December caught 4 silvers and 11 steelhead, of which 5 were released in good condition. A group of chartered vessels taking part in the test during the second week in December used nets with mesh of  $7\frac{1}{2}$  inches or larger and caught 44 silvers and 8 steelhead. All 8 trout were released in good condition.

Observations during the test confirmed the belief that seals are a serious predator

on both steelhead trout and silver salmon in the Grays Harbor area. (Washington State Department of Fisheries, April 1, 1964.)

\* \* \* \* \*

### PURSE-SEINE VESSEL CHARTERS SOUGHT BY DEPARTMENT OF FISHERIES:

The Washington State Department of Fisheries announced on April 22, 1964, that it wished to charter three purse-seine vessels and nets for salmon tagging at the following areas: West Beach, Rosario Strait, Iceberg Point, Salmon Banks, Lime Kiln, Mitchell Island and Stuart Island. One of the requirements in bidding for a charter was that a shipper must be familiar with at least two of the above areas and be able to demonstrate that he has been successful in fishing for silver salmon in those areas.

The charters will total a maximum of 20 fishing days per vessel and work will be done during the weekly 2- and 3-day closures of Puget Sound to commercial net fishing beginning on or about August 23, 1964. Charter will be on a per-day basis with no minimum season guarantee. Payment will be made for any day on which the net is set regardless of length of time fished. A bonus of a dollar per fish will be paid for every silver salmon tagged over a total of 160 per day.

No bids were considered that were in excess of \$300 per day for drum seines and \$200 per day for power-block seines. Such limit would not prevent payment of the bonus of a dollar for each silver salmon tagged in excess of 160 per day.

To be considered, a vessel had to be over 40 feet in length, large enough to handle two 36-inch circular fish tanks on deck, equipped with a deck pump for circulating sea water and have adequate life-saving equipment. The fishing ability of the skipper, as well as general condition of the vessel, net, and working space were all considered in awarding the charters.

The fisherman will furnish all fishing gear including losses, fuel, food, crew, boat insurance, and other vessel requirements. Charter will include meals for two biologists, except when in port. The net used must be in good condition and be of a standard size for areas to be fished.

One or more Washington State Department of Fisheries staff members will be aboard all times when the net is fishing.



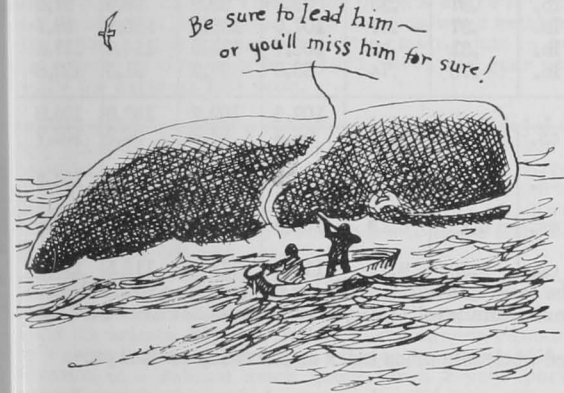
Bids were received by the Washington Department of Fisheries until May 14, 1964.



Whales

WHALE MARKING PROJECT OFF SOUTHERN CALIFORNIA:

A three-week whale-marking cruise off Southern California was begun in January 1964 by the Lynn Ann, a chartered research vessel of the U. S. Bureau of Commercial Fisheries. The project is part of an international program to conserve the world's populations of whales.

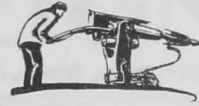


A total of 59 whale marks were fired during this cruise and 34 whales were estimated to have been effectively marked. The marked whales were 27 sperm whales, 5 gray whales, 1 whale, and 1 humpback whale. Twenty-five min whales, 6 sei whales, 1 humpback whale, 46 gray whales, and about 180 sperm whales were sighted. One killer whale and 10 dolphins were collected. Gray whales were seen farther offshore than formerly observed and this raises some question in the index based on land-based shore counts.

