

Pearly hairtail, *Trichiurus auriga* Klunzinger

A prospective non-conventional deep-sea resource

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Indian coastal waters, though hugely productive and, despite bearing the major share of total marine fish landing over the past many years of the country, provide only limited scope for further production augmentation. Taking cues from the increasing demand for fishes from domestic as well as international markets that include reduction fish industry, opportunities for spatial expansion targeting non-conventional resources of the deep seas have never been abrogated by the trawler fleet across the maritime states. Thus, they have often encountered lantern fish (myctophids), unicorn leather jacket (*Aluterus monoceros*), smooth blaasop (*Lagocephalus inermis*) red toothed triggerfish (*Odonus niger*) etc., which added to enhance economic benefits from deep sea fishing.

A recent addition to this list of non-conventional resources is pearly hairtails (*Trichiurus auriga*). Deep sea trawlers operating along offshore waters of the south-eastern Arabian sea between 200 to 600 m depth have encountered considerably huge assemblage of this fish, gaining immediate and enthusiastic acceptance from the fishmeal industry. This has offered a potential opportunity for the deep-sea trawlers, reeling under the problems like increased fuel cost, to diversify their activity for enhancing their operational profitability.

Deep-sea trawlers from southern districts of Kerala, which are targeting mainly shrimps and cephalopods, have reported to catch pearly hairtails on their return trip to fill the empty deck space for enhancing their economic returns (*personal communication with the fisherman*). They catch pearly hairtails using the

shrimp trawl, when the fish rise to subsurface waters of 100 - 150 m depth during mid-day as part of their diurnal movement. The towing time vary between 30 to 60 minutes at a speed of 1.5 - 2 knots (Fig 1). They generally perform one or two operations on the final day of their fishing trip. Ribbon fish (pearly hairtail) catch generally varied between 7 and 10 tons per haul. (Fig. 2). The fishing activity for hairtails lasts for over four months during October - February every year. Trawlers from Karnataka and Tamil Nadu also ventured



