

Large Pelagics fisheries along Odisha coast – An overview

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Abstract

The large pelagics fishery along Odisha coast is supported by resources such as seerfish, queenfish, tuna, barracuda, cobia, needlefish, billfish, dolphinfish and rainbow runner. The annual landings of large pelagics during the period 2007-2019 showed marked fluctuations with a declining trend and average landings of 5711 tonnes. Seerfish contributed 43% of total large pelagic landings followed by queen fish (31%), tuna (14%) and barracuda (7%). Major gears contributing to the landings were long lines (36%), followed by trawl nets (24%), gill nets (22%) and ringseines (11%). The fishery for large pelagics peaks during January to March and October – December periods with lowest landings during the April -June months and coinciding with a monsoon fishing ban period. These fishes which have low demand in local markets due to its large size and high prices are mostly iced immediately after auctioning and sent to distant markets. The fishery is mostly restricted to nearshore coastal waters without any deep sea fishing vessels. There is need to explore options of introducing deep sea vessels with proper storage facilities, developing infrastructure facilities for landing and processing, skilling fishermen and developing marketing and export linkages.

Keywords: Large pelagics, Odisha, seerfishes, queenfishes, catch utilisation

Introduction

Odisha has a long coast line of 480 km and six coastal districts: Ganjam (60 km), Puri (155 km), Jagatsinghpur (67 km), Kendrapara (68 km) Bhadrak (50 km), and Balasore (80 km) with 605,514 fisher folk populations (CMFRI, 2010). The large pelagics fishery along Odisha coast is supported by seerfish, queenfish, tuna, barracuda, cobia, needlefish, billfish, dolphinfish and rainbow runner. The present study documents their landings trend, species composition, exploitation pattern, crafts and gears involved and marketing.

Fishery trends

The annual landing of large pelagics during the year 2007-2019 along the Odisha coast has shown a declining trend (Fig.1). The large pelagics such as seerfish, queenfish, tuna, barracuda, cobia, needlefish, billfish and dolphinfish contribute to the fishery. Among them, the highest landings were of seerfish and queenfish whereas tuna, barracuda, cobia, needlefish, billfish, dolphinfish and rainbow runner were landed seasonally. The estimated marine fish landings of Odisha coast was 1.02 lakh tonnes (t) in 2019 in which the large pelagics constituted 5.3%.

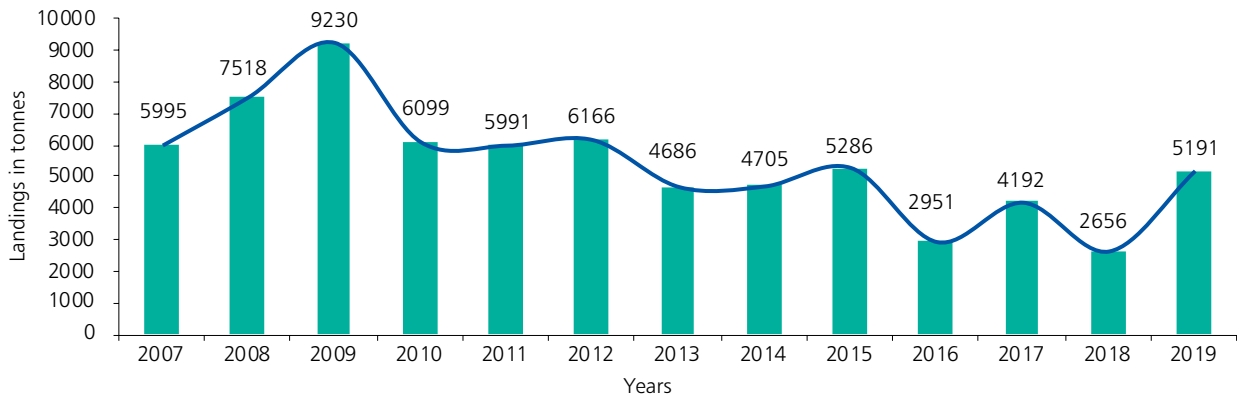


Fig.1. Trend of landings (t) of large pelagics along Odisha coast during 2007-2019

