

Trap Fishing- A Resource-Specific Diversified Technique

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SUMMARY

Trap fishing is an age-old method of fishing that has been widely practiced in both tropical and temperate seas around the world. Traps have evolved in recent years as a versatile fishing gear used to capture aggressive predatory fish such as blue fin tuna. Netting material, funnel shape, mesh size, bait, escape vent and soaking hours significantly play a role in the trap's catching efficiency. The use of collapsible traps can help fishers capture more fish and earn more profit. More traps can be stacked in the fishing craft by using collapsible traps.

INTRODUCTION

Trap is an impounding device into which fishes are lured and afterwards escapement is made difficult because of the presence of a non-return device fixed at the entrance. Owing to passive and stationary nature, the trap fishing in general, is considered to be much less harmful considering the conservation of fish stocks compared to active gears like purse seine and trawls. Traps being fixed devices does not require continuous attention and vigilance by the operator but can be left to function themselves and secure a catch while the owner is engaged in other occupation. People in different parts of the world are not always referring to exactly the same things when they use the words "trap" and "pot". In general, traps are large structures fixed to the shore. Pots are smaller, movable traps, enclosed baskets or boxes that are set from a boat or by hand. In India, the term 'trap' is interchangeably used to mention both pot and trap. In recent years, trap has been evolved as a versatile fishing gear even to capture active predatory fishes like blue fin tuna. Catches of Pacific blue fin tuna accounted for about 12% of the total Japanese Pacific blue fin tuna catch and ranked as the commercial fishing gear followed by troll gear which accounted for about 13 % of the catch while purse seine ranked first with the contribution of 55% of the blue fin tuna catch of Japan. In many islands, trap fishing has been evolved the most appropriate fishing method and has showed significant impact on the socio-economic and cultural heritage value of the island.

Trap fishing-World scenario

Fishing with traps has been an age old technique and progressively developed in accordance with the technical advancement in different parts of the world. The usage of wire mesh traps in South Florida of United States of America used to catch lobster, crabs and fishes. Fish pots of 'Z' shaped were popular along South America coast from Jamaica to Trinidad. Fish traps have been reported to be the principal fishing device throughout the Bahamian and Caribbean islands as they were found to be efficient device for capturing fishes in areas where coral formation prevents the use of trawls and other nets. West Indian fish traps were the most popularly used fishing device in the Virgin Islands of Caribbean Sea. Free floating trap nets were successfully introduced by Fisheries Research Department of British Columbia for the live capture of different varieties of fish species. In Japan, trap is the major fishing gear used for catching blue swimming crab besides bottom set gill nets. Commercial crab trap operation started in Japan adopting longline trap setting method with the number of traps ranging from 2,000 to 5,000 per boat during 1981. In New South Wales of Australia, the majority of ocean leather jackets were fished using demersal fish traps. However, ocean leather jackets ranks second behind the snapper as far as the demersal trap fishery was concerned. The annual landings of ocean leather jackets fished with demersal fish traps and demersal otter trawls together have increased from 134 to 430 tonnes from the year 2000 to 2007 respectively. Japan is the only country in the world that uses trap to catch Pacific bluefin tuna with the annual catch of Japan through trap fishing ranging between 1,000 to 2,000 tons during last two decades.

Trap fishing- Indian scenario

In south-west coast of India, traditional traps are made of palmyra (*Borassus flabellifer*) leaf-stalks and Date palm leaf (*Phoenix dactylifera*) stalks. Wood has been used as primary trap material in the early stages of development of trap fishing technology in the world. As far as India is concerned, scientific investigation on trap fishing started as early as 1930. Filter traps were operated in the backwaters of Kerala. In south west coast of India,

traditional traps made of Palmyra (*Borassus flabellifer*) leaf-stalks. Keelakarai coast of Ramanathapuram district in Tamilnadu is known for exploiting perches in the Gulf of Mannar. A box type trap with 'D' shaped cross section made of split bamboo fastened using coir twines were operated at Kannur district of Kerala. This type of trap were found operated in rocky areas without any bait to catch *Etroplus suratensis* and *Lutjanus argentimaculatus*.

