



A Study on Reef Fishes of Gulf of Mannar Biosphere Reserve, Southeast Coast of India with New Records

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ABSTRACT: The present study reports 140 species of reef associated fishes belonging to 87 genera and 52 families and 20 orders from Mandapm, Keelakarai, Tuticorin and Vember group of islands of Gulf of Mannar Biosphere Reserve. The survey was done in the four groups of islands of the Marine National Park during December 2018 to March 2020 to assess the reef associated fishes. This study deals with the systematic and distributional list of the recorded species and description two species namely, *Epinephelus magniscuttis* Postel, Fourmanoir & Gueze, 1963 (Family-Epinephelidae) and *Callionymus megastomus* Fricke, 1982 (Family- Callionymidae) as the first record from the Gulf of Mannar Biosphere Reserve, Tamil Nadu, India. This finding represent two first records to the ichthyofaunal diversity of Tamil Nadu, India.

Keywords: New record, Reef fishes, Gulf of Mannar, South east coast.

INTRODUCTION

Reef fishes are the integral part of coral reef ecosystem as they play major role in ecological balance. Fish communities are a major resource of coral reef. They play an important role in coral reef environment and are commercially important for both fisheries and more recently tourism. Decline in the abundance of coral reef associated fish due to coral bleaching in 1998 was reported by Kumaraguru *et al.* (2003). Coral reefs and the associated reef fishes of Gulf of Mannar have been severely damaged due to the rampant coral mining which was happening until 2004 (Edward *et al.*, 2008). Gulf of Mannar one of the leading producers of marine fishes in the country, however, the effect of increased fishing pressure on the resources with increasing demand and modernization of fishing practices have resulted in a decrease in the catches of several highly valued resources (Asha *et al.*, 2009). First report of the finfish species from Gulf of Mannar (GOM) was during 1964 and contains a list of 265 fishes from GOM (Murty, 1969). Varghese *et al.* (2011) recorded 183 species belonging to 51 families after 4 years of study (June 2006 to November, 2010) from Gulf of Mannar. Yogesh *et al.* (2013) studied diversity of reef fishes in Thoothukudi and Vembar group of islands in Gulf of Mannar Islands, India and recorded 117 species under 79 genera, 42 families. Mathews *et al.* (2015) studied reef fishes in Tuticorin group of islands, Gulf of Mannar, South eastern India. Padate *et al.* (2017) reported distributional record of marine fishes from the

coral reefs and deep waters of Gulf of Mannar, India. Varghese, *et al.* (2017) studied the diversity of reef fishes in trap fishery at Keelakarai, Gulf of Mannar, south-east coast of India. Kumar *et al.* (2017) studied status of corals and fishes in a deeper reef patch of Gulf of Mannar. Ammaiappan *et al.* (2022) reported 102 reef fishes from Kilakarai landing centre of Gulf of Mannar. Kar *et al.* (2022) reviewed comprehensive account of coral-reef associated fishes around the waters of the Indian subcontinent and 2,810 species were recorded from 176 families. Though some works are available on reef fish biodiversity from Gulf of Mannar a detailed list of reef fishes is lacking. So, the present study was done to documenting the reef associated fish fauna covering all four island groups of Gulf of Mannar Biosphere Reserve, Tamil Nadu.

MATERIALS AND METHODS

A. Study area

The Gulf of Mannar lies between India and Sri Lanka. It encompasses the territorial waters of the southeast coast of India, from Dhanushkodi in the north to Kanyakumari in the south. This Biosphere reserve includes several ecosystems such as coral reefs, rocky shores, sandy beaches, mud flats, seaweeds, sea grasses and mangroves, each having its own zonation pattern supporting its own characteristic communities. It has a chain of 21 islands, with each island having an area of 0.5 ha minimum and 129 ha maximum. They are located 2 to 10 km from the mainland along the 140 km

stretch between Tuticorin and Rameswaram (Lat 8°55'-9°15'N and Long 78°0'-79°16'E). They have fringing coral reefs and patch reefs rising from shallow areas of sea-shore. Fringing reefs are located mostly at a distance of 50 - 100 m from the islands and are narrow. These coral reefs have a rich variety of food fishes and ornamental fishes of various dimensions, colors and designs. The islands in the Gulf of Mannar are classified into four major groups viz, Mandapam group, Keelakarai group, Tuticorin group and Vembar group.

Mandapam group (seven islands): Musal, Manoli, Manoliputti, Poomarichan, Pullivasal, Krusadai, and Shingle.

Keelakarai group (seven islands): Yaanaipar, Vallimunai, Poovarasaputti, Appa, Thalaiyari, Vaalai, and Mulli.

