



# समुद्री मात्स्यकी सूचना सेवा

## MARINE FISHERIES INFORMATION SERVICE

No. 126

JANUARY 1994



तकनीकी एवं TECHNICAL AND  
विस्तार अंकावली EXTENSION SERIES

केन्द्रीय समुद्री मात्स्यकी CENTRAL MARINE FISHERIES  
अनुसंधान संस्थान RESEARCH INSTITUTE  
कोचिन, भारत COCHIN, INDIA

भारतीय कृषि अनुसंधान परिषद  
INDIAN COUNCIL OF AGRICULTURAL RESEARCH

# FISHERY RESOURCES OF VERAVAL

K. K. Philipose

Veraval Research, Centre of CMFRI, Veraval - 362 269

Gujarat has undergone a blue revolution in the marine fishery sector during the past two decades. From a humble fish production of 82,159 tonnes in 1971 (7.1% of all India marine production) the production increased to 2.34 lakh tonnes in 1981 (17.0% of all India marine production) and further to 4.92 lakh tonnes in 1990 (20.1% of all India marine production). The six times increase in production during the past two decades is exclusively from the capture fishery sector which employs three types of machanised gear, viz. trawl, gill and 'dol' nets. A substantial portion of the catch is contributed by the Saurashtra coast. The introduction of commercial trawlers in 1967, mainly to capture shrimps for the export market and subsequent large scale expansion of the trawling activity to the present level of nearly 1200 trawlers were chiefly responsible for the blue revolution in Saurashtra coast.

Marine production at Veraval has undergone tremendous changes. Fish production increased from 33,827 tonnes in 1983 to 47,867 tonnes in 1988 and further to 1,15,703 tonnes in 1991. The increase in the production from 1989 was tremendous and unproportionate to the increase in the effort. This increase in the catch, although was very evident in the case of trawl landings, was also remarkable in the gill net catches (Table 1 & 2).

## Craft and gear

**Gill net :** Two types of crafts, wooden and FRP dugout canoes (with outboard engine) and plank built boats (with inboard engine) are used in gill net fishing. The gear is 'Khandari' (surface drift net of mesh size 65-85 mm) 'Jada jal' (mesh size 170-215 mm) and 'Dakkal' (surface or bottom drift net of mesh size 140-160 mm) operated either from the OBM or from IBM boats at depth of 20-45 m.

**Trawl net :** The trawling fleet consists of wooden boats of 14 m OAL, fitted with diesel

engine of 87-93 HP. The boats are designed for stern trawling with power winches. The gear operated are two or four seam shrimp trawls with head rope length of 22-24 m. The cod end mesh size is 8-12 mm. Most of the boats use flat rectangular otter boards of 64 x 140 cm size weighing 50 kg and trawl at an average speed of about two knots.

## Resources exploited by the gill net

Most of the pelagic resources are landed by gill nets at Veraval. Gill net catch and catch rate showed remarkable increase during the last ten year period (Table 1). The annual catch increased from 2,459 tonnes in 1983 to 8,732 tonnes in 1992. The catch rate also increased from 9.3 kg per hour to 24 kg per hour.

Fishes belonging to ten groups formed about 92% of the gill net fishery. Tunas dominated the fishery forming 21% of the catch followed by elasmobranchs, seer fish, carangids and cat fish (Table 3). In the recent years, tunas especially the Indian long tail tuna *Thunnus tonggol* and the yellow fin tuna, *T. albacares* assumed significance by increased landings and export demand. The second important component of the gill net fishery is the ribbon fishes. The ribbon fishes especially *Trichiurus lepturus*, *T. savala*

TABLE 1. Annual effort, catch and catch rate of the gill netters at Veraval from 1983-1992

Year	Efforts (h)	Catch (t)	Catch rate (kg/h)
1983	263105	2459	9.3
1984	261845	4121	15.7
1985	245290	5039	20.5
1986	226362	5023	22.1
1987	201910	3353	16.6
1988	197403	3402	17.2
1989	203388	5321	26.1
1990	336652	6165	18.3
1991	403094	12804	31.7
1992	362329	8732	24.0

