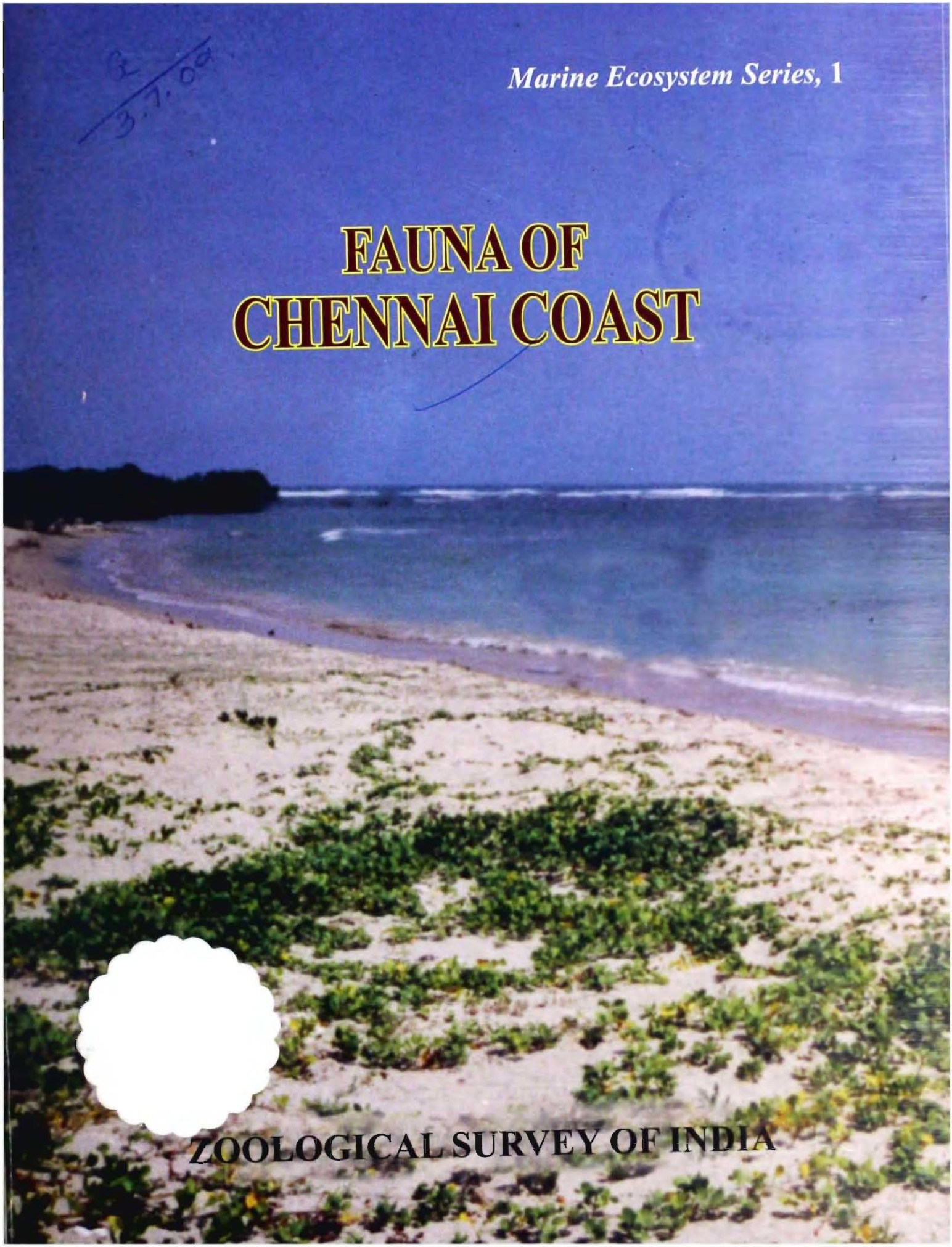
Marine Ecosystem Series, 1

FAUNA OF CHENNAI COAST



ZOOLOGICAL SURVEY OF INDIA

Marine Ecosystem Series 1

FAUNA OF CHENNAI COAST

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Fauna of Chennai Coast

Marine Ecosystem Series

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MARINE FAUNA OF CHENNAI COAST AN OVERVIEW

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INTRODUCTION

Coastal ecosystem plays a vital role in India's economy by virtue of their resources, productive habitats and rich biodiversity. India has a coastline of 7,516 km of which the mainland accounts for 5,422 km, Lakshadweep coast extends upto 132 km and Andaman and Nicobar Islands have a coastline of 1,962 km. Nearly 250 million people live within a distance of 50 km from the coast. The coastal area has been assuming greater importance in recent years, owing to increasing human population, urbanisation and accelerated development activities. The coastal regions are thus, a place of hectic human activity and the coastal ecosystems are now highly disturbed and very much threatened.

Until today marine biodiversity is less well known than terrestrial biodiversity. We know astonishingly little about marine life, even in the most familiar seascapes. For instance, scientists have identified twenty-two phyla of meiofauna, two of which had been identified only in the past two decades. They are a major source of food for shrimp and bottom feeding fish, and they consume detritus and pollutants in seawater that filters through coastal and near shore sands.

Coastal zone represents 18% of the earth's surface, providing space for 60% of the human population, since about 70% of the world cities with population more than 1.6 million are located in the coastal zone. 90% of the world fish catch is obtained from this zone. The land along the Chennai Coast (40 km) extends into the sea as continental shelf with variable width. Further, the coastal zone of Chennai is also endowed with a very wide range of coastal ecosystems such as estuaries, lagoons, mangroves, backwaters, salt marshes, rocky coasts, sandy stretches and coral reefs characterised by unique biotic and abiotic properties and processes. More than half of the Chennai coastline is sandy. The Kovalam area of Chennai (South of Chennai city) is predominantly rocky consisting of rocky flats or lime stone rocks, Sandy areas, rivers and creeks interrupt the rocky coast and back waters.

Realising the importance of the coastal ecosystems and its multiple uses, the ever exploding human population exploit not only the biological resources but also interfers with and modifies the basic coastal processes. Traditionally, Chennai Coast is highly populated and developed because they are the places where trade, transport, communication and civilisation are well developed. For example, in the state of Tamil Nadu, the population density in coastal areas is 528 per sq km against the state average of 372 per sq km. The increased population pressure has led to resource depletion and environmental degradation due to coastal pollution, disposal of domestic wastes and industrial wastes. As in most of the developing nations, the coastal environmental problems and issues in India are also concerned with the following three main factors : environmental degradation, resources reduction and user conflicts. The recent Integrated Coastal Zone Management (ICZM) plan has been recognised as a tool for addressing options that ensure livelihood security and environmental stability along the Chennai Coast.

The biodiversity of Chennai Coast is very rich despite the fact that it is always under pressure both due to maritime activities and land-based activities. Between Ennore estuary in the northern most sector and the fish landing centre at Royapuram it is observed that many industries bordering the coastline are discharging their effluents both in the form of chemical byproducts, fly-ash and heated coolant waters. The Chennai Harbour situated to the south of Royapuram, is one of the most active ports of the sub-continent. To the south of Chennai Harbour, the shore is devoid of any major structures up to Adyar estuary wherein the mouth of Coovum River is also situated. Both the Coovum River and Adyar estuary do not discharge their contents into the sea all through the year. Nevertheless, their effect is felt in the sea immediately after heavy rainfall during the late southwest monsoon period and northeast monsoon period. To the South of Adyar River, the coast is continuous up to Mahabalipuram.

Ecosystem diversity is reflected in the formation of estuaries at the mouth of Buckingham Canal and Adyar River. These estuaries harbour lush vegetation, which help substantially in the organic production. In some locations along the Chennai Coast, backwaters stretch (e.g. Muttukadu) to many areas and have a few specialized faunal groups. The Chennai Coast comprises of estuaries, lagoons, mangroves, backwaters, salt marshes, rocky coasts, sandy stretches and a few patches of coral reefs. More than half of the Chennai Coast line is sandy. Mostly sandy areas, creeks and backwaters interrupt the rocky coast. In the south near Mahabalipuram (= Mamallapuram), small stretches of rocky formations with a few coral species occur, which are not studied till today.

The ecosystem diversity along the Chennai Coast is well known but the species diversity and generic diversity is not well documented. Systematic sampling for biodiversity components has been carried out in only a few areas of Chennai Coast. Many of the areas along the Chennai Coast have been studied on their fishery potentials. However, precise information is not available for a number of major faunal groups and for taxonomically less known groups and micro and meio-fauna.

FAUNAL DIVERSITY

HISTORY OF MARINE FAUNA OF CHENNAI COAST

The first study on marine fauna was made in India on *Aplysia* and its purple colour by Ensign W. Franckin 1786-87 (Bengal to Persia in Pinkerton's Voyages And Travels, 1811) Bombay followed by Wallich's Marine algae on Herbarium (1822) (In Prodromus Florae Peninsulae Indiae Orientails, 1834) along the coast of Hindustan and Madras. However, in Chennai, it was consequent to the setting up of Madras Museum. The Madras Literary Society mooted the proposal for a museum in Chennai in 1846 and Sir Henry Pottinger, the then Governor, obtained the sanction of the Court of Directors of the East India Company in London. In January 1851, Dr. Edward Balfour, Medical Officer of the Governor's Body guard was appointed as the First Officer in charge of the Government Museum. This was followed by the setting up of a marine aquarium in Chennai in the Marina Beach in 1909. Dr. E. Thurston the then Superintendent of the Museum first drew up the plans for the Madras Aquarium during 1905-1906. The aquarium was opened to the public on October 21, 1909 AD. Today many famous collections available in the museum, starting from Great Indian Baleen Whale to molluscan shells, starfishes, sea urchins, insects and several hundreds of dry preserved specimens in boxes and cabinets that are important for research.

Dr. Edward Green Balfour, the first officer-in-charge (1851–1859) and organiser of Government Museum, Chennai, had very clear ideas of the functions of the museum "to contain complete collection of the natural production of the country and other parts of the world, duly named and systematically arranged as a means of encouraging the study of Natural History and to do its share in the advancement of science" Dr. Balfour started collection campaign and acquired valuable collection of fishes. Captain Jesse Mitchell (1859–1872) who succeeded Dr. Balfour acquired shells, fishes, birds, insects and fossils from several Museums from foreign countries in exchange for similar materials sent from Chennai.

The golden period of the study of marine fauna of Chennai Coast is 1885 to 1978 when Dr. Edgar Thurston (1885–1908) was holding the charges of Superintendent of the Madras Museum followed by Dr. J. R. Henderson (1908–1919), Dr. F. H. Gravely (1920–1940), Dr. A. Aiyappan (1940–1960) and Dr. S. T. Satyamurthi (1961–1978). During this period many surveys and publications were made on the marine fauna of Chennai and the adjacent areas. The Zoological collection of the Museum also had grown enormously and required to be properly arranged, catalogued, labeled, preserved and also clearly explained. Dr. S. Sundararaj joined the Museum as Zoological Assistant to Dr. Henderson in 1913. He had the opportunity of collecting and studying South Indian fauna and started to display the animals in their natural surroundings (Sundararaj, 1927 a.b). When Dr. Frederic Henry Gravely took charge as Superintendent in 1920, the investigation of the littoral fauna of Krusadai Island in the Gulf of Mannar was undertaken. This investigation led to the revival of the Bulletin of the Madras Government Museum for the publication of the results of the researches. The

collections were scientifically preserved, studied and interpreted by publishing research bulletins during the tenure of Dr. Gravely (1920–1940). The reserve collection in the Zoology section, particularly of Invertebrates, was enlarged and improved. Dr. Gravely's work on Mollusca helped in completing the gallery and the reserve collection in these two large Zoological groups (Gravely, 1927, 1942). A large number of shells collected from various localities of the world were received as donations from Mr. M. D. Crichton, a conchologist (Crichton, 1940, 1941). In 1940, Dr. S. T. Satyamurti who joined as Curator, Zoology Section was promoted as Superintendent of the Museum. Later the post of Superintendent was redesignated as 'Director of Museums' During the tenure of Dr. Satyamurti, the displayed collections in the galleries were interpreted and published as Guide Books. His noteworthy publications are on the Mollusca of Krusadai Island in the Gulf of Mannar "Amphineura and Gastropoda" Vol. I, "Scaphopoda, Pelecypoda and Cephalopoda" Vol. II and Echinodermata (Satyamoorthy, 1952, 1956, 1976).

The fauna of Chennai Coast was investigated by many workers either in particular reference to this region or the work may include this region as part of their work. Chaetognatha was studied by many workers of which, John (1933, 1937), Menon (1931), Raghunathan and Srinivasan (1983), Srinivasan (1977, 1980) and Subramaniam (1940) are important. Except Ali (1945, 1956, 1960) and Dendy (1887) no other worker directly dealt with the sponges of Chennai Coast. Other important works on sponges from the neighbouring areas are of Burton, (1930, 1937), Burton and Rao (1932) Pattanayak and Buddhadeb (2001) and many publications of Thomas (1968–1985) from Gulf of Mannar. The hydromedusa forms the major part of the zooplankton of Chennai Coast, Menon's (1931) publication is the only major work on this group and Annandale (1907 a.b. 1915) published mainly on the brackish water medusa. The diversity of scyphomedusae was investigated by many researchers (Sundara Raj. 1927; Menon, 1931) of which, Chakrapany (1984) made elaborate inventory of the Chennai Coast. Sundara Raj (1927) and Leloup (1934) were the pioneer workers on the siphonophores of Chennai Coast and it was followed by Daniel and Daniel (1963 a.b. 1985), Nayar (1950, 1959) and Sivaprakasam (1969 a.b.) were the major workers on the amphipods of Chennai Coast. The study on barnacle was first started in India by Anandale (1905, 1906, 1909, 1910, 1911, 1913) followed by many publications on the diversity by Daniel (1952, 1953, 1956, 1958, 1959, 1962) and Daniel and Ghosh (1963). Alcock (1894, 1895, 1896, 1898, 1899, 1900, 1901) was the first person to work on the crabs of India and neighbouring seas. This was followed by many publications of Chopra (1933a, b) and Chopra and Das (1937). Except the above, no other particular work on the crabs of Chennai Coast is available. Also the credit of working on the macruran fauna of India goes to Alcock (1901, 1904, 1905). The pioneering work on gastropod molluscs of Chennai Coast was by Melvill and Standen (1878) and Preston (1911), which was followed by Crichton (1940, 1941) and Gravely (1942). Recent work by Subba Rao (2003) and Subba Rao and Dey (2000) deals with distribution of most of the molluscan fauna occurring in Indian coast. The only major investigation on the bivalves are by Crichton (1941), Gravely, F. H. (1941) and Preston (1916). Except Jothinayagam (1987) no other worker directly dealt with the Cephalopoda of Chennai Coast. In general, cephalopods of

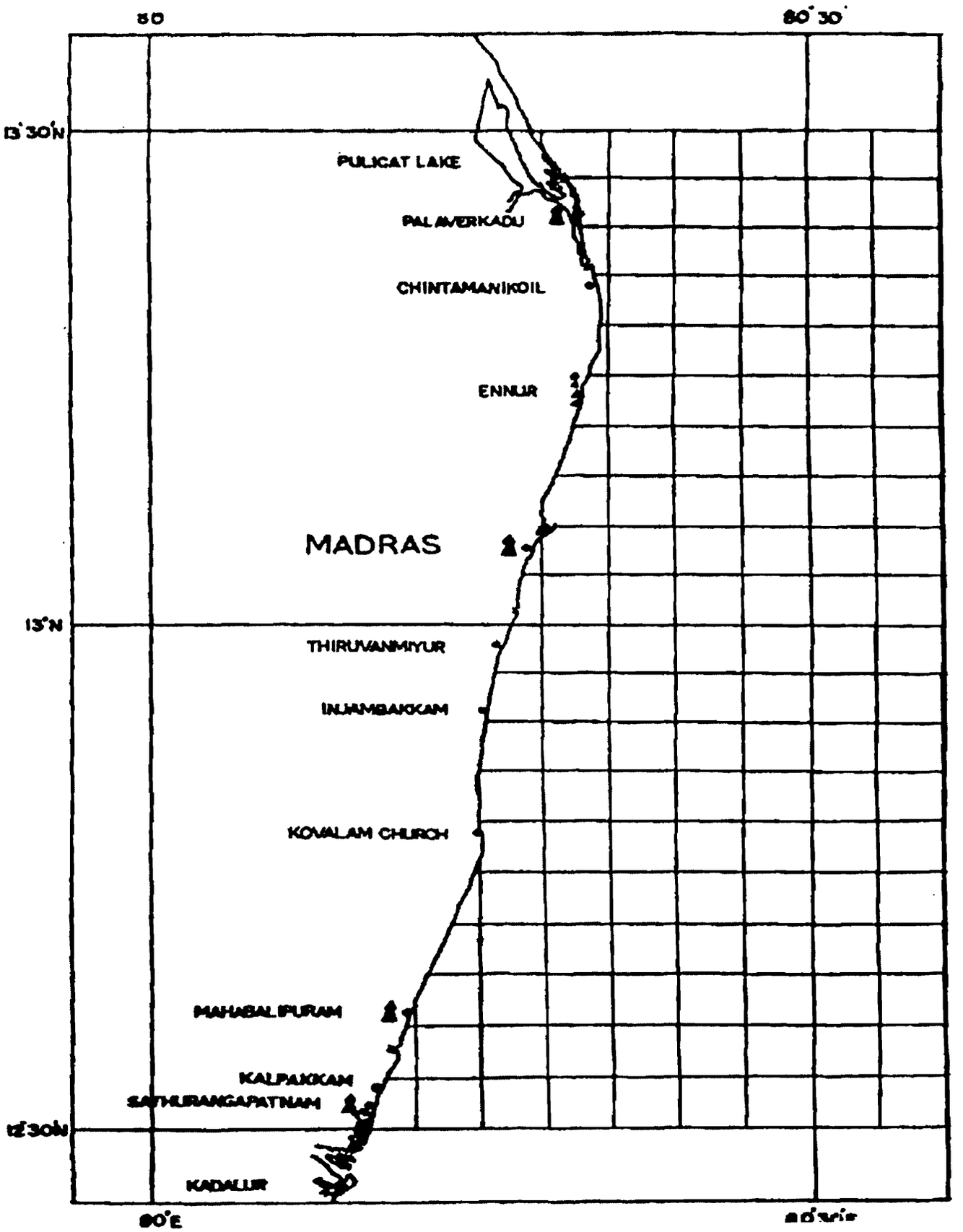

Fig. 1 : Map of Chennai Coast where the marine faunal studies are made

India were studied by Goodrich (1896), Massy (1916) and Winckworth (1936). Bell (1988) investigated the echinoderm fauna collected by Thurston from Tuticorin Coast followed by Thurston (1890) mainly from the Gulf of Mannar coast. Satyamoorthy (1976) is the only major worker dealing with the echinoderm fauna of Chennai coast.

Fishes constitute one of major faunal groups of any marine region. Chennai Coast is not an exception to this. However, no publication directly deals with the fishes of Chennai Coast. The major works of Alcock (1993), Day (1865, 1875-78, 1898), Jhingaran (1985), Murthy (1982a, b), Rema Devi (1992), Talwar and Kacker (1984) and Talwar and Jhingran (1991) deal with the fishes of Indian seas, which have reference to the distribution of fishes in the Chennai Coast. The next major vertebrate group occurring in the Chennai Coast is sea snakes and turtles, which has been investigated only by Murthy (1977). Smith (1933, 1935, 1943) published a series on the reptiles of India and Srilanka. Other studies on reptiles of Chennai Coast are by Sharma (1998), Tikader (1985) and Tikader and Sharma (1992).

Marine Biological Station, Zoological Survey of India was established (1975) in Chennai during which period many Phd theses (Chakrapani, 1984; Jothinayagam, 1985; Krishnamoorthy, 1986 and Krishnan, 1987) and publications were made on the marine fauna of Chennai Coast.

Table 1. : Comparison of marine faunal diversity in the world, India and Chennai.

Group	World	India		Chennai
		Total	Marine	
Protista	31,250	2577	750	?
Mesozoa	71	10	10	?
Porifera	4,562	519	486	14
Cnidaria	9,916	817	790	104
Ctenophora	100	12	12	?
Gastrotricha	3,000	88	88	?
Kinorhyncha	100	99	99	?
Platyhelminthes	17,500	4,920	550+	?
Annelida	12,700	842	440	4
Mollusca	66,535	5,050	3,370	273
Bryozoa	4,000	194	184+	?
Crustacea	35,534	2,994	2,440	200
Meristomata	4	2	2	?
Pycnogonidae	600	16	16	?
Sipuncula	145	38	38	?

Contd.

Group	World	India		Chennai
		Total	Marine	
Echiura	127	33	33	?
Tardigrada	514	30	10	?
Chaetognatha	111	30	30	10
Echinodermata	6,223	765	765	42
Hemichordata	120	12	12	1
Protochordata	2,106	116	116	88
Pisces	21,723	2,546	1,800+	493+
Amphibia	5,150	204	3	?
Reptilia	5,817	446	26	19
Aves	9,026	1,228	145+	?
Mammalia	4,629	372	29	6
Total =	**2,41,563**	**23,960**	**12,244+**	**1,253+**

(? = not known from Chennai Coast.)

The marine fauna of Chennai is rich and varied. The coastline encompasses almost all types of intertidal habitat, from hypersaline and brackish lagoons, estuaries, and coastal marsh and mudflats, to sandy and rocky shores with every degree of exposure and widely varying profile. Subtidal habitats are equally diverse. Each local habitat reflects prevailing environmental factors and is further characterized by its biota. Thus, the marine fauna itself demonstrates gradients of change throughout the Chennai coast. Much is to be known about the number and types of the species of flora and fauna, which live along the Chennai Coast. The algae, fungi, ferns, bryophytes and lichens are less well known than flowering plants. For flowering plants, the location and even population size are known for the most threatened species. Invertebrates are generally less known than the vertebrates. For birds, and now increasingly for reptiles, amphibians and mammals, most species have estimates.

Out of the total 34 animal phyla, 11 are represented in the marine ecosystem of Chennai coast. This includes arrow worms, sponges, cnidarians, crustaceans, molluscs, echinoderms, fishes, reptiles, and mammals.The benthic macro fauna comprises of resident species such as scleractinian corals, molluscs, and mud-burrowing fishes. Among invertebrates sponges and echinoderms generally do not prefer estuarine ecosystem. In Chennai Coast, species diversity is the maximum in Mollusca with 273 species belonging to 151 genera under 72 families. Crustaceans are represented by 200 species belonging to 125 genera under 39 families.

Macro organisms and meiofauna of Adyar estuary and Ennore creek have not yet been properly investigated. Estuarine bottom soil may contain rich variety of bacteria, flagellates, ciliates nematodes, ostracodes, harpacticoid copepods, rotifers, gastrotriches, arachnids and tardigrades, which are yet to be investigated.

Table 2. : Marine faunal diversity of Chennai Coast.

Group	Family	Genus	Species
1. *CHAETOGNATHA	1	3	10
2. *BRACHIOPODA	1	1	1
3. PORIFERA	9	10	14
4. COELENTERATA			
Hydromedusae	9	22	27
*Sea Anemones	?	7	9
*Gorgonids	?	3	3+
Scyphozoa	16	22	32
Siphanophore	8	18	29
5. ANNELIDA	?	4	4
6. ARTHROPODA : CRUSTACEA			
*Pelagic Crabs	1	7	28
Benthic Crabs	8	53	58
Amphipoda	20	38	48
Cirripedes	6	13	36
Macrura : Shrimps	2	11	26
Lobster	2	3	4
7. MOLLUSCA			
*Opisthobranchia	?	7	7
Gastropoda	46	86	170
Lamellibranchia	22	45	70
Cephalopods	4	13	26
8. ECHINODERMATA			
Crinoidea	1	2	2
Asteroidea	7	7	9
Echinoidea	13	13	16
Ophiroidea	2	5	5
Holothuroidea	5	7	8

Contd.

Group	Family	Genus	Species
9. *HEMICHORDATA	1	1	1
10. PROTOCHORDATA			
***Tunicata**	3	18	45
***Larvacea**	2	6	40
*Cephalochordata	?	2	3
11. CHORDATA			
Pisces	116	268	493
Reptiles	5	14	19
Hydrophiidae	1	7	12
Lizards	1	1	2
Turtles	2	5	5
Crocodiles	2	2	2
*Birds	**	**	**
*Mammals	?	6	6
Total =	**308+**	**820+**	**1270+**

Not dealt in the present work, ** No published information available.

Free swimmers or nekton are important components of marine biodiversity and constitute important fisheries of the world. The dominant taxa in the nekton are fish, others being crustaceans, molluscs, reptiles and mammals. Out of a total 22,000 species, it has been estimated that about 4,000 species occur in the Indian Ocean of which 1,800 species are from the Indian seas. In Chennai, 200 species of crustaceans, 273 molluscs, 493 fishes, 19 reptiles and 6 mammals are reported (Table 2).

Among reptiles, sea snakes and turtles are important and represented worldwide by 50 and seven species respectively. These are generally oceanic forms but majority of these often swim near to the shore and visit the shore during some part of their life. Twelve species of sea snakes belonging to one family, Hydrophiidae and five species of sea turtles have been reported from Chennai Coast. Olive ridley turtles visit the shore during breeding season (November to March) to lay their eggs. The visit of Olive ridley during breeding season is a spectacular sight on the sandy beach through out Chennai Coast. Some turtle hatcheries are available along the Neelankarai coast for the protection of these turtle eggs. Also during the breeding season, many of these turtles are found dead and washed ashore probably due to human interference.

The Chennai Coast offers a variable feeding and breeding ground for a number of birds. It is difficult to define precisely the avian component. There are some special species, which exclusively depend on marine ecosystem, while a few are generalised without much dependence on it. No systematic data is available on the coastal dependent shore birds of Chennai.

Marine mammals belong to three orders, Sirenia, Cetacea and Carnivora. About 120 species are estimated to occur in world seas and of these 29 are reported from seas around India (Table 1). However, majority of these are oceanic forms and occasionally a few individuals may get standard along the shore. Occasional stranding of whales such as sperm whale and spinner dolphins are regularly reported. However other data on their migration pattern and diversity status are not known from Chennai Coast.

A survey conducted at Pulicat Lake by Chacko *et al.*, (1953), clearly stated the richness of flora and fauna in this area of Chennai Coast. A total of 8 species of Cyanophyceae, 7 species of Chlorophyceae, 2 species of Rhodophyceae and 32 species of Bacillarieae comprising of all the phytoplankton was recorded during this study. Other faunal groups recorded from Pulicat Lake are Zooplankton : Protozoa-4 spp., Annelida-3 spp., Crustacea : Ostracoda-1 sp., Copepoda-9 spp., Mysidacea-2 spp., and Decapoda-2 spp., others : Coelenterata-5 spp., Nemathelminthes-2 spp., Annelida-6 spp., Arthropoda-28 spp., Mollusca-28 spp., Echinodermata-1 sp., Fishes-65 spp.

Likewise a study on the fauna of Chennai Harbour area by Gopala Iyer (1938) reveals that many species of pelagic larvae, 6 species of hydroids, 8 species of Hydrozoan medusae, 5 species of Scyphozoan medusae, 3 species of corals, 2 species of gorgonids, 6 species of polyzoans, 3 species of crustaceans, 13 species of molluscs and 10 species of echinoderms occur in this area. The same study also reported the occurrence of as many as 200 species of brackish water fauna confined to the Coum and Adyar estuary and the presence of coral reef formations near Chennai Harbour area, which is not found today.

The study conducted by Marine Biological Station, Zoological Survey of India, Chennai on the fauna of Chennai Coast (from Ennore Port to Thiruvanmiyur) revealed the occurrence of a total of 1270 species belonging to 820 genera including all the invertebrate and vertebrate groups (Table 2). Among the various faunal groups recorded from the Chennai Coast, fish fauna display a maximum diversity with 493 species belonging to 268 genera. Next to fishes, molluscs occur with 273 species belonging to 144 genera (Table 2). The recorded species diversity of marine faunal groups of the world is 2,41,563 of which India has a total number of 23,960 (both terrestrial and marine) (Table 1). Out of the total number of species occurring in India, only 12,244 species (51.10%) are recorded from marine regions of India. Nevertheless, Chennai Coast has little over 10% of marine fauna recorded from India. The total percentage of faunal occurrence will increase if an intensive survey and study of all the groups especially the micro and meiobenthos is made.

CAUSES OF DEGRADATION OF MARINE BIODIVERSITY IN CHENNAI COAST

Since marine ecosystems have been given lesser importance when compared to terrestrial ecosystem, these are poorly represented among world's protected areas. In India only 5 out of the 533 protected areas (National Parks-85, Sanctuaries-446, Biosphere Reserve-10 and Ramsar sites-16) are marine ecosystems, out of which Pulicat Lake has become one of the Ramsar sites in India very recently. In general, marine resources of the EEZ are considered open access to public. Coastal zone management, ICMAM and conservation of marine diversity are of recent origin. However, the following threats or problems still exist along the Chennai Coast area.

1. Sedimentation : The construction of Ennore Port and dredging operations deposit large quantities of silt, which increase the turbidity in water causing damage to marine life. There are also reports available on the erosion of some areas in the North Chennai due to the construction of Ennore Port. In general, siltation and sedimentation due to erosion reduces the productivity in the shallow areas.

2. Disposal of Domestic Sewage : Demographic pressure in the Chennai city has resulted in the production of enormous amounts of domestic waste materials. These materials reach the marine environment directly through Coovum and Adyar River. These domestic wastes are discharged mostly in partially treated or untreated conditions. The capacity of the sewage treatment plants is not adequate to treat the total waste generated in the Chennai city. This always results in the reduction of biodiversity in the Chennai Coast. The sewage also causes diseases to many organisms living in the coastal areas. This results in reduced growth rate and reproduction, which in turn affects the biodiversity.

3. Industrial waste : Chennai is one of the largest industrial cities in India. The enactment of Water Polluction Act in 1974 and Environment Protection Act, 1986 have helped in regulating the disposal of wastes from the industries. Most of the major industries treat their effluents and comply with the standards set for each type of industry. However, the problem of wastes generated by medium and small-scale industries are not dealt with effectively. Common treatment plants for small and medium scale industries have been set up in Chennai. These measures have resulted in reduction of pollution loads of the coastal waters to certain extent. Major industries like fertilizer, petro - and agrochemical and chemicals are mainly located at Chennai, Ennore and Cuddalore. Besides industrial and municipal wastes, port related operations such as continuous movement of marine vessels at Chennai including oil transport as also the wastes of aquaculture and agriculture farms (near Kovalam) are increasingly posing threats to the coastal water quality and to the biodiversity.

4. Over fishing : The variation in the production in marine fisheries in the past 50 years and in particular the drop in production after 1997 indicates a series of crisis this sector is facing today. The status of fishing industry cannot be assessed based on catches alone. Even

when the catches are on the increase in India, the following indicators of the adverse changes could be diagnosed :

(i) Of the total landings of 2.7 m t during 1997, about 2.2 m t was from the inshore waters (<50 m depth) and the rest from 50 to 100 m depth. The catcheable potential in the inshore areas is estimated at 2.2 m t (Anon, 1991), which has been achieved by the commercial fisheries.

(ii) The catch rate of trawlers in several fishing harbours is on the decline. The annual effort of the trawlers based at Chennai (south east coast), has increased from 175,000 fishing hours in 1984 to 895,000 h in 1997 ; the catch rate, which was 32.0 kg/h in 1984, increased to 110.8 kg/h in 1991 but declined drastically to 29.7 kg/h in 1994. In other words, the catch rate has declined considerably against the trawl effort of 263,000 h (Vivekanandan, 1999).

Fishing operations with latest technologies are causing damage to the marine living resources. Along with increase in the targeted catch, a number of untargeted fish and other biota are removed from their habitat and discarded as waste. It has been estimated that worldwide shrimp fishermen discard up to 15 million tones and other fishermen up to five million tones per year (Weer, 1994). Shrimp trawlers probably have the highest rate of bycatch bringing in up to 90% more of **"trash fish"**. Random capture techniques destroy immature fish and other non-targeted marine species. Gill nets used to catch fish bring in a host of other animals such as dolphins, turtles *etc.*

5. Tourism : Sandy beaches are the main attraction for tourists. Trampling of the beach sand and litter has changed the complexion of the Marina and other beaches along Chennai Coast. The beaches along the Chennai Coast have been attracting more and more number of tourists as well as locals. Other than the major beach Marina, there are many new beaches being used for recreation, which include some of the amusement parks and private beaches with hotels along the East Coast Road up to Mahabalipuram. These beaches along the Chennai Coast are under tremendous pressure from tourism and garbage accumulation. Many of these areas previously ear marked for turtle nesting grounds now accumulate a lot of gargabe and waste materials discarded by the visitors.

Chennai Coast is known for its rich biodiversity. It is also the zone of maximum human concentration. The problems in the zone are due to conflicting sectorial interests. There are several stakeholders representing both, the Government Departments and NGOs. The traditional fishermen and trawler operators exploit the living resources along the Chennai Coast to the maximum. There is no proof to show that the existing catches have exceeded the maximum sustainable yield. Nevertheless, one thing is certain, coastal biodiversity is threatened by pollution especially from domestic sewage and run off from agricultural land. Destruction of habitat is another serious problem along the Chennai Coast. The traditional users of the Chennai Coast feel that they are marginalized. Many fishermen living along the Chennai Coast are ignorant of the Wildlife (Protection) Act 1972 and Coastal Regulation

Zone Notification. Socioeconomic evaluation of coastal resources and Public involvement in the management are the two aspects, which may have to be considered for conservation and management of faunal resources of Chennai Coast.

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PORIFERA

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INTRODUCTION

Chennai is one of the major cities in the coast of India. The species abundance and the diversity were well studied by several workers in the past. Along the Chennai coast more than 60 coastal villages involved in active fishing. The coast starts from Pulicate Lake to Kalpakkam. In Chennai coast the Kasimedu is one of the largest landing center and from where the present species were recorded. Sponges were collected in the Chennai Harbour and Rayaburam beach showed some differences in distribution size and texture. The Chennai Harbour is a protected area with placid waters. Effluents from the ships and docks, pollutes water in the harbour area. Some boats docked there for long periods form the major substratum for the sponges. Dead bivalve shells on the walls of the harbour provide a good substrate for certain sponges. Royapuram beach is a open sand and boulder beach with heavy wave action.

Mostly the economically important fishes and Crustaceans were harvested in the coastal area of Chennai. The actual diversity of the marine organisms was not yet clearly estimated. However, the sponges collected as non-targeted marine species were thrown as trash and were utilized for the present study. The sponges collected from trash in the landing centers contain representatives of all the major groups of sponges.

Along the east coast, the sponge fauna of Madras and Chilka Lake were inverted by Dendy (1887) and Ali (1954, 1956a). Dendy (1905) reported the Gulf of Mannar as one of the richest centres of sponge distribution. Burton (1930, 1937) added to our knowledge of the sponge fauna of Gulf of Mannar. An extensive survey of the marine sponges in the Gulf of Mannar and Palk Bay were conducted during the years 1964–67 by Thomas (1968). Ali (1960) discussed the ecology of fauna of Madras harbour. Sivaramakrishnan (1951) studied the development and regeneration of *Callispongia diffusa* and *Tedania nigrescens* from the Chennai Coast. (Thomas 1986) made a checklist containing 275 species sponges form Gulf of Mannar and Palk Bay.