Thoothukudi group (four islands): Van, Koswari, Kariyachalli, and Velanguchalli

Vembar group (three islands): Upputhanni, Pulivinichalli, and Nallathanni

Methodology: The four surveys were made during December 2018 to March 2020, on the reefs surrounding the Thalayari, Appa, Mulli, Vaalai, Valimunai and Anaipar Islands of Keelakarai group; Shingle, Krusadai, Hare, Manoli, Pullivasal, and Poomarichan, Island of Mandapam group; Vaan, Kasuwar, Valinguchalli and Karayichalli of Tuticorin group and Nallathanni and Upputhanni of Vembar group and landing centres nearby Gulf of Mannar Marine Biosphere Reserve (GoMBR) (Fig. 1). The specimens were observed through snorkelling diving methods; depth ranges of from 1- 4 m waters encountered especially underneath dead coral plates and exposed reef areas. Underwater photographs were taken *in situ* to record the fish specimens present in the coral reef habitat. Digitization of individual species was made by underwater camera (NIKON, Model-COOLPIX W300, 16.05 megapixels). Fish specimens from the intertidal zones of the islands were collected by using hand nets. Hiring artisanal craft and application of practicing gears were applied for collection and observation of fish specimens. Some specimens were collected from the landing centres in and around Gulf of Mannar regions. Co-ordinates of the sampling areas were obtained using GPS (GARMIN GPS map 78S). The collected fishes were photographed in the field and then fixed in 10% formalin solution. The specimens were identified up to species level following standard publications for identification of fishes is Fischer and Bianchi (1984); Talwar and Kacker (1984); Smith and Heemstra (1986); Rao (2004). Underwater photo of fishes were identified up to species level following Randall *et al.* (1998); Lieske and Myers (1996); Allen *et al.* (2005); Rajan (2010); Kumar *et al.* (2012). The taxonomy followed in the manuscript is based on FishBase (Froese and Pauly, 2025) and the Catalogue of Fishes (Eschmeyer, 2024). The specimens collected and identified were deposited in the collections of National Zoological Collections of Marine Biology Regional Centre, Zoological Survey of India, Chennai.

RESULTS AND DISCUSSION

A total of 448 specimens with underwater photographs of fishes were collected during the survey period (December 2018 to March, 2020) from the Mandapam, Keelakarai, Tuticorin and Vembar groups of islands including landing centres in and around Gulf of Mannar region. From the collected specimens and underwater photographs, 140 species were identified belonging to 87 genera, 52 families and 20 orders. The checklist of the species with distribution in four different island groups of from Gulf of Mannar Biosphere Reserve has been presented in Table 1. The species inventory also registered four species of fishes belonging four different families reported for the first time from Gulf of Mannar region i.e *Asterropteryx semipunctata* Ruppell, 1830 (Family-Gobiidae), *Pseudamia gelatinosa* Smith 1956 (Family-Apogonidae), *Epinephelus magniscuttis* Postel, Fourmanoir & Gueze, 1963 (Family- Epinephelidae) and *Callionymus megastomus* Fricke, 1982 (Family-Callionymidae). The two species namely *Epinephelus magniscuttis* and *Callionymus megastomus* has been described in this paper as former two are already described.

Taxonomic Account

Class: Actinopterygii

Order: Perciformes

Family: Epinephelidae

Genus: *Epinephelus* Bloch, 1793

1. *Epinephelus magniscuttis* Postel, Fourmanoir and Gueze, 1963

Speckled Grouper (Fig. 2)

1963. *Epinephelus magniscuttis* Postel, Fourmanoir and Guézé: 365, fig. 9 (Type locality: Reunion).

Material examined: MBRC/ZSI/ F.2456, 1 ex., 92.6 mm SL. 04.iii.2020, Valinokkam.

Diagnostic characters: D: XI, 15; A: III, 8; P: 18; V: I, 5. Body elongated with large mouth. Body depth 3.2 times to standard length (SL). Head profile straight covered with minute scales. Head length (HL) 2.23 times to SL; Eye moderate 5.2 times in HL. Interorbital area flat, opercle angular, upper part finely serrated and angle with 3 large serrae. Gill rakers 8 on upper limb, 16 on lower limb. Operculum with three spines, middle one pointed, situated midway between upper and lower spines. Dorsal fin single, continuous, interspinous membrane incised; pelvic fin not reaching to anus, caudal fin rounded.

Colour: Pale brown with small round black spots distributed irregularly in mid lateral part of head and body; Paired fins, anal fin and ventral part of body & head are devoid of spots. Upper margin of maxillary groove is dark brown; three dark bands originating from posterior margin of orbit. Dorsal dark brown; Pectoral, pelvic, anal and caudal light brown at the base and dark towards edges (Fig. 2).

Distribution: Indo-West Pacific (Heemstra & Randall 1993). From Indian coast, this species has been reported from Andhra Pradesh (Sujata *et al.*, 2015), West Bengal (Ray & Mohapatra 2022) and Odisha coast (Sahoo *et al.*, 2020). This paper adds its distribution to Gulf of Mannar, Tamil Nadu which further extends the range in southeast coast of India.

Taxonomic account

Class: Actinopterygii

Order: Callionymiformes

Family: Callionymidae Bonaparte, 1831

Genus: Callionymus Linnaeus, 1758

2. *Callionymus megastomus* Fricke, 1982

Indian megamouth dragonet (Fig. 3)

1982. *Callionymus megastomus*, Fricke, J. Nat Hist. 16:345, Fig. 1 ; (Type locality: Calcutta, India).

Material examined: MBRC/ZSI/ F.2434, 1 ex., 72.4 mm SL. 04.iii.2020, Valinokkam.

Diagnostic characters: D1 III ; D2 I, ix ; A viii, P 14 , V I, 5; C i, 7.

