

TRAP LIFT NET FOR CATCHING TUNA BAIT FISHES

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NEW LIFT NET DESIGNED

Lift nets were moderately successful in catching small quantities of fish under lights on the 1952 cruises of the Service's exploratory fishing vessel Oregon in the Gulf of Mexico. The lift nets used, however, were generally unsatisfactory.

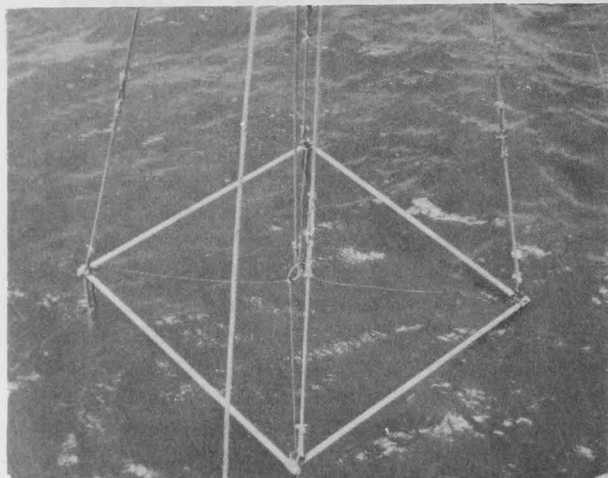


FIG. 1 - TRAP LIFT NET IN FISHING POSITION (SIDES DOWN). WHEN IN USE AT NIGHT A LIGHT IS SUSPENDED OVER THE CENTER OF THE NET.

The frames were not strong enough. The lift was either not rapid enough to catch some kinds of small fish, or the webbing split when sufficient speed was attained.

The trap lift net was designed and constructed to overcome these difficulties. The essential feature of the trap lift net is provision for quick lift of the sides of the net independent of the lift of the frame and bottom of the net.

This gear was used successfully in early 1953 to catch tuna bait fish of several species attracted by lights to the Oregon while the vessel was anchored at night. The bait fish (Jenkinsia lamprotaenia, Anchoa lamprotaenia, Anchoa hepsetus hepsetus, Anchoa mitchilli, and Sardinella anchovia) taken in quantity were all relatively small, and our limited observations suggest that they are easily injured by handling. The smallest of these bait fish, the majua (J. lamprotaenia), averaged 800 fish to the pound. Our largest catch with the lift net contained approximately 100 pounds of fish, too large a quantity for proper handling except in calm seas. Possibly these bait species are relatively less hardy and more easily injured than species generally used in the Pacific Coast tuna fishery. At any rate, less difficulty was experienced in catching the fish than in getting them into the bait tank in good condition. We were successful in working the trap lift net in tidal flows of one to two knots and in winds of 18 to 24 miles per hour, but we could not work the net effectively in swells or in a choppy sea.

FISHING WITH THE TRAP LIFT NET

Fishing was carried out in 16 to 50 feet of water while the Oregon was at anchor, usually in the lee of an island. A 150- or 300-watt light mounted at the end of a 14-foot pole was used to attract

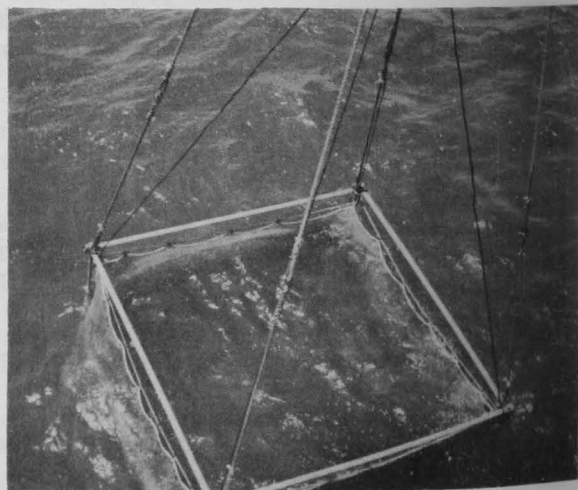


FIG. 2 - TRAP LIFT NET WITH SIDES UP.

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the fish. The trap lift net was suspended in the water from the boom over the after lee rail with its sides down. The top of the frame was held from six inches above the surface to as deep as eight feet below the surface, depending on the depth at which the bait schooled. The light was placed over the center of the net.

When a sufficient number of fish collected under the light, the sides of the net were lifted as rapidly as possible, and the frame was hoisted until the bottom was approximately at sea level. The catch was then scooped into the tanks and the net returned to the set position.

