



Transferring king crab from weighing bucket to processing-plant cart. (BCF-Alaska photo: J. M. Olson)

THE U.S. FOOD SITUATION

The average American ate a record amount of food in 1969 and paid over 5% more for it. This year there likely will be slightly more food supplies per person, but retail prices will rise again--perhaps $3\frac{1}{2}$ to 4%. It will reflect continued strong demand. This is reported by the U.S. Department of Agriculture.

Food consumption per person in 1969 was a record 106% of 1957-59 average. It was slightly higher than 1968. The increase came primarily in chicken and turkey, vegetable oils, fresh and processed fruits, and processed potato products. Consumption of red meat per person was slightly less--more beef but less veal, lamb, and pork. Consumption of eggs, milk, and most manufactured dairy products declined. Cheese consumption increased.

Fishery-Product Consumption Steady

Although per-capita consumption of fishery products has remained constant, total consumption of fresh and frozen food-fish products has increased faster than domestic landings. The gap has been filled by imports of food-fish products.

Retail Prices Up

Despite continued high level of food availability, retail prices rose sharply in 1969. The year's average was 5.2% above 1968;

prices in December 1969 were 7.2% above a year earlier.

Restaurant food prices moved up steadily throughout 1969. Red meats and eggs led in price advances for store-bought food. Most other food-store items also rose, but prices of fats and oils leveled, and prices of fresh fruit declined.

1970 Predictions

Per-capita food supplies are expected to gain slightly in 1970. Consumption of poultry and processed fruits likely will rise substantially; that of eggs and fish probably will rise moderately. Beef production and consumption will be up, but veal and lamb again will be down. Pork production will be down until later in 1970, then increase, so total red-meat per-capita consumption may be about 1969 level.

1970 Fish Consumption

In 1970, civilians will eat about 1,230 million pounds of fishery products (edible weight). One quarter will come from groundfish: such as cod, haddock, hake, Boston bluefish (pollock), and ocean perch; about 60% of this will be imported. Landings of flounders, cod, ocean perch, and Boston bluefish are expected to rise above a year ago, while haddock landings will drop to a record low. The decline in haddock landings may more than offset any gains in other groundfish.



NORTH ATLANTIC SHRIMP INDUSTRY EDGES SOUTH

On the U.S. Atlantic Coast, the northern shrimp fishery appears to be edging southward, reports BCF. The northern shrimp used to be harvested almost exclusively within 50 miles of Portland, Maine, and marketed as "Maine shrimp."

BCF has promoted frozen Maine shrimp at international food fairs. Introduced in London in 1966, it has been well received in France, Germany, Italy, Sweden, and the Netherlands. About 50% of Maine's shrimp production for the 1968-69 season was exported to Western Europe, mostly to Sweden.

Enter Non-Maine Fishermen

Biologists do not know where these deep-water shrimp mature, but they move shoreward to spawn and are caught then. Maine's commercial fishermen have harvested the small pink shrimp as a winter crop--from September or October into April or May.

However, BCF exploratory fishing has shown the shrimp within reach of other coastal states; also, that traditional shrimping season can be extended through summer. As a result, vessels from Massachusetts and New Hampshire moved into the fishery in 1969.

In 1969, Maine fishermen caught about 24.5 million pounds worth around \$3 million; Massachusetts landed 4.5 million pounds worth about \$500,000, and New Hampshire about 100,000 pounds valued at \$12,000.

A new processing plant capable of handling up to 200,000 pounds of shrimp a day is being built on Gloucester (Mass.) State Fish Pier.

Northern & 4 Florida Species

As the northern shrimp fishery expands, BCF marketing specialists speculate that shrimp may be marketed more widely under a more general name. In the Gloucester area it is "just shrimp" because it is the only commercial shrimp species there.

In Florida, the picture is somewhat different. There, fishermen land 4 different species--the white shrimp, a somewhat larger brown shrimp, the southern pink (not the same species as the northern shrimp), and royal reds.

Despite this formidable competition, the delicate flavor of the northern shrimp, marketed frozen as a novelty, has won it considerable popularity among Florida gourmets. Availability Fluctuated Sharply

Northern shrimp are too small and too delicate to be processed by conventional methods. Until the advent of special equipment and techniques, the shrimp either were peeled by hand or sold whole (unpeeled). Besides processing problems, industry development has been hampered by sharp fluctuations in availability. In the 1930s, the northern shrimp was abundant in the Gulf of Maine. By the 1950s, it had practically disappeared. Then in the late 1950s, it became abundant again. Mysteries About Shrimp's Environment

Little is known about environmental factors that control the young shrimp's chances of survival to adulthood. Biologists believe the life span is about 4 years. During the first year of life, the shrimp, which begins its adult life as a male, changes to female and moves toward the shore to spawn.



INTERIOR DEPARTMENT INSPECTED VAST AMOUNT OF FISH IN 1969

During 1969, the inspection service of the U.S. Department of the Interior (USDI) inspected or graded over 328 million pounds (edible-weight basis) of fish and fishery products. About one million pounds of the total were rejected for noncompliance with USDI Grade Standards or product specifications.

The 1969 amount inspected was about 28.5% of the volume processed in the U.S. each year--and 12% of U.S. annual consumption.



GOOD DEMAND FOR PUGET SOUND PACIFIC HAKE

The demand for Puget Sound hake is good this year. Two factors have helped to stimulate it: 1) the formula for the Oregon moist pellet has been changed. Now hake and hake meal can be used in place of other ingredients; and 2) the increase in world price of fishmeal.

Peruvian fishmeal, for example, rose from \$172 per ton (f.o.b. New York and Gulf ports) in September 1969 to \$204 per ton in December 1969.

Fishermen are receiving \$15 to \$20 per ton for hake, compared to \$12 to \$20 last season.

The Fishery

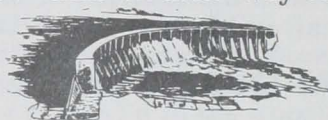
The seasonal fishery begins in September or October and extends through May or June. The catch for the 1969-70 season during September through January is 1,000,000 pounds; for the same period last season, it was 700,000 pounds. Generally, fishing improves significantly during the season's second half, when hake are more concentrated and available in the area of Port Susan. Last season's catch was 9,000,000 pounds.



NEW DEVICE PROTECTS SALMON AT LOW-HEAD DAMS

A prototype fish-guiding device has been installed in a turbine intake of Ice Harbor Dam (Snake River, Washington). It is a large traveling screen designed to divert salmon fingerlings from the turbine, where many die. After a week's trial, under maximum turbine load conditions, its mechanical operation has been successful. Its efficiency in diverting salmon fingerlings from the turbine will be measured this spring, when their seaward migration starts.

The device is a key part of a bypass system being developed to protect salmon fingerlings of the Upper Snake River in their migrations past seven dams on their way to the sea.



OYSTER STUDIES YIELD IMPORTANT INFORMATION

A Federal-state study of shellfish in Pacific coast bays revealed a relatively high mortality in native oysters and mussels from Yaquina Bay, Oregon. However, the Pacific oyster, more than 99% of the oysters marketed commercially, has not been affected. State fisheries agencies of Oregon, Washington, and California have cooperated with BCF, University of Washington, and the Pacific Coast Oysters Growers Association in investigating causes of oyster mortalities since 1965.

