

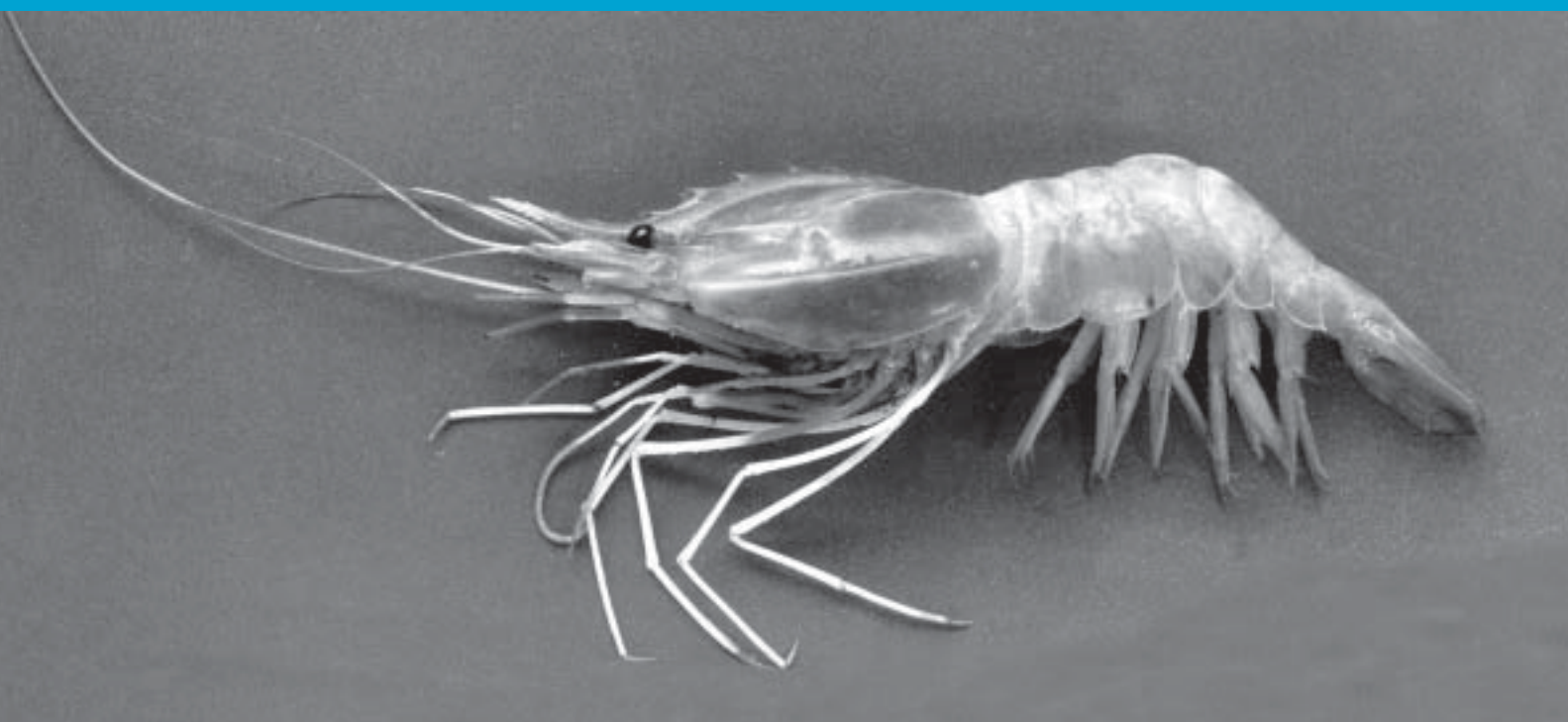
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Veraval is the most important fish landing centre of Gujarat. The fluctuations in the landings of Gujarat are mainly governed by the landings at Veraval (Fig. 1). The average annual contribution of Veraval to the landings of Gujarat is about 32%. Veraval has two landing points viz. Veraval Old Lighthouse (VRL OLH) and Veraval Bhidya. Trawl net (TN), Gillnet (GN), Outboard Gillnet (OBGN) and Hooks & Lines (H&L) are the major gears operated at Veraval.

