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Check list of marine fish from Nagapattinam coastal waters, south east coast of India

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Abstract

The macrofaunal communities are arguably the most diverse group on earth and soil represents a favorable habitat for macrofauna. The present investigation was carried out on marine fish accessibility along the Nagapattinam coastal waters to identify, quantify and assess the fish resources potential for development of a small-scale industry. Stratified random sampling method was followed from each trawl and the collected fishes were identified up to species level by using the FAO identification sheet. A large collection of marine fish was made along the coastal line of Nagapattinam and totally 95 species belonging to 42 families and 59 genera of marine fishes were identified over a 12 months study period from May 2014 to April 2015. Most of the species were commonly available in all the season along Nagapattinam coastal waters. The present study revealed the occurrence of marine fish species along the Nagapattinam coastal waters, southeast coast of India.

Keywords: Engraulidae, bycatch, trawl fishes, Leiognathidae

1. Introduction

Though marine sciences has been established much attention along the southeast coast of India in recent years-marine fish studies are still watch over by many researchers. The lack of basic information such as diversity data and species check list make it impossible to assess the rate of population lost among marine fishes and other species. In the region of intertidal and inshore waters are present the commercially important fishes and these fishes received extensive consideration in recent years due to greater demand for meat [15].

Fish are at present in soaring require in food markets, they are widely consumed in many parts of the world because they possess maximum of protein, vitamins, low saturated fat and also contain omega fatty acids known to support good health [9]. The commercial fish fauna of India has been studied extensively [8]. However, little is known about noncommercial fishes [2]. Underwater visual censuses have been reported from Lakshadweep [7], the Andaman and Nicobar Islands [1,3] and from islands off the central western coast states of Goa and Karnataka [5,6]. Hence the present studies take over on marine fish biodiversity studies completed on the Nagapattinam coastal waters, southeast coast of India.

2. Materials and Methods

Fishes were collected at monthly intervals from the trawl bycatch landed in Nagapattinam landing centre (Lat 10°45'37.45"N Lon 79°51'09.07"E) during the May 2014 to April 2015 (Figure 1). Stratified random sampling from each of the trawl catch was followed. In the present study, the fish species was collected in the trawl bycatch and identified up to species level by using the keys available in FISH BASE [10], FAO species identification sheets [11] besides standard books [12] also used to identify the fishes. Data were collected fortnightly, pooled seasonally and repeated throughout the period. The data on marine fishes from collection site was combined together for the different seasons

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Fig 1: Map showing the collection site (Nagapattinam)

3. Result and Discussion

The coastal area is dependent upon fishing, related activities and their economies have been badly damaged by the overfishing of fishery resources at an ever increasing rate over the past decade. Fishery resources are finite but renewable. The present scrutiny was document the distribution of marine fishes along the Nagapattinam coastal waters and totally 95 different species were identified belonging to 42 family and 59 genera from collection site, southeast coast of India (Figure 1). A different family fishes were identified along the collection site such as *Ariidae* (1), *Bothidae* (3), *Bregmacerothidae* (1), *Carangidae* (7), *Centropomidae* (1), *Channidae*(1), *Chirocentridae* (1), *Clupeidae* (7), *Congridae* (2), *Cynoglossidae* (2), *Dasyatidae* (1), *Diodontidae* (1), *Drepaneidae* (1), *Engraulidae* (10), *Exocoetidae* (2), *Fistulariidae* (1), *Gerreidae* (2), *Hemiramphidae* (1), *Lagocephalidae* (1), *Leiognathidae* (8), *Lutjanidae* (6), *Mugilidae* (1), *Mullidae* (4), *Narcinidae* (1), *Plotosidae* (1), *Platycephalidae* (1), *Pomadasyidae* (1), *Psettodidae* (1), *Scaridae* (1), *Sciaenidae* (1), *Scombridae* (1), *Serranidae* (3), *Siganidae* (1), *Sillaginidae* (3), *Soleidae* (1), *Sphyaenidae* (4), *Stromateidae* (2), *Syngnathidae* (1), *Synodidae* (2), *Teraponidae* (2), *Triacanthidae* (1) and *Trichiuridae* (2)

(Table 1). The above findings are in concord with Murugesan *et al.* (2012) collected 46 species in Parangipettai and 51 in Cuddalore coastal waters as well as Varadharajan *et al.* (2012) identified 66 species in Mallipattinam coastal waters, Southeast coast of India. Presence of a large number of mid level carnivores in the trawl bycatch landings signals the large scale removal of top level predators [16]. The total number of species and genera were identified among the collection site during the study period-(fig-2).

