

# EXPERIMENTAL TRAWLING AND POT FISHING FOR GIANT ALASKAN PRAWN

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A research cruise sponsored jointly by industry and BCF was conducted to determine the feasibility of trawling for spot shrimp (Pandalus platyceros). New BCF-developed midwater trawls and combination systems employing standard trawls with hydrofoil doors were fished in areas of suspected spot shrimp concentrations. In 21 bottom drags, 689 pounds of spot shrimp were taken. Five days of shrimp pot fishing (47-50 pots per day) produced 929 pounds of marketable shrimp.

The availability of giant Alaskan prawn or spot shrimp (Pandalus platyceros) in southeast Alaskan waters has long been known to local fishermen. Unlike pink shrimp (Pandalus borealis) and side-stripe shrimp (Pandalopsis dispar), which occur in large concentrations over flat trawlable bottoms, spot shrimp seem to occur on rough, rocky bottom types where conventional trawls cannot be used. Consequently, commercial fishing gear has been limited to shrimp pots. Because of this fishing gear limitation, the spot shrimp fishery has remained a small operation producing shrimp mainly for home use and, occasionally, for the fresh shrimp market.

Interest in commercial fishing for spot shrimp has expanded within the last few years. The large size, superior quality, and year-round availability make this shrimp ideal for an off-season small-boat fishery. BCF is now conducting exploratory fishing and gear research studies to delineate the distribution and abundance of spot shrimp--and to determine the most efficient type of gear for harvesting this valuable resource.

The research cruise represented the first commercial shrimping for research purposes in Alaska. It was made in April and May 1967. The project was initiated by a commercial fisherman, Bruce Joyce, skipper-owner of the vessel "Bull Moose," of Bellingham, Wash. He felt that spot shrimp may exhibit a diurnal vertical movement. Nakat Packing Company furnished the "Nancy Rose," skippered by John Kristovich of Ketchikan, Alaska, a veteran of

more than 10 years of spot shrimping. The BCF Exploratory Fishing and Gear Research Base at Seattle, Wash., furnished hydrofoil doors, a telemetry system, several trawl nets, and a gear expert during the first part of the cruise. The BCF Exploratory Fishing and Gear Research Base at Juneau, Alaska, furnished technical assistance during the second phase. This cruise was a commercial operation run by commercial fishermen.

This report gives the results of the Nancy Rose cruise.

## EXPERIMENTAL TRAWLING

The first part of the cruise was an attempt by commercial fishermen to capture spot shrimp using various trawls and the telemetry system that was developed by the BCF Seattle base.

### Methods and Gear

Drags were made in several bays and inlets in the Ketchikan area of southeast Alaska where previous fishing with shrimp pots had indicated concentrations of spot shrimp (fig. 1). Because most of these areas were too rocky for trawling with conventional gear, systems that use hydrofoil doors, telemetry equipment, and standard and experimental trawls were tried. By positioning the trawl off bottom, it was possible to fish areas too rocky for conventional trawling. Surprisingly, some areas of rough bottom could be trawled on bottom using this system. The following trawling gear was used:

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1. 40-foot flat shrimp trawl.  
hydrofoil doors  
8 - 8-inch diameter plastic floats  
(17 floats used on first five  
tows)  
50 pounds of weight on footrope

2. 72-foot semiballoon Gulf of Mexico  
shrimp trawl.  
hydrofoil doors  
40 pounds of weight on footrope (re-  
moved for some tows)  
10-fathom bridles

