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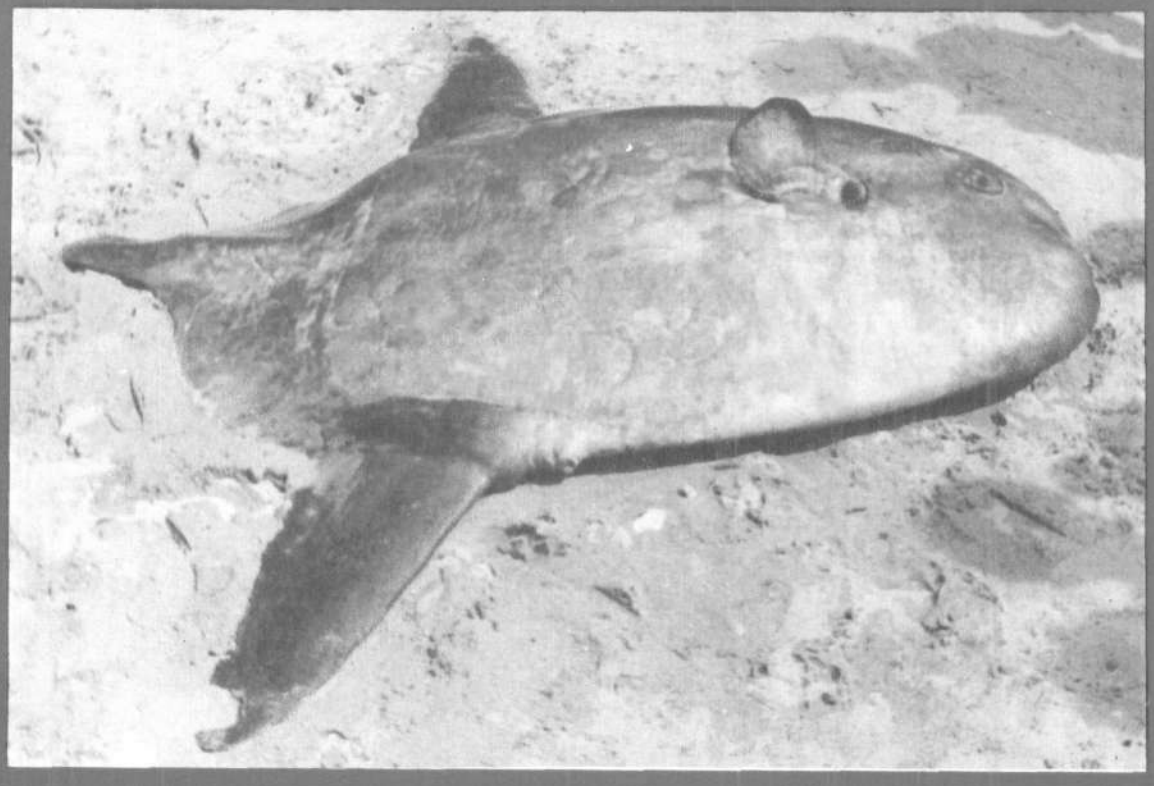

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DRIFT GILLNET FISHERY OF GOA

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Introduction

The average annual marine fish production of Goa has been of the order of 87,330 t during 1989-'91 forming about 4% of the all-India marine fish landings. Trawl, purse seine and drift gillnet fishing are the important means of production, contributing to 62.5, 31.1 and 6.4 per cent respectively of the total marine fish landings of the state. Although the indigeneous gears such as *rampani, yendi* and other smaller shore seines became less popular after the introduction of purse seine in Goa in early seventies, the drift gillnet (*Mag jaal*) continued to be in operation for catching bigger pelagics because of their greater economic returns. The mechanisation of traditional craft with out- board engine in recent years has given further fillip to this fishery and its emergence as a significant contributor to the marine fish production of the state. The present communication deals with the drift gillnet fishery of the state during the period 1985-'88.

Along the 153 km coastline of Goa, there are twelve drift gillnet landing centres. Of these, Calangute on the north and Vasco-Baina and Colva on the south of Panaji (Fig. 1) are the three major centres, where about 50 gillnetters each operate during the peak fishing season. Data were collected from these centres for the present study.

