

SNAPPER TRAWLING EXPLORATIONS ALONG THE SOUTHEASTERN COAST OF THE UNITED STATES

By Robert Cummins, Jr.,* Joaquim B. Rivers,* and Paul Struhsaker*

SUMMARY

Concentrations of food fish along the southeastern coast of the United States have been discovered by U. S. Bureau of Commercial Fisheries exploratory fishing with the chartered trawler Silver Bay. Catches, during the explorations, ranged up to 2,000 pounds of snapper, grouper, and ecologically-related species having average landed values of 15 to 23 cents a pound. Best catches were made on "live bottom" off St. Augustine, Fla., and SSE. of Cape Fear, off the Carolinas. Careful attention to depth-recorder fish traces and use of a funnel flapper in the roller-rigged trawls were major factors in the success of the explorations.

INTRODUCTION

Exploratory fishing has revealed commercial concentrations of food fish in selected areas along the south Atlantic coast of the United States. Because of the interest shown in this potential fishery, the following report has been prepared to provide preliminary information on trawl-caught snapper, grouper, and ecologically-related species. The information is preliminary in that explorations on a regional and seasonal basis are incomplete. Data obtained on cruises of the trawler Silver Bay, a vessel chartered for fishery explorations by the U. S. Bureau of Commercial Fisheries, form the basis of the report.

AREA OF EXPLORATIONS

Exploratory fishing with roller-rigged fish trawls was conducted over the continental shelf in 15 to 70 fathoms between Ft. Pierce, Fla., and Cape Hatteras, N. C. Most coverage was obtained in 15 to 30 fathoms where the bottom varied from smooth to broken, but where trawling with roller-rigged trawls was generally possible. Limited coverage was given the 30- to 70-fathom range.

From 15 to 70 fathoms between Cape Lookout and Cape Canaveral, "live bottom" areas were found where food fish were caught with bottom trawls in varying amounts. "Live bottom" is composed, typically, of the following animals and inert materials.

- Loggerhead sponge - generally present, small to very large amounts
- Fire sponge - generally present, variable amounts
- Other sponge - always present, small amounts
- Coral - occasionally present, small amounts
- Rock - sometimes present, variable amounts
- Shell - usually present, small amounts

The area beyond 70 fathoms adjacent to the Gulf Stream was not explored with fish trawls, and the extent of the resources in deep water is, therefore, unknown.

*Fishery Methods and Equipment Specialists, Exploratory Fishing and Gear Research Station, U. S. Bureau of Commercial Fisheries, Brunswick, Ga.

During exploratory fishing trials, the best catches were invariably made on "live bottom" when fish tracings appeared on a whiteline depth-recorder. Characteristically, the catches possessed a strong, warmly pungent odor associated with the "live bottom."

Off St. Augustine, Fla., and SSE. of Cape Fear, S. C., good catches were made consistently on "live bottom" at different seasons during several Silver Bay cruises (fig. 1). Cov-