During the 2007-2019 period, seerfish was the most dominant group with an average landing of about 2321 tonnes, constituting 43% of total large pelagic landings along the coast (Fig.2). Seerfish landings have shown a declining trend with highest landing of 3150.5 t recorded in 2009 and lowest of 1643.2 t in 2019. The queenfishes, with an estimated average landing of 1697.8 t formed 31.2% while contribution of tunas to the total large pelagics was only 14% with an average annual landing of about 740.6 t. The estimated average landing of barracudas during the period was 383.2 t contributing 7.0% of total large pelagic landings, indicating a declining trend. Cobia landings also indicated a declining status, contributing 2% to the total large pelagic landings of the state, with average annual landings of about 125.8 t. Needle fish landings has shown an increasing trend with an average annual landings of 99.7 t contributing 1.8% of the total large pelagic catch and highest landing of 248.2 t was recorded in 2019 (Fig.3). The contribution of billfishes and dolphinfishes to the total large pelagic landings along Odisha coast is negligible at 0.7 and 0.5% and average annual landings at 39.3 and 28.2 t respectively during the period. Rainbow runner forms a fishery in certain years with highest landings of about 2.8 t recorded in 2019.

Different crafts were operated for fishing large pelagics in Odisha. Along the Ganjam coast, mostly outboard fibreglass boats (9 m Overall length (OAL) and 9-10 hp engine) were operated, followed by catamarans (6-7 m OAL) and inboard fibreglass boats (12-14 m OAL and 10-40 hp engine). On Puri coast, outboard fibre glass boats (9.6 m OAL and 9-10 hp engine), non-motorized plank built boat/fibre boat (5-6 m OAL) and a few trawlers

(12-17 m OAL and 105-280 hp engine) were operated. Along Jagatsinghpur coast, highest number of outboard fibre glass boats (6.2-9 m OAL, 8-14 hp engine) were operated, followed by multiday trawlers (10-16 m OAL and 68-365 hp engine) and inboard plank built boats (10-14 m OAL and 9-26 hp engine). In Kendrapada coast, the major crafts were inboard plank built boats (9.5-15 m, 20-106 hp engine), followed by trawlers (11-16 m OAL, 68-350 hp engine) and outboard fibre boats (7.5-10 m OAL, 8-14 hp engine). On Bhadrak coast, inboard plank

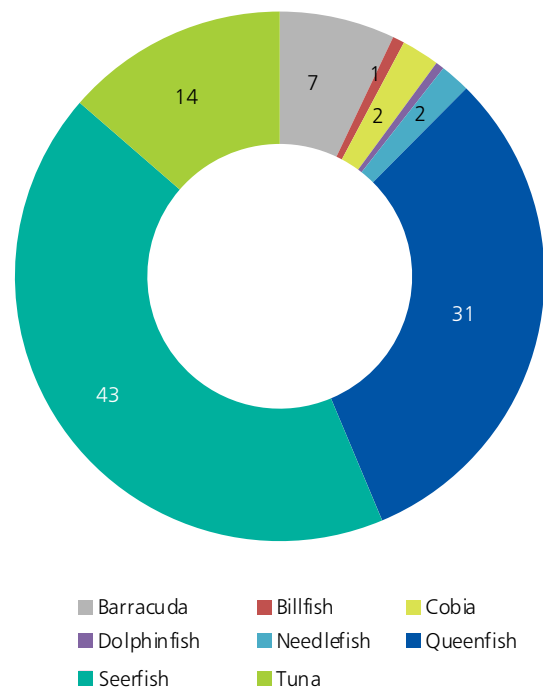


Fig.2. Average groupwise contribution to landings of Large pelagics (2007 - 2019)

