THE USE OF TRAPS IN THE SPINY LOBSTER FISHERY IN TANZANIA

ABSTRACT

Results of field experiments on catching lobsters by Box traps, Wire traps and Basket traps in the inshore sea at Kunduchi and Fungu Yasini about 20 kilometres north of Dar es Salaam were reported. It is suggested that the change from the more popular but inefficient octopus hand net method to trap fishing may help in observing the minimum legal size of the crustaceans in this area.

THE NEED to develop and use traps in the lobster fishery of Tanzania has been increasingly felt in recent years in the context of increasing demand for these

crustaceans in the country. The present methods engaged for catching the lobsters are inefficient, for instance, in the octopus hand net method, the availability of an octopus was crucial, as it determines the fishing efficiency. Besides, Bwathondi (1979 a) had suggested that the legal size of lobsters should be set at about 70 mm carapace length. However, strict adherence to this size by the fishermen may pose difficulty due to several reasons, and in this context an introduction of traps may help to alleviate this problem. Besides, the success of trap fishing will also ensure a constant supply of lobsters in the market.

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Material and methods

The present investigation was carried out at Kunduchi and Fungu Yasini, about 20 km north of Dar es Salaam town. The area consisted of three coastal islands of Mbudya, Pangavini and Bongoyo. The islands are surrounded by corals that grow more luxuriantly in the offshore waters than in the inshore regions. Fungu Yasini consists of a wide stretch of coralline area on the east and southeast, and an upraised sand dune area, usually exposed during low tides (even at neap tides) on the west, and drops sharply to deeper water immediately after the sand dunes and the coral outgrowths. The remaining part consists of sand and a relatively larger grassbed area along the coast.

Three different types of traps, namely wooden Box trap (similar to "parlor" and "double header" traps), Chicken wire iron traps (modification of the wooden Box trap) and Basket trap (locally known as "Madema") were used.

Box trap

Ten wooden Box traps (Fig. 1) were used. The trap was made of wooden frame stewn by longitudinally arranged laths (measuring 5 x 15 cm) spaced 4 cm apart

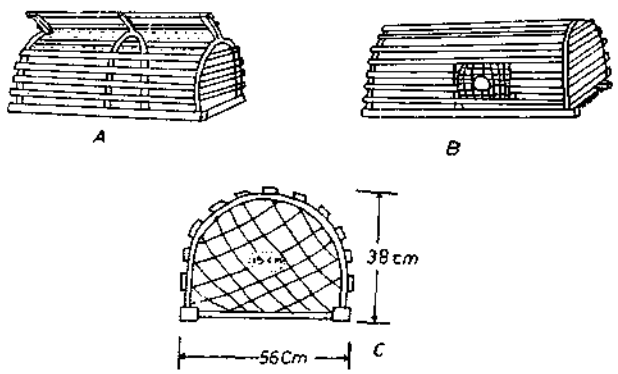

Fig. 1. Box trap - a. side view with the top cover opened, b. side view and c. end view.

(in five boxes) and 5 cm apart in the remaining five boxes. The spaces between the laths were large enough to allow small lobsters (carapace length less than 70 mm)

to escape but to retain larger ones. At both ends there was a dome shaped bow. In five of the traps there were entrances at each end view (Fig. 1 c) while the remaining five had only one entrance situated at the side (Fig. 1 b). The base of each box was fitted with runners 5.5 cm. The bow was screwed to the runners. Lobsters could be recovered from the box by opening the cover which was hinged at the top (Fig. 1 a). The bait was tied suspended in the box just behind the wire hoop, but occasionally placed at the floor of the box. A weight, usually several pieces of hard rock bound together by strings, was tied on each side of the trap.

Wire trap

The wire trap (Fig 2) was made of cast iron frame of 1 cm diameter. A chicken wire was wound all around the frame. Five of the traps had two doors each, one

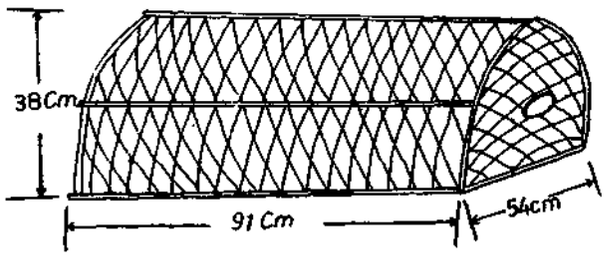

Fig. 2. Wire trap.

on either end, while the remaining five had only one door for removing the catch. The bait was either tied dangling inside the trap or placed at the floor of the trap. The weights were only necessary for anchoring the trap and not for sinking it.

Basket trap ("Madema")

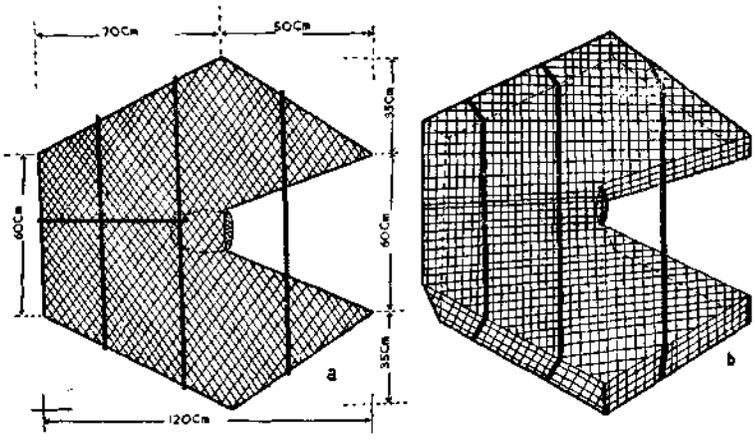

Fig. 3. Basket trap—a. Top/bottom view and b. side view.