The life history of many fishes in this region are adapted to the seasonal fluctuations in climatically the area falls under severe monsoon influence and is impacted by cyclones, tidal surge and inland flooding resulting in environmental refugees. The fishes showed that the habitual and consistent groups dominated the post monsoon and pre monsoon seasons, while seasonal species dominated during the monsoon season [17, 18]. The maximum number of species was observed in the family of Engraulidae (10 species and 3 genera) followed by Leiognathidae (8 species and 3 genera); Clupeidae and Carangidae (7 species and 5 genera respectively); Lutjanidae (6 species and 3 genera); Mullidae (4 species and 1 genera); Serranidae, Bothidae and Sillaginidae (3 species and 1 genera respectively); Congridae, Exocoetidae and Synodidae (2 species and 2 genera respectively); Cynoglossidae, Gerreidae, Stromateidae, Teraponidae and Trichiuridae (2 species and 1 genera respectively) (Table 1 and Figure 2). While, spatial variation of marine fishes are result from the combination of many physical and biological factors that affect fish distribution and diversity [4].

The different fisheries sector is order to maximize their catches by using smaller meshes. Thus, small fishes dominate catches, lots of juveniles and eggs are destroyed. The species can be conserved by restricting to the traditional way of fishing and prohibiting trawling in the nursery grounds [20]. When fishing exploits a resource it changes the mortality and behaviour of the system. There is also need for updating the information for the benefit of research workers, administrators and other stake holders, resource wise estimates of marine fish landings [19].

