THE JOHN N. COBB'S SHELLFISH EXPLORATIONS IN CERTAIN SOUTHEASTERN ALASKAN WATERS, SPRING AND FALL OF 1950

(A Preliminary Report)

By Edward A. Schaefers*

INTRODUCTION

The commercial shellfish potentialities in certain southeastern Alaskan waters were surveyed by the John N. Cobb, an exploratory fishing vessel of the U. S. Fish and Wildlife Service, in the spring and fall of 1950. Special emphasis was placed on shrimp and crab fisheries.

During the spring of 1950 a combined shakedown and shellfish survey cruise was made by the vessel. Because of the limited amount of time between the vessel's commissioning in February 1950 and the start of an extensive offshore exploration for albacore, this first survey was a short one. Actual exploratory work was carried on from March 24 to April 11 in the region near Ketchikan.

A second survey was conducted from October 30 to December 9. These five weeks were spent in the waters adjacent to Baranof and Chichagof Islands.

The cruises were made in the spring and fall because it was believed that the findings might assist in the establishment of "off-season" fisheries in the area; moreover, during these months work in the open ocean by an exploratory vessel tends to be less practicable and productive because of time lost for adverse weather.

This report is presented in two parts. The first part discusses the spring survey trip while the second part discusses the fall operations.

RESULTS OF SPRING OPERATIONS

TYPES OF GEAR: Three types of gear were used in the spring fishing operations—traps, an otter trawl, and a dredge.

The shrimp traps, made up of 1¼-inch stretched-mesh cotton webbing, were cubic in shape with sides 34 inches square, containing 4 cone-shaped entrances (3 inches in diameter) located in the center of each vertical side.

The otter trawl, a small West Coast box-type trawl with a total length of 460 meshes, had wings and body made of 21-thread, 2-inch stretched-mesh cotton webbing, and a cod end of 24-thread, 1½-inch stretched-mesh cotton webbing. The net at the throat was 150 meshes across and had a 75-mesh breast.

The dredge used had a cast-iron frame and was spread with an 8-foot steel-pipe beam. It was similar in most respects to a small Blake deep-sea trawl, the chief difference being the addition of two beams on the outer margin of the U-shaped runners. The extra beams gave additional support to the frame and also served as a place of attachment for the net. The net was a simple bag made of 1½-inch stretched-mesh, 24-thread cotton webbing. Although no sweep ropes were used, the extra beams served in a similar manner.

