

## GEAR AND TECHNIQUE OF THE SEA BASS TRAP FISHERY IN THE CAROLINAS

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### ABSTRACT

An increasing number of shrimpers along the Carolina Coasts have diversified fishing activities by producing black sea bass (*Centropristes striatus*) in commercial quantities. Utilizing baited wire traps similar to those used in the Chesapeake Bay crab fishery, two-man boats have made landings ranging up to 6,300 pounds of salable fish. As a daytime fishery, 15 to 20 units of gear, each consisting of a trap, polyethylene line and bamboo flag buoy, are fished along the 10 fathoms curve. The catch, sold in the round, is handled by local dealers or trucked to northern markets and is completely dependent upon market supply and demand.

### BACKGROUND

The end of the regular shrimp season along the North and South Carolina coasts of the United States marks the beginning of a long, unproductive lay-up for the small 35- to 50-foot shrimp vessels (Sundstrom 1957) and their crews. The larger vessels, if capable, generally move southward to the more productive grounds either off the coast of Florida in the Cape Kennedy and Key West areas, or into the Gulf of Mexico because those shrimp grounds have more to offer the shrimp fishermen than the coast of the Carolinas during the winter months.

In 1960, small vessels (35-45 feet) from various ports in the Carolinas began catching sea bass (*Centropristes striatus*) with wire-mesh crab traps. Landings have steadily increased since the beginning of the fishery so that the total production is now close to 2 million pounds (table).

### SEASON

The traps are set in depths of about 10 fathoms along the North and South Carolina coasts from the end of the shrimp season in early winter to the start of the new shrimp season in the spring.

Winter weather conditions along that section of the coast constitute a major problem in the fishery by limiting the number of fishing days. A combination of rough seas and small vessels does not provide safe and comfortable conditions, nor does it encourage the recruitment of new personnel or vessels into this new fishery.

### VESSELS USED

The vessels now used in the fishery range in size and description from the regular shrimp vessels (fig. 1) and fancy 20-foot sport fishing boats, to a 110-foot World War II converted rescue vessel that operates as a charter fishing boat during the tourist season.

All the shrimp vessels are equipped with a standard trawling winch, which they use for mechanically hauling the traps. The winch heads are somewhat inefficient. Modifications to increase their hauling speeds would increase the efficiency of the operation by reducing the hauling time of each unit.

Some of the vessels such as those previously engaged in sport and party fishing have improvised hauling gear powered by small air-cooled gasoline engines. A small radial davit at the railing (fig. 2) with an open block facilitates quick and easy handling of the trap warp.

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Year	North Carolina	South Carolina
1964	240,100	224,700
1963	197,563	264,000
1962	304,033	261,000
1961	327,255	29,000
1960	81,300	13,000
Total	1,150,251	791,700



Fig. 1 - A South Carolina vessel, with fish traps and gear stacked on the stern, preparing to depart for the fishing grounds.

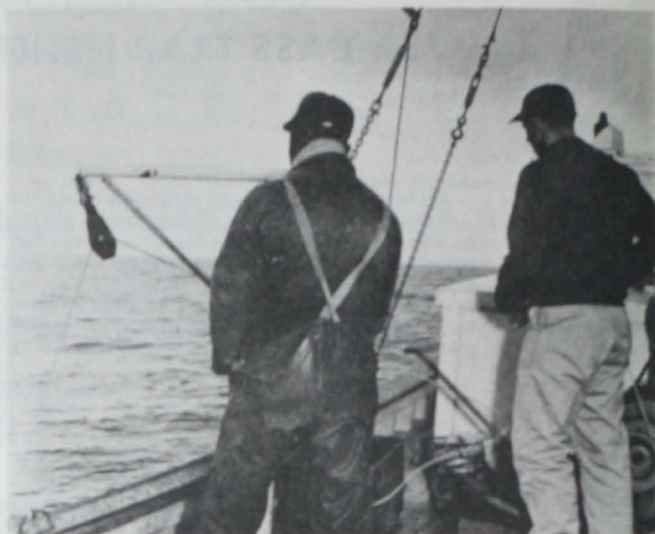


Fig. 2 - Hauling traps with a small davit and open block.

