

# DOUBLE-RIG TWIN SHRIMP-TRAWLING GEAR USED IN GULF OF MEXICO

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Double-rig shrimp trawling was developed in the Gulf of Mexico during the Mid-1950s. By 1958, it had become the principal trawling method used in the offshore shrimp fishery (Knake, et al., 1958). Over the following 15 years, other advances in methodology and technology were concerned mostly with design of the outriggers, mast structures, and other rigging components related to handling problems of the double-rigged gear.

During the past year, however, there have been scattered attempts to test the application of a twin trawling technique similar to that now being used experimentally in the North Sea sole fishery (Anonymous, 1970 and 1971). Some of these trials have yielded encouraging results and have excited much curiosity throughout the shrimp industry. The purpose of this paper is to describe one twin shrimp-trawling rig that has been fished along the Texas coast during the past year.

## TWIN TRAWLING

The principle of twin trawling is to tow two trawls using a single pair of otter boards or doors. The two trawls are joined at the head rope and foot rope to a "neutral door," which is connected to a third bridle leg. The neutral door is called "center bridle weight ski" in Europe and "sled" in the Gulf shrimp fishery. Generally speaking, the same total head rope

length is maintained for each twin-rig component as was used in the single trawl units on a double-rigged trawler. That is, if a trawler had been towing two 70-foot head rope length trawls, it would now tow four 35-foot head rope length trawls, two on each outrigger.

## Rig of 'La Fourche'

The following rig description was obtained from a unit designed by Captain J. F. Wiley, Aransas Pass, Texas, for the 380 HP shrimp trawler "LA FOURCHE". The trawler was conventionally outfitted and no standing rigging modifications were necessary for the conversion to twin trawling.

The towing warps were standard  $\frac{5}{8}$ -inch diameter trawl cable. The three legged bridles of  $\frac{1}{2}$ -inch diameter cable were 40 fathoms long. The twin trawls were standard 35-foot head rope flat shrimp trawls that had been modified by having the outside footropes and headropes three feet longer than those secured to the sled. This was to compensate for the distance lost along the towing axis by the equal length of all three bridles.

Each wood trawl door was conventionally chain rigged, seven feet long by 36 inch high. The two lazy lines were secured to each other and then tied to a tag line secured to the sled.

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MARINE FISHERIES REVIEW  
Reprint No. 951

