

Review Article

Marine Fish Landings of Karnataka, India: A Review

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In this article a short review on the trends in marine fish landings of Karnataka state of India is presented. Due to enforcement of the proper marine fishing regulations, maintenance of the proper hygiene and sanitation in the marine fish landings and a total of 320 km of coastline, Karnataka holds a good potential for the marine fisheries in the country and sustaining livelihoods of 1.5 lakh plus fishermen and fisherwomen. Marine landings of 5.01 lakh tons in 2019 contributes 14.07% to the total landings of country securing fourth position. The 59% of demersal resources landed in the state is due to major share of non-conventional fish redtoothed triggerfish (*Odonus niger*). The mechanized sector has almost increased to 96% in the last 10 years because of the increase in the trawlers and purse seiners. Thus the state supports good scope of marine fisheries in the country contributing to food security and income & employment generation.

Keywords: Coastal; Indian oil sardine; Karnataka; Mangaluru; Triggerfish**Introduction**

The demand for fish has been increasing as the health conscious people prefer to buy more fish than meat because of the rich protein and low cholesterol content. India is a sub-continent which is surrounded by waters on the three sides has a greater chance for fishing and its allied activities. Being a tropical country is blessed with highly diverse marine fishery resource in its 2.02 million square km of Exclusive Economic Zone (EEZ) with a 530000 square km of continental shelf area. The coastline of India measures about 8129 km, which is bounded by nine maritime states and two union territories. Marine fisheries have emerged as one of the largest sector in the country employing more than 14.5 million people. It is validated as a sunrise sector and fishing is an occupation for most of the coastal regions contributing to national income, foreign exchange and employment generation.

India is the second largest producer of fish in the world both in the total fish production and aquaculture. Fisheries sector in India has shown impressive growth with an average annual growth rate of 10.88% during the year from 2014-15 to 2018-19. The fish production in India has registered an average annual growth of 7.53% during last 5 years and stood at an all-time high of 13.76 Lakh Tons (LT) during 2018-19. The export of marine products pegged at 1289651 tons worth Rs.46662.85 crores (USD 6.68 billion) during 2019-20. Frozen shrimp remained the major export item in terms of quantity and value followed by frozen fish [1].

Statistics on marine fisheries in India is closely monitored by the Central Marine Fisheries Research Institute (CMFRI) since the 1947. CMFRI plays a pivotal role in the field of fisheries research in India, focusing on various aspects of marine fisheries, which target sustainable fish production and well-being of fishermen communities. Ever since its establishment in 1947, the Institute has grown significantly in developing a creditable research infrastructure and scientific expertise, enabling a multidisciplinary approach in marine capture as well as culture fisheries. The marine fisheries sector

of India, which contributes about 45% of the total fish production of

the country, plays a noteworthy role in supplying protein rich food to the growing population and attracts rewarding foreign exchange earnings through seafood export [2]. In accordance with the global trends in marine fisheries management, the fishing industry in India should also attempt to meet the challenges of formulating a successful management system that addresses sustainability issues

Marine Fisheries of India

Indian coastline materialize by nine maritime states (Five on the west coast – Gujarat, Maharashtra, Goa, Karnataka and Kerala; and Four on the east coast – Tamil Nadu, Andhra Pradesh, Odisha and West Bengal) is bound by the Arabian Sea on the west and Bay of Bengal on the east. India's marine fish production registered 3.56 million tons showing a marginal rise of 2.1% in 2019 compared to 2018 [3]. The total marine fish production of the country has increased from 2.26 MT to 3.56 MT in the last 25 years registering a growth of 57.52%. In 2019, Tamil Nadu stood at first position with total landings of 7.75 LT, Gujarat shifted to second position with landings of 7.49 LT and Kerala remained at third position with landings of 5.44 LT.

Marine Fisheries of Karnataka

Karnataka state with a coastline of 320 km along the southwest coast of India is one of the frontline state in the country in marine fisheries development. During 1957, Karnataka emerged as a separate maritime state having 27000 square km of continental shelf area and 87000 square km of EEZ. Historically Karnataka coast is referred as "mackerel coast". The three major maritime districts of Karnataka are Dakshina Kannada, Udupi and Uttara Kannada. Dakshina Kannada district has a coastal line of 42 km from Talapady in South to Mully in the North. Udupi district stretches from Kodi Hejamady to Gangoli with 98 km of coastline. Uttara Kannada has the longest coastline of 162 km with natural harbors and ports like Karwar, Binaga, Chendiya, Balekeri, Tadri, Ankola, Gangavali, Kumta, Honnavar, Manki, Murudeshwar, Shirali and Bhatkal. Dakshina Kannada district has

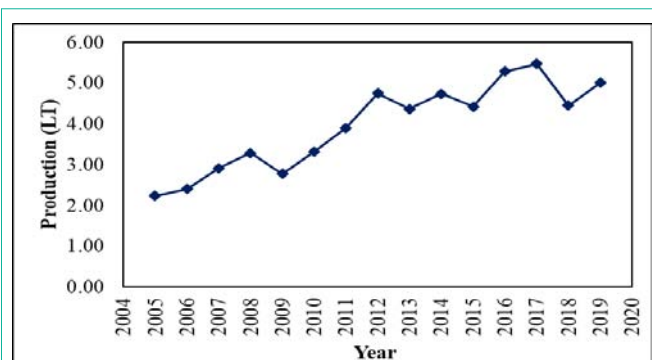


Figure 1: Trends in marine fish production of Karnataka in last 15 years (from CMFRI, 2020).