Many variations for handling the gear appear feasible. The boom on the Oregon was long, and an electric winch for the topping lift made its use convenient. The sides of the net were raised by hand using a line over a single sheave. Although two men could work the rig, we found that eight men could keep busy when the bait was plentiful and there was any sea running. Often we had to wait for several hours before sufficient bait collected, and in general the amount of bait per lift increased toward dawn. At times a large supply of bait appeared around the light



FIG. 3 - TRAP LIFT NET FRAME RAISED IN POSITION FOR REMOVAL OF CATCH WITH A DIP NET. SIDES HAVE BEEN LOWERED.

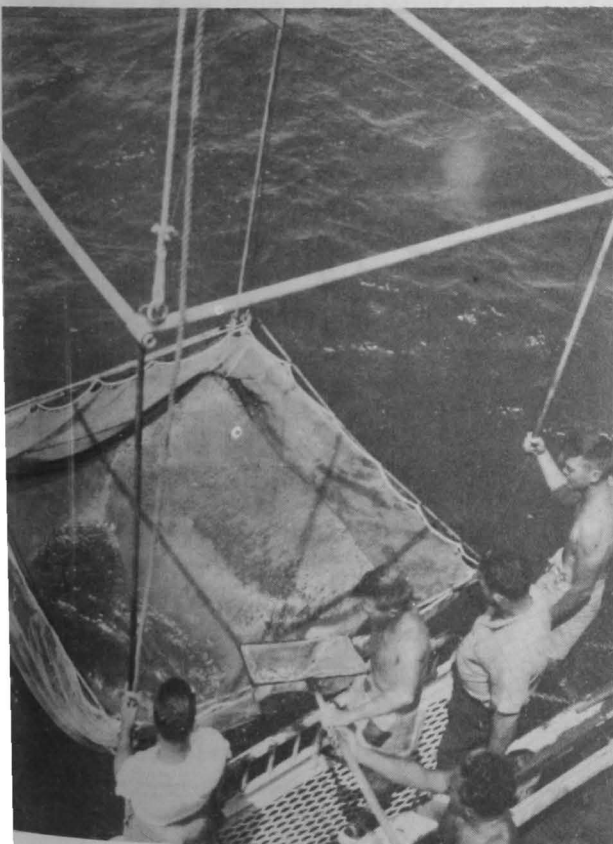


FIG. 4 - BAIT BEING TRANSFERRED FROM THE TRAP LIFT NET TO LIVE TANKS WITH NYLON MARQUISSETTE-COVERED SCOOP.

without difficulty or delay, but on some occasions all of the lights (including a five-million candle power searchlight) on the vessel were used to get bait close to the net. Before lifting, all lights except the one over the net were turned off. We were unsuccessful in using gradually-dimming lights, since the schools thus attracted broke up when the light became weak and did not bunch well with the light too bright. The light intensity where the bait was grouped presumably would vary greatly with the turbidity and depth.

Whenever the bait became plentiful around the vessel, we found that a second light, used to hold the bait while the net was being unloaded, sped operations. This extra light was turned off as soon as the net was again in position.

Transfer of the bait was facilitated by the use of scoops covered with nylon marquisette. Apparently this covering was less abrasive to the scales of the fish than knotted webbing, and held enough water to keep the fish from damage in the scoops.