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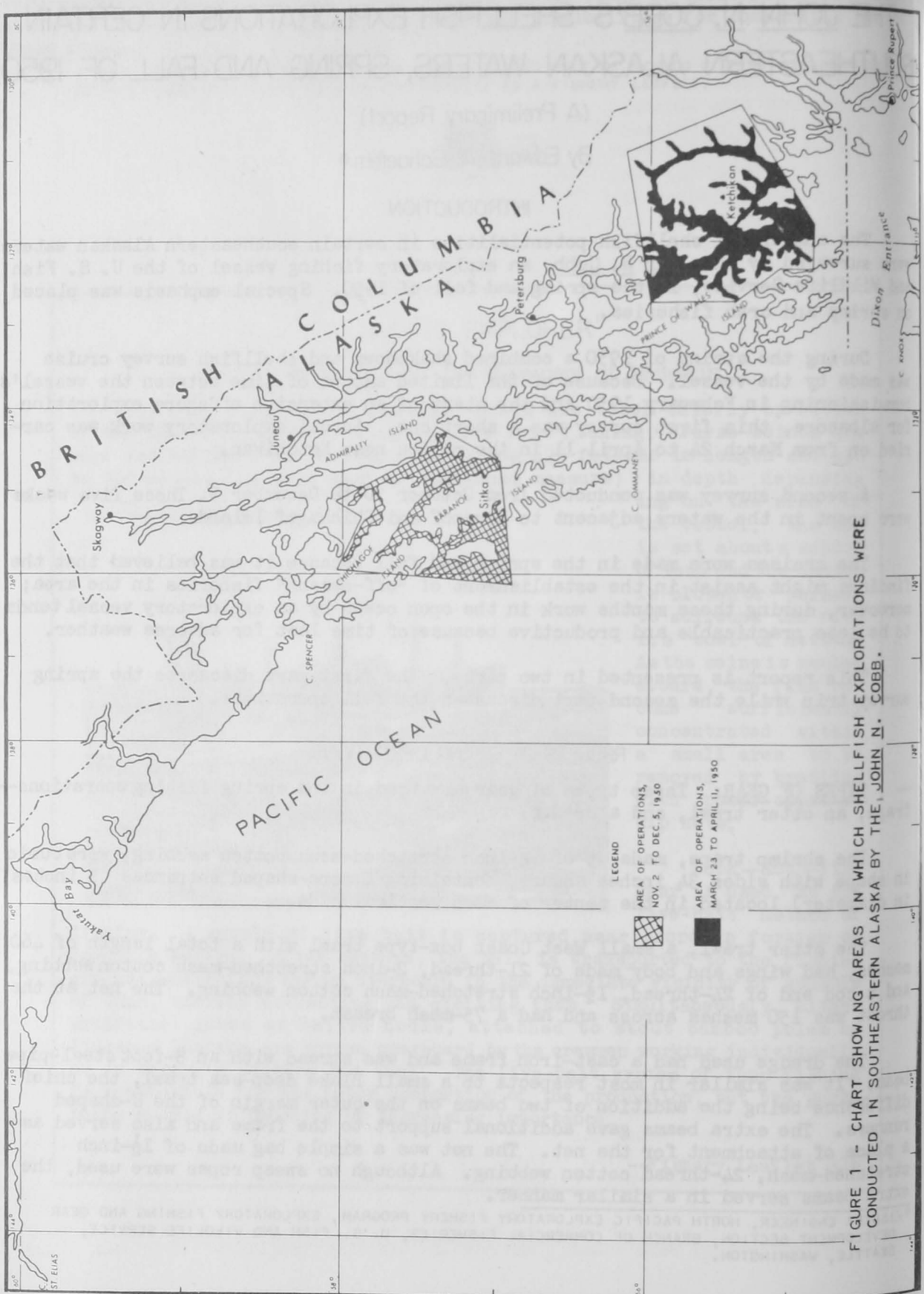
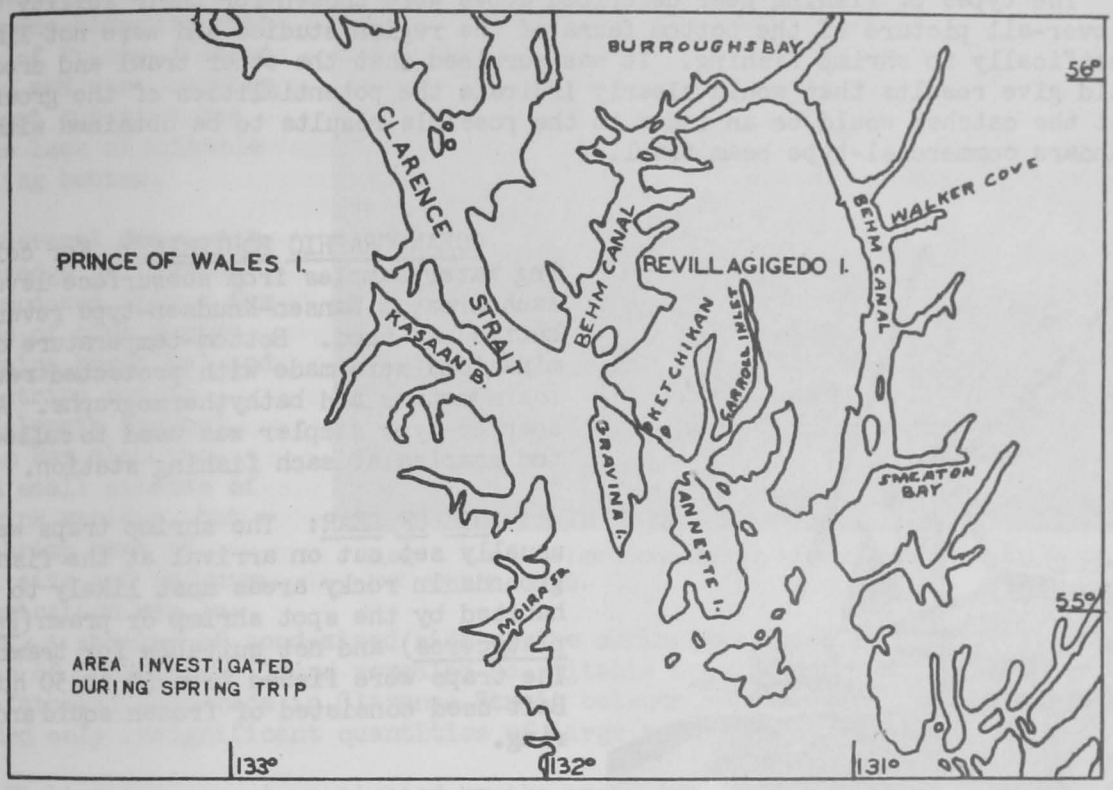


FIGURE 1 - CHART SHOWING AREAS IN WHICH SHELLFISH EXPLORATIONS WERE CONDUCTED IN SOUTHEASTERN ALASKA BY THE, JOHN N. COBB.