None of the vessels is equipped with radar, loran, or any of the newer electronic fish-finding devices that incorporate the use of the "white line" or the cathode ray tube means of presentation. Most of the vessels use echo-sounders with flashing-light bottom indicators. Some are equipped with recorders that give a graphic presentation of the contour of the ocean floor (fig. 3). Those recorders are more sensitive and register the slightest rise or indentation, which usually indicates the most suitable bottom for catching fish.

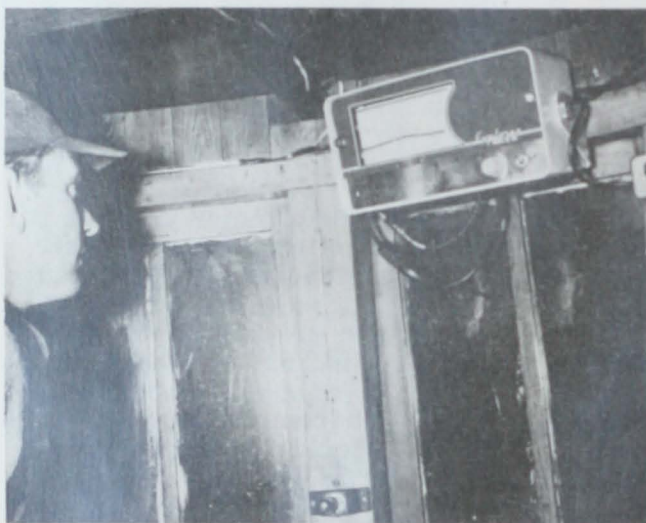


Fig. 3 - Depth-recorder tracings are intently observed as the vessel proceeds over or near the prospective areas to conduct the fishery.

#### GEAR

The principal gear used in this fishery is the Chesapeake Bay crab trap, similar to that described by Isaacson (1957). It can be purchased either completely assembled (current price \$4) or in sections (\$1.80) to be assembled by the fishermen. Associated gear (fig. 4) includes a  $\frac{1}{4}$ -inch diameter, 3-strand polyethylene line attached directly to the bottom of the trap and to the marker buoy.

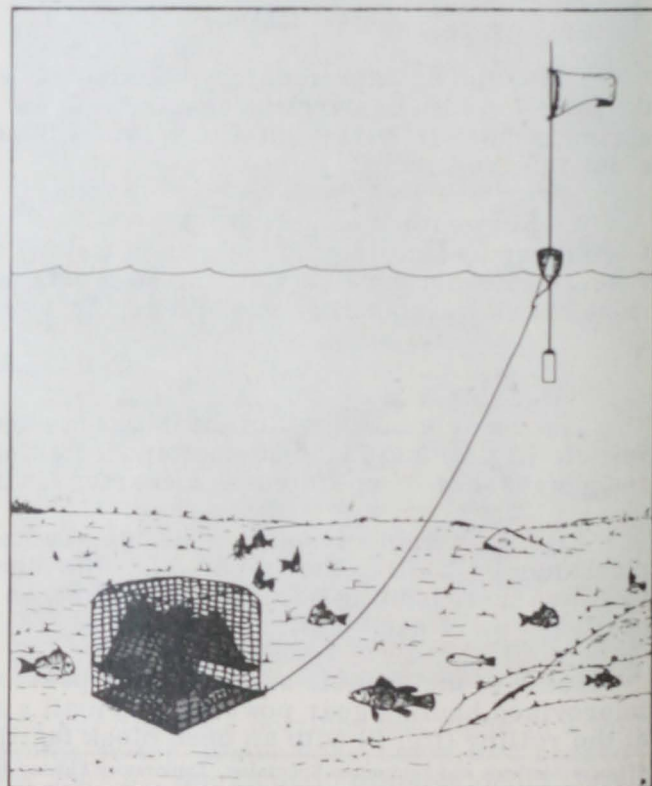


Fig. 4 - Diagram of trap and associated gear which includes  $\frac{1}{4}$ -inch diameter, 3-strand polyethylene line attached to a marker buoy.