Lab Examination

Experimental planting of native oysters in Yaquina Bay suffered mortality rates from 18 to 30%, or more, per year. Samples of oysters from the trays examined microscopically by biologists at the BCF laboratory in Oxford, Maryland, and at the University of Washington showed a condition that appeared serious enough to cause the oyster deaths. Although similar conditions were observed in mussels taken from Yaquina Bay, it was not found in the Pacific oysters examined from the same area.

No Public Health Threat

No name has been given to the condition present in these native oysters and mussels.

The cause has not yet been identified. Scientists say the disorder could be caused by environmental factors, or by a virus. The Boards of Health in Oregon and Washington reviewed the problem and do not view the native oyster condition as a threat to public health.

In contrast to the high mortality rates of native oysters and mussels, Pacific oyster mortality in Yaquina Bay is the lowest observed on the Pacific coast. In fact, experimental plantings of Pacific oysters in Yaquina Bay, as part of the coastwide mortality study, were used as a "control" for comparison with plantings in other bays, where Pacific oysters have higher death rates.



OYSTER-MEAT QUALITY INDEX REPORTED

A plump, creamy-white oyster meat that generally fills its shell cavity is considered of high quality; a shrunken transparent oyster meat with a high water content that does not fill the shell cavity is considered of low quality. Using this basis, the Virginia Institute of Marine Science has been conducting surveys in the rivers of Virginia to determine the condition of oysters.

Survey's Results

As a result of these surveys, the Institute developed an acceptable measure of quality and relative yield--designated the "Oyster Meats Quality Index." It can be used to compare the actual size of an oyster meat with the space inside the shell cavity. The index's chief value is to provide industry with a useful tool for comparing the potential yield of oysters of the same size, different growing areas, and from one season to the next.

Where To Get Index

The index was reported in the Jan. 1970 issue of the Institute's "Marine Resources Information Bulletin." It may be obtained from the Institute at Gloucester Point, Virginia 23062.



FISHERIES SURVEY OF AMERICAN SAMOA SLATED

The research vessel 'Charles H. Gilbert' of the BCF Biological Laboratory, Honolulu, sailed for American Samoa to conduct the first systematic survey of the area's fishery resources. The Government of American Samoa is cooperating.

The islands are headquarters of a large fishing industry. The two U.S.-owned canneries there are supplied by about 100 vessels from Japan, Korea, and Taiwan. The bulk of the catch is albacore tuna. Much of the product is exported to mainland U.S.

The survey, however, will concern itself with skipjack tuna, for which there is growing demand in the fishing industry.



SCIENTISTS WARN AGAINST ADDING DDT TO ANTI-FOULING PAINT

The Virginia Institute of Marine Science (VIMS) is concerned about continuing reports of oyster-boat owners mixing DDT with copper anti-fouling paint. The mixture is used on boat bottoms to control scurf, borers (worms) and barnacles. This is an extremely dangerous practice "because DDT is one of the most toxic pollutants that can be put in water," VIMS scientists warn. They say its value in protecting boat bottoms has never been proved and it may, in fact, do more harm than good. DDT could change the paint and cause it to flake off--exposing bare wood to infestation.

Shellfish Concentrate DDT

Shellfish, especially oysters, concentrate DDT in their bodies to levels approximately 10,000 times those found in the water. One pound of DDT can contaminate a billion pounds of water. This would be sufficient to load over 100,000 bushels of oysters with enough DDT to justify seizure by health authorities.

Recommends Better Grade of Paint

If the usual 'soft' copper anti-fouling paints are not giving the required protection, VIMS recommends using a better grade of copper, rather than adding materials like DDT. Some

'SQUOXIN' IS A SELECTIVE TOXIN FOR SQUAWFISH

A selective fish toxin that will turn squawfish belly-side up--and leave trout, salmon, steelhead, and other desirable species unharmed--is a management tool scientists have long been seeking. Squoxin, a nonchlorinated hydrocarbon that kills the highly predacious squawfish and leaves other fish swimming happily, is a big step in this direction.

Releases of young salmon and trout from fish hatcheries are especially vulnerable to squawfish. As many as 250 young salmon have been found in the digestive tracts of squawfish.

Squoxin Developed

The squawfish-killing chemical was developed by Dr. Craig MacPhee, professor of fisheries at the University of Idaho, after 4 years of research and testing. The search was sponsored by BCF's Columbia Fisheries Program Office.

The selective toxin, Squoxin, acts on the squawfish's nervous system as a vaso-constrictor; it prevents efficient use of oxygen and the proper function of the blood vessels. The chemical is applied to the stream or lake environment--.1 part per million--and kills squawfish, while not harming salmon and trout. The toxin also kills a very few dace and shiners--an indicator that the proper amount of toxin is being metered into stream. It has no effect on aquatic insects or other fish foods, humans, or land animals.

Slow-Working, Short-Lived

Squoxin is a relatively slow-working but short-lived toxin. It becomes ineffective within hours. The first dead squawfish are seen 3 hours after squoxin is applied, and more are dying 24 hours later. Because of squoxin's short life, it must be applied over a long period.

One amazing characteristic of the toxin is that squawfish apparently have no sense of danger, or are aware that they are being killed. With other fish-killing chemicals, such as rotenone, fish of all kinds try desperately to escape with the very first whiff. Squawfish have moved miles downstream to get out of rotenone's effective range.

Field Tests

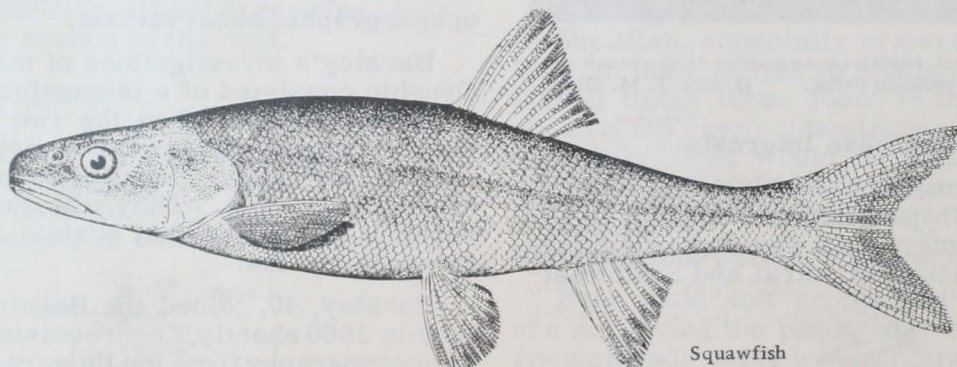
During experimental field tests, squawfish, trout, young salmon, steelhead, and other fish were observed swimming directly below the point where the squoxin was being put into the water. They appeared unaware of the chemical.

The first indication of squawfish distress is an apparent weakening, followed by a slow drift downstream, and then loss of equilibrium. Distress is noted 2 to 3 hours after the start of chemical application. Exact counts of dead squawfish are very difficult to make. But, in one test, it was estimated that about 200,000 squawfish were killed in an 8-mile section of stream.

Squoxin can be an exceptional fishery management tool to help control squawfish, especially in areas heavily populated by squawfish and salmon and trout.

Laboratory experiments on mammals have indicated that this selective chemical is perhaps five times less toxic than table salt when administered to experimental animals on a specific volume-per-unit weight basis.

A patent has been issued to the U.S. Government and the principal investigators by the U.S. Patent Office.