In marking whales, an 8-inch, hollow, stainless-steel tube with a lead cap--or whale mark--is fired from a specially designed gun. The tube carries instructions requesting anyone recovering the marker to return it to the National Institute of Oceanography in England.

The United States takes an active part in the work of the International Whaling Commission which resulted from a pact signed by 17 nations in Washington, D. C., on December 2, 1964. The U. S. Bureau of Com-

mercial Fisheries carries out the Federal Government's responsibilities in the conservation of whales and has a staff member serving on the Commission.



**Wholesale Prices**

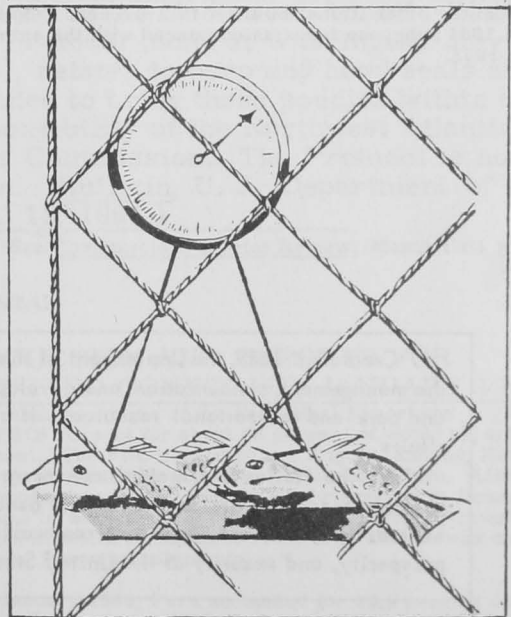
EDIBLE FISH AND SHELLFISH, APRIL 1964:

The April 1964 wholesale price index for edible fish and shellfish (fresh, frozen, and canned) dropped 1.0 percent from the previous month. With few exceptions, prices this April were generally lower for most of the fishery products listed than in March. At 103.1 percent of the 1957-59 average, the index this April was 9.2 percent lower than the same month a year earlier.

From March to April 1964, the drawn, dressed, or whole finfish subgroup index was down 2.5 percent and was lower than April 1963 by 7.7 percent. Lower prices for western frozen halibut (down 7.2 percent) at New York City were largely responsible for the decline, together with sharply lower prices for Great Lakes fresh-water fish. Although certain North Pacific halibut fishing areas were open in April, the main areas did not open until May 1. Since stocks were liberal, frozen halibut prices dropped in April. The declines were offset, to some extent, by higher April prices at Boston for ex-vessel large haddock (up 9.1 percent) and fresh and frozen king salmon (up 1.8 percent) at New York City. Compared with April 1963, prices this April were lower for all items in the subgroup except fresh large haddock (up 7.8 percent) at Boston and round fresh yellow pike (up 1.2 percent) at New York City.

The subgroup index for processed fresh fish and shellfish in April 1964 was down 0.9 percent from the previous month. Prices this April were lower than in March for fresh haddock fillets (down 3.1 percent) at Boston and fresh shrimp (down 1.6 percent) at New York City. Compared with April 1963, the subgroup index this April was down 9.9 percent mainly because of lower prices for fresh shrimp (down 13.7 percent) as well as for all other items in the subgroup.

All items listed in the subgroup for processed frozen fish and shellfish this April were priced lower than in March and the index was down 1.6 percent. The more significant price



