

Status of Large Pelagics fishery in Andhra Pradesh

H. M. Manas¹, M. Satishkumar¹, Shubhadeep Ghosh¹, Indira Divipala¹, Subal Kumar Roul², Prathibha Rohit³, K. G. Mini⁴ and E. M. Abdussamad⁴

¹Visakhapatnam Regional Centre of ICAR-Central Marine Fisheries Research Institute, Visakhapatnam -530 003, Andhra Pradesh

²Mangalore Regional Centre of ICAR-Central Marine Fisheries Research Institute, Mangaluru-575 001, Karnataka

³Field Centre of ICAR-Central Marine Fisheries Research Institute, Puri-752 002, Odisha

⁴ICAR-Central Marine Fisheries Research Institute, Kochi-682 018, Kerala

E-mail: Manas.HM@icar.gov.in

Abstract

Large pelagics forms an important fishery along Andhra Pradesh coast, 26 species of large pelagics are caught in the state. This group accounts to an annual average of 9% of total states marine catches (2.5 lakh ton) since a decade and highest contribution of large pelagics to the total states landing was recorded in 2014 (12%). Tunas dominated the large pelagics landings, followed by seerfishes and barracuda. Gillnets are mainly employed to catch tunas, seer fishes, billfishes and queenfishes, trawls for barracudas and hook and line for Dolphinfish. Peak landing occurred during the December - March period. Among the large pelagics, seerfishes fetched the highest price in the market.

Keywords: Large pelagics, Andhra Pradesh, fisheries

Introduction

Andhra Pradesh has a coastline of 974 km with 9 coastal districts and 353 landing centers besides two major fishing harbours (Visakhapatnam and Kakinada), along with medium and minor fishing harbours. Large pelagic fisheries form an important component of the marine capture fishery of the state, mainly exploited by small scale fishers operating motorised and artisanal boats.

Large pelagic resources and fishery trends

Among the landings of large pelagics in Andhra Pradesh, tunas represented by 7 species, followed by seerfishes (5 species), queenfishes (4 species), barracudas (4 species),

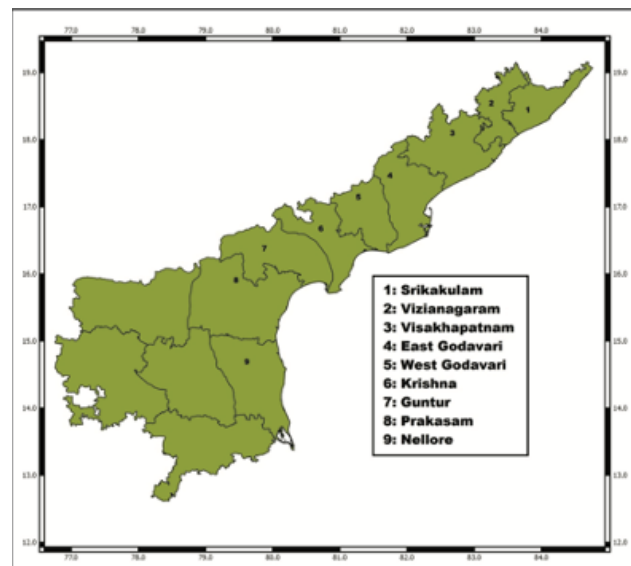


Fig 1. Coastal districts of Andhra Pradesh

billfishes (3 species) and needlefishes (3 species), Cobia and dolphinfish were observed (Table. 1).