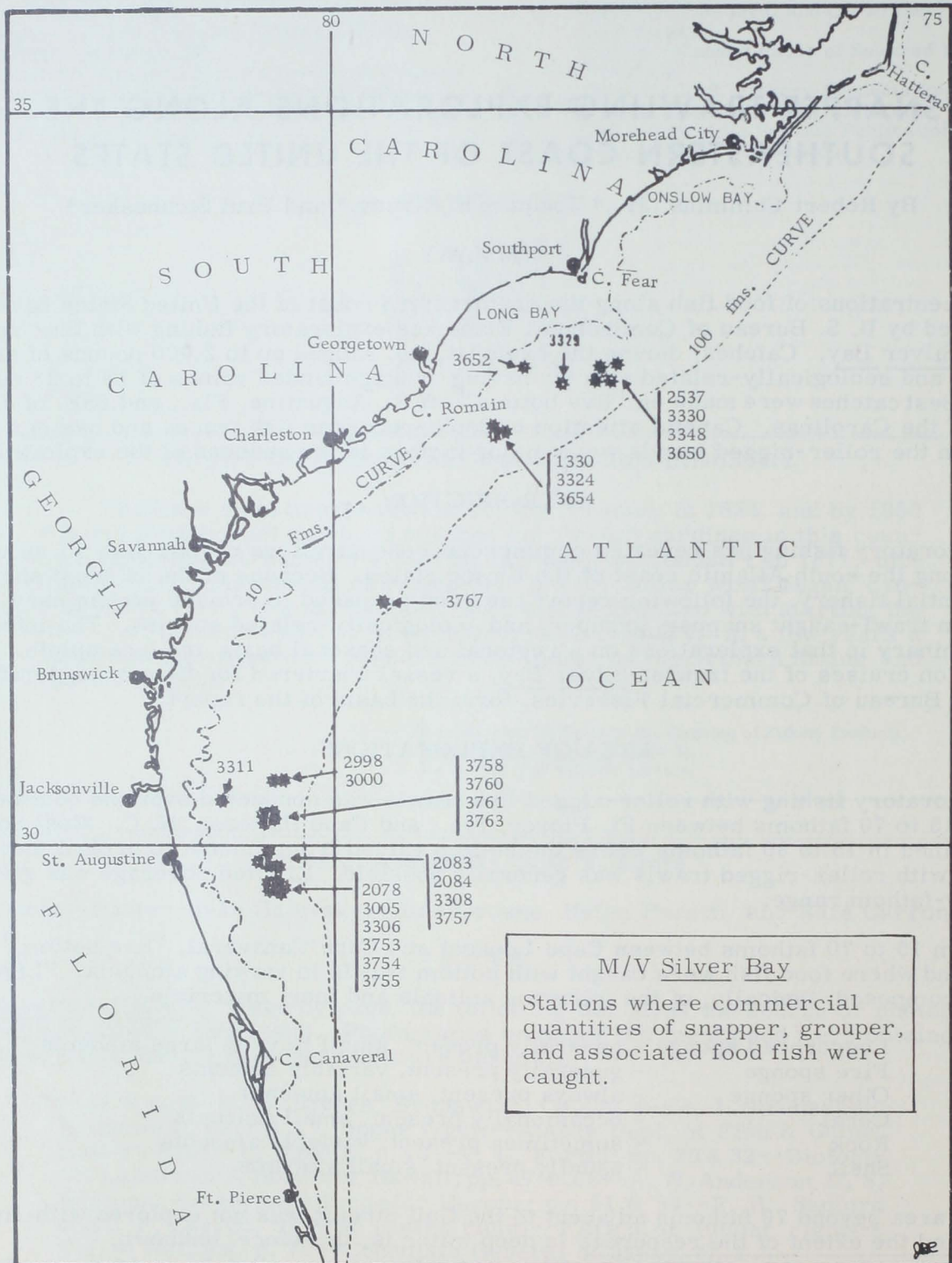


Fig. 1 - Chart of southeastern coastal waters explored for snapper and related food fishes, October 1959 - March 1962.

erage by the Silver Bay has not been sufficiently extensive, to date, to delineate in detail "live bottom" areas suitable for bottom trawling.

FISHING RESULTS

FOOD FISH: The species here referred to as snapper, grouper, and ecologically-related food fish, which constituted the most valuable portion of the catches, are listed and grouped in the order of their approximate value in table 1.

VERMILION SNAPPER: This fish was found throughout the area and is the most valuable species taken in commercial quantities. Silver Bay trawling resulted in salable catches of up to 1,000 pounds per drag, and the fish were sold for as high as 35 cents a pound. Some catches contained many small individuals, but for the most part, the average size was about 2 pounds. Like red snapper, vermilion snapper are bright red in color, and the meat is light and mild. They normally demand a higher price than red snapper on the East coast. The fish are easily captured in fish trawls, but the use of a "funnel flapper" (fig. 2) is recommended to prevent their escapement.