Squawfish

OCEANOGRAPHY

USC STUDIES SANTA BARBARA OIL SPILL EFFECTS

"Keep those (drift) cards coming in, folks," University of Southern California (USC) scientists have asked the public. The scientists are conducting a year-long study of the effects of the Santa Barbara Channel oil spillages.

The drift cards, brightly colored and encased in watertight polyethylene envelopes, are being used to trace ocean currents. They have been released periodically throughout the Santa Barbara Channel from USC's research vessels 'Velero IV' and the 'Golden West.'

Since March 1969, 12,500 drift cards have been released. The final drop was scheduled for Feb. 8-17, 1970.

Public Cooperation Asked

The cards wash up on beaches and other waterfront areas. Finders are asked to discard the plastic envelopes, indicate on the cards where and when they were found, and then mail them (postage-prepaid) to USC.



SURFACE SLICKS HAVE 10,000 MORE PESTICIDE THAN ENCIRCLING WATER

Concentrations of up to 13 parts per billion (ppb) of chlorinated pesticides were measured in natural surface slicks in Biscayne Bay, Florida, by Dr. Eugene F. Corcoran and Dr. Douglas B. Seba of the University of Miami Rosenstiel School of Marine and Atmospheric Sciences. The researchers also found that water surrounding the slicks generally contained less than 1 part per trillion--or less than 1/10,000--of the pesticides found in the slicks.

Dr. Corcoran said: "Natural surface slicks may explain the occurrence of pesticide residues in penguins in the Antarctic, or the disappearance of pelicans from nearly all of the U.S. seacoasts. In Biscayne Bay, for example, we have observed gulls and pelicans diving into surface waters to feed on the dense schools of small fish that feed on plankton concentrated in the slicks. Since these sea birds

eat many times their weight in fish, they eventually have more pesticide concentrated in their tissues than the fish did."

"Surface slicks are natural oceanographic phenomena which appear as calm streaks or patches on the otherwise rippled surface of lakes, coastal waters, and open ocean areas," added Dr. Seba. "In our aerial surveys of Biscayne Bay, we have observed slicks varying from a few meters to over 100 meters in width and up to several miles in length. During the summer of 1968, aerial photographs revealed that about 10% of the bay was covered with these slicks"

How Slicks Induced

The slicks may be wind-induced or may occur where two water masses converge. The converging water causes compaction of the film of dissolved organic and inorganic molecules normally found on the surface of biologically productive waters; this provides a tremendous supply of nutrients. Some nutrients are used directly by phytoplankton (microscopic floating plants); others combine into small particles and are used by filter-feeding animals.

Pesticides In Atmospheric Dust

The cycling of pesticides depends not only on food-web interactions, but on interaction between atmosphere, water, silt, and bottom deposits. Dr. Seba and Dr. Joseph M. Prospero found in a study that atmospheric dust collected at Barbados, West Indies, after it had crossed 4,000 miles of open ocean, contained appreciable amounts of chlorinated pesticides. The latter were similar to those found in Biscayne Bay surface slicks. The scientists believe this indicates that Atlantic tropical tradewinds are responsible for transporting significant quantities of pesticides from continents to the open-ocean ecosystem. They also found pesticides in the rainwater of tropical hurricanes.

The research was supported in part by Interior Department's Federal Water Pollution Control Administration, the National Science Foundation, and the Office of Naval Research.



ESSA VESSEL SEEKS EVIDENCE OF PACIFIC SEA-FLOOR SPREADING

U.S. oceanographers are investigating a little-known ocean area in the South Pacific south of Easter Island for evidence of sea-floor spreading. They are aboard the U.S. Coast and Geodetic Survey ship 'Oceanographer,' a "floating laboratory" manned by 95 officers, scientists, and crew.

Their investigation centers on the East Pacific Rise, a 3,000-foot underwater mountain range; the Chile Trench, a deep chasm in the seabed off South America; and the intervening area. The ocean there is about 15,000 feet deep.

Sea-Floor Spreading Theory

The study of sea-floor spreading is based on the theory that the ocean floor moves constantly and carries along the continents. The oceanographers are trying to determine the extent and rate of the spreading.

The oceanographers also are investigating the topography of the sea bottom. Little is known of sea-floor features in this area.

The ship will spend about seven weeks between Papeete, Tahiti, and Valparaiso, Chile.



DISCOVERIES SUPPORT A NEW THEORY OF SEA-FLOOR MOTION

Discoveries that support a new theory of sea-floor motion have been made by scientists in the Deep Sea Drilling Project. Geologist James D. Hays of Columbia University has reported "evidence that the major Pacific Ocean floor plate has moved at varying speed and direction during the past 35 million years." His findings support the theory that "the sea floor is being pulled away from the East Pacific Ridge by the force of gravity." It was believed before that the sea floor was "being pushed and dragged away by the force of convection currents" under it.

His conclusions are based on data gathered on the recently completed ninth leg of the Project, supported by the National Science Foundation. Dr. Hays was chief scientist during the 52-day voyage of the research vessel 'Glomar Challenger' across the equatorial Pacific from Tahiti to Panama.



BOTTLE DRIFTS 7 YEARS FROM GEORGIA TO FLORIDA'S GULF COAST

A bottle tossed into the Atlantic Ocean in June 1962 off Wassaw Island, near Savannah, Ga., by Explorer Scouts was found in the Gulf of Mexico off Ft. Myers Beach, Fla., 830 miles away, in July 1969.

The finder, Don B. Howard, of Ft. Myers, asked oceanographers of Commerce Department's Environmental Science Services Administration (ESSA) what route the bottle could have taken.

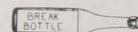
The oceanographers said it was impossible to track the route or estimate the miles traveled. Once the bottle was transported offshore at Savannah, it would have been picked up by the Gulf Stream and carried into the North Atlantic. From there to Ft. Myers Beach, it could have traveled several routes that would have taken it between Cuba and Mexico's Yucatan Peninsula into the Gulf.