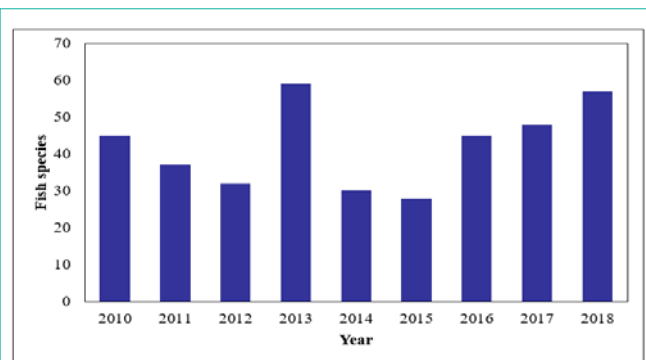


Figure 3: No. of species studied in detail for biological characteristics by CMFRI.

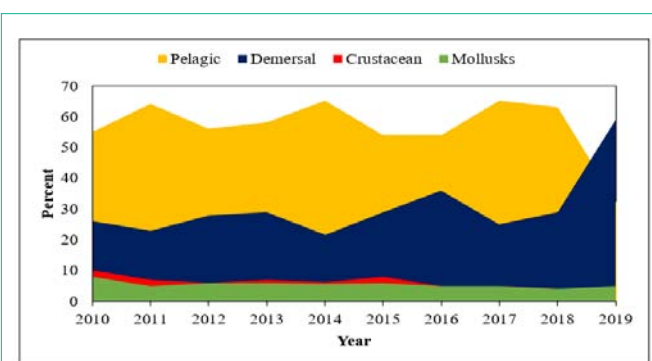


Figure 2: Trends in percentage contribution of different marine fisheries resources of Karnataka.

14 marine fishing villages Udupi district has 56 and Uttara Kannada district has 83 marine fishing villages.

In 2019, the total estimated marine fish production of the state was 5.01 LT standing at fourth position in the marine fish landings of the country [3]. The marine fish catch of the state has substantially increased from 2.24 LT to 5.01 LT in last 15 years (2005-2019) registering a growth of 5.51% each year and there is a rise in 10.90% compared to 2018 (Figure 1). Karnataka has crossed five lakh tons for the first time in 2016 and at present all-time highest catch was recorded in the year 2017. Mangaluru and Malpe were the principal harbours which contributed more than 60% of the total landings of the state. Mangaluru coast is well known for its multi-species and multi-gear fisheries and the fishery oceanographic features of this region are true representation of the Malabar upwelling system. The Mangaluru fish landing centre is a buzzing place with around 20,000 to 30,000 people at any given time during the normal fish landing period. The landing centre harbors around 1337 trawl boats, 57 purse seiners, 1420 motorized boats and around 534 traditional boats. At present most commonly used fishing gears are trawl net, purse seine, ring seine and gill net. In Dakshina Kannada district, around 1.5 lakh people are engaged in fishing and fisheries related activities that are directly or indirectly connected to the landing centre. Some of the people are engaged in direct fishing, while some are engaged in post-harvest process such as cleaning, washing, icing, ice making, pickling, fish drying, marketing etc. The Bunder port not only engages people from the Dakshina Kannada but also the fishermen communities from neighboring states like Kerala and Tamil Nadu and also different

northern states like Bihar, Chhattisgarh, etc. [4].

In Karnataka, pelagic finfishes always dominate in the marine fish landings but in 2019 demersal resources dominated the catch because of the major landings of triggerfish (*Odonus niger*) [3]. The pelagics found in Karnataka are Indian oil sardine, Indian mackerel, ribbon fish, anchovies, *Thryssa* sp., carangids, seer fishes, tunnies, etc. The demersal fishes found are bulleeyes, threadfin breams, croakers, lizard fishes, pomfrets, triggerfish, elasmobranchs and catfishes. High valued crustacean forms the third largest resources which includes shrimps, crabs, lobsters and stomatopods. Mollusks resources like squids, cuttlefish, octopus, bivalves and gastropods stands at fourth position. Year wise different marine fisheries resources of Karnataka is presented in Figure 2.

The different resources landed along the Karnataka coast were studied for their biological as well as sustainable characteristics by scientists from CMFRI and different fisheries colleges and research institutes. CMFRI studies the different biological aspects through rapid stock assessment method. Every year different numbers of species are studied in detail based on abundance status and availability of the samples in required numbers. The trends in the numbers of species studied which includes pelagic, demersal, crustaceans and mollusks resources of Karnataka are present in Figure 3. The highest of samples were studied in 2013 ($n=59$) and lowest in 2015 ($n=28$).