TABLE 2. Annual effort, catch and catch rate of the commercial trawlers at Veraval from 1983-1992

Year	Efforts (h)	Catch (t)	Catch rate (kg/h)
1983	512304	31368	61.2
1984	604032	46073	76.2
1985	523302	37800	72.2
1986	664157	43777	65.9
1987	713518	35925	50.3
1988	614793	44465	72.3
1989	733961	67049	91.3
1990	716487	78081	109.0
1991	760646	102899	135.3
1992	783655	96483	123.1

and *Euplogrammus* spp. constitute this fishery at Veraval. The annual elasmobranch catch by the gill net is about 2,500 tonnes. *Scoliodon laticaudus* and *Carcharhinus limbatus* are the major shark species and *Aetobatus* spp. and *Rhinoptera* spp. are the major ray species landed at Veraval. Pomfrets, *Pampus argenteus* and *Formio niger* form good fishery during the monsoon months.

Gill net fishing is conducted throughout the year with less intensity during the south west monsoon. Barring clupeids, the catches of all the other groups were maximum during August-September i.e. during the last phase of monsoon (Said Koya and Vivekanandan, 1992, *Mar. Fish. Infor. Serv., T & E Ser., No. 116 : 1-4*).

#### Resources exploited by trawl nets

Trawl landings in Veraval increased from 31,368 tonnes in 1983 to 78,081 in 1990 and further to 1,02,899 tonnes in 1991. The catch rate also increased from 61.2 to 135.3 kg/h

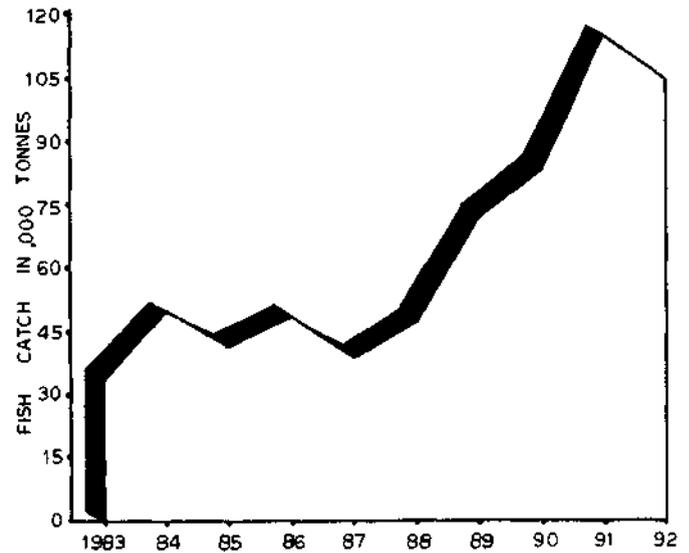


Fig. 1. Annual fish catch at Veraval during 1983-1992.

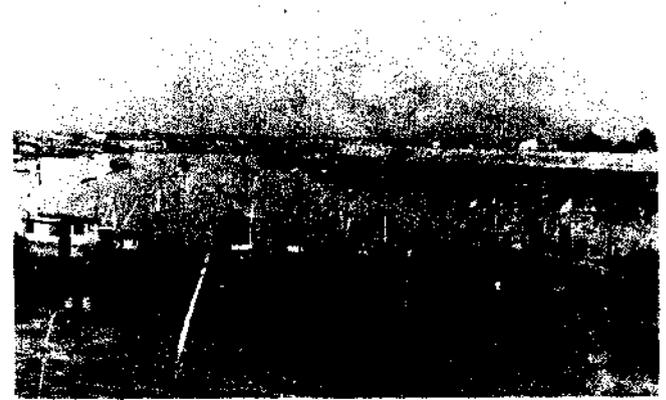


Fig. 2. Fisheries Harbour, Bhidiya, Veraval.