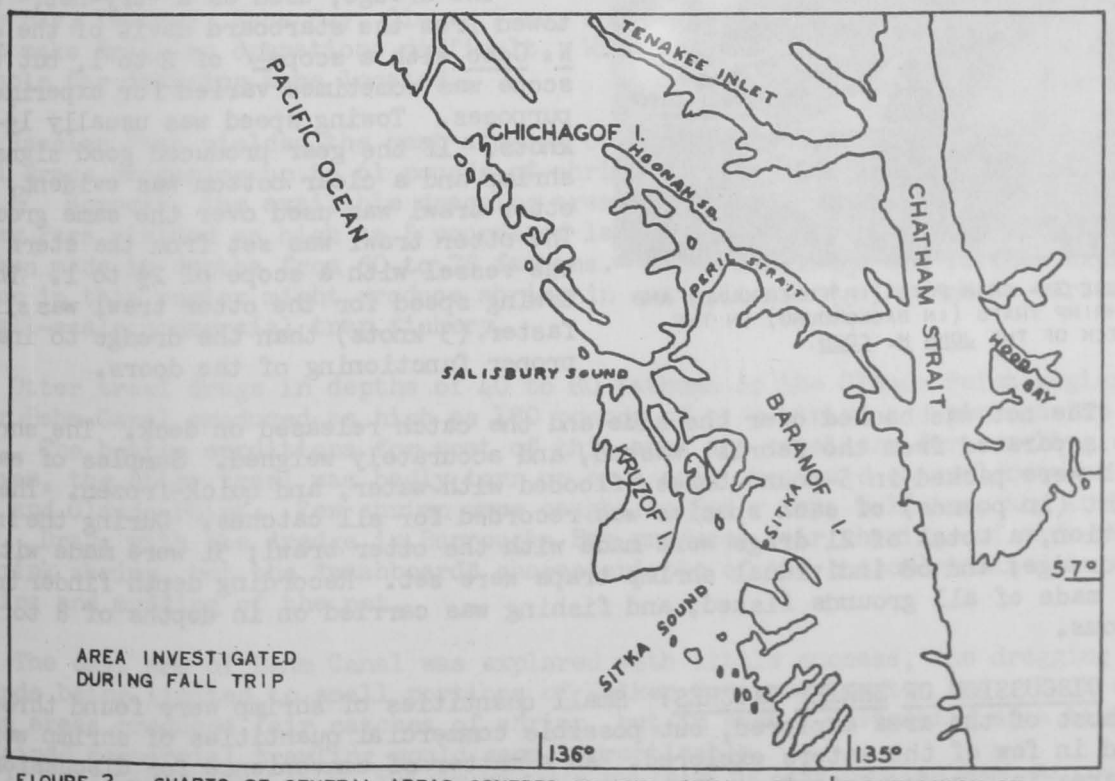


FIGURE 2 - CHARTS OF GENERAL AREAS COVERED BY THE JOHN N. COBB'S SHELLFISH EXPLORATIONS IN THE SPRING AND FALL OF 1950.

The types of fishing gear described above were chosen for their ability to give an over-all picture of the bottom fauna of the region studied and were not limited specifically to shrimp fishing. It was surmised that the otter trawl and dredge would give results that would clearly indicate the potentialities of the grounds and that the catches would be an index to the possible results to be obtained with a standard commercial-type beam trawl.

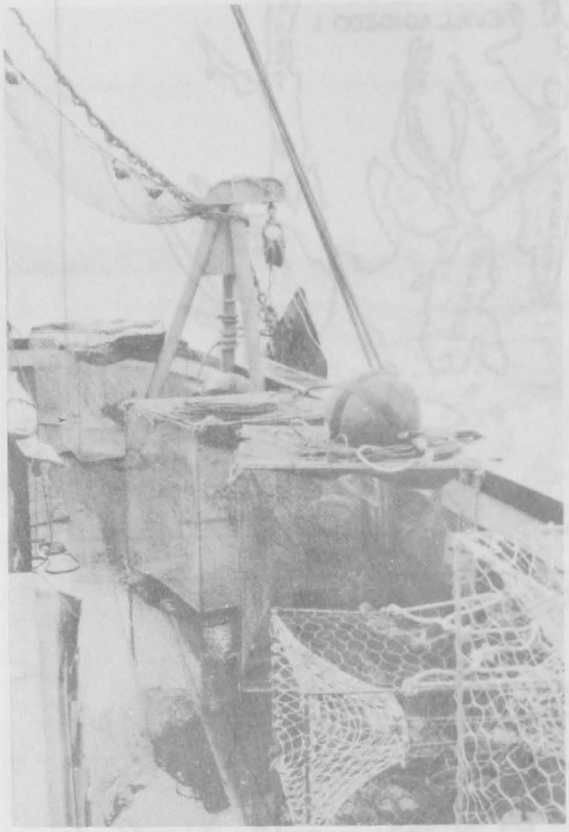


FIGURE 3 - CRAB POTS (IN FOREGROUND) AND SHRIMP TRAPS (IN BACKGROUND) ON THE DECK OF THE JOHN N. COBB.

OCEANOGRAPHIC EQUIPMENT: For collecting water samples from subsurface levels in each area, a Nansen-Knudsen-type reversing bottle was used. Bottom-temperature determinations were made with protected reversing thermometers and bathythermographs. A snapper-type sampler was used to collect bottom samples at each fishing station.

USE OF GEAR: The shrimp traps were usually set out on arrival at the fishing grounds in rocky areas most likely to be inhabited by the spot shrimp or prawn (Pandalus platyceros) and not suitable for trawling. The traps were fished from 12 to 50 hours. Bait used consisted of frozen squid and herring.

The dredge, used as a "try-net," was towed from the starboard davit of the John N. Cobb with a scope[1/] of 2 to 1, but the scope was sometimes varied for experimental purposes. Towing speed was usually 1½-2 knots. If the gear produced good signs of shrimp and a clear bottom was evident, the otter trawl was used over the same grounds. The otter trawl was set from the stern of the vessel with a scope of 2½ to 1. The towing speed for the otter trawl was slightly faster (3 knots) than the dredge to insure proper functioning of the doors.