LIST OF SPECIES REPORTED FROM CHENNAI COAST

Phylum PORIFERA

Class DEMOSPONGIA

Order HALICHANDRIIDA

Family AXINELLIDAE Ridley and Dendy

Genus ***Axinella*** Schmidt, 1862

1. *Axinella donnani* (Bowerbank, 1873)
2. *Axinella flabelliformis* (Keller, 1884)

Genus ***Acanthella*** Schmidt, 1862

3. *Acanthella cavernosa* Dendy, 1921
4. *Acanthella elongata* (Dendy, 1905)

Order HAPLOSCLERIDA Topsent

Family PHLOEODICTYIDAE Carter

Genus ***Oceanapia*** Norman

5. *Oceanapia arenosa* Rao, 1941

Family CHALINIDAE Gray, 1867

Genus ***Sigmadocia*** de Laubenfels, 1936

6. *Sigmadocia fibulata* (Schmidt, 1862)

Family CALLISPONGIIDAE de Laubenfels

Genus ***Callispongia*** Duchassaing and Michelotti

7. *Callispongia diffusa* (Ridley, 1884)

Order DENDROCERATIDA

Family DARUINELLIDAE Moerkowsky, 1879

Genus ***Dendrilla*** de Laubenfeld

8. *Dendrilla membranosa* (Pallas, 1766)

Family DYSIDEIDAE

Genus ***Sponginella*** Bowerbank, 1862

9. *Spongionella pulvilla* (Dendy, 1905)
10. *Sponginella tuberosa* Burton, 1937

Order HAPLOSCLERIDA

Family HALICHLONIDAE

Genus ***Haliclona*** Grant, 1835

11. *Halichlona oculata* Linnaeus, 1759

Order POECILOSCLERIDA

Family MYCALIDAE Lundbeck, 1905

Genus ***Mycale*** Gray, 1867

12. *Mycale (Carmia) madraspatana* Annandale, 1914

Order POECILOSCLERIDA

Family TEDANIIDAE

Genus ***Tedania*** Gray, 1867

13. *Tedania (Tedania) anhelans* Lieberkuha, 1859

14. *Tedania nigrescens* (Schmidt, 1862)

SYSTEMATIC ACCOUNT

Order HALICHANDRIIDA

Family AXINELLIDAE Ridley and Dendy

Genus ***Axinella*** Schmidt, 1862

Axinella donnani (Bowerbank, 1873)

1873. *Isodictya donnani* Bowerbank, p. 28, pl. 6.

1905. *Phakellia donnani* Dendy, p. 190.

Description : Sponge is lamellar; body is encrusted or massively globular structure. Colour grey, consistency tough and incompressible. Oscules are compound and distributed irregularly on the surface. Its diameter is 2-4 mm. Pores scattered irregularly. Surface consists of conules. These conules are covered by dermal membrane. Axial part is globular in the dermal membrane from the axial part, the extra axial fibres arised vertically. Spicules styles slightly curved and sharply pointed blunt. The spicules size 0.152–0.452 x 0.004 mm oxeas-0.377-0.509 x 0.004 mm.

Distribution : Bay of Bengal, Atlantic Ocean and Red Sea.

Axinella flabelliformis (Keller, 1884)

1884. *Axinella flabelliformis* Keller, p. 394, pl. XXIV, fig. 48.

Description : Sponge is flabellate or stipitate structure, surface consists of longitudinal ridges having conules oscules are numerous. Texture tough, compressible and resilient.

Colour : Blue when alive, grayish brown with spirit. Skeleton is made up of sub isodictyal reticulation of sponge in fibres having oxea. Spicule oxea size-0.03 x 0.00 6mm.

Distribution : Gulf of Mannar.

Genus ***Acanthella*** Schmidt, 1862

Acanthella cavernosa Dendy, 1921

1887. *Acanthella stipitata var.* Ridley and Dendy, p. 178.

1921. *Acanthella cavernosa* Dendy, p. 120, pl. 7, fig. 7.

Description : Specimen is massive or lobose branching. It is covered by dermal membrane. Oscules present in the surface. Colour yellow when dry. Consistency tough but compressible spicules. Styles slightly curved size 0.377-0. 943 x 0.008mm. Strongyles 0.943 x 1.13 x 0.004 mm.

Distribution : Gulf of Mannar (Krusadai Island), widely distributed in the Indian Ocean.

Acanthella elongata (Dendy, 1905)

1905. *Auletta elongata* Dendy, p. 195, pl. 13, fig. 7.

1937. *Acanthella elongata* Burton, p. 37, pl. 7, fig. 42.

Description : Sponges erect, stipitate and tubular structure. Surface is minutely hispid and leathery appearance. Oscule present on the surface texture-compressible and resilient. Colour yellowish grey in the spirit. Skeleton composed of stout longitudinal fibres with plumose columns. Spicules styles-size 0.782 x 0.019 mm.

Distribution : Gulf of Mannar, Bay of Bengal.

Order HAPLOSCLERIDA Topsent

Family PHLOEODICTYIDAE Carter

Genus ***Oceanapia*** Norman

Oceanapia arenosa Rao, 1941

1941. *Oceanapia aremosa* Rao, p. 443, pl. 12, fig. 16-18.

Description : Dermal skeleton is made up of oxeas. They are uni or multispicular reticulation. Main skeleton of fibres vary between 0.06–0.12 mm in diameter. Ectosome having the fistules. It is incorporated by sand particles. Length about 6 mm in diameter. It is supported by mesh and sponging. Colour pale yellow. Texture is firm and compressible. Oscules present 2 mm in diameter. Spicules-oxeas, size-0.16–0.18 x 0.004 –0.006 mm.

Distribution : Gulf of Mannar.

Family CHALINIDAE Gray, 1867

Genus ***Sigmadocia*** de Laubenfels, 1936

Sigmadocia fibulata (Schmidt, 1862

1862. *Reniera fibulata* Schmidt.

1880. *Reniera fibulifera* Carter, p. 48.

1968. *Sigmadocia fibulata* Thomas.

Description : Fibulata is cushion shaped form sponges. Colour green in colour due to the presence of algal matter. Surface is strongly reticulated and irregular curted sigmas. Consistency hard slightly compressible there is no ectosomal skeleton. The dermal skeleton is having tangential spicule. The choanosomal skeleton is connected by primary fibres, oxeas 0.105–0.21 x 0.002 mm. Sigmas notch at the center, size is 0.022 mm.

Distribution : North Atlantic Ocean, Mediterranean Sea, Indo Australian.

Remarks : It grows on a piece of bryozoans, calcareous algae and tubeworm.

Family CALLISPONGIIDAE de Laubenfels

Genus ***Callispongia*** Duchassaing and Michelotti

Callispongia diffusa (Ridley, 1884)

1884. *Cladochalina diffusa* Ridley, p. 672, pl. xli, fig. D.

1934. *Callispongia diffusa* Burton, p. 41, fig. 6.

Description : Specimen is repent and cylindrical body with compound oscules are present on the sides of the body. Sand grains are heavily incorporated into the body. Colour sandy grey when dry. Consistency rough and slightly compressible. Pores are appeared minutely one per mesh. Surface is reticulated and hispid. This hispidity is due to spicules. The dermal skeleton is having primaries 0.1 mm diameter, secondaries of 0.5 mm in diameter. Tertiary reticulation also be present. Spicules is oxeas sharply pointed size 0.062–0.121 mm x 0.002 mm.

Distribution : Gulf of Mannar and Palk Bay.

Order DENDROCERATIDA

Family DARUINELLIDAE Moerkowsky, 1879

Genus ***Dendrilla*** de Laubenfeld

Dendrilla membranosa (Pallas, 1766)

1766. *Spongia membranosa* Pallas, p. 389.

1934. *Dendrilla membranosa* Burton, p. 595.

Description : Sponge massive or lobodigitate appearance. Surface smooth with well developed. Spinous conules ending in the surface. Oscules are scattered in the body. Texture soft, compressible and resilient. Colour yellow in the alive condition. Red in the spirit. Skeleton is trace like stout fibres no dermal skeleton.

Distribution : Widely distributed in the Indian Ocean.

Family DYSIDEIDAE

Genus ***Sponginella*** Bowerbank, 1862

Spongionella pulvilla (Dendy, 1905)

1905. *Megalopastas pulvillus* Dendy, p. 206, pl. XV, fig. 3.

Description : Sponge is cushion shaped and flattened dorso-ventrally. Surface even and granulated. Oscules are small, compound scattered on the body. Main skeleton is reticulated with fibres of large meshes. No dermal specialization texture firm, compressible and resilient. Colour yellowish grey in the spirit, ascending fibres 0.1 mm diameter connecting fibres 0.04 mm diameter.

Distribution : Gulf of Mannar.

Sponginella tuberosa Burton, 1937

1937. *Sponginella tuberosa* Burton, p. 42, pl. 9, fig. 58.

Description : Sponge consists of numerous tubes. Tubes diameter is 5-10 mm. Sponge surface is soft and compressible. Colour of the sponge is yellow in the spirit. Skeleton is composed of sponging primaries are 0. 03 mm and connectives are 0.015 mm diameter.

Distribution : Gulf of Mannar.

Order HAPLOSCLERIDA

Family HALICHLONIDAE

Genus ***Haliclona*** Grant, 1835

Halichlona oculata Linnaeus, 1759

1759. *Spongia oculata* Linnaeus, p. 1348.

1941. *Haliclona oculata* Rao, p. 428.

Description : Surface is smooth and hispid. It grows less than 1 cm thick encrusted sponge with numerous, hollow cylindrical tubes. Consistency soft not tough but elastic. Ectosome skeleton is usually absent. Endosome reticulation of primary or trispicular with isodictyal network sponge is moderate. Spicules is oxeas, fusiform bent at the middle, sharply pointed, spicule size is 0.08–0.125 x 0.004 mm.

Distribution : Gulf of Mannar, Atlantic Ocean and Red Sea.

Order POECILOSCLERIDA

Family MYCALIDAE Lundbeck, 1905

Genus ***Mycale*** Gray, 1867

Mycale (Carmia) madraspatana Annandale, 1914

1914. *Mycale madraspatana* Annandale, p. 154, pl. X, fig. 3, pl. XI, fig. 4.

1936. *Carmia madraspatana* de Laubenfels, p. 118.

1937. *Mycale madraspatana* Burton, p. 24, pl. 2, fig. 12.

Description : Sponge is encrusted or irregularly massive. Colour brick red when alive and slimy appearance. Oscules are small, inconspicuous and contractile. Dermal skeleton consists of spicular bands and main skeleton also the similar bands ends in the surface. Spicules is sub-tylostyles, size 0.265–0.296 x 0.005 mm. Anisochelas–In rosette chord, 0.043–0.051 mm. Sigmas chard size 0.08–0.095 mm. Toxas size 0.140–0.356 mm.

Distribution : Widely distributed in the Indian Ocean. Cosmopolitan.

Order POECILOSCLERIDA

Family TEDANIIDAE

Genus ***Tedania*** Gray, 1867

Tedania (Tedania) anhelans Lieberkuha, 1859

1859. *Tedania (Tedania) anhelans* Lieberkuha fig. 2A-F.

1952. *Tedania anhelans* Levi.

Description : Surface is irregular. Oscules of 5 mm diameter on the main body as well as on the branches. Consistency soft or compressible, easily damaged. Colour orange, reddish brown. Skeleton consist of tylotes in the surface, choanosome consists of styles. Spongin is indistinct. Spicules styles smooth slightly curved size, 0.198–0.245 x 0.004 mm. Onychaetes size 0.099 mm. Tornotes size 0.182–0.235 mm.

Distribution : Gulf of Mannar, Palk Bay and Mediterranean Atlantic.

Tedania nigrescens (Schmidt, 1862)

1862. *Reniera nigrescene* Schmidt, p. 74.

1932. *Tedania nigrescens* Burton and Rao, p. 353.

Description : Sponge digitate processes. Conspicuous oscular tubes. Surface smooth and minutely papillate. Texture soft, friable oscules are conspicuous and scattered. Colour yellow or orange when alive, Green or red in the spirit. Spicules styles-0.022 mm x 0.008 mm. Tornotes–0.002 mm x 0.004 mm, Onchaetes–0.015 x 0.001 mm.

Distribution : Gulf of Mannar, Bay of Bengal.

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CHAETOGNATHA

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INTRODUCTION

Chaetognaths form one of the major constituents of the marine zooplankton. They occupy the second place in the order of abundance, copepods being the first one. They are bilaterally symmetrical carnivorous animals without the circulatory and excretory systems. They are popularly known as "Arrow-worms" and "Glass-worms" because of the torpedo-like shape and transparent nature of the body. They are hermophrodites with well developed nervous system.

Altogether about 120 species of chaetognaths are so far reported from the World Oceans. They are found in the surface, sub-surface and benthic waters of the Oceans and estuaries. They are mostly marine, but a few species are estuarine. Among the 120 species known from the World Oceans, about 30 are reported from the Indian Seas.

Chaetognaths play a main role in the marine food cycle. The biomass of chaetognaths has been estimated as 10-30 percent of that of copepods in the World Oceans, so that they are of great significance in transfering energy from copepods to higher trophic levels. As they form the food of many larger organisms, they occupy an important position in planktonic food webs.

Chaetognaths are useful as indicator organisms of the origin of the watermasses and their movements, as certain species are seen associated with particular type of watermass, in a region, where there are several bodies of water in which the salinity conditions are not well marked (Russell, 1935). In such cases only the planktonic organisms could provide information on the origin of such waters. Along the west coast of India Srinivasan (1976, 1996) pointed out the possibility of utilising *Sagitta decipiens* Fowler (1906) as an indicator of upwelling.

Menon (1931), while studying the Madras plankton, stated the occurrence of *Sagitta enflata* (reported as *Sagitta bipunctata* Quoy and Gaimard) throughout the year along the Madras Coast. This is probably the first elaborated reported on the Indian Chaetognaths. Further in his another paper (1937) he reported the seasonal variation in the distribution of *Sagitta* of the Chennai Coast.

Lele and Gae's (1936) paper on the "Common *Sagittae* of the Bombay Harbour" is the first paper on the chaetognaths from the west coast of India. In 1937 Subramaniam studied the distribution of *Sagitta* along the Madras Coast and reported the occurrence of *Sagitta* throughout the year and he recorded the presence of *S. bedoti* from the plankton of the Madras Coast in 1940. Then in 1943 Varadarajan and Chacko studied the chaetognaths of the Krusadai Island. Pillai (1944) and Menon (1945) reported the chaetognaths of the Trivandrum coast. In 1952 Grorge examined the chaetognaths of the Malabar coast and recorded the seasonal fluctuation of ten species. Prasad (1956) and Sudarsan (1963) studied the chaetognaths of the Mandapam area. Chaetognaths of the Lawson's bay, Waltair were studied by Rao (1958 a,b, 1966), Rao and Ganapati (1958), and Rao and Kelly (1962) and they have reported 15 species.

A series of papers were published on chaetognaths from the west coast of India by Nair (1967, 1971, 1972, 1973, 1974 and 1975), Nair and Rao (1973a,b) Nair and Selvakumar (1979), Nair *et al.*, (1975, 1981), Silas and Srinivasan (1968, 1969, 1970) and Srinivasan (1972a,b, 1976, 1979, 1996). Altogether 22 species were reported from the Arabian Sea. Further, Srinivasan (1977, 1980) studied the chaetognaths from the Ennore estuary and traced the life cycle of *S. bedoti* and *S. enflata.* 13 species of chaetognaths were reported from the Andaman Seas by Nair *et al.* (1981).

LIST OF SPECIES REPORTED FROM CHENNAI COAST

Genus *Sagitta*

1. *Sagitta bedoti* Beraneck, 1895
2. *Sagitta enflata* Grassi, 1881
3. *Sagitta ferox* Doncaster, 1903
4. *Sagitta hexaptera* d' Orbigny, 1834
5. *Sagitta neglecta* Alda, 1897
6. *Sagitta pacifica*Tokioka, 1940
7. *Sagitta pulcra* Doncaster, 1903
8. *Sagitta regularis* Aida, 1897
9. *Sagitta robusta* Doncaster, 1903

Genus *Pterosagitta*

10. *Pterosagitta draco* (Krohn, 1853)

Genus *Krohnitta*

11. *Krohnitta pacifica* (Aida, 1897)
12. *Krohnitta subtilis* (Grassi, 1881)

DESCRIPTION OF THE SPECIES

1. *Sagitta bedoti* Beraneck, 1895

1895. *Sagitta bedoti* Beraneck, *Revue Suisse de Zoologie*, **3**, : 147.

Description : Total length (including the tail fin) of the specimens varies from 7 to 14.0 mm and the estuarine forms are smaller. The body is long, slender and opaque. The longitudinal muscles are strong and hence the shape of the body is maintained. Intestinal diverticula are absent. The head is small and differentiated from the body by a well defined neck. A thin collarette is seen at the neck region, that extends up to the origin of the anterior lateral fins. 6 to 8 hooks, 7 to 13 anterior teeth and 18 to 25 posterior teeth are found on either side of the head. Eyes are spherical and have a star shaped pigmented region at the center. The tail segment is narrow, conical and measures from 23 to 25% of the animal length. The constriction at the tail septum is not marked. Ventral ganglion is situated at the origin of the anterior lateral fins. The origin of the anterior lateral fins is at the levelof the ventral ganglion. They are longer and narrower than the posterior lateral fins. The innermost region are rayless and the posterior part is wider than the anterior region. The origin of the posterior lateral fins is closer to the end of the anterior lateral fins and extend upto the seminal vesicles. More than 50% of the fins are found on the trunk segment and the inner region is without fin rays. The seminal vesicles are in touch with both the posterior lateral and tail fins. They are oval and the anterior half is slightly broader and they break open along the anterolateral margin, through which the sperms are liberated. In matured specimens, the ovarian tubes are seen upto the ventral ganglion. The ova are round and arranged in three rows.

Distribution : This is a neritic species, found in the coastal waters of the Indian and Pacific Oceans. They are also found in the estuarine waters of Cochin and Ennore.

Remarks : This is an epi-planktonic species seen in the upper 200 metres of the ocean and is abundant in the neritic waters than in the oceanic waters. This is an euryhaline species, that can tolerate a salinity range of 11.6% to 33% (Nair, 1972). The estuarine specimens are smaller in size. (Srinivasan, 1972), as they are living in an environment where the fluctuation of salinity is very high.

2. *Sagitta enflata* Grassi, 1881

1881. *Sagitta enflata* Grassi, Intorno as Chaetognati. *R.C. Inst. Lombardo, Ser.*, 2, **14** : 213.

Description : Total length varies from 6.0 to 24.0 mm. Estuarine forms are smaller and measures from 3.5 to 11.2 mm. (Srinivasan, 1972). Body is highly transparent, flaccid and flexible due to thin and weak longitudinal muscles. Intestinal diverticula are absent. The head is smaller than the body and differentiated from the body by a narrow neck. Head is wider than long. Collarette is totally absent. The number of hooks on jaws varies from 7 to 10. Anterior teeth vary from 4 to 8 and posterior teeth from 8 to 16. Eyes are oval and have a star shaped pigmented region at the centre. Tail segment measures from 17.0 to 19.0% of the animal length. The constriction at the tail septum clearly demarcates the tail segment from the body. Ventral ganglion is situated at the middle region between the neck and the start of the anterior lateral fins. Anterior fins are narrow, elongated and measures between

14 and 15% of the animal length. Fin rays are absent along the inner margin of the posterior lateral fins. These fins are longer and broader than the anterior fins and measure between 16 and 18% of the animal length. More than 50% of the fins are found on the trunk segment. The testis occupies the posterior half of the tail segment and the seminal vesicles are located close to the caudal fin. In matured specimens the ovarian tubes grow upto the start of the anterior lateral fins. The ova are round and arranged in three rows. This is a continuous breeder.

Distribution : This is an epi-planktonic cosmopoliton species, found in the upper 200 meters of the oceans. This occurs in the oceaninc, neritic and estuarine waters.

Remarks : This is one of the few species of the Phylum Chaetognatha that can tolerate a wide range of salinity. It has already been reported from several estuaries, where the salinity ranged from 3.0‰ to 33.0‰. The specimens from the estuarine habitat are smaller in size. This is due to the variation in salinity conditions. It is said that the marine organisms are known to exhibit a reduction in final size in the areas of their distribution, where the salinity is significantly reduced (Kinne, 1964).

3. ***Sagitta ferox*** Doncaster, 1903

1903. *Sagitta ferox* Doncaster, Chaetognatha, with a note on the variation and distribution of the group. *The Fauna and Geography of the Maldive and Laccadive Archipelagos* 1,212.

Description : Total length of the specimens vary from 5 to 16.5 mm. Body is opaque, firm and rigid due to strong and thick longitudinal muscles. The body is of uniform size and shape. Intestinal diverticula are present. The head is bigger than the body and clearly demarcated from the body by a well defined neck. The collarette is seen from the neck to the ventral ganglion as a thick layer and then it spreads as a thin layer upto the tip of the tail. Hooks are long, thick and six numbers are found on either side of the head. Anterior teeth vary from 6 to 8 and posterior teeth from 11 to 14. Eyes are spherical with a central pigmented region. Tail segment constitutes 26 to 28% of the animal length and a clear constriction is seen at the tail septum. Ventral ganglion is situated at the origin of the anterior lateral fins. Anterior lateral fins are longer than the posterior lateral fins are measure from 26 to 29% of the animal length. These fins start at the level of the ventral ganglion and the fins are fully rayed. Posterior lateral fins measure from 23 to 26% of the animal length. More or less the fins are equally placed on the trunk and tail segment and the posterior ends of the fins are in touch with the seminal vesicles. The fins are fully rayed, except for a small region near the tail septum. Seminal vesicles are in touch with both the posterior lateral and caudal fins. They are oval in shape with anterior bulged portion. The seminal vesicles break open along the anterolateral margin through which the sperms are liberated. Ovarian tubes are long, wide and reach upto the neck region in matured specimens. Ova are large and arranged in two rows.

Distribution : This is an epi-planktonic species found in the upper 200 metres of the Indian and Pacific Oceans.

Remarks : This is a stenohaline oceanic species found in the marine habitat, where the standard salinity conditions occur. This species resembles *S. robusta* in several aspects. However this differs from *S. robusta* in the possession of a pair of longer anterior lateral fins than the posterior lateral fins and arrangement of ova in two rows in the ovary, whereas in *S. robusta* the ova are arranged in one row in the ovary.

4. ***Sagitta hexaptera*** d' Orbigny, 1843

1843. *Sagitta hexaptera d'* Orbigny, *Voyage dansl Amerique meridionale, Tome,* **5**(3), *Mollusques,* 140.

Description : This is one of the largest species of Chaetognatha from this coast. The maximum size from this area is 35 mm. The body is highly transparent, flaccid but the shape is maintained due to strong longitudinal muscles. The body shape closely resembles that of *S. enflata.* Intestinal divertivula are absent. The head is smaller than the body and clearly demarcated from the trunk by a neck. Collarette is absent at the neck and other regions of the body. Prehensile hooks vary from 7 to 9, anterior teeth from 2 to 4 and the posterior from 3 to 6. This species differs from *S. enflata* in the possession of less number of anterior and posterior teeth. The eyes are oval in shape with small pigmented region at the centre. This species has a longer tail segment and it varies from 19 to 21% of the animal length. Constriction at the tail septum is very prominent. Ventral ganglion is situated at the central region between the tip of the head and posterior end of the anterior lateral fins. Orgin of the Anterior lateral fins is at about the midway between the anterior end of the head and tip of the tail segment. These fins are shorter and narrower than the posterior lateral fins. The fin rays are sparsely arranged and the inner margin of the fins is rayless. Posterior lateral fins are broader and longer than the anterior lateral fins. More than 60% of the fins are found on the trunk region. Innermost region of the fins is rayless and the fin rays are sparsely arranged. The seminal vesicles are closer to the caudal fin. They are spherical and break open along the mid-dorsolateral region through which the sperms are liberated. Ovarian tubes are long, slender and they grow upto the ventral ganglion. Ova are spherical and arranged in three rows.

Distribution : This is a cosmopolitan species reported from the epi-planktonic region of the Atlantic, Indian and Pacific Oceans.

Remarks : This is a stenohaline oceanic species reported from the upper 200 metres of the oceanic waters than in the shelf areas.

5. ***Sagitta neglecta*** Aida,1897

1897. *Sagitta neglecta* Aida, Chaetognatha of Misaki Harbour, *Annotationes Zoological Japonenses*, **1** : 16

1937. John, *Rec. Indian Mus.*, **39** : 83-97

Description : The specimens are less than 9 mm in total length. This is one of the smaller species of the Phylum Chaetognatha. The body is slender, firm, translucent and not flexible due to strong longitudinal muscles. The body is more or less of uniform width from head to tail septum. Intestinal diverticula are present. The head is elongated, slightly bigger than the body and the demarcation at the neck region is not prominent due to the presence of a thick layer of collarette, that extends upto the tail. The hooks vary from 6 to 7 either side of the

head. Anterior teeth ranges from 5 to 7 and the posterior teeth from 12 to 16. The eyes are round, larger when compared to the head size and have a five lobed pigmented region at the centre. Tail segment forms 30% of the animal length. The constriction at the tail septum is very conspicuous. Ventral ganglion is bigger in size and located at one fourth distance from the anterior end. Anterior lateral fins originate below the level of the ventral ganglion and they are shorter and narrower than the posterior lateral fins. More than 60% of the posterior lateral fins are found on the tail segment and the fins are fully rayed. Seminal vesicles are big round and located at the posterior end of the posterior lateral fins and away from the tail fins. The gap between the seminal vesicles and the tail fin is covered by a thick layer of collarette. Ovaries are long, broad and extend upto the ventral ganglion. Ova are round and compactly arranged in one row.

Distribution : This is an epi-planktonic species found in the upper 200 metres of the Indian and Pacific Oceans. This is found in abundance in the coastal waters than in Oceanic waters.

Remarks : This species resembles *S. regularis* in several characters. Both are included under "neglecta" group. *S. neglecta* is longer in size and the seminal vesicles are round in shape, whereas in *S. regularis* they are elongated.

6. ***Sagitta pacifica*** Tokioka, 1940

1941. *Sagitta pacifica* Tokioka, A collection of Chaetognatha from the coast of New South Wales. *Rec. Austr. Mus.* **20**(6) : 373.

Description : The specimens vary in total length from 5.0 to 11.6 mm. The body is transluscent, firm and not flexible due to strong longitudinal muscles. Intestinal diverticula are absent. This species is characterised by the possession of well developed sensory hairs throughout the body. The head is of medium Description and well differentiated from the trunk by a neck. The collarette is found at the neck region that extends upto the start of the anterior lateral fins. The hooks vary from 6 to 7 on either side of the head and they are characterised by the presence of serrations on the inner margin. Anterior teeth vary from 8 to 11 and the posterior teeth from 11 to 22 on either side of the head. The eyes are oval, with a small pigmented region at the centre. Tail segment forms 24 to 26% of the animal length and clearly demarcated from the trunk by a tail septum. The tail segment is narrow and conical in shape. Ventral ganglion is located at one fourth distance from the anterior end of the animal. Anterior lateral fins originate behind the level of the ventral ganglion and measure between 23 to 24% of the animal length. The shape is more or less similar to posterior lateral fins, but slightly narrower in width. Posterior lateral fins measure from 25 to 27% of the animal length and more than 50% of the fins are found on the tail segment. The posterior end of these fins are in contact with the seminal vesicles and the fins are fully rayed. Seminal vesicles are very prominent and away from the caudal fins. More than five chitinous teeth are seen on the inner margin of the seminal vesicles. Ovarian tubes are long and slender and extend upto the start of the anterior lateral fins in matured specimens. Ova are shperical and compactly arranged in a single row.

Distribution : This is an oceanic species reported from the upper 200 metres of the Indian and Pacific Oceans.

Remarks : This is a stenohaline oceanic species found in abundance in the offshore waters than in the neritic waters. As this is associated with high saline oceanic waters, Rao (1958) suggested that this could be used as an indicator of incursion of oceanic waters into the coastal waters of Visakhapatnam.

7. *Sagitta pulchra* Donncaster, 1903

1903. *Sagitta pulchra* Doncaster, Chaetognatha, with a note on the variation and distribution of the group. *The Fauna and Geography of the Maldive and Laccadive Archipelagos,* **1**(2), 213.

Description : The specimens vary from 8 to 20 mm in length. Specimens from the estuarine waters are smaller in size. The body is highly transparent, elongated, slender, firm and not flexible due to strong longitudinal muscles. Intestinal diverticula are absent. The head is of medium size and differentiated from the trunk by a neck. A well developed collarette is seen at the neck region, that extends upto the ventral ganglion. The hooks vary from 6 to 7. The anterior teeth number from 5 to 9 and the posterior teeth from 10 to 13, on either side of the head. The eyes are small, roundish with central pigmented region. The length of the tail segment varies from 19 to 24% of the total length of the animal and is clearly demarcated from the trunk. The tail segment is conical in shape. Ventral ganglion is situated at the origin of the anterior lateral fins and can be seen at one fourth distance from the anterior end of the animal. Anterior lateral fins are longer and narrower than the posterior lateral fins and start at the middle of the ventral ganglion. Fin rays are sparsely arranged at the anterior region of the fins and inner margins are without fin rays. The hind end of the fins are broader. The origin of the posterior lateral fins is close to the anterior lateral fins. These fins are shorter and broader. Fin rays are absent at the anterior and inner margin of the fins. The posterior end is close to the seminal vesicles. More than 50% of the fins are found on the trunk segment. Seminal vesicles are found in touch with the tail fins. Anterior portion of the seminal vesicles are broader and they break open along the anterolateral margin, through which the sperms are liberated. The ovarian tubes are long, slender and they never grow beyond the level of the ventral ganglion. The ova are round and arranged in two rows.

Distribution : This is an oceanic species, seen in the upper 200 metres of the Indian and Pacific Oceans.

Remarks : Tough *S. pulchra* is an oceanic species, this has been reported from the estuarine waters (Srinivasan, 1972, 1977) and this can tolerate a wide salinity range (3 to 33‰). The estuarine forms are smaller in size than the oceanic forms because they are living in a habitat, where the salinity fluctuation is very high.

8. *Sagitta regularis* Aida, 1897

1897. *Sagitta regularis* Aida, Chaetognaths of the Mlsakl Harbour. *Annotations Zoological Japonnenses,* **1** : 17.

Description : This is the smallest species of the Phylum Chaetognatha and it measures from 4 to 5.5 mm. The body is of uniform description from head to the tail septum, opaque and rigid due to strong longitudinal muscles. Intestinal diverticula are present. The head is smaller than the body and the damarcation between the head and the body is not clear. The

head is pointed and fully covered with collarette, that extends upto the anterior lateral fins as a thick layer and then it continues upto the tip of the tail as a thin layer. This is the only species that is fully covered with collarette from top to bottom. The hooks are small and vary from 6 to 8 on either side of the head. Anterior teeth vary from 3 to 5 and the posterior teeth from 5 to 8 on either side of the head. Eyes are bigger is size, when compared to the head description and have a central pigmented region. Tail segment forms 33 to 34% of the animal length. The constriction at the tail septum is not prominent as this area is covered with the collarette. Ventral ganglion is very conspicuous and bigger in size and located at one fourth distance from the anterior end. Anterior lateral fins originate behind the level of the ventral ganglion. They are smaller and narrower than the posterior lateral fins and measures between 20 and 22% of the animal length. The fins are fully rayed. Posterior lateral fins measure from 25 to 27% of the animal length. The fins are fully rayed and extend upto the seminal vesicles. More than 60% of the fins are found on the tail segment. The fins are fully rayed. The seminal vesicles are in touch with the posterior lateral fins and separated from the tail fin by a small layer of collarette. The seminal vesicles are oval in shape with a bulged anterior portion. The ovrian tubes are long, wide and in matured specimens, they grow upto the ventral ganglion. The ova are large, spherical and compactly arranged in a single row.

Distribution : This is an epi-planktonic species reported from the upper 200 metres of the Indian and Pacific Ocean.

Remakrs : This is a stenohaline, oceanic species found in abundance in the offshore waters of the seas, than in the neritic waters (Srinivasan, 1976)

9. ***Sagitta robusta*** Doncaster, 1903

1897. *Sagitta robusta* Donaster, Chaetognatha, with notes on the variation and distribution of the group. *The fauna and Geography of the Maldive and Laccadive Archipelago*, **1** : 212.

Description : The specimens vary in length from 5.5 to 13.0 mm. The body is firm, opaque and the shape is uniform from head to tail segment. The longitudinal muscles are thick and strong. The intestinal diverticula are present. The head is prominent and well differentiated from the trunk by a neck. A well developed collarette is seen from the neck to the ventral ganglion and then it continues as a thin layer upto the tail region. The hooks are strong, well developed and vary from 7 to 8 on either side of the head. The anterior teeth vary from 5 to 10 and the posterior teeth from 10 to 15. The eyes are spherical and have a pigmented region at the centre. The tail segment measures from 27 to 29% of the animal length and well demarcated from the trunk by a tail septum. Ventral ganglion is situated at one third distance from the anterior end of the animal. Anterior lateral fins measure between 19 and 22% of the animal length and originate behind the level of the ventral ganglion. The fins are fully rayed. Posterior lateral fins measures between 24 and 26% of the animal length and longer than the anterior lateral fins. The posterior end of the fins reaches up to the start of the seminal vesicles. More than 50% of the fins are found on the trunk segment. The fins are fully rayed, but for a small region near the tail, septum, where the rays are absent. The seminal vesicles are in touch with both the posterior lateral fins and caudal fins. They are oval in shape with an anterior broad head region and a narrow posterior body region. The

seminal vesicles break open along the anterolateral margin, through which the sperms are liberated. Ovarian tubes are long, wide and extend upto the neck region in matured specimens. Ova are spherical and arranged in a single row.

Distribution : This is an epi-planktonic species found in the upper 200 metres of the Indian and Pacific Oceans.

Remarks : This is an oceanic species found in abundance in the offshore waters than in the neritic waters. However, this was once reported in the Cochin backwards (Nair, 1972) near the Fairway Buoy, where the salinity was 30.00%.

10. ***Pterosagitta draco*** (Krohn, 1853)

1853. *Pterosagitta draco* Krohn, Nachtragliche Bemerkungen uber der Bau der Gattung *Sagitta* rubst der Baschrelbung einiger neuen Arten. *Archiv. Fur Naturgeschichte Jahrgang,* **19** : 273

Description : Total length varies from 4 to 7 mm. The specimens of the Pacific Ocean are known to grow up to 10 mm. Body is short, stumpy, robust and opaque due to strong and thick longitudinal muscles. The width of the animal is uniform from head to tail septum. The width of the animal is uniform from head to tail septum. Intestinal diverticula are absent. Head is bigger than the body and clearly differentiated from the trunk by a neck. The number of hooks varies from 8 to 9, anterior teeth 7 to 8 and posterior teeth 12 to 17. The characteristic feature of this species is the possession of a well developed wing like collarette from the head to the seminal vesicles as a thick layer and then it continues as a thin layer upto the tip of the tail segment. The eyes are oval in shape with a central pigmented region. Tail segment is more or less equal to that of trunk length and it varies from 42 to 45% of the animal length. The constriction at the tail septum is clear. Ventral ganglion is situated roughly at the central region between the head and tail septum. This species has only one pair of lateral fins corresponding to the posterior lateral fins of the genus *Sagitta*. The fins are semicircular in shape, originate at the level of the tail septum and extend upto the seminal vesicles. The fins are fully rayed and the length of the fins vary from 21 to 24% of the animal length. Seminal vesicles are in touch with both the lateral and tail fins. They are elongated with a bugled portion. Bursting of the seminal vesicles takes place along the anterior lateral margin, through which the sperms are liberated. Ovarian tubes are long, thick and in matured specimens, extend upto the neck region. The ova are large, spherical and compactly arranged in two rows.

Distribution : This is a cosmopolitan species found in the epi-planktonic waters of the Atlantic, Indian and Pacific Oceans.

Remarks : This is a stenohaline, oceanic species, found in the offshore waters. It is abundant in the oceanic waters than in the neritic waters.

11. ***Krohnitta pacifica*** (Aida, 1897)

1897. *Krohnitta pacifica* Aida, Chaetognaths of Misaki Harbour, *Annotationes Zoological Japonenses*, **1** : 19.