Fig 1. Cod end with rich haul of pearly hair tail in the fishing ground



Fig 2. Catch of pearly hairtail onboard deep-sea trawler at sea

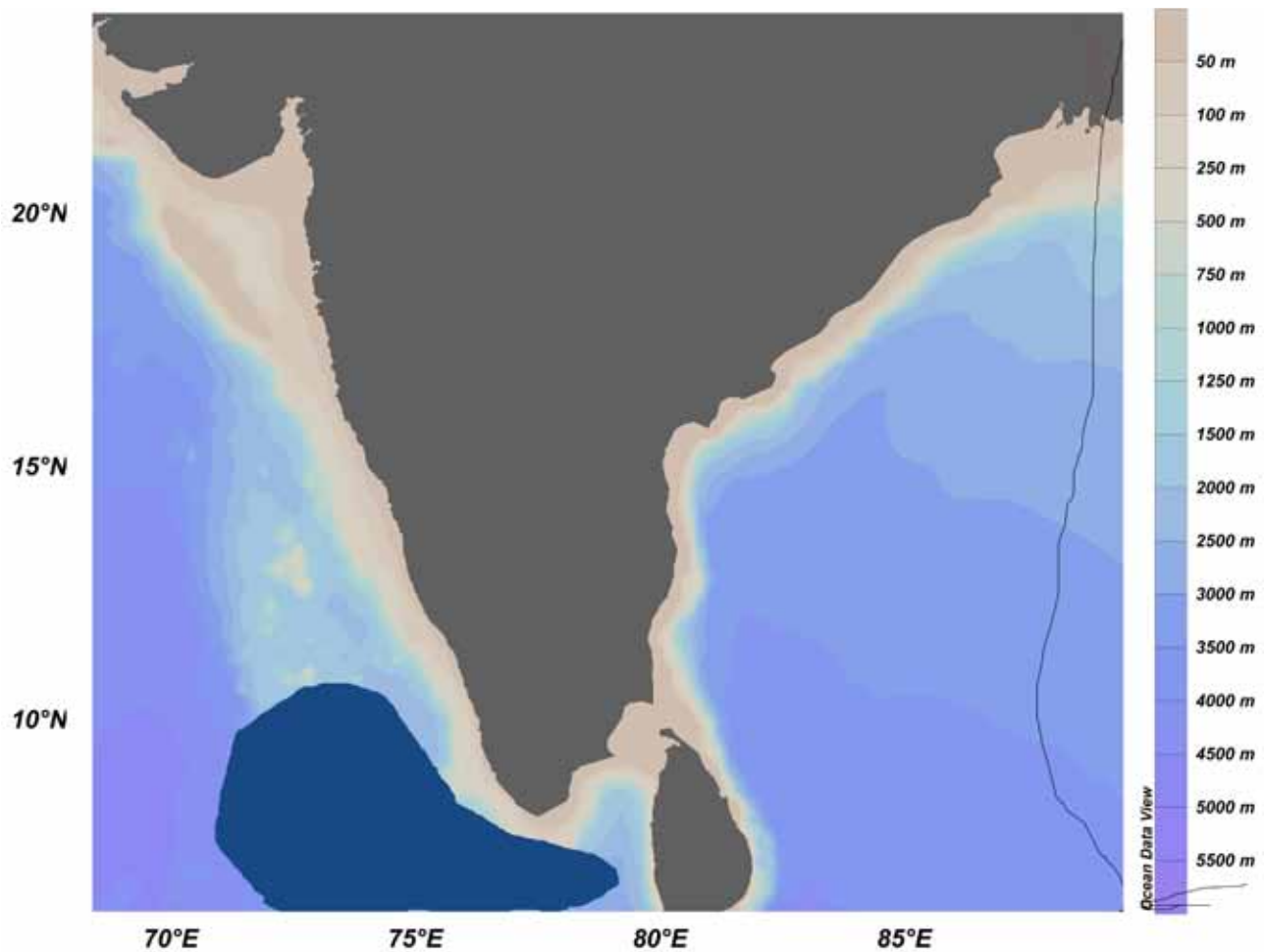


Fig. 3. Present fishing grounds off southwest coast of India

for targeted fishing of pearly hairtail from this area, during the same period, mainly to supply for fish meal industries. With the transformation of pearly hairtail as a targeted resource, they formed part of the commercial landing along the southern coast. A tentative estimate based on the catch rates, mean carrying capacity, number of fishing boats involved and average number of fishing trips/boat etc. gathered from different sources, including boat operators of respective regions indicated that more than 4,00,000 tons of pearly hairtail was caught during October 2022 to February 2023 season.

Our observations and details gathered from deep sea trawler operators indicated the most potential ground for this resource as the continental slopes off Thiruvananthapuram-Kanyakumari Districts at a depth

range of 300 - 600 m (Fig 3). Their temporal fishing pattern and landing trends indicated probable seasonal congregation of the species along this area, suggesting them as a migrant population. Moreover, the large catch rate to the tune of 7 - 10 tons/haul further suggested their huge biomass along the region, which have the potential to support and sustain a vibrant seasonal fishery. The fisher's responses and our present observations suggested that the seasonal pearl hairtail fishery has enhanced total fish landings, ensured employment and financial security of local fishing community and supported the fishmeal industry, which has minimized their dependence on other food fishes.

Earlier exploratory fishery surveys carried out under the UNDP/FAO Pelagic Fishery Project also indicated large abundance of pearly hairtail, along the continental