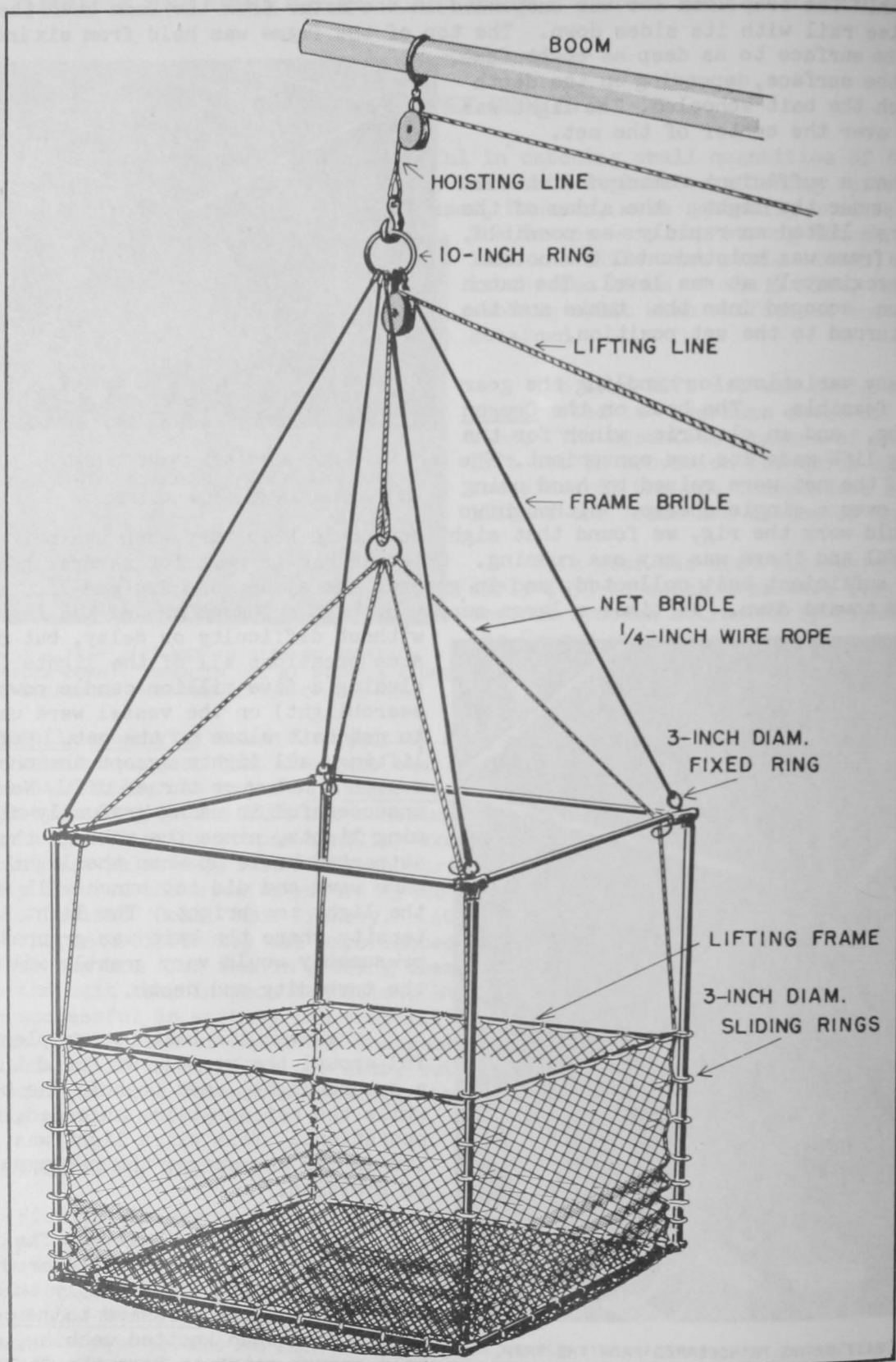


FIG. 5 - CONSTRUCTION DETAILS OF THE 8 $\frac{1}{2}$ -FOOT TRAP LIFT NET USED ON THE M/V OREGON.

Large razorbellies (Harengula) interfered in catching small bait fish in the Florida Keys. The large razorbellies were unsatisfactory for bait because of a tendency to sound when used for live chum, but they sometimes appeared in sufficient number to eat all of the smaller fish under the light. As many as 25 majua were taken from the stomach of one six-inch razorbelly caught on a hand line.

The anchovies taken in the trap lift net appeared to be injured by the knots of the cotton webbing in the bottom of the net. Fewer anchovies died in the tanks when we replaced the cotton web bottom with one made from nylon marquisette.

A nylon marquisette floor in the trap lift net, tried on the Mississippi coast, was quite successful in catching anchovies, but it also retained predaceous, half-inch-long isopods. In the tanks these isopods killed a large number of the anchovies, estimated at 1 to 3 percent per day. Furthermore, they attacked the diver cleaning the tank and made it necessary for him to wear a complete covering of protective clothing.

DESCRIPTION OF THE TRAP LIFT NET

The trap lift net used on the Oregon was made with a frame of galvanized pipe having fittings arranged so that the net could be completely taken apart for convenient storage. The top and bottom squares, each $8\frac{1}{2}$ feet, were made of $1\frac{1}{4}$ -inch pipe, and the $8\frac{1}{2}$ -foot verticals were made from $3/4$ -inch pipe. The cotton webbing used was $1/2$ -inch (stretched) mesh with the floor hung on 12-thread manila for convenient attachment to the lower square of the frame. The top of the walls was hung on an 8-foot square frame of $1/2$ -inch galvanized rod. The method of rigging the hoisting and lifting lines is illustrated in figure 5. No webbing was used as a cover for the top of the net since practically no fish of the types wanted escaped over the top.



COMMERCIAL FISHERY LAWS AND REGULATIONS

Commercial Fishery Laws and Regulations, Fishery Leaflet 168 (Revised), was recently issued by the Service's Branch of Commercial Fisheries. This 7-page leaflet describes the various Federal laws and regulations which affect the commercial fisheries of the United States and Alaska. It also lists the fishery agencies of the States, Territories, and Island Possessions which have jurisdiction over fisheries. The Interstate Compact Commissions and the International Commissions are also listed.

Free copies of Fishery Leaflet No. 168 are available from the Division of Information, U. S. Fish and Wildlife Service, Washington 25, D. C.