Research Communications

Decadal status of Large Pelagic fishery in West Bengal

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Abstract

The marine landings of the state have fluctuated widely over the years with the maximum of 4 lakh tonnes recorded in 2011. Pelagics dominate the marine fishery and contribute around two-third of the marine landings. Major large pelagic resources landed were seerfishes, queenfishes, tunas and cobia. Sporadic landings of barracudas, billfishes and dolphinfish were observed in certain years. Average annual landings of large pelagics during 2010 – 2019 were 6,131 t forming 2.65% of the total state landings. More than half of the landings were contributed by seerfishes, followed by queenfishes. Major gears contributing to the landings were gillnets (60%) and trawl nets (38%). *Scomberomorus guttatus* formed 95% of the seerfish landings and were landed by both trawl nets and gill nets, whereas *Scomberomorus commerson* landed only by gillnets. Among queenfishes landed by trawl nets and gill nets, *Scomberoides lysan* dominated followed by *S.tala* and *S.commersonianus*. Tunas landed mostly in gillnets was constituted by *Auxis thazard* (50%) followed by *Euthynnus affinis* (37%).

Keywords: *Large pelagics, decadal trends, West Bengal*

Introduction

West Bengal with a coastline of 158 km has two maritime districts *viz*, South 24 Parganas and Purba Medinipur bordering the northern Bay of Bengal. According to the Department of Fisheries, Govt. of West Bengal, inshore (up to 10 fathom depth) fishing zone covers 777 km^2, offshore (10-40 fathom depth) fishing zone covers 777 km^{2}and the continental shelf (up to 100 fathom depth) covers 17,049 km^2. The state has 59 marine fish landing centres with a marine fisherfolk population of 3.8 lakhs. The dominant large pelagic resources landed in West Bengal are seerfishes, queenfishes, tunas and cobia.

Fishery trends

Average annual landings of large pelagics during 2010 – 2019 were 6,131t. Around 6,370t were landed in 2010 which increased to 8,619t in 2011, after which the landings gradually decreased and reached an all time low of 520 t in 2014. Post 2014, the landings have again increased and in 2019, it was 9,227t (Fig.1). Large pelagics formed around 2.08% of the marine fish landings of the state in 2019. The average contribution of the state in the landings of large pelagics to that of the country during 2010 – 2019 was 2.65%. It varied from a minimum of 0.26%

Fig.1. Trend in the landings (tonnes) of large pelagic resources in West Bengal (2010 - 2019)

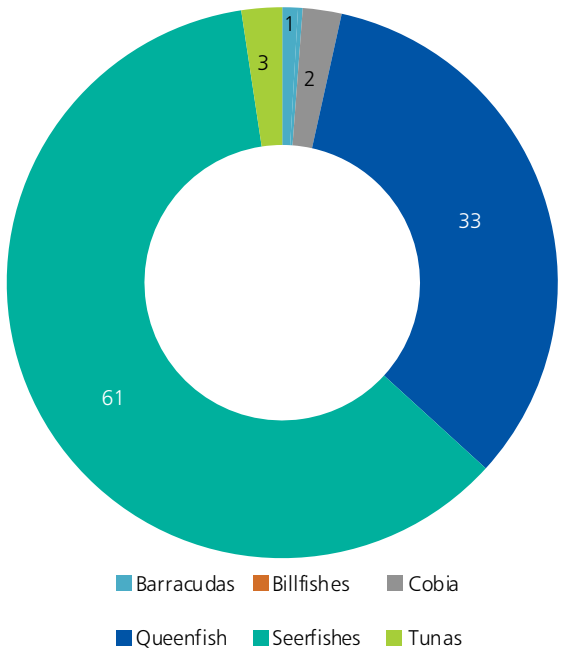

Fig.2. Average species composition of large pelagics landed during 2010 - 2019

in 2014 to a maximum of 4.65% in 2011 being 2% during the 2018 -2019 period.

During 2010 – 2019, on an average, more than half of the landings of large pelagics was contributed by seerfishes followed by queenfishes (Fig.2). Major gears contributing to the landings of large pelagics were gillnets (60%) trawlnets (38%) and Hooks and lines 2% (Fig.3). Trend in landings in major gears is depicted in Fig.4. The landing of large pelagics in gillnets was highest (5,743 t) in 2017. Generally, landings in gillnets were higher during 2010 – 2011 (4,522 t annual), 2013 (3,659 t) and 2015 (3,792 t). In trawlnets, landings were high in 2010–2011 (2,951 t annual) and again during 2016–2019 (3,091t annual). Lowest landings in gill nets (458 t) and trawl nets (31 t) were recorded in 2014.