The warp-scope ratio is 1.5 to 1 (i.e., 15 fathoms of warp in 10 fathoms of water). The mark-

er buoy consists of a bamboo pole, 12 to 14 feet long, with flotation provided by a standard conical crab pot buoy with a hole drilled through the middle. The underwater end is embedded in a 1-quart plastic milk container filled with cement. This acts as a counterbalance and maintains the pole in an upright position for easier sighting and identification. Colored cloths that will not blend in with the sea and sky are used for flags. Some of the fishermen paint numbers on the flags to help them remember the sequence of their setting pattern. The shoal depths of the area fished, combined with only moderate currents, allow the traps to remain stationary on the bottom without anchors.

FISHING OPERATION

Since this is a daytime fishery, boats leave the dock in time to arrive on the grounds at sunrise for the fishing operation. The fishing area is generally selected from the results of the previous day's catches or from the captain's experience and knowledge of the fishery.

During the run to the grounds, trap-baiting is completed; the baits are usually menhaden, herring, spot, croaker, or mullet. The most preferable choices are menhaden and herring. Their oily meat appears to excrete a slick that attracts sea bass into the chamber of the trap.

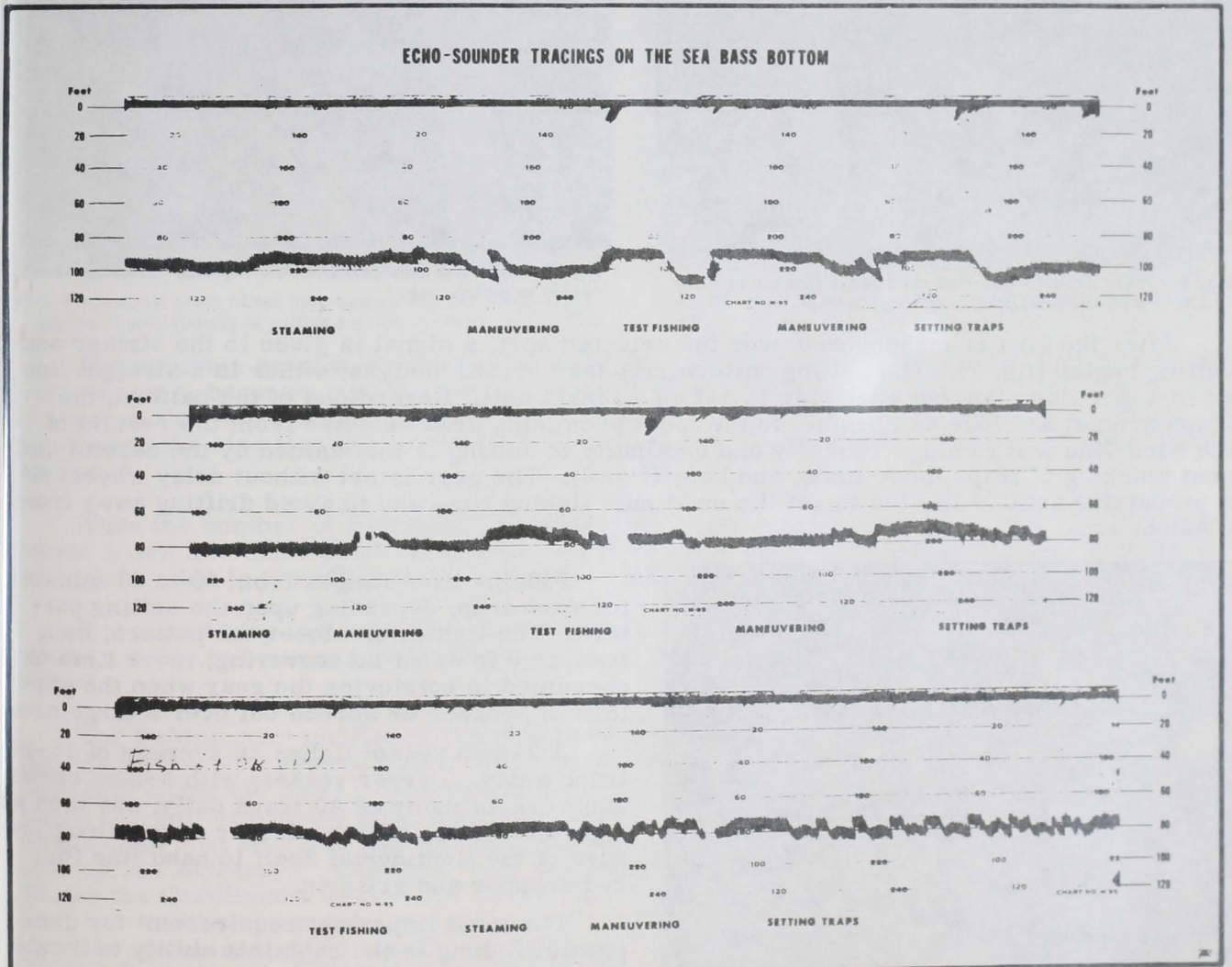


Fig. 5 - Depth-recorder tracings made during the fishing operation off the South Carolina coast. The type of machine that made this tracing does not show indications of fish over the sea bed, but only the contour of the bottom.

Reportedly, some fishermen have placed cans of catfood in their traps. The cans are punctured with holes to permit the escapement of the contents, which attracts the fish towards, and eventually into, the trap. The availability of fresh bait is dependent upon the sources of supply in the various local areas, but frozen bait is readily available to the fishermen. The current price for frozen bait in the South Carolina area is \$6.18 a hundredweight.