The fishery in the state is categorized into three sectors based on the type of fishing crafts used namely mechanized, motorized and non-motorized. Fishing crafts that use machine power for both propulsion of the fishing craft as well as operation of the fishing gear are termed as mechanized crafts, whereas motorized are those fishing crafts that use machine power only for propulsion of the craft. The non-motorized fishing crafts do not use machine power of any kind [2]. More than 9 different types of craft gear combinations are used for harvesting marine resources in Karnataka waters.

The motorized and non-motorized sector operate close to the shore within 12 nautical miles (nm) and at depths ranging from 2 to 8 m. The mechanized multi-night trawlers operated mostly beyond 12 nm at depths ranging from 10 to beyond 200 m. The extent of purse seine operation was off Karnataka coast at depths ranging from 13.5 to 98 m and that of gillnets at depths ranging from 20 to beyond 100 m [5]. In 2019, mechanized sector contributed nearly 96% followed by motorized (3%) and non-motorized (1%). Year wise landings from

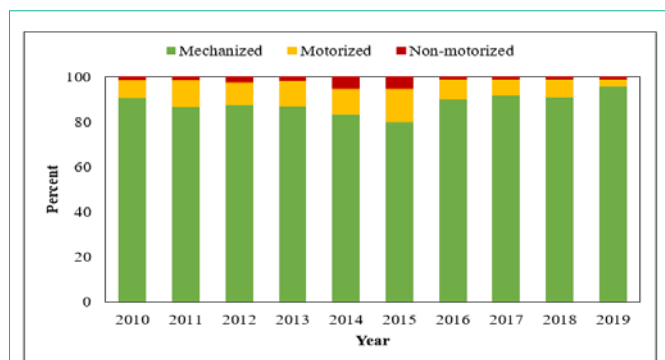


Figure 4: Trends in percentage contribution of different fishing crafts of Karnataka.

Table 1: Valuation of marine fish of Karnataka at landing center and retail level.

Year	Valuation (Crores)	
	Landing center	Retail center
2019	7118	10030
2018	6442	10470
2017	6397	9488
2016	6247	9108
2015	4620	7690
2014	3422	6260
2013	2490	4550

different fishing crafts of Karnataka are presented in Figure 4 [3]. It is observed that the sector has now shifted from subsistence fishing to the status of a multi-million industry. The mechanized sector almost increased to 96% compared to 90% in 2010 and traditional or non-motorized sector has almost reached to less than 1% in the landings.

Valuation of Fish Landings Across Karnataka

The estimate of the value of marine fish landings during 2019 at landing center level and retail level was 7118 crores and 10030 crores respectively which contributed 11.69% and 10.86% respectively to the total valuation of the country [3]. The valuation of landing center level and retail level of the past 7 years is present Table 1. The value

has consistently increased from 2490 crores to 7118 crores at landing center and from 4550 crores to 10030 crores at retail level in the last seven years. The landed fish is either sold fresh on harbour or it is transported to the different local markets; to different homes through fish vendors and retailers; to fish processing units in Mangaluru or nearby states like Goa, Kerala and Tamil Nadu or it is transported to the fish meal and fish oil plants for further byproducts preparation.

Conclusion

Karnataka has major role in the livelihoods of lakhs of fishermen in the coastal districts of state. The major setback in the marine fish landings of the state was observed when the landings of the Indian oil sardine of the state was reduced by 58.32% in 2018. Despite of different unusual cyclonic storms in 2019 the landings of Karnataka has increased 10.90% in the year 2019 which is mainly due to the huge production of commercially important non-conventional fish red-toothed triggerfish, *Odonus niger*. But in 2019 the major setback was observed in the landings of Indian Mackerel, *Rastrelliger kanagurta* which was the topmost resource of the state in 2018 has shifted to the 5th position in 2019. Thus future prospects of marine fish landings of state in expected lesser because of the upsurge of COVID-19 pandemic and resultant total lockdown in the entire state during 2020. The marine fish landings of state in 2020 is expected to decline due to reduction in the fishing days and disruption in the whole supply chain of the marine fisheries sector. Nevertheless, different alternatives schemes and policies need to draft by the state government for the upliftment of the livelihoods of the coastal fishermen and fisherwomen.

References

1. Nazeer MA. Frozen shrimp remain major export item followed by frozen fish. Aqua International. 2020.
2. Suyani NK, Rajesh M, Rathore SS. Status and situation of marine fisheries in India. Aqua International. 2019; 46-52.
3. CMFRI. Marine fish landings in India 2019. Technical report, ICAR-Central Marine Fisheries Research Institute, Kochi. 2020; 24.
4. College of Fisheries Mangalore. Impact of Lockdown on Fishing Community. 2020.
5. CMFRI. Annual Report 2014-15. ICAR-Central Marine Fisheries Research Institute, Cochin. 2015.