Drift gillnet fishing

Drift gillnet fishing is carried out mainly by plank-built canoes, with out-rigger (*odi*, size 7 to 10m long) fitted with 'Yamaha' or 'Kirloskar' out-board engines of 8-11 HP. The drift gillnet is made of pink coloured nylon thread with mesh size (stretched) varying from 8 to 14 cm, measuring 60 to 80 m long and 6 to 7 m wide. About 7 to 10 such pieces of nets are jointed together to form a net of 500 to 700m long providing required weights and floats to maintain the buoyancy of the net. Usually 4 to 5 fishermen who are engaged in the operation of the drift

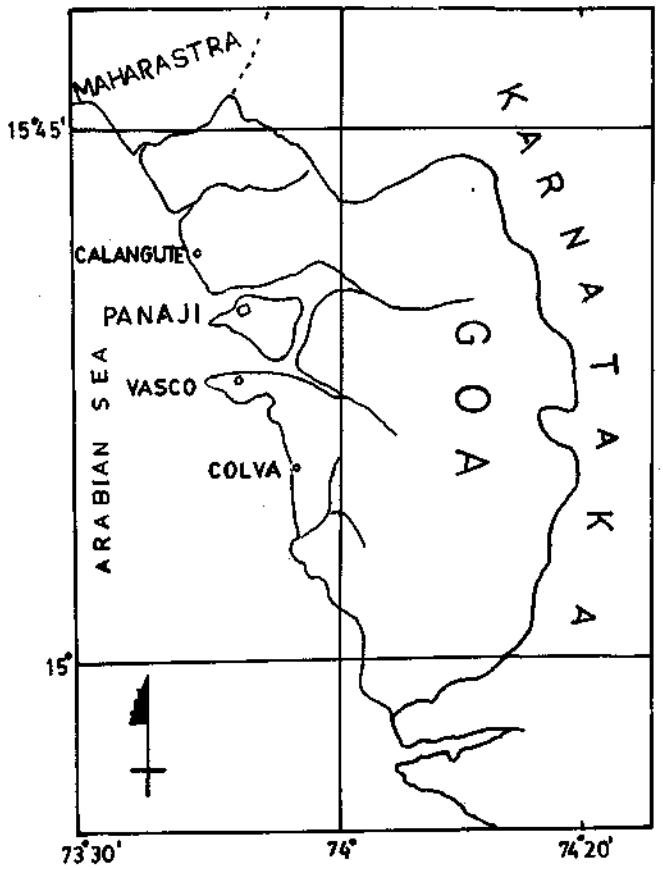

Fig. 1. Map showing major drift gillnet landing centres in Goa.

gillnet start for the fishing from the base between 1600 and 1800hrs, and on reaching the fishing ground which is located at 20-60m depth zone off the coast, set the net. The time taken for setting and soaking of the net is around 4hrs. and for taking one haul, about 1 to 2 hrs. Depending on the catch, usually 1 or 2 hauls are made during a trip. The more productive fishing grounds off Goa are found to be in 20-40m depth zone, though some of the boats also operate in deeper waters of 50-60m depth zone. The units return to the base on the following day morning between 0700 and 1000 hrs. The drift gillnet fishery at Goa generally starts from the first week of Septmeber after the south-west monsoon, and closes by the end of February. The peak fishing season is during October-November (Fig. 2).

Fishery

The estimated fish production by the drift gillnet fishery at the three observation centres during 1985-'86 was 442.2 t realised by 6370 units of effort at a catch rate of 69.4 kg. In the following year (1986-'87), the total catch increased to 645 t, although the effort expended