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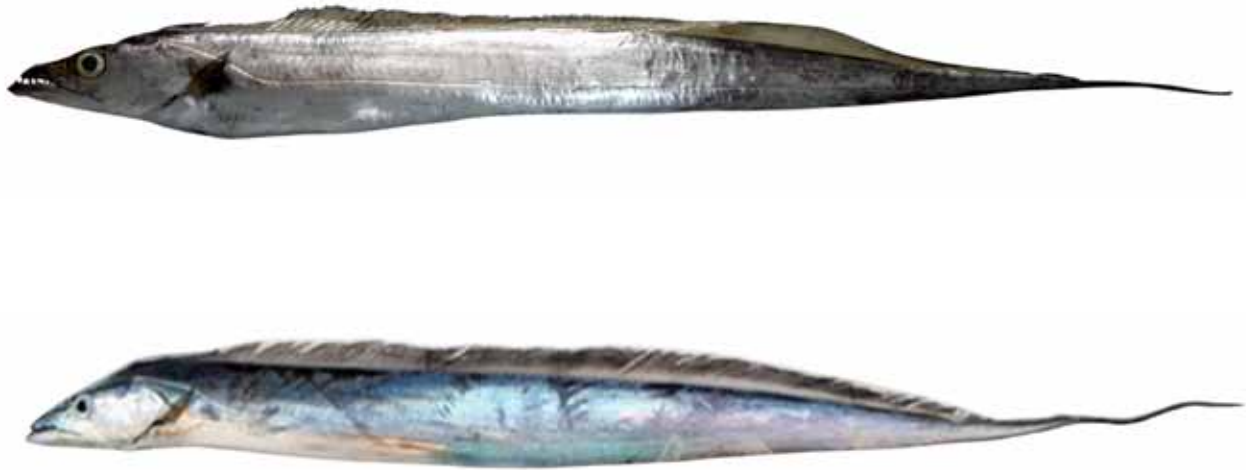


Fig. 4 Images of a. *Trichiurus lepturus* and b. *Trichiurus auriga*.

shelf edge and adjacent slope of southern coast of Kerala and Tamil Nadu. Further, they reported extended spatial distribution up to off Maharashtra coast. Recently, in 2014, FORV Sagar Sampada exploratory cruise also reported huge catch of this resource to the tune of 8 - 10 tons/haul from off Thiruvananthapuram coast beyond 200 m depth, the present fishing area.

Management conflicts

The emergence of this fishery unfortunately has spawned some managerial dilemmas owing basically to a taxonomic ambiguity between two species of ribbon fishes. The pearly hairtail and largehead hairtail (*Trichiurus lepturus*) belong to the same family (Trichiuridae) and are commonly known as ribbonfishes (Fig. 4). The former, appears like juveniles of the latter and often lead to misidentification on several occasions. The enforcement wing of Department of Fisheries, Kerala on noticing huge quantities of small sized ribbonfish being landed by deep sea trawlers in Kollam harbour had imposed heavy fines on them – quoting Minimum Legal-Size violations, which later turned to be due to mistaking pearly hairtails for juveniles of largehead hairtail. Whereas fishers from Kerala are strictly prohibited in catching and landing pearly hairtail, the fishers from the adjacent state of Karnataka continue to catch pearly hairtails and able to

make good income by selling the fish to the fish meal plants there.

It is also to be noted recently during the last season, some conflicts erupted out at seas between the fishers of Kanyakumari District, Tamil Nadu and Karnataka off Kanyakumari coast. The Tamil Nadu fishers who are targeting large pelagics in this region objected the fishing by Karnataka boats by arguing that intensive catching of huge quantities of pearly hairtails would adversely affect their targeted fishery. As a result, fishers from Karnataka have stopped fishing off Kanyakumari.

Distinctness of pearly hairtail

The alleged taxonomic ambiguity, in fact, is the result of lack of expertise. Silas and Rajagopalan (1974), provided detailed morphometric distinctness for both largehead and pearly hairtails. The most distinctive feature of the pearly hairtail is presence of barbless fangs in both jaws compared to barbed fangs in largehead hairtail (Fig. 4). They are also characterised by their smaller size, pearly whitish colouration with dusky dorsal body. Largehead hairtails, have barbed fangs in both jaws, grow to large size and have steel blue body with silvery reflections and semi-transparent pectoral fins.

