

## AN OVERVIEW ON COMMERCIALY IMPORTANT PELAGIC FISHERY RESOURCES OF GULF OF MANNAR AND PALKBAY

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### Introduction

Pelagic fishes are highly migratory and exhibit shoaling nature. They inhabited in the water column (not near the bottom of the shore) of the coast or open oceans. Based on the deepness of the water in which they exist, can be classified into coastal and oceanic fish. The “coastal resources” are called the groups like sardines, anchovies and shads which inhabit above the continental shelf, and oceanic resources are called Tuna, swordfish, and mackerel which inhabited below the continental shelf they are. There is no clear demarcation of the boundary between coastal and ocean waters. Some oceanic species become coastal inhabitant (some tunas) due to migration or lifecycle stages and vice versa. However, true oceanic species spend their entire life in the open ocean. The pelagic fishes form different taxon because of its significance in species richness and its abundance. The commercially important pelagic groups of Gulfs of Mannar and Palk Bay are Lesser Sardine, Oil sardine, Other Sardines, Hilsa, Anchovies, Mulletts, Wolf herring, Halfbeaks, Full beaks, Ribbonfish, Barracudas, Carangids, Mackerels, Seer fish, Tunas, Flying fish, Swordfish and Billfishes.

### Capture Methods - Craft and Gear

The crafts used for exploiting the resources along this coast are Catamaran, Non-motorized boat (Vathai), Motorized Fibre Reinforced boat, Inboard/outboard engine fitted crafts (Vallam). Mechanised crafts like trawls, purse-seine, and gillnets used for exploit of the fishery. Along both coast, trawls are the most common method for exploiting the fishery resources. The single-day trawl or multiday trawl classified Based on a number of days' operation. The gill nets and trawls (Shrimp trawls/Fish trawls) are also commonly used gear and based on the depth of the gear, mesh size, a number of floaters and sinkers it can be varied according to the species usually they catch. The Paruvalai / Choodaivalai used all along the coast. The common traditional methods are traps, shore seine.

#### 1. Belonidae (Needlefishes)

The fishes are Small to medium-sized (up to 2 m) with elongate bodies. Head with both upper and lower jaws extended into long beaks filled with sharp teeth dorsal and anal fins posterior in position; pelvic fins located in an abdominal position; pectoral fins short. Lateral line running down from pectoral-fin origin and then along the ventral margin of the body.

Scales small, cycloid (smooth), easily detached. The fishery formed by eight species belonging to Four genera along the Indian waters. The commercially important species which support the local fishery namely *Ablenneshians*, *Platybeloneargalusplatyura*, *Strongyluraleiura*, *Strongylurastrongylura*, *Tylosurusacusmelanotus* and *Tylosurus crocodilus crocodilus*. The fishery mostly exploited by Modified gillnet and Mini trawl (ThalluMadi).

## 2. Carangidae (jacks, pompanos, jack mackerels, runners, and scads)

Carangids are called Jacks, and it is small to large and ranges up to 150 cm, and the body shapes extremely variable from elongate, fusiform to deep and strongly compressed. It is extremely variable in size, shape and colour during its developmental stages from juveniles to adult. More than 35 species formed the resource. However, few species support the commercial fishery. Scads and yellow stripe scads are the dominated resources along this coast. There is 16 commercially important genus under this family. The commercially important species and reasonable landings are *Parastromateus niger*, *Alectis indicus*, *Trachinotus blochii*, *Scomberoides commersonianus*, *Megalopsis cordyla*, *Elagatis bipinnulata*, *Decaptereus russeli*, *Alepes djedaba*, *Selaroides leptolepis*, *Atule mate*, *Selar crumenophthalmus*, *Seriola dumerili*, *Carangoides chrysophyrs*, *C. fulvoguttatus*, *C. bajad*, *C. Uii*, *C. headlensis*, *Caranx ignobilis*, *C. heberi* *C. sexfasciatus* and *Gnathanodon speciosus*. The trawls, gillnets and hook-and-lines are exploiting the carangids.

## 3. Chirocentridae (Wolf Herrings)

Dorabs are very elongate, highly compressed body lack of scutes along the belly and presence of large canine teeth in both jaws. Having single dorsal fin; pectoral fins set low on the body; pelvic fins about equidistant between the pectoral base and anal origin; caudal fin deeply forked. They are non-shoaling fishes, abundant along both east and west coast. There are two species, namely; *Chirocentrus dorab* and *C.nudus* supported the fishery. Around 50% of the total landing exploited from Palkbay and Gulf of Mannar coast by trawls.