Seerfish was the dominant large pelagic landed with an annual average landing of 3,204 t, forming more than half of the catch of large pelagics. Landings were high in most of the yeras. Highest landing of 7,388 t was recorded in 2011. Lowest landing of 320 t was in 2014. Other years with appreciable landings were 5,202 t in 2010 and 5,443 t in 2017. During 2010 – 2012, contribution of seerfish to the landings of large pelagics was significantly high, around 81.62%, with the highest contribution of 85.72% in 2011. Mechanised gillnetters and mechanised trawnets were the major gears exploiting, with a contribution of 57.57% and 42.43%. From 2010 to 2017, gillnet was the dominant gear, however, in 2018 and 2019, trawlnet was found to be major gear exploiting seerfishes. *Scomberomorus guttatus* formed 94.57% of the landings and were landed by both trawlnets and gillnets, whereas *S.commerson* formed the rest and were landed only in gillnets. Significant contribution of *S.commerson* was only observed between 2016 and 2019 (14.79%), in rest of the years, *S.guttatus* dominated.

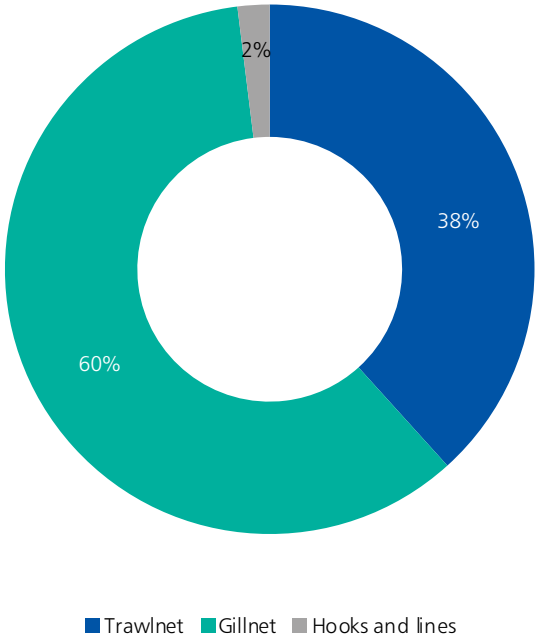

Fig.3. Gearwise contribution to the landings of large pelagics during 2010 – 2019

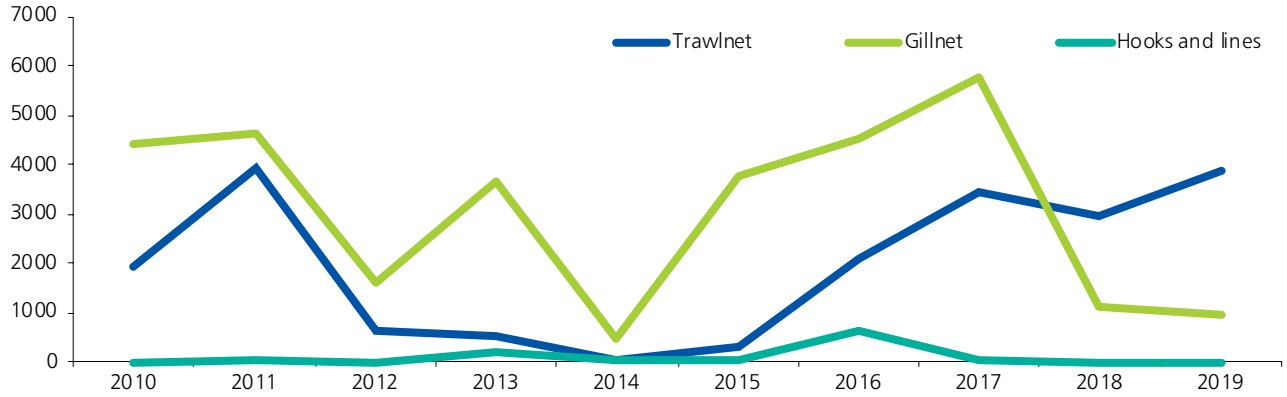

Fig.4. Gearwise landings (t) of large pelagics during 2010 -2019.

Highest landing was in October, forming 21.2% of the annual catches, followed by November with 14.9% of the annual catches.