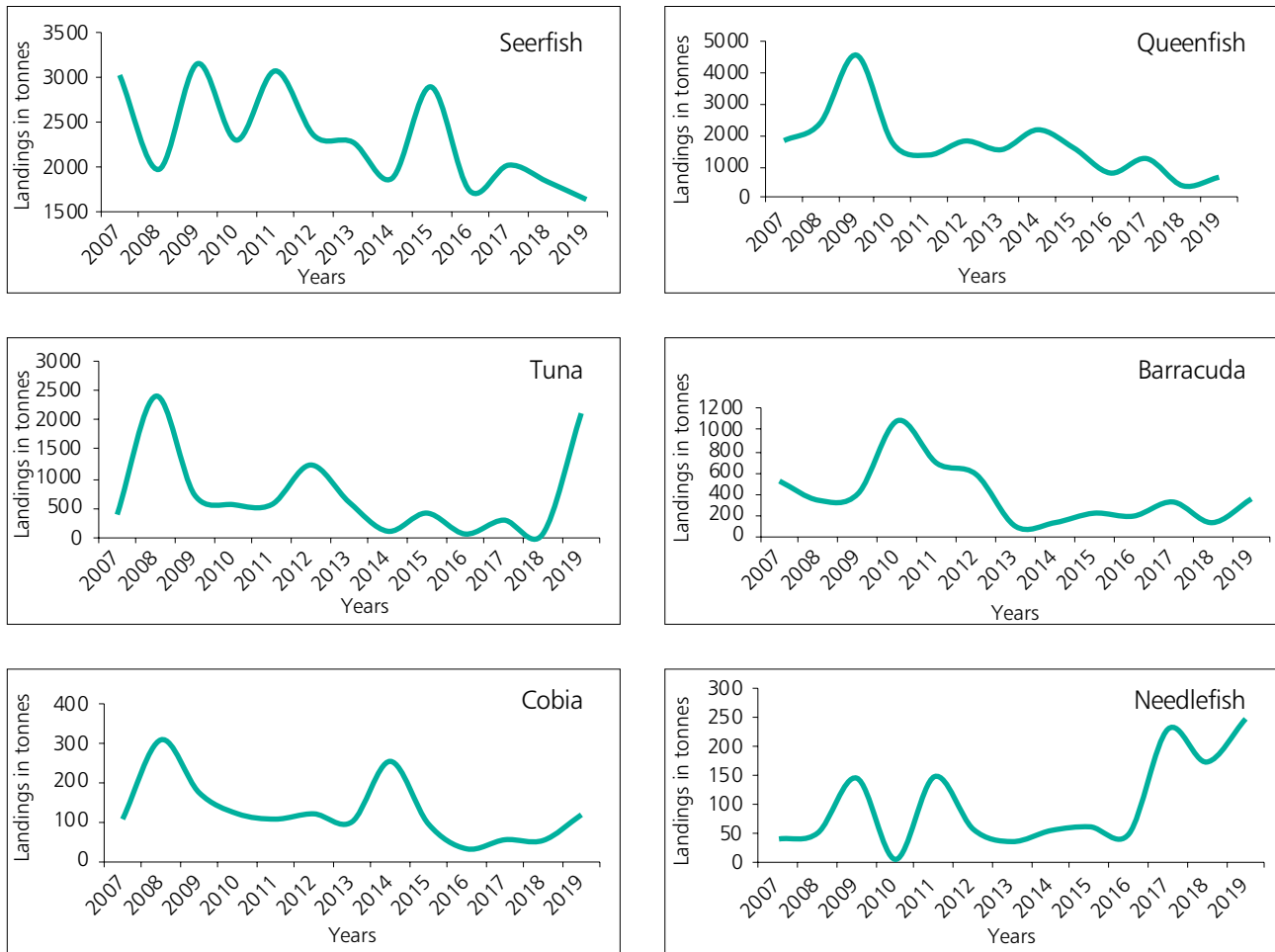


Fig.3. Trend of annual landings (t) of Large pelagics along Odisha coast during 2007-2019

built boats (9.8-14 m OAL, 10-245 hp) and multiday trawlers (11.5-16 m OAL, 68-350 hp engine) were the major crafts involved in the large pelagics fishery. Along Balasore coast, the major crafts were inboard plank built boats (7.5-16.8 m OAL, 10-350 hp engine), followed by multiday trawlers (10.6-18.4 m OAL, 68-450 hp engine) and non-motorized plank built boats (7-10 m OAL). Trawl nets, gillnets and long lines were used to capture large pelagics in almost all the coastal district of Odisha. However in Ganjam, trawling is not practiced, all other gears including ringseines are operated to capture large pelagics. Trawlers operate trips for 5-15 days duration while longlines and gillnets conduct both single day and multiday (2-5 days) voyages.

