

CHECKLIST FOR COMMERCIALLY IMPORTANT FOOD FISHES OF PARANGIPETTAI, SOUTHEAST COAST OF INDIA

Kudus Kadharsha^{1*}, Syed Ajmal Khan¹, Somasundharanair Lyla¹, Ponnuvel Mohanchander¹, Akbar John²

¹Annamalai University, Faculty of Marine Sciences, Centre of Advanced Study in Marine Biology, Parangipettai-608502, Tamil Nadu, India.

²INOCEM, Kulliyah of Science, International Islamic University Malaysia, Kuantan Pahang Malaysia.

*Corresponding author E-mail: kadharsha87@gmail.com

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ABSTRACT

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A checklist for commercially important food fishes from Parangipettai, Southeast coast of India is presented (lat. 11° 30' N, long. 79° 46' E). This comprises 93 species belonging to 57 genera and 42 families currently known from the area, which are all of commercially valuable. We provided a synthesis of the taxonomical work carried out until now that could guide to future research..

1. INTRODUCTION

Fish forms a vital source of food and is man's important source of high quality protein, providing 16% of the animal protein consumed by the world's population (FAO, 2000) [1]. Marine fisheries have emerged as one of the largest industries in the country employing about 10 million people in 3,651 fishing villages along the 8,129 Km coastline of India earning foreign exchange of over 7250 crores in 2009-2010.

India has an EEZ of 2.02 million Km² and is endowed with a rich variety of demersal fishery resources. The exploited demersal finfish resources increased from 0.75mt in 1985 to register the peak of 1.35 mt in 1998. However, it decreased to 1.15 mt in 2004 (Srinath *et al.*, 2006) [2]. About 700 species of finfish have been recorded from the Indian sea bottom of which about 250 are common to the demersal fisheries. Species richness of demersal is more off the east coast than off the west coast (Bensam, 2000) [3].

Tamil Nadu has a coastline of about 1,076 Km (13% of the country's coastline), 1.9 lakh Km² of Exclusive Economic Zone (9% of India's EEZ) and a continental shelf of about 41,412 Km². Tamil Nadu alone produced 363,000 tons of marine fish and 112,00 tons of inland fish amounting altogether to 475,000 tons of total fish in the year 2008 (total for the whole India 2.8 million tons).

In the southeast coast of India, Parangipettai waters where the present swot was carried out harbour a variety of food fishes, shrimps and other shellfishes. The fishes landed daily were marketed at the local fish market and in the surrounding villages and the choice items were moved to interior places so also exported. The surplus is sundried. As a wide range of fin fishes were contributing in the catch, hence a checklist has been made for the commercially important food fishes occurring in the waters of Parangipettai (southeast coast of India).

2. MATERIALS AND METHODS

2.1 Study site

Parangipettai (lat. 11° 30' N, long. 79° 46' E) situated on the southeast coast of India is endowed with a variety of biotopes such as neritic, estuarine, backwater and mangrove swamps (Figure1). At this consign an estuary named "Vellar" debouches into the Bay of Bengal, where it's origin is in the

Shervaroyan hills of Salem district, 240 Km. west of Parangipettai. This estuary is 600 metres wide at its junction with the sea. This is a true estuary and is subjected to long term seasonal variations. During the northeast monsoon (October to December) it drains more of fresh water.