Description : Total length of the specimens varies from 5 to 7 mm. This species has a slender, flexible, long and transparent body with uniform width from neck to seminal

vesicles. The body is not firm due to weak longitudinal muscles. Intestinal diverticula are absent. The hooks vary from 8 to 10 on either side of the head. There is only one set of teeth on either side of the head and the number varies from 9 to 12. The teeth have a flat base and pointed tip and arranged in the shape of a triangle. The eyes are spherical, small and have a bean shaped central pigmented region. The tail segment varies in length from 30 to 32% of the animal length. It is conical in shape and separated from the trunk by a tail septum which is not prominent. Ventral ganglion is situated roughly at one third distance from the anterior end of the animal. This species has only one set of lateral fins. The fins originate from the middle region of the body and extend upto the seminal vesicles. The fin rays are seen only along the two-third outer margin of the fins. Tail fin is oval in shape and is in contact with the seminal vesicles. The fin is fully rayed. The seminal vesicles are large, oval in shape and are in touch with both the lateral and caudal fins. They break open along the anterolateral margin through which the sperms are liberated. The ovarian tubes are long and extend upto the start of the lateral fins in matured specimens. Ova are spherical, small and arranged in a single row.

Distribution : This is found in the epi-planktonic tropical waters of the Indian and Pacific Oceans. Occassionally this has been reported from the estuaries like Cochin backwaters and Ennore estuary (Nair,1972, Srinivasan, 1977).

Remarks : This species is more abundant in the oceanic waters than in the neritic waters. This is a stenohaline species found in the areas where the salinity is more than 30%.

12. ***Krohnitta subtilis*** (Grassi, 1881)

1881. *Krohnitta subtilis* Grassi, Interno al Chaetognatha. *Rend. Inst. Lambardo Ser.*, **2, 14** : 213.

Description : The total length of the specimens vary from 7 to 11.5 mm. Specimens from other areas grow upto 16 mm. (Atlantic and Pacific Oceans). The body is long, slender, flaccid, highly transparent and the width is uniform from the head to the tail septum. The body is flexible due to weak longitudinal muscles. The intestinal diverticula are absent. The head is smaller than the body and differentiated from the trunk by a constricted neck. The collarette is absent at the neck and other regions of the body. Hooks vary from 7 to 9 on either side of the head and the teeth from 10 to 13. Teeth are long, pointed and arranged like a triangle as in *K. pacifica.* The eyes are oval, with a central pigmented region. Tail segment occupies more than one third of the animal length and the length varies from 35 to 38% of the animal length. Ventral ganglion is situated at the middle region between the head and the tail septum. Lateral fins originate at the middle region between the head and the tip of the tail segment and extend upto the seminal vesicles. More than 60% of the fins are found in the tail segment and the length of the fins varies from 32 to 35% of the animal length. The fins are very broad, semicircular in shape and the fin rays are sparsely arranged along the outer margin of the fins. Caudal fin is spoon shaped and it resembles that of *K. pacifica.* Seminal vesicles are elongated, not prominent and located between the lateral and caudal fins. They break open along the antero-lateral margin, through which the sperms are liberated. Ovarian tubes are short, stout and never extend byeond the start of the lateral fins. Only a few ova are seen arranged in two rows. Ova are large and spherical.

Distribution : This is a cosmopolitan oceanic species, found in the epi-planktonic tropical waters of the Atlantic, Indian and Pacific Oceans.

Remarks : This is a stenohaline species found in the upper 200 metres of the offshore waters. So far this was not reported from the estuarine waters.

DISCUSSION

Among the 12 species of chaetognaths reported from the Chennai Coast, *Sagitta enflata* tops the list in the order of abundance (57%), followed by *S. bedoti* (11%), *S. neglecta* (7%), *P. draco* (6%), *S. regularis* (5%), *S. pulchra* (2%), *S. hexaptera* (1.5%), *S. pacifica* (1%), *K. pacifica* (0.9%) and *K. subtilis* (0.6%).

Among these 12 species four species (*S. enflata, S. hexaptera, P. draco* and *K. subtilis*) are cosmopolitan. They are found in the epi-planktonic waters of the Atlantic, Indian and Pacific Oceans. It is interesting to note that none of the chaetognath species are common to Atlantic and Indian Ocean, whereas eight species are common to Indian and Pacific Oceans. This may probably be due to the fact that the Indian and Pacific Oceans are connected and the inter-change of water between the two oceans takes place through the Indonesian Archipelago. It is said that the warm water species of the Indian and Pacific Oceans are connected along the Indonesian Seas and the cold water species are connected along the Australian-Tasmanian Seas.

Chaetognaths occur at all depths of the Sea. Some species are found at the surface and others at the sub-surface waters. Species found in the upper 200 metres of the Sea are known as the epi-planktonic forms. All the 12 species accounted in this report are epi-planktonic forms. Among these 12 species five species (*S. bedoti, S. enflata, S. ferox, S. neglecta,* and *K. subtilis*) are found in abundance in the coastal neritic waters and the remaining 7 species (*S. hexaptera, S. pacifica, S. pulchra, S. regularis, S. robusta, K. pacifica* and *P. draco*) are found in abundance in the offshore oceanic waters.

Among these 12 species known from the Madras Coast, four species (*Sagitta bedoti, S. enflata S. pulchra* and *Krohnitta pacifica*) are reported from the Ennore estuary along with Srinivasan, 1971, Raghunathan and Srinivasan, 1983) *S. bedoti* and *S. enflata*. The salinity at Ennore estuary varied from 0.2% to 30.0%. High Salinity values werenoted during January and low values were observed during the north east monsoon periods (October-December). During other seasons, the salinity ranged from 22 to 24%. Chaetognaths were found in all the samples and were seen in greater numbers during July, and August. Specimens of these species are smaller in size compared with the specimens of marine habitat. *S. enflata* of the coastal waters will be usually between 5 and 20 mm or more in total length and *S. bedoti* will be between 7 and 13 mm. Whereas, the specimens from the estuarine waters measured between 3.6 and 9.2 mm (*S. enflata)* and 3 and 5 mm. (*S. bedoti*). As pointed out by Kinne (1964), these are smaller in size because of the habitat in which they are living was subjected to a wide fluctuation of salinity conditions.

Among the 30 species known from the Indian Seas, only 12 are so far reported from the Chennai Coast. Further studies from the deep water samples of the Madras Coast, may increase the number of species known from the coast. So, insufficient sampling is mainly responsible for our ignorance about the unknown species of Chaetognatha from the Madras Coast.

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HYDROMEDUSAE

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Our knowledge on the Hydromedusae inhabiting the littoral waters of the Indian coast is practically confined to the collections made by Professor Herdman from Ceylon. The two expeditions to the Maldives (Stanley Gardiner and Alexander Agassiz) have brought to light several interesting medusae. Bigelow (1919) reported an interesting account of the distribution of the Hydromedusae of the Indo- Pacific and opined that there is no separation between Malaysia and the Ceylon-Maldives-Chagos region as far as their medusae are concerned, and that the Malayan region cannot be separated geographically from the Philippines. Menon (1931) published "The hydromedusae of Madras" (= Chennai) from the plankton collections of Chennai coast collected by the University of Zoological Laboratory, Chennai, contained 35 species of Hydromedusae belonging to 28 genera. The present compilation (by K. Venkataraman, Marine Biological Station, ZSI) on the 27 species of Hydromedusae adds to our knowledge to the fauna of the Indo-pacific especially Chennai coast. Species such as *Halitiara formosa* Fewkes and *Merga violacea* (Agassiz and Mayer) were recorded for the first time from the Indian ocean (Menon, 1931). The presence of a few of the typical Atlantic species like *Amphinema dinema* (Peron and Lesueur) and *Starrodiscus tetrastaurus,* Haeckel, on Chennai coast is interesting and it throws light on the distribution of these medusae. The present compilation on the list of hydromedusae is mainly based on Menon (1931). The classification followed by Menon (1931) is from Mayer (1910) "Medusae of the world" The deviations that have been made from Mayers system are in accordance with the researches of Hartlaub, Maas, or Bibelow (Menon, 1931).

LIST OF SPECIES RECORDED FROM THE CHENNAI COAST

Order ANTHOMEDUSAE

Family TIARIDAE

Genus ***Halitiara*** Fewkes, 1882

1. *Halitiara formosa* Fewkes, 1882

Genus ***Merga*** Hartlaub, 1913

2. *Merga violacea* (Agassiz and Mayer, 1899)

Genus ***Amphinema*** Haeckel, 1897

3. *Amphinema dinema* (Peron and Lesueur, 1809)

Genus ***Leuckartiara*** Hartlaub, 1913

4. *Leuckartiara octona* (Flemming, 1890)

Family MARGELIDAE

Genus ***Cytaeis*** Eschscholtz

5. *Cytaeis tetrastyla* Eschsholtz

Genus ***Bougainvillia*** Lesson, 1836

6. *Bougainvillia fulva* Agassiz and Mayer, 1899

Genus ***Kollikeria*** L. Agassiz, 1862

7. *Kollikeria constricta* Menon, 1931

Family WILLIADAE

Genus ***Proboscidactyla*** Brandt, 1838

8. *Proboscidactyla ornata* (Mc Crady, 1857)
9. *Proboscidactyla conica*, Menon, 1931

Order Leptomedusae

Family THAUMANTIADAE

10. *Staurodiscus tetrastaurus* Haeckel, 1879

Family EUCOPIDAE

Genus ***Phialucium*** Mass, 1905

11. *Phialcium multitentaculata* Menon, 1931.

Genus ***Eutima*** Mc Crady, 1857

12. *Eutima mira* Mc Crady, 1857

Genus ***Irenopsis*** Goette, 1886

13. *Irenopsis hexanemalis*, Goette 1886

Genus ***Eirene*** Eschscholtz 1829

14. *Eirene malayensis* Stiasny, 1928
15. *Eirene madrasensis* Menon, 1931

Subfamily OCTOCANNOIDAE

Genus ***Octocannoides*** Menon, 1931

16. *Octocannoides ocellata* Menon, 1931

Genus ***Octocanna*** Haeckel, 1879

17. *Octocanna solida* Menon, 1931

18. *Octocanna polynema* Haeckel, 1879

Family AEQUORIDAE

Genus ***Aequora*** Peron and Lesueur, 1809

19. *Aequorea macrodactyla* (Brandt) 1899

20. *Aequorea pensili* Eschscholtz

21. *Aequorea parva* Browne, 1905

Genus ***Zygocanna*** Haeckel, 1879

22. *Zygocanna buitendijki* Stiasny, 1928

Order TRACHYMEDUSAE

Genus ***Gonionemus*** Agassiz, 1862

23. *Gonionemus suvaensis* Agassiz and Mayer, 1899

Genus ***Olindias*** F.Muller, 1861

24. *Olindias singularis* Browne, 1905

Family GERYONIDAE

Genus ***Liriope*** Lesson, 1843

25. *Liriope tetraphylla* (Chamisso and Eysenhardt, 1828)

Order NARCOMEDUSAE

Family AEGINIDAE

Genus ***Solmundella*** Haeckel, sens. Maas

26. *Solmundella bitentaculata* (Quoy et Gaimard, 1833)

Genus ***Cunoctantha*** Haeckel, 1879

27. *Cunoctantha octonaria* (Mc Crady, 1857)

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SCYPHOMEDUSAE

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The Scyphozoa, are one of the beautiful groups of the animal kingdom and with their characteristic pulsating umbrella directed forwards and followed by the elegant, long, trailing mouth arms and milky white tentacles, move with grace. They occur in abundance along the coasts all over the world especially in the tropical regions of the Oceans. Browne, (1905, 1906, 1916) reported on the Scyphozoa made by the 'Sea Lark' from the Lakshadives, Maldives, Sri Lanka (Pearl Oyster Banks) and Okkhamandal Coast of Kattiawar. Aiyar (1911) and Annandale (1916) recorded 21 species of Scyphozoa from the east coast of India, Menon (1930) from the Chennai coast, Rao (1931) (26 species belonging 818 genera) from the shallow waters along the coast of India and Burma, Panikkar (1944) from the Krusadi Islands, Nair (1945, 1954) from the Travancore coast and Chakrapany (1984) from the Chennai coast are some of the published information on this group.

In the Indian seas several cruises of the R.I.M.S. 'Investigator' and coastal surveys by the Officers of the Zoological Survey of India, has yielded a collection of 24 species which form the Indian National Collections in the Zoological Survey of India, Kolkata. From a detailed study of these collections, Chakrapani (1984) included 24 species. In addition, several cruises of the R.V. 'Chota Investigator' along the Chennai coast from 1972-1983 has revealed the occurrence of 19 species of which 11 were already known from the Indian seas. Thus, a total 32 species are known from the Indian Seas, out of 200 species of Scyphomedusae known from the World Oceans. In the plankton at Madras coastal waters out of 19 species collected from Chennai coast, 12 species of Scyphomedusae occur almost throughout the year, namely (1) *Chiropsalmus buitendijki* Horst, (2) *Pelagia noctiluca* Peron & Lesueur, (3) *Dactylometra quinquecirrha* L. Agassiz, (4) *Nausithoe punctata* Kolliker, (5) *Cassiopea andromeda* var. *Malayensis* Maas, (6) *Acromitus flagellatus* (Haeackel), (7) *Crambionella stuhlmanni* (Chun), (8) *Charybdea madraspatana* Menon, (9) *Rhopilema hispidum* (Vanhoffen) Maas, (10) *Lobonemoides robustus* Stiasny (11) *Tamoya alata* Reynaud, (12) *Aurelia solida* Browne. Only *Crambionella stuhlmanni* (Chun), *Acromitus flagellatus* (Haeckel), *Rhopilema hispidum* Vanhöffen form significant constituents of this group for the major part of the year (Chakrapani, 1984). The present list of Scyphozoa is compiled from the work of Chakrapani (1984) by K. Venkataraman, Marine Biological station, Zoological survey of India, Chennai.

LIST OF SCYPHOZOA FROM CHENNAI COAST

Phylum COELENTERATA (Cnidaria)

Class SCYPHOZOA

Scyphomedusae LANKASTER, 1881

Order CUBOMEDUSAE, Haeckel, 1880

Family CHARYBEIDAE Gegenbaur, 1856

Genus ***Charybdeidae*** Peron and Lesueur, 1809

1. *Charybdea adraspatana* Menon, 1930

Genus ***Tamoya*** Muller, 1859

2. *Tamoya alata* (Reynaud, 1830)

Family CHIRODROPIDAE Haeckel, 1880

Genus ***Chiropsalmus*** L. Agassiz, 1862

3. *Chiropsalmus quadrumanus* (Mulle, 1859)
4. *Chiroplasmus buitendijki Horst, 1907*

Order CORONATAE Vanhoffen, 1892

Family PERIPHYLLIDAE Sensu Claus, 1886

Genus ***Periphylla*** Steenstrup, 1837

5. *Periphylla hyacinthina* Steenstrup, 1837

Family EPHYROPSIDAE Claus, 1883

Genus ***Nausithoe*** Kolliker, 1853

6. *Nausithoe punctata* Kolliker, 1853

Family COLLASPIDAE Haeckel, 1880 = Atollidae Bigelow, 1909

Genus ***Atolla*** Haeckel, 1980

7. *Atolla wyvillei Haeckel, 1880*

Order SEMAEOSTOMEAE L. Agassiz, 1862

Family PELAGIIDAE Gegenbaur, 1856

Genus ***Pelagia*** Peron and Lesueur, 1809

8. *Pelagia noctiluca* (Forskal, 1775)

Genus ***Chrysaora*** Peron and Leuseur, 1809

9. *Chrysaora helvola* Brandt, 1838
10. *Chrysaora melanaster* Brandt, 1838

Genus ***Dactylometra*** L. Agassiz, 1862

11. *Dactylometra quinquecirrha* (L. Agassiz, 1862)

Family CYANEIDAE L. Agassiz, 1862.

Genus ***Cyanea*** Peron and Lesueur, 1809

12. *Cyanea nozakii* Kishnouye,1891

Family ULMARIDAE Haeckel, 1880

Subfamily AURELIA L. Agassiz, 1862

Genus ***Aurelia*** Peron and Lesueur, 1809

13. *Aurelia solida* Browne, 1905

Order RHIZOSTOMEAE Cuvier, 1799

Suborder KOLPOPHORAE Stiasny, 1921

Tribe KAMPLYLOMYARIAE Stiasny, 1921

Family CASSIOPEIDAE Stiasny, 1921

Genus ***Cassiopea*** Peron and Lesueur, 1809

14. *Cassiopea frondosa* Lamarck,1816
15. *Cassiopea andromeda maldivensis* Browne, 1905

Tribe ACTINOMYARIAE Stiasny, 1921

Family CEPHEIDAE Stiasny, 1921

Genus ***Netrostoma*** Schultz, 1898

16. *Netrostoma typhlodendrium* Schultze, 1898
17. *Netrostoma coerulescens* Maas, 1903

Tribe KRIKOMYARIAE Stiasny, 1921

Family MASTIGIIDAE Stiasny, 1921

Genus ***Mastigias*** L.Agassiz, 1862

18. *Mastigias ocellata* (Modeer, 1791)
19. *Mastigias albipunctatus* Stiasny, 1921
20. *Mastigias papua Sibogae* Maas, 1903

Genus ***Mastigietta*** Stiasny,1921

21. *Mastigietta palmipes* (Haeckel, 1880)

Family VERSURIDAE

Genus ***Versura*** Haeckel, 1880

22. *Versura anadyomene* (Maas, 1903)

Family LEPTOBRANCHIDAE Stiasny, 1921

Genus ***Thysanostoma*** L. Agassiz, 1862

23. *Thysanostoma thysanura* Haeckel, 1880

Suborder DACTYLIOPHORAE Stiasny, 1921

Tribe INSCAPULATAE Stiasny, 1921

Family CATOSTYLIDAE Stiasny, 1921

Genus ***Crambionella*** Stiasny, 1921

24. *Crambionella stuhlmanni* (Chun. 1896)
25. *Crambionella orsini* Vanhoffen, 1888
26. Crambionella annandalei Rao, 1931

Genus ***Acromitus*** Light, 1914

27. *Acromitus flagellatus* (Stiasny, 1921)
28. *Acromitus rabanchatu* Annandale, 1915

Family LOBONOMUDAE Stiasny, 1921

Genus ***Lobonema*** Mayer, 1910

29. *Lobonema smithii* Mayer, 1910

Genus ***Lobonemoides*** Light, 1914

30. *Lobonemoides sewelli* Rao, 1931
31. *Lobonemoides robustus* Stiasny, 1921

Tribe SCAPULATAE Stiasny, 1921

Family RHIZOSTOMATIDAE Stiasny, 1921

Genus ***Rhopilema*** Haeckel, 1897

32. *Rhopilema hispidum* Vanhöffen, 1888

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SIPHONOPHORES

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There are 158 valid species of Siphonophora in the world oceans of which, 116 species are reported from Indian Ocean (Daniel, 1985). Although the study of the siphonophores of the Indian Ocean by Totton (1954) has received considerable attention and not much is known on the siphonophores of the Chennai Coast. The siphonophores are most abundant in the Chennai coast and constitute an important fauna in the marine plankton. The siphonophores from the Chennai coast have been studied by several workers-Sundara Raj (1927); Leloup (1934), Daniel and Daniel (1963) and Daniel (1985) on siphonophores from inshore and offshore plankton collections of Chennai coast. The present compilation list is mainly based on the publications by Daniel and Daniel (1963) and Daniel (1985) on siphonophores from inshore and offshore plankton collections of Chennai coast. The list of species included in the present account consists of plankton samples collected at the surface with a tow-net during 1952-54 and 1956-60. Offshore collections were made at depths ranging from 10-70m with Nansen's net. The list of siphonophores of Chennai is compiled from Daniel (1985) by K. Venkataraman, Marine Biological Station, Zoological survey of India, Chennai.

LIST OF SPECIES FROM CHENNAI COAST

HYDROZOA

Order SIPHONOPHORA Eschscholtz, 1829

Suborder CRYSTONECTAE Haeckel, 1888

Family PHYSALIDAE Brandt, 1835

Genus ***Physalia*** (Linnaeus, 1758)

1. *Physalia physalis* (Linnaeus, 1758)

Family RHIZOPHYSIDAE Brandt, 1835

Genus ***Rhizophysidae*** Brandt, 1835

2. *Rhizophysa eysenhardti* Gagenbaur, 1859

Suborder PHYSONECTAE Haeckel, 1888

Family APOLEMIIDAE Huxley, 1859

Genus ***Agalma*** Eschscholtz, 1825

3. *Agalma okeni* Eschscholtz, 1825
4. *Agalma elegans* (Sars, 1846)

Genus ***Halistemma*** Huxley, 1859

5. *Halistemma rubrum* (Vogt, 1852)

Genus ***Nanomia*** A.Agassiz, 1865

6. *Nanomia bijuga* (Delle chiaje,1841)

Family FORSKALIIDAE Haeckel, 1888

Genus ***Forskalia*** Kolliker,1853

7. *Forskalia leuckarti* Bedot,1893.

Family DIPHYIDAE Quoy and Gaimard, 1827

Subfamily SULCULEOLARIINAE Totton,1954

Genus ***Sulculeolaria*** Blainville, 1834

8. *Sulculeolaria chuni* (Lens and van Reimsdijk, 1908)
9. *Sulculeolaria quadrivalvis de* Blainville, 1834
10. *Sulculeolaria turgida* (Gagenbaur, 1853)
11. *Sulculeolaria monoica* (Chun, 1888)

Genus ***Eudoxia*** Eschscholtz,1825

12. *Eudoxoides mitra* (Huxley, 1859)

Genus ***Diphyes*** Cuvier, 1817

13. *Diphyes dispar* Chamisso and Eysenhardt, 1921
14. *Diphyes bojani* (Eschscholtz, 1825)
15. *Diphyes chamissonis* Huxley, 1859

Genus ***Lensia*** Totton, 1932

16. *Lensia subtiloides* (Lens and Van Reimsdijk, 1908)
17. *Lensia cossack* Totton, 1941
18. *Lensia hotspur* Totton, 1941
19. *Lensia gnanamuthui* Daniel and Daniel, 1963
20. *Lensia tottoni* Daniel and Daniel, 1963.

Genus ***Muggiaea*** Busch, 1851

21. *Muggiaea contorta* (Lens and van Reimsdijk, 1908)

Genus ***Chelophyes*** Moser, 1925

22. *Chelophyes contorta* (Lens and van Reimsdijk,1908)

Family ABYLIDAE L.Agassiz, 1862

Subfamily ABYLINAE L.Agassiz, 1862

Genus ***Ceratocymba*** Chun, 1888

23. *Ceratocymba leuckartii* (Huxley, 1859)

Subfamily ABYLOPSINAE Totton, 1954

Genus ***Abylopsis*** Chun, 1888

24. *Abylopsis tetragona* (Otto, 1823)
25. *Abylopsis eschscholtzi* (Huxley, 1859)

Genus ***Bassia*** L.Agassiz, 1862

26. *Bassia bassenis* (Quoy and Gaimard, 1834)

Genus ***Enneagonum*** Quoy and Gaimard, 1827

27. *Enneagonum hyalinum* Quoy and Gaimard, 1827

Suborder CHONDROPHORA (Chamisso and Eysenhardt, 1821)

Family PORPITIDAE Brandt, 1835

Genus ***Porpira*** Lamarck, 1801

28. *Porpita porpita* (Linnaeus, 1758)

Family VELELLIDAE Brandt, 1835

Genus ***Velella*** Lamarck, 1801

29. *Vellella velella* Linnaeus, 1758.

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CIRRIPEDES

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Information on the diversity of Cirripedia of Indian coast is far from complete. Weltner (1894) and Borradaile (1903) described 18 species from Indian Ocean especially from Maldive and Laccadive Archipelago. Annandale (1905-1924) reported many species of Cirrepedes from Srilanka and India. Cirripedes of The Chennai coast received very little attention although many species inhabit the area. Cantell (1938) reported a number of Cirripedes from Bay of Bengal, Arabian Sea and Indian Ocean. He has also described 13 species of operculate barnacles from Chennai. Except the work of Annandale (1909), Panikkar and Aiyar (1937) and Daniel (1952-1965) Chennai coast have received very little attention. The present compilation of Cirripedes incorporates the 36 species under 13 genera, and 5 families of the Chennai coast by P. Krishnamoorthy, Marine Biological Station, Zoological survey of India, Chennai.

SYSTEMATIC LIST

Phylum ARTHROPODA

Class CRUSTACEA

Order CIRRIPEDIA

Suborder LEPADOMORPHA

Family SCALPELLIDAE

Genus ***Pollicipes*** Leach, 1817

1. *Pollicipes polymerus madrasensis* Daniel,1953

Genus ***Smilium*** Bloch, 1922

2. *Smilium squamuliferum* Weltner, 1894

Family IBLIDAE

Genus ***Ibla*** Leach,1825

3. *Ibla cumingi* Darwin, 1851

Family LEPADIDAE

Genus ***Lepas***, Linnaeus, 1758

4. *Lepas anatifera indica* Annandale, 1909
5. *Lepas anserifera* Linne, 1761
6. *Lepas pectinata* Spengler, 1793
7. *Lepas bengalensis* Daniel, 1952

Genus ***Conchoderma*** Olfers, 1814

8. *Conchoderma virgatum* Spongler, 1763
9. *Conchoderma virgatum* forma *hunteri* Owen, 1830,

Family TRILASMATIDAE

Genus ***Trilasmis*** Plisbry, 1928

10. *Tilasmis minuta* (Gravely, 1825)

Genus ***Octolasmis*** Gray, 1825

11. *Octolasmis tridens* (Aurivillius, 1893)
12. *Octolasmis warwickii* Gray, 1825
13. *Octolasmis grayii* (Darwin, 1851)
14. *Octolasmis grayii* var. *permuda* (Annandale, 1909)
15. *Octolasmis lowei* (Darwin, 1851)
16. *Octolasmis stella* (Annandale, 1909)
17. *Octolasmis cor* var. *A* (Aurivillius, 1893)
18. *Octolasmis angulata* (Aurivillius, 1894)

Suborder BALANOMORPHA

Family BALANIDAE

Subfamily BALANINAE

Genus ***Balanus*** Da Costa, 1778

19. *Balanus tintinnabulum tintinnabulum* Linnaeus, 1758
20. *Balanus ebumeus* Gould, 1841

21. *Balanus amphitrite variegatus* Darwin, 1854
22. *Balanus amphitrite communis* Darwin, 1854
23. *Balanus amphitrite venustus* Darwin, 1884
24. *Balanus calidus* Pilsbry, 1916
25. *Balanus perforatus* (Brugiere, 1789)
26. *Balanus balanoides* Linne, 1766
27. *Balanus tenuis* Hook, 1883
28. *Balanus amaryllis* forma *euamaryllis*, Broch, 1922
29. *Balanus amaryllis forma nivea* Gruvel, 1905
30. *Balanus longirostrum var.Krusadaiensis* Daniel, 1955
31. *Balanus calceolus* Darwin, 1854
32. *Balanus cymbiformis* Darwin, 1854

Genus ***Acasta*** Leach, 1817

33. *Acasta sulcata var.spinosa* Daniel, 1955

Subfamily TETRACLITINAE

Genus ***Tetraclita*** Schumacher, 1817

34. *Tetraclita purpurascens* Wood, 1818

Subfamily CHELONOBINAE Leach, 1817

Genus ***Chelonobia*** Leach, 1817

35. *Chelonobia tstudinaria* Linne, 1761
36. *Chelonobia caretta* Spengler, 1790
37. *Chelonobia patula* Ranzani,1818

Subfamily CORONULINAE

Genus ***Platylepas*** Gray, 1825

38. *Platylepas hexastylos* Fabricus, 1798

Family CHTHAMLIDAE

Genus ***Chthamalus*** Ranzani, 1817

39. *Chthamalus stellatus stellatus* (Poli, 1791)

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AMPHIPODA

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Studies on the amphipods of the Indian and the neighboring waters received the attention of Zoologists only as late as 1885 when Giles published a paper on the occurrence of two species of amphipods from Bengal. Subsequently in 1887, 1888 and 1890 he continued his work on amphipods and described about twenty-five more species from Indian waters bringing the total number of Indian amphipods to about twenty-seven out of which, three species were recorded from the Chennai Coast. Gravely (1927) and Sundararaj (1927) reported sixteen species of amphipods from Krusadai Island, Gulf of Mannar and its neighbouring waters. Bernard (1935) reported amphipods collections by Zoological Survey of India made from Travancore, Cochin and Bengal coasts. Apart from the record of the three species of amphipods off the coast of Mahabalipuram by Giles (1888 and 1890) and a brief note about the occurrence of three species of amphipods at Adyar in Madras, by Panikar and Aiyar (1937), in their study of the brackish water fauna of the Chennai Coast, the amphipods of the Chennai Coast have not been worked out meticulously. A total of 48 species under 38 genera and 20 families have been compiled in the present work by K. Venkatraman, Marine Biological Station, ZSI, Chennai from the previous reports made by Nayar (1959), Sivaprakasam (1968,1969 and Surya Rao (1972). The list includes all amphipods collected from Chennai harbour, Royauram, Adyar backwaters, Cooum River, Madras inshore waters, Ennore and Mahabalipuram.

LIST OF SPECIES FROM THE CHENNAI COAST

Phylum ARTHROPODA

Class CRUSTACEA

Order AMPHIPODA

Family LYSIANASSIDAE

1. *Shoemakerella nasuta* (Dana, 1853)

Family AMPELISCIDAE

2. *Ampelisca zamboangae* Stebbing, 1888

3. *Ampelisca cyclops* Walker, 1904
4. *Ampelisca tridens* Walker, 1904
5. *Byblis lepta* (Giles, 1888)

Family HAUSTORIIDAE

6. *Platyischnopus herdmani* Walker, 1904
7. *Urothoe spinidigitus* Walker, 1904

Family PHOXOCEPHALIDAE

8. *Leptophoxus uncirostratus* (Giles, 1890)

Family AMPHILOCHIDAE

9. *Cyproidea ornata* Haswell,1880
10. *Amphilochus schubarti* Schellenberg, 1938

Family LEUCOTHOIDAE

11. *Leucothoe spinicarpa* (Abildgaard, 1789)
12. *Leucothoe madrasana* Sivaprakasam, 1967

Family STENOTHIDAE

13. *Stenothoe gallensis* Walker, 1904

Family OEDICEROTIDAE

14. *Perioculodes longimanus* (Bate and Westwood, 1868)

Family CALLIOPIIDAE

15. *Paracalliope indica* Bernard, 1935

Family GAMMARIDAE

16. *Eriopisa chilkensis* (Chilton)
17. *Eriopisa chilkensis* (Chilton, 1921)
18. *Megaluropus agilis* Hoeck, 1889
19. *Melta fresnalli* (Audovin, 1825)
20. *Maera quadrimana* (Dana, 1853)
21. *Maera othonides Wlaker, 1904*
22. *Quadrivisio bengalensis* Stebbing, 1907
23. *Elasmopus pectenicrus* (Bate, 1862)

Family TALITRIDAE

24. *Talorchestia martensii* (Weber, 1892)
25. *Hyale hawaiensis* (Dana,1853)
26. *Hyale honoluluensis* Schellenberg, 1938
27. *Micropratopus maculatus* Norman, 1867
28. *Cheiriphotis megacheles* (Giles, 1885)
29. *Photis longicaudata* (Bate and West, 1862)
30. *Photis digitata* Bernard, 1935

Family AMPITHOIDAE

31. *Ampithoe indica* (Milne Ewards, 1840)
32. *Cymadusa filosa savigny,* 1816

Family COROPHIDDAE

33. *Grandidierella bonnieri* Stebbing, 1908
34. *Grandidierella gilesi* Chilton, 1921
35. *Cerapus abditus* Templeton, 1836
36. *Ericthonius brasiliensis* (Dana, 1883)
37. *Corophium acherusicm* Costa, 1857
38. *Corophium madrasensis* Nayar, 1905

Family PODOCERIDAE

39. *Podocerus brasiliensis* (Dana, 1883)

Suborder HYPERIIDEA

Family HYPERIIDAE

40. *Hyperia bengalensis* (Giles, 1887)

Family LYCAEOPSIDAE

41. *Brachyscelus crusculum* Bate, 1861

Family OXYCEPHALIDAE

42. *Rhabdosoma armatum* (Milne Edwards, 1830)

Family CAPRELLIDAE

43. *Tritella pilimana* Mayar, 1890
44. *Paracaprella lata* Mayar, 1903

Family HYALIDAE

45. *Hyale affinis* Chevreux, 1908

46. *Hyale chevreuxi* Barnard, 1916

47. *Hyale macrodactyle* Stebbing, 1899

Family PHOTIDAE

48. *Eurystheus togoensis* Schellenberg, 1925

49. *Photis digitata* (Barnard, 1935)

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MACRURA

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Although large number of species of prawns and lobsters are known to occur in and along the Chennai coast, work on Macrura group of species is very limited. The present work is based on the collections of macrurans (shrimps and lobsters) available in the collection of the Marine Biological Station, Zoological Survey of India, Chennai. Further, the species recorded in literature in the Chennai coast have also been included. The shrimp contribution is large when compared with other group of crustacean. In the world, there are 17 families, 67 genera and 383 species recorded as commercially important. A total of 55 species of commercial shrimps and prawns were recorded in India. The East coast of India contributes about 24.5% and the West coast contributes 75.3% of country's shrimp production. In 1953 the average annual production of shrimps and prawns in west coast of India was 61,000 tonnes. Similarly in the east coast the production is very low to about 9000 tonnes per annum. In 1966, a total quantity of 11,470.014 tonnes of prawns and prawn products valued at Rs. 112,719,139 were exported from India. This included a variety of products like frozen prawns, dried prawns, prawn powder, prawn meal, prawn pickle, prawn curry, etc., and were exported to over 50 countries of the world. Most of these were utilized for human consumption besides some for good export value. They were marketed probably by fresh, frozen or dried. Also they were canned or fried in paste. Small size shrimps are also used as bait.

The larger and fleshy varieties of crab are edible and consumed fresh by the coastal population and a fraction is processed and exported. The crabs used for commercial purpose are sorted and sold at the landing sites by auction or by prearranged agreements. The trash with smaller crabs were dried and stocked for bulk sale to fishmeal plants located around.

The lobsters contribute a little but having high exploiting rate, and commercial importance. They are among the most highly esteemed sea-food delicacies. 15 species of lobsters were recorded for having high commercial value. Most of the deep sea species need specially equipped crafts and gears for their capture, but a high percentage of lobsters is taken with lobster pots or other traps. Diving and spearing of shallow-water species is mostly done for local consumption or as a sport. The traditional way is the spear fishing of lobsters by which the species were stunned by sudden light using torch. Species burrowing in sand or in intertidal

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area or in mud can often be captured by digging, or with yabbie pumps or slurp guns. The abdominal muscle of the lobsters from the main edible part, used almost exclusively for human consumption seldom as bait. The mounted specimens of spiny lobsters, usually in fancy glass cases were sold as Curios to tourists. The lobsters are delicious also. It is believed to have some medicinal importance.