Careful attention is paid to the depth-recorder (fig. 5) for indications of significant changes in the topography of the sea floor. Whenever changes are registered, a test is made of the area using rod and reel, or hand lines with baited hooks (fig. 6).



Fig. 6 - Areas indicative of good catches are first tested with baited hooks and lines prior to setting the traps.



Fig. 7 - Awaiting the signal from the captain, the striker stands ready to set the trap.

After the boat is maneuvered over the selected spot, a signal is given to the striker and setting begins (fig. 7). The setting pattern may take varied designs, either in a straight line or in a circular plan, but each trap is set as a single unit. Regardless of the pattern, the traps are set as close as possible to the most promising area selected from the results of the hand-line test fishing. Rapidity and continuity of setting is maintained by the careful and neat stacking of traps, buoy lines, and buoy (fig. 8). The gear is set without delay whenever a productive area is located to get the maximum fishing time and to avoid drifting away from a select area.

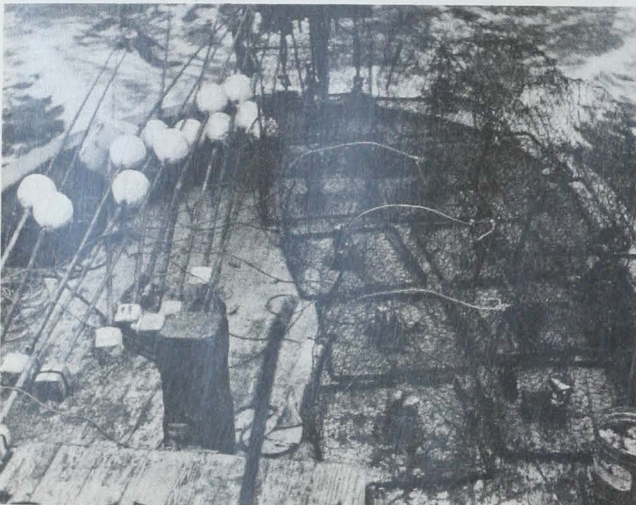


Fig. 8 - Buoys and lines are carefully stacked with lines neatly coiled to prevent fouling.

Fishing time ranges from 20 to 45 minutes for each trap, depending upon the setting pattern. The tighter or closer the pattern, then less time is spent maneuvering; more time is consumed in retrieving the gear when the pattern is broader or spread out over a large area.

A 2-man vessel fishes an average of 15-20 traps a day. Larger vessels with 5-man crews can work as many as 40 traps daily, and then at night may move into the deeper water along the edge of the Continental Shelf to hand line for red snapper and grouper.

The most important requirement for successful fishing is the captain's ability to locate the most productive grounds with a minimum loss of time. Grounds must be tested and gear must be set and retrieved in the shortest period possible to maintain a high catch rate per unit of fishing gear.



Fig. 9 - A small catch of sea bass coming aboard. Incidental catches of scup (porgy) or puffers are also included in the traps.