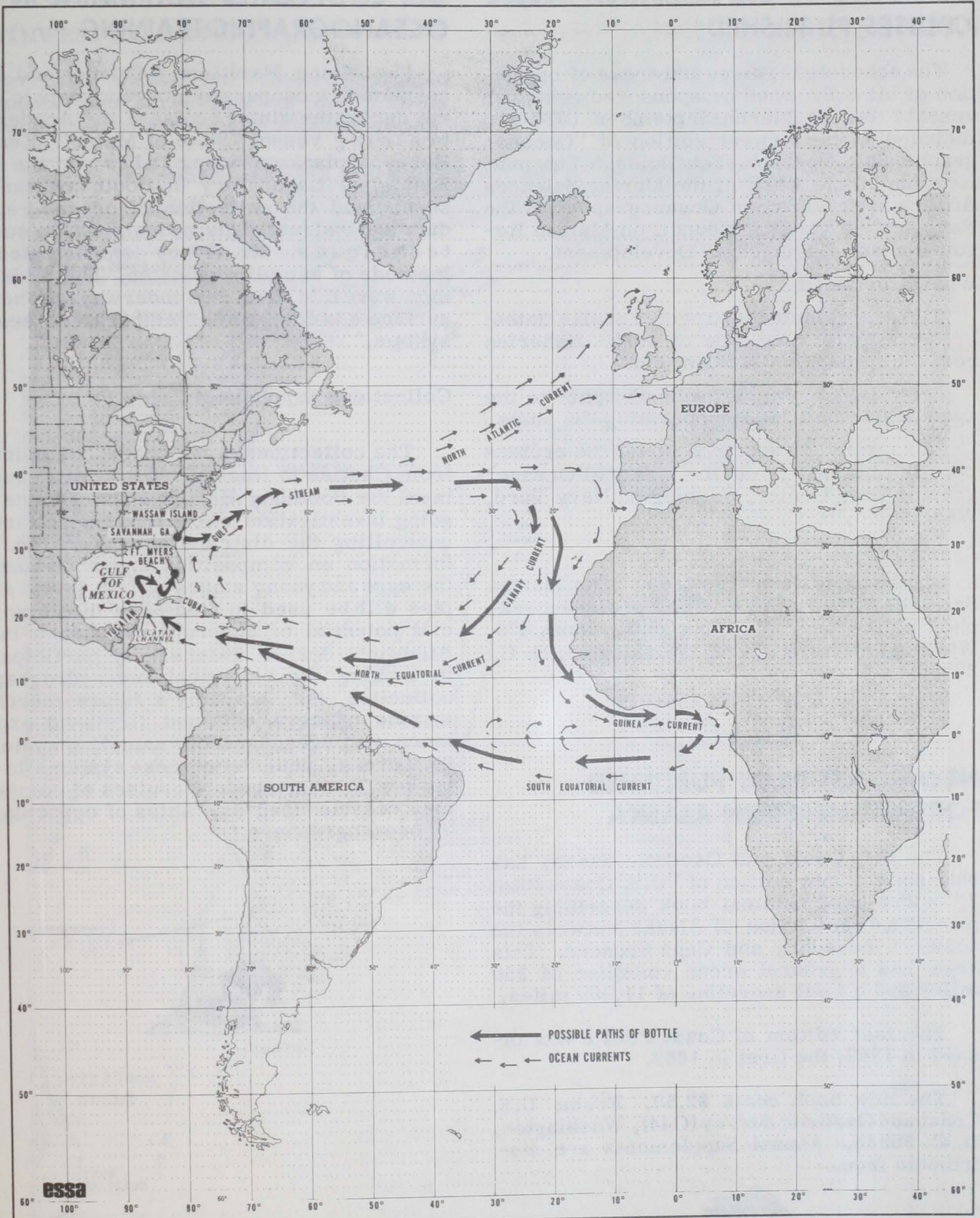
The oceanographers said they could suggest probable routes, even though they could not pinpoint the actual route. The time and distance of the drift would vary with seasonal speed and location of ocean currents and local meteorological effects. They outlined these possibilities:

1. When the bottle was picked up by the Gulf Stream, it would have drifted at 2 to 4 miles per hour up the U.S. coast to vicinity of Cape Hatteras, N.C. There, it would move easterly across North Atlantic until caught by Canary Current. This current would carry the bottle southward, down Africa's bulge, and to North Equatorial Current, which would transport it westward across Atlantic into Caribbean. Then the Caribbean Current would transport it to the Yucatan Channel. From there it would pass into Gulf of Mexico and land on Ft. Myers Beach.

2. The bottle could have traveled a somewhat longer route. After drifting down North Africa's west coast, it could have been caught in the Guinea Current and carried south of African bulge to South Equatorial Current. This would have transported bottle across the Caribbean Sea, where it would follow the course outlined above.

In either case, it was considered probable that the bottle lay trapped in the rushes of the Georgia coastal swamps for a long time--until high tides and/or strong offshore winds freed it and caused it to drift far enough from shore to be picked up by the Gulf Stream.





Map shows Atlantic Ocean currents that may have carried drift bottle on 7-year, 830-mile journey from Wassaw Island, Ga., to Ft. Myers Beach, Fla.

SCHEDULE OF U.S. RESEARCH-VESSEL CRUISES PUBLISHED

The scheduled cruises and areas of operation of all U.S. owned or sponsored research vessels during March-September 1970 are included in the newest edition of "Oceanographic Ship Operating Schedules." The publication is the work of the Marine Sciences Affairs staff, Office of Oceanographer of the Navy, for the National Council on Marine Resources and Engineering Development.

What It Includes

The report includes expected cruise dates; area of operations; type of work--fisheries research, plankton studies, etc.

Scientists may apply for berth space to the agencies or institutions operating the ships.

Research data acquired during the cruises can be obtained from the National Oceanographic Data Center, Washington Navy Yard, Washington, D. C. 20390.

Free Copy

Single copies are free from: The Marine Sciences Affairs Staff, Office of Oceanographer of the Navy, Building 159E, Room 476, Washington Navy Yard, Washington, D. C. 20390.



NEW COAST PILOT PUBLISHED FOR SOUTHEASTERN ALASKA

The U.S. Coast and Geodetic Survey has published a new edition of "U.S. Coast Pilot 8," a 254-page nautical book describing the panhandle section of Alaska between the southern boundary and Cape Spencer. This area has a general ocean coastline of 250 miles and a tidal shoreline of 11,085 miles.

The last edition of Coast Pilot 8 was issued in 1962; the first in 1869.

The new book costs \$2.50. From: U.S. Coast and Geodetic Survey (C44), Washington, D. C. 20235. Annual Supplements are distributed free.



BCF COOPERATES WITH MAINE IN OCEANOGRAPHIC TRAINING

The Maine Maritime Academy and BCF conducted a cooperative oceanographic survey during the winter cruise of the Academy's training vessel "State of Maine". Kenneth Honey, a plankton specialist at the BCF Biological Laboratory in Boothbay Harbor, supervised the collection of oceanographic data and instructed the midshipmen in survey techniques. Mr. Honey demonstrated the methods of sampling plankton. The midshipmen were told about new underway expendable surface and deep-water temperature-sensing system.

Collections Supplement Lab's Study

The collections were made periodically from Castine to Nassau. These will supplement the Boothbay Harbor Laboratory's ongoing investigation of oceanographic factors controlling the distribution of plankton. Information on composition and abundance of the eggs and young stages of fish in the samples will be used in studies of the commercial potential of underutilized fishes in the Atlantic's deeper waters. By participating in making the biological and hydrographic collection, the Academy's future merchant marine officers obtained firsthand experience with oceanographic sampling systems. An increasing number of these systems is being put on transoceanic cruises of commercial vessels used as "ships of opportunity" by oceanographers.



FOREIGN FISHING OFF U.S. JANUARY 1970

NORTHWEST ATLANTIC (Fig. 1)

Favorable weather in January permitted reasonably good surveillance of foreign fleets off New England and Middle Atlantic coasts;

88 foreign fishing and support vessels were sighted (80 in December 1969). No Soviet or Polish violations of 'no fishing' zone were observed.