LIST OF PRAWNS FROM CHENNAI COAST

Phylum ARTHROPODA

Class CRUSTACEA Pennant, 1777

Class MALACOSTRACA Latreille, 1806

Subclass EUMALACOSTRACA Calman, 1904

Order DECAPODA Latreille, 1803

Family SOLENOCERIDAE

Genus ***Solenocera***

1. *Solenocera crassicornis* (H. Milne Edwards, 1837)

Family PENAEIDAE

Genus ***Metapenaeopsis***

2. *Metapenaeopsis mogiensis* (Rathbun, 1902)
3. *Metapenaeopsis stridulans* (Alcock, 1905)

Genus ***Metapenaeus***

4. *Metapenaeus affinis* (H. Milne Edwards, 1837)
5. *Metapenaeus dobsoni* (Miers, 1878)
6. *Metapenaeus ensis* (De Hann, 1844)
7. *Metapenaeus monoceros* (Fabricius, 1798)

Genus ***Parapenaeopsis***

8. *Parapenaeopsis coromandelica* Alock, 1906
9. *Parapenaeopsis maxillipedo* Alock, 1906
10. *Parapenaeopsis sculptilis* (Heller, 1862)
11. *Parapenaeopsis stylifera* (H. Milne Edwards, 1837)
12. *Parapenaeopsis uncta* Alcock, 1905

Genus ***Parapenaeus***

13. *Parapenaeus longipes* Alcock, 1905

Genus ***Penaeus***

14. *Penaeus (Melicertus) canaliculatus* (Oliver, 1811)
15. *Penaeus (Penneropenaeus) indicus* H. Milne Edwards, 1837
16. *Penaeus (Marsupenaeus) japonicus* Bate, 1888
17. *Penaeus (Pennenopenaeus) merguiensis* De Man, 1888
18. *Penaeus (Penaeus) monodon* Fabricius, 1798
19. *Penaeus (Penaeus) semisulcatus,* Dettaan, 1844

Genus ***Trachypenaeus***

20. *Trachypenaeus curvirostris* (Stimpson, 1860)
21. *Trachypenaeus granulosus* (Haswell, 1879)

Genus ***Acetes***

22. *Acetes erythraeus* Nobili, 1905
23. *Acetes indicus* H. Milne Edwards, 1830

Genus ***Exopalaemon***

24. *Exopalaemon styliferus* (H. Milne Edwards, 1840)

Genus ***Nematopalaemon***

25. *Nematopalaemon tenuipes* (Henderson, 1893)

Genus ***Exhippolysmata***

26. *Exhippolysmata ensirostris* (Kemp, 1914)

SYSTEMATIC ACCOUNTS

Genus ***Solenocera***

1. ***Solenocera crassicornis*** (H. Milne Edwards, 1837)

1827. *Penaeus crassicornis* H. Milne Edwards, *Hist. Nat. Crust.,* **2** : 418.

Description : Telson simple and devoid of any spine on lateral margin. Post rostral crest low and anterior part, delimiting a broadly rounded loop slightly behind frontal margin of carapace. Branchiocardic crest slightly sinous and stoping antero-ventrally. Fifth peropod without a coxal spine, post orbital spine present, scrpra hepatic and branchiostegal spines absent. Plerygostomian angle unarmed. Body, pereopods and pleopods reddish-orange to red, posterior margins of each abdominal segments darker, antennae, pleopods and uropods uniformly red.

Distribution : Indo-West Pacific : Pakistan and India to the Malay Archipelago, China and Japan. In Indian waters it is found both on east and west coasts and contributes a fishery in Bombay waters.

Remakrs : Commonly named as "Coastal mud shrimp." It is a littoral species inhabitating waters of 40 m and less and prefers muddy bottom. Males grow to a maximum length of 90 mm and females 140 mm.

Genus ***Metapenaeopsis***

2. ***Metapenaeopsis mogiensis*** (Rathbun, 1902)

1902. *Parapenaeus mogiensis* M. J. Rathbun, *Proc. U. S. Natl, Mus.*, **26** : 39.

Description : Carapace length is 10-14.5 mm in males and 8 to 19 mm in females. Pair of tooth-like platelets behind the local plate, without posterior tubercles stridulating organs absent from posterior branchio-stegiste. Petasma asymmetrical, 3rd maxilleped with basical spine. A distal fixed pair of spines on the telson and 1-3 pairs of mobilet spines. Rostrum without ventral teeth.

Distribution : Indo-West Pacific; Red Sea and India to Japan and N.E. Australia. In the Indian region it is found off the Malabar coast, Ceylon and Andaman Islands.

Remakrs : Commonly named as Magi velvet shrimp. It is a marine form inhabiting waters with 11 to 30 m depth and grows to a maximum length of 90 mm.

3. ***Metapenaeopsis stridulans*** (Alcock, 1905)

1905. *Metapenaeopsis stridulans* Alcock, *Ann. Mag. Nat. Hist.* **16** (7) : 518-526.

Description : Rostrum with 7 to 8 dorsal teeth, the penultimate tooth generally anterior to orbital margin of carapace. The stridulating organ (as posterior part of carapace) consists of 5 to 7 strong ridges in a wide, straight bard at 4/10 of carapace depth; middorsal crest on third abdominal segment with a usually broad groove. Petasma asymmetrical, right dorsoventral projection with 5 to 12 legs apical processes; Intermediate plate of the thelycum broadly trapozoidal, much wider than long, flat or with a shallow median groove; Coaxial plates of fourth pereopods smaller than the local plate. The colour of this species, white to reddish-brown, with red to dark brown routtlings.

Distribution : Indo-West Pacific : Arabian Sea to the Malay-Archipelago, New Gunia and Britain. In Indian waters it is mostly found in the Bombay region and northern region of east coast.

Remakrs : Commonly named as Fiddler shrimp. A marine form found between 9 to 90 m depth and grows to a maximum length of 100 mm.

Genus ***Metapenaeus***

4. ***Metapenaeus affinis*** (H. Milne Edwards, 1837)

1837. *Penaeus affinis* H. Milne Edwards, *Hist. Nat. Crust.*, **2** : 416.

Description : In females anterior plate of thelycum deeply grooved longitudinally and considerably wider posteriorly, posterior transverse ridge with 2 anterolateral rounded projections partly convering lateral plates ; impregnated (fertilized) specimens occasionally

with white conjoined pads on thelycum. Body pale greenish to pale pinkish with green or red-brown specks, antennae red; distal half of uropods translucent green or rust coloured; tips usually whitish to yellowish.

Distribution : Indo-West Pacific : Arabian Sea to the Malay Archipelago and Hong Kong. In India it forms a fishery along west coast and southern part of east India. The juveniles of the species are fished in small numbers from backwaters and estuaries.

Remakrs : Commonly called as "Jinga shrimp." A marine forms inhabits muddy bottom at depths ranging between 5 to 92 m. It usually grows to a maximum length of 170 mm. In males distomedian projections of petasma and crescent shaped, leaving on distolateral projections and concealing them partly or completely, distolateral projections diverted anterolaterlly. In adult males, merus of fifth pereopod with a proximal notch, followed by a twisted, keeled tubercle.

5. *Metapenaeus dobsoni* (Miers, 1878)

1878. *Penaeus dobsoni* Miers, *Proc. Zool. Soc. London,* 302, 307.

Description : Rostrum long, extending beyond antennular peduncle, towards its distal part adorostral crect reaching as far as epigastric tooth. In adult males basal spine of third pereopod extremely long and barbed, and merus of fifteen pcrepod with 1 or 2 large, triangular teeth; each distomediam projection of petasma with a short filament on ventral surface and another on dorsal surface; distolateral projection directed forward. In females, fifth periopod often reduced to goxa and basis, the thelycum with a long, grooved tongue like anterior plate partially eusheathed in a horse-shoe like process formed by the lateral plates. Body pale yellow to brownish with red, brownish or greenish specks.

Distribution : Indo-West Pacific : West coast of India to Indonesia and the Philippines. In India it is a most important commercially exploited species, especially on the southwest coast. The paddy field fishery of Kerala is mostly dependant on this species.

Remarks : Commonly called as "Kadal Shrimp." It is a bottom marine and brackish water form found at depths ranging between 1 to 37 m and prefers muddy bottom. Males attain a maximum length of 118 mm and females 130 mm.

6. *Metapenaeus ensis* (De Hann, 1844)

1844. *Penaeus ensis* De Hann, *In* : Von Siebold, *Fauna Japonica Crustacea* (6/7) : 46, fig. 2.

Description : In adult males, merus of fifth pereopod with a proximal notch followed by a long, inwardly curved spiniform process and a row of tubercles; distomedian projections of petasma convoluted, greatly scroller and directed forward, triangular in shape and concealing almost entirely distolateral projection in ventral view. In females, anterior plate of thelycum long and deeply grooved; lateral plates with strongly raised lateral margin following posteriorly 2 inwardly curved triangular projections. Body pink to greenish-grey. Pereopods with white snipes on ischium and merus ; distal part of uropods purple-blue, extend margins of exopods red-brown.

Distribution : Indo-West Pacific : Sri Lanka and Malaya to Southeast China, Japan, the Malay Archipelago, New Guinea and Western, northern and eastern Australia. In India it forms a small fishery along with *M. monoceros* on the east coast of India.

Remarks : It is a marine and estuarine form found at depth ranging between 18 to 67 m and prefer muddy bottom. Maximum size attained is 170 mm.

7. ***Metapenaeus monoceros*** (Fabricius, 1798)

1798. *Penaeus monoceros* Fabricius, *Suppl. Ent. Syst.*, 409.

Description : In adult males, merus of fifth pereopod with a proximal notch followed by a long, inwardly curved spiniform process and a row of tubercles; distomedian projection of petasma convoluted, greatly swollen, balliform, directed anterolaterally and concealing distolateral projection in ventral view. In females, anterior plate of thelycum long and deeply grooved, lateral plates with strongly raised lateral margins forming 2 longitudinal crests. Body pink, green-greyish or whitish with brown specks; distal part of uropods purple-blue, external margin of uropods red.

Distribution : Indo-West Pacific : East and Southeast Africa (from Durban worth), Red Sea, to the Bay of Bengal, Eastern Atlantic : entered into the eastern Mediterranean (Turkey, Sylia, Lebanon, Israel, Egypt) through the survey canal. In India it occurs along the entire coastline found in juvenile stages in the estuaries and backwater. It forms a very important commercial fishery along Kerala Coast and in the Gangetic delta.

Remarks : Commonly called as "Speckled Shrimp." Usually found from the coastline to depth of about 70 m. (it has been fished down to 170 m in an exploratory survey off Pakistan), mainly on mud, sandy mud or silt. Juveniles inhabit estuaries, backwater along the southwest coast it breeds in 50 to 60 m depth. Males attain a maximum length of 150 mm and females 200 mm.

Genus ***Parapenaeopsis***

8. ***Parapenaeopsis coromandelica*** Alcock, 1906

1906. *Parapenaeopsis stylifera coromandelica* Alcock, *Cat. Indian Decap. Crust.*, **3** (1) : 37.

Description : Rostrum signoidal, toothless on atleast distal half, strongly upcurved and much overreaching tip of antennular peduncle. Telson armed with 1 or 2 pairs of subapical, fixed spines (the several pair, when present, much smaller than distal pair), epipod and basal spine present in first and second pereopods; In males; distolateral projections of petasma slender, low-like and straight, directed antero-laterally, with ventro-external openings, In females : anterior plate of the thelycum square and concave, with a slender stem-like posterior process; posterior plate deeply notched antero-medially. Usually grey, sometimes grey-reddish or brownish.

Distribution : Indo-West Pacific : East coast of India, and Sri Lanka to Indonesia. In India it occurs absolutely in the Southern part of India (Tamilnadu and Kerala).

Remarks : It is commonly called as "Coromandal Shrimp" forms in the marine environment at depth 7 to 11 m. It grows to a maximum length of 120 mm and prefer muddy bottom.

9. ***Parapenaeopsis maxillipedo*** Alcock, 1906

1906. *Parapenaeopsis maxillipedo* Alcock, *Ann. Mag. Nat. Hist.*, (7) **16** : 522, 527.

Description : Longitudinal surface reaching 1/3 to 1/2 of carapace length; epipod present on first and second pereopods; basal spine present on first 3 pairs of pereopods; telson unnamed. In males petasma with long and slender, horn like distolateral projections, diverging proximally and curving inward distally, without small dowal spiniform processes. In females; anterior plate of thelycum subquadrate, posteriorly depressed and radially fused to posterior plate, the later with a pair of lateral depressions and a median boss; a median tuft of long setae (hairs) behind the thelycum. Usually grey colour, sometimes pale brown; abdomen with dorsal transverse dark bands; Uropods greenish to red-brown with a pale snip along margin.

Distribution : Indo-West Pacific : from the west coast of India and Sri Lanka to Malaya, the Philippines, Indonesia, New Guinea and Northern Australia. In Indian water although not contributing to a fishery it has been recorded mostly from Bombay, Kerala and Madras.

Remarks : Commonly called as "Torpido Shrimp." It is found on muddy bottom in the marine environment at depths ranging between 9 to 11 m. It attains a maximum length of 121 mm.

10. ***Parapenaeopsis sculptilis*** (Heller, 1862)

1862. *Paneaus sculptilis* Heller, *Verh. Zool. Bol. Ges. Wien,* **12** : 528.

Description : In males, petasma with long, robust ear-shaped distomedian projections, deeply concave ventrally; distolateral projections short, directed anterolaterally; proxi-molateral lobes very large, and curved dorsally. In females, thelycum with anterial plate distally rounded and broadly articulating with posterior plate, the latter with a median tubercle baring a tuft of long setae (hairs). The body colour is pale with wide, dark brown- almost black-transverse bands; carapace dark brown dorsally, except for a white band about its middle, bands on abdomen reaching ventro-lateral margin, Uropods yellow to pink, with a very wide, dark brown middle transverse band.

Distribution : Indo-West Pacific : from the west coast of India and Sri Lanka to Malaya, the Philippines, Indonesia, New Guinea and Northern Australia. In Indian water although not contributing to a fishery it has been recorded mostly from Bombay, Kerala and Madras.

Remarks : Commonly called as "Rainbow Shrimp." It is found at depth ranging between 35 to 90 m in the marine environment and grows to a maximum total length of 170 mm. Epipod and basal spines present on first and second pereopods.

11. ***Parapenaeopsis stylifera*** (H. Milne Edwards 1837)

1837. *Paraenus stylifera* H. Milne Edwards, *Hist. Nat. Crust.*, **2** : 418.

Description : Rostrum sigmoid-shaped, strongly upcurved and by far over reaching tip of antennular peduncle (in males somewhat shorter), toothless in distal half or more telson

armed with 4 pairs of lateral fixed spines epipod and basal spine present on first and second pereopods. In males, distolateral projections of petasma slender, horn-like and straight, directed antero-laterally and with ventro-external opening. In females, anterior plate of the thelycum square concave, with a slender stem-like posterior process ; posterior plate deeply notched anteromedilly. Pale brownish or pinkish white, sometimes greenish ; distal part of uropods dark grey, their distinctly white.

Distribution : Indo-West Pacific : Kuwait, Pakistan, India ; Sri Lanka, Bangladesh. In India it forms a fishery along the entire west coast (Katchchh, Bombay, Karwar and Travancore) and southeast coast.

Remarks : Commonly named as "Kiddi Shrimp." Inhabits marine environment at 20 to 90 m depth. Grows to a maximum total length of 145 mm. It has no estuarine in phase in its life history.

12. ***Parapenaeopsis uncta*** Alcock, 1905

1902. *Parapenaeopsis uncta* Alcock, *Ann. Mag. Nat. Hist.*, **16** (7) : 522.

Description : Epipod and based spine present on first pereopod, both also present on second pereopod of females, but in males the basal spine is absent or very small. In males, distolateral projections of petasma simply tapering to end, each with a long dorsomedian spine-like process; distomedian projections very small. In females, anterior plate of thelycum wide and short, with curved anterior margin and with 2 longitudinal ridges, medially fused with the quadrate posterior plate. Brown; carapace, abdomen with white areas making it to appear brown-banded, Uropods brownish proximally, blackish distally, with a white bluish band along margins on distal half.

Distribution : Indo-West Pacific : reported from Pakistan, India, Bangladesh and Sri Lanka. In India it is found along the south coasts of India. It doesn't form a fishery in India.

Remarks : Commonly named as "Uncta Shrimp." Occurs at depth 5 to 82 m in the marine environment on clean sand and grows to a maximum total length of 120 mm.

Genus ***Parapenaeus***

13. ***Parapenaeus longipes*** Alcock, 1905

1905. *Parapenaropsis uncta* Alcock, *Ann. Mag. Nat. Hist.*, **16** (7) : 522.

Description : Rostrum reaching or exceeding distal margin of basal antennular segment, slightly curved downwards. Branchiostegal spine absent; no trace of hepatic crest. Fifth pereopod exceeding antennal scale by length of dactyle (often also by distal part of propodus). Petasma I (in males) with distalateral lobes spont-like and a long as distamedian ones. In females, anterior plate of thelycum semicircular, articulating to intermediate plate; the latter is broad, quadrate and continues to posterior general plate. Pink to whitish, speckled with pink chromatophoces.

Distribution : Indo-West Pacific : East Africa to the Malay Archipelago and Japan. In

India it is reported sporadically, both on east and west coast of India and does not form any fishery.

Remarks : Commonly named as "Flamingo shrimp." It is a marine form found between 10 and 90 m depth. Males grow to a maximum length of 50 to 76 mm and females grow to a maximum length of 61 to 79 mm.

Genus ***Penaeus***

14. ***Penaeus (Melicertus) canaliculatus*** (Oliver, 1811)

1811. *Palaenon canaliculatus* Oliver, *Encycl. Method. Hist. Nat. (Ins.)* **8** : 660.

Description : Females grow to a length ranging between 131 to 145 mm with 35 to 40 mm as carapace length. Abrostral crest and groove long, extending almost to posterior margin of carapace. Posteronostral crest with a deep median groove throughout its length is gastrofrontal crest present; gastrofrontal groove bifurcate posteriorly; telson lacking lateral spines; no ischial spine on first pareopod. Petasma (in males) with short distomedian projections; ventral costac broadened especially and bearing minute spinules at tip. Thelycum (in females) with lateral plates, their anteromedian margins diverging, them turning in a broad are contribution with anterolateral margins. Rostrum brown, tip cream coloured, carapace with 2 dorsal bands perpendicular to axis of body and a third one reaching anterolaterally and reaching anterior margin of carapace, last abdominal band reaching ventral margin, Pereopods yellow, tips bluish or pinkish, pleopods yellow with brown and white spots at bases.

Distribution : Indo-West Pacific : from Southeast Africa to Taiwan, the Malay Archipelago and Polynesia. In Indian waters recorded mostly from northwest India and South India as a small fishery.

Remarks : Commonly called as "Witch Prawn." It is a marine form occurs at depth ranging between 33 to 46 m. Males grow to a maximum total length of 97 to 120 mm with a carapace length ranging between 24.5 to 34 mm. Correct identity of this species existed until perey-Farfante (1976 : 23) made its true positions clean. Until then the records may pertain to other, more often closely related species (e.g. *Penaeus japonicus*).

15. ***Penaeus (Penneropenaeus) indicus*** H. Milne Edwards, 1837

1837. *Penaeus indicus* H. Milne Edwards, *Hist. Nat. Crust.*, **2** : 415.

Description : Blade of rostrum becoming moderately high in large specimens; adrostral crest and groove extending as far as, or just beyond epigastric tooth, gastro-orbital crest extending over posterior 2/3 of distance between hepatic spine and orbital margin; in adult males, dactyl of third maxilleped about as long as propodus (0.85 to 1.0 times). Outer surface of lateral lobes of petasma (in males) with a few rows minute tubercles. Body pale pink to yellowish, semi translucent.

Distribution : Indo-West Pacific : East and Southeast Africa to South China, New Guinea and N. Australia. Due to the availability of the species in all the coastal waters, estuaries and

backwaters in India and also due to its ability to grow to a length of 230 mm it is the most important species in India, next to *Metapenaeus dobsoni,* especially for rice field shrimp farming.

Remarks : Commonly named as Indian white prawn. Inhabits shelf areas from the coastline to depth about 90 mm most abundant in shallow waters in less than 30 m on sand or mud (slight preference for sandy bottom); Euryhaline species juveniles are estuarine. Grows to a maximum total length of 184 mm by males and 230 mm by females. This species is often confirmed with *P. mergriensis* and *P. penicillatus.*

16. ***Penaeus (Marsupenaeus) japonicus*** Bate, 1888

1888. *Penaeus caraliculatus japonicus* Bate, *Rep. Voyage Challenges (Zool.)* **24** : 25.

Description : Rostrum with an accessory crest on the blade : at dorsal crest and groove long, extending almost to posterior margin of carapace, postrostral crest with a deep median groove throughout its length, gastrofrontal crest present, gastrofrontal groove bifurcate posteriorly, telson armed with three pairs of movable spines, no ishial spine of first pareopod. Petasma (in males) with long distomedian projections distinctly forming distal margins of rostal, tips enlarge. Thelycum (in females) without lateral plates but with a pouch widely open anteriorly; anterior and posterior processes forming a triangular, concave plate. Rostrum banded, carapace with anterolateral and dorsal patches (the latter circular in dorsal view) and two bands, the anterior one at middle of carapace and leaning antero-ventrally, last abdominal band discontinuous.

Distribution : Indo-West Pacific : from the Red Sea, East and Southeast Africa to Korea, Japan and the Malay Archipelago and Fiji. Eastern Atlantic. The species entered eastern Mediterranean through the canal and reached south Turkey. In Indian waters it makes a small contribution to the Fishery along the Chennai Coast especially in Pulicat Lake and as the West Coast off Bombay in small numbers. On the east coast it occurs in the fishery in the post-monsoon months.

Remarks : Commonly called as "Kuruma Prawn." Inhabits shelf areas from the coastline to depths of about 90 m but is more abundant in less than 50 m on sandy bottom, the adults are predominantly active at night, burying in the substrate in daytime. Males grow to a maximum total length of 200 mm and females 235 mm.

17. ***Penaeus (Pennenopenaeus) merguiensis*** De Man, 1888

1888. *Penaeus mergnopeniensis* De Man, *J. Linn. Soc. Lond. (Zool.)* **22** : 287.

Description : Blade of rostrum high, broadly triangular in shape, adrostal crest and groove not reaching as far as epigastric tooth, gastrofrontal and hepatic crests absent, gastro-orbital crest extending order hepatic spine and or orbital margin, in adult males, dactyl of third maxilleped half (0.5 to 0.6 times) as long as propodes. In males the free border of ventral coastal of the petasma serrate near apex. Body pinkish to pale yellow, sometimes green-greenish, with green grey to grey-blue speckles.

Distribution : Indo-West Pacific : from the Persian gulf to Thailand, Hong Kong, the Philippines, Indonesia, New Guinea, New Caledonia and North Australia. In Indian waters it contributes to a fishery in the east and west coasts. In other areas it is found in very small numbers. In the regions where the species contributes to fishery juveniles are fished from estuaries.

Remarks : Commonly called as "Banana Prawn." Inhabitats shelf areas from the coastline to depths of about 55 m, but is most abundant in shallow waters of less than 20 m depth, on mud or sandy-mud, (this is not a burrowing species) and forms large shoals when the density of the population is high; caught by day as well as night. Known maximum total length for males is 195 mm and 240 mm for females.

18. ***Penaeus (Penaeus) monodon*** Fabricius, 1798

1798. *Penaeus monodon* Fabricius, *Suppl. Ent. Syst.*, 408.

Description : Adrostral crest and groove extending as far as, or slightly ahead, of epigastric tooth; gastrofrontal crest absent; antennal crest-ending above middle of hepatic over posterior half, or less, of distance between hepatic crest and orbital margin hepatic crest straight, almost horizontal, distinctly separated from base of antennal crest; fifth pereopod without exopod. In males, in the petasma the inner surface of lateral lobes armed with spinules. Abdomen with dark brown to dark grey and pale yellow dorsal transverse bands; antennae uniform pink-brown; Uropods with a pale yellow to pink median transverse bands; Juveniles are pale green with dark transverse bands on first third and last abdominal segments.

Distribution : Indo-West Pacific : East and Southeast Africa and Pakistan to Japan, The Malay Archipelago and Northern Australia. Along the Indian coast it is more common on the east coast especially in Bengal and Orissa forming a dominant fishery. In other places large sizes are caught in good numbers.

Remarks : Commonly called as "Giant Tiger Prawn." It is found from the coastline to depths of about 150 m, occasionally in deeper waters; the larger concentration are fished in less than 60 m on sand or mud. Juveniles are found in mangrove swamps, estuaries or backwaters, the species is more easily available at night. This is the larger penacid species known. Males attain a maximum total length of 268 cm and females 337 mm.

19. ***Penaeus (Penaeus) semisulcatus*** De Haan, 1844

1844. *Penaeus semiculcatus* De Haan, *In* Von Siebold, *Fauna Japanica, Crustacea* (6/7) : pl. 46, fig 1.

Description : Abdorstral crest and groove extending beyond epigastic tooth; post rostral crest with a distinct median groove; gastrofrontal crest absent; antennal crest very prominent, ending above posterior third of hepatic crest; hepatic crest straight sloping anteroventrally, fifth pereopod with exopod. Body pale brown, sometimes greenish; Abdomen with brown-grey and pale yellow dorsal transverse bands antennal banded white and brown.

Distribution : Indo-West Pacific : Red Sea, East and Southeast Africa to Japan, Korea the

Malay Archipelago and Northern Australia, Eastern Atlantic. The species has reached the eastern Mediterranean near through the Suez Canal it is low found all along the coasts of Egypt. Israel, Lebanon, Syria and southern Turkey. In India it is more common in the east than on the west coast, but it is not important commercially as *P. monodon.* It plays a role in the rice field shrimp forming in the Ganges delta.

Remarks : Commonly called as "Green Tiger Prawn." Inhabits the continental shelf from the coastline to depths of about 130 m but is not abundant in waters less than 60 m deep on mud, sandy-mud or sandy shit. Males grow to a maximum total length of 180 mm and females 230 mm mostly fished at night Juveniles are estuarine.

Genus *Trachypenaeus*

20. *Trachypenaeus curvirostris* (Stimpson, 1860)

1860. *Penaeus curvirostris* Stimpson. *Proc. Acad. Nat. Sci. Phila,* : 44.

Description : Telson armed with 3 or 4 pairs of small movable lateral spines, subequal in size epipod present on first 3 pereopods; petasma (in waters) with broad, wing-like distolateral projections, diverted laterally and curved dorsoventrally; In females anterior plate of thelycum concave anteriorly, with a middle groove posteriorly and a blunty pointed anterior margin posterior plate notched antero-medially. In fertilized specimens coxae of 4th perepods often with a small projections always densely fringed with setae. Body pink to reddish brown, sometimes whitish on sides. Uropods with distinct white margins.

Distribution : Indo-West Pacific : Red sea, East Africa and Madagascar to China, Japan and Australia, Eastern Atlantic; reported from Egypt, Israel and Turkey. In Indian waters it is found both in the east as well as west coast, but most in very large numbers as to contribute to a fishery.

Remarks : Commonly called as "Southern Rough Shrimp." Found from 10 to 300 m depth on sand or mud. Fished in waters less than 60 m; easily available at night. Males attain maximum total length of 81 mm and females 105 mm.

21. *Trachypenaeus granulosus* (Haswell, 1879)

1879. *Penaeus granulosus* Haswell, *Proc. Linn. Soc. N. 5. W,* **4** : 41.

Description : Telson armed with a pair of sub-apical, small movable spines and 2 or 3 pairs of spinnels; spipod present on third pereopod only; Petasma (in males) with very broad distolateral projections their tips curving forward in a broad sweep and then inward. In females anterial plate of thelycum flat or slightly concave, rounded distally and with a posterior rounded projection which can be very prominent and is often fused to posterior plate; posterior plate excavate on either side of median convexity. Uropods red with generally distinct yellow margins.

Distribution : Its distribution is scattered. Indo-West Pacific : Kuwait, Sri Lanka, Malaya, Indonesia, Taiwan, Australia. In India stray catches are taken from the southern coast alone.

Remarks : Commonly called as "Cooxae shrimp." Found from 5 to 80 m depth on mud, hard sand or rocky bottom, it is more easily available at night. Males grow to a maximum total length of 72 mm and females 95 mm.

Genus ***Acetes***

22. ***Acetes erythraeus*** Nobili, 1905

1904. *Acetes erythraeus* Nobili, *Bull. Mus. Hist. Nat. Paris,* **11** : 393.

Description : In males anterior margin of genital coxae pointed petasma with pairs astringes; procurved tooth between bases of first pair of pleopods. In females inner margin of basis of third pereopod without a sharply pointed projections; third and fourth thoracic stanites not channelted longitudinally. Procurved tooth present between bases of first pair of pleopods. Apex of telson triangular.

Distribution : Indo-West Pacific : Red Sea, and Southeast Africa to China. Indonesia and Northeast Australia. In Indian waters the species seem in fairly good quantities in Bengal, Orissa, Madras region on the east-west and off Trivandrum in the southwest coast. Along the Trivandrum coast it occurs in large quantities from the middle of December to the middle of April.

Remarks : In size it is smaller than *A. indicus.* Commonly called as "Trivakihimi Parte Shrimp." It is found from the coastline to 55 m on mud or land bottom in the marine environment. Usually found in brackish environment. It is fished intertidal Zone. Attains a total length ranging between 16 to 33 mm rarely up to 48 mm.

23. ***Acetes indicus*** H. Milne Edwards, 1830

1830. *Acetes indicus* H. Milne Edwards, *Ann. Sci. Nat. Paris.* **19** (1) : 351.

Description : In males anterior margin of genital coxae rounded. Petasma without pairs astringans. Procurved tooth present between bases of first pair of pleopods. Inner margin of basis of third pereopods with a sharply pointed projection third and fourth thoracic sternites deeply channeled longitudinally.

Distribution : Indo-West Pacific : West coast of India to Thailand and Indonesia. In Indian seas it is an important commercial shrimp. In Bombay waters about 20% of the total prawn fishery is constituted by this species. On the west it occurs only in northern region in great quantities. On the east it is represented throughout occurring in sea as well as brackish waters.

Remarks : Commonly called as "Jawla paste Shrimp." It is found in shallow, sometimes brackish coastal waters Total length of females range between 23 to 40 mm and males between 15 to 25 mm. It is the largest among from the different species and found in company with *A. enythrens* along the east coast and with *A. japonicus* on the west coast.

Genus ***Exopalaemon***

24. ***Exopalaemon styliferus*** (H. Milne Edwards, 1840)

1840. *Palaemon styliferus* H. Milne Edwards, *Hist. Nat. Crust.,* **3** : 638, 394.

Description : Commonly called as "Roshra." In habit shallow coastal waters in sea or brackish waters and occasionally freshwater. Males grow to a maximum total length of 90 mm and ovegerous found females 86 mm. Rostrum long and slender, most of distal part of dorsal margin toothless, save for 1 or 2 subdistal teeth, ventral margin with 6 to 10 teeth. Branchiostegal spine and brachiostegal groove present. Dactyls of fifth pair of pereopods about 1/3 as long as propodus. Whitish translucent, ovegerous females with large dark spots on first 4 abdominal pleura.

Distribution : Indo-West Pacific : Pakistan and India to Thailand and Indonesia. In India it is abundantly fished in the central and northwest coast of India (Gujarat and Maharastra). In Gangetic delta area this is one of the most important commercial species. In south India it is fished in small numbers.

Genus *Nematopalaemon*

25. *Nematopalaemon tenuipes* (Henderson, 1893)

1892. *Leander tenuipes* Henderson, *Trans. Linn. Soc. Lond. (Zool.)* **5** (2) : 440.

Description : Rostrum long and slender. Most of distal part of dorsal margin toothless except for a small sub-distal tooth; Ventral margin with 2 to 6 teeth. Dactyls of third to fifth pairs of pereopods extremely long and thin, far longer than propodus and carpus combined. Brachiostegal groove absent. Whitish translucent; reddish brown spot on bases of uropods.

Distribution : Indo-West Pacific Ocean.

Rostrum : Commonly called as "Spider Prawn." Inhabitats shallow coastal waters to depth of about 20 m as well as in estuarine and brackish waters. Grows to a maximum total length of 80 mm.

Genus *Exhippolysmata*

26. *Exhippolysmata ensirostris* (Kemp, 1914)

1914. *Hippolysmata ensirostris* Kemp. *Rec. Indian Mus.*, **10** : 118.

Description : Rostrum long, dorsal margin with an elevated crest of 7 to 12 teeth, second pair of pereopods with small pincers, carpus long and subdivided into more than 7 articles; dactyls of last 3 pairs of pereopods single and much shorter than propode. Whitish or pinkish with the appendages red, often dark red, rostrum flagella also reddish.

Distribution : Indo-West Pacific : West coast of India to Malay Archipelago. Along the Indian coasts this species is present in most regions and represented in the fishery in small numbers. In Bombay and Godawary estuary area there is fairly good fishery for the species.

Remarks : Commonly called as "Hunter Shrimp." It inhabits shallow marine or estuarine waters. Grows to a maximum total length of 79 mm. Often found along with *Nematopalaemon tenuipes.*

LOBSTERS

Phylum ARTHROPODA

Class CRUSTACEA Pennant, 1777

Class MALACOSTRACA Latreille, 1806

Subclass EUMALACOSTRACA Calman, 1904

Order DECAPODA Latreille, 1803

Family SCYLLARIDAE

Genus ***Panulirus***

1. *Panulirus homarus* (Linnaeus, 1758)

Genus ***Scyllarus***

2. *Scyllarus rugosus* H. Milne Edwards, 1837

Genus ***Thenus***

3. *Thenus orientalis* (Lund, 1793)

Family PALINURIDAE

4. *Panulirus ornatus* (Fabricus, 1798)

Genus ***Panulirus***

1. *Panulirus homarus* (Linnaeus, 1758)

1758. *Cancer homarus* Linnaeus, *Systema Natural, (Ed. 10)* **1** : 633.

Description : Antennular plate with 4 equal, large well separated spines and a group of spinules in between. Exopod of third maxilleped absent. The abdominal somites have a distinct groove, the anterior margin of which is crenulated and with setae. Body bluish grey with numerous minute white spots. Each abdominal somite has a conspicuous white spot on either side. A chain of six or seven large white spots present on either side of the carapace. Antennule banded. Legs rather uniform in colour. Sometimes with faint longitudinal streaks. It forms a good fishery along the coasts of India, especially along the south-west cost of India and Andaman and Nicobar Islands.

Distribution : This species enjoys very wide distribution in the Indo-West Pacific region. In India recorded from Port Okha, Veraval, Gulf of Cambay, Bombay, Ratnagiri, Mangalore, Calicut, Trivandrum, Cape Comarin, Triuchendur, Gulf of Mannar, Tuticorin, Mandapam, Palk Strait, Point Calimere, Madras, Kakinada, Vishakapatnam, Puri, Balasore, Calcutta, Port Blair, Car Nicobar and Great Nicobar.

Remarks : Commonly called as "Scalloped spiny lobster." Maximum total body length is 32 cm. Carapace length 12 cm. It inhabits shallow waters mostly between 1 and 5 m, among rocks. This species is gregarious and nocturnal. Tolerant to surge and turbulence.

Genus *Scyllarus*

2. *Scyllarus rugosus* H. Milne Edwards, 1837

1837. *Scyllarus regosus* H. Milne Edwards, *Histoirs naturelle des Crustaces,* **2** : 283.

Description : The carapace has the medium teeth before the cervical groove blunt and inconspicuous. The gastric tooth is conspicuous and bears double row of tubercles. First somite is smooth, and has a slightly noticeable extreme lateral parts. In somite, both before and behind this groove there is a broad smooth ridge. The anterior margin of the thoracic sternum is deeply U-shapely incised. Each of the thoracic sternites bears a rounded medium tubercle. Body is greyish or purplish brown with darker spots dorsally. The distal part of antena is often lighter. Dark blue colour on the dorsal side of the first abdominal somite. This is a non-commercial species.

Distribution : Indo-West Pacific region.

Remarks : Commonly called as "Hunch back locust lobster." Body length vary between 2.5 to 6 cm. Carapace length between 0.8-2.2 cm. Body and carapace length of oviperous females are few mm longer than the normal forms. Found between 20 to 60 m usually in sandy and muddy bottom.

Genus *Thenus*

3. *Thenus orientalis* (Lund, 1793)

1793. *Scyllarnus orientalis* Lund, *K, Danske Videnskabers, Selskab Skrifter, (n. ser)* **2** (2) : 22.