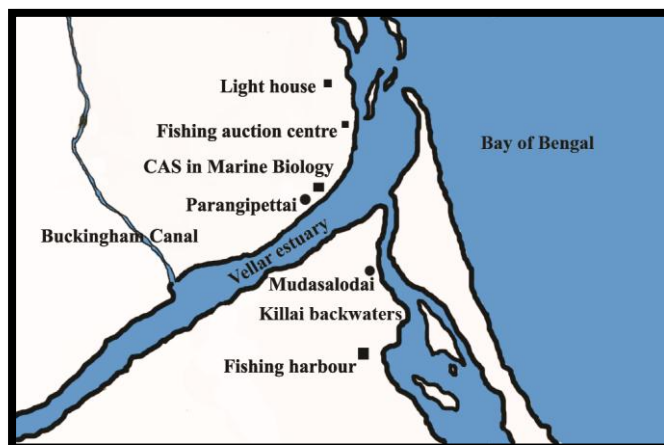


Figure 1: Map showing the study area

2.2 Sample collection and processing

Samples (fishes) were collected from the commercial fish landings at two popular landing centres namely Annankovil and Mudasalodai which are situated in the coastal waters of Parangipettai for a period of one year (January 2010-December 2010), no sampling was done in the month of May, due to the fishing holiday in the coast of Tamil Nadu. The collected fishes were kept in ice boxes and transferred to the laboratory and washed in tap water. The fishes were identified up to the species level. FAO species identification sheets for fishery purposes (EASTERN INDIAN OCEAN fishing area 57 and WESTERN CENTRAL PACIFIC fishing area 71) were used for species level identification. For further studies specimens were preserved in 5% formalin after identification. Mechanized trawlers, mechanized boats, catamarans, plank-built boats and dugout canoes were mainly employed for fishing. Gill nets (35mm) and trawl nets (80cm-10cm) are commonly used gears in the study area.

2.3 Identification flowchart

1. Wash the fish to be identified and remove all sand/sediment adhering to. Make sure that the fish is not damaged so as to obliterate the morphological configuration (do not prefer any spoiled or deteriorated fish).
2. To familiarise yourself with all measurements with the help of pictorial presentations.
3. Look for any conspicuous/predominant characters such as the presence of operculum, type of caudal fin, nature of dorsal fin and spine, lateral line, scutes, dark blotches, nature of snout, possessed by the fish. On successful examination, we could arrive tentatively at the family to which the given fish may be belonging.
4. After arriving at the family level, examine the list of species given under each family. Compare the character of the collected species with characters for each species under that family. While doing so, it is better to stick on to the meristic characters.

3. RESULTS AND DISCUSSION

A total of 447 individuals were collected and 93 species belonging to 57 genera and 42 families were identified (Table 1). About 97 species of teleost fishes were identified from Parangipettai waters [4]. In the present study, the catch and the fishery contributed varied between months. The family Carangidae ranked first with a maximum number of 7 species followed by Synodontidae (6 species), Engraulidae (6 species), Mugilidae (5 species), Leiognathidae (5 species) and Lutjanidae (4 species). All the species recorded were not observed in all the months. A total of 254 species belonging to 17 families were recorded in the Indian Ocean [5]. Of all the 93 species recorded, the representatives of Clupeiformes (*Nematalosa nasus*), Gonorynchiformes (*Chanos chanos*), Siluriformes (*Arius subrostratus*, *Plotosus canius*), Synodontiformes (*Saurida tumbil*), Belontiiformes (*Hemiramphus far*), Mugiliformes (all mugilids in table.1), Perciformes (*Lates calcarifer*, *Epinephelus tauvina*, *E. bleekeri*, *Sillago sihama*, *Caranx para*, *Lutjanus argentimaculatus*, *Leiognathus splendens*, *Eluthronema tetradactylum*, *Kthala axillaris*, *Terapon puta*, *Etroplus suratensis*, *Scatophagus argus*) and Pleuronectiformes (*Pseudorhombus triocellatus*) were present in the sampling site throughout the year. The fishery in this study area was not only supported from marine, but also from the adjacent estuarine waters, where the river Vellar joins the Parangipettai coastal waters. The presence of the above representatives throughout the year indicates their ability to withstand in any adverse conditions.

The number of species found in all the months fluctuated seasonally. This may be due to the increase in the fishing efforts as the fishermen are going to deeper regions for fishing, as a result the fleet may migrate to faraway places. On the other hand, the influence of biological processes also tends the animals to migrate to another fishing ground.

All the species observed in this study were of having commercial importance. They are fetching more cost by means of export at times of heap landings. Several studies were done on the biodiversity of marine fishes in the coasts of Tamil Nadu. Similar results were obtained in the study taken in Puducherry coastal waters by [6]. For the Eastern Indian ocean where the study area is situated, works on such aspects are scanty.

A total of 885 species belonging to 150 families were recorded in the South-Western Indian Ocean [7]. However, such kind of works are not much of interest in the Indian context, worldwide several works had been done. About 107 fish species belonging to 32 families have been reported from Malaysian waters [8]. 53 species from 13 families were also been observed in the streams of Sao Paulo state [9].

The number of species in this checklist is not final as there might be changes regarding the valid fish names in the future or new recorded species. Since Parangipettai coast is having close connections with the backwaters and small tributaries, there may be chances for some more species to enter in these waters, which may increase the numbers in this list. Optimistically this checklist will be a good reference for current and future studies.