Basket traps (Fig 3) are the most popular movable traps developed in the fishery of several demersal fishes such as siganids, lutjanids and lethrinids in the western

part of the Indian Ocean. The trap was a seven basket made of pieces of bamboo splits or flexible or creeping herbs sewn together and tied at the outer joints by barks of certain trees or coconut fibre. The baits were placed as those of the two types of traps treated above. Some weights, usually big stones were tied on the sides to aid in sinking and anchorage.

Setting of traps

All the three types of traps were set and operated in the same manner. A good lobster ground was usually selected, based on the experience of lobster fishermen and the author, the traps were lowered gently until they reached the bottom. The

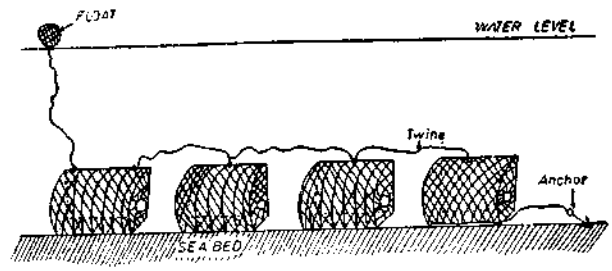

Fig. 4. Setting of traps in series.

weights placed on both sides provided good balance so that the traps usually rested on their runners. Two different settings were made, namely, setting the traps singly, and setting them in series as shown in Fig. 4. The second method has the advantage of securing all the traps in one piece thus reducing the possibility of losing the traps as was observed in the former case. The traps were checked after every two days.

TABLE 1. *The number of lobsters caught in fish-baited "Madema" traps (These data were collected over a peroid of three months)*

Trip number	Trap number	Number and species caught
I	1	2 *P. ornatus*
	2	3 *P. ornatus*
	3	8 *P. longipes*
II	4	2 *P. ornatus*
	5	1 *P. ornatus*, 3 *P. longipes*
III	6	8 *P. longipes*, 4 *P. ornatus*
	7	6 *P. ornatus*, 2 *P. longipes*
IV	8	6 *P. longipes*
	9	1 *P. versicolor*
V	10	4 *P. ornatus*, 2 *P. versicolor*

Results

More than fifteen trials to catch lobsters by traps were carried out over a period of one year. Each trial lasted one week. Of these only three caught lobsters, *P. longipes*. The traps that were used by fishermen, the "Madema" to catch

siganids, lutjanids and lethrinids caught three species of lobsters namely, *P. ornatus*, *P. longipes* and *P. versicolor*. The present observation thus contrary to the previous reports (Bwathondi, 1973) establishes that the lobster in this region would be caught by lobster traps and whenever *P. longipes* was present in the traps, they were either two or more. This behaviour as has been reported by Bwathondi (1979 b), offer significant advantage to lobster fishermen in catching *P. longipes*. It was also observed during the course of this investigations that the bait played an important role in the trapping operation. However, the smaller fishes belonging to the families Lutjanidae and Lethrinidae, were found to enter the traps through the spaces betweenthe laths and to consume the bait. This probably accounted for the less number of lobsters in most of the traps.

Remarks

The study area mainly including the region where fishermen illegally dynamite the corals, which form the most favourable habitat of the lobsters. The patchy corals surviving in the region do not form good hiding places for the lobsters. In the patchy coral region, the smaller species, *P. longipes* is generally found in greater numbers. Studies on the estimation of abundance of lobsters in the area indicated that the lobsters were more abundant at Dambwe than at Fungu Yasini. These two areas have different habitats and dynamiting operation is being carried more intensively at Fungu Yasini than at Dambwe, consequently fewer lobsters are reported at the former habitat. This indicates that lobsters, particularly *P. ornatus* are quite sensitive to changes in the habitat. Bwathondi (1973) reported that *P. ornatus* prefers rich coralline habitat while *P. longipes* although prefers corals, is also found in grounds where coral growth is poor. The population of lobsters around Kunduchi and Fungu Yasini is diminishing mainly due to dynamiting for corals.

The problem of carnivorous demersal species such as lutjanids and lethrinids entering the lobster traps through the spaces between laths may be difficult to overcome in the trapping operation of shallow-water species like *P. longipes* are mostly abundant in shallow waters which are their nursery grounds as the shallow water areas not serve as a habitat for smaller specimens of *P. longipes* but also form the nursery ground for the juveniles of the fishes. Here the deeper water trap fishing would be advantageous as large size lobster and fishes are fully encountered.

As the depth of the water increases, the number of juvenile carnivorous demersal species also decreased. This is followed by an increase in the number of larger carnivorous demersal species. Since larger lobsters and larger carnivorous demersal species occupy slightly deeper waters, the success of traps in such waters will not only benefit lobster industry but also the industry of lutjanids and lethrinids both of which fetching high price in the local markets.

Further trapping operations will be carried out in deeper areas (at least 50 m depth during low tides) and in more undynamitted areas such as Kilwa and Rufiji.

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