Description Orbits on the anterolateral angle of the carapace. Strongly depressed body. Lateral margin of the carapace with only the cavical incision. No teeth on the lateral margin of the carapace, apart focus the anterolateral and post cavical. Fifth leg of female without a chela. Exopod of third and first maxilleped without a flagellum; the flagellum of second maxilleped transformed to a single laminate segment.

Distribution : Indo-West Pacific region. In India, it is recorded in many places on east and west coasts. There is no specialized fishery for it. It often appears as a bycatch in the redished much when compared to spiny lobsters of prawns. In India, it faced overfishing in Gujarat and Chennai Coast.

Remarks : Commonly called as "Flathead sand lobster." Maximum total body length about 25 cm. Maximum carapace length about 8 cm. It is found usually between 10 m to 50 m on soft substrate.

4. *Panulirus ornatus* (Fabricius, 1798)

1798. *Palinurus ornatus* Fabricius, *Supplementum Entomologiae Systematicae,* : 400.

Description : Antennular plate with four spines, the anterior pair is larger than the posterior pair. Exopod of third maxilleped absent. Abdominal somites smooth and naked. Body bluish green in colour, the carapace has pale cream verniculate lines and bright white spots. The usual large eyespot in the anterior half near the base of the pleura is accompanied

by an oblique pale streak placed somewhat medium of the eye spot. The pleura have the tips white, sometimes this white colour extends slightly up to the anterior and posterior margins. Walking legs alternately banded or marbled with cream and maroon.

Distribution : Indo-West Pacific region : from East Africa and Mauritius through the Indian seas and Malaysia to Northern Australia, New Caledonia and Fiji. Recently a specimen was found on the coast of Israel in the east Mediterranean. In India, recorded from Calcutta, Madras, Mandapam Camp and Andaman.

Remarks : Commonly called as "ornate spiny lobster" usually 30 to 35 cm in size, can attain a total body length of about 50 cm. It inhabits shallow waters mostly between 1 to 8 m depth. Prefers sandy and muddy substrates, sometimes found among rocks. Undergoes mass migration. It constitutes a good fishery along southeast coast of India.

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BRACHYURA

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INTRODUCTION

The infraorder Brachyura (Greek : Brachia, "gill"; and oura, "tail") consists of true crabs, with reduced abdomen which is always flexed beneath the thorax; uropods are usually absent. The carapace is fused, atleast laterally, with a sternal plate in front of the mouth called episterum. Distinctive features of this group are modification of three anterior pairs of thoracic appendages into maxillipedes; usually more than single series of gills; lateral projections of the carapace over the gills form branchial chambers and enlargement of the expodite of the second maxilla as flattened scoop called scaphognathite.

The habits of crabs are various; some are exclusively aquatic and remain on the sands or rocks, at great depths in the sea, others inhabit excavations formed in the soft coral reefs or bars on certain coasts; some spend their days altogether on shore, living on burrows or dens found in a most or boggy soil, others resort to rocky flats or beaches to bask in the sun, where only occasional waves dash over them and seek refuge in the sea when alarmed, while some species are completely terrestrial inhabiting holes upon high hills and mountains.

Most of the Brachyurans are predators and scavengers. Food is captured with the chelate appendages and pushed forward to the gnathal structures, where suitably sized pieces are chewed or torn off; gastric mill present. Locomotion is by the use of four pairs of walking legs; the loss of limbs by automy is common, adaptive methods for adequate locomotion are well developed. These animals are well known for exhibiting a variety of colours useful for concealment in the environment in which they live. The gills are exclusively phyllobranchiate in structure. The gills are exclusively phyllobranchiate in structure. They undergo moulting of the exoskeleton to effect growth and the process continues throughtout the active life of the animal. The segmental excretory organs are the antennal or green glands.

Considerable sexual dimorphism occurs in the species and they exhibit various courtship procedures before copulation. The development of these animals goes through metamorphosis consisting of different stages of zoea and post larval megalopa. They exhibit remarkable capacity for regeneration. Fossil records show that their origin extends back to the upper cretaceous. Many species of the group are of great economic value and they play a major role in the marine ecosystem.

The present study incorporates studies on the crabs belonging to families Dromiidae, Dorippidae, Leucosiidae, Calappidae, Majidae, Parthenopidae, Xanthidae and Goneplacidae collected from the Madras Coast during the period 1982-'85.

SCOPE OF PRESENT STUDY

Although a large number of Brachyuran crabs are landed during the trawling operations along the Madras Coast, information on their species composition, seasonal abundance and biology are very meager in literature. Alcock (1894-1900), Andreson (1896), Chopra (1933) and Balss (1935) have dealt with species collected from Madras Coast, in their studies on Brachyuran crabs. Gravely (1927) has recorded the Brachyuran species in his survey of animal remains found along the Madras beach. Subsequent works, pertaining to this group, in the study area, are limited to a few reports on some of the economically important species. The obvious lack of interest on this group of fauna may be attributed to the fact that many of the species of this group are economically less important. But it is an acknowledged fact they play a major role in the marine ecosystem, and gaining momentum in fisheries as they are marketed for poultry feed and manure. In recent years, the taxonomic concept of many groups of Invertebrates, including crabs, has undergone major changes. These facts underline the need for further work on this group from the Madras Coast.

MATERIAL AND METHODS

Material for the present study was collected for a period of four years from 1982 to 1986. Collections from the trawling and dredging operations during the fortnightly cruises of R. V. Chotta Investigator, 32-feet Research Boat of the Marine Biological Station, Zoological Survey of India, Madras along the Madras Coast from Ennur in the North to Thiruvanmiyur in the South and samples collected from the fish landing along the Madras Coast from Pulicat in the North to Kalpakkam in the south were utilised for the study. The reserve collections of the Marine Biological Station, Zoological Survey of India, Madras and the crustacean holdings of the Zoological Survey of India, Calcutta, were also examined for comparative study and confirmation of identification. A total number of 2380 examples were examined during the course of the present study.

In order to avoid shedding of legs or chelae, the live animals were narcotized with menthol, washed and preserved in 70% alcohol.

Juveniles and immature specimens were not considered for taxonomic study. Plates have been prepared for all the species included in the study. The male abdomen, first male pleopod, and third maxilliped of each species have been figured with the aid of camera lucida. The measurements required for the study, were taken with the help of dividers and vernier calipers. The left appendages were considered for taking measurements, and in the absence of any one of them, the corresponding right appendage was taken into account. The colouration and ornamentation of the species were recorded by careful observation.

LIST OF SPECIES RECORDED FROM CHENNAI COAST

Section BRACHYURA

Subsection DROMIACEA De Haan, 1839

Superfamily DROMIIDEA Alcock, 1899

Family DROMIIDAE Alcock, 1899

Genus ***Dromia*** Weber, 1795

1. *Dromia dehaani* Rathbun, 1923

Genus ***Cochoecetes*** Stimpson, 1858

2. *Conchoecetes artificiosus* (Fabricuis, 1798)

Subsection OXYSTOMATA De Haan, 1841

Family DORIPPIDAE White, 1841

Genus ***Dorippe*** Weber, 1795

3. *Dorippe (Dorippe) frascone* (Herbst, 1785)

Genus ***Paradorippe*** Serene &Romimohtarto

4. *Paradorippe granulata* (De Haan, 1841)

Family LEUCOSIIDAE Dana, 1852

Subfamily PHILYRINAE Rathbun, 1937

Genus ***Arcania*** Leach, 1817

5. *Arcania undecimspinosa* De Haan, 1841
6. *Arcania quinguespinosa* Alcock & Anderson 1894
7. *Arcania septemspinosa* De Haan, 1841
8. *Arcania erinaceous* (Fabricius, 1798)

Genus ***Myra*** Leach, 1817

9. *Myra fugax* (Fabricius, 1798)
10. *Myra affinis* Bell, 1855

Genus ***Ixoides*** Mac Gilchrist, 1905

11. *Ixoides cornutus* Mac Gilchrist, 1905

Genus ***Ixa*** Leach, 1815

12. *Ixa inermis* Leach 1879
13. *Ixa cylindrus* (Fabricius,1798)

Genus ***Parilia*** Wood-Mason, 1891

14. *Parilla alcockii* Wood-Mason, 1891

Genus ***Philyra*** Leach, 1817

15. *Philyra globosa* Fabr. De Haan 1888.
16. *Philyra globulosa* Edwards,1855
17. *Philyra scabriscula* (Fabricius) 1855
18. *Philyra verrucosa* Henderson,1893

Subfamily LEUCOSIINAE Miers, 1886

Genus ***Leucosia*** Weber, 1795

19. *Leucosia anatum* (Herbst, 1783)
20. *Leucosia craniolaris* (Linnaeus, 1758)
21. *Leucosia rhomboidalis* De Haan, 1841
22. *Leucosia longifronis* De Haan, 1841
23. *Leucosia pubescensis* Miers, 1886

Family CALAPPIDAE Dana, 1852

Subfamily CALAPPINAE Alcock, 1896

Genus ***Calappa*** Weber, 1795

24. *Calappa lophos* (Herbst, 1782)
25. *Calappa terraereginae* Ward, 1936
26. *Calappa philargius* (Linnaeus, 1758)
27. *Calappa gallus*, Herbst, 1803
28. *Calappa japonica* Ortmann, 1892
29. *Calappa pustulosa* Alcock, 1896

Subfamily MATUTINAE Alcock, 1896

Genus ***Matuta*** Weber, 1795

30. *Matuta lunaris* (Forskal, 1775)
31. *Matuta plainpes* Fabricius, 1798
32. *Matuta miersi* Henderson, 1887

Subsection OXYRHYNCHA Latreille, 1803

Family MAJIDAE Samoulle, 1819

Subfamily PISINAE Alcock, 1895

Genus ***Inachoides*** 1838

33. *Inachoides dulichorhynchius* Alcock & Anderson,1894

Genus ***Naxoides*** A. Milne Edwards, 1865

34. *Naxoides mammillata* (Ortmann, 1893)

Genus ***Phalangipus*** Latreille, 1825

35. *Phalangipus hystrix* (Miers, 1836)
36. *Phalangipus filliformis* Rathbun, 1916

Genus ***Chorilibinia*** Lockington, 1876

37. *Chorilibinia andamanica* Alcock, 1895

Genus ***Hyastenus*** White, 1847

38. *Hyastenus aries* (Latr. 1825)

Genus ***Doclea*** Leach, 1814

39. *Doclea ovis* (Herbstm 1788)
40. *Doclea hybrida* (Fabr.) Edw. 1798
41. *Doclea muricata* (Herbst.)Edw.
42. *Doclea canalifera* Stimpson, 1853

Family PARTHONOPIDAE Miers, 1897

Subfamily PARTHENOPINAE Miers, 1879

Genus ***Parthenope*** Weber, 1795

Subgenus ***Parthenope*** Weber, 1795

43. *Parthenope(Parthenope longimanus* (Linnaeus,1764)

Subgenus ***Platylambrus*** Stimpson

44. *Parthenope (Platylambrus) echinatus* (Linnaeus, 1764)

Subfamily AETHRINAE Dana, 1852

Genus ***Cryptopodia*** H. Milne Edwards, 1834

45. *Cryptopodia fornicata* (Fabr.)
46. *Cryptopodia angulata* Ed. and Lucas,1841

Genus ***Zebrida***

47. *Zebrida adamsi*

Subsection BRACHYRHYNCHA Borradile, 1903

Family XANTHIDAE Alcock, 1898

Subfamily XANTHINAE Alcock, 1898

Alliance HALIMEDOIDA Alcock, 1898

Genus ***Halimede*** De Haan, 1835

48. *Halimede octodes* (Herbst, 1783)

Genus ***Liagore*** De Haan, 1833.

49. *Liagore rubramaculata* De Haan, 1835

Alliance XANTHOIDA Alcock, 1898

Genu ***Demania*** Laurie, 1906

50. *Demania scaberrima* (Walker, 1887)

Alliance GALENOIDA Alcock, 1898

Genus ***Galene*** De Haan, 1833

51. *Galene bispinosa* (Herbst, 1765)

Genus ***Actea*** De Haan,1833.

52. *Actea savignyi* (H. Milne Edwards,1834)

Subfamily MENIPPINAE Ortmann, 1893

Genus ***Ozius*** H. Milne Edwards, 1834

53. *Ozius rugulosus* Stimpson, 1858

Subfamily PILUMINAE Ortmann, 1893

Alliance PILAMNOIDA Alcock, 1898

Genus ***Pilumnus*** Leach, 1845

54. *Pilumnus scabriusculas* (Fabricius,1793)

Family GONEPLACIDAE Dana, 1851

Subfamily CARCINOPLACINAE Miers, 1886

Genus ***Carcinoplax*** H.Milne Edwards,1852

55. *Carcinoplax longimana* De Haan, 1835

Genus ***Eucrate*** De Haan, 1835

56. *Eucrate sexdentata* Haswell, 1881

57. *Eucrate crenata* De Haan, 1835

DESCRIPTION OF SPECIES LIST

Section BRACHYURA

Subsection DROMIACEA De Haan, 1839

Super family DROMIIDEA Alcock, 1899

Family DROMIDAE Alcock, 1899

Genus ***Dromia*** Weber, 1795

1. ***Dromia dehaani*** Rathbun, 1923

1903. *Dromia dormis* (nec Linnaeus) Borradaile, London, Vol. 1, p. 298.

Description : Carapace broader than long; front cut into three teeth; of equal size; anterolateral border with four sharp teeth.

Distribution : Indo-Pacific : Gulf of Aden, India, Java Coast, Hongkong, Japan and Formosa.

Remarks : The absence of spine at the far end of the posterior border of propodus of the fourth pair of legs, clearly distinguishes this species from the other two species of the genus Dromia reported from the Indian Seas. This species occurs throughout the year in the study area. Registration Number : 3254

Genus ***Cochoecetes*** Stimpson, 1858

2. ***Conchoecetes artificious*** (Fabr., 1798)

1798. *Dromia artifiociosa* Fabricius, p. 360

1803. *Cancer artificiosus* Herbst, Vol. 1, p. 54, pl. 56.

1907. *Conchoecetes artificiosus* Stimpson, Vol. 49, p. 180, pl. 2, fig. 5.

Description : Carapace flat, pentagonal, smooth; entire body, except the dactyli and tip of the fingers covered with a close velvet-like tomentum. Third pair of ambulatory legs end in a characterstic stout talon-shaped dactylus.

Distribution : Indo-Pacific : Hongkong, Thailand, Ceylon, and Coasts of India, Andaman, Persial Gulf and Queensland, Cape of Goodhope, Japan.

Remarks : This genus includes two specie, i.e. C. artificiosus (Fabricius, 1798) and C. andamanica, Alcock; of these C. artificiosus alone is reported from the study area; C. andamanica is restricted to Andaman seas. Registration Number : 3205.

Subsection OXYSTOMATA De Haan, 1841

Family DORIPPIDAE White, 1841

Genus ***Dorippe*** Weber, 1795

3. ***Dorippe (Dorippe) frascone*** (Herbst,1785)

1962. *Dorippe frascone* Tyndale-Biscos and George, *Jour. Royal Soc., West Australia,* Vol. 45, pt. 3, p. 66

1969. *Dorippe (Dorippe) frascone* Serene and Romi-Mohtarte. Indonesia Marine Research No. 9, p. 6, pls. 1a, b, c, figs. 1, 5, 10, 15a, b.

Description : Carapace nodular wrinkled and covered with hairs; spine at the inner canthus enormously developed, curved and serrated; cheliped symetrical; extreme length of carapace greater than extreme breadth.

Distribution : Indo-Pacific : from east Asia to Australia and east coast of Africa.

Remarks : It is one of the common species available in the study area, throughout the year. It always found to carry a bivalve shell on its body with its reduced peraeopods. Based on the structure of the anterior pleopod of male, Serene and Romimohtarte (1964) separated the old genus Dorippe into three genera Dorippe, Paradorippe and Neodorippe. Registration Number : 3263.

Genus ***Paradorippe*** Serene &Romimohtarto

4. ***Paradorippe granulata*** (De Haan, 1841)

1841. *Dorippe granulata* De Hann, X Crustacea, **In**: de Siebold, Fauna of Japonica, p. 122, pl. 31, fig.2

1976. *Paradorippe granulata* Sakai, *Crabs of Japan and the Adjacent Seas,* p. 62. pl. 22, fig.2.

Description : Extreme length of carapace less than extreme breadth; carapace finely granular; first and second true legs completely devoid of hairs.

Remarks : The unique characterstic feature of this species is the complete absence of hairs in the 1st and 2nd legs. Registration Number : 4865.

Family LEUCOSIIDAE Dana, 1852

Subfamily PHILYRINAE Rathbun, 1937

Genus ***Arcania*** Leach, 1817

5. ***Arcania undecimspinosa*** De Haan, 1841

1896. *Arcania undecimspinosa* Alcock, *Jour. Asiatic. Soc., Bengal,* Vol. 65, part 2, no. 2 p. 266.

1976. Sakai, *Crabs of Japan and the Adjacent seas,* p. 91, pl. 28, fig. 1.

Description : Carapace longitudinally void or nearly globular, covered with granules; margins with eleven spines; fingers longer than the palm.

Distribution : Indo-Pacific : India, Seychellas southward to Queensland coasts of China, Korea and Formosa.

Remarks : It is distinguished from other species of this genus by the globular carapace with eleven spines on its margin. This species occurs commonly in the Madras Coast. Registration Number : 3208.

6. ***Arcania quinguespinosa*** Alcock &Ander.

1896. *Arcania quinquespinosa* Alcock, *Jour. Asiatic. Soc., Bengal,* Vol. 65, part-2, no. 2, p. 266.

1965 Sakai, *Crabs of Japan and the adjacent seas*, p. 95, pl. 28, fig. 3.

Description : Carapace broadly conical margins with five spines, large bright red mark with milk-white-edged ocellus on the cardic region.

Distribution : Indo-Pacific : Indian coasts, Ceylon, Laccadive Islands, Persian Gulf, Red Sea and Japan.

Remarks : The large bright-red mark with milk-white edged ocellous on the cardiac region of carapace clearly distinguishes this species from other species of this genus. Registration Number : 3210.

7. ***Arcania septemspinosa*** De Haan, 1841

1896. *Arcania septemspinosa* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 65, part-2, no. 2, p. 265.

1957. Chhapgar, *Taraporevala Marine Biological Station,* p. 10, pl. 3.

Description : Carapace rhomboidal, granular; margins armed with seven spines, the lateral median epi-branchial spine longer than other spines. Finger longer than propodus.

Distribution : Indo-Pacific : Ceylon, Singapore, East Coast of India; Japan.

Remarks : It is distinguished from other species of the genus of its rhomboidal carapace with seven spines along the margins of carapace. This species is compaired to Indian ocean only. Registration Number : 3235.

8. ***Arcania erinaceous*** (Fabricius, 1798)

1896. *Arcania ernaceus* Alcock, *Jour. Asiatic. Soc., Bengal,* Vol. 65, part-2, no. 2, p. 268.

Description : Carapace globular, covered with spinules and spine like granules. Finger shorter tan propodus.

Distribution : Indo-Pacific : Ceylon, Singapore, east coast of India; Japan.

Remarks : In arrangements of marginal spines it resembles *A. undecimspinosa* but differs from that species in the size of the spine and the fingers of chelipeds, shorter than propodus. Registration Number : 5218.

Genus ***Myra*** Leach, 1817

9. ***Myra fugax*** (Fabricius, 1798)

1896. *Myra fugax* Alcock, *Jour. Asiatic. Soc., Bengal,* Vol. 65, part-2, no. 2, p. 202.

Description : Carapace ovoid with 3 sharp long spines, two on posterior border and one

in the middle line; side wall of hepatic regions forms a distinct facet, chelipeds long and very slender.

Distribution : Indo-Pacific : Japan to Madagascar, Red Sea and east coast of Africa.

Remarks : The genus *Myra* includes twelve species distributed in the Indo-pacific waters. The present collection includes two species i.e. *M. fugax* and *M. affinis*. In *M. fugax* the lateral spines of carapace are acute and the hepatci facet smooth, in *M. affinis* the lateral spines of carapace are dentiform and the hepatic facet granular. Registration Number : 3207.

10. ***Myra affinis*** Bell, 1855

1896. *Myra affinis* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 64, Part, 2, no. 2, Calcutta, p. 205.

Description : Carapace ovoid, crisply granular with 3 spines on the posterior lateral border and one in the middle just above the posterior border, the middle one sharp and recurved, lateral spines dentiform, chelipeds short and stout, hepatic facet granular.

Distribution : Indian Ocean; Arkan, Mergui, Andaman, Gangam, Persian Gulf.

Remarks : This species is distinguished from *Myra fugax* by the short cheliped, the dentiform lateral spines and granular hepatic facet of the carapace. Registration Number : 3239.

Genus ***Ixoides*** Mac Gilchrist, 1905

11. ***Ixoides cornutus*** Mac Gilchrist, 1905

1976. *Ixoides cornutus* Sakai, *Crabs of Japan and the adjacent seas,* p. 102, pl. 31, fig. 2, text figs. 56a, b.

Description : Carapace smooth, transversely ovoid, with a lateral process at the junction of the antero and postero lateral borders; chelipeds slender, front broadly bidentae; large petaloid tubercle on outer end of the posterior border.

Distribution : Indo-Pacific : Japan, Hongkong and Persian Gulf.

Remarks : This species resembles *Ixa inermis* in having a petaloid tubercle on the posterior border and lateral process; but differes in having smooth carapace. The present record is first report of this species from the Indian Seas. Registration Number : 3214.

Genus ***Ixa*** Leach, 1815

12. ***Ixa inermis*** Leach

1896. Alcock, *Jour. Asiatic Soc., Bengal,* Vol. 65, part. 2, no. 2, p. 272.

Description : Channels on carapace shallow, in the form of grooves, lateral processes tapering gradually; a large granular petaloid tubercle present at either end of the posterior margin. Exognath covered with pearly granules.

Distribution : Indian Ocean; India (Orissa)

Remarks : This species is distinguished from other species of the genus available in the study-area by the smooth carapace, epistome projecting beyond the front and by the smooth abdominal tergum. The geographic distribution of this species is restricted to the Indian ocean only. Registration Number : 3271.

13. ***Ixa cylindrus*** (Fabr.) Leach

1896. *Ixa cylindrus* Alcock, *Jour. Asiatic. Soc., Bengal,* Vol. 65, part, 2. No. 2, p. 271.

Description : Carapace with deep and very well defined channels, lateral processes with abruptly accumuniate tip, buccal frame triangular, exognaths with the surface concave and free of granules.

Distribution : Indian Ocean : Andaman and Madras coast.

Remarks : It is distinguished from the closely related *Ixa inermis* by the deeply cut channels of carapace and by the abruptly accuminate lateral processes. The geographic distribution of this species restricted to Indian waters only. Registration Number : 5219

Genus ***Parilia*** Wood-Mason, 1891

14. ***Parilia alcockii*** Eood-Mason, 1891

1894. *Parilia alcockii* Alcock and Anderson, *J.Asiatic. Soc., Bengal,* Vol. 63, pt. 2, p. 177.

1896. Alcock, *Jour. Asiatic. Soc., Bengal,* 65, p. 198.

1976. Sakai, *Crabs of Japan and Adjacent Seas*, p. 106.

Description : Carapace oval, convex, buccal cavern much broader than long, branchial regions enormously puffed out. Chelipeds slender and very long.

Distribution : Indian Ocean : Orissa, Bay of Bengal.

Remarks : The distribution of this species restricted to Indian waters; the other two species included in the genus *Parilia* have been reported only from Japanese waters. Registration Number : 3213.

Genus ***Philyra*** Leach, 1817

15. ***Philyra globosa*** Fabr. De Haan

1895. *Philya globosa* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 65, part-2, p. 243.

1933. Chopra, *Rec. Ind. Mus.* Vol. 35, part-1, p. 27.

Description : Carapace smooth, semicircular epistome projects well beyond the edge of the front; terminal segment of exognath roughly semicircular.

Distribution : Indian Oceans : All along the coast east of India and Karachi.

Remarks : This species is distinguished other species of the genus available in the study-area by the smooth carapace, epistome projecting beyond the front and by the smooth abdominal tergum. The geographic distribution of this species is restricted to the Indian Ocean only. Registration Number : 5220.

16. ***Philyra globulosa*** Milne Edwards, 1868

1896. *Philya globulosa* Alcock, *Jour. Asiatic. Soc., Bengal,* Vol. 65, part-2, nos. 2, p. 245.

Description : Carapace circular, surface granular, finger in the male strongly bent inwards, sixth abdominal tergum with median dentacle in the male.

Distribution : Indian Ocean; Persian Gulf and Indian Coasts.

Remarks : It is distinguished from the other closely related *P. globosa* by the fingers in the male strongly bent inwards and median denticle in the 6th abdominal tergum. The geographic distribution of this species is restricted to Indian Ocean. Registration Number : 3225.

17. ***Philyra scabriscula*** (Fabricius,1798)

1896. *Philyra scabriscula,* Alcock, *Jour. Asiatic. Soc. Bengal,* 65(2), No. 2, p. 239.

1976. *Philyra scabriscula,* Kanthabai and Rama Ro, *News. Zool. Surv. India,* Vol. **3** (6), p. 369.

Description : Carapace discoidal, epistome and the lower border of hepatic facet form a lobe and project beyond the front; carapace ornamented with vesicular granules.

Distribution : Indian Ocean : India and Persian Gulf.

Remarks : This species usually inhabits the intertidal area but very often it comes in trawl and dredge collections and exhibits a variety of colour patterns. Registration Number : 5221.

Subfamily LEUCOSINAE Miers, 1886

Genus ***Leucosia*** Weber, 1795

18. ***Leucosia anatum*** (Herbst, 1783)

1896. *Leucosides longiforms* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. **65** (2) No. 2, p. 220.

Description : Carapace bluntly rhomboidal, anterolateral borders sinuous, longer in size than any other species of the genus.

Distribution : Indo-Pacific : India and northwest Australia, Japan, China, Formosa, Hongkong, Gulf of Thailand.

Remarks : It differs from all known species of the genus by its comparative giant size and colour pattern.

19. ***Leucosia craniolaris*** (Linnaeus, 1758)

1897. *Leucosis craniolaris* Alcock, *Jour. Asiatic. Soc., Bengal,* Vol. 65. Part-2, no. 2, p. 234.

1976. Sakai, *Crabs of Japan and the Adjacent Seas.* p. 122, pl. 35, fig. 3.

Description : Carapace hexagonal; thoarcic sinus with deep cavity, edge not invaginated, its boundary convex and granular. Front ends in five prongs. Surface below the posterior margin of carapace granular.

Distribution : Indo-Pacific : India and northwest Australia, Japan, China Formosa, Hongkong, Gulf of Thailand.

Remarks : The deep thoracic sinus and the granular surface below the carapace margin enable us to distinguish this species from closely alied. *L. pubescens.* It differs from *L. rhomboidalis* in having smooth inner-surface of hand. Registration Number : 3242.

20. ***Leucosia rhomboidalis*** De Haan, 1841

1898. *Leucosis rhomboidalis* Alcock, *Jour. Asiatic. Soc., Bengal,* Vol. 65. Part-2, no. 2, p. 234.

1977. Sakai, *Crabs of Japan and the Adjacent Seas.* p.123, pl. 35, fig. 5, text fig. 65f.

Description : Carapace rhomboidal, surface below the carapace margin granular; front ends in 3 teeth, the median tooth prominent, inner surface of hand with two prominent rows of granules.

Distribution : Indo-Pacific : Coast of India, Ceylon and Andamans, Japan, Hongkong and Manila.

Remarks : The presence of granules below the posterior carapace margin and the two prominent rows of granules on the inner surface of the hand, separate this species from *L. pubescens.* Further the shallow thoracic sinus enables us to distinguish this species from *L. craniolaris.* Registration Number : 3272.

21. ***Leucosia longifrons*** De Haan, 1841

1896. *Leucosia longifrons* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 65, part-2, no. 2, p. 217.

Description : Hepatic regions forming distinct mammary bulge, thoracic sinus deep, invaginated anteriorly; meropodites of legs smooth.

Distribution : Indian Ocean : India, Ceylon margin and Persian Gulf.

Remarks : The prominent mammary bugle on the hepatic region and the smooth meropodites of ambulatory legs distinguish this from other species available in the study area. Registration Number : 3273.

22. ***Leucosia pubescensis*** Miers, 1886

1896. *Leucosia pubescens* Alcock, *Jour. Asiatic. Soc. Bengal* Vol. 64, part-2, Calcutta, p. 233.

1957. Chhapgar, *Contribution No.1 of the Taraporevala Marine Biological Station,* p. 8, pl. 2g.

Description : Carapace hexagonal, smooth, surface below the posterior margin of carapace smooth; propodus with smooth inner edge.

Distribution : Indian Ocean : Coast of India, Persian Gulf, Thailand, Mergui, Hongkong and Australia.

Remarks : This species is distinguished from *L. Rhomboidalis* and *L. craniolaris* occurring in the study area, by the smooth surface below the posterior margin of carapace and inner surface of propodus. Registration Number : 3274.

Family CALAPPIDAE Dana, 1852

Subfamily CALAPPINAE Alcock, 1896

Genus ***Calappa*** Weber, 1795

23. ***Calappa lophos*** (Herbst, 1782)

1894. *Calappa lophos,* Alcock and Anderson, *Jour. Asiatic. Soc. Bengal,* Vol. 65, part-2, no. 2, p. 144.

1976. Sakai, *Crabs of Japan and Adjacent Seas.* P. 129, pl. 37, fig. 1, p. 38, fig. 2.

Description : Carapace smooth, clypeiform expansion well developed, anterior border of endostominal septum deeply concave, no spine on the posterior border of the carapace in the middle.

Distribution : Indo-Pacific : east and west coasts of India, Persian Gulf, Dares-Salam, Laccadives, Ceylon, Siam, Japan, Celebes, Ambonia, Australia.

Remarks : This is a common species occurring throughout the year in the Madras Coast. It is easily distinguished by the smooth carapace, beaded posterior border with indistinct tooth. Registration Number : 5222.

24. ***Calappa terraereginae*** Ward, 1936

1976. *Calappa terraereginae,* Sakai, *Crabs of Japan and Adjacent Seas,* P. 130, text figs 72a, b.

Description : Carapace smooth, free margins cut into six teeth, the posterior border produced beyond the level of the clyperform expansions.

Distribution : Indo-Pacific : Madras, Bay of Bengal, North east and western Australia and Korea coast.

Remarks : It is easily distinguished from other species occurring in the area by its posterior border produced beyond the level of the margins of clypeiform expansions. The present record is the first report of this species from Indian Seas. Registration Number : 5223.

25. ***Calappa philargius*** (Linnaeus, 1758)

1895. *Calappa philargius* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 65, part 2, no. 2, p. 145.

1976. Sakai, *Crabs of Japan and the Adjacent Seas,* p. 130, pl. 37, fig. 2.

Description : Carapace smooth, anterior border of endostominal septum strongly convex and projecting ; posterior border marked with three prominent stout spines; one in the middle and one on either side.

Distribution : Indo-Pacific, Madras, Bay of Bengal, north east and western Australia and Korea coast.

Remarks : It is easily distinguished from other species occurring in the area by its posterior border produced beyond the level of the margins of clypeiform expansions. The present record is the first report of this species from Indian Seas. Registration Number : 3255.

26. ***Calappa gallus,*** Herbst, 1803

1896. *Calappa gallus* Alcock. *Jour. Asiatic Soc., Bengal* Vol. 65, part-2, no. 146.

1976. Sakai. *Crabs of japan and Adjacent Seas,* p. 131, p. 39, fig. 2

Description : Hepatic region strongly depressed tubercles on the hind row of hepatic region largest; posterior third of the carapace covered with transverse granulated ridges; front thick forming a laminar rostrum.

Distribution : Red Sea, Indian Ocean, Pacific Ocean and Atlantic Ocean.

Remarks : This species is easily distinguished from other species of the genus occurring in the area by the strong depression in the hepatic region. This is the only species having distribution in the Atlantic Ocean and occurs throughout the year in the Madras Coast. Rathbun (1937) has drawn attention to the variations in the length and breadth of carapace and other morphological characters exhibited by this species. Registration Number : 3253.

27. ***Calappa japonica*** Ortmann, 1892

1984. *Calappa japonica* Alcock and Anderson, *Jour. Asiatic. Soc. Bengal,* Vol. LXIII, pt. 2, p. 177.

1897. Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 65, part-2, no. 2, p. 146.

Description : Branchial regions of the carapace greatly inflated and covered with smooth maxillary tubercles with red base and yellow apex.

Distribution : Indo-Pacific : Bay of Bengal and coast of South Africa, Japan.

Remarks : The large size and smooth mammillary tubercles with red base and yellow apex distinguishes this species from other species of the genus occurring in the study area. Registration Number : 3248.

28. ***Calappa pustulosa*** Alcock, 1896

1896. *Calappa pustulosa* Alcock, *Jour. Asiatic. Soc. Bengal,* 65 (2), 147.

1976. Sakai, *Crabs of Japan and the Adjacent Seas.*

Description : Carapace subcircular, five obtuse teeth around the clypeiform expansions; surface covered with large tubercles arranged in seen parallel rows.

Distribution : Indo-Pacific : Indian coasts, Australia, Red Sea and South Africa, Japan, China to Southern Asia.

Remarks : The subcircular Carapace and five numbers of obtuse teeth on the clypeiform expansions distinguish this space. This is the first record of this four chennai coast. Registration Number : 3256.

Subfamily MATUTINAE Alcock, 1896

Genus ***Matuta*** Weber, 1795

29. ***Matuta lunaris*** (Forskal, 1775)

1976. *Matuta lunairs* Chopra, *Crabs of Japan and the Adjacent Seas,* P. 140, pl. 44, fig. 1.

1896. *Matuta victor* Alcock, *Jour. Asiatic. Soc., Bengal,* Vol. 65, part-2, no. 2, p. 160.

1927. Gravely, *Bull. Madras Govt. Mus.,* Vol. 1, p. 142.

Description : A prominent spine at the angle of the propodus were it comes it contact with the external angle of the merus; carapace covered with uniform minute red spots.

Distribution : Indo-Pacific : Indian coasts, Australia, Red Sea and south Africa, Japan, China to Southern Asia.

Remarks : A distinct spine at the angle of propodus where it come in contact with the external angle of merus clearly, distinguish the species from other species of this genus. Registration Number : 3219.

30. ***Matuta plainpes*** Fabricius, 1798

1933. *Matuta planipes* Chopra, *Rec. Ind. Mus.* Vol. 35, p. 32.

1976. Sakai, *Crabs of Japan and the Adjacent Seas,* p. 141, pl. 44, fig. 2.

Description : Tubercle at the angle of propodus where it touches the external angle of the merus indistinct. Carapace coloured with vermicular red line, forming spots or incomplete rings on the anterior portinon of the carapace. The posterior region with narrow longitudinal loops.

Distribution : Indo-Pacific : India, west Australia and Japan and North China.

Remarks : The presence of a tubercle at the angle where the propodus comes in contact with the distal lobule of the merus clearly distinguish the species form other species. Registration Number : 5224.

31. ***Matuta miersi*** Henderson, 1887

1896. *Matuta miersii* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 64, part-2, p. 163.

1976. Sakai, *Crabs of Japan and the Adjacent Seas,* p. 142, pl. 45, fig. 2.

Description : Front broader than orbit, posterior and postero-lateral borders smooth, finely beaded and prolonged into the border of the lateral spine (along the edge. Longitudinal ridge of dactylus of chelipeds smooth; lower surface of propodus very rough in the adults.

Distribution : Indo-Pacific : South India, Ceylon and Japan.

Remarks : It can be distinguished from other species by the smooth finely beaded posterolateral border, by its small size and the less developed lateral spine. Registration Number : 5225.