Table 1 - Snapper, Grouper, and Ecologically-Related Food Fish Taken Commonly in Silver Bay Trawl Catches

Common Name	Scientific Name
Vermilion snapper	<i>Rhomboplites aurubens</i>
Yellowtail snapper	<i>Ocyurus chrysurus</i>
Red snapper	<i>Lutjanus blackfordii</i>
Mutton snapper	<i>Lutjanus analis</i>
Gray snapper	<i>Lutjanus griseus</i>
Silk snapper	<i>Lutjanus vivanus</i>
Hogfish	<i>Lachnolaimus maximus</i>
Black sea bass	<i>Centropristes striatus</i>
Black grouper	<i>Mycteroperca bonaci</i>
Red grouper	<i>Epinephelus morio</i>
Groupers (miscellaneous)	<i>Mycteroperca</i> sp. and <i>Epinephelus</i> sp.
Scamps	<i>Mycteroperca phenax</i> and <i>M. interstitialis</i>
Red porgy	<i>Pagrus sedecim</i>
White porgies	<i>Calamus</i> sp. (2 species taken commonly)
Porgies (miscellaneous)	<i>Stenotomus</i> sp.
Grunts	<i>Haemulon aurlineatum</i> and <i>Haemulon plumieri</i>
Triggerfish	<i>Balistes capricus</i>

Note: Listed in order of apparent local commercial potential.