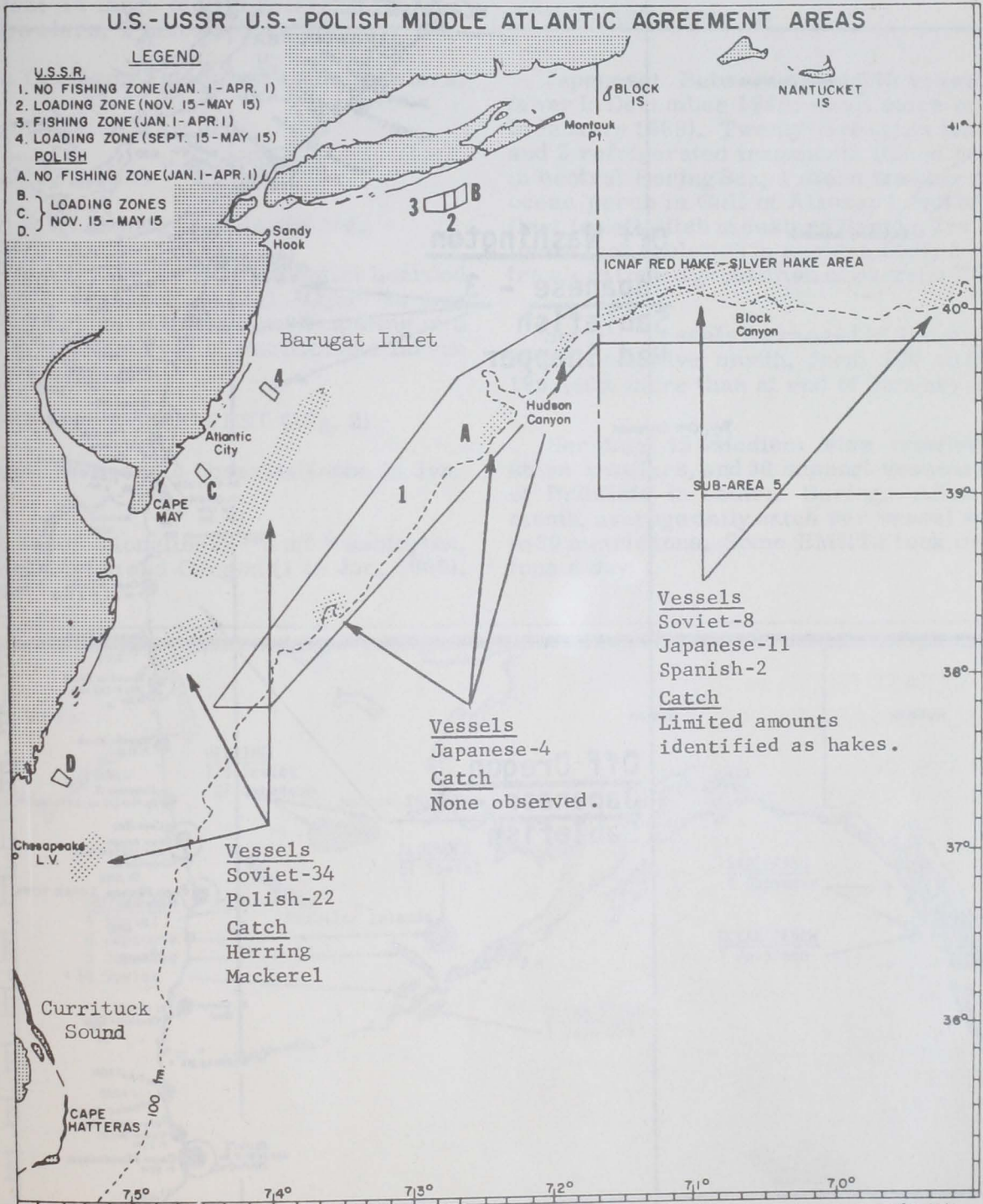


Fig. 1 - Foreign fishing vessels off southern New England and Georges Bank. Number of vessels, country of origin and species fished.

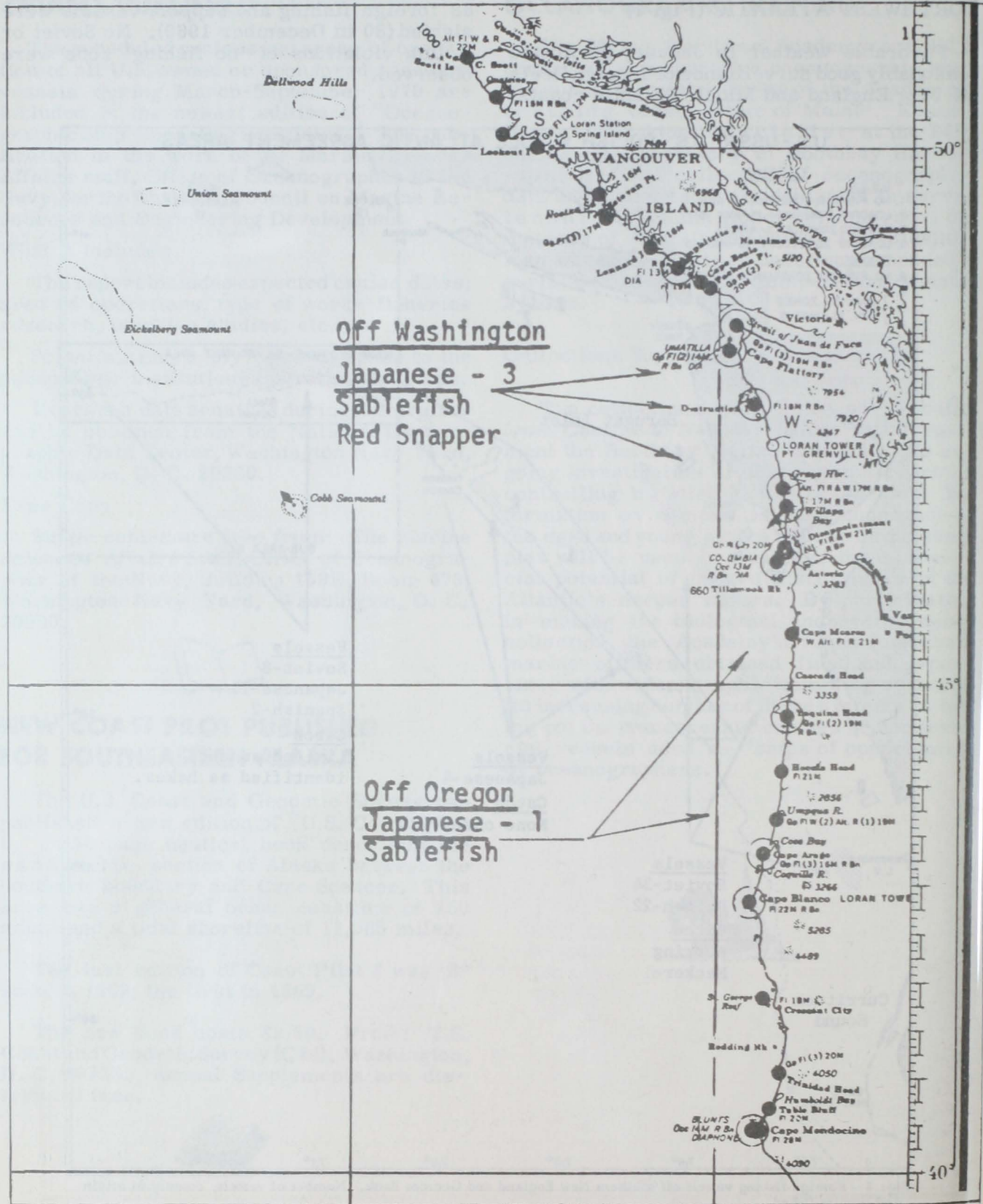


Fig. 2 - Foreign fisheries off U.S. Pacific Northwest.

Soviet: 34 medium side trawlers, 5 factory stern trawlers, 1 factory base ship, 2 refrigerated carriers.

Japanese: 15 freezer stern trawlers.

Polish: 14 large side trawlers, 7 freezer stern trawlers, 1 factory base ship.

East German: 3 stern and 4 side trawlers.

Spain: 2 side trawlers.

OFF CALIFORNIA

No foreign fishing vessels sighted.