Large pelagic fishes are landed all along the coast from mechanized fishing vessels in major fishing harbours to small beach landing artisanal crafts. Non motorised and artisanal vessels mainly operate passive gears such as hooks and line, gill nets (multi meshed, drift), few are

Table 1. List of major large pelagic species landed in Andhra Pradesh

| Group | Species | Family |
|-------------|------------------------------------|----------------|
| Barracudas | <i>Sphyraena barracuda</i> | Sphyraenidae |
| | <i>Sphyraena jello</i> | |
| | <i>Sphyraena obtusata</i> | |
| | <i>Sphyraena putnamae</i> | |
| Billfishes | <i>Istiophorus platypterus</i> | Istiophoridae |
| | <i>Istiompax indica</i> | |
| | <i>Xiphias gladius</i> | |
| Cobia | <i>Rachycentron canadum</i> | Rachycentridae |
| Dolphinfish | <i>Coryphaena hippurus</i> | Coryphaenidae |
| Needlefish | <i>Ablennes hians</i> | Belonidae |
| | <i>Strongylura strongylura</i> | |
| | <i>Tylosurus crocodilus</i> | |
| Queenfish | <i>Scomberoides commersonianus</i> | Carangidae |
| | <i>Scomberoides lysan</i> | |
| | <i>Scomberoides tala</i> | |
| | <i>Scomberoides tol</i> | |
| Seerfishes | <i>Acanthocybium solandri</i> | Scombridae |
| | <i>Scomberomorus commerson</i> | |
| | <i>Scomberomorus guttatus</i> | |
| Tunas | <i>Auxis rochei</i> | Scombridae |
| | <i>Auxis thazard</i> | |
| | <i>Euthynnus affinis</i> | |
| | <i>Gymnosarda unicolor</i> | |
| | <i>Katsuwonus pelamis</i> | |
| | <i>Sarda orientails</i> | |
| | <i>Thunnus albacares</i> | |

Table 2. Details of large pelagics landed in Andhra Pradesh

| District | Gears operated | Period of operation | Major Large pelagics groups caught |
|---------------|---|---------------------|--|
| Srikakulam | Gillnets, Hook & line, Ringeines | Throughout the year | Yellowfin, Skipjack tuna, Carangids, Barracuda, Seerfishes |
| Vizianagaram | Gillnets, Hook & line, Ringeines | Throughout the year | Seerfishes, Yellowfin, Carangids |
| Visakhapatnam | Trawls, Gillnets, Hook & line, Shoreseines | Throughout the year | Yellowfin tuna major landing besides all large pelagics |
| West Godavari | Gillnets, Hook & line, Shoreseines | Throughout the year | Seerfishes major landings, Carangids and tunas |
| East Godavari | Gillnets, Hook & line, Ringeines, Shoreseines | Throughout the year | Small tunas, Barracudas, Seerfishes |

also involved in shore seine and ring seine operations. Most of the mechanised vessels targeting large pelagics are multi gear vessels carrying gill net (drift, bottomset) and trawl, based on the season and abundance of the fish with preference of the gear changing. Among the nine coastal districts major Fisheries Harbours are in Visakhapatnam and East Godavari, while all other districts have medium and minor harbours wherein both motorised and artisanal crafts land their catches and Nellore, Prakasam and Guntur have only artisanal crafts which operate traditional gillnets and hooks and lines. Minor and beach landing centres in all districts are active throughout the year with a few operating only in certain months of the year based on catch intensity and seasonal abundance. The general trend of major gears operated and major groups targeted in different costal districts of Andhra Pradesh are given in Table 2. As technology developed, fishers have adopted to the changing technological innovations, in case of trawlers, high horsepower engines of 300 hp are being used in certain parts of Andhra Pradesh; also use of drum haulers for gill net operation is increasing (Fig.2).



Fig.2. Gillnetters fitted with drum haulers in Nizamapatnam Fisheries Harbour

Large pelagics contribute an annual average of 9% to the total marine fish landings of the state. The peak landings were in 2014 (42,314 t) and average annual landing from 2010 to 2019 was 25,242 t (Fig.3). Gillnets accounted for 44% of all the large pelagic fishes landed, followed by hooks and lines (26%) and rest by trawl nets (15%)