Major characters for species differentiation

Trichiurus lepturus

- Dorsal and anal fin with more numerous fin rays;
 - a) Dorsal spine + soft rays: III + 130 - 137
 - b) Anal soft rays: 103 - 115
- Colour: Fresh specimens are steely blue with silvery reflections
- Teeth with barbs



Fig 5. Teeth pattern of *T. lepturus*

- Size at maturity: 50.6 cm
- Size range in the landing: 30 - 99 cm

Trichiurus auriga

- Dorsal fin with less numerous fin rays;
 - a) Dorsal spine + soft rays: III + 106 - 116
 - b) Anal soft rays: 83 - 87
- Colour: Fresh specimens are pearl white and slightly dusky dorsally
- Teeth pointed and without barbs

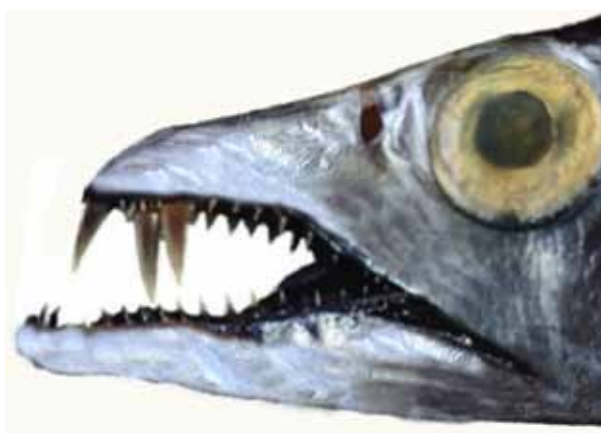


Fig 6. Teeth pattern of *T. auriga*

- Size at maturity: 26 cm
- Size range in the landing: 23 - 42 cm

It is clear that through proper scientific training and awareness programs, the taxonomic difficulties can be overcome.

Summary

The pearly hairtails have hardly been targeted as a commercial fishery all these years, the reasons being its occurrence in deeper areas, mostly beyond the conventional fishing grounds of territorial waters. Not much commercial attention was also being paid by deep sea trawlers due to their small size which generally does not fetch a good market price. However, with the increasing demand for non-conventional

resources from fish meal industries in recent years, pearly hairtails have received the attention of deep-sea trawlers, who have started catching them on their return trips to fill their empty storage/deck space. Since, the stock being unexploited and virgin with large biomass availability heavy catches were realised during targeted fishing. In most cases the fish-hold gets full in just one-to-two-days of fishing. The rousing acceptance for the resource from fishmeal sector, made the fishery attractive and highly remunerative. Initially, only deep-sea trawlers from southern Kerala alone exploited the pearly hairtail. Noticing the high catch and large profit margin in short duration fishing, trawlers from Tamil

Nadu and Karnataka too started targeted fishing for the resource. As the fishing grounds are being beyond territorial waters, there was no legal issues for boats from different maritime states in harvesting the pearly hairtail. Fishing for this resource generally commenced by October, and fishing continue full scale till end of February. The fishery was extremely profitable and rewarding as it being short duration fishing with very high catch, and with reasonable and sustainable demand.

The present study suggested pearly hairtail, presently an unconventional resource has tremendous potential, worth commercial harvesting for the overall benefit of the sector. Their biological and ageing studies indicate that their life span is around one year and they mature and spawn at an age of 6 - 7 months. Developing a deep-sea fishery for them, would aid in diverting part of fishing efforts from heavily fished coastal waters to deeper waters. Their proper harvesting and utilization

will relieve the excessive pressure on the coastal resources, which are specially targeted for fishmeal and allied sectors. However, a detailed survey on their abundance, spatial distribution, biology and economic efficiency of the fishery needs to be conducted to understand the potential harvestable biomass and to establish guidelines for their sustainable exploitation and to avoid conflicts between administrators and fishery actors. Exploratory surveys also need to be made to map the new potential fishing ground on a GIS platform and this geospatial data can be made available to the respective fishing sector to assist them in fishing these unconventional resources. Such details will aid the policy makers to suggest suitable measures to maintain the fishery sustainable and economically viable.

References available upon request from corresponding author

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