Body elongated and depressed. Head depressed its length 4.2 in standard length. Body depth 10.7 in standard length. Body width 3.9 in SL. Eye large, 3.23 in head length. preorbital length 3.4 in HL. Interorbital distance 4.6 in eye diameter. Branchial opening dorsal in position. Upper jaw highly protruding. Main tip of preopercular spine curved upward, angular, one antrose spine at preopercular spine base and three curved serrae at its dorsal margin. Urogenital papilla elongated. First dorsal fin is higher than second dorsal fin. Pectoral fin long, reaching to base of second anal-fin ray; pelvic fin distally conx, does not reaching the base of first anal fin. Distal margin of caudal fin is convex.

Colour: Body brown, head light brown with darker cheeks and a number of darkish lateral spots dorsally, turning whitish-yellow ventrally. Eye dark brown, belly whitish. Dorsum with numerous small dark brown spots. First dorsal fin is brown, Pelvic fin translucent with two dark spots. Middle of the caudal fin with many irregular dark spots.

Distribution: This species is known only from Gulf of Bengal, off Calcutta, India (Fricke, 1982). The present

report extends geographic distribution of *C. megastomus* to Gulf of Mannar Biosphere Reserve, south east coast of India.

In the present study, 140 species of reef associated fish species were identified belonging to 87 genera, 52 families and 19 orders with first distributional records of four species of fishes from Gulf of Mannar ecosystem. The species *Asterropteryx semipunctata* Ruppell, 1830 was previously reported from Lakshadweep and Andaman Islands. *Pseudamia gelatinosa* Smith 1956 was reported only from Lakshadweep (India); *Epinephelus magniscuttis* Postel, Fourmanoir & Gueze, 1963 previously reported from Andhra Pradesh, West Bengal and Odisha coast only. *Callionymus megastomus* Fricke, 1982 previously reported only from Kolkata, Bay of Bengal, India. Baiju *et al.* (2024) recorded 232 fish species from the rocky reef areas of Kerala coast, southwest coast of India among them 31 species extended new distribution ranges within the Indian Ocean and India. From the distribution of identified fishes in four groups of islands of Gulf of Mannar it was observed that highest numbers of fishes were recorded from Mandapam group of islands followed by Keelakarai group of islands, Tuticorin group of islands and Vember group of islands respectively. The identified fishes belonging to 52 families were most diverse recorded during this study. The number of species in the largest group that belong to the family Lutjanidae, Apogonidae, Chaetodontidae followed by Labridae, Pomacentridae, Serranidae, Lethrinidae, Haemulidae, Acanthuridae, Mullidae and Terapontidae. The reef fishes are diverse and abundance in the area surveyed.

Table 1: List of reef fishes recorded from Gulf of Mannar, Tamil Nadu.

Sr. No.	Species	Group of Islands			
		Mandapam	Kelakarai	Tuticorin	Vember
	Phylum: CHORDATA Class: ACTINOPTERYGII Klein, 1885 Order: PERCIFORMES Bleeker, 1863 Family: Epinephelidae Genus: <i>Epinephelus</i> Bloch, 1793				
1	<i>Epinephalus latifasciatus</i> (Temminck & Schlegel, 1842)	+	+	-	-
2	<i>Epinephalus faveatus</i> (Valenciennes, 1828)	+	-	-	-
3	<i>Epinephelus undulosus</i> (Quoy & Gaimard 1824)	-	+	-	-
4	<i>Epinephelus magniscuttis</i> Postel, Fourmanoir & Gueze, 1963	-	+	-	-
5	<i>Epinephalus poecilonotus</i> (Temminck & Schlegel, 1842)	+	-	-	-
	Genus: <i>Cephalopholis</i> Bloch & Schneider, 1801				
6	<i>Cephalofolis formosa</i> (Shaw, 1812)	-	+	-	-
	Family: SCARIDAE Rafinesque, 1810 Genus: <i>Scarus</i> Forsskal, 1775				
7	<i>Scarus ghobbon</i> Forsskal, 1775	+	+	+	+
	Family: LABRIDAE Cuvier, 1816 Genus : <i>Halichoeres</i> Rüppell, 1835				
8	<i>Halichoeres zeylonicus</i> (Bennett, 1833)	+	-	+	-
9	<i>Halicoeres nigrescens</i> (Bloch & Schneider, 1801)	+	-	+	-
	Genus: <i>Hemigymnus</i> Günther, 1861				
10	<i>Hemigymnus melapterus</i> (Bloch, 1791)	+	-	-	-
	Genus: <i>Stethojulis</i> Günther, 1861				