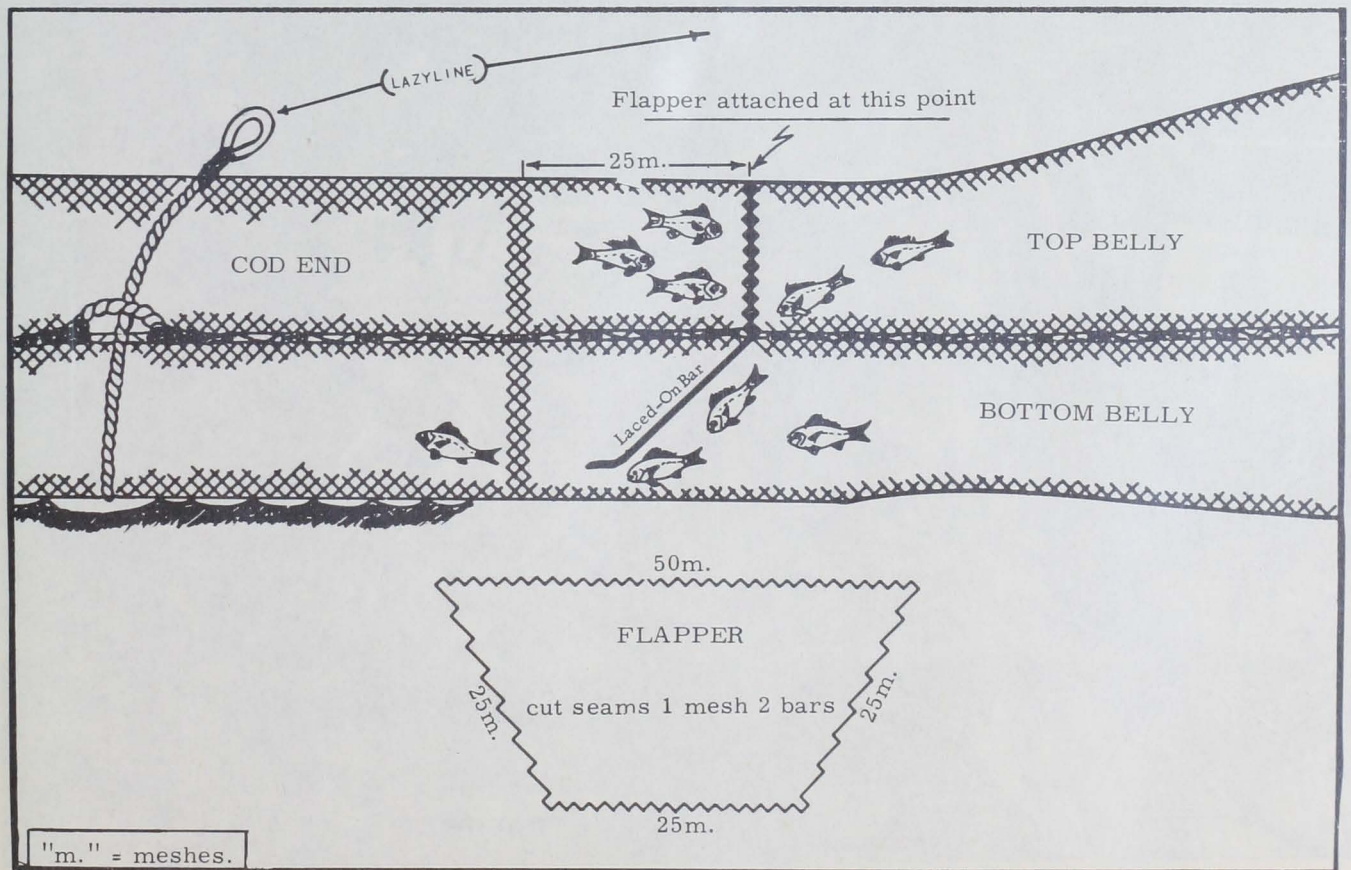


Fig. 2 - Cutting diagram and detail of arrangement of the funnel flapper. The flapper helps prevent fish from swimming out of the trawl.

OTHER SNAPPER: Other species of snapper, and hogfish, were usually present. A greater number of species per drag was present off Florida than farther north. Seldom did a drag produce more than about 200 pounds of a single snapper other than vermilion snapper, but collectively, the miscellaneous snappers comprise a group next in value to vermilion snapper.

BLACK SEA BASS: Sea bass were not taken in amounts exceeding 200 pounds per drag. Normally they command a good price, and they are easily handled. With additional coverage of areas and seasons, it is possible that this species will be found in greater quantities.

GROUPER: Numerous catches contained several 30- to 40-pound grouper. Grouper contributed significantly to the catches and were sold for about 10 cents a pound.

ASSOCIATED SPECIES: The remaining food fish were scup or porgy (at least three species), triggerfish, and grunt. The latter were occasionally taken in commercial quantity, but were usually of a size smaller than is normally marketed. They are mentioned here because the size taken is sometimes marketed in quantity in other sections of the Atlantic seaboard.



Fig. 3 - Catch of groupers, porgies, triggerfish, and associated species of food fish aboard the Silver Bay.

Triggerfish were quite common in the catches and ranged in amounts up to about 600 pounds per drag. The species is salable locally and when filleted is marketed as turbot steak.

The three species of scup or porgy often comprised the bulk of salable fish. They are referred to commercially as red porgy, small white porgy, and large white porgy. All brought the same price--about 8 cents a pound--and catches of salable fish ranged up to more than 1,000 pounds per drag.

VALUE: During two cruises, test landings were made to determine the approximate value of the catches. In order to determine an average value, the salable fish were sorted, iced down in the hold, ¹/_{landed}, and sold in the approximate same proportions as they occurred in the catch. The value per pound was found to average 23 cents in May 1961 (Silver Bay Cruise 30) and 15 cents in February 1962 (Silver Bay Cruise 37).

FISHING METHODS

During initial exploratory fishing trials, routine transects were made over a broad area. Fishing sets were made "in the blind" and at locations when fish tracings occurred on the whiteline depth-recorder. It was found that catches of snapper, grouper, and ecologically-related species were invariably made when fish tracings occurred on and near bottom. From this information the following procedure was developed, which became standard practice on Silver Bay cruises.

With the whiteline recorder on, transects were made in areas likely to contain broken or irregular bottom. When bottom fish tracings were observed, a buoy, maintained "at the ready" was immediately set out to mark the exact location. So long as the recorder was set for the speed of the vessel, transects could be effectively made at any speed. Generally, when wide coverage was desired, as when searching for broken bottom areas, transects were made at full speed. When less coverage and greater detail on the recorder was desired, as when searching for fish tracings over broken bottom areas, transects were made at reduced speed. Once the buoy was set out, the surrounding area was "cartwheeled" or worked out in all directions to determine the location, size, and number of fish concentrations and the bottom contour. Finally, on the basis of recorder tracings of fish and bottom contour, the actual fishing operation was begun.