The estimation of marine fish landings during 1991-2001 made by the Fisheries Resources Assessment Divisions of Central Marine Fisheries Research Institute formed the basis of the study.

Trawlers and gillnetters were the main craft at Veraval. At Veraval Bhidya there were three types of trawlers (a) trawlers below 35' OAL and horse power (H.P) ranging from 45-52. (b) trawlers between 35' and 40' OAL and H. P. ranging from 45-68 and (c) trawlers above 40' OAL with H. P. ranging from 88-118. Larger trawlers (about 1200 in number) were most common at Bhidya, whereas medium types were nearly 25 numbers and there were only 3 smaller ones. Among motorised crafts 44 numbers were fibre type boats and wooden dugout canoes were only 12. Among non-motorised crafts, 7 were FRP and 5 very small canoes.

At Veraval (OLH), there were about 47 trawlers of 30'-35' OAL (45-58 H.P.); 176 trawlers between 36'-40' OAL (55-105 H.P) and 847 trawlers above 40' OAL (85-118 H.P) Among traditional motorised craft 33 were dugout canoes and 248 were FRP. Among non-motorised traditional craft, 6 were FRP and 27 small wooden canoes.

There were 17,466 trawl nets, 24,860 gillnets, 24 cast nets and 800 hooks at Veraval (Bhidya). At VRL (OLD), 12493 trawlnets, 1,44,490 gillnets and 66 cast nets were in operation. About 100 trawlers operate hooks & lines

(for *R.typos* fishing) during February - May period every year before the ban on shark fishing came into force and hooks & lines boats were having average 8 hooks. Trawlers operate gillnet (*jada jal*) for big fishes during monsoon season. Gillnets include *Jada jal, jal* and monofilament nets.

The commercially important resources landed at Veraval were sharks, cat fishes, croakers, ribbonfishes, penaeid prawns, non-penaeid prawns, crabs and cephalopods. An annual average of about 6800 tonnes of sharks were landed at Veraval. Most common species were *Scoliodon* spp., *Carcharhinus* spp. and whale sharks. These whale sharks occurring from February to May were caught by H&L. They contributed to the bulk of landings of sharks. The year 1995 recorded the highest landings of sharks (12,700 tonnes) and the least landings was during 2001 (1,900 tonnes).

The landings of catfishes (Average 1600 t) were higher during October to March. *Arius* spp. was the most abundant. The year 1998 recorded the highest landing of catfishes (5,600 tonnes) and the least during 1991 (1,200 tonnes). More than 80% of the landing of cat fishes were by trawl net.

Although Bombay-duck is very common in north-west region, only an annual average of 235 tonnes were landed at Veraval. Its contribution to the total landings at Veraval was less than 1% and 95% of Bombay-duck landings were by mechanised trawl net. They were also recorded in OBGN landings in small quantities. The maximum landings of Bombay-duck was recorded during 1996 (586 tonnes) and the least during 1991 (only 15 tonnes).

An average of about 23,000 tonnes of croakers were landed at Veraval. More than 10,000 tonnes were landed during fourth quarter followed by first quarter with an average of about 9,000 tonnes. Landing of croakers

were highest during the year 1998 (34,000 tonnes). More than 85% of the landings were by trawl net especially by long voyage units. Apart from *Johnius* spp. and *Otolithus* spp., *Protonibea diacanthus* and koth were caught from Veraval.

On an average about 21,000 tonnes of ribbonfishes were landed annually at Veraval. About 15% of the catch occurred during October to December. An average of more than 5,000 tonnes occurred during January-March. *Trichiurus* spp. was most abundant. During the last five year from 1995 onwards, the ribbonfish landings were highest during the year 1997 (36,000 tonnes), least during 1995 and the landings fluctuated. About 99% of the ribbonfish landings were by trawl net of which 80% were by long voyage trawlers.