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Table 1: Month wise data on list of fishes observed from the study area during the year 2010-2011. (x: present; - : absent; N: No sampling due to fishing holiday)

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Elopiformes												
Elopidae												
<i>Elops machnata</i> (Forsskal, 1775)	x	x	x	x	N	x	x	x	x	x	x	-
Megalopidae												
<i>Megalops cyprinoides</i> (Broussonet, 1782)	-	x	x	x	N	x	x	x	-	x	-	x
Anguilliformes												
Anguillidae												
<i>Anguilla bicolor bicolor</i> McClelland, 1844	-	-	-	-	N	-	-	-	-	x	x	x
Muraenesocidae												
<i>Muraenesox bagio</i> (Hamilton-Buchanan, 1822)	-	-	x	x	N	x	x	x	x	x	x	x
<i>Muraenesox cinereus</i> (Forsskal, 1775)	x	x	x	x	N	x	x	x	x	-	-	-
Clupeiformes												
Chirocentridae												
<i>Chirocentrus dorab</i> (Forsskal, 1775)	-	-	-	x	N	x	x	x	x	x	x	x

Engraulidae													
<i>Thryssa malabarica</i> (Bloch, 1795)	x	x	-	x	N	x	-	x	x	-	-	x	
<i>Thryssa mystax</i> (Schneider, 1801)	x	x	x	x	N	x	x	x	x	-	x	x	
<i>Thryssa setirostris</i> (Broussonet, 1782)	-	x	x	x	N	x	x	x	x	x	x	x	
<i>Ciolla dussumieri</i> (Valenciennes, 1848)	-	-	-	x	N	x	x	x	x	-	-	-	
<i>Stolephorus commersonii</i> Lacepede, 1803	x	x	x	x	N	x	x	x	x	-	-	-	
<i>Stolephorus waitei</i> Jordan & Scale, 1926	x	x	x	x	N	x	x	x	x	-	-	-	
Clupeidae													
<i>Sardinella albella</i> (Valenciennes, 1847)	x	x	x	x	N	x	x	x	x	-	-	-	
<i>Sardinella longiceps</i> (Valenciennes, 1847)	x	x	x	x	N	x	x	x	-	-	-	-	
<i>Nematalosa nasus</i> (Bloch, 1795)	x	x	x	x	N	x	x	x	x	x	x	x	
Gonorynchiformes													
Chanidae													
<i>Chanos chanos</i> (Forsskal, 1775)	x	x	x	x	N	x	x	x	x	x	x	x	
Siluriformes													
Aridae													
<i>Arius maculatus</i> (Thunberg, 1792)	x	x	x	x	N	x	x	-	x	x	x	x	
<i>Arius subrostratus</i> (Valenciennes, 1840)	x	x	x	x	N	x	x	x	x	x	x	x	
Plotosidae													
<i>Plotosus canius</i> (Hamilton & Buchanan, 1822)	x	x	x	x	N	x	x	x	x	x	x	x	
Aulopiformes													
Synodontidae													
<i>Saurida tumbil</i> (Bloch, 1745)	x	x	x	x	N	x	x	x	x	x	x	x	
<i>Saurida undosquamis</i> (Richardson, 1848)	x	x	-	-	N	x	x	x	x	x	x	x	
<i>Saurida isarakurai</i> (Shindo & Yamada, 1972)	-	-	-	x	N	x	x	x	x	-	-	-	
<i>Synodus indicus</i> (Day, 1873)	-	-	-	-	N	-	-	x	x	x	x	-	
<i>Synodus hoshinonis</i> Tanaka, 1917	x	x	-	-	N	-	-	-	x	x	x	x	
<i>Trachinocephalus myops</i> (Forster, 1801)	x	-	-	-	N	-	x	x	x	x	x	x	
Beloniformes													
Hemiramphidae													
<i>Hemiramphus far</i> (Forsskal, 1775)	x	x	x	-	N	x	x	x	x	x	x	x	