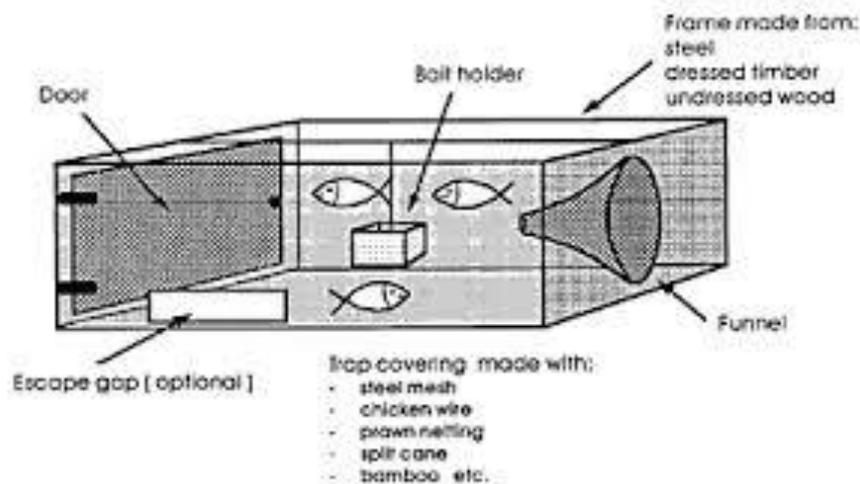


Fig 1. Different parts of fish traps

Factors that determine traps efficiency

Factors such as (i) trap material (ii) funnel design (iii) mesh size of the funnel and covering panel (iv) bait (v) bait holder (vi) escape vent and (vii) soaking duration have been studied by different scientists across the world.

Fish traps have been made up of both natural materials (split bamboo, canes, creepers, palmyrah leaf stalk fibers) and man-made materials (polyethylene, polyester). In Keelakarai coast of Tamilnadu, traps have been reported to be made by *Acacia planifrons* sticks of Odai tree, Eeecha tree, Palmyrah roots and Palmyrah leaves. Owing to technological advancement, manmade synthetic materials were brought to use in designing fish traps. Fish traps in the Virgin Islands of Caribbean Sea were originally made from woven hoop vine (*Trichostigma crandrum*) and split bamboo, however later they were replaced by poultry wire mesh panels. In Thailand, collapsible fish pots made up of galvanized frame structure covered with green coloured polyethylene webbing. Further, plastic coated metal traps were found to have more durability than traditional traps. The trap frame can be made up of reinforced steel, wood, plastic, combination of these materials, whereas the covering materials of the trap can be made from chicken wire mesh or galvanized wire or plastic coated wire.

Pots have been designed with single funnel positioned at the top of the trap, they have been designed with several funnels also. The inner end of funnel have been designed often in such a way it is directed downwards ("horse-neck") or constricted in some way to prevent escape. In Antillean fish traps, the funnel designed in such a way that it is kept opened downwards and its aperture is roughly ellipsoid in shape with the dimension of 15-20 cm wide and 30-35 cm long. Mesh size of the funnel and covering panel of trap has also been reported to be an important factor in deciding the catching efficiency of the traps. The fish trap with 1-inch hexagonal mesh panel was found to catch 17.9 times more fish than the trap made with 1.5 inch hexagonal panel. Further, trap made up of 1x 2 inch rectangular mesh was found to catch 9.5 times more fish than the trap made up of 1.5 hexagonal panel.

Bait is an important factor that decides both quality and quantity of fish species that enter into the trap. Good bait is basic necessity to achieve success in trap fishing. An ideal bait should start emitting chemical compounds which stimulate the fish get into the trap. The degree of attraction may vary with the type of bait and species involved. The actual pattern for how the smell of the bait is spread into the surrounding water is highly complicated and mainly dictated by currents, but also to a minor degree by diffusion. Both natural and artificial baits have been used in trap fishing. Escape vents are used in pot fisheries to maximize retention of large fish and to facilitate the escapement of under sized fishes. The vent opening area is an important factor which decides the degree of crab escapement in crab traps. In order to reduce the capture of fishes of undersized animals of target

species, bycatch and discards during pot fishing, use of escape windows or vents have been demonstrated and employed for the lobster and crab traps. Square shaped vent has been found to be superior over circular vent and further rectangular vent has been found superior over elliptical vent.

CONCLUSION

Traps are highly energy efficient low cost fishing gears with high size selectivity. Trapping allows some control over the species and sizes of the catch. The trap entrance, or funnel, can be regulated to control the size of fish that enter. Fresh and live catch ensure premium price to the fishers. Once the traps are set, the fishers can operate other gear or engage in other works to increase their income.

REFERENCES

- Lalmohan, R.S., 1985. A note on the changing catch trends in the traditional trap fishery of Keelakarai and Rameswaram. Regional Centre of CMFRI Institute,
- Meenakumari, B. K.V. Mohanrajan, 1985. Studies on Materials for Traps for Spiny Lobsters. *Fish. Res.*, **3**: 309-321.
- Remesan.M.P., Ramachandran.,2008. Fish traps in inland waters of Northern Kerala. *Fishery Technology*.vol. 45(2) pp:137-146