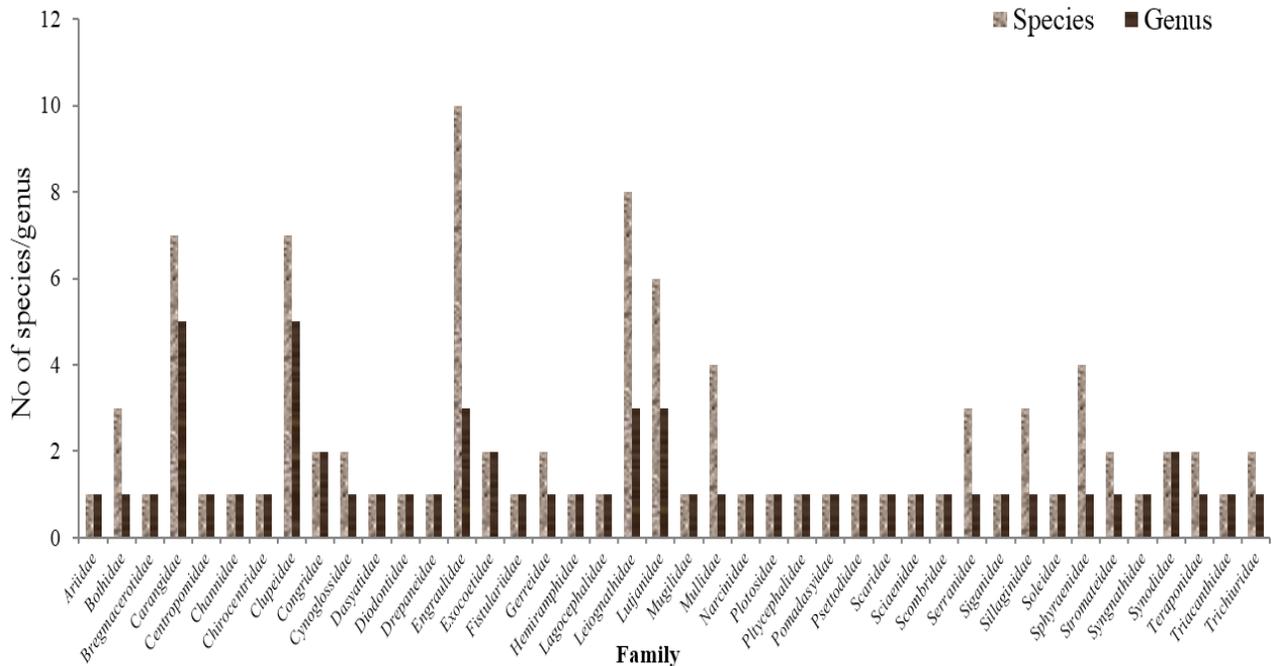


Fig 2: Number of species and genus along the Collection sites

Table 1: Check list and Assessment with previous survey of marine fishes along the Southeast coast of India

S.L. NO.	Species	Family	Present Survey	Murugesan et al., 2012	Varadharajan et al., 2012
1	<i>Arius arius</i>	Ariidae	+	+	+
2	<i>Pseudorhombus elevatus</i>	Bothidae	+	+	-
3	<i>P. javanicus</i>		+	+	-
4	<i>P. triocellatus</i>		+	+	-
5	<i>Bregmaceros maclellandii</i>	Bregmacerotidae	+	+	-
6	<i>Alectis ciliaris</i>	Carangidae	+	+	+
7	<i>A. indicus</i>		+	-	+
8	<i>Caranx ignobilis</i>		+	+	-
9	<i>C. sem</i>		+	-	+
10	<i>Decapterus macrosoma</i>		+	+	-
11	<i>Scomberoides tol</i>		+	-	+
12	<i>Trachinotus blochii</i>	+	-	+	
13	<i>Lates calcarifer</i>	Centropomidae	+	-	+
14	<i>Chanos chanos</i>	Channidae	+	-	+
15	<i>Chirocentrus dorab</i>	Chirocentridae	+	-	+
16	<i>Anodontostoma chacunda</i>	Clupeidae	+	+	-
17	<i>Dussumieria acuta</i>		+	+	-
18	<i>Escualosa thoracata</i>		+	+	-
19	<i>Ilisha megaloptera</i>		+	+	-
20	<i>Sardinella fimbriata</i>		+	+	+
21	<i>S. gibbosa</i>		+	+	+
22	<i>S. longiceps</i>		+	+	+
23	<i>Anguilla bengalensis</i>	Congridae	+	+	-
24	<i>Conger cinereus</i>		+	+	-
25	<i>Cynoglossus arel</i>	Cynoglossidae	+	+	+
26	<i>C. macrostomus</i>		+	+	-
27	<i>Himantura imbricata</i>	Dasyatidae	+	+	-
28	<i>Diodon hystrix</i>	Diodontidae	+	+	-
29	<i>Drepane punctata</i>	Drepaneidae	+	-	+
30	<i>Encrasicholina heteroloba</i>	Engraulidae	+	+	-
31	<i>E. punctifer</i>		+	+	-
32	<i>Stolephorus commersonii</i>		+	-	+
33	<i>S. indicus</i>		+	+	+
34	<i>S. insularis</i>		+	+	+
35	<i>Thryssa purava</i>		+	-	+
36	<i>T. dussumieri</i>		+	-	+
37	<i>T. malabarica</i>		+	-	+
38	<i>T. mystax</i>		+	+	-
39	<i>T. setirostris</i>	+	+	-	
40	<i>Cheilopogon spilopterus</i>	Exocoetidae	+	-	+
41	<i>Exocoetus volitans</i>		+	-	+
42	<i>Fistularia commersonii</i>	Fistulariidae	+	+	-
43	<i>Gerres abbreviatus</i>	Gerreidae	+	-	+
44	<i>G. filamentosus</i>		+	+	-
45	<i>Hemiramphus far</i>	Hemiramphidae	+	-	+
46	<i>Lagocephalus lunaris</i>	Lagocephalidae	+	+	+
47	<i>Gazza minuta</i>	Leiognathidae	+	+	+
48	<i>Leiognathus bindus</i>		+	+	-
49	<i>L. blochii</i>	Leiognathidae	+	+	-
50	<i>L. brevisrostris</i>		+	+	-
51	<i>L. daura</i>		+	+	-
52	<i>L. dussumieri</i>		+	+	-
53	<i>L. fasciatus</i>		+	+	-
54	<i>Secutor insidiator</i>		+	+	-
55	<i>Apharus rutilans</i>	Lutjanidae	+	+	-
56	<i>Lutjanus argentimaculatus</i>		+	+	+
57	<i>L. lutjanus</i>		+	-	+
58	<i>L. malabaricus</i>		+	-	+
59	<i>L. rivulatus</i>		+	-	+
60	<i>Lutjanus fulviflamma</i>	+	-	+	
61	<i>Mugil cephalus</i>	Mugilidae	+	-	+
62	<i>Upeneus bensasi</i>	Mullidae	+	-	+
63	<i>U. moluccensis</i>		+	+	-
64	<i>U. sulphureus</i>		+	-	+
65	<i>U. vittatus</i>		+	+	+
66	<i>Narcine brunnea</i>	Narcinidae	+	+	-

