

ON THE USE OF DIFFERENT NATURAL BAITS FOR SEA-FISHING IN INDIA

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[Rod and line, hand-line, and fish traps are the different types of fishing gears wherein suitable fish baits are employed with a view to luring the catch. The coastal fishermen of India mostly use different types of natural fish-baits to catch fishes like Perches, Carangids, Sciaenids, Scombroids and Elasmobranchs. The reactions of the fishes caught to the different baits used are quite varied. Successful line fishing operations very much depend on the fish-baits. A detailed record of the variety of fishes caught, types of fishing and different baits used by the coastal fishermen of India has been made.]

The fundamental principles involved in commercial sea-fishing can be broadly classified under three major heads viz. Attacking, Snaring and Luring. The last two types of fishing alone accounts for the maximum of the total fish production from the seas. While snaring the fish-stock moving in a shoal or school with suitable designs of nets is by far the most widely practised form of fishing in India, luring the fish with a view to enticing them to enter a trapping contrivance or to bite a hook is equally popular with the coastal fishermen. The different types of fishing gears employed for the luring of fish are the simple Rod and line, Hand-line, trolling-line, the long-line, and the fish-traps. In all these fishing gears, the use of suitable baits is greatly responsible for a successful fishing operation. No comprehensive data on the use of different baits for sea-fishing in India has been collected in a systematic way except for few occasional passing references (Ramaswamy Ayyangar (1922), Hornell (1916, 1938 and 1950), Gopinath (1954), Chacko *et. al.* (1955 and 1956) and John *et. al.* (1959).

During a survey, it has been possible for the author to collect certain amount of basic information on fish baits that are commonly used by the coastal



Fig. 1

Fish caught : SEER (*Cybius*)
 Location : Off Cape Comorin.
 Gear employed : Trolling Lines.
 Bait used : *Chirocentrus dorab*.



Fig. 2

Fish caught : CARANX.
 Location : Off Madras.
 Gear employed : Hand Lines.
 Bait used : Live-prawns.



Fig. 3

Fish caught : SHARKS.
 Location : Off Madras.
 Gear employed : Long Lines.
 Bait used : Fish (dead)



Fig. 4

Fish caught : SHARK.
 Location : Madras State.
 Gear employed : Long lines with revolving chain hooks.
 Bait used : Beef.

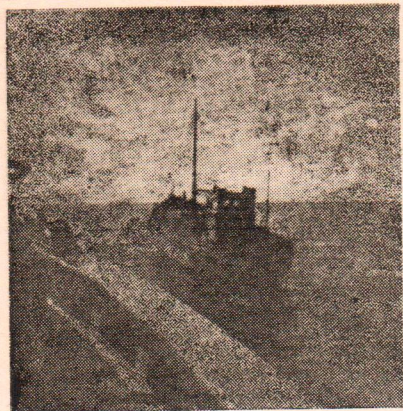


Fig. 1
Mother vessel M.F.V. "MADRAS"

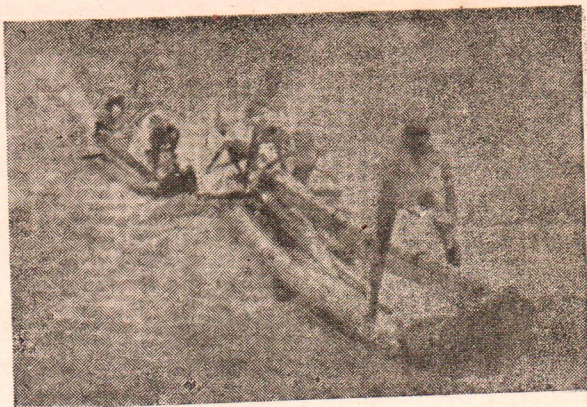


Fig. 2
The catamarans on tow

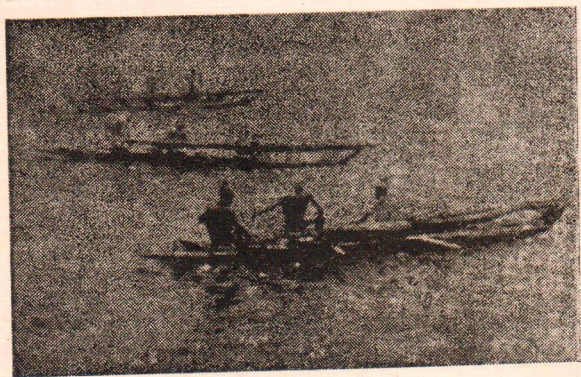


Fig. 3
Catamarans at the fishing site



Fig. 4
Catch on handlines.

fishermen in their regular line-fishing operations off both the coasts of India. Informations were collected by making frequent visits to the fishing villages and fishlanding centres. As an integral part of the survey many fishing trips were undertaken along with the local fishermen. A thorough scrutiny of the baits used by the fishermen and the composition of their daily catches were also made. Most of the important fishing centres on both the coasts of India were covered during the survey.