11	<i>Stethojulis trilineata</i> Bloch & Schneider,1801)	-	-	-	+
12	<i>Stethojulis albovittata</i> (Bonnaterre,1788)	-	+	-	-
	Genus: <i>Chelinus</i> Lacépède, 1801				
13	<i>Cheilinus chlorourus</i> (Bloch,1791)	-	+	-	-
	Genus: <i>Iniistius</i> Gill, 1862				
14	<i>Iniistius cyanifrons</i> (Valenciennes, 1840)	-	-	+	-
	Genus: <i>Labroides</i> Bleeker, 1851				
15	<i>Labroides dimidiatus</i> (Valenciennes 1839)	-	+	-	-
	Family: LUTJANIDAE Gill,1861 Genus: <i>Lutjanus</i> Bloch, 1790				
16	<i>Lutjanus quinquelineatus</i> (Bloch, 1790)	+	+	-	-
17	<i>Lutjanus fulviflamma</i> (Forsskål, 1775)	+	-	-	-
18	<i>Lutjanus vittata</i> (Quoy & Gaimard, 1824)	-	-	+	-
19	<i>Lutjanus fulvus</i> (Forster, 1801)	+	+	-	-
20	<i>Lutjanus decussatus</i> (Cuvier, 1828)		+	+	-
21	<i>Lutjanus johni</i> (Bloch, 1792)	+	-	-	-
22	<i>Lutjanus lutjanus</i> Bloch, 1790	+	+	-	-
23	<i>Lutjanus madras</i> (Valenciennes, 1831)	-	+	-	
24	<i>Lutjanus rusellii</i> (Bleeker, 1849)				+
25	<i>Lutjanus ehrenbergii</i> (Peters 1869)	+	-	-	-
26	<i>Lutjanus lemniscatus</i> (Valenciennes 1828)	+	-	-	-
	Family: LETHRINIDAE Bonaparte 1831 Genus: <i>Lethrinus</i> Cuvier, 1829				
27	<i>Lethrinus ornatus</i> Valenciennes, 1830	+	-	-	-
28	<i>Lethrinus lentjan</i> (Lacepede, 1802)	+	+	-	-
29	<i>Lethrinus nebulosus</i> (Forsskal,1775)	+	-	-	-
	Genus: <i>Gymnocranius</i> Klunzinger, 1870				
30	<i>Gymnocranius griseus</i> (Temminck & Schlegel,1843)	-	+	-	-
	Family: APOGONIDAE Günther 1859 Genus: <i>Pseudamia</i> Bleeker, 1865				
31	<i>Pseudamia gelatinosa</i> Smith 1956	+	-	-	-
	Genus: <i>Ostorhinchus</i> Lacépède, 1802				
32	<i>Ostorhinchus aureus</i> (Lacepede, 1802)	+	-	-	-
33	<i>Ostorhinchus flavus</i> (Allen & Randall, 1993)	+	-	-	-
34	<i>Ostorhinchus fasciatus</i> (Valenciennes,1832)	+	-	-	-
35	<i>Ostorhinchus moluccensis</i> (Valenciennes, 1832)	+	+	-	-
36	<i>Ostorhinchus nigrofasciatus</i> (Lachner 1953)	-	+	-	-
	Genus: <i>Apogonichthys</i> Bleeker, 1854				
37	<i>Apogonichthys nigripinnis</i> (Cuvier, 1828)	-	+	-	-
38	<i>Apogonichthyoides gardineri</i> (Regan, 1908)	+	-	-	-
	Genus: <i>Jaydia</i> Smith, 1961				
39	<i>Jaydia novaeguineae</i> (Valenciennes,1832)	+	-	-	-
	Genus: <i>Cheilodipterus</i> Lacépède, 1801				
40	<i>Cheilodipterus quinquelineatus</i> Cuvier, 1828	+	+	-	-
	Family: POMACENTRIDAE Bonaparte 1831 Genus: <i>Abudefduf</i> Forsskål1775 ,				
41	<i>Abudefduf septemfasciatus</i> (Cuvier, 1830)	+	+	-	+
42	<i>Abudefduf vaigiensis</i> (Quoy&Gaimard, 1825)	+	+	-	-
43	<i>Abudefduf bengalensis</i> (Bloch1787)	+	-	+	-
	Genus: <i>Pomacentrus</i> Lacépède, 1802				
44	<i>Pomacentrus proteus</i> Allen 1991	-	+	-	-
45	<i>Pomacentrus tripunctatus</i> Cuvier 1830	-	-	-	+
	Genus: <i>Amphiprion</i> Bloch & Schneider, 1801				
46	<i>Amphiprion clarkii</i> (Bennett, 1830)	-	-	-	+
	Family: HAEMULIDAE Gill 1885				