The net was hauled over the side and the catch released on deck. The shrimp were separated from the debris, washed, and accurately weighed. Samples of each catch were packed in 5-pound boxes, flooded with water, and quick-frozen. The weight (in pounds) of each species was recorded for all catches. During the investigation, a total of 21 drags were made with the otter trawl; 51 were made with the dredge; and 68 individual shrimp traps were set. Recording depth finder traces were made of all grounds fished, and fishing was carried on in depths of 8 to 225 fathoms.

DISCUSSION OF SHRIMP CATCHES: Small quantities of shrimp were found throughout most of the area explored, but possible commercial quantities of shrimp were found in few of the waters explored. As a matter of convenience for discussion, the area is divided into five districts, as follows:

1. EAST COAST OF PRINCE OF WALES ISLAND
2. WEST ARM OF BEHM CANAL.
3. UPPER BEHM CANAL.
4. EAST ARM OF BEHM CANAL
5. KETCHIKAN DISTRICT.

1/ RATIO OF CABLE OUT TO DEPTH OF WATER.

A total of 19 drags were made along the east coast of Prince of Wales Island and were usually of short duration due to the lack of suitable trawling bottom.

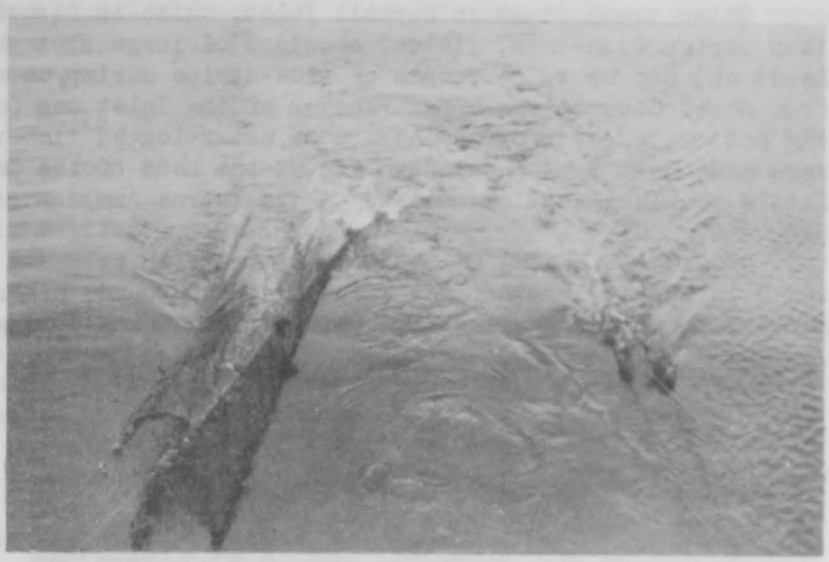


FIGURE 4 - THE OTTER TRAWL BEING HAULED IN AT THE STERN OF THE JOHN N. COBB.

Several drags with the dredge in Tolstoi Bay produced only a few pounds of pink shrimp (Pandalus borealis) and side-stripe shrimp (Pandalopsis dispar). Kasaan Bay also produced small catches of the pink variety, but the shrimp were of small size and no large concentration was located. A showing of good-sized side-stripe shrimp was found in Skowl Arm. Exploration of Cholmondely Sound revealed no suitable trawling ground. Deep-water drags (220 fathoms) were made in Clarence Strait between Ratz Bay and Luck Point, but yielded only insignificant quantities of large side-stripe shrimp.

Eight areas were investigated on the west side of Behm Canal. Of these, Spacious Bay, Yes Bay, Naha Bay, Clover Pass, and Neets Bay possess bottom conditions which make dragging operations difficult. With the exception of Yes Bay, no grounds suitable for dragging were located.

Hassler Pass yielded the best showing of shrimp in this region, with otter trawl drags producing up to 61 pounds of shrimp (mostly side stripe and spot) per hour.[2/] However, the available dragging area is limited. Shrimp traps set in Gedney Pass yielded as high as 5 pounds of large spot shrimp per trap, with best catches made in depths from 50 to 75 fathoms. Local knowledge and further exploration in this region might produce shrimp in quantities large enough to warrant a small-scale commercial trap fishery.

Otter trawl drags in depths of 40 to 80 fathoms in the Claude Point region of upper Behm Canal produced as high as 180 pounds of side-stripe and pink shrimp per hour. The bottom conditions for most of this area are excellent for trawling. However, the otter trawl was badly torn up on a snag about mid-channel between Point Lees and Claude Point. Few shrimp were caught in Baily Bay, Bell Arm, and Anchor Pass. Drags with the dredge in Burroughs Bay produced fair showings of side-stripe and pink shrimp, but the "washboard" characteristic of the bottom resulted in the fouling and mudding of the net.

The east arm of Behm Canal was explored with little success, the dragging grounds being limited to small portions of Walker Cove and Smeaton Bay. Each of these areas produced fair catches of shrimp, but in such a restricted area that sustained commercial trawling would seem impracticable.