Subsection OXYRHYNCHA Latreille, 1803

Family MAJIDAE Samoulle,1819

Subfamily PISINAE Alcock,1895

Genus ***Naxoides*** A. Milne Edwards, 1865

32. ***Naxoides mammilata*** Henderson, 1887

1976. *Naxoides mammilata* Sakai, *Crabs of Japan and Adjacent Seas,* p. 217, pl. 75, fig. 1, 2.

Description : Carapace elongate, triangular and covered with conical spines. Rostral spine longer than half the length of Carapace. Ambulatory legs thick and the meropodites are unarmed. Propodus of cheliped inflated.

Distribution : Indo-Pacific : Japan, Solomon Bank and Madras Coast.

Remarks : The propodus of cheliped of this species is very much inflated, the amount of inflation being pronounced in full grown mates. The present report is the first report of this species from the Indian Seas. Registration Number : 3247.

Genus ***Phalangipus*** Latreille, 1825

33. ***Phalangipus hystrix*** (Miers, 1836)

1895. *Naxia hystrix* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 64, part-2, p. 220.

1895. *Egeria investigatoris* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 64, part-2, p. 225.

Description : Rostral spines with a subdistal accessory spinule. Carapace armed with numerous long sharp spines; one on the intestinel region very large and projecting horizontally backwards; the sternum has a transverse group of spines on every segment. Palm of chelipeds long, slender and cylinderical.

Distribution : Indo-Pacific : Bay of Bengal, Andama, Sri Lanka, Red Sea, East China, Phillippines, East China, Japan, Malay Archipelago and Australia.

Remarks : This species differs from *P. filliformis* (Rathbun, 1916) in having rostral spine armed with subdistal accessary spinule and chelipeds cylinderical and slender propodus. This species has been previously recorded from off Ceylon and described by Alcock as *Eigeria investigatoris* and from Andaman as *Naxia hystrix.* The present record is the first report of this species from the study area. Registration Number : 3222.

34. ***Phalangipus filliformis*** Rathbun, 1916

1976. *Phalangipus filiformis* Sakai, *Crabs of Japan and the Adjacent Seas,* p. 220, pl. 81, fig. 3, text fig. 118.

Description : Carapace subpyriform, coverd with symmetrically disposed spines and spinules; propodus inflated a pair of large teeth in the seternum between the chelipeds.

Distribution : Indo-Pacific : Japan, south China Sea, Philippines, India and Malay Archipelago.

Remarks : This species differs from *P. hystrix* in having two large teeth in between the cheliped. Registration Number : 5226.

Genus ***Chorilibinia*** Lockington, 1876

35. ***Chorilibinia andamanica*** Alcock, 1895

1895. *Chorilibinia andamanica* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 64, part-2, no. 2, p. 223, pl. 19a, fig. 37.

Description : Carapace spinose, broadly subpyriform; rostral spines coalescent at the basal half; orbit with a supraocular cave and a cupped post ocular tooth. Chelipeds slender, sternum between the chelipeds, carries a pair of very strong sharp teeth.

Distribution : Andaman and Madras.

Remarks : The presence of a pair of very sharp teeth between the chelipeds distinguish this species. This is the first record of this species from the study area. Registration Number : 5163.

Genus ***Hyastenus*** White, 1847

36. ***Hyastenus aries*** (Latr. 1825)

1860. *Hyastenus aries* Miers, *H.M.S. Challenger, Zool.*, part-29, Vol. 17, p. 56.

Description : Rostral horns short, less divergent carapace pyriform, convex and swollen, densely tomentose, anterior angle of the supra-orbital cave obtuse, a pair of tubercles present in the gastric region.

Distribution : Indian Ocean : Orissa Coast, Vartaban, Straits of Malacca.

Remarks : Two gastric tubercles in the mid-line enable us to distinguish this species. This is the only species of genus *Hyastenus* in the study area. Registration Number : 3270.

Genus ***Doclea*** Leach, 1814

37. ***Doclea ovis*** (Herbstm 1788)

1895. *Doclea ovis* Alcock, *Jour. Asiatic. Soc. Bengal*, Vol. 64, part-2, p. 227.

1976. Sakai, *Crabs of Japan and the Adjacent Seas*, p. 231, pl. 80, fig. 2.

Description : Anterolateral border with four sharp teeth. Propodus in males inflated, entire body except the hands and the tips of the dactyli covered with dense soft fur.

Distribution : Indo-Pacific : East coast of India, Singapore, Hongkong and Japan.

Remarks : The short rostrum, smooth carapace and inflated propodus separates this species from its closely related *D. tetraptera* and *D. canalifera*. Registration Number : 4858.

38. ***Doclea hybrida*** (Fabr.) Miline Edwards, 1798

1834. *Doclea hybrida* Milne Edwards, *Histoire naturelle des Crustaces, Paris*, Vol. 1, p. 294.

Description : Pterygostamian region not canaliculated, carapace subglobular and marked only with tubercles (except the anterolateral border).

Distribution : East and West coast of India.

Remarks : It resembles *D. muricata* in having the canaliculated pterygostomian region and in the arrangement of tubercles on the carapace but it differs from *D. muricata* in having tubercles on the carapace in place of spines. Registration Number : 3265.

39. ***Doclea muricata*** (Herbst.)Miline Edwards

1834. *Doclea muricata* Milne Edwards, *Histoire naturelle des Crustaces, Paris*, Vol. 1, p. 355.

Description : Carapace subglobular, with a row of sharp long spines in the middle,

anterolateral margins with four spines, the last one being the largest, pterogostomium regions not canaliculated.

Distribution : East and West coasts of India.

Remarks : It differs from all other species of the genus *Doclea* in having 5 series of large sharp spines on the carapace. Registration Number : 3216.

40. ***Doclea canalifera*** Stimpson, 1853

1895. *Doclea canalifera* Alcock, Jour. Asiatic. Soc. Bengal, Vol. 64, part-2, no. 2, Calcutta, p. 228.

1976. Sakai, *Crabs of Japan and the Adjacent Seas*, P. 231, pl. 80, fig. 1.

Description : Carapace with three spines down the middle line; and lateral spine on the branchial region, one each on the gastric, a large spine on the cardiac region and a much larger one on the posterior border. Body and appendages, except the fingers and dactylo-podites covered ith velvet like tomentum.

Distribution : Indo-Pacific : east coast of India, Singapore, Hongkong, Japan, Mouth of the Hoogly, orissa, Arakan.

Remarks : The buff coloured velvet like tomentum easily distinguish this species. This is the first record of this species from the study area. Registration Number : 3267.

Family PARTHONOPIDAE Miers, 1897

Subfamily Parthenopinae Miers, 1879

Genus ***Parthenope*** Weber, 1795

Subgenus ***Parthenope*** Weber, 1795

41. ***Parthenope (Parthenope) longimanus*** (Linnaeus, 1764)

1895. *Lambrus longimanus* Alcock, Jour. *Asiatic. Soc. Bengal,* Vol. 64, part-2, p. 95.

1976. Sakai, *Crabs of Japan and the Adjacent Seas*, P. 22, text fig.144.

Description : Carapace carinate, surface granular, Cheliped enormously developed. The median rostral process thin.

Distribution : Indo-Pacific : Japan, Philippines, Gulf of Thailand, Ambonia, Celebes, Java, New Guinea, Australia westwards to Singapore, Mothua, Andaman, India, Ceylon and Maruities.

Remarks : This is one of the common species occurring throughout the year in the Madras Coast. Registration Number : 3260.

Subgenus ***Platylambrus*** Stimpson

42. ***Parthenope (Platylambrus) echinatuas*** (Linnaeus, 1764)

1895. *Lambrus echinatus* Alcock, Jour. *Asiatic. Soc. Bengal*, Vol. 64, part-2, p. 264.

Description : Carapace broadly triangular, rostrum in the form of a curved beak, deep grooves separate branchial region from cardiac and gastric regions.

Distribution : Indian Ocean: Coast of Orissa (Bay of Bengal)

Remarks : The characterestic form of beak and elevated regions of the carapace enable us to distinguish this species. The present report is the first record of this species from the Madras Coast. Registration Number : 3279.

Subfamily AETHRINAE Dana, 1852

Genus ***Cryptopodia*** H. Milne Edwards, 1834

43. ***Cryptopodia fornicata*** (Fabr.)

1895. *Cryptopodia fornicata* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 64, part-2, p. 282.

1976. • *Parthenope(Cryptopodia) fornicata* Sakai, *Crabs of Japan and the Adjacent Seas,* P. 292, text fig.163.

Description : Carapace broadly triangular, depressed, posterior and posterolateral margins unbroken.

Distribution : Indian Ocean : India, Singapore, Australia, Ceylon, Gulf of Martaban, Persian Gulf, Pacific Ocean, Japan, China Sea and Philippines.

Remarks : The smooth surface of carapace with the exception of depression the unbroken posterolateral margin and the form of rostrum clearly separate this species from *Cryptopodia angulata* the only availbable species of this genus. Registration umber : 3231.

44. ***Cryptopodia angulata*** Ed. and Lucas,1841

(Pl.23b, fig.46)

1895. *Cryptopodia angulata* Alcock, Materials for a Carainological Fauna of India. The Brachyura Oxyri-hyncha *Jour.Asiatic Soc.Bengal* Vol. 64(2), No. 2, pp : 157-291.

Description : Carapace pentagonal, posterior and posterolateral margins deeply dentated and all angles produced into curved spines.

Distribution : Restricted to the Indian Water only.

Remarks : According to Chhapgar (1957) the species "does not appear to be common in Indian water." The present study reveals that this species occurs commonly. Registration Number : 5227.

Subsection BRACHYRHYNCHA Borradile, 1903

Family XANTHIDAE Alcock, 1898

Subfamily XANTHINAE Alcock, 1898

Alliance HALIMEDOIDA Alcock, 1898

Genus ***Halimeda*** De Haan, 1835

45. ***Halimeda octodes*** (Herbst, 1783)

1896. *Polycremnus ochtodes* Alcock, Jour. Asiatic. Soc. Bengal, Vol. 67, part-2, no. 1, p. 135.

1939. *Halimeda ochtodes* Sakai *studies on the Crabs of Japan,* p. 445.

Description : Carapace pentagonal, moderately broad; front narrow, bilobed and projects well beyond the orbits. Last segment of male abdomen is unusually long.

Distribution : Indo-Pacific : Red Sea, East coast of India, Penang, Singapore, Gulf of Thailand, Hongkong and Japan.

Remarks : This species has been previously recorded from Madras and it occurs commonly in the Madras Coast. Registration Number : 5228.

Genus ***Liagore*** De Haan, 1833

46. ***Liagore rubramaculata*** De Haan, 1835

1897. *Liagore rubramaculata* Alcock, Jour. Asiatic. Soc. Bengal, Vol.64, part-2, p.227

1976. Sakai, Crabs of Japan and the Adjacent Seas, P. 389, pl. 136, fig. 1.

Description : Carapace quadrilateral, smooth, chelipeds massive, carapace and chelipeds with large red spots.

Distribution : Indo-Pacific : Bay of Bengal, Hongkong and Japan.

Remarks : The genus *Liagore* includes two species namely *rubramaculata* and *L. erythmatica.* The present study reveals that *L. rubramaculata* occurs commonly in the Madras Coast. Registration Number : 3234.

Alliance XANTHOIDA Alcock, 1898

Genus ***Demania*** Laurie, 1906

47. ***Demania scaberrima*** (Walker, 1887)

1898. *Xantho (Lophoxanthus) scaberrimus* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 67, part-2, no. 1 p. 116.

1976. *Demania scabberium* Sakai, *Crabs of Japan and the Adjacent Seas,* P. 420, pl. 151, fig. 2.

Description : Carapace and chelipeds are thickly covered with well defined tubercles, regions of carapace well defined. Anterolateral borders four lobed. Anterior borders of carpus and propodites of first three pairs of legs, serrated.

Distribution : Indo-Pacific : Coast of India, Singapore, Gulf of Tamilnadu and Hongkong and Japan.

Remarks : The scaley tubercles on the entire body of the animal enable easy identification of this species. This is the first record of this species from Madras Coast. Registration Number : 5229.

Alliance GALENOIDA Alcock, 1898

Genus ***Galena*** De Haan, 1833

48. ***Galena bispinosa*** (Herbst, 1765)

1897. *Galene bispinosa* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 67, part-2, no. 1, p. 136.

1976. Sakai, *Crabs of Japan and the Adjacent Seas,* P. 441, pl. 157, fig. 4.

Description : Carapace quadrilateral, convex anterolateral border indistinctly four lobed; chelipeds massive and unequal, abdomen 7 distinct segments.

Distribution : Indo-Pacific : Coast of India, Queensland, Singapore, Hongkong, Japan, Formosa and China.

Remarks : This is the only economically exploited xanthid crab. It shows remarkable variation in the colour pattern. Registration Number : 4780.

Subfmaily ACTAEINAE Alcock, 1898

Genus ***Actaea*** De Haan, 1833

49. ***Actaea savignyi*** (H. Milne Edwards,1834)

1896. *Actaea granulata* Alcock, *Jour. Asiatic. Soc. Bengal*, Vol. 67, part-2, no. 2, p. 151.

1965. *Actaea savignyi* Sakai, *Imperial Household, Tokyo*, P. 145, p. 72, fig. 2.

Description : Carapace thickly covered with mulberry like coarse tubercles, front sharply bilobed, antero-lateral border four lobed.

Distribution : Indo-Pacific Seychelles, Persian Gulf, Red Sea, India, Ceylon, Maldives and Laccadives, Malaya, Hongkong, Australia, New Zealand, Karachi, Ganjam Coast margin and Malacca.

Remarks : This species occurs very rarely in the Madras and is distinguished by its mulberry-like carapace. Registration Number : 3240.

Subfamily MENIPPINAE Ortmann, 1893

Genus ***Ozius*** H. Milne Edwards, 1834

50. ***Ozius rugulosus*** Stimpson, 1858

1896. *Ozius regulosus* Alcock, *Jour. Asiatic. Soc. Bengal*, Vol. 67.

1976. Sakai, *Crabs of Japan and the Adjacent Seas*, P. 472, pl. 68, fig. 1.

Description : Carapace transversely oblate-oval anterolateral borders five-lobed and not crested; branchial regions with two ridges, carpus and palm, regose and reticulated.

Distribution : Indo-Pacific : South Africa, Red Sea, India, part Deninson, New Caledonia, Samoa, Japan to Tahiti.

Remarks : This species is mainly to be collected from the intertidal zone; however it does occur occasionally over sandy rough grounds down to a depth of 30 metres. Registration Number : 4779.

Subfamily PILUMNAE Ortmann, 1893

Genus ***Pilumnus*** Leach, 1845

51. ***Pilumnus scabrisculus*** (Fabricius,1793)

1896. *Pilumnus shuiteri* Alcock, *Jour. Asiatic. Soc. Bengal*, Vol. 67, part-2, no. 1.

1976. Sakai, *Crabs of Japan and the Adjacent Seas,* P. 486, text fig. 259.

Description : Carapace transversely oval, regions of carapace faintly demarcted, notches in the orbital margins weakly developed.

Distribution : Philippines, Malay Archipealgo, Samoa, Andamans, Paulo Edam, Aldabra and Penang.

Remarks : This is the first record from Madras Coast and it occurs rarely in the collection. Registration Number : 3277.

Family GONEPLACIDAE Dana, 1851.

Subfamily CARCINOPLACINAE Miers, 1886

Genus ***Carcinoplax*** H.Milne Edwards,1852

52. ***Carcinoplax longimana*** De Haan, 1835

1898. *Carcinoplax longimana* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 69, part-2, no. 3, p. 303.

1976. Sakai, *Crabs of Japan and the Adjacent Seas.*

Description : Carapace vaulted fore and aft; anterolateral borders with three teeth end, cheliped long, tiny spine present at the outer angle of wrist.

Distribution : Indo-Pacific : India, Andaman, South Africa, Coast of Japan and China and Gulf of Martaban.

Remarks : This species is easily distinguished by the convex carapace, much longer cheliped, and spine at the outer angle of wrist. Registration Number : 5230.

Genus ***Eucrate*** De Haan, 1835

53. ***Eucrate sexdentata*** Haswell, 1881

1900. *Eucrate sexdentata* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 69, part-3, no. 3, p. 301.

Description : Carapace smooth, anterolateral border cut into 3 teeth, the last one in the form of sharp spine. Anteror half of carapacecovered with rectangular purplish markings. Dactylus of 4th ambulatory legs straight.

Distribution : Indian Ocean.

Remarks : Anterolateral, spine-shaped, third tooth and the smooth a carapace distinguishes this species from *Eucrate crenat.* Registration Number : 3228.

54. ***Eucrate crenata*** De Haan, 1835

1899. *Eucrate crenata* Alcock, *Jour. Asiatic. Soc. Bengal,* Vol. 69, part-2, no. 2, p. 300.

1976. Sakai, *Crabs of Japan and the Adjacent Seas,* P. 535, pl. 192, fig. 1.

Description : Carapace smooth, anterolateral margins with four teeth, dactylus of last pair of legs palmulate.

Distribution : Indo-Pacific : Seychelles, India Andaman, Coast of Korea, China and Japan.

Remarks : This species differs from *E. sexdentata* in having four blunt teeth in the anterolateral border. In *E. sexdentata* this anterolateral border has three teeth, with last one produced in to a spine. Registration Number : 5231.

DISCUSSION

The present study is based on the benthic crabs collected from the Madras Coast during the period 1982-1986. The collections included 54 species belonging to 28 genera under eight families namely Dromiidae, Dorippidae, Leucosiidae, Calappidae, Majidae, Parthenopidae, Xanthidae and Goneoplacidae. Of these, a maximum number of 18 species belonged to family Leucosiidae, followed by 9 species each under families Calappidae and Majidae, 6 species under family Xanthidae, 4 species under family Parthenopidae, 3 species under family Goneoplacidae and 2 species each under families Dromiidae and Dorappidae. Nine species are reported for the first time from the study area. It is interesting to note that the study of material collected from shelf waters yielded 54 species including nine new records. It is very probable that further studies over the continental shelf would add to the number of species that are being reported in this study.

The geographic distribution of the species included in the present work falls under three categories mainly (1) Species endemic to Indian Ocean, (2) Indo-Pacific species and (3) Cosmopolitan species.

(1) Species endemic to Indian Ocean : *Philyra globosa* (Fabricius), *Philyra globulosa, Philyra scabriuscula, Arcania septemspinosa, Cryptopodia angulata, Chorilibinia andamanica, Parilia alcocki* are endemic to Indian Ocean.

(2) Indo-Pacific Species : A total number of 40 species included in the present work, two species of family Drommidae, two species of family Dorippidae, eight species of family Leucosiidae, nine species of family Calappidae, five species of family Majidae, two species of family Parthenopidae, six species of family Xanthidae and two species of family Goneoplacidae, are Indo-Pacific in distribution.

(3) Cosmopolitan Species : Only one species i.e. *Calappa gallus* available in the present collection is reported from all over the world oceans and hence known to be cosmopolitan in geographic distribution.

Bathymetric Distribution : Our knoweldge on the bathymetric distribution of Brachyuran fauna of the Indian seas is fragmentary. The present study reveals that more than 90% of the

species recorded from shallow inshore waters occur under 200 metres. Four species *Philyra scabriscual, Matuta lunaris, Matuta planipes* and *Ozius regulosus* are predominently intertidal inhabitat. Of the three species of genus *Matuta* represented in the present study. *Matuta miersi* was collected at a depth of 30-50 metres, while the other two are intertidal forms. *Leucosia anatum, L.craniolaris, Calappa lophos; C. terraereginae, Halimede octodes, Cryptopodia frontica, Liagore rumbramaculata* were observed to extend upto 50 metres. A maximum number of 20 species belonging to 12 genera i.e. *Dromia, Dorippe, Paradorippe, Arcania, Ixoides, Calappa, Doclea, Parthenope, Carcinoplax, Pilumnus, Demania* and *Leucosia* were collected from soft shallow sand. *Dorippe frascone* and *Paradorippe* inhabited soft muddy bottom and shelly ground. Species of family Leucosiidae were found to inhabit soft sandy and shelly ground.

Investigations revealed that the following species occurred throughout the year in the Madras Coast; *Dromia dehaani, Dorippe (Dorippe) frascone, Arcania undecimspinosa, Arcania septemspinosa, Myra fugx, Philyra globusa, Philyra scabriscula, L. pubescens, Ixa inermis, C. gallus, C. lophos, Matuta miersi, Parthenope (Parthenope) longimanus, Liagore rubramaculata, Galena spinosa, Doclea ovis, D. hybrida.*

The following species were rarely collected during the period of study. *Arcania erinaceous, Parilia alcocki, L. craniolaris, L. rhomboidalis, Actea savignyi, E. crenata, L. longifronis.*

The present data indicate the rather rich and varied brachyuran fauna inhabiting the Madras Coast. Another line of future research would be to determine the breeding season of each of the brachyuran species available in this area.

Studies on the biology and fisheries of Brachyurans are mainly concerning the edible forms. Thampi (1957), Menon (1952) studied the fisheries of *Neptunus* species. Sankoli (1961) studied the larval stage of *Philyra corralicola, Arcania septemspinosa*, Rajabai and Naidu (1954-1960), Chandran (1968), Krishnaraj and Ramamurthy (1976), Nayak (1977), Kakbati (1982), Mohan and Kannupandi (1985) worked on different aspect of biology of common brachyuran crabs. However, further work is needed on the ecology and biology on other species of this group inhabiting the area; as this group of animals play a major role in the marine ecosystem and gaining importance in fisheries.

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CEPHALOPODA

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Cephalopods are bilaterally symmetrical marine mollusks with well-developed head and a crown of tentacles. The terminology of this group is based on the presence of foot attached to the head (Greek "Kephale" = head, "Podus = foot). Our knowledge on the cephalopods dates back to the days of Aristotle. During the 19th century Orbigny (1834-1848), Gray (1849), Steenstrup (1856, 1857, 1875, 1880, 1881) Verrill (1880, 1881, 1882), and Hoyle (1885a, 1885b, 1886) made valuable contributions to the study of cephalopod taxonomy. At the dawn of the present century, contributions of Pfeffer (1900, 1908, 1912), Chun (1910), Neaf (1912, 1916, 1921, 1923), Thiele (1921, 1935), Grimpe (1916, 1925) and Joubin (1920, 1924, 1931, 1933) gave satisfactory outline to the classification of this group.

During the recent years the study of the cephalopod taxonomy has received added impetus with increased attention being paid for the exploitation of cephalopods for human consumption. Sasaki (1929), Robson (1929,1932), Adam (1938a, 1938b, 1939, 1942, 1952, 1954, 1959, 1960, 1973).Voss (1956,1963,1977), Fillippova (1968), Roper and Young (1968), Young and Roper (1969,1969a). Young (1972) and Roper *et al.* (1969, 1984) have brought out important publications paving way for a fuller understanding of cephalopod taxonomy.

Perusal of literature reveals the fact that proper attention has not been paid to the study of the cephalopod fauna of the Indian seas and there are only a few reports on the subject. Important works are by Goodrich (1896), Massy (1916), Robson (1926, 1929, 1932), Winck-worth (1936), Adam (1939), Gravely (1941), Rao (1954) and Adam and Rees (1966). Silas (1968) gave a catalogue of the known species of cephalopods from the Indian Ocean. Oommen (1966, 1976, 1977) studied some cephalopods from the west coast of India and Sials *et al.*, (1982), reported the squid and cuttlefish resources of the Indian seas. Jothinayagam (1987) has studied the Cephalopoda of the Madras Coast.

Although Madras is one among the areas in the eastern Indian Ocean where a large number of cephalopod species are landed, very little information is available in literature, on their species composition, seasonal abundance and other aspects of their biology. The present account on Cephalopoda included 26 species from the Madras Coast.

Material for the study were collected during the period 1975-1982 from the fish-landing centers along the Chennai coast between Pulicat in the north and Kalpakkam in the south

and from the traweling operations during the fortnightly cruises of 32 feet research boat "Chota Investigator" of the Marine Biological Station, Zoological Survey of India, Madras, up to a depth of about 50 m between Ennore in the north and Thiruvanmiyur in the south in which the author participated regularly. The material form the shore-seines operated along the Chennai coast were also collected and utilized for the study. The cephalopod holdings of the Zoological Survey of India, Kolkata and the reserve collections available at the Marine Biological Station, Zoological Survey of India, Madras were also examined for comparative study. A total number of 1858 examples of cephalopods were examined during the course of the present study.

LIST OF CEPHALOPODS OF THE CHENNAI COAST

Class CEPHALOPODA Cuvier, 1798

Subclass COLEOIDEA Bather, 1888

Order SEPIOIDAE Neaf, 1916

Family SEPIIDAE Keferstein, 1866

Genus ***Sepia*** Linnaeus, 1758

1. *Sepia aculeata* Orbigny, 1848
2. *Sepia pharaonis* Ehrenberg,1831
3. *Sepia koblensis* Hoyle, 1885
4. *Sepia brevimana Steenstrup,* 1875
5. *Septa prashadi* Winckworth, 1936

Genus ***Sepiella*** Grey, 1849

6. *Sepiella inermis* Orbigny, 1848

Genus ***Aurosepina*** Jothinayagam,1987

7. *Aurosepina arabica* (Massy, 1916)

Family SEPIOLIDAE Leach, 1817

Subfamily SEPIOLINAE Appellof, 1898

Genus ***Euprymna*** Steenstrup, 1887

8. *Euprymna berryi* Sasaki, 1929

Genus ***Inioteuthis*** Verrill, 1881

9. *Inioteuthis japonica* Verrill, 1881
10. *Inioteuthis maculosa* Goodrich, 1896

Order TEUTHOIDAE Neaf, 1916

Suborder MYOPSIDA Orbigbny, 1845

Family LOLIGINIDAE steenstrup, 1856

Genus ***Loligo*** Schneider, 1784

11. *Loligo duvauceli* Orbigny, 1848
12. *Loligo uyi* Wakiya and Ishikawa, 1921
13. *Loligo bengalensis* Jothinayagam, 1987

Genus ***Doryteuthis*** Neaf, 1912

14. *Doryteuthis singhalensis* Ortmann, 1891

Genus ***Sepioteuthis*** Blainville, 1824

15. *Spioteuthis lessoniana* Lesson, 1830

Genus ***Loliolus*** Steenstrup, 1856

16. *Loliolus investagatoris* Goodrich, 1896

Order OCTOPODA Leach, 1818

Suborder INCRIRATA Grimpe, 1916

Family OCTOPODIDAE Orbigny, 1845

Subfamily OCTOPODINAE Grimpe, 1921

Genus ***Octopus*** Lamarck, 1798

17. *Octopus aegina* Gray, 1849
18. *Octopus rugosus* Bose, 1792
19. *Octopus macropus* Risso, 1826
20. *Octopus fusiformis* brock, 1887
21. *Octopus areolatus* Orbigny, 1840
22. *Octopus globosus* Appellof, 1886
23. *Octopus cyaneus* Gray, 1849

Genus ***Cistopus*** Gray, 1849

24. *Cistopus indicus* Orbigny, 1840

Genus ***Gaplochlaena*** Robson, 1929

25. *Haplochlaena fasciata* Hoyle, 1886

Genus ***Berrya*** Adam, 1939

26. *Berrya hoylri* (Berry, 1909)

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ECHINODERMATA

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INTRODUCTION

The information on the echinoderms of Chennai coast is scattered in several publications on the echinoderm fauna of India. Only the reports chiefly of Gravely (1941), Satyamurti (1976) and James (1987) contain a compilation of the species. There have been several taxonomic changes since then. Following is the list of echinoderm prepared mainly from the above works and corrected from several other sources. The preparation of the list of species of echinoderms was supported by V. Sivaswamy, Marine Biological Station, ZSI, Chennai.

LIST OF SPECIES FROM CHENNAI COAST

Phylum ECHINODERMATA

Class CRINOIDEA

Order COMATULIDA

Family MARIAMETRIDA

1. *Lamprometra palmata* J.Muller, 1841

Family TROPIOMETRIDAE

2. *Tropiometra carinata* (Lamarck, 1816)

Class ASTEROIDEA

Order PAXILLOSIDA

Family LUIDIIAE

3. *Luidia hardwicki* (Gray, 1840)
4. *Luidia maculata* Muller & Troschel, 1842

Family ASTROPECTINIDAE

5. *Astropecten bengalensis* Doderlionu, 1917

6. *Astropecten indicus* Doderlionu, 1917
7. *Astropecten zebra* Sladen, 1883

Suborder VALVATIDA

Family OREASTERIDAE

8. *Anthenea pentagonula* (Gray, 1866)
9. *Pentaceraster indicus* (Kocala)
10. *Pentaceraster regulus (*Muller and Troschel, 1842)

Family OPHIDIASTERIDAE

11. *Linckia laevigata* (Linneaus, 1758))

Family GONIASTERIDAE

12. *Stellaster equestris* (Retzius, 1820)

Order SPINULOSIDA

Family ECHINASTERIDAE

13. *Echinaster purpurus* (Gray, 1840)

Family METRODIRIDAE

14. *Metrodira subulata* Gray, 1840

Class OPHIUROIDEA

Order OPHIURIDA

Family OPHIACTIDAE

15. *Ophiactis savignyi* Muller & Troschel, 1842

Family OPHIOTHRICIDAE

16. *Ophiothrix exigua* Lyman
17. *Ophiocnemis marmorata* (Lamarck, 1816)
18. *Ophiopteron elegans* Ludwig, 1888)
19. *Ophiothela danae* Verrill, 1869

Class ECHINOIDEA

Order DIADEMATOIDA

Family DIADEMATIDAE

20. *Astropyga radiata* (Leske, 1778)

Order PHYMOSOMATODA

Family STOMECHINIDAE

21. *Stomopneustes variolaris* (Lamarck, 1816)

ORDER TEMNOPLEUROIDA

Family TEMNOPLEURIDAE

22. *Salmacis bicolor* L. Agassiz, 1841

23. *Salmacis virgulata* L. Agassiz, 1846

Family TEMNOPLEURIDAE

24. *Temnopleurus toreumaticus* (Leske, 1778)

Family TOXOPNEUSTIDAE

25. *Pseudoboletia maculata* Troschel, 1869

Order CLYPEASTEROIDA

Family CLYPEASTERIDAE

26. *Clypeaster humilis* (Leske, 1778)

27. *Clypeaster rarispinus* de Miijeri, 1903

Family FIBULARIDAE

28. *Fibularia volva* L. Agassiz, 1847

Family LAGANIDAE

29. *Laganum depressum* Lesson, 1841

Family ASTRICLYPEIDAE

30. *Echinodiscus aurites* Leske, 1778

31. *Echinodiscus bisperforatus* Leske, 1778

Order CASSIDULOIDA

Family ECHINOLAMPADIDAE

32. *Echinolampas ovata* (Leske, 1778)

Order SPATANGODA

Family SPATANGIDAE

33. *Pseudomareia alta* (A. Agassez, 1863)

Family LOVENIIDAE

34. *Lovenia elongata* (Gray, 1845)

Family BRISSIDAE

35. *Metalia sternalis* (Lamarck, 1816)

Class HOLOTHUROIDEA

Order ASPIDOCHIROTIDA

Family HOLOTHURIIDAE

36. *Bohadschia marmorata* Jaeger, 1833

37. *Holothuria (Theelothuria) spinifera* Theel, 1886

Order DENDROCHIROTIDA

Family CUCUMARIIDAE

38. *Stolus buccalis* (Stimpson, 1855)

39. *Leptopentacta imbricata* (Semper, 1868)

Family PHYLLOPHORIDAE

40. *Phyllophorus (Phyllophorella) parvipedes* H.L.Clark, 1938

41. *Phyllophorus (Urodemella) brocki* Ludwig, 1888

Order MOLPADIDA

Family CAUDINIDAE

42. *Acaudina molpadiodes* (Semper, 1868)

Order APODIDA

Family SYNAPTIDE

43. *Synaptula recta* (Semper, 1868)

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FISHES

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INTRODUCTION

This paper is based on the ichthyofaunal constituents collected from the inshore waters of Chennai metropolitan city limits (extending from Ennore in the north to Thiruvanmiyur in the south) by the scientists of Marine Biological Station, Zoological Survey of India, Chennai over a period for two decades. The samples have been identified by a team of workers and deposited with the Marine Biological Station.

It contains information on 493 species of fishes belonging to 268 genera brought under 116 families. Relevant literature pertaining to the locality (Day, 1878; Day 1889-1898; Bleeker *et al.*, 1913; Weber and de Beaufort, 1916-1936; de Beaufort, 1940; de Beaufort and Chapman, 1951; Koumans, 1953; de Beaufort and Briggs, 1962; Kagwade, 1970; Fischer and Bianchi, 1984; Talwar and Kacker, 1984; Smith and Heemstra, 1986; Munro, 1982; Whitehead *et al.*, 1988; Russell, 1990; Talwar and Jhingran, 1991; Remadevi, 1992) have been consulted while confirming identity of samples.

Though information is available on more than 900 species of fishes from the Tamil Nadu Coast, a comprehensive and reliable information base is lacking. Hence this work to fill the lacuna and to provide appropriate taxonomic data to the extension workers. To facilitate easy access to standard description, we have chosen to employ taxonomic details *verbatim* from the established and acclaimed workers due their accuracy in explaining morphological features.