The details of fishes caught, the types of line-fishing made and the different baits used are presented in Table I. The most common baits used and the composition of fishes caught at various centres were identified as much as possible either in the field the same day or in the laboratory at a later date. The particulars are furnished in Table II.

TABLE I

Showing the variety of fish caught, methods of fishing and different baits used

Variety of fish	Type of fishing	Baits used	Remarks
Seer	Trolling line Hand line	Live prawns	Large specimens of 3' to 4' length are caught by trolling off Cape Comorin with silver bar fish and Trigger fish as baits. (Plate 1, Fig. 1.)
		Sardines	
		Anchovies	
		Ribbon-fish	
		Silver bar fish	
		Lizard fish	
		Trigger-fish	
Tuna	Trolling line Hand line Rod and line	Bombay-duck	Good fishery off Minicoy islands has been reported.
		Squids.	
		Live-Prawns	
		Sardines	
Big perches	Hand line Long line Perch traps	Anchovies	Good fishing in and around coral rocks, rocky-bottom and ship wrecks has been recorded. Giant rockcods have been caught in long-lines. Perch traps with baits are operated in Gulf of Mannar and Palk Bay.
		Small perches.	
		Sardines	
		Mackerels	
		Mulletts	
		Prawns	
Carangids	Hand line Trolling line	Crabs	Good landings recorded off Madras coast. (Plate 1, Fig. 2)
		Sea-cucumber	
		Live-prawns	
		Squids	
		Small fishes	
		Pieces of fish flesh.	

Variety of fish	Type of fishing	Baits used	Remarks
Sharks, Rays & Skates	Long line Hand line	Fishes Beef Squids Big crabs Turtle flesh Dolphin meat	Common on both the coasts of India; special revolving chain hooks with swivels are used by Government fishing units. (Plate I, Fig. 3 & 4).
Sword fish	Trolling line	Fishes	A specimen of 7ft. length was caught off Madras beyond 60 fms. in the trolling line with <i>Trichiurus</i> as baits
Miscellaneous Cat fishes, Eels, Flying fish, Barracuda, Jew fish, Coryphaena.	Hand line Trolling line	Small fishes Squids Crustaceans	Barracuda and coryphaena are caught off Madras in trolling lines with fish baits.

TABLE II

List of the most common baits used and the composition of the catch

BAITS	FISH CATCHES
FISHES	SEER
<i>Clupea longiceps</i>	<i>Cybius guttatum</i>
" <i>brachysoma</i>	" <i>commersonii</i>
" <i>fimbriata</i>	
<i>Engraulis purava</i>	TUNA
" <i>malabaricus</i>	<i>Katsuwonus pelamis</i>
<i>Dussumieria hasseltii</i>	<i>Euthunnes macropterus</i>
<i>Chirocentrus dorab</i>	<i>Thynnus thunnina</i>
<i>Scomber microlepidotus</i>	
<i>Stromateus</i> sp.	PERCHES
<i>Caranx kalla</i>	<i>Serranus undulosus</i>
<i>Equula</i> sp.	" <i>miniatus</i>
<i>Mugil cephalus</i>	" <i>salmoides</i>
" sp.	" <i>lanceolatus</i>
<i>Plotosus canius</i>	<i>Lutjanus sebae</i>
<i>Saurida tumbil</i>	" <i>Johnii</i>

BAITS	FISH CATCHES
<i>Harpodon nehreus</i>	<i>Lutjanus malabaricus</i>
CRUSTACEANS	" <i>rosens</i>
LIVE-PRAWNS :	" <i>rioulatus</i>
<i>Penaeus indicus</i>	<i>Lethrinus cinereus</i>
" <i>carinatus</i>	" <i>nebuloses</i>
" <i>semisulcatus</i>	" <i>karwa</i>
<i>Metapenaeus dobsonii</i>	<i>Pristipoma</i> sp.
" <i>affinis</i>	CARANGIDS
CRABS :	<i>Caranx rottleri</i>
<i>Scylla serrata</i>	" <i>affinis</i>
<i>Neptunes pelagicus</i>	" <i>malabaricus</i>
" <i>sanguinolentus</i>	" <i>atropus</i>
<i>Hippa</i> and <i>Albunea</i>	" <i>hippos</i>
SQUIDS	<i>Chorinemus moadetta</i>
<i>Sepia</i> and <i>Laligo</i>	" <i>toloo</i>
	" <i>lysan</i>
	<i>Trachynotus russellii</i>
	SHARKS, RAYS, & SKATES
	<i>Carcharias acutus</i>
	" <i>limbatus</i>
	" <i>melonopterus</i>
	<i>Galeocerdo articus</i>
	<i>Zygaena tudis</i>
	" <i>blochii</i>
	<i>Trygon sephen</i>
	" <i>uarnak</i>
	<i>Aetbatus narinari</i>
	<i>Dicerobatus</i> sp.
	<i>Rhynchobatus ancylostomus</i>
	SAIL FISH
	<i>Histiophorus gladius</i>
	MISCELLANEOUS FISHES
	Cat fishes : <i>Arius</i> sp.
	Eels : <i>Muraenesox telabonoides</i>
	Flying fish : <i>Exocoetus poecilopterus</i>
	Barracuda : <i>Sphyræna obtusata</i>
	" <i>acutipinnis</i>
	Jew-fish : <i>Sciaena diacanthus</i>
	Butter-fish : <i>Elacate nigra</i>
	Indian Dolphin: <i>Coryphaena hippurus</i>