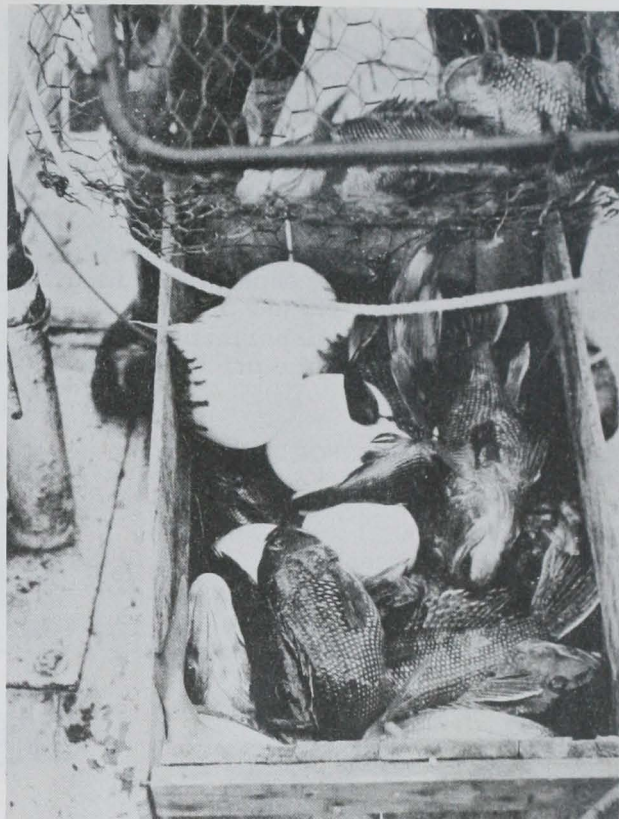


Fig. 10 - Fish are dumped on deck or into a box to be culled prior to storage in the fish hold.

The optimum amount of time to keep the gear on the bottom is thought to be 15 to 20 minutes per trap, because once the bait is gone the effectiveness of the trap is greatly reduced. It appears that sea bass in this area are attracted to the trap for food rather than shelter as opposed to the situation in certain other trap fisheries where unbaited traps are successfully utilized.

When the number of fish caught is temporarily reduced in an area, searches are made to locate a new and more productive area. Again a captain's knowledge of the bottom topography of an area adds to the effectiveness of the fishing operation.

After each trap is hauled (fig. 9), the fish are dumped into a box (fig. 10), and the gear is stacked ready to be used again when needed. If the gear is to be reset the traps must be re-baited.

The fishing gear method of operation is quite dissimilar to those of the older sea bass fishery off the New Jersey coast. The season in that area extends from May to December with June being the most productive month. The Jersey fishermen use the Jersey skiff, a small (26-30') seaworthy boat, which has ample cockpit space for the handling of the gear. A single-man boat sets and tends about 500 traps whereas a two-man boat maintains and operates up to 1,600 traps. Landings have ranged up to 5,000 and 6,000 pounds of black sea bass. Where the Carolinians search for lumps and test fish with hand lines, the northern fishermen seek out wrecks and rough bottom and rely on their electronic devices for the indication and location of commercially significant catches of fish. Another major difference is that the Jersey fishermen use unbaited wooden slat traps (Dumont and Sundstrom 1961), which are set out in strings of 10 or 20 traps per line instead of singly. This technique is similar to the one employed by some of the New England lobstermen. Attempts to increase the trap's productivity has led to some experimentation by the Jersey fishermen. These include using either a mirror or a battery-powered light to attract the fish and lure them into the trap.

## SALE OF CATCH

Daily catches have ranged up to 6,300 pounds of sea bass, but the financial success of a trip depends entirely upon the market prices.

At sea the fish are stored in the same type wooden box that is used to pack shrimp for shipment. A layer of crushed ice is spread on the bottom of the box; then the fish, and finally another layer of crushed ice is spread over the fish to maintain the quality of the product.

Fish are sold in the round (not headed or gutted). They are handled locally or shipped to the northern markets. No set price has been established, nor does the price stabilize itself during the season. The fishermen are fully dependent upon the customers' demand and the supply in the market, so the prices during a season have ranged from 4 to 40 cents a pound.

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Note: Appreciation is gratefully extended to Capt. Wright Skinner, Jr. of Georgetown, S. C., for allowing me the opportunity to observe and photograph the fish trap operation on board his vessel Lillian Skinner.



NOVEMBER 1958 SUPPLEMENT OF COMMERCIAL FISHERIES REVIEW  
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