

Alaska Exploratory Program
2725 Montlake Boulevard
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Survey of Bering Sea Fishery Resources
Conducted by Trawler Deep Sea on Charter to F.W.S.

The Service chartered the Trawler Deep Sea for the purpose of making an exploratory fishing survey of northern Bering Sea waters. Personnel assigned by the Service to accompany the vessel were the following:

J. G. Ellson, fishery engineer, in charge of field party
Donald Powell, fishery engineer
Henry Hildebrandt, aquatic biologist
Ernest Dietrich, technologist

The party flew from Seattle to Anchorage June 19, from Anchorage to Dutch Harbor June 21, where it joined the ship. Departure was made from Dutch Harbor immediately, via Akutan to discharge local resident crew members. The vessel made a short stop at St. Paul Island enroute north. The first drag was made on June 24, in a position about 50 miles south of St. Mathews Island. A total of five drags was made between here and a position about 50 miles to the north of St. Mathews. Drag No. 1 produced about 25 cod and 150 pounds mixed flatfish, all in prime and fat condition. Drag No. 3 made in the bight to the north of St. Mathews resulted in 23 male platypus King Crab, all much smaller than the Gamtschatica species found to the south. Except as noted, the drags were unproductive and flatfish taken were all below marketable size.

On the run to St. Lawrence soundings and water temperatures were taken. Several drags near St. Mathews had revealed extremely cold bottom temperatures (-.8 C to -1.4 C). This very cold water (apparently from the Gulf of Anadir on the Siberian side) continued right up to the south shore of St. Lawrence Island. Two unproductive drags were made on the south side of St. Lawrence, the water being very cold. Two unproductive drags were made in the Straits of Anadir between St. Lawrence and Siberia (water still cold but slightly warmer). Both tows resulted in bad snags. Three drags were made to the north of St. Lawrence. One in the bight on the northwest shore produced a few small platypus crabs. Two of these tows resulted in bad snags. Water temperatures ranged from + 1.3 C to 1.9 C. Since so much trouble was being caused to the nets from the ice-borne boulders and a coral-like formation, it was necessary to move to the east to get better bottom to conserve the supply of nets. Also it seemed apparent that little could be expected in the way of market fish at this season. Starting near St. Lawrence Island about 100 miles due west from Nome a series of tows was made to run a thorough test in the Nome vicinity. A total of 17 drags was made to give a thorough test as to various localities and water depths in this vicinity.

Norton Sound was worked almost as far as its most eastern extremity. Since results were uniformly negative it was clear that migratory fish such as cod had not yet entered these waters, and flatfish were either to the southward or else on the beaches in shallow water beyond the reach of trawl gear.

As the area was well blanketed with representative tows, it is felt results reflect the true conditions as of the time of year investigated. Bottom temperatures ranged from + 1.1 C to + 6.8 in the area, the colder water being nearest to St. Lawrence Island and the warmest in the shallow water of Norton Sound. Nearly all flatfish caught, except a few starry flounder, were very small. Isolated platypus King Crab were caught in the area, and several species of shrimp which later have been brought to Seattle for identification. Arctic cod and tom cod were caught, but not in appreciable quantities. A few capelin (a favorite feed of cod) were caught in many of the hauls, which could indicate the presence of cod somewhat later in the season. Quite a few snags were found which damaged the nets. These are probably due to ice-borne boulders from the recent ice breakup. Also the bottom was foul with starfish and other trash, some of which was quite abrasive to the gear. On one tow near Sledge Island a trawl was torn to ribbons, entirely beyond possibility of repair. It is believed the Camtschatica species of King Crab was found in Norton Sound, but positive identification from samples brought to Seattle is required before definitely asserting this. These crabs, however, were quite small, about the size of the more common platypus. If these are truly Camtschatica, as far as the writer knows, this would establish a new "farthest north" range for this species, although this could not be definitely claimed without a thorough search of the literature. No great quantity of shrimp was taken, even with the try net, but indications of shrimp were found in many drags.

Twelve drags were made in the area from Norton Sound to abeam of the southern extremity of Nunivak Island. These drags were made in a pattern intended to give a survey in both a longitudinal and latitudinal direction in the area worked. Immediately results were more encouraging, and in some cases actually promising. The first drag in the channel abeam the southern end of St. Lawrence Island produced some rock sole, lemon sole, starry flounder, yellowfin sole and cod of prime marketable size. Also very good showing of capelin was in the net.

This showing kept improving with all hauls made to the south on this course, except that hauls made either closer to the mainland or quite far off shore in the neighborhood of the Anadir cold water, were much poorer than those made in the middle. Capelin became very abundant. All the fishermen agreed they had never seen any better cod than in this area, meaty and free from worms, and large size (up to 20 pounds or more to the fish). Obviously more work is necessary to establish the actual abundance of cod and flatfish, but there is no doubt they are general throughout the area. No drag in this area resulted in snags.

Ten drags were made in the area to the south of Nunivak Island. Results showed a considerable increase in flatfish, a good showing of cod, but the

cod was of much poorer quality and size than that to the west of Nunivak. Here also there was no trouble from snags. The last haul made, No. 51, was the best haul of the trip. About 5,000 pounds of prime mixed flatfish, some very large, and about 3,000 pounds of cod were landed. The cod ranged from small to very large.

In the drags made to the south of Norton Sound, except when tows were made out in the middle or in the case of a few south of Nunivak, no bottom temperatures below 0° C were encountered. Always when the water was cold, the catch was poor.

The vessel operated on the basis of two shifts for fishing; therefore the work was carried on 24 hours a day. The final drag, No. 51, was completed the evening of July 5. Weather conditions encountered were about 60 % winds of force 5 to 8 and the balance winds from 0 to 4. Sea conditions were often rough to very rough.

It is believed sufficient material has been obtained to make possible an interesting report. Aside from actual catches of fish, such matters as water temperatures, trawling conditions, weather conditions encountered, navigational difficulties and aids, and other matters will be discussed.

Soundings Where No Drags Were Made

<u>Location</u>	<u>Date</u>	<u>Fathoms</u>	<u>Bottom</u>	<u>Bottom Temp.</u>
61-58 N 171-56 W	6/25/49	30	Gr. sand	-0.6 C (minus)
5 mi S of tow No. 7 63-05 N 170-48 W	6/25/49	24	Gr. sand blk specks	-0.1 C (minus)
63-10 N 170-48 W	6/25/49	18	Gravel	-1.2 C (minus)
63-47 N 171-40 W	6/26/49	10	Gravel	+1.7 C