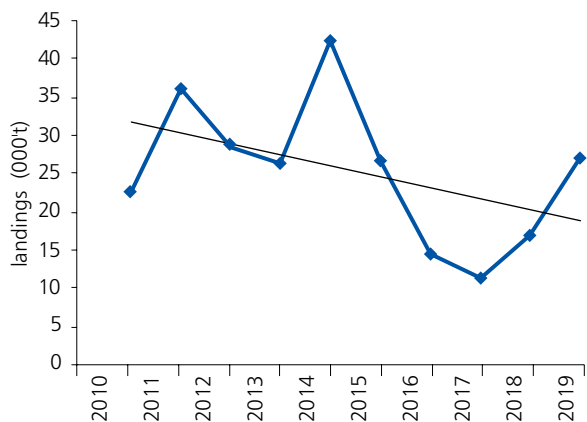


Fig 3. Annual large pelagic landings of Andhra Pradesh (2010-2019)

and seine nets (12%) (Fig.4). Annual landing trends of major gears involved in capturing large pelagics are given in Fig 5. In 2014, gillnets, hooks and lines and seine nets recorded the highest catch, while in trawls highest catch was in 2012. Minimum catch in gillnets was in 2017, while that of hooks and lines was in 2010, trawl nets in 2015 and seine nets was in 2018.

During the study period, tunas dominated the large pelagic catches followed by seerfishes and barracudas (Fig.6). Analysis of monthly large pelagics landing data during the 2012 -2016 period revealed marked seasonality with a major peak during December- March, minor peak during July to September and very low landings during April - June period.

Tuna catches were highest in 2014 (27,490 t), and lowest during 2017, with only 6,390 t of tunas being landed in the state. Among different species contributing to tuna landings, *Thunnus albacares* (Yellowfin tuna) and *Euthynnus affinis* (Little tunny or Kawakawa) contributed