During earlier cruises, as an aid in determining the size and species being recorded, hand-line fishing over tracings of fish was occasionally performed prior to "shooting" the trawl. With experience, however, fish tracings on and near bottom could be accurately interpreted, as evidenced by the fact that it was possible to make good catches of the sought-after food fish solely on the basis of the recorder tracings.

GEAR USED

The Silver Bay, the gear used in snapper explorations, and the exploratory snapper fishing operation have been described previously (Captiva and Rivers 1960).

A wide variety of gear, including roller-rigged fish trawls varying from 50/70-foot to 86/116-foot and 40-foot industrial fish and shrimp trawls, was used in early explorations. But the principal gear used in most of the explorations was either 50/70 or 80/100-foot roller-rigged trawls with 8- to 10-foot bracket doors. These trawls were hung, rigged, and fished in the usual way (Knake 1956, 1958), except that funnel flappers (fig. 2) similar to those used by some New England fishermen were added. The funnel flappers proved to be useful accessories in preventing the escape of fish from the cod ends. Their use is recommended when the object of trawling is large fish such as snapper and grouper.

¹/Snapper (except small vermilion snapper), grouper, scamp, and hogfish were rough dressed prior to icing; all other fish were iced in the round.

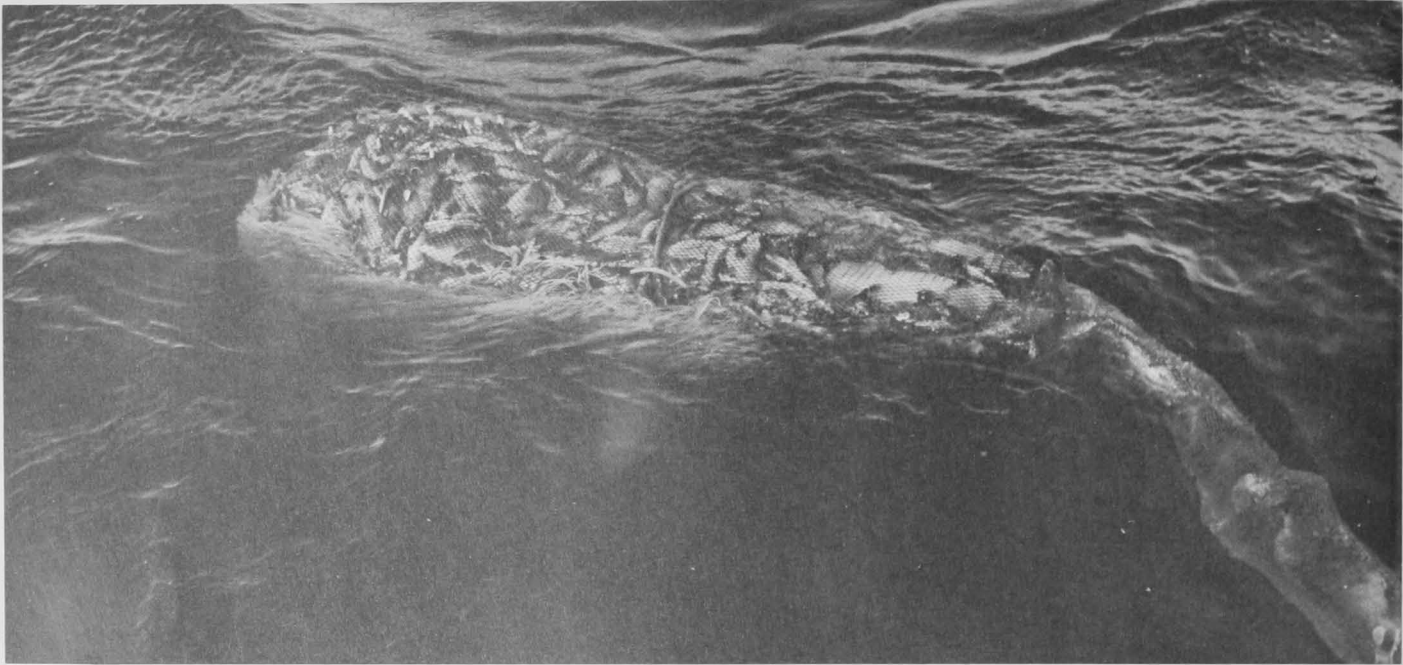


Fig. 4 - A fine catch of fish (mostly snappers and groupers) floating in the cod end before pick up by the Silver Bay.