2/AS ALL WERE NOT ONE-HOUR DRAGS, THE SHRIMP CATCH FOR DRAGS OF LESS THAN ONE HOUR WAS CONVERTED ON THE BASIS OF CATCH PER ONE-HOUR DRAG.

Otter trawl drags in Carroll Inlet, which is fished occasionally by a few Ketchikan shrimp fisherman, yielded showings of large spot shrimp weighing 5 to 6 per pound heads on, and up to 65 pounds of side-stripe shrimp, on an hourly basis. The region from Shoal Cove to the upper reaches of the Inlet was found to have excellent trawling bottom, except for the hazard of water-logged timbers fouling the net. Best catches were made just past Shoal Cove and at the head of the Inlet in approximately 80 fathoms. Little trawlable bottom was located in Thorne Arm.

LENGTH AND WEIGHT OF SHRIMP: Spot shrimp or prawn (Pandalus platyceros), reaching 8 inches in length[3/] and weighing 6 per pound, heads on, were caught during this survey. The average length of this variety taken during this survey was slightly over 6 inches in length and averaged 11 per pound, heads on, and 21 per pound headed. Fishing results indicated the spot shrimp inhabit rocky slopes to a greater extent than the other species of commercially desirable Alaskan shrimp.

FIGURE 5 - A MIXED CATCH OF LARGE SIDE-STRIPE AND SPOT SHRIMP.

The side-stripe shrimp (Pandalopsis dispar) was the species most frequently caught throughout this spring survey with best catches made in depths of 50 to 80 fathoms having a gray mud bottom. This species averaged 28 per pound, heads on, and 47 per pound headed.

The pink shrimp (Pandalus borealis), which makes up the bulk of the Petersburg and Wrangell commercial catch, averaged 3½-inches in length and weighed 101 per pound heads on, and 160 per pound headed. They were found to be most abundant in areas with muddy bottoms.

The coon-stripe shrimp (Pandalus hypsinotus) was caught in small quantities in widely diversified regions. Catches of this species averaged approximately 5 inches in length and weighed 28 per pound, heads on, and 43 per pound headed.

A random sample of shrimp taken during this spring cruise showed that 7 percent of the side stripe, 18 percent of the spot, 24 percent of the coon-stripe, and 34 percent of the pink were egg carriers.

MISCELLANEOUS CATCH: Drags in Tolstoi Bay frequently produced small sculpins (Cottidae) and eel-blennies (Lumpenidae) and 1 drag in Kasaan Bay netted 200 pounds of whiting (Theragra chalcogramma) and flathead sole (Hippoglossides elassodon).

Fish common in the waters of Hassler and Gedney Pass appeared to be eel-blennies, slender sole (Lyopsetta exilis) and long-jawed rockfish (Sebastodes alutus).

Marine life commonly caught in upper Behm Canal included eel-blennies, ratfish (Hydrolagus colliei), long-nosed skate (Raja rhina), long-jawed flounder (Atheresthes stomias), and eulachon (Thaleichthys pacificus).

Walker Cove produced small numbers of English sole (Parophrys vetulus), eel pouts (Zoarcidae), slender sole, and Tanner crabs (Chinonoectes opilio).

3/ ALL LENGTHS MEASURED FROM THE EYE TO THE TIP OF THE TAIL.

Drags in Carroll Inlet captured English and flathead sole, eel-blennies, liparids (Liparidae), and small numbers of rockfish (Scorpaenidae).

RESULTS OF FALL OPERATIONS

The general plan of the second of a contemplated series of shellfish surveys in certain southeastern Alaskan waters was to explore the following areas: Tenakee Inlet, Hood Bay, Peril Strait, Salisbury Sound, waters in the vicinity of Sitka, and the open waters off Kruzof Island.

A meeting was held at the Fishery Products Laboratory in Ketchikan to discuss the present shellfish survey operation; and suggestions, criticisms, and ideas for future explorations in Alaska by all persons present were invited. This meeting was attended by the staff of the Ketchikan Fishery Products Laboratory, boat owners, fishermen, cannery owners, personnel of the John N. Cobb, representatives of the Alaska Native Service, and the Alaska Territorial Department of Fisheries.

TYPES OF GEAR: Fishing operations were carried on from November 4 to 12 in Tenakee Inlet and Hood Bay, and from November 12 to December 4 in Peril Strait, Salisbury Sound, and the inshore and offshore waters near Sitka.

Various types of gear used during this survey included an otter trawl, beam trawl, scallop dredge,[4] crab pots, and shrimp traps. The otter trawl used was the same as the small West Coast box-type trawl used on the spring trip and described in the first part of this report.

The beam trawl used in this survey was a modified version of the standard type used in the Wrangell-Petersburg shrimp fishery. The beam used was a 20-foot, 6- by 6-inch fir plank to which the "D" frames and cross braces were attached.[5] After breaking 2 of these beams, it was found that spruce or hemlock poles, approximately 8-inches in diameter, cut down to 6-inches at each end to allow attachment of the "D" frames, were better suited for withstanding the rough bottom conditions often encountered during dragging operations than the milled fir planks. The net, attached to the sweep rope and the beam was made up of 1½-inch stretched-mesh cotton webbing, 150-meshes deep. This modified beam trawl was approximately one-half the size of the average beam trawl used in the Wrangell-Petersburg shrimp fishery, and unless the shrimp were concentrated in a very small area, the catches for this survey would likely be increased accordingly with a beam trawl of commercial size.