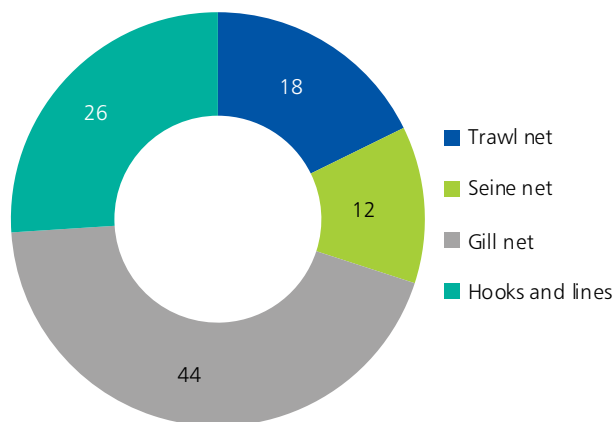


Fig.4. Gearwise contribution (%) to the large pelagics landings

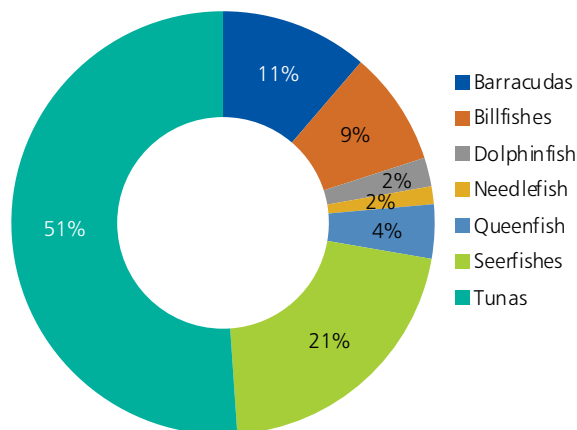


Fig.6 . Contribution by various groups of large pelagics

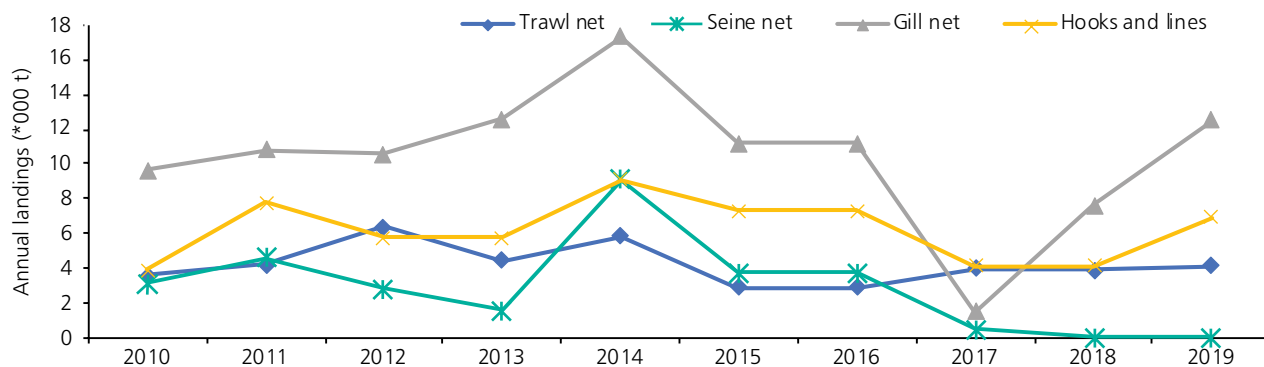


Fig 5. Annual gearwise large pelagic landings (2010-2019)