## NEUTRAL DOOR OR "SLED" FOR TWIN TRAWL

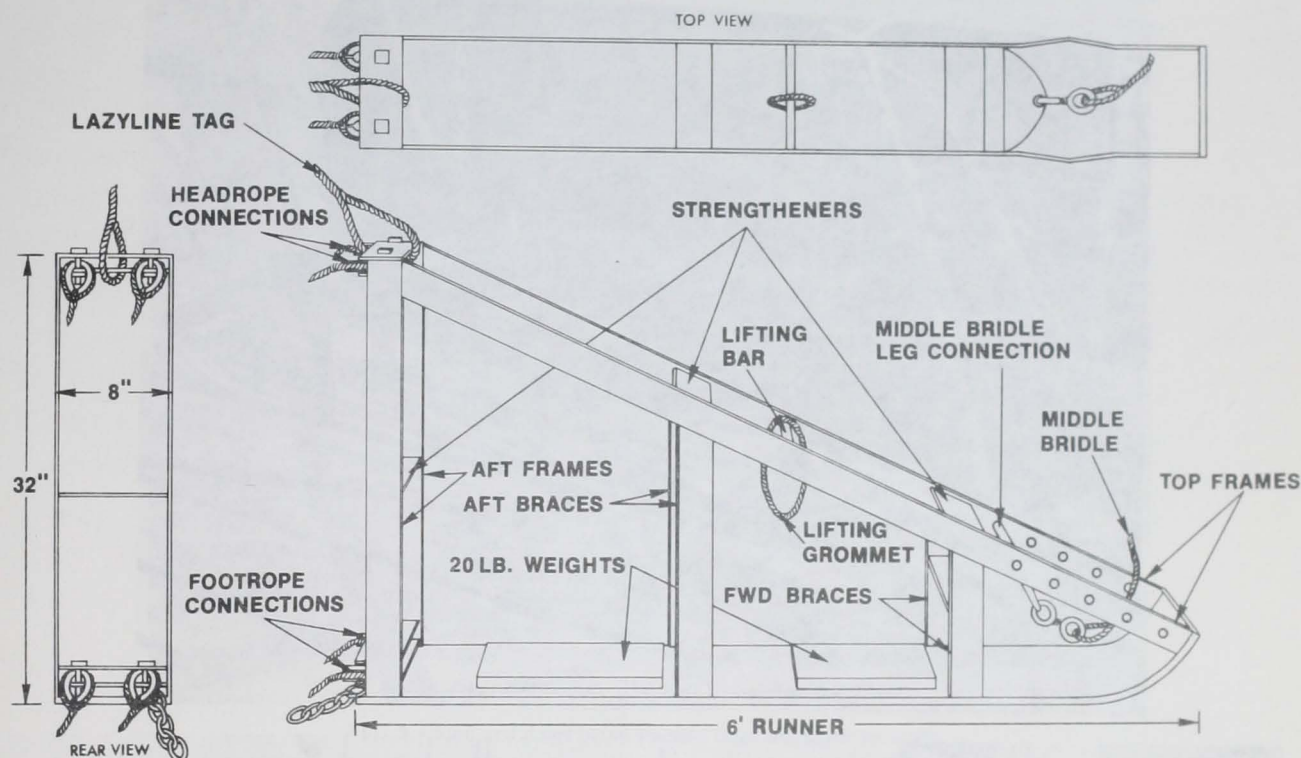


Fig. 1 - Diagrammatic sketch of a Gulf of Mexico twin-trawl sled and terminology.

The sled design used by Captain Wiley was six foot long, 32 inches high at the aft end, and rode on an eight-inch-wide, one-inch-thick steel shoe. Specifications and construction details of the Wiley sled are shown in Figure 1.

### Reported Advantages

There have been no sustained comparative tests to prove the reported increased efficiency of the twin trawl array. There are now about 10 vessels so rigged in the Gulf of Mexico. The captains we have talked to have offered several apparent advantages over the conventional double rig. Most significant is the reported increase in fishing efficiency: in some cases, as much as 25% over the con-

ventional double-rig system. Some other apparent advantages are the light weight and ease of handling two 35-foot trawls, as opposed to a single 70-foot trawl. The combined weight of netting of two 35-foot nets is significantly less than one 70-foot net. The two 35-foot nets can be spread with a single pair of seven-foot trawl doors; a 70-foot trawl would require 10- to 12-foot doors. This means that nets can be towed with significantly less than maximum horsepower, ideally at three to four knots. It is claimed, also, that the vessel can make sharper turns with fewer incidents of tangling as a result of crossing the towing warps.

Figures 2 through 6 illustrate the gear aboard the "LA FOURCHE".

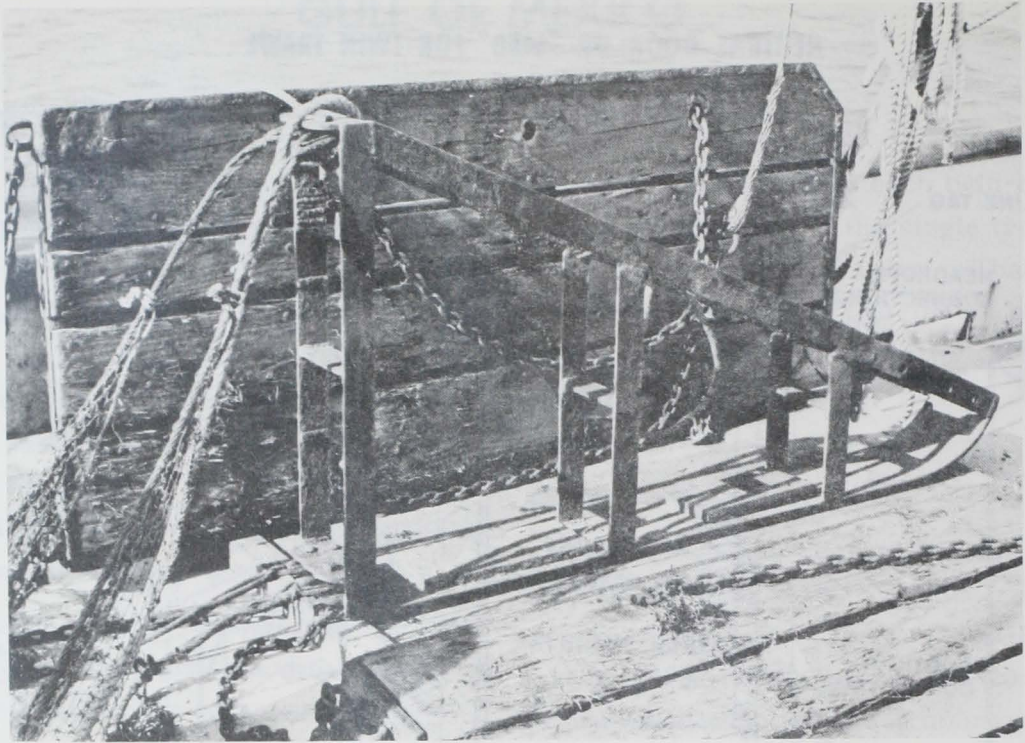


Fig. 2 - Side view of sled fully rigged and ready to set.



