

PAWN FISHERY IN GUJARAT LOCATION OF NEW PRAWN GROUNDS OFF VERAVAL

SURVEY AND RESEARCH DIVISION

Department of Fisheries, Gujarat.

[Details about the three departmental vessels, *Gulf shrimp*, *Indian Salmon* and *Silver Pomfret* and gear in the exploratory fishing off Veraval coast are reported. Potential prawn fishing grounds have been located by their operation in section 20-70, 21-69 and 22-69 in the cruises conducted in October, 1962. Observation regarding suitability of gear and composition of catch are given. The possibility of better prawn grounds occurring in areas deeper than the present grounds is indicated.]

A glance at the chart of the waters of Gujarat would reveal the extent of the coastline with its two main gulfs on either side of the Saurashtra Peninsula and the vastness of the continental shelf all along the coast. The state of Gujarat stands third in the country in marine fish production and out of the 85,000 tons of marine fish landed in the State about 10% are constituted by prawns. Prawns form a major fishery in the Gulf of Kutch where the heavy influx of rain water flowing through the Banas river causes their migration into the estuary soon after the monsoons. Fishing in this area is carried on from July to September and again continued during the winter months of December and January after a break of one month in October. Fishing for prawns all along the gulf is restricted to the inter-tidal zone and upto 3 fathoms and staked bag nets and wall nets are mainly employed in the capture of prawns. A fishery of lesser magnitude also exists around the Gulf of Cambay where about 1000 to 1500 tons of small prawns are landed along with Bombay-ducks. The presence of these crustaceans in the alimentary canals of Daras which are caught in large numbers in the Gulf of Kutch and off Umbergaon in South Gujarat gives us an indication of the extent of its fishery in these areas.

With the export potentialities that have been created in the recent years for frozen and canned prawns the development of this fishery has been engaging the attention of the Fisheries Departments of most maritime States in the country. The location of virgin prawn grounds off Veraval since two years has developed a great interest among the fishermen and others engaged in the industry.

In October 1962 the three departmental survey vessels GULF SHRIMP, INDIAN SALMON and SILVER POMFRET conducting exploratory fishing with trawl nets off Veraval first located potential prawn grounds in sections 20-70, 21-69, and 22-69. These vessels were operating trawl nets rigged under the directions of Dr. H. Miyamoto of the F.A.O. when sizeable quantities of prawns were observed in the catches.

The Vessels

All the three vessels of the department are identical and locally built wooden boats (copper sheated) 49' in length and 13½' beam with a displacement of 30 tons and 5' draft aft. These are fully decked boats with a light for mast and a stronger short mast aft with a boom for handling trawl nets. There is an insulated fish hold amidships with a capacity of 10 tons and a wheel house with galley and bunks for the skipper, slightly hind of midships. Accommodation for crew is provided in the forepeak. These boats are powered with 6 cylinder Lister engines developing 87 H.P. at 1500 R.P.M. and power for driving the winch is taken from this engine. An auxiliary engine of 5 HP provides power for the generator. These are sea-worthy and sea-kindly boats well suited for trawling and the dentiful fore deck available make them convenient for gill netting also.

Deck-gear

The deck-gear consists of a winch (type B) of the Central Institute of Fisheries Technology approved design with a reduction of 1:42 and capable of taking 200 fathoms of 3/8" wire on each drum. The winch which is very sturdy is locally fabricated and can

take a strain of 5 tons on each drum. Power to run the winch is taken from the main engine with Vee-belt drive and the operation of the winch can be controlled from the wheel-house.

Vessels 'INDIAN SALMON' and 'SILVER POMFRET' have two gallows of the tripod type fixed on the deck on the port and starboard sides far astern with blocks overhanging the rails. GULF SHRIMP has a single gallow fixed at the stern slightly on the starboard side with two blocks for taking the wires. The pulley blocks overhang in such a way that the other doors are kept clear of the stern. The two warps are taken through snatch blocks hooked to the sides of the fore mast and passed over a set of guide blocks at the sides. In the case of INDIAN SALMON and SILVER POMFRET the wires run through the blocks of the gallows while in GULF SHRIMP they are taken through a pair of deck-blocks before passing through the gallows.

The Gear

These boats have been using trawl nets of different designs and dimensions and without any exception all the nets have been found efficient. Dr. Miyamoto who initiated the operations in October 1962 used 75' cotton trawl nets and these nets were found very efficient in catching demersal fishes and the catches averaged over 1000 kgs. for an hour's haul. He even remarked that the fishing grounds of the coast between Dwarka and Madhwar compared very well with the richest fishing grounds of the world. Since the 75' nets were found to be too big and overloading the engines, smaller versions of the same design were tried. The 45' cotton trawls offered the least resistance and the trawling speed which was about 2 nautical miles per hour could be increased to 2½ nautical miles per hour without any hazards. A brief description of the 45' net used on these vessels is given below:—

The 'Belly', 'square', 'wings' and 'Jibs' of these nets are of 15 thread cotton twine with 2¼" stretched mesh. The 'funnel' and 'throat' are of 24 thread twine with 2" stretched mesh and the cord end of 36 threads hard laid twine with 1½" mesh. The head rope is of ½" manila floated with 4½" diam. aluminium floats and for the ground rope ¾" old wire rope wrapped with sisal was

used. While rigging the nets and overhand of 2' was kept. Otter boards of 40 kg. each are connected to the wings with 6 fathoms manila legs (sweeps) and 3/8" wire ropes are used for towing the nets. Sixty three feet cotton nets and nylon nets of 45, 63 and 75 feet have been tried with encouraging results. The design of the 45' net is given in the figure attached.