67	<i>Grammopolites suppositus</i>	Platycephalidae	-	+	-
68	<i>Plotosus canius</i>	Plotosidae	+	-	+
69	<i>Platycephalus indicus</i>	Platycephalidae	+	+	+
70	<i>Pomadasy maculatus</i>	Pomadasyidae	+	+	-
71	<i>Ilisha elongate</i>	Pristigasteridae	-	-	+
72	<i>I. kampen</i>		-	-	+
73	<i>Psettodes erumei</i>	Psettodidae	+	+	+
74	<i>Scarus ghobban</i>	Scaridae	+	-	+
75	<i>Otolithes ruber</i>	Sciaenidae	+	+	-
76	<i>Rasterigella kanagurta</i>	Scombridae	+	-	+
77	<i>Scomberomorus guttatus</i>		-	+	-
78	<i>Epinephelus bleekeri</i>	Serranidae	-	-	+
79	<i>E. diacanthus</i>		-	-	+
80	<i>E. hexagonatus</i>		-	-	+
81	<i>E. lanceolatus</i>		+	-	+
82	<i>E. malabarica</i>		+	-	+
83	<i>E. tauvina</i>		+	-	+
84	<i>Soganus javus</i>	Siganidae	+	+	-
85	<i>Sillago aeolus</i>	Sillaginidae	+	-	+
86	<i>S. ingenuua</i>		+	-	+
87	<i>S. sihama</i>		+	+	+
88	<i>Zebrias quagga</i>	Soleidae	+	+	-
89	<i>Sphyaena barracuda</i>	Sphyaenidae	+	-	+
90	<i>S. forsteri</i>	Sphyaenidae	+	-	+
91	<i>S. jello</i>		+	+	+
92	<i>S. obtusata</i>		+	+	-
93	<i>Pampus argenteus</i>	Stromateidae	+	+	+
94	<i>P. chinensis</i>		+	-	+
95	<i>Hippocampus kuda</i>	Syngnathidae	+	+	-
96	<i>Saurida tumbil</i>	Synodidae	+	+	-
97	<i>Trachinocephalus myops</i>		+	+	-
98	<i>Terapon jarbua</i>	Teraponidae	+	+	-
99	<i>T. puta</i>		+	+	+
100	<i>Triacanthus biaculeatus</i>	Triacanthidae	+	-	+
101	<i>Lepturacanthus savala</i>	Trichiuridae	+	+	+
102	<i>Trichiurus lepturus</i>		+	+	+
No of species			95	62	60

Present (+); Absent (-)

4. Conclusion

In the present survey designate that represents various circumstances in using sea ranching and marine hatchery enhancement to generate income, re-establish fisheries and conserve aquatic biodiversity. Thus, it may be concluded that the marine fishes distributed at Nagapattinam coastal waters as flashing distribution are either homogenous or heterogeneous in origin. The nature of distribution and migration has to be studied in detail and subjects of interest in marine fishes along the southeast coast of India.

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