Fig. 3 - Front view of sled showing towing bridle and lazyline tag.



Fig. 4 - Aft view of sled and doors in position for pickup to outrigger boom.

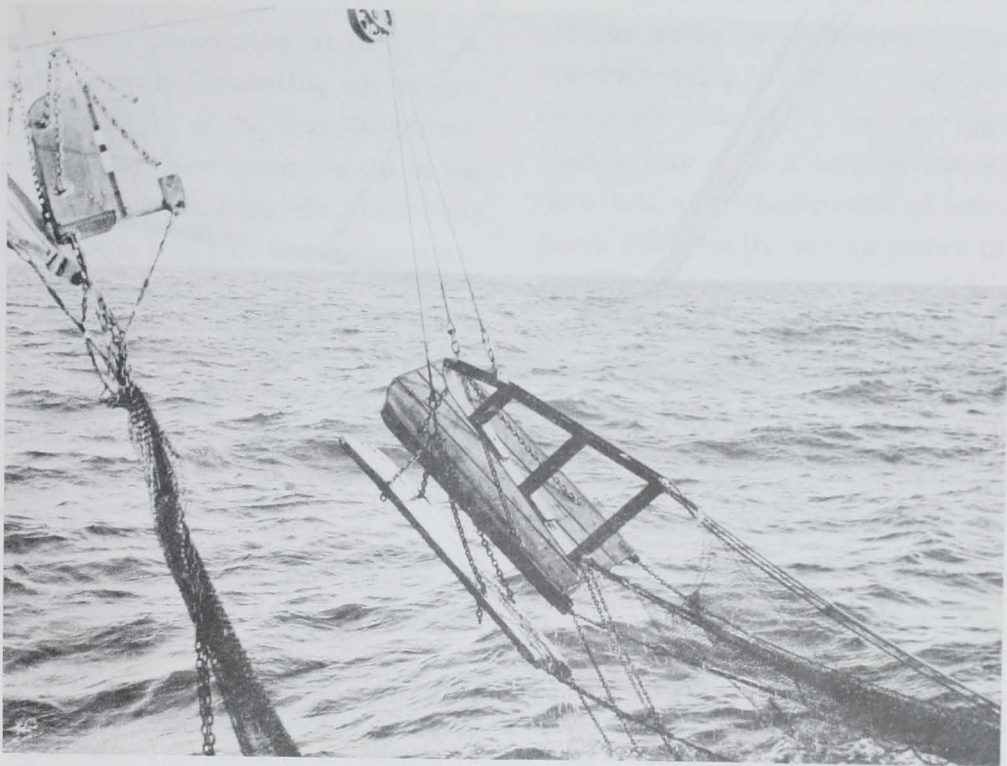


Fig. 5 - Sled and doors being slacked from outrigger boom tip.



Fig. 6 - Doors submerged and sled about to submerge during trawl setting.