	Genus : Plectorhinchus Lacépède, 1801				
47	<i>Plectorhinchus vittatus</i> Linnaeus, 1758	-	+	-	-
48	<i>Plectorhinchus pictus</i> (Tortonese, 1936)	+	-	-	-
49	<i>Plectorhinchus gibbosus</i> (Lacepède 1802)	-	+	-	-
	Genus: Diagramma Oken, 1817				
50	<i>Diagramma pictum</i> (Thunberg, 1792)	+	-	-	-
	Family: CAESIONIDAE Bonaparte, 1831 Genus: Caesio Lacépède 1801 ,				
51	<i>Caesio cuning</i> (Bloch, 1791)	+	-	-	-
52	<i>Caesio caerulea</i> Lacepede , 1801	-	+	-	-
	Genus: Pterocaesio Bleeker, 1876				
53	<i>Pterocaesio chrysozona</i> (Cuvier, 1830)	+	-	-	-
54	<i>Pterocaesio tile</i> (Cuvier, 1830)	+	+	-	-
	Family: NEMIPTERIDAE Regan 1913 Genus: Scolopsis Cuvier, 1814				
55	<i>Scolopsis vosmeri</i> (Bloch, 1792)	+	+	+	
56	<i>Scolopsis bimaculata</i> Ruppell, 1828	-	-	-	+
	Genus: Nemipterus Swainson, 1839				
57	<i>Nemipterus bipunctatus</i> (Valenciennes, 1830)	-	+	-	-
58	<i>Nemipterus randalli</i> Russell, 1986	+	-	-	-
59	<i>Nemipterus japonicus</i> (Bloch, 1791)	+	-	-	-
	Family: SILLAGINIDAE Richardson 1846 Genus : Sillago Cuvier, 1816				
60	<i>Sillago sihama</i> (Forsskal, 1775)	+	+	-	-
	Family: GERREIDAE Bleeker 1859 Genus : Gerres Quoy & Gaimard, 1824				
61	<i>Gerres erythrourus</i> (Bloch, 1791)	-	-	+	-
62	<i>Gerresoyena</i> (Forsskal, 1775)	+	-	-	-
	Family: PRIACANTHIDAE Günther 1859 Genus : Priacanthus Oken, 1817				
63	<i>Priacanthus hamrur</i> (Forsskal, 1775)	-	-	-	+
	Order: ACANTHURIFORMES Family: CHAETODONTIDAE Rafinesque 1815 Genus : Chaetodon Linnaeus, 1758				
64	<i>Chaetodon collare</i> Bloch, 1787	+	+	+	+
65	<i>Chaetodon octofasciatus</i> Bloch 1787	+	+	+	-
66	<i>Chaetodon plebeius</i> Cuvier, 1831	-	+	-	-
67	<i>Chaetodon auriga</i> Forsskal 1775	-	+	-	-
68	<i>Chaetodon decussatus</i> Cuvier 1829	-	+	+	-
69	<i>Chaetodon lineolatus</i> Cuvier 1831	-	+	-	-
	Genus: Heniochus Cuvier, 1816				
70	<i>Heniochus acuminatus</i> (Linnaeus, 1758)	+	-	-	-
	Family: ACANTHURIDAE Bonaparte 1835 Genus: Acanthurus Forsskal, 1775				
71	<i>Acanthurus mata</i> (Cuvier, 1829)	-	+	-	-
72	<i>Acanthurus xanthopterus</i> Valenciennes 1835	+	+	-	-
	Genus: Zebрасoma Swainson, 1839				
73	<i>Zebрасoma desjardini</i> (Bennett 1836)	+	+	-	-
	Family: POMACANTHIDAE Jordan & Evermann, 1898 Genus: Apolemichthys Burton, 1934				
74	<i>Apolemichthys xanthurus</i> (Bennett, 1833)	+	-	-	-
	Family: SIGANIDAE Richardson 1837 Genus: Siganus Fabricius, 1775				
75	<i>Siganus canaliculatus</i> (Park, 1797)	+	+	-	-
76	<i>Siganus arjenteus</i> (Quoy & Gaimard, 1825)	+	-	-	-
77	<i>Siganus javus</i> (Linnaeus, 1766)	+	-	-	-

	Family: EPHIPPIDAE Bleeker 1859 Genus: Ehippus Cuvier, 1816				
78	<i>Ehippus orbis</i> (Bloch, 1787)	+	-	+	-
	Family: DREPANEIDAE Gill 1872 Genus: Drepane Cuvier, 1831				
79	<i>Drepane punctata</i> (Linnaeus, 1758)	+	-	-	-
	Order: ACROPOMATIFORMES Family: PEMIPHERIDAE Bleeker 1859 Genus : Pempheris Cuvier, 1829				
80	<i>Pempheris mangula</i> Cuvier, 182	+	+	-	-
81	<i>Pempheris vanicolensis</i> Cuvier 1831	-	+	-	-
	Order: BLENNIIFORMES Family: BLENNIIDAE Rafinesque 1810 Genus : Petroscirtes Rüppell, 1830				
82	<i>Petroscirtes variabilis</i> Cantor 1849	-	+	-	-
	Order: MULLIORMES Family: MULLIDAE Rafinesque 1815 Genus: Upeneus Cuvier, 1829				
83	<i>Upeneus tragula</i> Richardson, 1846	+	+	+	-
84	<i>Upeneus sulphurous</i> Cuvier, 1829	+	-	-	-
85	<i>Upeneus moluccensis</i> (Bleeker, 1855)	+	-	-	-
	Genus: Parupeneus Bleeker, 1863				
86	<i>Parupeneus indicus</i> (Shaw, 1803)	+	+	+	-
87	<i>Perupeneus macronemus</i> (Lacepede, 1801)	+	-	-	-
	Order: CALLIONYMIFORMES Family: CALLIONYMIDAE Bonaparte 1831 Genus : Callionymus Linnaeus, 1758				
88	<i>Callionymus megastomus</i> Fricke, 1982	-	+	-	-
89	<i>Callionymus erythraeus</i> Ninni, 1934	-	+	-	-
90	<i>Callionymus gardineri</i> Regan, 1908	-	+	-	-
	Genus: Synchiropus Gill 1859 ,				
91	<i>Synchiropus lineolatus</i> (Valenciennes, 1837)	+	-	-	-
	Family: DACTYLOPTERIDAE Gill 1861 Genus: Dactyloptena Jordan & Richardson, 1908				
92	<i>Dactyloptena orientalis</i> (Cuvier, 1829)	+	+	-	-
	Family: PEGASIDAE Bonaparte 1831 Genus : Pegasus Linnaeus, 1758				
93	<i>Pegasus volitans</i> Linnaeus, 1758	+	-	-	-
	Family: SYNGNATHIDAE Rafinesque, 1810 Genus : Hippocampus Rafinesque, 1810				
94	<i>Hippocampus spinosissimus</i> Weber, 1913	+	-	-	-
	Family: FISTULARIDAE Blainville, 1818 Genus: Fistularia Linnaeus, 1758				
95	<i>Fistularia petimba</i> Lacepede, 1803	-	+	+	-
	Family: CENTRISCIDAE Bonaparte, 1831 Genus: Centriscus Linnaeus, 1758				
96	<i>Centriscus scutatus</i> Linnaeus, 1758	+	-	-	-
	Order: CENTRARCHIFORMES Family: CIRRHITIDAE Macleay 1841 Genus: Cirrhitichthys Bleeker, 1857				
97	<i>Cirrhitichthys bleekeri</i> Day, 1874	-	+	-	-
	Family: TERAPONTIDAE Richardson 1842 Genus : Terapon Cuvier, 1816				
98	<i>Terapon theraps</i> Cuvier, 1829	+	-	-	-
99	<i>Terapon jarbua</i> (Forsskål 1775)	+	-	-	+
	Genus: Pelates Cuvier, 1829				
100	<i>Pelates quadrilineatus</i> (Bloch, 1797)	-	+	-	-
	Order: CARANGIFORMES Family: CARANGIDAE Rafinesque 1815 Genus: Gnathanodon Bleeker, 1851				