## 4. Clupeidae(herrings, shads, sardines, hilsa, and menhadens)

Clupeidae is the most valuable family of food fishes in the world. The clupeids are small pelagic having highly migratory shoaling behaviour in nature. These small pelagic are more diverse. The Clupeidae are characteristically small (<50 cm), They have no spines in the fins, one short dorsal fin, deeply forked tails, ventral fins on their abdomens far behind the pectorals, deep bodies, and large scales that slip off at a touch. The clupeids further classified into five subfamilies they are:

- Dussumieriinae (*Dussumieria*, *Etrumeus*)
- Clupeinae (*Herklotsichthys*, *Sardinella*, *Amblygaster*, *Escualosa* & *Sardinops*)
- Dorosomatinae (*Nematalosa* & *Anodontostoma*)
- Alosinae (*Hilsa* & *Tenualosa*) and Pristigasterinae (*Pellona*, *Ilisha* & *Opisthopterus*)

### 1.a. Indian Oil sardine

The oil sardine most important pelagic fishery resource of the country having high commercial importance and account first to the total landings. It is locally called “*Pei chala*” has been targeted and fully exploited by pair trawlers. The seasonal fishery starts from late September to April from Palk Bay. The catch focused for fishmeal preparation, and some quantities sent to Kerala for fresh consumption.

### 1.b. Lesser sardines

Thirteen species formed fishery all along the Indian waters and the dominant species along this water are *Sardinella gibbosa*, *S. albella*, and *S. fimbriata*. This fishery mostly exploited by trawls and gillnet

## 5. Coryphaenidae (Dolphin Fish)

Dolphin fish are moderately slender and laterally compressed, with slightly projecting lower jaw, a massive blunt head, a long, rather high dorsal fin without spines, extending from close behind the head to near the base of the caudal fin, and a widely forked tail. *Coryphaena* is monogeneric in the family and composed of two species, namely *C. hippurus* and *C. equiselis*. This species forms very rare landing along this water and exploited by gill net and hook and line

## 6. Engraulidae (White Baits)

Small silvery fishes, usually with fusiform, sub-cylindrical bodies, scutes present along the belly, strongly projecting, and lower jaw characteristically "under slung". No spiny rays in fins; with a single dorsal fin, anal fin short, moderate or very long. Anchovies range from 8 cm (*Stolephorus banganensis*) to 32 cm (*Setipinna brevifilis*) (FishBase, 2017). Five genera include *Encrasicholina*, *Stolephorus*, *Thryssa*, *Coilia* and *Setipinna* are recognised and form the fisheries all along the Indian waters.

The whitebaits are constituted by two genera the *Encrasicholina* and *Stolephorus* only. The genus *Stolephorus* constitute nearly 70% of the catch. The *Stolephorus indicus* and *S. Commerson* are major landings from this coast. *Setipinna phasa* and *Setipinna taty* are also a commonly available resource from this group. In the *Thryssa* group, the commercially important species along this coast are *Thryssa dussumieri*, *T. malabarica*, *T. mystax*, *T. setirostris* and *T. vitirostris*.

## 7. Hemiramphidae (Half Beaks)

The fishes are with an elongate body and prolonged lower jaw and short triangular upper jaw. Nostrils in pit anterior to eyes. No spines in fins; dorsal and anal fins posterior in position; pelvic fins abdominal in position, pectoral fins usually short. Lateral line running down from pectoral-fin origin and then back along the ventral margin of the body. Scales moderately large, cycloid (smooth), easily detached. The fishery formed by twenty-two species belonging to five genera along the Indian waters. But in this coast *Hemiramphus* far is dominant resources contribute more than 98% to the fishery

## 8. Rachycentridae (King Fish)

*Rachycentron canadum* is the only species in the family Rachycentridae. It is commonly called as cobia and sergeant fish and having large, moderately elongate fishes with a broad, flattened head, tiny scales, a long, low soft dorsal fin preceded by short spines unconnected by membranes, and a slightly shorter anal fin. This species forms very rare landing along this water and exploited by trawls and hook and line