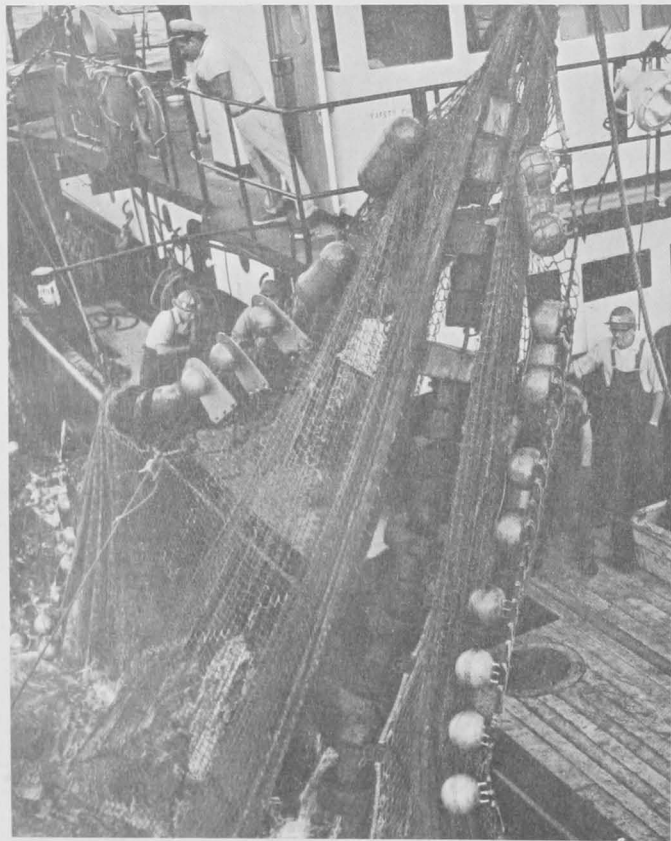


Fig. 5 - Bringing the roller-rigged fish trawl aboard the Silver Bay at the end of a drag. The tree-trunk rollers make possible trawling on broken bottom.