101	<i>Gnathanodon speciosus</i> (Forsskal,1775) Genus: Alepes Swainson, 1839	+	-	-	-
102	<i>Alepes kleinii</i> (Bloch,1793) Genus: Atule Jordan and Jordan, 1922	+	+	-	-
103	<i>Atule mate</i> (Cuvier, 1833) Family: SPHYRAENIDAE Rafinesque 1815 Genus: Sphyraena Artedi, 1793	-	-	+	-
104	<i>Sphyraena obtusata</i> Cuvier, 1829 Family: MENIDAE Fitzinger 1873 Genus : Mene Lacepède, 1803	-	+	-	-
105	<i>Mene maculata</i> (Bloch & Schneider, 1801) Order: GOBIIFORMES Family: GOBIIDAE Cuvier 1816 Genus: Asterropteryx Rüppell, 1830	-	-	+	-
106	<i>Asterropteryx semipunctata</i> Ruppell, 1830 Genus: Trypauchen Valenciennes 1837 ,	-	+	-	-
107	<i>Trypauchen vagina</i> (Bloch & Schneider, 1801) Genus: Amblygobius Bleeker, 1874	+	-	-	-
108	<i>Amblygobius phalaena</i> (Valenciennes, 1837) Genus: Parachaeturichthys Bleeker, 1874	+	-	-	-
109	<i>Parachaeturichthys polynema</i> (Bleeker,1835) Genus: Istigobius Whitley, 1932	-	+	-	-
110	<i>Istigobius ornatus</i> (Rüppell 1830) Order: ANGUILLIFORMES Family: MURAENIDAE Rafinesque 1815 Genus : Gymnothorax Bloch, 1795	+	-	+	+
111	<i>Gymnothorax favagineus</i> Bloch & Schneider, 1801	-	+	-	-
112	<i>Gymnothorax meleagris</i> (Shaw, 1795) Family: OPHICHTHIDAE Günther 1870 Genus : Pisodonophis Kaup, 1856	-	+	-	-
113	<i>Pisodonophis cancrivorus</i> (Richardson, 1848) Order: BELONIFORMES Family: BELONIDAE Bonaparte 1835 Genus: Strongylura van Hasselt, 1824	+	-	-	-
114	<i>Strongylura leiura</i> (Bleeker,1850) Order: BATRACHOIDIFORMES Family: BATRACHOIDIDAE Jordan 1896 Genus: Batrachomoeus Ogilby, 1908	+	-	-	-
115	<i>Batrachomoeus trispinosus</i> (Gunther,1861) Order: HOLOCENTRIFORMES Family: HOLOCENTRIDAE Bonaparte 1833 Genus: Sargocentron Fowler, 1904	+	-	-	-
116	<i>Sargocentron rubrum</i> (Forsskal,1775) Order: ATHERINIFORMES Rosen, 1966 Family: ATHERINIDAE Risso 1827 Genus: Atherinomorus Fowler, 1903	+	+	-	-
117	<i>Atherinomorus duodecimalis</i> (Valenciennes, 1835) Order: AULOPIIFORMES Family: SYNODONTIDAE Gill 1861 Genus : Synodus Scopoli, 1777	+	+	-	-
118	<i>Synodus indicus</i> (Day, 1873)	-	+	-	-
119	<i>Synodus variegates</i> (Lacepede, 1803) Genus : Trachinocephalus Gill, 1861	+	-	-	-
120	<i>Trachinocephalus myops</i> (Forster, 1801) Genus: Saurida Valenciennes 1850 ,	+	-	-	-
121	<i>Saurida nebulosa</i> Valenciennes, 1850 Order: MUGILIFORMES Family: MUGILIDAE Jarocki 1822 Genus : Ellochelon Whitley, 1930	+	-	-	-
122	<i>Ellochelon vaigiensis</i> (Quoy& Gaimard,1825)	+	-	-	-