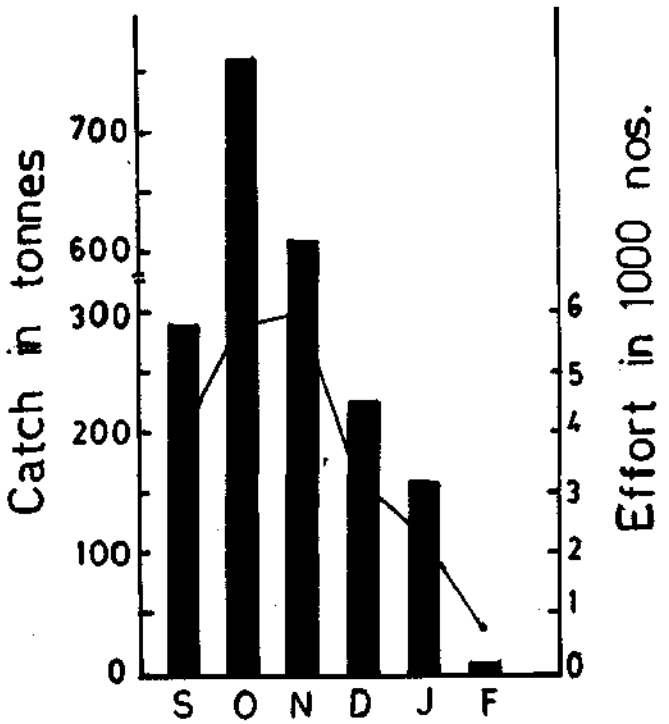

Fig. 2. Average estimated month-wise catch (t) and effort (nos) in the drift gill net fishing at Goa during 1985-'88.

(6343 units) was almost of the same magnitude. In 1987-'88, the total fish catch showed further improvement, being 990.5 t, the catch rate (136.4kg) showing 33% increase and the catch, 54% over those of the previous year. Thus the catch and the catch rate have been showing an increasing trend during 1985-'88 period.

Catch composition

The drift gillnet fishery is supported by several groups of fishes. Among them seerfishes contribute as an average to more than 50% of the total catch, followed by elasmobranchs (10.8%), tunas (9%), catfishes (6.9%), carangids (6.3%), wolf herring (4.9%), ribbon fishes (4.2%), pomfrets (3.6%) and other miscellaneous fishes (3.8%) (Fig. 3).

Seer fish

Maximum landings (554 t) of seer fish were recorded during 1987-'88, and the catch was composed of *Scomberomorus commerson* and *S. guttatus*. The former species dominated the catch with more than 60% of the total seer fish landing. The peak fishing season for seer fish was during October-November.

Elasmobranchs

Scoltodon sorrahkowa, Carcharhinus

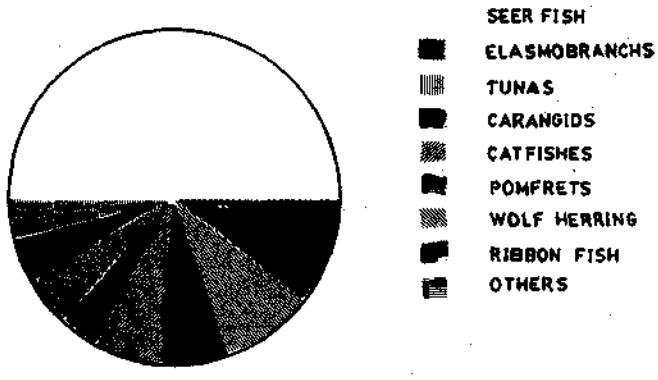

Fig. 3. Average catch composition of fish landed by drift gillnet during 1985-'88.

limbatus and *Sphyrna lewini* were the principal species constituting the elasmobranchs catch in the drift gillnet fishery in Goa. The annual landing of this group was highest (94.6 t) in 1986-'87. The main fishing season was from September to November and thereafter the fishery was observed to be lean till the close of the season in February.

Tunas

The landings of tunas showed an increasing trend during the three-year period of study. The lowest catch was 32.4 t in 1985-'86 and it gradually increased to 88.5 t in 1987-'88. Better landings were recorded during October and November and thereafter, the fishery phased out gradually. *Euthynnus affinis*, *Thunnus tonggol* and *Auxis thazard* were the major species supporting the fishery. Stray landings of *Sarda orientalis* were recorded during November 1985 at Colva centre.

Catfishes

This group was represented by *Tachysurus thalassinus T. dusssumieri*, *T. serratus* and *T. tenuispinus*. During the three years of observation, lowest landing was recorded in 1985-'86 (18.3 t) and the highest (67 t) in the following year. The catfish fishery was active throughout the season, although October witnessed better landings.