On January 26, a BCF scientist boarded the Soviet research vessel 'Ogon' in Los Angeles Harbor. Ogon is participating in a joint U.S.-USSR survey of Pacific hake larvae off Baja California.

OFF PACIFIC NORTHWEST (Fig. 2)

Soviet: No vessels observed (none in Jan. 1969).

Japanese: 3 longliners--2 off Washington, 1 off Washington and Oregon (1 in Jan. 1969).

One longliner off Oregon caught sablefish with an estimated 75% success (percentage of hooks with fish attached). A longliner off Washington had only an estimated 15% success.

OFF ALASKA (Fig. 3)

Japanese: Between 40 and 45 vessels (10 fewer in December 1969; about same number in January 1969). Twenty-five stern trawlers and 2 refrigerated transports fished herring in central Bering Sea; 1 stern trawler fished ocean perch in Gulf of Alaska; 1 factoryship fleet took flatfish in eastern Bering; 2-4 longliners took sablefish in eastern Gulf; 5 stern trawlers fished groundfish in eastern Bering.

Soviet: Vessels increased in January for 3rd consecutive month, from 100 to nearly 190 (40% more than at end of January 1969).

Herring: 45 medium side trawlers, 40 stern trawlers, and 30 support vessels north of Pribilof Islands in central Bering. After mid-month, average daily catch per vessel was 25 to 30 metric tons. Some BMRTs took over 60 tons a day.

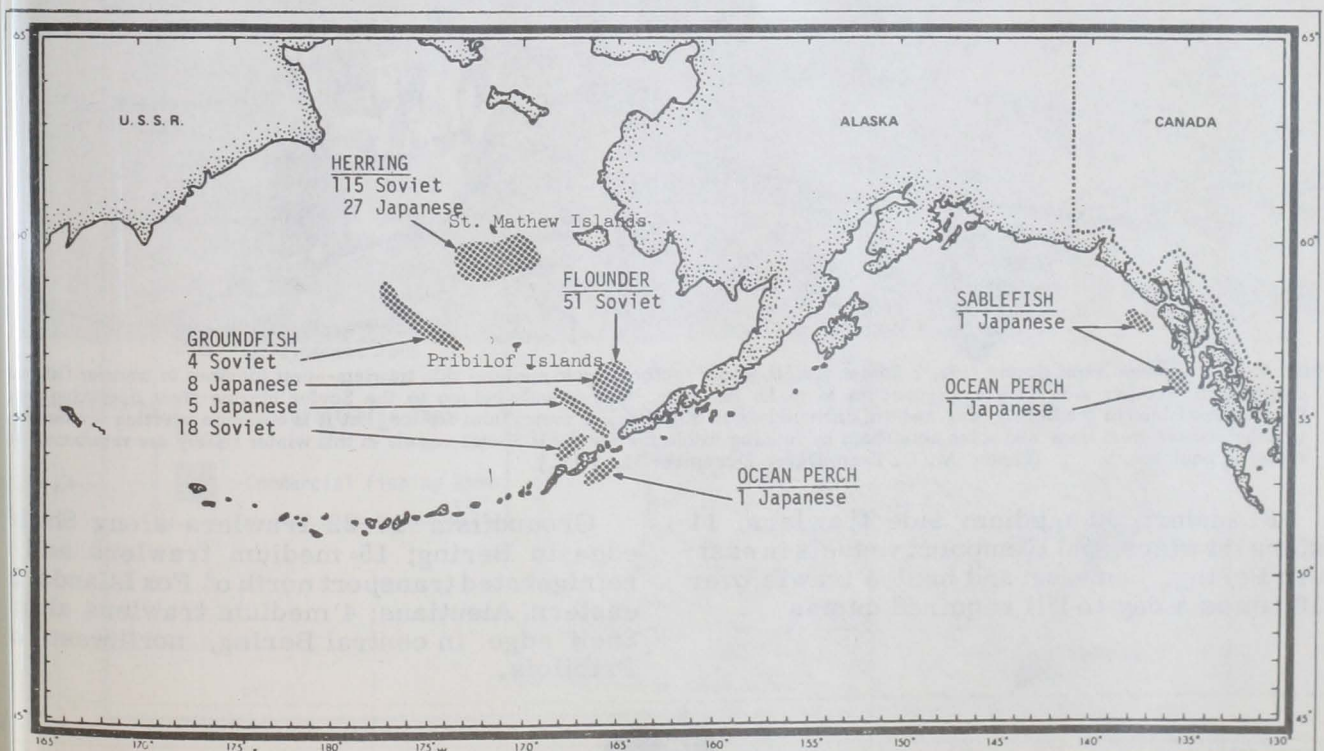


Fig. 3 - Soviet & Japanese fisheries off Alaska, January 1970.