## 9. Scombridae (Mackerels, Spanish mackerels, bonitos, Seer fish and tunas)

The Scombrids have an elongate, fusiform and compressed body with a pointed snout and Adipose eyelid sometimes present in some species. Two separated dorsal fins; finlets present behind dorsal and anal fins; caudal fin deeply forked, covering hypural plate and at least two small keels on each side of caudal peduncle. The lateral line is simple. The body either uniformly covered with small to moderate scales (e.g. *Rastrelliger*, *Scomber*, *Scomberomorus*) or a corselet developed and rest of body naked (*Auxis*, *Euthynnus*, *Katsuwonus*) or covered with small scales (*Thunnus*). There are 15 genera, and about 50 species forms the fishery all along the Indian water. Mackerels, Spanish mackerels, bonitos, and tunas form the basis of important commercial fisheries. All scombrids are excellent food fishes. They are the most relished fishes with very high market demand. The trawls, gillnets and hook-and-line exploit the Scombrids.

### a. Seer Fishes

The Five major species supported the resource and fishery in Indian waters. The species *Scomberomorus commerson* one of the dominant and commercially important fishes among the seer fish along this coast. The other species, namely, *S.guttatus*, *Acanthocybium solandri*, are the least support to the fishery.



### b. Mackerel

Three species stand for fishery namely *Rastrelliger kanagurta*, *R. brachisoma* and *R. faugni* in Indian waters. However, Indian mackerel *R. kanagurta* supported more than 98% landing, along this coast

### c. Tunas

Tunas are fast swimming, and highly migratory pelagic fishes have a cosmopolitan distribution. Nine species are belonging to the six genera. The *Katsuwonus pelamis*, *Thunnus albacore* and *Euthynnus affinis* are the three-dominant species along this coast.



*Scomberomorus commersonii* catch at Pamban Therkuvadi



*Hemiramphus far* catch at Pamban lighthouse



Seer fish catch from Shore seine Valinokkam



Mackerel catch from Pamban Therkuvadi

## 10. Sphyraenidae (Barracudas)

Body elongate, subcylindrical or slightly compressed (size to 170 cm); covered with small, cycloid scales. Headlong, pointed, scaly on sides and posteriorly on top. Mouth large with elongated Jaws having sharp, flattened or conical teeth with sharp canines near the tip



of the lower jaw. Two short dorsal fins, widely separated; Caudal fin forked; Lateral line well developed, straight. This Carnivorous pike-like, fishes distribute both tropical and temperate regions. The Juvenile barracudas frequently occur in small to large schools. The fishes are commercially important and edible among the pelagic resources. The fishery formed by more than five species, namely *Sphyraena barracuda*, *S. Putname*, *S. jello*, *S. foresteri*, *S. obtusata*, and *S. flavicuda*. The fishery mostly exploited by trawls and hook and line.



*Istiopterus platypterus* catch at Pamban lighthouse



*Caranx* sp. catch at Rameshwaram



*Caranx* sp. catch at Pamban Therkuvadi



Bycatch landings at Jegathapattianm

### 11. Trichuridae (Ribbon Fishes)

Ribbon fishes are extremely elongate and laterally compressed and ribbon-like fishes. Mouth large and lower jaw usually projecting a dermal process at the tip of each jaw; strong canine teeth in jaws, those at the front of upper jawfang-like; maxilla concealed by preorbital bone. Dorsal fin low and long, anal fin low or reduced to short spinules; pectoral fins short and low on the body; pelvic fins reduced or completely absent (*Trichiurus* and

*Lepturacanthus*); caudal fin either small and forked or absent, the body tapering to a point. Single lateral line with the absence of scales. The fishery was formed by six species and dominated by *Trichiurus lepturus* and *Lepturacanthus savala* along this coast. The fishery mostly exploited by trawls

## 12. Miscellaneous

Other resources which contribute considerable fishery pelagic fishery are Barramundi, Sailfish, Swordfish, Mullet, Milkfish, Tarpons, Lady fishes, Fusiliers etc. They form commercial fishery at varying levels in certain areas.

## Conclusion

Fishing pressure on marine ecosystems has increased significantly all over the world, particularly in developing countries. In this region increase in fisher population and demand, results in overfishing of marine fisheries resources. The enormous fishing pressure will lead to overexploitation. Along Gulf of Mannar and Palk Bay management and conservation measures on marine fisheries need to be ensured. It will enhance the resource through sustainable use of marine fisheries in the future. And also, indigenous management measures will instigate the community or regional enlargement of fisheries regulation for the sustainability of available resources.