Along the Jagatsinghpur coast, multiday trawlers (7-15 days) operate at about 40-75 km away from the coast at water depths of 50-60 m from the surface whereas gillnetters (2-3 days) operate at 30-40 km

distance at water depths of 30-45 m. Along the Puri coast, gillnetter cum liners operate at 25-50 km away from the coast at water depths of 15-35 m whereas multiday trawlers operate at 15-50 km distance and water depth of 20-35 m. Similarly, along Balasore and Bhadrak coast, trawlers operate at 22-55 km from the shore at water depths about 28-42 m whereas gillnetters operate at 7-40 km distance at water depth 6-28 m. Along the Kendrapada coast, the pattern of fishing and fishing ground is similar to Bhadrak. In Ganjam coast ringseines are operated at 5-50 km distance from the shore and at 10-40 m water depth from surface, gillnets at 5-50 km distance at 5-50 m water depth and long lines at 20-100 km distance at 50-100 m water depth. Along Ganjam coast fishing is mostly restricted to single day operations except for long lines where two days fishing is practiced. In multi-days fishing, fishes are iced on-board immediately after harvesting whereas in single day fishing, fishes

are brought directly to the landing centre without any preservation using ice.

Major gears deployed that contributed to the landings of large pelagics were Hooks and lines (36%), followed by trawl nets (24%), gill nets (22%) and ringseines (11%). Non-mechanised gears (4%), shoreseines (1%) and other gears (2%) contributed the rest (Fig.4). Gear-wise catch data analysis during the year 2007-2019 revealed that a declining trend was observed for almost all gears (Fig.5). Seasonal landing trends during 2012-2019 indicated that the fishery attained its peak during the January to March and October – December periods with lowest landings during the April -June months and coinciding with the monsoon fishing ban period (Fig.6).

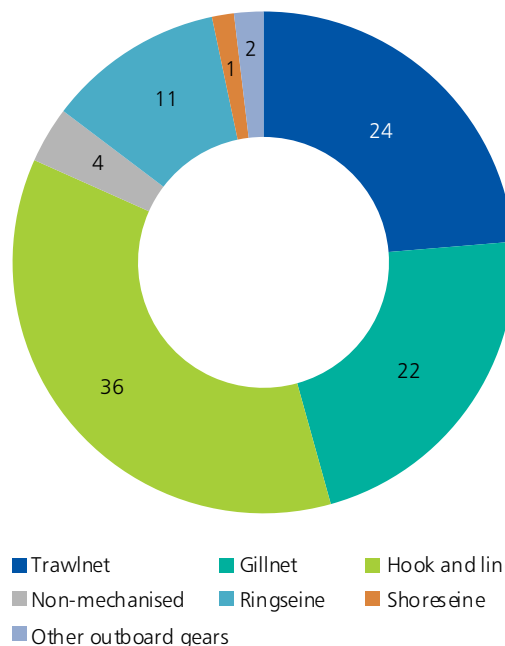


Fig.4. Average gearwise contribution% to large pelagics landings in Odisha during 2007 -2019

Narrow-barred Spanish mackerel *Scomberomorus commerson* contributed about 50% of the seerfish landings, followed by *S.guttatus* while Wahoo *Acanthocybium solandri* was only rarely recorded in the landings. Three

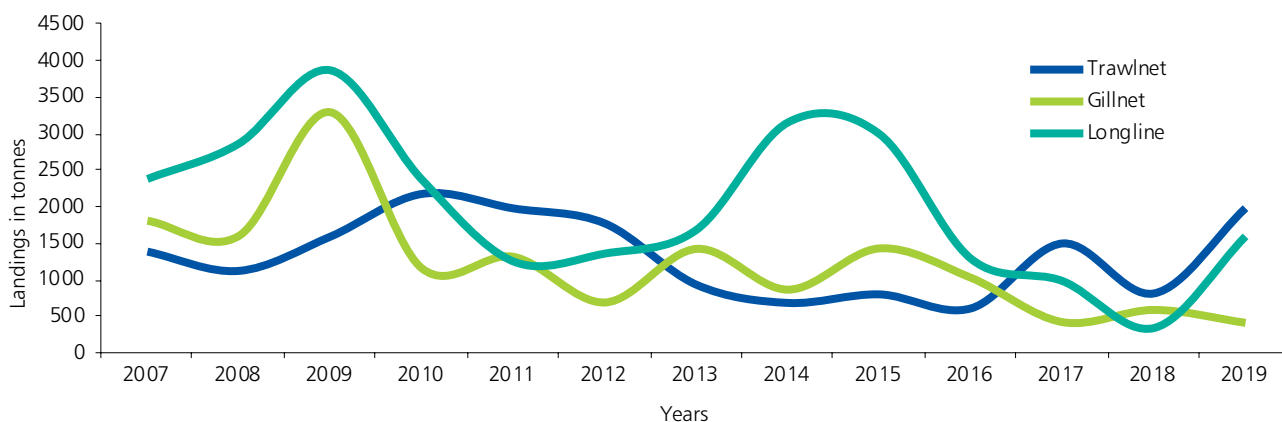


Fig.5. Annual landings trends of large pelagics in major gears along Odisha coast in 2007-2019