<i>Hyporhamphus limpatus</i> (Valenciennes, 1846)	x	-	-	x	N	x	x	x	x	x	-	-	
Mugiliformes													
Mugilidae													
<i>Mugil cephalus</i> (Linnaeus, 1758)	x	x	x	x	N	x	x	x	x	x	x	x	
<i>Liza parsia</i> (Hamilton & Buchanan, 1822)	x	x	x	x	N	x	x	x	x	x	x	x	
<i>Liza tade</i> (Forsskal, 1775)	x	x	x	x	N	x	x	x	x	x	x	x	
<i>Liza subviridis</i> (Valenciennes, 1876)	x	x	x	x	N	x	x	x	x	x	x	x	
<i>Valamugil cunnesius</i> (Valenciennes, 1836)	x	x	x	x	N	x	x	x	x	x	x	x	
Perciformes													
Ambassidae													
<i>Ambassis gymnocephalus</i> (Lacepede, 1801)	x	x	x	x	N	x	x	x	x	-	-	-	
Centropomidae													
<i>Lates calcarifer</i> (Bloch, 1790)	x	x	x	x	N	x	x	x	x	x	x	x	
Serranidae													
<i>Epinephelus tauvina</i> (Forsskal, 1775)	x	x	x	x	N	x	x	x	x	x	x	x	
<i>Epinephelus bleekeri</i> (Vaillant, 1877)	x	x	x	x	N	x	x	x	x	x	x	x	
<i>Epinephelus malabaricus</i> (Schneider, 1801)	x	x	x	-	N	-	-	-	x	x	x	x	
Lactaridae													
<i>Lactarius lactarius</i> (Bloch & Schneider, 1801)	x	x	-	-	N	-	-	-	x	x	x	x	
Sillaginidae													
<i>Sillago sihama</i> (Forsskal, 1775)	x	x	x	x	N	x	x	x	x	x	x	x	
Carangidae													
<i>Alectis indicus</i> (Ruppel, 1830)	x	x	x	x	N	x	x	x	x	-	-	-	
<i>Carangoides malabaricus</i> (Bloch & Schneider, 1801)	x	x	x	x	N	x	x	x	x	x	x	-	
<i>Caranx ignobilis</i> (Forsskal, 1775)	x	x	x	x	N	x	x	x	x	-	x	x	
<i>Caranx para</i> Cuvier, 1833	x	x	x	x	N	x	x	x	x	x	x	x	
<i>Caranx sexfasciatus</i> (Quoy & Gaimard, 1824)	x	x	x	x	N	x	x	x	x	-	x	x	
<i>Parastromateus niger</i> (Bloch, 1795)	x	-	-	-	N	-	x	x	x	-	-	-	
<i>Scomberoides tol</i> (Cuvier, 1832)	x	x	x	x	N	x	x	x	x	-	-	-	
Lutjanidae													
<i>Lutjanus argentimaculatus</i> (Forsskal, 1975)	x	x	x	x	N	x	x	x	x	x	x	x	
<i>Lutjanus fulviflammus</i> (Forsskal, 1775)	x	x	x	x	N	x	x	x	x	-	-	-	
<i>Lutjanus johni</i> (Bloch, 1792)	x	x	x	x	N	x	x	x	x	x	-	-	
<i>Lutjanus russelli</i> (Bleeker, 1849)	-	-	x	x	N	x	x	x	x	x	x	x	
Leiognathidae													
<i>Leiognathus splendens</i> (Cuvier, 1821)	x	x	x	x	N	x	x	x	x	x	x	x	
<i>Leiognathus equulus</i> (Forsskal, 1775)	x	x	x	x	N	x	x	x	x	x	-	-	
<i>Leiognathus bindus</i> (Valenciennes, 1835)	-	-	x	x	N	x	x	x	x	x	x	x	
<i>Secutor insidiator</i> (Bloch, 1787)	-	x	x	x	N	x	x	x	x	x	-	-	
<i>Secutor ruconius</i> (Hamilton-Buchanan, 1822)	-	-	x	x	N	x	x	x	x	x	x	x	
Polynemidae													
<i>Eluthronema tetradactylum</i> (Shaw, 1804)	x	x	x	x	N	x	x	x	x	x	x	x	
<i>Polynemus plebius</i> Broussonet, 1782	x	x	x	x	N	x	x	-	-	-	-	-	
Haemulidae													
<i>Pomadasys kakkan</i> (Cuvier, 1830)	-	-	-	x	N	x	x	x	x	x	x	-	