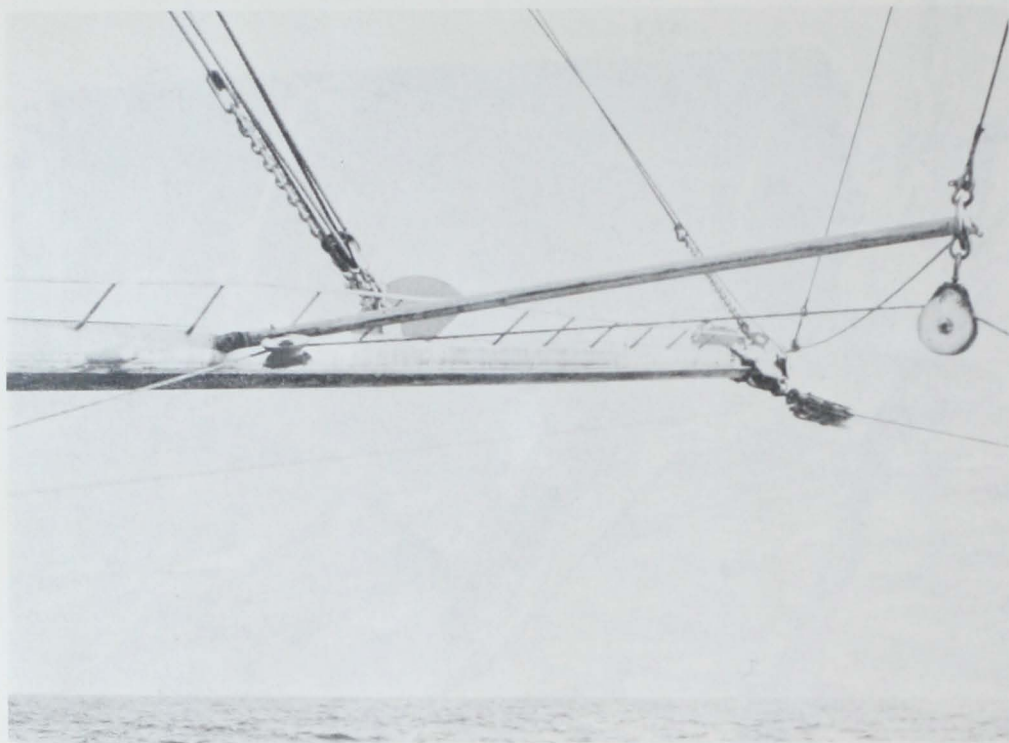


Fig. 7 - Outrigger boom with welded "T" track holding the sliding clip that carries the trawling block. The clip is fully extended to the boom tip and is under towing strain.

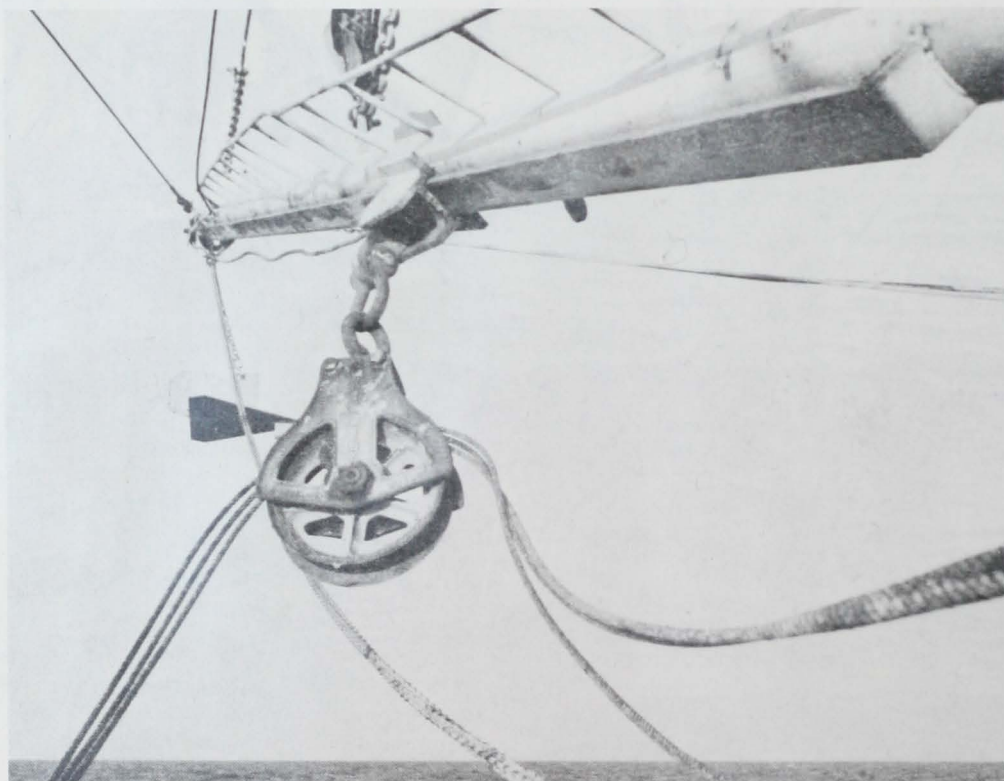


Fig. 8 - Close-up of the "T" track and sliding clip that carries the outrigger boom trawling block.

### Traveling Out-Rigger Block

Another recent innovation aboard U. S. shrimp trawlers is the "traveling out-rigger block". The principle of the traveling block is to move the trawl door from the tip of the outrigger boom to alongside the vessel for easier access to the lazy line and to facilitate hoisting of the cod end.

Figure 7 shows the traveling block fully extended to the tip of the out-rigger boom and in trawling position. Figure 8 shows the block near the base of the boom and in a slack condition.

There does not appear to be a prefabricated, off-the-shelf, traveling block system.

Each rig is fabricated on individual specifications using the following components: a one-inch-thick steel "T" is welded to the lower aft-quarter of the outrigger boom; a sliding clip with a welded pad-eye holding the block, also constructed of one-inch-thick steel, rides on the tee as shown in Figure 8. The clip is pulled out to the boom tip using a tag line operated from the winch. It slides back to the side of the vessel when the tag line tension is eased.

Comparative tests and evaluation of twin trawls are scheduled during the coming year. A detailed report will appear later.

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