OCEANOGRAPHIC EQUIPMENT: Water samples and subsurface temperatures were taken with the same equipment described in the first part of this report; namely, the Nansen-Knudsen-type reversing bottle, reversing thermometers, and bathythermographs. Bottom samples were collected with a snapper-type sampler. Subsurface temperatures were taken from each station, and shrimp were found in temperatures ranging from 3.9° C. (39.02° F.) to 8.1° C. (46.58° F.).

USE OF GEAR: Crab pots and shrimp traps were usually set soon after arrival at each new location. The crab pots were usually set in shallow water (20 fathoms or less) and the shrimp traps in deeper water (50-100 fathoms). A total of 43 individual crab pots and 103 individual shrimp trap sets were made.

A total of 80 drags were made with the beam trawl, the time on the bottom varying from 7 to 60 minutes. Drags of 30 minutes or 60 minutes were attempted but

4/ "GEAR USED IN THE SEA SCALLOP FISHERY," BY WILLIAM F. ROYCE, COMMERCIAL FISHERIES REVIEW; DECEMBER 1946, PP. 7-11, REPRINTED AS FISHERY LEAFLET NO. 225 (APRIL 1947).

5/ "COMMERCIAL POSSIBILITIES OF SHRIMP RESOURCES IN CERTAIN SOUTHEASTERN ALASKAN AREAS," FISHERY MARKET NEWS SUPPLEMENT, JULY 1945, PP. 5-6.

certain conditions, such as uneven bottoms, limited dragging area, and debris caused many of the drags to be shortened.

The otter trawl was used for the purpose of comparing its fishing ability with that of the beam trawl. No appreciable difference in fishing ability was noted when comparison was made between the catches of the otter trawl and beam trawl over approximately the same bottom; however, it appeared that the beam trawl was more capable of withstanding the rough bottom frequently encountered. The beam trawl was fished from the starboard davit with a scope of 2 to 1 in shallow water (20 to 40 fathoms) and 2½ to 1 in deeper water (40 fathoms and over).

FIGURE 6 - THE BEAM TRAWL ABOUT TO BE HOISTED ABOARD THE JOHN N. COBB.

DISCUSSION OF SHRIMP CATCHES: Four major stations were fished and explored during this survey. The stations and the areas within them covered were: Station 1 - Tenakee Inlet, including Long Bay and Freshwater Bay; Station 2 - Hood Bay, including North Arm and South Arm; Station 3 - Peril Strait, including Sitkoh Bay, Saook Bay, Rodman Bay, Ushk Bay, Deadman Reach, Fish Bay, and Hoonah Sound; Station 4 - Salisbury Sound and Sitka area, including the open water off Kruzof Island, Nakwasina Passage, Nakwasina Sound, Katlian Bay, Silver Bay, Deep Inlet, Sitka Sound, and Krestov Sound.

Tenakee Inlet: A total of 20 drags were made with the beam trawl and otter trawl in Tenakee Inlet. The best showing of shrimp was found near the head of the Inlet where 1 drag at 35 fathoms produced 106 pounds of shrimp, 10 percent pink (Pandalus borealis) and 90 percent coon-stripe (Pandalis hypsinotis), on an hourly basis. There were 22 large scallops taken in a beam-trawl drag 6 miles from the head of Tenakee Inlet in 20 fathoms. A total of 5 drags were then made with the scallop dredge, and 3 drags produced no scallops, while 2 of the 5 drags averaged 39 large scallops per drag. Evidently the scallops in Tenakee Inlet are few in number and widely scattered, or are concentrated in areas not dragged by the John N. Cobb. A set of 6 shrimp traps fished 39 hours in 15 to 17 fathoms near the southeast end of a small island, 5 miles from the head of Tenakee Inlet, produced a total of 209 spot shrimp (Pandalus platyceros) averaging 8 per pound, heads on, and 256 coon-stripe. A single beam trawl drag in Long Bay netted small quantities of pink and coon-stripe shrimp, 26 hard-shell male and 12 soft-shell male Dungeness crabs. From the exploration of Tenakee Inlet, the possibility of commercial shrimp operation seems limited to trap fishing for spot shrimp or prawn in the gulleys surrounded by rocky reefs. In Freshwater Bay 5 drags were made covering an area from the head to Chatham Strait. No commercial quantities of shrimp were located; 46 pounds of mixed pink, side-stripe (Pandalopsis dispar), and coon-stripe being the largest catch of any one drag. Several shrimp traps set near Pavlof Harbor produced only one spot and 20 coon-stripe shrimp.