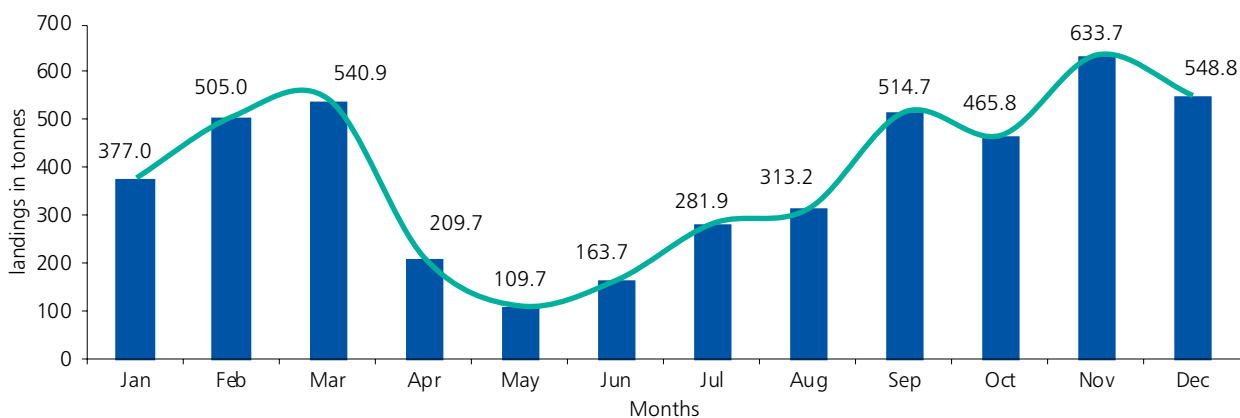


Fig.6. Seasonal abundance of large pelagics landings (Average 2012 -2019)

species of queenfish (*Scomberoides commersonianus*, *S.tol* and *S.lysan*) were recorded and *S.commersonianus* constituted more than 90% of the queenfish landings. Seven species of tunas, namely, *Euthynnus affinis*, *Auxis rochei*, *Auxis thazard*, *Katsuwonus pelamis*, *Sarda orientalis*, *Thunnus albacares* and *Thunnus tonggol* were recorded in landings. Among these species, *E.affinis* constituted more than 90% and formed a seasonal fishery only. Species such as *A.rochei*, *K.pelamis*, *S.orientalis*, and *T.albacares* were only rarely landed. Four species of barracuda (*Sphyraena putnamae*, *S.jello*, *S.forsteri* and *S.pinguis*) were recorded with *S.pinguis* forming more than 60% of the total barracuda landings followed by *S.putnamae*. *Sphyraena forsteri* that were recorded rarely in trawl catches. Four species of needlefish such as *Ablennes hians*, *Tylosurus crocodilus*, *Strongylura leiura* and *S.strongylura* were recorded in the landings with more than 90% contributed by *A.hians*. Cobia, *Rachycentron canadum* and dolphinfish, *Coryphaena hippurus* constituted the single species group with very low contribution to the large pelagic landings along the coast. Three species of billfishes such as *Istiophorus platypterus*, *Istiompax indica*, *Xiphias gladius* were recorded and all were landed occasionally as by-catch in long lines. Young ones of rainbow runner *Elagatis bipinnulata* occurred rarely in landings of certain years (Fig.7).

Major fish landing centres in various coastal districts are Gopalpur landing centre, Bada Arjipally fishing harbour, Sonapur landing centre, Ramayapatnam landing centre and Markondi landing centre (Ganjam District); Chandrabhaga landing centre, Pentokota landing centre and Astaranga Fishing Harbour (Puri District); Paradeep fishing harbour and Atharabanki landing centre (Jagatsinghpur District); Kharinasi landing centre (Kendrapada District); Dhamara fishing harbour and Chandinipal landing centre (Bhadrak District); and Bahabalpur landing centre and Balaramgadi landing centre (Balasore District).