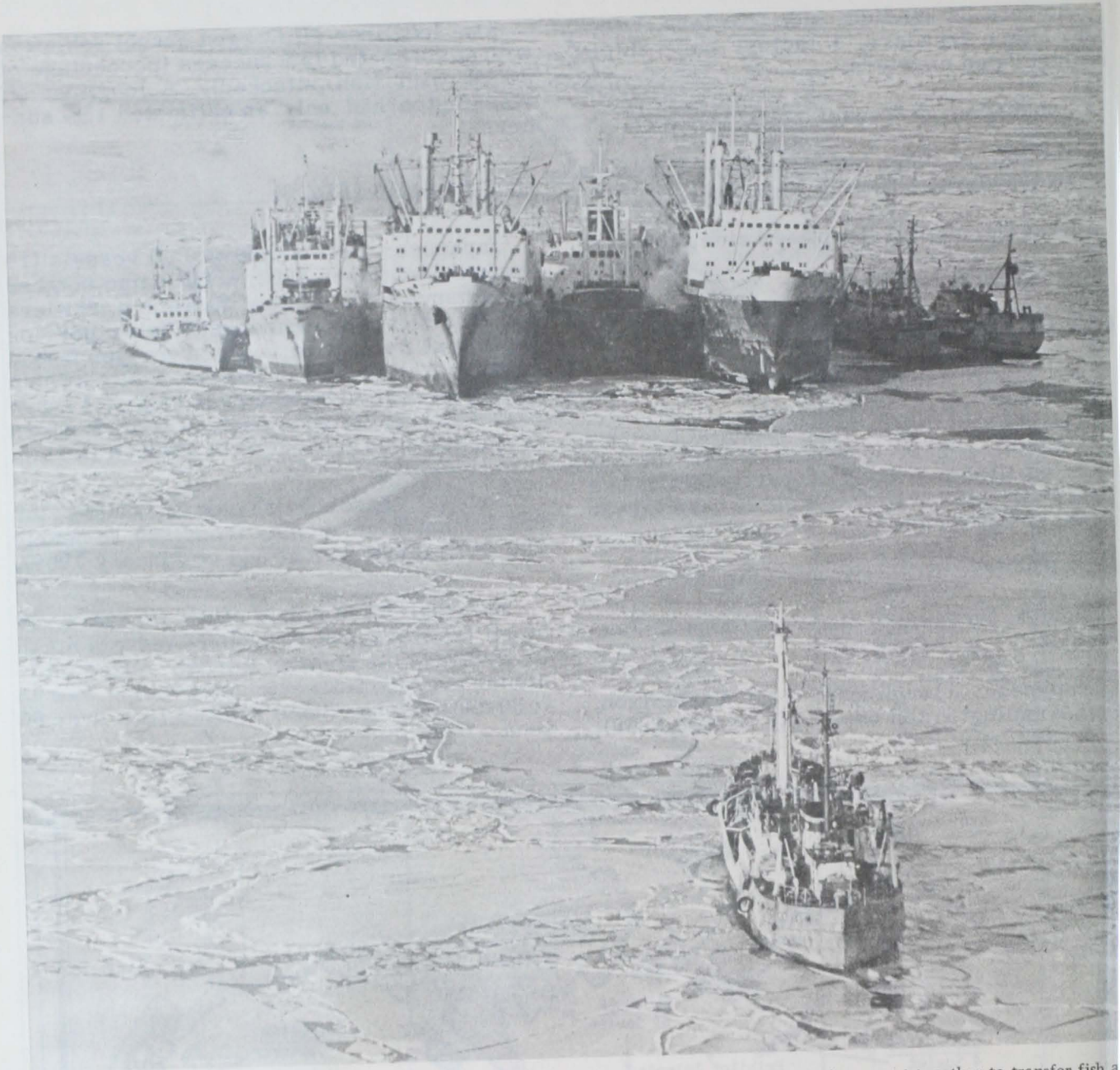


Fig. 4 - Far removed from stormy seas, 7 Soviet vessels--from motherships to medium side trawlers--nest together to transfer fish and cargo, while another side trawler approaches to make delivery. The vessels belong to the Soviet herring fleet, operating near St. Matthew Island in the Bering Sea, and are anchored some 30 miles, or more, from the ice, but it is common practice for the ships to take shelter from seas and icing conditions by running inside the ice. All Soviet vessels in this winter fishery are reinforced for travel in pack ice. (Photo: M. C. Zahn; Date: December 31, 1969.)

Fleet was
 Flounder: 30 medium side trawlers, 11 stern trawlers, and 10 support vessels in eastern Bering. Some set and hauled trawls over 10 times a day to fill required quotas

which
 Groundfish: 17-22 trawlers along Shelf edge in Bering; 15 medium trawlers and refrigerated transport north of Fox Islands in eastern Aleutians; 4 medium trawlers along Shelf edge in central Bering, northwest of Pribilofs.



STATES

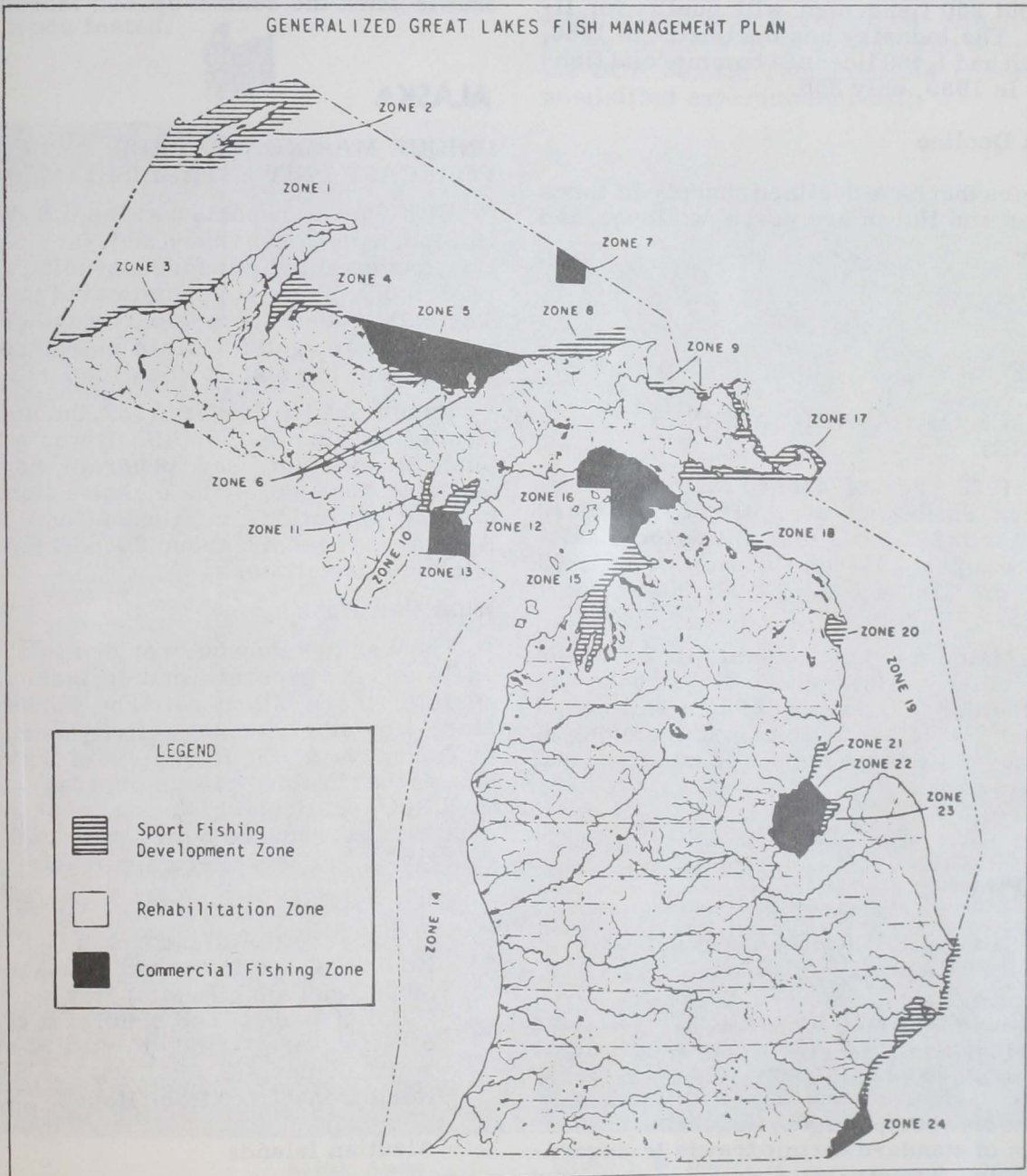
MICHIGAN

GREAT LAKES WATERS ZONED FOR FISHERY MANAGEMENT

In Nov. 1969, the Michigan Natural Resources Commission adopted a zone management plan for its Great Lakes fishery. The plan aims to restore and further develop this resource. It establishes 3 distinct types of use areas in the state's Great Lakes waters

for the purpose of managing the fishery in each according to its special problems and needs.

The accompanying map indicates the three types of zones and the sections in the lakes where each will apply. The zones are prescribed for: (1) Sport fishing development--inshore areas with either actual or potential high-quality sport fishery; generally will be



closed to commercial fishing. (2) Rehabilitation--open to sport and commercial fishing; the latter will be closely regulated, particularly the gill nets. (3) Commercial fishing--traditionally productive areas, which will be managed primarily for commercial species.

Number of Fishermen

The plan also regulates number of commercial fishermen. For 1970, it is expected that about 250 fishermen will qualify for licenses. The industry has declined: in 1950, Michigan had 1,460 licensed commercial fishermen; in 1969, only 350.

Species Decline

Species that have declined sharply in lakes Michigan and Huron are perch, walleyes, and herring.



MAINE

1969 PACK OF CANNED SARDINES DECLINED

The 1969 pack of canned Maine sardines has been estimated at 1,018,000 standard cases, worth \$12.2 million. It was the smallest pack since 1964 and a drop of 681,302 cases from 1968's pack of 1,699,302 standard cases.