Hood Bay: Of four drags made in Hood Bay, three produced no sign of shrimp and one drag netted nine pounds of pink shrimp, on an hourly basis. One drag near the head of North Arm captured one small female king crab. North and South Arm produced no shrimp, although two-thirds of South Arm was covered with ice and could not be dragged. Five shrimp traps set in mid-channel from Cabin Point towards the entrance produced no shrimp, and one to five starfish were found in each trap. Throughout this survey when starfish were found in abundance, a marked absence of shrimp was noted.

Peril Strait: Several drags in depths from 128 to 178 fathoms were made in Peril Strait with small quantities of shrimp (mostly side stripe) being caught. Drags in Sitkoh and Saook Bay produced insignificant numbers of pink shrimp. Drags in Rodman Bay netted 41 pounds of pink and coon-stripe, on an hourly basis. Ushk Bay was dragged near the entrance, and produced a poor showing of pink. The head of this bay was iced-in and was not dragged. Drags in Deadman Reach resulted in negligible quantities of pink and 16 king crab (from small to medium size).

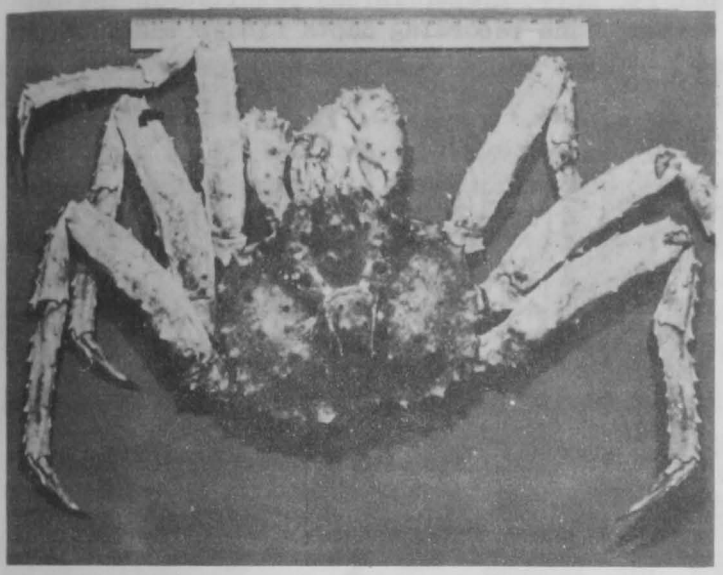


FIGURE 7 - KING CRAB TAKEN IN DEADMAN REACH. SMALL QUANTITIES OF THESE CRABS WERE TAKEN IN SEVERAL TOWS DURING THE FALL TRIP.

Beam and otter-trawl drags in Fish Bay netted as high as 250 pounds of pink shrimp on an hourly basis. The largest concentration of pink was found to be located off the "slide" area in 30 to 40 fathoms. Drags on both sides, and in mid-channel netted over 200 pounds of pink shrimp on an hourly basis. Using a 40-foot beam, pink shrimp might be taken at the rate of 400 pounds per hour. It seems possible that Fish Bay might support a small-scale dragging operation for shrimp without appreciably reducing the present population.

Of 6 drags made in Hoonah Sound, the most productive drag in 95 to 102 fathoms near the south end of Emmons Island netted 46 pounds of side stripe and pink shrimp per hour.

Commercial shrimp possibilities for this station (Peril Strait) seem to be limited to dragging for pink shrimp in Fish Bay and a trap fishery for spot shrimp in the rocky areas of both shores from Point Thatcher to Hoonah Sound. Traps set in this area produced catches of spot shrimp varying from a few to 17 pounds per trap. The average weight of 46 pounds of spot caught in traps in this area was 18 per pound, heads one, with the larger spot averaging 10 per pound, heads on. Best catches were made in depths of 60 to 80 fathoms.

Salisbury Sound and Sitka Area: A single drag near the north shore of Salisbury Sound, opposite Kalinin Bay in 92 to 100 fathoms netted 20 pounds per hour of large side stripe averaging 20 per pound, heads on. These side stripe were vermillion red in color, and all but a few of the smaller ones had eggs. Very little dragging bottom was found in Salisbury Sound. The total catch from 24 shrimp traps, set in 22 to 90 fathoms from Point Kruzof to Schulze Cove, was only 24 spot shrimp.

There were 2 beam-trawl drags made in 76 to 86 fathoms, 7½ and 10 miles off Pt. Kruzof, Kruzof Island. Of the 2 drags, one netted a small amount of pink, while the other resulted in a broked beam. This area also proved to be unproductive with regard to other forms of marine life, as only a few flathead "sole" and one long-jawed flounder were captured from the 2 drags. A single drag in 96 fathoms, 9 miles off Gilmer Bay, Kruzof Island, resulted in a large hole being torn in the

net. Although 75 to 90 percent of the catch may have been lost, this drag produced 4 pounds of spot and 1 pound of humpy shrimp (Pandalus goniurus) per hour. The spot were large, averaging 11 per pound, heads on.

One otter-trawl drag 9 miles off Pt. Mary, Kruzof Island resulted in the net snagging 8 minutes after reaching bottom. The recording depth finder showed this area to have a fairly smooth bottom, but evidently there are many rocks which are large and sharp enough to tear a net or break a beam. These rocks may be from the eruption of Mt. Edgecumbe. It is quite possible that a population of spot shrimp inhabit this area near the rocks, but dragging operations seem impracticable, and a trap fishery would probably not be feasible except in the summer months because of the inclement weather often encountered in this region.