	Order: PLEURONECTIFORMES Family: CYNOGLOSSIDAE Jordan, 1888 Genus: <i>Cynoglossus</i> Hamilton, 1822				
123	<i>Cynoglossus lingua</i> Hamilton, 1822	+	-	-	-
124	<i>Cynoglossus arel</i> (Bloch & Schneider, 1801)	-	+	-	-
	Family: SOLEIDAE Bonaparte, 1832 Genus: <i>Zebrias</i> Jordan & Snyder, 1900				
125	<i>Zebrias quagga</i> (Kaup, 1958)	+	+	-	-
	Genus: <i>Pardachirus</i> Günther, 1862				
126	<i>Pardachirus pavoninus</i> (Lacépède, 1802)	+	-	-	-
	Genus: <i>Heteromycteris</i> Kaup, 1858				
127	<i>Heteromycteris oculus</i> (Alcock, 1889)	-	+	-	-
	Order: SCORPAENIFORMES Family: SCORPAENIDAE Risso, 1826 Genus: <i>Pterois</i> Oken, 1817				
128	<i>Pterois mombasae</i> (Smith, 1957)	+	-	-	-
	Genus: <i>Parascorpaena</i> Bleeker, 1876				
129	<i>Parascorpaena picta</i> (Cuvier, 1829)	+	-	-	-
	Family: PLATYCEPHALIDAE Swainson 1839 Genus : <i>Sorsogona</i> Herre, 1934				
130	<i>Sorsogona tuberculata</i> (Cuvier, 1829)	-	+	-	-
	Order: SILURIFORMES Family: PLOTOSIDAE Bleeker, 1858 Genus : <i>Plotosus</i> Lacépède, 1803				
131	<i>Plotosus lineatus</i> (Thunberg, 1787)	+	+	-	-
	Order: TETRAODONTIFORMES Family: TETRAODONTIDAE Bonaparte, 1832 Genus: <i>Lagocephalus</i> Swainson, 1839				
132	<i>Lagocephalus guentheri</i> Miranda Ribeiro, 1915	+	+	-	-
	Genus: <i>Chelonodon</i> Müller, 1841				
133	<i>Chelonodon patoca</i> (Hamilton, 1822)	+	-	-	-
	Genus: <i>Canthigaster</i> Swainson, 1839				
134	<i>Canthigaster solandri</i> (Richardson, 1845)	+	-	-	-
	Family: TRICANTHIDAE Bleeker, 1859 Genus : <i>Triacanthus</i> Oken, 1817				
135	<i>Triacanthus biaculeatus</i> (Bloch, 1786)	+	+	-	-
	Genus: <i>Pseudotriacanthus</i> Fraser-Brunner, 1941				
136	<i>Pseudotriacanthus strigilifer</i> (Cantor, 1849)	+	+	-	-
	Family: BALISTIDAE Rafinesque 1810 Genus : <i>Odonus</i> Gistel, 1848				
137	<i>Odonus niger</i> (Ruppell, 1836)	+	-	-	-
	Family: OSTRACIIDAE Rafinesque, 1810 Genus: <i>Ostracion</i> Linnaeus, 1758				
138	<i>Ostracion cubicus</i> Linnaeus, 1758	+	-	-	-
	Genus : <i>Lactoria</i> Jordan & Fowler, 1902				
139	<i>Lactoria cornuta</i> (Linnaeus, 1758)	+	-	-	-
	Family: MONOCANTHIDAE Nardo, 1843 Genus : <i>Aluterus</i> Cloquet, 1816				
140	<i>Aluterus monoceros</i> (Linnaeus, 1758)	-	+	-	-