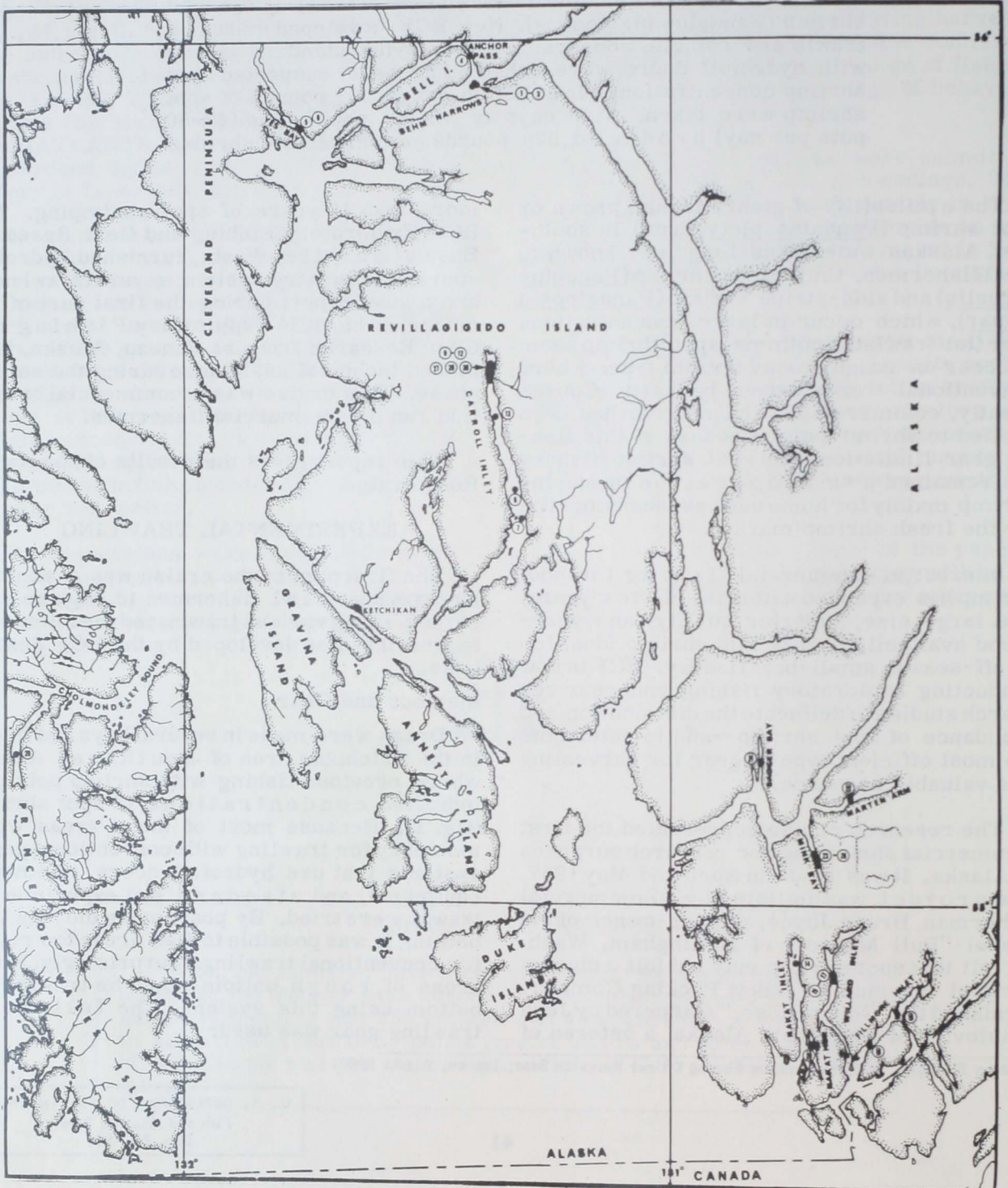


Fig. 1 - Location of 30 trawl tows taken during Nancy Rose cruise.