In Odisha, large pelagics have little demand in local markets due to its large size and higher prices, except for Bhubaneswar market where some quantity of large pelagics were sold. Hence, most of the catches are iced immediately after auctioning and are sent to distant markets such as Howrah, Digha and Kolkata (West Bengal); Chennai (Tamil Nadu); Visakhapatnam (Andhra Pradesh); Bangalore (Karnataka); and Kerala. Small quantities of juveniles/small sized seerfishes, queenfishes, cobia, needlefishes and tuna are also marketed fresh in local markets. Due to the demand with better prices from the distant markets in India processing of such fishes for export is not practiced in recent years (Table 1). In terms of freshness, fishes caught in long lines and gill nets are of prime quality

Table 1 Price of large pelagics (₹/kg) at landing centre from various locations along Odisha coast

Species	Balasore	Jagatsinghpur	Puri	Ganjam
<i>Scomberomorus commerson</i>	90-120(<1kg) 450-500 (>1kg)	280-340(>1kg)	400-550(>1kg)	300-600(>1kg)
<i>S.guttatus</i>	80-90 (<1kg) 350-400 (>1kg)	80-120 (<1kg) 280-340(>1kg)	100-150(<1kg) 180-300(>1kg)	300-400(>1kg)
<i>Scomberoides commersonianus</i>	400-450 (>1kg) 200-320(1-2 kg) 60-70(<1kg)	120-160(>2kg) 80-120(1-2kg) 40-80 (<1kg)	180-250(>1kg) 80-100 (<1kg)	100-150(>1kg)
<i>S.tol</i>	50-140	40-70	60-120	60-100
<i>Euthynnus affinis</i>	50-60	250-300	80-100	70-80
<i>Sphyraena putnamae</i>	60-70	40-70	80-120	100-120
<i>S.jello</i>	150-180 (>1kg)	120-180(>1kg)	120-200(>1kg)	120-200 (>1kg)
<i>Ablennes hians</i>	90-100 (>1kg)	70-90 (>1kg) 30-50 (<1kg)	90-130 (>1kg) 50-70(<1kg)	90-130 (>1kg)
<i>Tylosurus crocodilus</i>	150-180 (>1kg)	70-90 (>1kg) 30-50 (<1kg)	80-120 (>1kg) 50-70 (<1kg)	80-120 (>1kg)
<i>Rachycentron canadum</i>	200-300 (>1kg)	120-200(>1kg)	70-80 (<1kg) 150-250(>1kg)	200-300(>1kg)
<i>Coryphaena hippurus</i>	200-250	-	120-200	50-60
<i>Istiophorus platypterus</i>	-	-	80-120	-



Euthynnus affinis (Kawakawa)



Thunnus albacares (Yellowfin tuna)



Thunnus tonggol (Longtail tuna)



Scomberomorus guttatus (Indo-Pacific king mackerel)



S. commerson (Narrow barred spanish mackerel)



Scomberoides lysan (Doublespotted queenfish)



Scomberoides commersonianus (Talang queenfish)



Coryphaena hippurus (Common dolphinfish)



Ablennes hians (Flat needlefish)



Tylosurus crocodilus (Hound needlefish)



Sphyræna putnamae (Sawtooth barracuda)



Rachycentron canadum (Cobia)



Xiphias gladius (Swordfish)



Istiophorus platypterus (Indo-Pacific sailfin)

Fig. 7. Selected large pelagic species recorded along Odisha coast

which fetches higher price than the trawl catch. Beach landing is the most prevalent method of landing along the Odisha coast as most of the places lack proper harbour facilities, infrastructure/shed for auctioning and handing of the fishes. Some of the landing places are also located in remote areas, which create issues of transportation.

Conclusion

Most of the large pelagics (oceanic tunas, sailfish and dolphinfish) are highly migratory. While larger adult fishes are found in deeper waters, juveniles are mostly found in the coastal waters. The fishery of Odisha is presently

restricted to nearshore coastal waters and no deep sea fishing vessels are deployed, unlike in states like Kerala, Tamil Nadu, Maharashtra and Gujarat. Introduction of deep sea vessels with proper storage facilities, establishing infrastructure facilities for landing and processing, skill development for fishers and marketing support are options available to develop the fisheries for large pelagics along the Odisha coast.

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