'+' present/recorded; '-' absent /not recorded

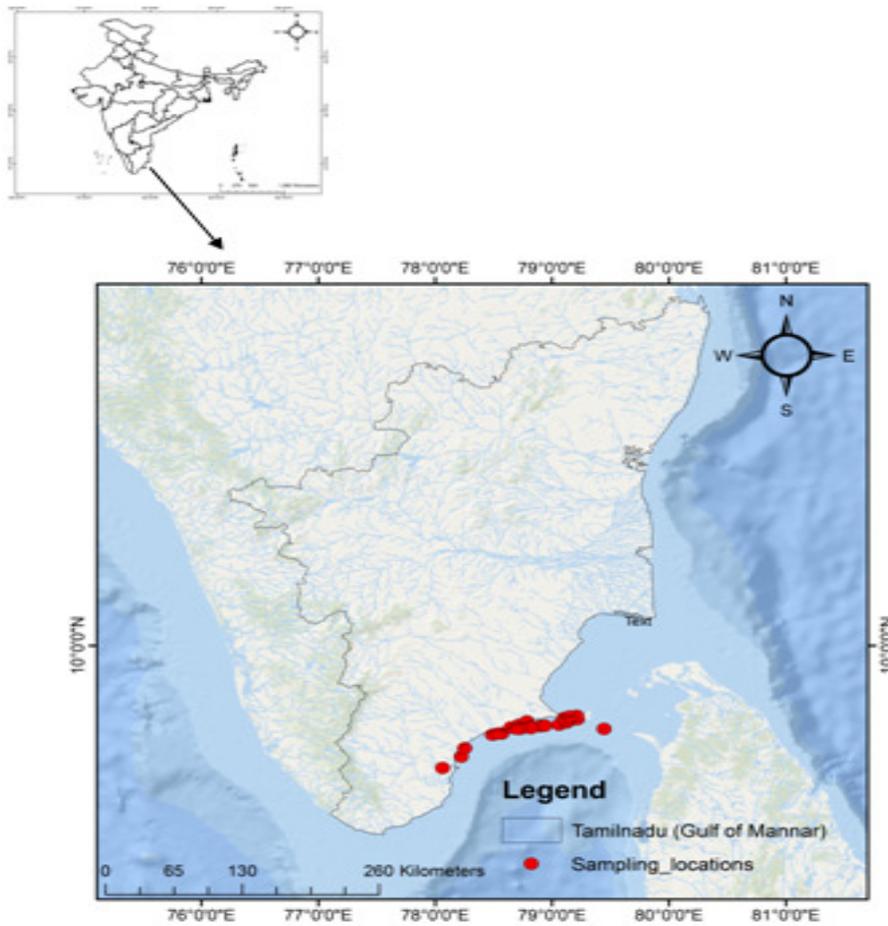


Fig. 1. Map showing sampling sites in Gulf of Mannar, Tamil Nadu, India.



Fig. 2. *Epinephelus magniscuttis* Postel, Fourmanoir & Gueze, 196.



Fig. 3. *Callionymus megastomus* Fricke, 1982.

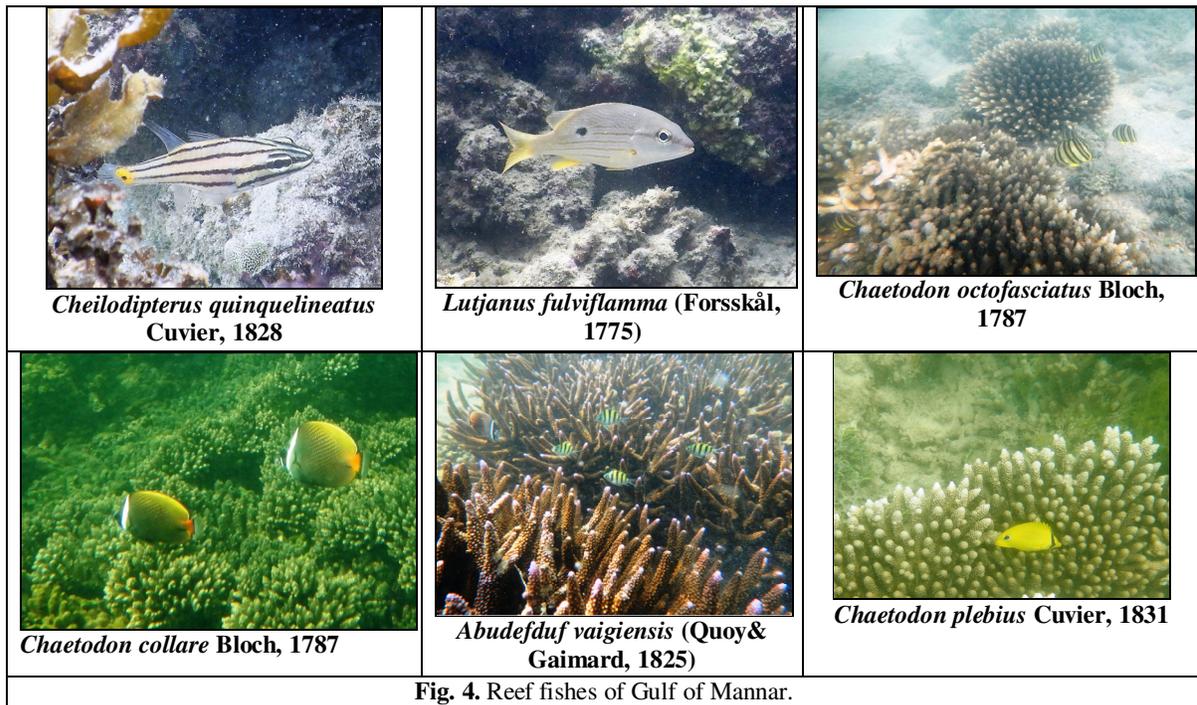


Fig. 4. Reef fishes of Gulf of Mannar.

CONCLUSIONS

From the study of the reef associated fishes, it is evident that Gulf of Mannar has a good coral cover with high fish density. Reef fishes are important to many processes occurring in the reef and loss would affect the health of the coral reef ecosystem. The degradation of the coral reef habitat, overharvesting, industrialization is leading to heavy losses in reef diversity around the globe, so the study is important and significant in this line, which could form a baseline data for future workers in fish and fisheries.

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