TABLE 3. Composition of the gill net catch at Veraval during 1992 (in percentage)

Group	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
Elasmobranchs	24.50	19.85	27.07	12.28	26.60	25.20	14.23	11.00	23.74	20.21	2.52	7.53	17.13
Ribbon fish	0.76	0.35	0.48	3.43	3.16	1.24	3.99	0.26	1.54	0.80	2.64	1.00	1.32
Tunas	17.7	38.21	28.70	20.14	3.35	0.69	0.13	0.59	5.59	35.05	28.12	20.65	21.00
Seer fish	3.04	8.60	6.10	9.02	3.25	3.21	27.11	3.71	3.94	3.02	30.73	43.61	13.63
Carangids	20.80	4.71	7.00	3.55	8.56	5.67	14.60	6.73	10.50	8.62	5.00	4.63	8.26
Cat fish	4.41	9.08	8.41	29.10	21.50	10.06	4.28	7.16	9.58	2.21	4.75	1.88	8.10
Clupeids	4.69	4.50	6.69	4.22	9.20	21.31	12.34	4.25	13.50	8.05	9.04	5.18	7.10
Sciaenids	3.77	4.96	5.64	5.70	13.80	7.96	7.06	7.82	14.24	3.71	2.57	3.52	5.96
Pomfrets	2.35	0.51	0.85	0.98	2.87	19.36	9.87	55.52	4.47	1.49	0.97	1.44	6.17
Dorab	2.26	2.01	1.15	4.77	1.72	0.67	1.99	0.64	5.96	4.87	5.16	2.70	3.00
Others	15.49	7.12	7.86	6.73	5.83	4.58	4.45	2.23	6.83	11.91	8.44	7.81	8.19



Fig. 3. Fisheries harbour, old light house, Veraval.

during this period (Table 2). The increase was remarkable from 1988 onwards.

The composition of catch showed an absolute dominance of crustaceans. Crustaceans as a group formed 54.7% of the total catch.



Fig. 4. Gill net catch being unloaded at old light house, Veraval.



Fig. 5. Gill net catch being unloaded at old light house, Veraval.

Ribbon fish and scianenids formed 13.7% and 12.1% of the catch respectively. However, the most significant change in the trend of the fishery was observed in the case of prawns. From a mere 2,335 tonnes in 1979-'80, the prawn landings increased to 27,304 tonnes in 1990 and further to 48,146 tonnes in 1992. The increase in catch was very high and unproportionate to the increase in effort.

Penaeid prawns and non penaeid prawns formed 78.9%, 12.2% of the crustacean catch respectively. Lobsters, crabs and stomatopods formed the rest of the catch. The monthly percentage composition of 13 major groups, forming 96% of the trawl catch shows that the period succeeding the monsoon is the most productive (Table 4).

Among the penaeid prawns *Parapenaeopsis stylifera*, *Metapenaeus monoceros* and *Solanocera crassicornis* formed most of the catch. The spiny



Fig. 6. Ribbon fish being unloaded at old light house, Veraval.

TABLE 4. Composition of the trawl net catch at Veraval during 1992 (in percentage)