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SYSTEMATIC LIST

Class CHONDRICHTHYES

Order ORECTOLOBIFORMES

Family HEMISCYLIDAE

1. *Chyloscyllium griseum* Muller and Henle, 1838

Family STEGOSTOMATIDAE

2. *Stegostoma fasciatum* (Hermenn, 1783)

Order LAMNIFORMES

Family LAMNIDAE

3. *Isurus oxyrinchus* Rafinesque, 1810

Order CARCHARHINIFORMES

Family CARCHARHINIDAE

4. *Carcharhinus dussumieri* (Valenciennes, 1839)
5. *Carcharhinus melanopterus* (Quoy and Gaimard, 1824)
6. *Galeocerdo cuvieri* (Peron and Le Sueur, 1822)
7. *Hemipristis elongates* (Klunzinger, 1871)
8. *Rhizoprionodon acutus* (Ruppell, 1838)
9. *Rhizoprionodon oligolinx* Springer, 1964
10. *Scoliodon laticaudus* Muller and Henle, 1838

Family SPHYRNIDAE

11. *Sphyrna lewini* (Griffith and Smith, 1834)

Order PRISTIFORMES

Family PRISTIDAE

12. *Anoxypristis cuspidata* (Latham, 1794)
13. *Pristis zijsron* Bleeker, 1851

Order TORPEDINIFORMES

Family NARCINIDAE

14. *Narcine brunnea* Annandale, 1909
15. *Narcine maculata* (Shaw, 1804)

16. *Narcine timlei* (Schneider, 1801)

Family NARKIDAE

17. *Bengalichthys impennis* Annandale, 1909
18. *Narke dipterygia* (Schneider, 1801)

Order RAJIFORMES

Family RHINOBATIDAE

19. *Rhina ancylostoma* Schneider, 1801
20. *Rhinobatos granulatus* Cuvier, 1829
21. *Rhinobatos thouiniana* (Shaw, 1804)
22. *Rhynchobatus djiddensis* (Forsskal, 1775)
23. *Zanobatus schoenleinii* (Muller and Henle, 1841)

Order MYLIOBATIFORMES

Family MYLIOBATIDAE

24. *Aetomylaeus nichofii* (Schneider, 1801)
25. *Rhinoptera adspersa* (Muller and Henle, 1841)

Family MOBULIDAE

26. *Mobula diabolus* (Shaw, 1804)

Family DASYATIDAE

27. *Dasyatis imbricata* (Schneider, 1801)
28. *Dasyatis kuhlii* (Muller and Henle, 1841)
29. *Dasyatis zugei* (Muller and Henle, 1841)
30. *Gymnura japonica* (Schlegel, 1850)
31. *Gymnura poecilura* (Shaw, 1804)
32. *Himantura favus* (Annandale, 1909)
33. *Himantura uarnak* (Forsskal, 1775)
34. *Himantura walga* (Muller and Henle, 1841)
35. *Hypolophus sephen* (Forsskal, 1775)
36. *Urogymnus asperrimus* (Bloch and Schneider, 1801)

Class OSTEICHTHYES

Order ELOPIFORMES

Family ELOPIDAE

37. *Elops machnata* (Forsskal, 1775)

Family MEGALOPIDAE

38. *Megalops cyprinoides* (Broussonet, 1782)

Family ALBULIDAE

39. *Albula vulpes* (Linnaeus, 1758)

Order ANGUILLIFORMES

Family ANGUILLIDAE

40. *Anguilla bengalensis bengalensis* (Gray, 1831)
41. *Anguilla bicolor bicolor* McClelland, 1844

Family MURAENIDAE

42. *Thyrsoidea macrura* (Bleeker, 1854)

Family OPHICHTHIDAE

43. *Ophichthus apicalis* (Bennett, 1830)
44. *Ophichthus microcephalus* Day, 1878
45. *Pisodonophis boro* (Hamilton, 1822)
46. *Pisodonophis cancrivorus* (Richardson, 1844)

Family MURAENESOCIDAE

47. *Muraenesox cinereus* (Forsskal, 1775)

Family CONGRIDAE

48. *Ariosoma anago* (Schlegel, 1846)
49. *Uroconger lepturus* (Richardson, 1845)

Order CLUPEIFORMES

Family CLUPEIDAE

50. *Anodontosoma chacunda* (Hamilton,1822)
51. *Dussumieria acuta* Valenciennes, 1847
52. *Escualosa thoracata* (Valenciennes, 1847)
53. *Hilsa kelee* (Cuvier, 1829)
54. *Nematalosa nasus* (Bloch, 1795)
55. *Sardinella brachysoma* Bleeker, 1852
56. *Sardinella fimbriata* (Valenciennes, 1847)
57. *Sardinella gibbosa* (Bleeker, 1849)
58. *Sardinella longiceps* Valenciennes, 1847

Family PRISTIGASTERIDAE

59. *Ilisha elongata* (Bennett, 1830)
60. *Ilisha megaloptera* (Swainson, 1839)
61. *Ilisha melastoma* (Schneider, 1801)
62. *Ilisha striatula* Wongratana, 1983
63. *Opisthopterus tardoore* (Cuvier, 1829)
64. *Pellona ditchela* Valenciennes, 1847

Family ENGRAULIDIDAE

65. *Coilia dussumieri* Valenciennes, 1848
66. *Coilia reynaldi* Valenciennes, 1848
67. *Encrasicholina heteroloba* (Ruppell, 1837)
68. *Setipinna taty* (Valenciennes, 1848)
69. *Stolephorus andhraensis* Babu Rao, 1965
70. *Stolephorus baganensis* Hardenberg, 1931
71. *Stolephorus commersonii* (Lacepede, 1803)
72. *Stolephorus indicus* (van Hasselt, 1823)
73. *Thryssa dayi* Wongratana, 1983
74. *Thryssa dussumieri* (Valenciennes, 1848)
75. *Thryssa hamiltonii* (Gray, 1835)
76. *Thryssa malabarica* (Bloch, 1795)
77. *Thryssa mystax* (Schneider, 1801)
78. *Thryssa purava* (Hamilton,1822)
79. *Thryssa setirostris* (Broussonet, 1782)
80. *Thryssa vitrirostris* (Gilchrist and Thompson, 1908)

Family CHIROCENTRIDAE

81. *Chirocentrus dorab* (Forsskal, 1775)
82. *Chirocentrus nudus* Swainson, 1839

Order GONORHYNCHIFORMES

Family CHANIDAE

83. *Chanos chanos* (Forsskal, 1775)

Order SILURIFORMES

Family ARIIDAE

84. *Ariodes dussumieri* (Valenciennes, 1840)
85. *Arius arius* (Hamilton, 1822)

86. *Arius caelatus* Valenciennes, 1840
87. *Arius jella* (Day, 1877)
88. *Arius maculatus* (Thunberg, 1793)
89. *Arius sona* (Hamilton, 1822)
90. *Arius sumatranus* (Bennett, 1830)
91. *Arius thalassinus* (Ruppell, 1837)
92. *Osteogeneiosus militaris* (Linnaeus, 1758)

Family PLOTOSIDAE

93. *Plotosus canius* Hamilton, 1822
94. *Plotosus lineatus* (Thunberg,1791)

Family SYNODONTIDAE

95. *Saurida micropectoralis* Shindo and Yamada,1972
96. *Saurida pseudotumbil* Dutt and Sagar, 1981
97. *Saurida tumbil* (Bloch, 1795)
98. *Synodus indicus* (Day, 1873)
99. *Trachinocephalus myops* (Schneider, 1801)

Family HARPADONTIDAE

100. *Harpadon nehereus* (Hamilton, 1822)

Order GADIFORMES

Family BREGMACEROTIDAE

101. *Bregmaceros macclellandii* Thompson, 1840

Order OPHIDIIFORMES

Family CARAPIDAE

102. *Carapus homei* (Richardson, 1846)

Family OPHIDIIDAE

103. *Brotula multibarbata* Temminck and Schlegel, 1846

Order LOPHIIFORMES

Family ANTENNARIIDAE

104. *Antennarius hispidus* (Bloch and Schneider, 1801)
105. *Antennarius nummifer* (Cuvier, 1817)

Order CYPRINODONTIFORMES

Family EXOCOETIDAE

106. *Cheilopogon furcatus* (Mitchell, 1815)

107. *Cypselurus bahiensis* (Ranzani, 1842)
108. *Cypselurus spilopterus* (Valenciennes, 1846)
109. *Parexocoetus mento* (Valenciennes, 1846)

Family HEMIRAMPHIDAE

110. *Hemiramphus far* (Forsskal,1775)
111. *Hyporhamphus limbatus* (Valenciennes, 1846)
112. *Hyporhamphus xanthopterus* (Valenciennes, 1846)
113. *Rhynchorhamphus georgii* (Valenciennes, 1846)
114. *Rhynchorhamphus malabaricus* Collette,1976

Family BELONIDAE

115. *Strongylura strongylura* (Van Hasselt, 1823)
116. *Tylosurus crocodilus* (Peron and LeSueur, 1821)

Order ATHERINIFORMES

Family ATHERINIDAE

117. *Atherinomorus duodecimalis* (Valenciennes, 1835)

Order BERYCIFORMES

Family HOLOCENTRIDAE

118. *Myripristis murdjan* (Forsskal, 1775)

Order PEGASIFORMES

Family PEGASIDAE

119. *Pegasus volitans* Linnaeus, 1758

Order SYNGNATHIFORMES

Family FISTULARIIDAE

120. *Fistularia petimba* Lacepede, 1803

Family CENTRISCIDAE

121. *Centriscus scutatus* Linnaeus,1753

Family SYNGNATHIDAE

122. *Hippichthys cyanospilos* (Bleeker, 1854)
123. *Microphis brachyurus* (Bleeker, 1853)
124. *Microphis cuncalus* (Hamilton, 1822)
125. *Trachyrhamphus longirostris* Kaup, 1856
126. *Trachyrhamphus serratus* (Schlegel, 1847)

Order DACTYLOPTERIFORMES

Family DACTYLOPTERIDAE

127. *Dactyloptera orientalis* (Cuvier, 1829)

Order SCORPAENIFORMES

Family SCORPAENIDAE

128. *Apistes carinatus* (Bloch and Schneider, 1801)
129. *Centropogon indicus* Day, 1875
130. *Choridactylus multibarbus* Richardson, 1848
131. *Minous monodactylus* (Bloch and Schneider, 1801)
132. *Pteroidichthys amboinensis* Bleeker, 1856
133. *Pterois miles* (Bennett, 1828)
134. *Pterois mombasae* (Smith, 1957)
135. *Pterois russellii* (Bennett, 1831)
136. *Pterois volitans* (Linnaeus, 1758)
137. *Scorpaenopsis roseus* (Day, 1867)
138. *Sebastapistes strongia* (Cuvier, 1829)
139. *Trachicephalus uranoscopus* (Bloch and Schneider, 1801)

Family TETRAROGIDAE

140. *Tetraroge niger* (Cuvier, 1829)

Family APLOACTINIDAE

141. *Cocotropus roseus* Day, 1875

Family TRIGLIDAE

142. *Lepidotrigla omanensis* Regan, 1905
143. *Lepidotrigla riggsi* Richards and Saksena, 1977
144. *Lepidotrigla spiloptera* Gunther, 1880

Family PLATYCEPHALIDAE

145. *Cociella crocodila* (Tileseus, 1812)
146. *Grammoplites scaber* (Linnaeus, 1758)
147. *Grammoplites suppositus* (Troschel, 1840)
148. *Inegocia japonica* (Tileseus, 1820)
149. *Platycephalus indicus* (Linnaeus, 1758)
150. *Sorsogona tuberculata* (Cuvier, 1829)
151. *Suggrundus bengalensis* (Visweswara Rao, 1966)

152. *Suggrundus rodericensis* (Cuvier, 1829)
153. *Thysanophrys celebica* (Bleeker, 1854)

Order PERCIFORMES

Family CENTROPOMIDAE

154. *Lates calcarifer* (Bloch, 1790)

Family AMBASSIDAE

155. *Ambassis commersoni* Cuvier, 1828
156. *Ambassis dayi* Bleeker, 1874
157. *Ambassis gymnocephalus* (Lacepede, 1802)
158. *Ambassis interruptus* Bleeker, 1852
159. *Ambassis miops* Gunther, 1871
160. *Ambassis urotaenia* Bleeker, 1852

Family SERRANIDAE

161. *Cephalopholis formosa* (Shaw and Nodder, 1812)
162. *Cephalopholis sonnerati* (Valenciennes, 1828)
163. *Epinephelus areolatus* (Forsskal, 1775)
164. *Epinephelus caeruleopunctatus* (Bloch,1790)
165. *Epinephelus coioides* (Hamilton, 1822)
166. *Epinephelus diacanthus* (Valenciennes, 1828)
167. *Epinephelus flavocaeruleus* (Lacepede, 1802)
168. *Epinephelus latifasciatus* (Temminck and Schlegel, 1842)
169. *Epinephelus longispinis* (Kner, 1864)
170. *Epinephelus malabaricus* (Schneider, 1801)
171. *Epinephelus morrhua* (Valenciennes, 1833)
172. *Epinephelus undulosus* (Quoy and Gaimard, 1824)

Family TERAPONIDAE

173. *Pelates quadrilineatus* (Bloch, 1790)
174. *Terapon jarbua* (Forsskal, 1775)
175. *Terapon puta* Cuvier, 1829
176. *Terapon theraps* Cuvier, 1828

Family PRIACANTHIDAE

177. *Priacanthus hamrur* (Forsskal, 1775)
178. *Priacanthus tayenus* Richardson, 1846

Family APOGONIDAE

179. *Apogon aureus* (Lacepede, 1802)
180. *Apogon bandanensis* Bleeker, 1854
181. *Apogon kallosoma* Bleeker, 1852
182. *Apogon multitaeniatus* Ehrenberg, 1828
183. *Apogon nigricans* Day, 1875
184. *Apogon nigripinnis* Cuvier, 1828
185. *Apogon quadrifasciatus* Cuvier, 1828
186. *Apogon taeniatus* Ehrenberg, 1828
187. *Apogon thurstoni* Day, 1888
188. *Apogonichthys ellioti* (Day, 1860)
189. *Apogonichthys ocellatus* (Weber, 1913)
190. *Apogonichthys poecilopterus* (Kuhl and Van Hasselt, 1828)
191. *Archamia lineolata* (Ehrenberg, 1828)

Family SILLAGINIDAE

192. *Sillago lutea* McKay, 1985
193. *Sillago sihama* (Forsskal, 1775)
194. *Sillago soringa* Dutt and Sujatha, 1983
195. *Sillago vincenti* (McKay, 1980)

Family MALACANTHIIDAE

196. *Hoplolatilus fronticinctus* (Gunther, 1887)

Family LACTARIIDAE

197. *Lactarius lactarius* (Gunther, 1887)

Family RACHYCENTRIDAE

198. *Rachycentron canadus* (Linnaeus, 1766)

Family ECHENEIDIDAE

199. *Echeneis naucrates* Linnaeus, 1758
200. *Remora brachyptera* (Lowe, 1839)

Family CARANGIDAE

201. *Alectis ciliaris* (Bloch, 1788)
202. *Alectis indicus* (Ruppell, 1830)
203. *Alepes djedaba* (Forsskal, 1775)
204. *Alepes melanoptera* Swainson, 1839

205. *Atropus atropos* (Bloch,1801)
206. *Atule mate* (Cuvier, 1833)
207. *Carangoides armatus* (Ruppell, 1830)
208. *Carangoides caeruleopinnatus* (Rupell, 1830)
209. *Carangoides chrysophrys* (Cuvier, 1833)
210. *Carangoides gymnostethus* (Cuvier, 1833)
211. *Carangoides malabaricus* (Bloch and Schneider, 1801)
212. *Carangoides oblongus* (Cuvier, 1833)
213. *Carangoides praeustus* (Bennett, 1830)
214. *Carangoides talamparoides* Bleeker, 1852
215. *Caranx carangus* (Bloch, 1793)
216. *Caranx ignobilis* (Forsskal, 1775)
217. *Caranx para* Cuvier, 1833
218. *Caranx sexfasciatus* Quoy and Gaimard, 1825
219. *Decapterus russelli* (Ruppell, 1828)
220. *Elagatis bipinnulatus* (Quoy and Gaimard,1824)
221. *Megalaspis cordyla* (Linnaeus, 1758)
222. *Parastromateus niger* (Bloch, 1795)
223. *Scomberoides lysan* (Forsskal, 1775)
224. *Scomberoides tala* (Cuvier, 1831)
225. *Scomberoides tol* (Cuvier, 1832)
226. *Selar crumenophthalmus* (Bloch, 1793)
227. *Selaroides leptolepis* (Cuvier, 1833)
228. *Seriolina nigrofasciata* (Ruppell, 1828)
229. *Trachinotus mookalee* Cuvier, 1832

Family CORYPHAENIDAE

230. *Coryphaena hippurus* Linnaeus, 1758

Family LEIOGNATHIDAE

231. *Gazza minuta* (Bloch, 1797)
232. *Leiognathus berbis* (Valenciennes, 1835)
233. *Leiognathus bindus* (Valenciennes, 1835)
234. *Leiognathus blochii* (Valenciennes, 1835)
235. *Leiognathus brevirostris* (Valenciennes, 1835)

236. *Leiognathus daura* (Cuvier, 1829)
237. *Leiognathus dussumieri* (Valenciennes, 1835)
238. *Leiognathus equulus* (Forsskal, 1775)
239. *Leiognathus fasciatus* (Lacepede, 1803)
240. *Leiognathus leuciscus* (Gunther, 1860)
241. *Leiognathus lineolatus* (Valenciennes, 1835)
242. *Leiognathus splendens* (Cuvier, 1829)
243. *Secutor insidiator* (Bloch, 1787)
244. *Secutor ruconius* (Hamilton, 1822)

Family LUTJANIDAE

245. *Lutjanus argentimaculatus* (Forsskal, 1775)
246. *Lutjanus fulviflamma* (Forsskal, 1775)
247. *Lutjanus fulvus* (Schneider, 1801)
248. *Lutjanus johni* (Bloch, 1792)
249. *Lutjanus kasmira* (Forsskal, 1775)
250. *Lutjanus lemniscatus* (Valenciennes, 1828)
251. *Lutjanus lutjanus* Bloch, 1790
252. *Lutjanus madras* (Valenciennes, 1831)
253. *Lutjanus malabaricus* (Schneider, 1802)
254. *Lutjanus rivulatus* (Cuvier, 1828)
255. *Lutjanus russelli* (Bleeker, 1849)
256. *Lutjanus sanguineus* (Cuvier, 1828)
257. *Lutjanus sebae* (Cuvier, 1828)
258. *Lutjanus vittus* (Quoy and Gaimard, 1845)

Family GERREIDAE

259. *Gerres abbreviatus* Bleeker, 1850
260. *Gerres filamentosus* Cuvier, 1829
261. *Gerres limbatus* Cuvier, 1830
262. *Gerres lucidus* Cuvier,1830
263. *Gerres oblongus* Cuvier, 1830
264. *Gerres oyena* (Forsskal, 1775)
265. *Gerres poeti* Cuvier, 1829
266. *Gerromorpha setifer* Hamilton, 1822
267. *Pentaprion longimanus* (Cantor, 1850)

Family HAEMULIDAE

268. *Diagramma pictum* (Thunberg, 1795)
269. *Plectorhinchus cuvieri* (Bennett, 1830)
270. *Plectorhinchus gibbosus* (Lacepede, 1802)
271. *Plectorhinchus orientalis* (Bloch, 1793)
272. *Plectorhinchus pictus* (Thunberg, 1792)
273. *Pomadasys argenteus* (Forsskal, 1775)
274. *Pomadasys argyreus* (Valenciennes, 1833)
275. *Pomadasys furcatum* (Schneider, 1801)
276. Pomadasys *kaakan* (Cuvier, 1830)
277. *Pomadasys maculatum* (Bloch, 1797)

Family SPARIDAE

278. *Acanthopargus berda* (Forsskal, 1775)
279. *Acanthopargus latus* (Houttuyn, 1782)
280. *Argyrops spinifer* (Forsskal, 1775)
281. *Crenidens crenidens* (Forsskal, 1775)
282. *Rhabdosargus sarba* (Forsskal, 1775)

Family LETHRINIDAE

283. *Lethrinus nebulosus* (Forsskal, 1775)

Family NEMIPTERIDAE

284. *Nemipterus bipunctatus* (Ehrenberg, 1830)
285. *Nemipterus japonicus* (Bloch, 1791)
286. *Nemipterus nematophorus* (Bleeker, 1853)
287. *Nemipterus peronii* (Valenciennes, 1830)
288. *Nemipterus randalli* Russell, 1986
289. *Scolopsis bimaculatus* Ruppell, 1828
290. *Scolopsis vosmeri* (Bloch, 1792)

Family SCIAENIDAE

291. *Dendrophysa russelli* (Cuvier, 1830)
292. *Johnieops dussumieri* (Cuvier, 1830)
293. *Johnieops macrorhynus* Mohan, 1976
294. *Johnieops sina* (Cuvier, 1830)
295. *Johnius belangeri* (Cuvier, 1830)

296. *Johnius carutta* Bloch, 1793
297. *Johnius coitor* (Hamilton, 1822)
298. *Johnius dussumieri* (Valenciennes, 1833)
299. *Johnius macropterus* (Cuvier, 1830)
300. *Kathala axillaris* (Cuvier, 1830)
301. *Nibea maculata* (Schneider, 1801)
302. *Otolithes cuvieri* Trewavas, 1974
303. *Otolithes rubber* (Schneider, 1801)
304. *Pennahia macrophthalmus* (Bleeker, 1850) (*Sciaena aneus* Day, 1876)
305. *Protonibea diacanthus* (Lacepede, 1802)

Family MULLIDAE

306. *Mulloides vanicolensis* (Valenciennes, 1831)
307. *Parupeneus indicus* (Shaw, 1803)
308. *Upeneus bensasi* (Temminck and Schlegel, 1842)
309. *Upeneus luzonius* Jordan and Seale, 1907
310. *Upeneus moluccensis* (Bleeker, 1855)
311. *Upeneus sulphureus* Cuvier, 1829
312. *Upeneus taeniopterus* Cuvier, 1829
313. *Upeneus tragula* Richardson, 1846
314. *Upeneus vittatus* (Forsskal, 1775)

Family MONODACTYLIDAE

315. *Monodactylus argenteus* (Linnaeus, 1758)

Family PEMPHERIDIDAE

316. *Pempheris molucca* Cuvier, 1831

Family EPHIPPIDIDAE

317. *Ephippus orbis* (Bloch, 1787)

Family PLATACIDAE

318. *Platax pinnatus* (Linnaeus, 1758)

Family DREPANIDAE

319. *Drepane punctatus* (Linnaeus, 1758)

Family SCATOPHAGIDAE

320. *Scatophagus argus* (Bloch, 1766)

Family CHAETODONTIDAE

321. *Chaetodon collare* Bloch, 1787
322. *Chaetodon decussatus* Cuvier, 1831
323. *Chaetodon octofasciatus* Bloch, 1787
324. *Chaetodon vagabundus* Linnaeus, 1758
325. *Heniochus acuminatus* (Linnaeus, 1758)

Family POMACANTHIDAE

326. *Apolemichthys xanthurus* (Bennett, 1832)

Family CICHLIDAE

327. *Etroplus suratensis* (Bloch, 1785)

Family POMACENTRIDAE

328. *Pristotis jerdoni* (Day, 1873)

Family CIRRHITIDAE

329. *Cirrhitichthys aureus* (Schlegel, 1843)

Family CEPOLIDAE

330. *Acanthocepola abbreviata* (Valenciennes, 1835)

Family MUGILIDAE

331. *Liza macrolepis* (Smith, 1849)
332. *Liza melinoptera* (Valenciennes, 1836)
333. *Liza parsia* (Hamilton, 1822)
334. *Liza tade* (Forsskal, 1775)
335. *Liza vaigiensis* (Quoy and Gaimard, 1824)
336. *Mugil cephalus* Linnaeus, 1758
337. *Valamugil buchanani* (Bleeker, 1853)
338. *Valamugil cunnesius* (Valenciennes, 1836)
339. *Valamugil speigleri* (Bleeker, 1858)

Family SPHYRAENIDAE

340. *Sphyraena forsteri* Cuvier, 1829
341. *Sphyraena jello* Cuvier, 1829
342. *Sphyraena obtusata* Cuvier, 1829

Family POLYNEMIDAE

343. *Eleutheronema tetradactylum* (Shaw, 1804)
344. *Polydactylus heptadactylus* (Cuvier, 1829)
345. *Polydactylus indicus* (Shaw, 1804)
346. *Polydactylus plebeius* (Valenciennes, 1782)
347. *Polydactylus sexfilis* (Valenciennes, 1831)
348. *Polydactylus sextarius* (Schneider, 1801)

Family LABRIDAE

349. *Cheilinus bimaculatus* Valenciennes, 1840
350. *Xyrichtys pavo* Valenciennes, 1840
351. *Xyrichtys pentadactylus* (Linnaeus, 1758)

Family SCARIDAE

352. *Scarus blochii* (Valenciennes, 1839) (= *S. quoyi* Cuvier and Valeniennes, 1839)
353. *Scarus dubius* Bennett, 1828 (= *S. globiceps* Val. 1840)
354. *Scarus sordidus* Forsskal, 1775

Family OPISTOGNATHIDAE

355. *Opistognathus rosenbergii* Bleeker, 1856

Family URANOSCOPIDAE

356. *Uranoscopus cognatus* Cantor, 1850
357. *Uranoscopus guttatus* Cuvier, 1829

Family TRICHONOTIDAE

358. *Trichonotus setiger* Bloch and Schneider, 1801

Family MUGILOIDIDAE

359. *Parapercis pulchella* (Temmnick and Schlegel, 1843)
360. *Parapercis punctulata* (Cuvier, 1829)

Family BLENNIIDAE

361. *Omobranchus zebra* (Bleeker, 1868)
362. *Xiphasia setifer* Swainson, 1839

Family AMMODYTIDAE

363. *Bleekeria kallolepis* Gunther, 1862

Family CALLIONYMIDAE

364. *Callionymus japonicus* Houttuyn, 1782
365. *Callionymus sagitta* Pallas, 1770
366. *Eleutherochir opercularis* (Valenciennes, 1837)
367. *Synchiropus lineolatus* (Valenciennes, 1837)

Family ELEOTRIDAE

368. *Eleotris fusca* (Schneider, 1801)
369. *Prionobutis koilomatodon* (Bleeker, 1849)

Family GOBIIDAE

370. *Acentrogobius cyanomos* (Bleeker, 1849)
371. *Acentrogobius ennorensis* Menon and Remadevi, 1980
372. *Acentrogobius globiceps* (Hora, 1923)
373. *Acentrogobius griseus* (Day, 1876)
374. *Acentrogobius madraspatensis* (Day, 1868)
375. *Acentrogobius ornatus* (Ruppell, 1828)
376. *Acentrogobius viridipunctatus* (Valenciennes, 1837)
377. *Apocryptes bato* (Hamilton,1822)
378. *Apocryptichthys cantoris* (Day, 1870)
379. *Apocryptodon madurensis* (Bleeker, 1849)
380. *Awaous gutum* (Hamilton, 1822)
381. *Bathygobius ostreicola* (Chaudhuri, 1916)
382. *Boleophthalmus boddarti* (Pallas, 1770)
383. *Boleophthalmus sculptus* Gunther, 1861
384. *Brachygobius nunus* (Hamilton, 1822)
385. *Cryptocentrus gymnocephalus* (Bleeker)
386. *Favonigobius reichei* (Bleeker, 1853)
387. *Glossogobius biocellatus* (Cuvier and Valenciennes, 1837)
388. *Glossogobius giuris* (Hamilton, 1822)
389. *Gobiopterus chuno* (Hamilton, 1822)
390. *Mahidolia mystacina* (Valenciennes, 1837)
391. *Oligolepis acutipennis* (Valenciennes, 1837)
392. *Oligolepis cylindriceps* (Hora, 1923)
393. *Oplopomus caninoides* (Bleeker, 1852)

394. *Oxuderces dentatus* Eydoux and Souleyet, 1842
395. *Oxyurichthys formosanus* Nichols, 1959
396. *Oxyurichthys microlepis* (Bleeker, 1849)
397. *Oxyurichthys tentacularis* (Valenciennes, 1837)
398. *Parachaeturichthys polynema* (Bleeker, 1853)
399. *Parapocryptes rictuosus* (Valenciennes, 1837)
400. *Parapocryptes serperaster* (Richardson,1846)
401. *Periophthalmus chrysospilos* Bleeker, 1853
402. *Periophthalmus koelreuteri* (Pallas, 1770)
403. *Periophthalmus pearsei* Eggert, 1935
404. *Periophthalmus variabilis* Eggert, 1935
405. *Pseudapocryptes lanceolatus* (Bloch and Schneider, 1801)
406. *Stenogobius malabaricus* (Day, 1865)
407. *Stigmatogobius javanicus* (Bleeker, 1856)
408. *Yongeichthys criniger* (Valenciennes, 1837)

Family GOBIOIDIDAE

409. *Brachyamblyopus urolepis* (Bleeker, 1852)
410. *Taenioides anguillaris* (Linnaeus, 1758)
411. *Taenioides buchanani* (Day,1873)

Family TRYPAUCHENIDAE

412. *Ctenotrypauchen microcephalus* (Bleeker, 1860)
413. *Trypauchen vagina* (Bloch and Schneider, 1801)

Family ACANTHURIDAE

414. *Acanthurus bleekeri* Gunther, 1861
415. *Acanthurus celebicus* Bleeker, 1852
416. *Acanthurus nigrofuscus* (Forsskal, 1775)
417. *Acanthurus triostegus* (Linnaeus, 1758)
418. *Acanthurus xanthopterus* Valenciennes, 1835

Family SIGANIDAE

419. *Siganus canaliculatus* (Park, 1797)
420. *Siganus guttatus* (Bloch, 1787)
421. *Siganus javus* (Linnaeus, 1766)
422. *Siganus spinus* (Linnaeus, 1758)

Family TRICHIURIDAE

423. *Eupleurogrammus muticus* (Gray, 1831)
424. *Lepturacanthus savala* (Cuvier, 1829)
425. *Trichiurus lepturus* (Linnaeus, 1758)

Family SCOMBRIDAE

426. *Euthynnus affinis* (Cantor, 1850)
427. *Rastrelliger faughni* Matsui, 1967
428. *Rastrelliger kanagurta* (Cuvier, 1817)
429. *Scomberomorus commerson* (Lacepede, 1800)
430. *Scomberomorus guttatus* (Bloch and Schneider, 1801)
431. *Scomberomorus lineolatus* (Cuvier, 1831)

Family ISTIOPHORIDAE

432. *Istiophorus platypterus* (Shaw and Nodder, 1791)
433. *Makaira indica* (Cuvier, 1831)

Family NOMEIDAE

434. *Psenes cyanophrys* (Cuvier, 1833)

Family ARIOMMATIDAE

435. *Ariomma indica* (Day, 1870)

Family STROMATEIDAE

436. *Pampus argenteus* (Euphrasen, 1788)
437. *Pampus chinensis* (Euphrasen, 1788)

Order PLEURONECTIFORMES

Family PSETTODIDAE

438. *Psettodes erumei* (Bloch and Schneider, 1801)

Family CITHARIDAE

439. *Brachypleura novemzealandiae* Gunther, 1862

Family BOTHIDAE

440. *Arnoglossus intermedius* (Bleeker, 1866)
441. *Bothus pantherinus* (Ruppell, 1828)
442. *Crossorhombus azureus* (Alcock,1889)
443. *Crossorhombus valderostratus* (Alcock, 1890)
444. *Engyprosopon grandisquama* (Temminck and Schlegel, 1846)

445. *Laeops guntheri* Alcock, 1890
446. *Pseudorhombus arsius* (Hamilton, 1822)
447. *Pseudorhombus elevatus* Ogilby, 1912
448. *Pseudorhombus malayanus* Bleeker, 1866
449. *Pseudorhombus triocellatus* (Bloch and Schneider, 1801)

Family CYNOGLOSSIDAE

450. *Cynoglossus arel* (Schneider, 1801)
451. *Cynoglossus bilineatus* (Lacepede, 1802)
452. *Cynoglossus dispar* Day, 1877
453. *Cynoglossus kopsi* (Bleeker, 1851)
454. *Cynoglossus lida* (Bleeker, 1851)
455. *Cynoglossus lingua* Hamilton, 1822
456. *Cynoglossus macrostomus* Norman, 1928
457. *Cynoglossus punticeps* (Richardson, 1846)
458. *Cynoglossus semifasciatus* Day, 1877
459. *Paraplagusia bilineata* (Bloch, 1784)
460. *Paraplagusia blochii* (Bleeker, 1851)

Family SOLEIDAE

461. *Aesopia cornuta* Kaup, 1858
462. *Euryglossa orientalis* (Bloch, 1801)
463. *Solea elongata* Day, 1877
464. *Solea ovata* Richardson, 1846
465. *Synaptura albomaculata* Kaup, 1858
466. *Synaptura commersoniana* (Lacepede, 1802)
467. *Zebrias quagga* (Kaup, 1858)
468. *Zebrias synapturoides* (Jenkins, 1910)

Order TETRAODONTIFORMES

Family TRIACANTHIDAE

469. *Pseudotriacanthus striglifer* (Cantor, 1849)
470. *Triacanthus brevirostris* Schlegel, 1850

Family BALISTIDAE

471. *Abalistes stellatus* (Lacepede, 1798)
472. *Balistes vetula* Linnaeus, 1758
473. *Canthidermis maculatus* (Bloch, 1786)

Family MONACANTHIDAE

474. *Aluterus scriptus* (Osbeck, 1765)
475. *Paramonocanthus choirocephalus* Bleeker, 1852
476. *Psilocephalus barbatus* (Gray, 1831)

Family OSTRACIIDAE

477. *Ostracion cubicus* Linnaeus, 1758
478. *Rhynchostracion nasus* Bloch, 1784
479. *Tetrosomus gibbosus* (Linnaeus, 1758)

Family TETRAODONTIDAE

480. *Arothron hispidus* Linnaeus, 1758
481. *Arothron immaculatus* (Bloch and Schneider, 1801)
482. *Arothron leopardus* (Day, 1878)
483. *Arothron nigropunctatus* (Bloch and Schneider, 1801)
484. *Arothron reticularis* (Bloch, 1801)
485. *Arothron stellatus* (Bloch and Schneider, 1801)
486. *Canthigaster margritatus* (Ruppell, 1829)
487. *Chelonodon fluviatilis* (Hamilton, 1822)
488. *Chelonodon patoca* (Hamilton, 1822)
489. *Lagocephalus inermis* (Schlegel, 1850)
490. *Lagocephalus lunaris* (Bloch and Schneider, 1801)
491. *Lagocephalus spadiceus* (Richardson, 1845)
492. *Takifugu oblongus* (Bloch, 1786)
493. *Torquigener hypselogeneion* (Bleeker, 1852)

SYSTEMATIC NOTES

Class CHONDRICHTHYES

Order ORECTOLOBIFORMES

Family HEMISCYLIDAE

1. ***Chyloscyllium griseum*** Muller & Henle,1838

1838. *Chyloscyllium griseum* Muller & Henle, *Syst. Beschr. Plagiost.*, : 19.

Description : Slender body; slightly arched mouth; jaws with short labial grooves; gill slits narrow and the fourth and fifth slit in close proximity; last three slits over pectoral base. Origin of first dorsal above ends of pelvic bases. Along mid-back of body a dermal ridge present. Pale brown in colour. Young ones with 10 to 12 broad transverse bands on the back. Dorsals with two large dark blotches.

Distribution : Indo-West Pacific.

Remarks : Common in commercial catches

Family STEGOSTOMATIDAE

2. ***Stegostoma fasciatus*** (Hermann, 1783)

1783. *Squalus fasciatus* Hermann, *Tab. Affin.* : 302.

1991. *Stegostoma fasciatus* Talwar & Jhingran, *Inland Fishes of India*, **1** : 9.

Description : Body cylindrical. Five small gill slits, the last three behind pectoral origin. Naso-oral grooves connect the nostrils and short barbels to the mouth. Small mouth in front of eye. Second dorsal about half of first dorsal. Caudal about half of total length. Dermal ridges on caudal peduncle extending forward to sides. Adult and juvenile configurations very different in colour. Young ones with yellow stripe on dark brown body which break down into brown spots on yellow body with age.

Distribution : Indo-West Pacific.

Remarks : Quite common in the inshore waters.

Order LAMNIFORMES

Family LAMNIDAE

3. ***Isurus oxyrinchus*** Rafinesque, 1810

1810. *Isurus oxyrinchus* Rafinesque, *Caratt. animal. plante Sicilia* : 12, pl. 13.

Description : Fusiform, slender body; long and acutely pointed snout; long and broadly rounded mouth; strong but relatively few teeth in jaws; single cusped teeth with smooth edge. Dorsals unequal with first dorsal large; falcate pectoral long but shorter than head. Anal origin below middle of second dorsal base; caudal lunate. Caudal peduncle flattened with prominent keel. Back of body blue-grey and belly white.

Distribution : World wide in tropical and warm temperate seas.

Remarks : Mostly oceanic, surface living. Minor fishery exists.

Order CARCHARHINIFORMES

Family CARCHARHINIDAE

4. ***Carcharhinus dussumieri*** (Valenciennes, 1839)

1839. *Carcharias (Prionodon) dussumieri* Valenciennes *in* Muller & Henle, *Syst. Beschr. Plagiost*, (2) : 47, pl. 19.

1984. *Carcharhinus dussumieri* Compagno, *FAO Fish. Synop.*, (125) 4 (2) : 469.

Description : A small, slender to stocky species. Snout moderately long and pointed or narrowly rounded; internarial width 1.1-1.6 in preoral length; anterior nasal flaps elongate and triangular; eye usually horizontal, oval, length 2.0-2.2% of total length of specimens over 50 cm. Upper labial furrows short and inconspicuous. First dorsal small, broadly triangular, pointed or narrowly rounded at apex. Origin of first dorsal over posterior half of pectoral inner margins. Second dorsal small, origin over or slightly behind anal origin. Pectoral small, semifalcate. Grey or greyish brown, black dusky tip on second dorsal.

Distribution : Indo-West Pacific.

Remarks : Common inshore harmless shark, viviparous, feeding on small fishes and molluscs. Small scale fishery exists.

5. ***Carcharhinus melanopterus*** (Quoy and Gaimard, 1824)

1824. *Carcharias melanopterus* Quoy and Gaimard, *Zoologie, Voy. Uranie et Physic.*, 1877-20 : 194., pl. 43, figs. 1-2.