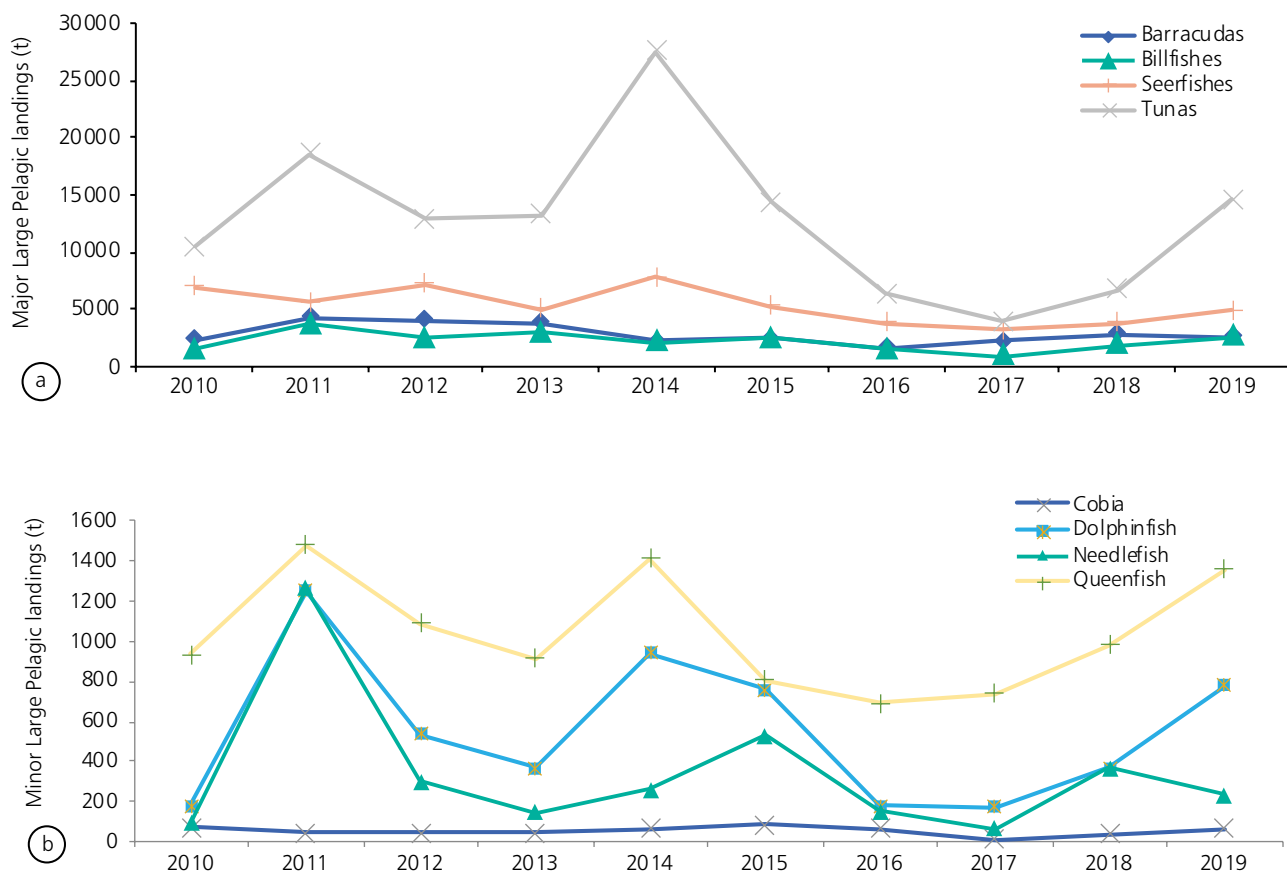


Fig 7. Annual trends in large pelagic landings (t) of Andhra Pradesh (2010-2019)

the highest with an average annual landings of 4,547 t and 4,100 t respectively, followed by *Auxis thazard* (Frigate tuna) 1,140 t, *Sarda orientalis* (Striped bonito) 98 t, *Auxis rochei* (Bullet tuna) 18.3 t and *Gymnosarda unicolor* (Dogtooth tuna) 0.14 t. Seine and gill nets were important gears which caught on an average of 36% and 32% of *E.affinis*, while *T.albacares* was mainly landed by gillnets and hook and lines which accounted on an average 49% and 35% of *T.albacares* landed at Andhra Pradesh. Overall gillnets accounted for 44% of tunas landed in the state, followed by hooks and lines and trawls, which contributed 25% and 18% respectively.

Seerfishes are the second largest contributors for the large pelagics with an annual average landings of 5,340 t, which is 22.4% of the total large pelagics landed in Andhra Pradesh. Seerfishes landings were highest in 2014 (7,738 t), and lowest in 2017 (3,237 t). *Scomberomorus commerson* (king seerfish) and *S.guttatus* (spotted seerfish), accounted for average annual landings of 2,861 t and 2,415 t respectively. Other species of seerfishes landed in the state in minor quantities was *Acanthocybium*

solandri (wahoo). Gillnet accounted on an average 50% of the total seerfish resources landed in Andhra Pradesh, followed by trawlnets (20%). Species-wise landings indicated 60% of *S.commerson* was caught by gillnets and 18% by hooks and lines. For *S.guttatus*, gillnets and trawls contributed 36% each.

Annual average landings of barracudas were 2,842 t, which was 12.2% of all large pelagics landed in Andhra Pradesh. Highest barracuda landings were recorded in 2011 (4,339 t) and lowest in 2008 at 930 t. *Sphyraena barracuda* (Great barracuda), *S.obtusata* (Obtuse barracuda), *Sphyraena jello* (Pickhandle barracuda) and *Sphyraena putnamae* (Sawtooth barracuda) species were recorded in the landings. Trawl nets caught 65% of the total barracudas landed, followed by gillnets 14%. Billfishes contributed an annual average of 2201 t, which was 9% of the large pelagics landed in the state. Peak billfish landings was recorded in 2011 (3,625 t) and the lowest was in 2017 (903 t). *Istiophorus platypterus* (Sailfish), *Istiompax indica* (Black marlin) and *Xiphias gladius* (Swordfish) were the major species with annual average landings of 1,102 t,

971 t and 41.6 t respectively. Hooks and lines accounted for 50% of the catches of billfishes, followed by gillnets (30%). Hooks and lines accounted for, 41% of the *I. platypterus* landed, while for *I. indica* and for *X. gladius* it was 58% and 55% respectively. Gillnets landed 37% of *I. platypterus* and *X. gladius* and 21% of *I. indica*.