Group	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
Sciaenids and 'Ghol'	13.20	16.60	13.60	12.30	8.16	5.18	—	—	10.90	7.56	15.50	14.92	12.10
Ribbon fish	7.20	11.40	13.20	23.10	20.69	46.40	—	—	15.22	8.82	14.48	15.60	13.70
Threadfin bream	0.39	0.27	0.13	0.20	0.28	0.61	—	—	0.53	0.17	0.29	0.39	0.28
White fish	1.80	2.53	2.84	0.98	0.71	—	—	—	3.80	0.73	0.59	3.52	1.63
Perches	2.09	1.04	0.51	1.07	0.85	0.29	—	—	0.59	0.84	9.93	3.88	2.74
Clupeids	5.01	4.45	2.60	2.40	2.31	8.88	—	—	6.85	1.72	4.75	4.55	3.68
Elasmobranchs	1.75	2.18	1.42	1.07	0.82	0.49	—	—	1.40	0.96	1.44	1.57	1.35
Eel	0.64	0.87	0.47	0.47	0.33	0.64	—	—	0.30	0.21	0.86	0.57	0.50
Flat fish	4.05	4.00	4.32	0.33	1.04	1.68	—	—	2.34	0.61	0.84	1.55	1.83
Cat fish	0.64	0.43	0.23	0.58	0.03	1.45	—	—	0.56	0.18	0.64	0.53	0.40
Pomfret	0.16	0.13	0.14	0.08	0.10	—	—	—	0.21	0.10	0.24	0.22	0.15
Crustaceans	53.09	46.79	51.20	48.46	58.19	29.06	—	—	50.92	74.63	42.30	47.00	54.70
Cephalopods	2.62	3.20	2.78	3.98	2.40	1.11	—	—	1.34	1.54	4.41	2.61	2.75
Others	7.2	5.9	4.59	4.89	4.01	4.14	—	—	4.96	1.85	3.65	3.03	4.09



Fig. 7. A trawler returning after a long trip, from the northern Kutch.



Fig. 8. Part of the long trip prawn catch.

lobster, *Panulirus polyphagus* and the sand lobster, *Thenus orientalis* represented the lobster fishery.

*Sciaenids Protonibia diacanthus*, *Johnius* spp., *Otolithus* spp., cat fish *Arius dussumieri*, *A. thalassinus*, *Osteogeniosus militaris*, Clupeids *Chirocentrus dorab* and *Ilisha megaloptera* are the important fin fish resources landed.

Compared to the landings during 1983 the percentage composition of the finfish groups to the total landings has substantially changed during 1992. This is due to the increase in the crustacean catch especially of *Acetes*. *Acetes* catch, which was only 2.7% of the total in 1979-'82, increased during the past years and formed 43.2% during 1992. However, despite the change

in the percentage composition of the selected groups during the decade, the landings of all the groups barring pomfret has increased.

Trawling commences by mid September every year, after a prolonged monsoon break of about four months. The catch and catch rate used to be very high in October and October remains the month of primary peak in the trawl landings of the season. The catch and catch rate although high, gradually decline since November and reach the lowest in February. The landings increase from March and form a secondary peak in April. This trend of forming a primary peak in October and a secondary peak in April was observed repeatedly in the last many years (Vivekanandan *et al.*, 1991, in press). During the

quarter, October-December, the total landing was 48.2% of the annual landings against a moderate effort of 40.8%. From this observation it is very clear that the quarter succeeding the monsoon is more productive than other seasons. The increase in the trawl landings, in the recent years was the result of two separate factors.

i. A gradual reduction in the cod end mesh size from 20-25 mm to 8-12 mm in just a period of five years.



Fig. 8. Gill net landing centre, Jaleswar, Veraval.

ii. Changes in the area of fishing, mainly to the northern fishing grounds, off Kutch.

Another resource of great importance is the whale shark, *Rhincodon typhus*. Although whale sharks are landed occasionally since many years, it is only in the past three years that they formed a regular fishery at Veraval. During 1992, about 1000 numbers of whale sharks were caught at Veraval.

Whale sharks are caught regularly, throughout the year, except during the closed season, for its fins and liver. Fins of a single whale shark fetch Rs. 25,000 to Rs. 40,000 and liver Rs. 6,000 to Rs. 10,000. After removing the fins and liver the carcasses, each weighing 8-15 tonnes are usually towed back and left in the open sea. The Saurashtra coast is abound with fishery resources. The catch and effort increased manifold in the last decade. Resources like *Acetes*, ribbon fish and sciaenids are landed in large quantities. Presently as much as 60% of the trawl catch, including the entire *Acetes* catch is utilised to make low value fish meal. An effective programme to conserve these resources is to be prepared on a priority basis, so that this valuable resource can be efficiently utilized.