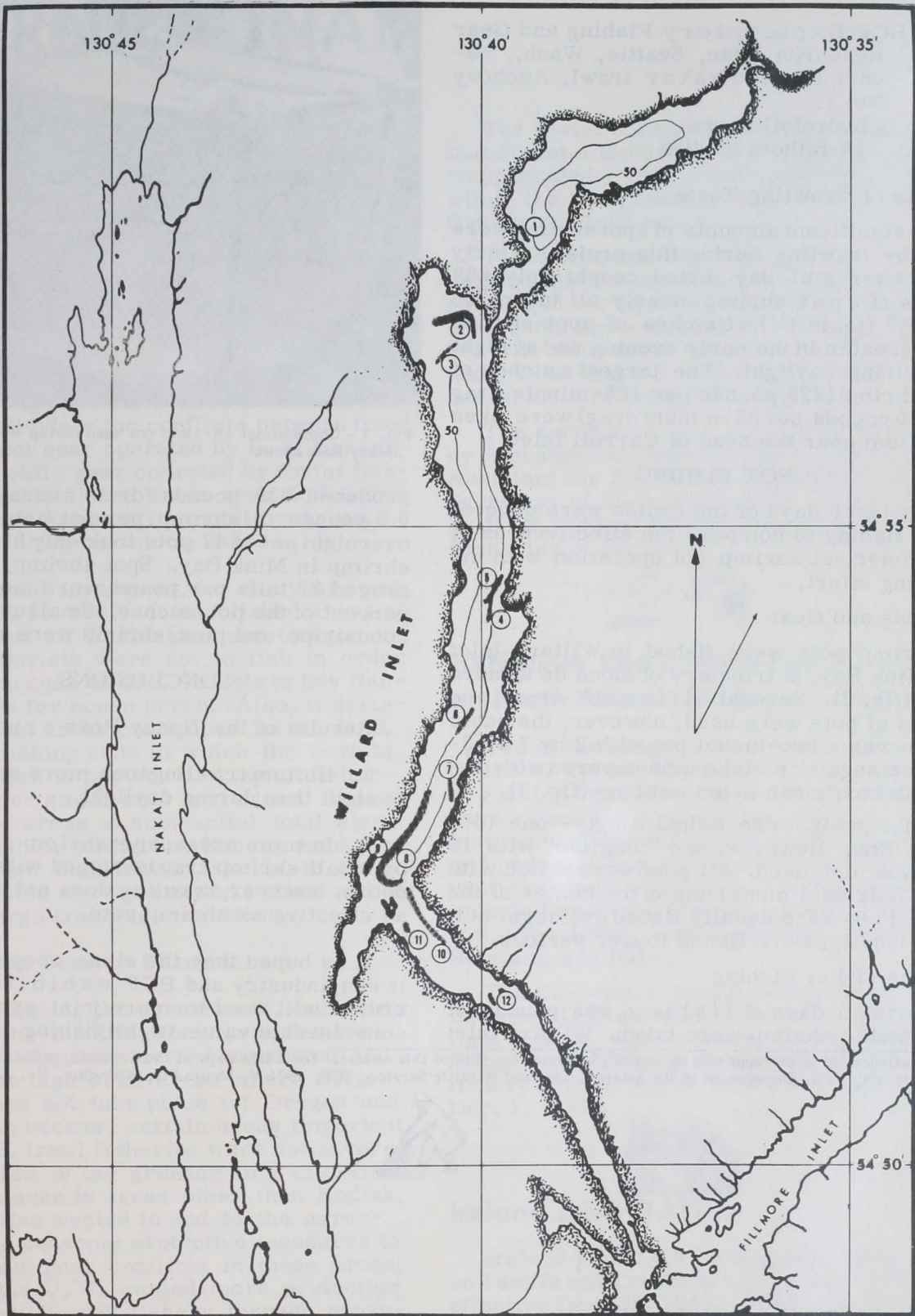


Fig. 2 - Location of shrimp pot sets in Willard Inlet during Nancy Rose cruise.

3. BCF Exploratory Fishing and Gear Research Base, Seattle, Wash., developed midwater trawl, Anchovy No. 1.
  - hydrofoil doors
  - 10-fathom bridles

#### Results of Trawling Tests

No significant amounts of spot shrimp were taken by trawling during this cruise. Thirty drags over a 21-day period caught only 689 pounds of spot shrimp, nearly all taken "on bottom" (table 1<sup>1/2</sup>). Catches of spot shrimp were greater in the early evening and at night than during daylight. The largest catches of spot shrimp (225 pounds per 105-minute drag and 160 pounds per 85-minute drag) were taken on bottom near the head of Carroll Inlet.

#### POT FISHING

The last 6 days of the cruise were devoted to pot fishing to compare the effectiveness of a commercial shrimp pot operation with the trawling effort.

#### Methods and Gear

Shrimp pots were fished in Willard Inlet and Mink Bay, a tributary of Boca de Quadra Inlet (fig. 2). Several different sizes and shapes of pots were used; however, the basic design was a two-tunnel pot with 2 by 3 by 3-foot rectangular metal frame covered with 1 $\frac{3}{4}$ -inch stretch mesh nylon webbing (fig. 3).

Most pots were fished singly--one to a buoy line. However, one "longline" with 10 pots was also used. All pots were baited with fresh hair seal meat hung in the center of the trap. Pots were usually fished overnight but, occasionally, were fished longer periods.

#### Results of Pot Fishing

During 5 days of fishing, 985 pounds of marketable shrimp were taken. Willard Inlet

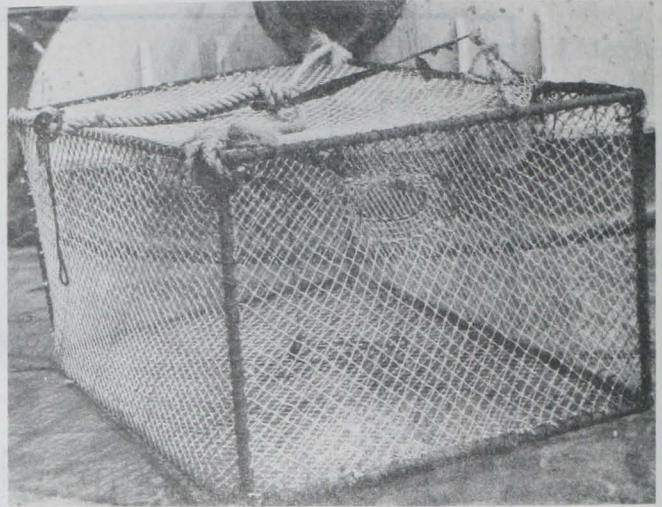


Fig. 3 - Commercial shrimp pot used during the last phase of Nancy Rose cruise.

produced 929 pounds for an average catch of 6.5 pounds of shrimp per pot (table 2<sup>1/2</sup>). An overnight set of 47 pots took only 56 pounds of shrimp in Mink Bay. Spot shrimp, which averaged 22 tails per pound, were more than 90 percent of the pot catches. Small quantities of coonstripe and pink shrimp were also taken.

#### CONCLUSIONS

Results of the Nancy Rose cruise show:

1. Bottom trawling took more spot shrimp at night than during daylight.
2. In some areas, spot shrimp can be taken by small shrimp trawls rigged with hydrofoil doors; however, trawling does not seem to be as effective as shrimp pots.

It is hoped that the close cooperation between industry and BCF exhibited by this cruise will lead to more joint projects with considerable value to the fishing community.

<sup>1/2</sup>All statistics are in the appendix to reprint (Separate No. 806) of this article. For a free copy of the Separate, write to Office of Information, U. S. Department of the Interior, Fish and Wildlife Service, BCF, 1801 N. Moore St., Arlington, Va. 22209.