Among crustaceans, the largest component was non-penaeid prawns. An average of about 32,000 tonnes were landed annually at Veraval. More than 50% landed during October-December period. About 90% were landed by trawl net mainly from long voyage. *Acetes*, *Nematopalaemon tenuipes* and *Exhippolysmata* were the abundant species among non-penaeid prawns at Veraval.

The average catch of penaeid prawns was about 11,000 tonnes. They were landed abundantly during October-March period. Landings of penaeid prawns showed an increasing trend from 8,000 tonnes in 1993 to about 17,000 tonnes in 1998 and showed fluctuation thereafter. *Parapenaeopsis stylifera*, *Penaeus semisulcatus*, *Solenocera* spp., *Metapenaeus affinis*, *Parapenaeopsis hardwickii*, *Metapenaeopsis stridulans*, *Metapenaeus kutchensis* were the main species. More than 85% of the landings were by mechanised long voyage trawlers and others by short trip trawl net.

The maximum landing of crabs occurred during 2000 (11,100 tonnes) with an annual average of about 5,000 tonnes. First quarter recorded the highest with an average of about 2,800 tonnes followed by the second

quarter with 2,200 tonnes. *Charybdis* spp and *Portunas* spp. were maximum. About 90% were caught by long voyage trawlers.

Cephalopod landings increased from 8,000 tonnes in 1991 to 14,000 tonnes during 1998. October-December period recorded the highest landings (7,000 tonnes). First quarter registered an average of about 3,800 tonnes and the least occurred during third quarter with an average of about 600 tonnes. About 95% of its landings were by long voyage trawlers. *Loligo* spp, *Sepia* spp., *Sepiella* spp. were the main groups occurring at Veraval.

Seasonal change

The maximum landings (Average 81000 t) at Veraval were during the fourth quarter, followed by the first quarter (55000 t). The landings decreased during April-June period and the least landings occurred during third quarter (Fig. 2). The average landings during these period were about 28,000 tonnes and 10,000 tonnes respectively. Trawl net (both long trip and short trip) landings and short trip outboard gillnet landings were in tune with that of total landings. But long voyage gillnet and outboard gillnet contributed their highest landings during first quarter. H&L contributed its highest landings during second quarter in 1993, 1995 and 1998. Landings of sharks and crabs were maximum during January to May.

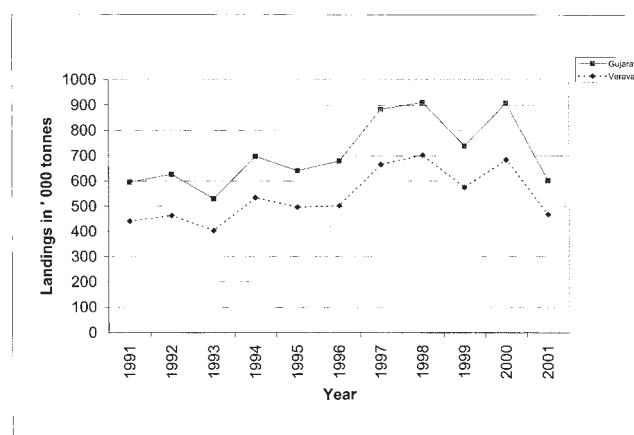


Fig. 1. Yearwise landings

Gearwise contribution

More than 80% of the landing at Veraval is contributed by long trip trawlnets. They usually land at night after spending 4 to 5 days in the sea. Each night landing consists of 80 to 150 boats. Due to landing and unloading problems only 200 to 250 trawlers land at the landing centre. Also fishermen and their association have decided to land limited boats at the landing centre to control fish prices. There are two types of trawl nets - fish trawl and shrimp trawl. The mesh size of fish trawl net range from 180 - 190 mm at the top; cod end range from 15 mm to 20 mm. The mesh size of shrimp trawl nets range from 50 to 55 mm at the top and 8 -10 mm at the cod end. Sciaenids, *Trichiurus* spp, perches, *Scomberomorus guttatus*, *Scoliodon* spp, *Arius* spp, *Decapterus russelli* etc. are the main resources that are caught by fish trawl and penaeid prawns, non-penaeid prawns, *Acetes*, cephalopods etc. are caught by shrimp trawl. The resource wise composition in the trawl net were sharks (1.7%), catfishes (1.6%), croakers (14.6%), penaeid prawns (7.8%), non-penaeid prawns (21.6%) and cephalopods (6.7%). Among croakers, *Otolithoids biauritus* (koth) and *Pseudosciaena diacanthus* are the larger types. The long trip trawlers operated at a depth of 50 to 60 meters and made 16 to 20 hauls during 50 to 60 hours of fishing operation. The average landings per boat was nearly 5 tonnes. The short tip trawlers fish at a depth of 30 to 35 metres and the average landings per boat was about 600 kg. The maximum landings by