Annual average landings of Queenfish during 2010 – 2019 were 1,646 t, and fluctuated widely over the years, with the highest landings recorded in 2013 and 2015–2017. The landings in 2013, 2015, 2016 and 2017 were 2,217 t, 2,685 t, 3,091 t and 3,127 t. Lowest landing of 169 t was in 2014. In 2013 and 2015, contribution was exceptionally high, wherein it formed 50.0% and 64.7% of the landings of large pelagics. Mechanised gillnetters contributed 83.11% to the landings and mechanised trawlers contributed 16.89%. Four species were represented in the landings viz., *Scomberoides commersonianus*, *S.lysan*, *S.tala* and *S.tol*. *S.lysan* was landed in both trawlnets and gillnets, whereas the rest were landed only in gillnets. The landings were contributed by *S.lysan* (38.38%), followed by *S.tala* (29.93%) and *S.commersonianus* (22.93%). Contribution of *S.lysan* was very high during 2010 – 2013 (95.39%), after which it gradually decreased and in 2019, it contributed only 8.96%. When landings of *S.lysan* were low, increase of *S.tala* (2016 and 2017) and *S.commersonianus* (2015, 2018 and 2019) was observed.

Average landing of tunas during 2010 – 2019 was 154 t, forming roughly 2.0% of the landings of large pelagics. Highest catch of 429 t was recorded in 2019. Catches were minimal during 2012 – 2016, with an average landing of 21.3 t, constituting less than 1% of the landings of large pelagics. Around 96% of the landings were from gillnetters and the rest (4%) from mechanised trawlers. Around half of the landings (50.1%) were constituted by *Auxis thazard*, followed by *Euthynnus affinis*(37.45%). The rest was contributed by *Thunnus albacares* (0.51%), *Thunnus tonggol*(8.22%) and *Katsuwonus pelamis* (3.72%). *A.thazard* dominated the tuna fishery, contributing somewhere between 60% and 80%, in 2010 (249 t) and 2011 (154 t) and again, in 2017 (159 t) and 2018 (137 t). There was no landing in 2013. The contribution of *E.affinis* was highest in 2019, wherein 267 t was landed forming two-third of the tuna caught. There was no landing in 2010 and 2014. Other years in which it contributed significantly were 2011 and 2017, wherein close to 100 t was landed. *T.tonggol* was the dominant resource in 2014 contributing 79.5%. Significant landings were recorded during October – January, wherein two-third of the annual landings was caught. Highest landing was recorded in October (23% of annual).

Annual average landings of cobia during 2010 – 2019 were 121 t, forming 2% of the large pelagic landings. Landings were highest in 2016, wherein 652 t was landed contributing 8.98% to the catches of large pelagics. Substantial catches were also recorded during 2017 – 2019 (130 t annual). Around 78.12% were landed in mechanised hooks and lines and 21.77% in mechanised trawlnets. Prior to 2016, the landings of barracudas occurred sporadically in 2010, 2014 and 2015 and peaked during 2016–2019. Almost, all the barracudas (98.97%) were landed by multiday trawlnets and rest in gillnets. Seasonal abundance revealed landings to be highest during September – October and also marginally higher during August and November. *Sphyraena jello* formed 17.7% of the barracuda landings. Billfishes were landed only in 2016 (62.3 t), 2017 (80.3 t) and 2018 (67.9 t) and formed 0.82% of the large pelagic landings in these three years. Billfishes were landed only in multiday trawlnets and observed in September only. *Istiophorus*

platypterus formed 43.23% of the billfish landings, the rest (56.77%) being contributed by *Makaira* sp.

High value large pelagics landed in appreciable quantities, like seerfishes and queenfishes are iced and packed to major domestic markets in the state and are sold at premium prices. They are carried in insulated containers, mostly to Kolkata. A part is sent to processing units located nearby and is processed and sent to different domestic markets or exported. Other large pelagics such as tunas, cobia, barracudas, billfishes and dolphinfishes, whose landings are intermittent and irregular are consumed by the coastal communites when landed in small quantities or when there is a glut in the landings, is sent for processing as there is not much domestic demand in the state.

Conclusion

The sustainability of fisheries for large pelagics has recently become a concern and ecosystem-based management approaches are proposed to manage these resources. More detailed studies at the species level are required, with reference to reproductive and feeding dynamics to arrive at the required biological reference limits and subsequent formulation of management plans for sustainable fisheries.