FIGURE 8 - PORTION OF AFTERDECK OF JOHN N. COBB SHOWING TRAWLING WINCH IN OPERATION.

Beam-trawl drags in Nakwasina Passage, Nakwasina Sound, and Krestov Sound produced insignificant numbers of shrimp, as did shrimp traps set in Nakwasina Sound and near Halibut Point.

Mid-channel drags in 66 to 82 fathoms near the head of Katlian Bay averaged 162 pounds of pink shrimp per drag per hour. A single night drag with the beam trawl in Katlian Bay yielded approximately the same amount of shrimp as a daytime drag over the same location. Night drags in Fish Bay and Tenakee Inlet also produced approximately the same amount of shrimp as daytime drags in these areas. Catches in Katlian Bay indicate the shrimp population might support a small-scale dragging operation.

No shrimp were caught in seven drags in Silver Bay and Deep Inlet although one drag near the entrance of Silver Bay netted eight pounds of pink per hour.

Beam trawl drags west of Biorka Reefs, Sitka Sound, in depths of 70 to 94 fathoms netted only small amounts of humpy shrimp. Shrimp traps set in 28 to 80 fathoms near Vasilief Bank, Sitka Sound, produced poor results. The shrimp traps set in Sitka Sound contained thousands of small "sand fleas" (amphipods) which had stripped the bait, leaving only bones. This condition was also noted in other areas where traps set produced few shrimp. It is possible that when amphipods are present in such large numbers, the shrimp move out rather than compete with them for food.

DUNGENESS CRAB: A total of 43 individual crab-pot sets were made in depths of 13 to 33 fathoms throughout the areas covered in this survey. Dungeness crabs weighing up to 3½ pounds were taken in pots from all areas except Pavlof Harbor, Freshwater Bay, where 3 traps produced no Dungeness crab. Commercial fishing for Dungeness crab is carried on in Tenakee Inlet and Peril Strait each year until freezing weather causes many of the Bays to ice in, making crab fishing impracticable.

MISCELLANEOUS CATCH: Drags in Tenakee Inlet yielded up to 150-pounds of flatfish, mostly long-jawed flounder (Atheresthes stomias) and flathead "sole" (Hippoglossides elassodon). Other fish common in this area were skates (Raja sp.), sculpins (Cottidae), eel blennies (Lumpenidae), eel pouts (Zoarcidae), whiting (Theragra chalcogramma), eulachon (Thaleichthys pacificus), and sea poachers (Agonidae).

Marine life taken in Hood Bay included small whiting, starry flounder (Platichthys stellatus), ratfish (Hydrolagus colliei), and one female king crab.

Drags in Peril Strait produced large numbers (up to 150 per drag) of Tanner crab (Chionoectes opilio), small numbers of greenlings (Hexagrammidae), flatfish, and black cod (Anolopoma fimbria).

Marine life common in the Salisbury Sound and Sitka area included whiting, herring (Clupea pallasii), yellowfin sole (Limanda aspera), and rex sole (Glyptocephalus zachirus).

CONCLUSIONS

Findings of the spring and fall surveys for commercial shellfish are applicable only to the time of year they were carried on, as conditions in these areas might bring about entirely different results during other months. The development of a trap fishery for shrimp in suitable areas seems feasible, and local knowledge and investigation could possibly lead to good catches in some regions where trawling is impracticable. Spot and coon-stripe shrimp of high market value can be taken with this type of gear, and with proper mesh size and rotation of traps, a continued supply of shrimp would seem possible.

Results of the spring survey indicate that the Claude Point area in upper Behm Canal, Carroll Inlet, and Hassler Pass could possibly support a small scale beam-trawl operation for shrimp. However, the limited areas available for dragging, together with lack of information as to the total stocks of shrimp available in the areas, suggest the possibility of early depletion, in the event heavy fishing were undertaken. More intensive explorations in the Gedney Pass area might uncover possibilities for a small-scale trap fishery for spot shrimp.

Results of the fall survey suggest that pink shrimp could probably be taken in commercial quantities with a beam trawl in Katlian and Fish Bay, but the small size of these two bays and the limited dragging area available would necessarily limit the extent of any beam-trawl operation. Trap fishing for spot shrimp or prawn in Tenakee Inlet and Peril Strait yielded good commercial-sized catches of this species. The large area suitable for trap fishing and the seemingly widespread distribution of spot shrimp throughout these areas indicate a population of spot shrimp of large enough numbers to support a commercial trap fishery. Further explorations are necessary to definitely determine the size of the population of spot shrimp in Tenakee Inlet and Peril Strait.

Freezing temperatures and gale-force winds encountered during a considerable portion of the fall trip indicate that weather conditions will probably be a factor in the development of a winter fishery in this area.

NOTE: A MORE DETAILED REPORT DESCRIBING THE GEAR AND EXPLORATORY OPERATIONS WILL BE PUBLISHED IN THE NEAR FUTURE BY THE SERVICE AS A FISHERY LEAFLET.