Carangids

The carangid catch in the drift gillnet fishery was comprised of *Alepes djeddaba*, *Megalaspis cordyla* and *chorinemus* spp. *Caranx ignobilis* was caught in stray quantity during November 1986. The highest catch of carangids was in 1987-'88 (72.2 t). Though the carangids were caught throughout the season, major landing was observed during October and November.

Pomfrets

The pomfret catch showed wide fluctuations from year to year. In 1985-'86, the catch was about 27.5 t and it declined by 2.7 times in the next year only to increase again by 1.2 times of 1985-'86 catch. The black pomfret, *Formio niger* and the white pomfret, *Pampus argenteus* were the major species, and the former formed the bulk of the catch.

Wolf herring

This group contributed to about 5% of the total drift gillnet landings at the observation centres. *Chirocentrus dorab* was the only species encountered in the catch.

TABLE 1. *Estimated landings of important species in the drift gillnet landing at Calangute, Vasco-Naina and Colva during 1985-1988*

Species	1985-'86			1986-'87			1987-'88			Grand total	cpue (kg)	%
	Catch (t)	cpue (kg)	%	Catch (t)	cpue (kg)	%	Catch (t)	cpue (kg)	%			
Seerfish	233.9	36.7	52.7	255.5	40.3	39.6	554.0	59.0	55.9	1043.4	47.2	50.2
Elasmobranchs	42.4	6.7	9.6	94.6	14.9	4.7	87.9	9.4	8.9	224.9	10.2	10.8
Tunas	32.4	5.1	7.3	65.2	10.3	10.1	88.5	9.4	8.9	186.2	8.4	9.0
Carangids	36.5	5.7	8.3	23.2	3.7	3.6	72.2	7.7	7.3	131.8	6.0	6.3
Catfish	18.3	2.8	4.1	67.0	10.5	10.4	58.7	6.3	5.9	143.9	6.5	6.9
Pomfrets	27.5	4.3	6.2	9.9	1.6	1.5	37.0	3.9	3.7	74.5	3.4	3.6
Wolf herring	41.5	6.5	9.4	23.8	3.8	3.6	35.9	3.8	3.6	101.2	4.6	4.9
Ribbon fish	Nil	—	—	71.0	11.2	11.0	16.4	1.7	1.2	87.4	3.9	4.2
Mackerel	0.9	0.1	0.1	2.3	0.4	0.3	2.7	0.3	0.3	5.0	0.2	0.2
Miscellaneous	7.7	1.5	2.9	32.6	5.1	5.1	37.2	4.0	3.8	79.5	3.6	3.8
Total fish	442.2	69.4		645.1	102.0		990.5	136.4		2077.8	94.0	
Total effort	6370			6343			9388			22101		

Ribbon fish

Although the ribbon fishes formed only a minor group in the drift gillnet fishery, in certain months, as in October and January of 1986-'87 they contributed to as much as 11% to the total landings. However, in later year, there was a drastic reduction in the catch, *Trichiurus savala* was the only species contributing the entire catch of ribbon fishes.

Mackerel

Occasionally large size mackerel were caught by the drift gillnets and in 1985-'86, their catch amounted to 0.9 t, which in the subsequent years increased to 2.3 - 2.7 tonnes.

Besides the above fishes, species such as *sphyraena* spp., *Coryphaena* sp., *Rachycentron canadus*, *Belone* spp., *Megalops cyprinoides*, *Psettodes erumi*, Dolphin fish, Sea turtle and perches were also caught occasionally, but their contribution was not significant.

Disposal of the catch

The quality fishes such as seer fishes and pomfrets are marketed locally by the fisher-women. The shark and rays are auctioned at the landing centre by the commission agents; later, these are sun dried and marketed in the local markets. The tunas which are sold to the merchants at the landing centre are transported to Bombay or to Kerala for marketing. The catfishes are generally utilised by the restaurants in Goa.

Remarks

In the present studies, contrary to the earlier finding, the drift gillnet fishery during 1985-'88 in major centres showed a steady improvement indicating its continued importance in the exploited fishery of Goa despite the fluctuations noticed. Further, it is also observed that in the small-scale fisheries sector, the drift gillnet fishing is significant as it exploits the higher value fishes such as seer fishes, tunas and sharks. With the location of potential grounds for sharks and tunas off Goa, it is envisaged that this fishery has better development prospects in the state.