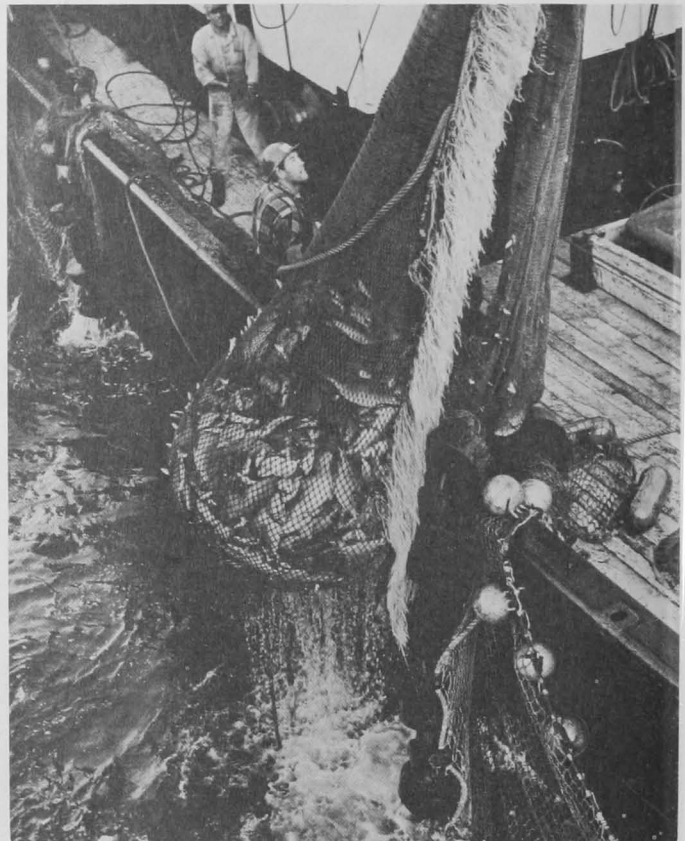


Fig. 6 - Cod end of fish trawl coming aboard the Silver Bay.

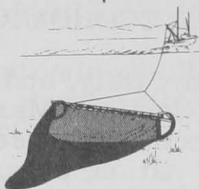
APPENDIX

A detailed fishing log showing fishing positions, gear, minutes fished, and other pertinent data for each drag is available as an appendix to this report. Write for Separate No. 661 which contains Table 2--Fishing Log, Silver Bay Snapper Trawl Stations, 1959-62.

LITERATURE CITED

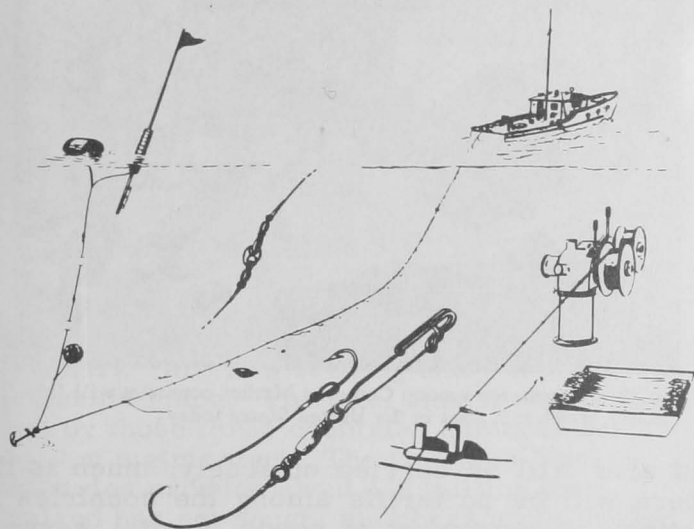
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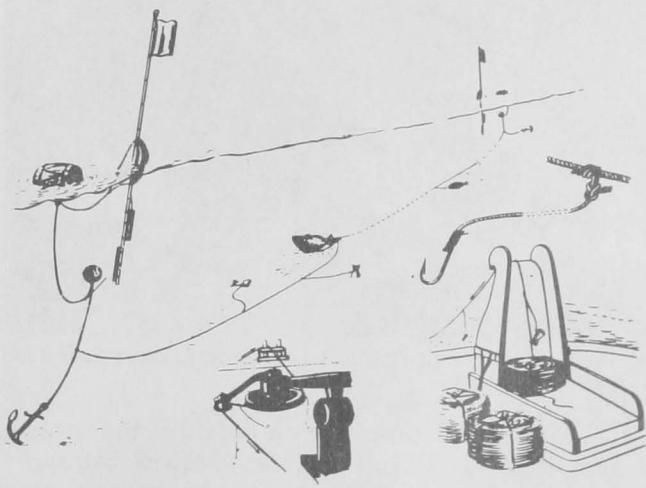


LONGLINE OR SETLINE, WITH HOOKS

This type of gear is an extremely long fishing line with a series of baited hooks on short, separate, but attached, lines. The gear can be anchored or left drifting and requires only periodical attention.



Steel cable longline



Halibut longline

The longline is known as a "trawl line" in New England, a "setline" on the Pacific Coast, and as a "trotline" in the South and inland waters. Although this type of fishing method was once important in the New England fisheries, it has been supplemented during the past twenty years by the otter trawl. However, in the halibut fisheries off the Northwest Coast of the United States this form of fishing continues.

Note: Excerpt from Circular 109, Commercial Fishing Gear of the United States, for sale from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., single copy, 40 cents.