The Maine Sardine Council attributed the decline chiefly to (1) light landings caused by poor weather, (2) failure of late-fall run of fish, and (3) delayed packing at beginning of 1969 caused by large supply of imported and domestic packs.



OREGON

BCF HELPS FISHERMEN CONVERT TO SHRIMP SEPARATOR TRAWL

BCF's Seattle (Wash.) Exploratory Fishing and Gear Research Base and the Oregon State University Extension Service held a 2-day workshop, Jan. 28 and 29, 1970, to demonstrate to Newport, Oregon, fishermen the conversion of standard shrimp trawls to separator trawls. Twenty-two fishermen took part at some time during the workshop; 12 fishermen attended full time.

Two nets belonging to Newport fishermen were converted with all fishermen doing some of the actual work. This prepared them to work on their own.

More Sessions

Workshops were scheduled at Brookings and Astoria, Oregon, in February. These efforts have been received enthusiastically by the fishermen. It appeared that most of the Oregon shrimp fleet would be using separator trawls when the season opened March 1.



ALASKA

UNIQUE MARINE WEATHER FORECAST UNIT ESTABLISHED

BCF Juneau reports that the U.S. Weather Bureau, with Coast Guard and Navy cooperation, has established a forecast unit in Alaska reportedly the most sophisticated in the U.S. The unit is designed to supply weather information on a regular basis to mariners within 60 miles of the state's coastline.

Established in October 1969, the unit is the first of its kind in the U.S. It was a logical place to start the new program, says BCF Juneau, "because of the massive fishing and barging operations in Alaska--and because Alaska represents about 60 percent of the total U.S. coastline."

What Unit Does

The Weather Bureau provides information on "winds and general weather; issues a synopsis of the weather pattern; warns of any storms or other frontal activity which might be conducive to the formation of ice on vessels as the result of blowing spray; estimates visibility, particularly in fog, when it is expected to be reduced below three miles, and reports on sea ice where applicable."

Forecasts are issued for 6 areas:

- Southeast Alaska and North Gulf Coast
- Kodiak, Cook Inlet, and Alaska Peninsula, including Bristol Bay
- Pribilof Islands and southwest coast
- St. Lawrence Island, Norton Sound, Seward Peninsula, and Kotzebue Sound
- North Coast from Point Hope to Canadian Border
- Aleutian Islands

The unit is manned 24 hours a day by a 3-man staff.

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'OREGON' STUDIES TANNER CRAB GEAR

A tanner crab gear research cruise was conducted from BCF's 'Oregon' near Kodiak Island by staff of BCF's Exploratory Fishing and Gear Research Base, Juneau, Alaska.

Principal objectives were: (1) to test relative efficiency of four pot types for capturing male tanner crab, and (2) to test relative effectiveness of different baits. A conical pot modeled after Japanese tanner crab pot was among types tested.

1 Pot Twice As Efficient

A 6' by 6' by 30" model of a modified king crab pot averaged 47.9 pounds of male tanner crab per pot catch; it was almost twice as efficient as the other types tested.

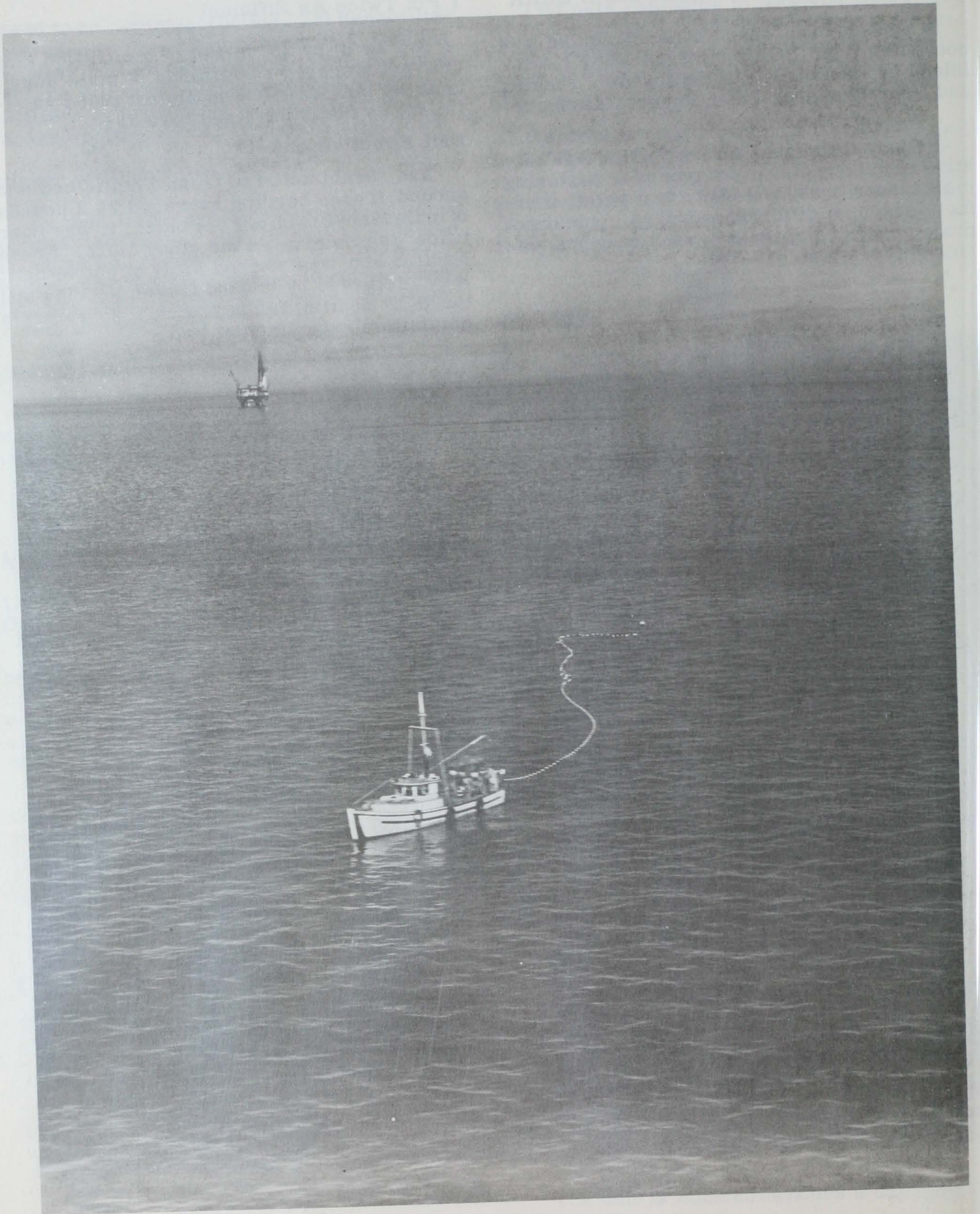
Bait Effectiveness

The combination of fresh Pacific cod and ground frozen herring averaged 74.9 pounds of male tanner crab per pot catch; it was over twice as effective as the other baits. Fresh Pacific cod was second most effective bait. It was followed by ground frozen herring and the BCF Seattle Technological Laboratory's emulsified experimental bait.



Kodiak, Alaska.

(Photo: J. M. Olson)



A drift gillnetter and oil rig vie for space in Cook Inlet, Alaska. (BCF-Alaska photo: J. M. Olson)