Observations

- i) Even though the ground swept by a 45' trawl during an hour's haul was only 75% of that covered by a 75' net during the same period the catches of the smaller net averaged about 4/5th of the larger one;
 - ii) Otter doors of Russian design (oval, hydrofoyle) compared with doors of the conventional type gave better results, in terms of catching efficiency of the gear;
 - iii) *Metapenaeus affinis* and *Penaeus indicus* are the two main species caught off Veraval; the former are very seldom found in the Gulf of Kutch while the latter constitute about 7% to 45% of the prawn landings. The prawns caught off Veraval are of a larger size, generally varying from 10 to 14 cms. in length.
- Except for the river Bhadar which meets the sea near Porbunder there are no major rivers discharging much flood water into the sea nearabout Veraval. The occurrence of prawns in fairly large concentrations off Veraval is an interesting factor worth further investigations.
- iv) It has been consistently observed that the prawn composition in the hauls made during the early hours of the morning is very small. Prawn catch increases progressively in hauls made after 9 a.m. and decreases after mid-day. They are also found in a belt between 12 and 18 fathoms in muddy grounds where the gill net fishermen operate. The grounds also shift very rapidly. A systematic study of their movements is in progress.
 - v) Charts show that there appear to be suitable prawn areas away from the present grounds. Exploration of these areas has to be carried out and it is conceivable that a considerably larger area than now being fished may be found more productive. It seems likely that the newly discovered fishery will be of a permanent nature.



Fig. 1. Forty-nine footer combination boat

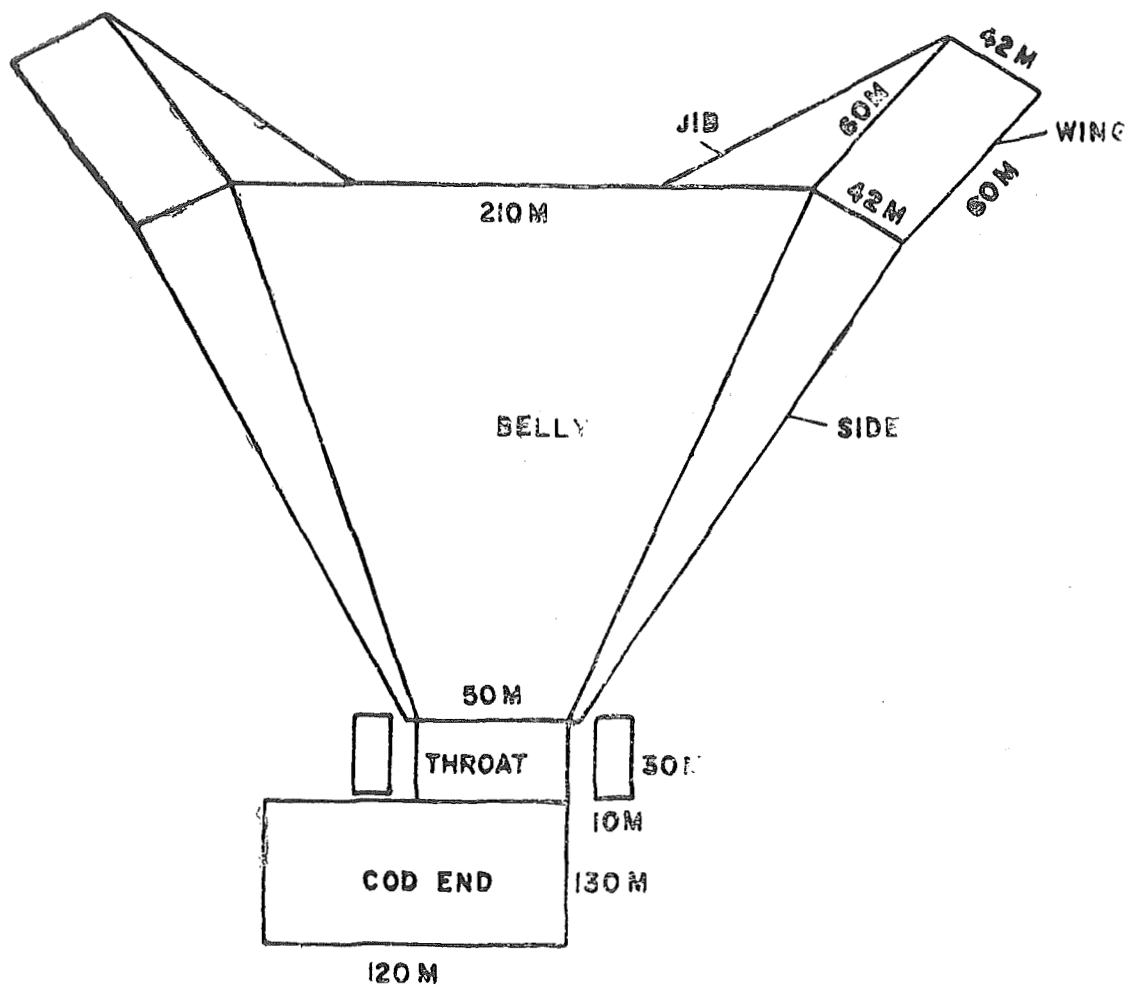


Fig. 2. Forty-five feet trawl-net