Discussion

The success of line-fishing depends on various factors, the most important of which appears to be the choice and the availability of the right type of baits in sufficient quantities and the exact location of the fishing grounds. It is evident from the data collected that a good amount of commercially important fishes can be caught by hand-lines, long-lines and trolling-lines using different types of baits to lure them. On both the coasts of India, the catches were mostly made up of fishes like Seer, Tuna, Rock-cods, Jew-fish, Carangids, Leather - Jackets, Sharks Rays and Skates, besides few miscellaneous varieties.

Baits that were used by the fishermen were all edible types either living or dead. The use of modern artificial baits was totally unknown to the fishermen. The types of baits used were found to vary from place to place. Mostly small fishes, prawns and cephalopods (*Sepia* and *Laligo*) were utilised as baits and the results were found to be invariably good. Among fishes, small *Clupeids*, small *perches*, *Mackerel*, *Mullet*, *Ribbon-fish*, *pomfret*, *Silver-bar fish*, *Bombay - duck* and *Eels* were the most common varieties used as bait. Apart from these, the use of miscellaneous baits like sea-snakes, pieces of fish - flesh, beef, turtle - flesh, Dolphin-meat, Crustaceans like *crabs*, *Hippa* and *Albunea* and *polychaete* worms, were also common. The effectiveness of these baits were found to vary very widely and at the same time the feeding responses of the fishes caught also differed much. Some fishes were more responsive to live-baits than to dead - baits. At few places, the fish landings through baited hooks were comparatively better than the catches through nets. The best catches came from hooks baited with live-prawns *Sepia* or *Laligo* when used as bait during the absence of live-prawns gave equally good results. Fishes like Seer, *Barracuda* and *Carangids* always showed quick response to live prawns and the *Tuna* to live fish baits. There exists a rich Tuna fishery on the high seas off the South - west coast of India, the successful fishing of which is entirely dependent on the availability of suitable live-baits. Jones (1958) has given a brief account of this tuna live-bait fishery of Minicoy Island in the Indian Ocean. Some fishes are very voracious and are caught almost with any type of bait. Sharks in particular have been observed to bite the hook irrespective of the type of bait used and in fact on many occasions they have been found to take even the unbaited naked hook. However, beef, flesh of rays and skates, fishes and squids are the common baits employed for the catching of big sharks.

Fishermen setting traps for catching of percoid fishes in the Gulf of Mannar and Palk Bay use dried or decaying holothurians (*Holothuria atra*), pieces of crab *Neptunus pelagicus*, small clupeid fishes and jelly - fishes as effective baits. Prabhu (1954) has reported on the comparative efficiency of four different kinds of baits used for the capture of *perches*.

The important problems that are faced by the fishermen operating exclusively the fishing lines, at present are (1) the non-availability of the right type

of bait at the time of their need and (2) the procurement of live baits and keeping them alive till their actual use. Fishermen of Madras coast engaged in line fishing collect sufficient quantity of live prawns to be used as bait from the other fishermen operating nets in the in-shore waters and river mouths. The live-prawns thus collected are kept alive in a small purse like basket made of palmyra leaf tied alongside the catamaran and kept immersed in sea - water. The circulation of water through the basket ensures a free supply of dissolved Oxygen enabling the prawns to be alive and active for a considerable length of time. The live prawns are not fed under captivity and mortality has been noted under storage.

In the Indian Ocean, live-baits of numerous varieties of small fishes are used for tuna fishing only in the Maldives and in Minicoy in the Laccadives, Jones (1860). Indian fishermen use neither salted nor frozen fishes as bait. It is reported that fishermen of Minicoy Islands use coconut kernel cut in to small pieces as good bait at times when other baits like small fishes, flesh of hermit-crab and flying fish are not readily available for hand- line fishing operations, Ramaswami Ayyangar (loc. cit). It has been gathered that for want of suitable baits fishermen suffer great hardships at times. It has also been observed that the size of hook, the type of bait, the location of fishing ground and the methods of operation have some striking influence on the fish catch. The present survey reveals the need for further detailed studies on fish - baits.

Summary

Luring of fish with baited hooks is an important method of commercial sea-fishing that requires special attention in India to attain an International standard. As the success of this type of fishing greatly depends upon the types of baits or lures employed, studies on fishbaits form an important prerequisite. The basic details collected as a result of a comprehensive field survey are presented in this paper.

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