Average annual landings of queenfishes were 1,040 t, which was 4.4% of all large pelagics landed in the state. Highest queenfish landings was observed in 2011 (1,481 t) and the lowest in 2016 (690 t) as indicated in Fig.7. *Scomberoides commersonianus* (Talang queenfish) was the dominant species with an annual average contribution of 58.5%, followed by *S. lysan* (Doublespotted queenfish), *S. tol* (Needlescaled queenfish), and *S. tala* (Barred queenfish) contributing 26.4%, 12.2% and 3% respectively. *S. commersonianus* was mainly landed by gillnetters (42%) and by the non-motorised sector (38%), while *S. lysan* by gillnetters (67%) and hooks and lines (25%), *S. tol* by gillnetters (44%) and hooks and lines (47%) and *S. tala* by hooks and lines (67%) and non-motorised sector (24%). Overall gillnetters contributed 46% of the all queenfishes landed in the state followed by trawlers (30%).

Dolphinfishes were represented by a single species, *Coryphaena hippurus*, with an average annual landing of 555 t, which was 2% of all large pelagics landed in the state. Highest dolphinfish landings was in 2011 (1,254 t) and lowest was in 2018 (36 t). Hooks and lines constituted 48% of dolphinfish landed, followed by gillnetters (28%) and non-motorised (22%). Average annual contribution of needlefishes to large pelagic catches was 342 t, which was 1.3% of all large pelagics landed in the state. Highest landings of 1,268 t was recorded in 2011 and lowest of 23 t in 2019. *Strongylura strongylura* (Spottail needlefish) dominated, with an annual average landing of 117 t, followed by *Ablennes hians* (Flat needlefish) with 37 t and *Tylosurus crocodilus* (Hound needlefish) with 1.2 t. *S. strongylura* and *A. hians* were caught mainly in seine netters which contributed 84% and 99% of these species respectively, while 69% and 13% of *T. crocodilus* was caught by non-motorised and gillnetters respectively. Cobia was

represented by a single species, *Rachycentron canadum*, with an average annual landing of 54 t during the period accounting for 0.2% of all large pelagics landed in the state. Highest landings was recorded in 2010 (70 t) and the lowest in 2017 (9.5 t). Gillnetters contributed an average of 44% of the cobia volumes landed during the period, while hooks and lines and non-motorised units landed 29% and 18% respectively.

Elasmobranchs occurred as by-catch in large sized gill nets and longlines, with hammerhead sharks (*Sphyrna* sp), tiger shark (*Galeocerdo cuvieri*) and Carcharhinid sharks along with large sized pelagic rays recorded. Since these species have market demand they are preserved and sold in the landing centres. Large pelagics landed comprised of high valued fishes (> ₹200/kg), medium valued (₹100-200/kg) and low value fishes (<₹100/kg). On an average 63% of large pelagics landed were medium valued fishes, including tunas, queenfishes, billfishes, cobia and dolphin fishes, whose demand in local market is relatively less and are consumed fresh or frozen or are salt dried in lesser quantities, and the major portion of the catch goes to other states, mostly Kerala. High value fishes like seerfishes and barracudas forms 35% of large pelagics landed in the state, and during months of higher demands, prices shoot up to ₹700-800 /kg. Low value large pelagics comprise of 2% of large pelagics landed and include mostly the needlefishes.

Conclusion

Average landings of large pelagics during the period was 25224 t, the economic value of which was around ₹257 crores. The potential estimated for these resources from the state is 67600 t valued at ₹749.4 crores, which can be tapped by the fishers. Further, better onboard handling of tuna and qualifying for *sashimi* grade would result in better prices in international market. In this regard, conversion of multiday trawlers to longliners, trolling etc, and modification of deck for facilitating best practices in preserving and handling tuna is suggested.