long trip trawl unit occurred during 2000 (194,000 tonnes) and the least during 1993 (75,000 tonnes). Landings of short trip trawl net showed decreasing trend. Maximum landings by the short trip occurred during 1996 (22,000 tonnes) and the least was during 2001 (14,000 tonnes) The highest landings of both long trip and short trip trawlers occurred during October to May period and their catch rates were highest during the fourth quarter.

Gillnet

Usually four types of gillnet fishing such as the long trip gillnet, short trip gillnet, long trip outboard gillnet and short trip outboard gillnet (OBGN) were in operation at Veraval. During monsoon due to ban of trawl net, trawlers do gillnet fishing. The average catch per year of the long trip gillnet fleet was 400 tonnes, that of short trip gillnet was 120 tonnes, that of long trip OBGN was 250 tonnes and that of OBGN was 3900 tonnes. Unlike in the case of trawlers the catch does not seem to increase by multiday fishing using gillnets. In the case of long trip mechanised gillnet January - March season recorded the highest catch (250 tonnes). Next comes July - September period yielding 135 tonnes. The least catch was during April - June period with an average of 80 tonnes. Landings of short trip mechanised gillnet was highest during July - September period with an average of 500 tonnes followed by January - March with an average of 120 tonnes, October-December with 105 tonnes and the April - June period registered the least landings - an average of 100 tonnes. There was no fishing by long trip OBGN during monsoon period. The landings were more during January - March period and less during October-December period. The seasonal trend was like that of trawl net having highest landings during October - December period and least during July - September period. At Veraval, OBGN operated at a depth range 12 - 20 meters and 4-5 persons were engaged in fishing per boat. They usually operate six hours per trip and made six hauls.

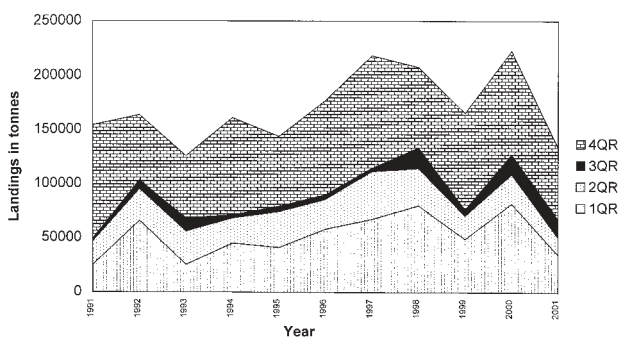


Fig. 2. Quarterwise landings

Hooks & lines

At Veraval, some trawlers were converted into hooks & lines fishery exclusively for whale shark (*Rhiniodon typus*) locally known as Berror fishing. The fishing started from February and continued up to June and landed generally at Veraval (Bhidya). *R.typus* weighed about 5 to 12 tons. They were fished to get liver and caudal fins. Liver was used to extract oil. Each hooks & lines contain average 8 hooks. Unlike other gear landings, H & L landings was highest during April to June. An average of 2,100 tonnes was landed during

this period followed by January - March season with an average of 1,260 tonnes, October to December period with an average of 790 tonnes and the least landings occurred during July - September period with an average of 106 tonnes. The catch rate also exhibited similar trend. The abundance of catch by H&L was due to the presence of *R. typus*. Ban imposed on whale shark fishing, from 2001 onwards considerably reduced H&L operation and their landings.

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