<i>Pomadasys maculatum</i> (Bloch, 1979)	x	x	x	x	N	x	x	x	x	-	-	-
Sciaenidae												
<i>Kthala axillaris</i> (Cuvier, 1830)	x	x	x	x	N	x	x	x	x	x	x	x
<i>Johnius corutta</i> Bloch, 1793	x	x	x	x	N	x	x	x	x	x	-	-
<i>Dendrophysa russelli</i> (Cuvier, 1830)	-	-	-	x	N	x	x	x	x	-	-	-
Lethrinidae												
<i>Lethrinus nebulosus</i> (Forsskal, 1775)	x	x	x	x	N	x	x	x	x	-	-	-
Nemipteridae												
<i>Nemipterus bleekeri</i> (Day, 1875)	-	-	-	-	N	x	x	x	x	x	x	x
<i>Nemipterus japonicus</i> (Bloch, 1791)	-	-	-	-	N	x	x	x	x	x	x	x
Gerreidae												
<i>Gerres abbreviatus</i> (Bleeker, 1850)	-	x	x	x	N	x	x	x	x	-	-	-
<i>Gerres filamentosus</i> (Cuvier, 1829)	x	x	x	x	N	x	x	x	x	-	-	-
<i>Gerres rappa</i> (Barnard, 1927)	x	x	x	x	N	x	x	x	x	-	-	x
Mullidae												
<i>Upeneus sulphureus</i> (Cuvier, 1829)	x	x	x	x	N	-	-	-	-	x	x	x
<i>Upeneus vittatus</i> (Forsskal, 1775)	-	-	-	x	N	x	x	x	x	x	x	x
Stromatidae												
<i>Pampus argenteus</i> (Euphrasen, 1788)	x	x	x	x	N	x	x	x	x	-	-	-
<i>Pampus chinensis</i> (Euphrasen, 1788)	-	-	-	x	N	x	x	x	x	x	-	-
Scombridae												
<i>Rastrelliger kanagurta</i> (Cuvier, 1817)	-	-	x	x	N	x	x	x	x	x	-	-
<i>Scomberomorus guttatus</i> (Bloch & Schneider, 1801)	x	x	x	-	N	-	-	-	-	x	x	x
<i>Scomberomorus commerson</i> (Lacepede, 1801)	-	-	-	x	N	x	x	x	x	-	-	-
<i>Ethynnus affinis</i> (Cantor, 1849)	-	x	x	x	N	x	x	x	x	-	-	-
Sphyraenidae												
<i>Sphyraena barracuda</i> (Walbaum, 1792)	x	x	x	x	N	-	-	-	-	-	x	x
<i>Sphyraena obtusata</i> (Cuvier, 1829)	-	-	-	x	N	x	x	x	x	x	-	-
Siganidae												
<i>Siganus javus</i> (Linnaeus, 1766)	x	x	x	x	N	x	x	x	-	-	-	-
<i>Siganus canaliculatus</i> (Park, 1797)	x	x	x	x	N	x	-	-	-	x	x	x
Teraponidae												
<i>Terapon jarbua</i> (Forsskal, 1775)	x	x	x	x	N	x	x	x	x	-	-	x
<i>Terapon puta</i> (Cuvier, 1829)	x	x	x	x	N	x	x	x	x	x	x	x
Trichiuridae												
<i>Trichiurus lepturus</i> Linnaeus, 1758	x	x	x	x	N	x	x	x	x	-	-	-
Cichlidae												
<i>Etroplus suratensis</i> (Bloch, 1797)	x	x	x	x	N	x	x	x	x	x	x	x
Drepanidae												
<i>Drepane punctata</i> (Linnaeus, 1758)	x	x	x	x	N	x	x	x	x	-	-	-
Lobotidae												
<i>Lobotes surinamensis</i> (Bloch, 1790)	x	x	x	x	N	x	x	x	x	-	-	-
Acanthuridae												
<i>Acanthurus bleekeri</i> Gunther, 1861	x	x	x	x	N	x	x	x	x	-	-	-
Scatophagidae												
<i>Scatophagus argus</i> (Bloch, 1788)	x	x	x	x	N	x	x	x	x	x	x	x
Pleuronectiformes												
Bothidae												
<i>Pseudorhombus triocellatus</i> (Schneider, 1801)	x	x	x	x	N	x	x	x	x	x	x	x
<i>Pseudorhombus elevatus</i> Ogilby, 1912	x	x	x	x	N	x	x	x	-	-	-	-
Cynoglossidae												
<i>Cynoglossus puncticeps</i> (Richardson, 1846)	x	x	-	x	N	x	x	x	x	x	-	-
<i>Cynoglossus arel</i> (Schneider, 1801)	x	x	x	x	N	x	x	x	x	-	-	-
Psettodidae												
<i>Psettodes erumei</i> (Schneider, 1801)	-	x	x	x	N	x	x	x	x	x	-	-