Wholesale Average Prices and Indexes for Edible Fish and Shellfish, April 1964 with Comparisons								
Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes (1957-59=100)			
			Apr. 1964	Mar. 1964	Apr. 1964	Mar. 1964	Feb. 1964	Apr. 1963
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned) . . . . .					103.1	104.1	109.0	113.6
<b>Fresh &amp; Frozen Fishery Products:</b> . . . . .					103.7	105.5	113.2	117.7
<b>Drawn, Dressed, or Whole Finfish:</b> . . . . .					98.4	100.9	120.8	106.6
Haddock, lge., offshore, drawn, fresh . . . . .	Boston	lb.	.09	.08	67.4	61.8	160.2	62.5
Halibut, West., 20/30 lbs., drsd., fresh or froz. . . . .	New York	lb.	.28	.30	82.8	89.2	90.2	118.3
Salmon, king, lge. & med., drsd., fresh or froz. . . . .	New York	lb.	.83	.82	116.3	114.2	116.0	122.3
Whitefish, L. Superior, drawn, fresh. . . . .	Chicago	lb.	.57	.73	84.3	108.2	85.8	104.5
Yellow pike, L. Michigan & Huron, rnd., fresh . . . . .	New York	lb.	.43	.70	69.6	114.7	101.6	68.8
<b>Processed, Fresh (Fish &amp; Shellfish):</b> . . . . .					115.0	116.1	114.0	127.7
Fillets, haddock, sml., skins on, 20-lb. tins . . . . .	Boston	lb.	.31	.32	75.3	77.7	140.8	76.5
Shrimp, lge. (26-30 count), headless, fresh . . . . .	New York	lb.	.95	.97	111.3	113.1	106.6	128.9
Oysters, shucked, standards . . . . .	Norfolk	gal.	7.50	7.50	126.5	126.5	118.0	134.9
<b>Processed, Frozen (Fish &amp; Shellfish):</b> . . . . .					94.7	96.2	100.7	114.4
Fillets: Flounder, skinless, 1-lb. pkg. . . . .	Boston	lb.	.37	.39	93.8	98.9	98.9	97.6
Haddock, sml., skins on, 1-lb. pkg. . . . .	Boston	lb.	.37	.37	107.0	108.5	115.8	99.7
Ocean perch, lge., skins on 1-lb. pkg. . . . .	Boston	lb.	.31	.33	108.7	114.0	114.0	117.5
Shrimp, lge. (26-30 count), brown, 5-lb. pkg. . . . .	Chicago	lb.	.73	.74	86.6	87.2	91.3	122.8
<b>Canned Fishery Products:</b> . . . . .					102.5	102.2	102.0	106.8
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. . . . .	Seattle	cs.	22.00	21.75	95.9	94.8	94.8	105.7
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs. . . . .	Los Angeles	cs.	11.63	11.63	103.3	103.3	103.3	104.4
Mackerel, jack, Calif., No. 1 tall (15 oz.), 48 cans/cs. . . . .	Los Angeles	cs.	6.13	6.13	103.9	103.9	103.9	100.0
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs. . . . .	New York	cs.	9.09	9.21	116.5	118.2	116.5	116.2

1/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.  
 2/Replaced California canned sardines starting December 1962; entered wholesale price index at 100 under revised procedures of Bureau of Labor Statistics.

declines were for ocean perch fillets (down 5.3 percent) and flounder fillets (down 5.2 percent); frozen shrimp prices were down 0.7 percent from the previous month. Frozen shrimp prices this April were 29.5 percent lower than in the same month a year earlier. While prices in this subgroup were lower than in April 1963 for nearly all items, the marked price drop for frozen shrimp contributed to a larger degree than the other items toward a 17.2-percent drop in the April 1964 subgroup index as compared with the same month in 1963.

Despite reports of liberal canned pink salmon stocks, increased demand caused April 1964 prices to move up slightly (up 1.2 percent) from the previous month, but they were still 9.3 percent lower than in April 1963. That price increase was offset by somewhat lower prices for canned Maine sardines (down 1.4 percent) prior to the start of the new sardine canning season. The subgroup index for canned fishery products was down 0.3 percent from March to April and was lower by 4.0 percent as compared with April 1963.



Created in 1849, the Department of the Interior--a department of conservation--is concerned with the management, conservation, and development of the Nation's water, fish, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States--now and in the future.