1984. *Carcharhinus melanopterus* Compagno, *FAO Fish. Synop.*, (**125**) 4(2) : 487.

Description : Snout short and bluntly rounded; internarial width 0.9-1.1 in preoral length; anterior nasal flaps moderately elongated and expanded; eye oval, fairly large, 2 to 3% in total length. Upper labial furrows short and inconspicuous. First dorsal falcate with a rounded apex and posterior margin curving ventrally from fin apex. Origin of first dorsal fin usually over pectoral free rear tip. Pectoral moderately large, narrow and falcate. First dorsal and ventral caudal lobe with a conspicuous black apical blotch, brilliantly highlighted proximally with white.

Distribution : Indian Ocean.

Remarks : Common inshore shark.

6. ***Galeocerdo cuvier*** (Peron & LeSueur, 1822)

1822. *Squalus cuvieri* Person & LeSueur, *in* LeSueur, *J. Acad Nat. Sci. Philad.* **2**(2) : 351.

1984. *Galeocerdo cuvier* Campagno, *FAO. Fish.Synop.*, (**125**) 4 (2) : 503.

Description : Head broad and flat, very short snout bluntly rounded or nearly truncate; eyes large, without posterior notches. Anterior nasal flaps short, broadly triangular and not tubular, labial furrows very long. Teeth similar in upper and lower jaws, of characteristic cock comb shape. First dorsal origin above pectoral insertion on inner margins. Second dorsal much smaller, its origin slightly anterior of anal origin. Pectoral moderately broad and semifalcate. Black spots and vertical bars on dorsal surface of body.

Distribution : Indo-West Pacific

Remarks : A common, wide ranging coastal pelagic tropical and warm temperate shark.

7. ***Hemipristis elongatus*** (Klunzinger, 1871)

1871. *Dirrhizodon elongatus* Klunzinger, *Verh. Zool. bot. Ges. Wien.*, **21** : 665.

1984. *Hemipristis elongatus* Talwar and Kacker, *Comm. Sea Fish. India* : 53.

Description : Body slender and fusiform; snout rounded; mouth with definite labial furrows in both jaws; lower teeth at front of mouth with long, strongly hooked cusps that prominently protrude from mouth when closed; spiracles small; gill openings over twice eye length. Fins strongly falcate. Brownish above, dull white below.

Distribution : Indian Ocean.

Remarks : Recorded earlier from Madras coast as *Carcharias ellioti* Day, 1878.

8. ***Rhizoprionodon acutus*** (Ruppell, 1837)

1837. *Carcharias acutus* Ruppell, *Neue Wirbel. Fauna. Abyssinien, Fische. Rothen Meers,* (11) : 65, pl. 18, fig. 4.

1984. *Rhizoprionodon acutus* Campagno, *FAO. Fish. Synop,* (125) 4 (2) : 525.

Description : Prenarial snout 4.0-5.4% of total length. Upper labial furrows long, prominent, about eye length; teeth serrated in adults, tooth rows usually 25/24. First dorsal origin over pectoral free rear tip. Second dorsal origin ranges from above last third of anal base to over its insertion. Pectoral with a light margin. Grey above, white below; dorsal and anal with dusky edges.

Distribution : Indo-West Pacific.

Remarks : A good fishery exists.

9. ***Rhizoprionodon oligolinx*** Springer, 1964.

1964. *Rhizoprionodon (Protozygaena) oligolinx* Springer, *Proc. U. S. natn. Mus.*, **115** (3493) : 621, figs. 12, 13.

Description : Snout long, pointed; upper labial furrows very short, shorter than the lower. First dorsal origin over inner corner of pectoral; second dorsal origin slightly in front end of anal base. Grey dorsally, belly whitish; fins yellowish, upper caudal-fin dusky.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery importance.

10. ***Scoliodon laticaudus*** Muller & Henle, 1838

1838. *Carcharias (Scoliodon) laticaudus* Muller & Henle, *Syst. Beschr. Plagiost.*, (1) : 27

Description : Snout parabolic, very long, with preoral length greater than internarial space and mouth width; eyes small, without posterior notches, anterior basal flaps very short, narrowly to rudimentary, with upper shorter than lower and falling far behind the eyes; teeth similar in upper and lower jaws, 25 -33/24-34 rows of teeth. First dorsal origin over or behind pectoral rear tip. Second dorsal much smaller than first. Pectoral very broad and triangular, not falcate; anal inserted anterior to second dorsal origin. Light grey or brownish grey above.

Distribution : Indo-West Pacific.

Remarks : A common tropical inshore shark.

Family SPHYRNIDAE

11. *Sphyrna lewini* (Griffith & Smith, 1834)

1834. *Zygaena lewini* Griffith & Smith, *Anim. Kingdom,* **10** : 640, pl. 50.

1984. *Sphyrna lewini* Compagno, *FAO Fish. Synop.,* (125)4 (2) : 545.

Description : Expanded prebranchial head hammer shaped and very wide but longitudinally short with a prominent median indentation at front margin. Well developed prenarial grooves present near mouth. Anterior teeth with moderately long, stout to slender cusps, smooth or weekly serrated. First dorsal fin high, falcate; second dorsal small, its base noticeably smaller than anal base. Grey or brownish above, white below; pectoral tips dusky to black.

Distribution : Indo-West Pacific.

Remarks : The commonest hammer-head shark.

Order PRISTIFORMES

Family PRISTIDAE

12. *Anoxypristis cuspidata* (Latham, 1794)

1794. *Pristis cuspidatus* Latham, *Trans. Linn. Soc. Lond.,* **2** : 279, pl. 26, fig. 3.

1991. *Anoxypristis cuspidata* Talwar and Jhingran, *Inland Fishes of India,* 1 : 32.

Description : Long narrow tapering saw with 24-25 pairs of triangular rostral teeth. Deep, broad and robust trunk. First dorsal distinctly behind pelvic; second dorsal slightly smaller. Subcaudal lobe well developed and pointed. Skin naked in young and develop denticles with growth into adults. Greyish above, fading to white below. Fin margins and lateral fold of tail white.

Distribution : Indo-West Pacific.

Remarks : Euryhaline species with minor fishery value in the east coast.

13. *Pristis zijsron* Bleeker, 1851

1851. *Pristis zijsron* Bleeker, *Nat. Tijdschr. Ned.-Indie.,* **2** : 417 & 442.

Description : Long, narrow and evenly tapering saw with 25-32 pairs of conical rostral teeth. Trunk broad, robust and deep. First dorsal large and erect, distinctly behind pelvic. Second dorsal subequal to first. Body chocolate brown fading to white below.

Distribution : Indo-West Pacific

Remarks : Infrequently occurring in trawl catches; does not support commercial fishery.

Order TORPEDINIFORMES

Family NARCINIDAE

14. *Narcine brunnea* Annandale, 1909

1909. *Narcine brunnea* Annandale, *Mem. Indian Mus.*, **2** : 45

Description : Disc shorter than tail; spiracles close behind eyes; nasal valves confluent. Two dorsal fins, the anterior one behind the ventrals. Chocolate brown, without spots; narrow creamy edge around disc.

Distribution : Seas of India, Malay Archipelago.

Remarks : Frequently occurs in trawl catches.

15. *Narcine maculata* (Shaw, 1804)

1804. *Raja maculata* Shaw, *Gen. Zool.*, **5** (2) : 316.

1941. *Narcine maculata* Fowler, *Bull. U.S. nat. Mus.*, (100) **13** : 333.

Description : Subcircular disc, long and broad; its length 1-9 in total length. Snout blunt, 3.7 in length of disc. Eyes small; mouth small, protractile. Spiracles without papillae. Electric organs on either side of head. Pelvic large triangular; dorsals sub-equal. No serrated caudal spine. Short tail without caudal pits. Brown with dark spots.

Distribution : India, Java and Penang.

16. *Narcine timlei* (Schneider, 1801)

1801. *Raja timlei* Schneider, *Syst. Ichth.* : 359.

1958. *Narcine timlei* Day, *The Fishes of India*, **1** : 733.

Description : Disc broader than long, outline of the tail reaching caudal base; spicules behind orbit, no tuberculation on the edge. Smaller anterior dorsal; origin behind the ventral. Spiracles in close proximity to the eyes. Numerous irregular chocolate coloured spots, larger than interspaces, on body and fin.

Distribution : India.

Remarks : Of negligible commercial value.

Family NARKIDAE

17. *Bengalichthys impennis* Annandale, 1909

1909. *Bengalichthys impennis* Annandale, *Mem. Indian Mus.*, **2** : 48, fig. 9, pl. 3, figs. 7, 7a.

Description : Stout, pear shaped disc, width of disc, 2.0-2.1 in total length. Eyes minute, sunken; snout broadly rounded; oronasal grooves present. Mouth small, protractile; roof and floor of mouth with long rectangular processes. Teeth triangular and pointed; 5 pairs of small

ventral gill openings. Pelvics subtriangular. Dorsal fin small, single, without spine. No serrated caudal spine. No anal fin. Caudal slightly bilobed. Brown above, ventral surface creamy.

Distribution : India, in the Bay of Bengal.

18. ***Narke dipterygia*** (Schneider, 1801)

1801. *Rhinobatus dipterygia*, Bloch & Schneider, *Syst. Ichth.* : 59.

1958. *Narke dipterygia* Munro, *The marine and freshwater fishes of Ceylon* : 17.

Description : One dorsal fin; disc almost circular. Tail short, skin smooth. Eyes small about half length of spiracle which is continuous with them. Brown above with diffuse blackish colourings medially. Dorsal and caudal brown.

Distribution : India and Srilanka.

Remarks : No fishery value.

Order RAJIFORMES

Family RHINOBATIDAE

19. ***Rhina ancylostoma*** Schneider, 1801

1801. *Rhina ancylostomus* Schneider, *Syst. Ichth. Bloch* : 352, pl. 72.

1984. *Rhina ancylostoma* Talwar & Kacker, *Comm. Sea. Fish. India* : 86.

Description : Broad depressed head with rounded snout. Body compressed and long. Strongly undulated mouth; rhomboid teeth, 40 rows in jaws. A division of spiracle interrupts the row of small tubercles along supraorbital edge. First dorsal triangular, origin anterior to pelvic base; smaller second dorsal; pelvic posterior to pectoral; larger upper and smaller lower lobes in caudal. A median row of vertebral tubercles on back and a short series on shoulder. Dorsally brown and ventrally white; sometimes with black lines or white lines or white dots.

Distribution : Tropical Indo-West Pacific.

Remarks : Of minor fishery value.

20. ***Rhinobatos granulatus*** Cuvier, 1829

1829. *Rhinobatus granulatus* Cuvier, *Regne Animal.* (ed.2), **2** : 396.

Description : Snout very long, triangularly pointed; width of mouth 2.6–3.2 in snout length; rostral ridges very close throughout their length. Nostrils wide, equal to internarial distance; anterior nasal flap extending across inner margin of nostril. Back coarsely tuberculated. Brown above; side of cartilage on rostrum buff brown. Dorsals and caudal grey.

Distribution : Indo-West Pacific.

Remarks : Truly marine, limited fishery value.

21. ***Rhinobatos thouiniana*** (Shaw, 1804)

1804. *Raja thouiniana* Shaw, *Gen. Zool.*, **5** : 318, pl. 147, fig. 2.

1984. *Rhinobatos thouiniana* Talwar & Kacker, *Comm. Sea Fish. India* : 84.

Description : Long snout with expanded tip and distinctly concave margins. Narrow rostral ridges anteriorly expanded; very close ridges anteriorly. Eye 5.5–8.7 in snout length. Mouth straight. Wide oblique nostrils, about 1.3 in width of mouth, 2.0 in internarial distance; anterior nasal flap extending beyond level of inner end of nostril. Spiracles nearly equal to eyes. Back with enlarged tubercles, a row of strong spines medially on the back. Body grey above, white below.

Distribution : India and East Indies.

Remarks : Minor fishery exists.

22. ***Rhynchobatus djiddensis*** (Forsskal,1775)

1775. *Raja djiddensis* Forsskal, *Descript. Anim.* : 18.

1986. *Rhynchobatus djiddensis,* Smith & Heemstra, *Smith's Sea Fishes* : 231.

Description : Snout long and pointed; disc longer than wide. First dorsal above pelvic base; posterior margin of pectorals anterior to pelvic origin; caudal bilobed. Eyes larger than spiracles; rear margin of spiracles with 2 dermal folds; rows of small tubercles along anterior and inner margin of orbit and inner margin of spiracles; a median row on back and on shoulder. Olive green above, with rows of white spots, dark spots on inter-orbital and a pair of prominent black ocelli ringed with white spots.

Distribution : Indian Ocean.

Remarks : An important game fish.

23. ***Zanobatus schoenleinii*** (Muller & Henle, 1841)

1841. *Platyrhina schoenleinii* Muller & Henle, *Syst. Beschr. Plagiost.* : 125, pl. 45.

1969. *Zanobatus schoenleinii* Misra, *Fauna of India, Pisces,* **1** : 128

Description : Disc broader than long, circular. Snout 1.5 in distance between snout end and hind edge of spiracle. Eyes 3.5 in snout, 1.5 in interorbital width; width of mouth 2.2 in head to first gill opening. Internarial 2.7 in head to first gill opening. Undulate dental plate. Dorsals subequal, on the tail. Pectorals subcircular; caudal rounded. Tail without spine, as long as disc length. Body brown with dark bands and blotches.

Distribution : Bay of Bengal.

Order MYLIOBATIFORMES

Family MYLIOBATIDAE

24. ***Aetomylaeus nichofii*** (Schneider, 1801)

1801. *Raja nichofii* Bloch and Schneider, *Syst. Ichth.*, : 364.

1991. *Aetomylaeus nichofii* Talwar and Jhingran, *Inland Fishes of India,* **1** : 51.

Description : Disc rhomboid, about twice as wide as long. Eye about 3.5 in snout length. Spiracles large, about twice the eye. Tail whip-like, about thrice as long as disc; no caudal spine. Skin naked in young, with fine denticles in adults. Dark brown with three to five greyish-blue bands often disappearing with age; tail irregularly blotched or dark brown in young; ventral surface white.

Distribution : India.

Remarks : Inhabits shallow inshore waters, enters brackish waters.

25. ***Rhinoptera adspersa*** Muller & Henle, 1841

1841. *Rhinoptera adspersa* Muller & Henle, *Syst. Beschr. Plagiost.,* : 183.

Description : Head broad, anterior margin concave; a soft bilobed subrostral fin on its lower surface. Upper jaw teeth in 9 rows, lower jaw teeth in 7 rows. Back rough with small stellate based spines. Tail long, whip-like, with a strong serrated spine. Greenish brown above, lighter below.

Distribution : India, Sri Lanka and Myanmar.

Remarks : Of minor fishery value.

Family MOBULIDAE

26. ***Mobula diabolus*** (Shaw, 1804)

1804. *Raja diabolus* Shaw, *General Zoology,* **5** : 291.

1984. *Mobula diabolus* Talwar and Kacker, *Comm. Sea Fish. India* : 119.

Description : Head broad, flat and truncate; mouth ventral, wide; each jaw with 30-80 rows of about 10 feeble teeth. Pectorals falcate, pointed. Tail slender, short; no spine at its base. Skin smooth. Grey to grey-brown above, creamy-white below.

Distribution : Indo-West Pacific.

Family DASYATIDAE

27. ***Dasyatis imbricata*** (Schneider, 1801)

1801. *Raja imbricata* Schneider, *Syst. Ichth.* : 366.

1984. *Dasyatis imbricata* Talwar & Kacker, *Comm. Sea Fish. India* : 94.

Description : Disc oval and flat; snout pointed; mouth undulated, with two buccal processes on its floor. Tail whip-like, about as long as disc length, with one spine, and with low cutaneous folds on both upper and lower surface. A row of conical denticles on shoulder and back, along tail as far as sting. Dorsal surface of disc grey, ventral surface white.

Distribution : India, eastward to the Philippines.

28. ***Dasyatis kuhlii*** (Muller & Henle, 1841)

1841. *Trygon kuhlii* Muller & Henle, *Syst. Beschr. Plagiost.* : 164, pl. 51, fig. 2.

1984. *Dasyatis kuhlii* Talwar & Kacker, *Comm. Sea Fish. India* : 95.

Description : Kite shaped disc, very broad. Eyes much smaller than spiracles. Mouth undulated, with two buccal papillae on the floor of mouth. Tails whip-like, long, more than disc length, bearing upper and lower cutaneous folds and 2-3 serrated spines. Skin on back and head of adult with small and black edged blue ocelli. Two obscure cross bands before the black tip of tail.

Distribution : Indo-West Pacific.

Remarks : Common in commercial catches.

29. ***Dasyatis zugei*** (Muller & Henle, 1841)

1841. *Trygon zugei* Muller & Henle, *Syst. Beschr. Plagiost.* : 165, pl. 54.

1984. *Dasyatis zugei* Talwar & Kacker, *Comm. Sea Fish. India* : 100.

Description : Disc sub-quadrangular; no buccal papillae on the floor of mouth. Spiracle larger than eye. Tail whip-like, tuberculated, with upper and lower cutaneous folds and one serrated spine. Skin smooth in young, adults with an incomplete series of tubercles medially, very large ones with complete series. Yellowish to dusky-brown, fading at the disc margin, cutaneous folds on tail dusky.

Distribution : Indo-West Pacific.

Remarks : Contributed to commercial fishery throughout the year.

30. ***Gymnura japonica*** (Schlegel, 1850)

1850. *Pteroplatea japonica* Schlegel, *in* Temmink & Schlegel, *Fauna Japan., Pisces*, 4 (15) : 309, pl. 141.

1984. *Gymnura japonica* Talwar & Kacker, *Comm. Sea Fish. India* : 106

Description : Disc length 2.0–2.2 in its width; snout broadly obtuse. Tail slender, 1.3–1.4 in disc length, with a small weak serrated spine and without cutaneous folds. Dorsal, anal and caudal fins absent. Disc brownish-grey; tail with 8 dark rings, as broad as interspaces.

Distribution : Indo-West Pacific.

Remarks : Earlier reported as *Gymnura micrura* (Schneider), occurrence of which is uncertain. Frequently found in trawl catches.

31. ***Gymnura poecilura*** (Shaw, 1804)

1804. *Raja poecilura* Shaw, *Gen. Zool.*, **5** : 291.

1984. *Gymnura poecilura* Talwar & Kacker, *Comm. Sea Fish. India* : 107.

Description : Disc broad, its length 1.9 in width. Snout broadly obtuse. No dorsal, anal and caudal. Mouth without buccal processes. Tail whip-like, without spine. Tail with black bands wider than inter-spaces. Dorsal surface brown, ventral whitish.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery value.

32. ***Himantura favus*** (Annandale, 1909)

1909. *Trygon favus* Annandale, *Mem. Indian Mus,* **2** : 25, pl. 1, fig. 3; pl. 3, fig. 10.

1969. *Dasyatis (Himantura) favus* Misra, *Fauna of India, Pisces,* **1** : 159.

Description : Disc rhomboidal, longer than broad; snout pointed, rather produced. Eyes small, widely separated, 6.0 in interorbital width. Mouth large, waved, with 2 buccal processes. Spiracles larger than eye. Five pair of ventral gill openings. Pelvics small; no dorsal; one serrated caudal spine. Tail whip-like, 1.8 in length of disc, without upper or lower cutaneous folds. Dark brown, with bold reticulations of dull yellow.

Distribution : Bay of Bengal.

33. ***Himantura uarnak*** (Forsskal, 1775)

1775. *Raja uarnak* Forsskal, *Descript. Anim.,* : viii, 18.

1991. *Himantura uarnak* Talwar & Jhingran, *Inland Fishes of India,* **1** : 46.

Description : Disc diamond-shaped and flat. Snout broadly rounded, with short terminal projection. Mouth long and undulated, with 4 fleshy papillae on floor of mouth. Dorsal surface of disc largely smooth, large median denticles in center of disc surrounded by many flattened ones. Tail whip-like, much longer than disc, with a single functional sting. Dorsal surface brown to blackish with a variable matrix of creamy lines; ventral surface whitish, often spotted with black.

Distribution : Indo-West Pacific.

Remarks : Of minor interest to fisheries.

34. ***Himantura walga*** (Muller & Henle, 1841)

1841. *Trygon walga* Muller & Henle, *Syst. Beschr. Plagiost.* : 159, pl. 51, fig.1.

1969. *Dasyatis (Himantura) walga* Misra, *Fauna of India, Pisces,* 1 : 169, fig. 58.

Description : Disc subcircular, slightly longer than broad, or as broad as long. Eyes 3.3 in interorbital width. Two buccal processes on floor of mouth. Uniform small tubercles on mid-dorsal surface of disc from eye to the sting. Tail whip-like, slightly longer than disc length, without upper and lower cutaneous folds, with 1 or 2 large serrated spines. Dull grey or brown above, whitish below.

Distribution : Red Sea, India to China.

Remarks : Taken commercially in small quantities. Recent authors consider it conspecific with *Dasyatis imbricata* Schneider.

35. ***Hypolophus sephen*** (Forsskal, 1775)

1775. *Raja sephen* Forsskal, *Descript. Anim.* : viii, 17.

1991. *Hypolophus sephen* Talwar & Jhingran, *Inland Fishes of India,* **1** : 48.

Description : Disc diamond-shaped; snout obtuse. Mouth strongly undulated, with five long papillae on floor of mouth. Teeth hexagonal and enlarged. Tail fairly thick and long, lower tail-fold very prominent. Skin smooth in young, denticulated all over dorsal surface in adults. Uniformly black or dark on dorsal surface of disc, whitish on ventral surface of disc; tail-fold blackish.

Distribution : Red Sea and Indian Ocean, eastward to Australia.

Remarks : A coastal species of minor fishery value.

36. ***Urogymnus asperrimus*** (Bloch & Schneider, 1801)

1801. *Raja asperrima* Bloch & Schneider, *Syst. Ichth,* 367.

1985. *Urogymnus asperrimus* Smith & Heemstra, *Smith's Sea Fishes :* 141.

Description : Disc circular, tooth rows about 48 in each jaw. Body covered with small pointed denticles and large thorns. Tail about as long as disc, without spine. Disc light grey or whitish above, white below; tail tip blackish.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery value.

Class OSTEICHTHYS

Order ELOPIFORMES

Family ELOPIDAE

37. ***Elops machnata*** (Forsskal, 1775)

1775. *Argentina machnata* Forsskal, *Descript. Anim.* : xiii, 68.

1991. *Elops machnata* Talwar & Jhingran, *Inland Fishes of India,* **1** : 67.

Description : Body elongate and fusiform; smooth unkeeled body. Mouth terminal, upper jaw long, extending well behind eye; lower jaw projecting slightly. Dorsal with 20 to 25 rays; anal with 15 to 17 rays, its origin well behind dorsal base; pelvic base little in front of dorsal origin. Back blue or grey, sides silvery; fins yellowish.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery value.

Family MEGALOPIDAE

38. ***Megalops cyprinoides*** (Broussonet, 1782)

1782. *Clupea cyprinoides* Broussonet, *Ichthyol.*, : pl. 9.

1984. *Megalops cyprinoides* Talwar & Kacker, *Comm. Sea Fish. India* : 211.

Description : Body fusiform and somewhat compressed, with smooth, unkeeled belly, mouth superior, upper jaw extending almost to hind border of eye; lower jaw projecting slightly, angular plate present. Dorsal with 17 to 20 rays, the last ray elongated and filamentous. Anal with 24 to 31 rays. Back blue-green, flanks silvery; lateral line golden.

Distribution : Indo-West Pacific.

Remarks : A coastal pelagic species; taken commercially along the southeast coast of India.

Family ALBULIDAE

39. ***Albula vulpes*** (Linnaeus, 1758)

1758. *Esox vulpes* Linnaeus, *Systema Naturae* (ed. 10), **1** : 313.

1984. *Albula vulpes* Talwar and Kacker, *Comm. Sea Fish. India* : 213.

Description : Body slender, snout rather pig-like, projecting beyond tip of lower jaw; mouth inferior, the upper jaw not reaching to eye. Dorsal with 15 to 17 rays; anal with 8 rays. Back blue/green with narrow dark horizontal lines, fading rapidly after death, sides silvery. Fins yellowish white.

Distribution : Circumglobal, in most tropical seas.

Remarks : Found in shallow coastal waters, estuaries and bays, over sand-mud bottom. Taken commercially only occasionally in our region.

Order ANGUILLIFORMES

Family ANGUILLIDAE

40. ***Anguilla bengalensis bengalensis*** (Gray, 1834)

1834. *Muraena bengalensis* Gray & Hardwick, *Illust. Indian. Zool.* : pl. 95, fig. 5.

1984. *Anguilla bengalensis bengalensis* Talwar & Kacker, *Comm. Sea Fish. India :* 216.

Description : Body snake-like, cylindrical anteriorly. Mouth slightly oblique, extending beyond eye; lips prominent; teeth small, conical, in narrow bands on jaws and vomer. Dorsal with 250–305 rays, inserted nearer to anus then gill opening. Pectorals well developed. Body brownish dorsally mottled with dark brown, belly yellowish. Fin yellowish mottled with brown.

Distribution : India to Indonesia.

Remarks : One among the three most common commercial eels of India.

41. ***Anguilla bicolor bicolor*** McClelland, 1844.

1844. *Anguilla bicolor bicolor* McClelland, *Calcutta J. nat. Hist.*, **5**(8) : 178, pl. 16, fig. 1.

Description : Body elongate; head conical, flattened dorsally. Mouth terminal, angle of mouth a little behind posterior margin of eye, lips prominent; teeth small, inconspicuous, multiserial, forming broad continuous bands on jaws and vomer; vomerine toothband extending to upper jaw. Dorsal with 220–245 rays, inserted slightly before or after anus, Brown, colour changes to bronze-silvery during migratory phase.

Distribution : India, westward to East Africa.

Remarks : Does not support commercial fishery.

Family MURAENIDAE

42. ***Thyrsoidea macrura*** (Bleeker, 1854)

1854. *Muraena macrura* Bleeker, *Nat. Tijdsch. Ned.-Indie*, **7** : 324.

1984. *Thrysoidea macrura* Talwar & Kacker, *Comm. Sea Fish. India* : 228.

Description : Body extremely elongate, depth about 40 times in total length; head about 3.5 in trunk. Posterior nostril with low rim, anterior nostrils short tubes. Cleft of mouth about 3 in head length. Teeth all slender, fang-like, front larger, medium depressible fangs; uniserial small hidden teeth on vomer. Dorsal fin inserted before gill-openings. Brownish grey above, fins tinged with black.

Distribution : Indo-West Pacific.

Remarks : This is the largest known eel. Not usually aggressive, but dangerous when cornered. This eel is mostly used as fish bait or consumed as food by the poor.

Family OPHICHTHIDAE

43. ***Ophichthus apicalis*** (Bennett, 1830)

1830. *Ophisurus apicalis* Bennett, *Cat. Zool. Spec. in Mem. Life of Raffles* : 692.

1984. *Ophicthus apicalis* Talwar & Kacker, *Comm. Sea Fish. India* : 246.

Description : Depth 2.6- 3.3, head 8.8-9.8 in total length. Head and trunk combined 1.5-1.6 in tail. Snout blunt, cleft of mouth extends slightly but not beyond the posterior margin of eye. Teeth small, sharp, in a cluster on tip of upper jaw, uniserial on sides of jaws, irregularly biserial on vomer. Dorsal fin origin over about pectoral base. Dorsal and anal fins expanded near end of tail. Pectoral fin 2.2-2.5 in length of head. Body light brown with greenish tint, ventrally whitish.

Distribution : Indo-Pacific.

Remarks : Of minor fishery value.

44. ***Ophichthus microcephalus*** Day, 1878

1878. *Ophichthus microcephalus* Day, *Fishes of India* : 665.

Description : Head 8.0–9.0 in length of trunk; tail nearly twice as long as trunk; eyes situated behind the middle of the distance between the snout and angle of mouth. Teeth obtusely conical and in three rows on sides of jaws. Dorsal fin origin over last third of pectoral base. Olive above, dull yellow on sides and below.

Distribution : India.

45. ***Pisodonophis boro*** (Hamilton, 1822)

1822. *Ophisurus boro* Hamilton, *Fishes of Ganges* : 20, pl. 5, fig. 5.

1984. *Pisodonophis boro* Talwar & Kacker, *Comm. Sea Fish, India* : 249.

Description : Body elongate, cylindrical; depth 30-36 in total length and 2.6-3.6 in head length. Length of head 9-12 in total length and 3.5–4.0 in trunk. Mouth large, its cleft extends behind eye; lower jaw shorter, teeth granular, in several series. Dorsal fin considerably behind tip of pectoral fin. Dorsal and anal fins low, end before tip of tail. Body uniform brownish olive above, pinkish or yellowish on sides and belly.

Distribution : Indo-West Pacific.

Remarks : Constitutes incidental catches.

46. ***Pisodonophis cancrivorus*** (Richardson, 1844)

1844. *Ophisurus cancrivorus* Richardson, *Voy. Erebus and Terror, Fish* : 97, pl. 50, figs. 6-9.

1991. *Pisodonophis concrivorus* Talwar & Jhingran, *Inland Fishes of India*, **1** : 87.

Description : Serpentine cylindrical body, compressed only along extreme tail tip. Anterior nostril tubular, posterior nostril along lower edge of lip. Teeth granular to molariform, in multiserial bands on jaws and vomer, but sharper and more pointed in young and on sides of lower jaw. Median fins on tail discontinuous posteriorly; extreme tip of tail stiff and finless; dorsal origin over front to middle portion of pectoral. Lateral line inconspicuous. Dorsal fin with a narrow black edge and a black spot anteriorly.

Distribution : Indo-West Pacific.

Remarks : It constitutes a by-catch.

Family MURAENESOCIDAE

47. ***Muraenesox cinereus*** (Forsskal, 1775)

1775. *Muraena tata cinera* Forsskal, *Descript. Animal.* : 22.

1984. *Muraenesox cinereus* Talwar and Kacker, *Comm. Sea Fish. India* : 239.

Description : Body without scales. Snout short; eye diameter 2.0-2.5 in snout length; Interorbital width about 8.2 in head. Posterior nostrils nearer to eyes than to anterior nostrils.

Mouth large, upper jaw extending beyond eyes. Teeth in jaws in 2 or 3 series, outer row of teeth in lower jaw erect; fang like canine teeth in front on lower jaw and vomer, median canines on vomer with distinct basal lobes. Dorsal origin slightly in front of gill openings, 66-78 rays before level of anus. Pectoral well developed. Lateral line pores before level of anus 39-47. Fins broadly edged with black.

Distribution : Indian Ocean.

Remarks : Common commercial eel of India.

Family CONGRIDAE

48. ***Ariosoma anago*** (Schlegel, 1846)

1846. *Conger anago* Schlegel, *Fauna Japonica, Pisces* : 259.

1982. *Ariosoma anago* Murno, *The marine and freshwater fishes of Ceylon* : 64.

Description : Depth 16 to 18, head 6 in length. Anterior nostril tubular. Teeth small and pointed, not forming a cutting edge, in several series in both jaws. Dorsal origin above pectoral base. Brown or greyish, fins yellowish hyaline.

Distribution : Indo-West Pacific.

Remarks : Of very minor fishery value.

49. ***Uroconger lepturus*** (Richardson, 1845)

1845. *Congrus lepturus* Richardson, *Zool. Voy. Sulphur* : 106, pl. 56, fig. 1-6.

1984. *Uroconger lepturus* Talwar and Kacker, *Comm. Sea Fish. India* : 232.

Description : Body elongate and cylindrical. Tail usually longer than twice length of head and trunk combined. Head large and stout; snout strong, broad and blunt, projecting in front of lower jaw. Mouth large; tongue free; teeth in two rows on sides of jaws, canine like; vomerine teeth in a single row of 10 to 20 teeth. Dorsal origin above or slightly before pectoral base. Body dark brownish; lateral line with a row of whitish spots. Fins darker.

Distribution : Indo-west Pacific.

Remarks : Of minor economic value.

Order CLUPEIFORMES

Family CLUPEIDAE

50. ***Anodontosoma chacunda*** (Hamilton, 1822)

1822. *Clupanodon chacunda* Hamilton, *Fishes of Ganges* : 246

1991. *Anodontostoma chacunda* Talwar & Jhingran, *Inland Fishes of India*, **1** : 104.

Description : Body very deep, its depth increasing with size of fish, 1.4-2.5 in standard length in fishes over 10 cm. Mouth inferior, second supra-maxilla a mere splint. Lower

gill-rakers 54 to 96, longest gill-rakers on lower part of arch less than corresponding gill-filaments. Last dorsal fin ray not filamentous. Hind edges of scales toothed, the teeth thinner than gaps between them; a median series of pre-dorsal scales. A large black spot behind gill opening, lines formed of spots along rows of scales in upper third of body.

Distribution : Indo-West Pacific.

Remarks : Contributes a small fishery.

51. ***Dussumieria acuta*** Valenciennes, 1847

1847. *Dussumieria acuta* Valenciennes, *Hist. nat. Poiss.*, **20** : 467, pl. 606.

Description : Body fairly elongate, subcylindrical in cross-section; belly rounded and smooth; without scutes. Mouth small, snout pointed; small vertical slit in upper half of adipose tissue covering eyes; branchiostegal rays 12-19; gill-rakers 19 to 26 on lower limb of first arch. Dorsal fin origin at mid-point of body; pelvic fins below dorsal fin base; anal fin very short. Hind portion of scales with fine horizontal striae. Back iridescent blue with a shiny gold/brass line below; flanks silvery, caudal with dark hind margin.

Distribution : Gulf to southern India.

Remarks : A pelagic inshore species abundant in the Indian coasts.

52. ***Escualosa thoracata*** (Valenciennes, 1847)

1847. *Kowala thoracata* Valenciennes, *Hist. nat. Poiss.*, **20** : 363.

1973. *Escualosa thoracata* Whitehead, *J. mar. biol. Ass India,* **14**(1) : 189, fig. 20.

Description : Body fusiform, moderately deep, compressed; belly with distinct keel of scutes; mouth small, 2nd supra maxilla rectangular, gill opening smoothly rounded. Dorsal fin at about mid-point of pelvic rays, anal fin short, its origin behind dorsal fin base. Back pale grey, a double pigment line along back, flanks with a diffuse silvery band.

Distribution : Indo-West Pacific.

Remarks : An important commercial species.

53. ***Hilsa kelee*** (Cuvier, 1829)

1829. *Clupea kelee* Cuvier, *Regne Anim.* (ed. 2)., **2** : 320.

1984. *Hilsa kelee* Talwar & Kacker, *Comm. Sea Fish. India* : 165.

Description : Body fusiform, fairly deep and compressed, depth 2.5-3.3 in standard length; belly with distinct keeled scutes. Top of head with numerous fronto-parietal striae; upper jaw with a median notch; no teeth on jaws. Gill-rakers very fine, about 100-175, those on inner arches distinctly curled outward; outer row of gill-filaments on first arch not more than half length of gill-rakers. A series of small triangular scales above axil of pelvic-fin; hind part of body scales perforated. A black spot behind operculum, usually followed by up to ten spots along flanks. Tips of anterior dorsal fin rays dusky, caudal tips faintly dusky.

Distribution : Indo-West Pacific.

Remarks : A valuable commercial fishery exists.

54. ***Nematalosa nasus*** (Bloch, 1795)

1794. *Clupea nasus* Bloch, *Naturges. Ausland. Fische,* (19) : 116, pl. 429, fig.1

1991. *Nematalosa nasus* Talwar and Jhingran, *Inland Fishes of India,* **1** : 111.

Description : Body deep, depth 2.4-2.9 in standard length; belly with 17-20 (usually 18) + 9-13 (usually 11), total 28-32 (usually 30) scutes. Mouth inferior, lower jaw strongly flared outward. Last dorsal fin ray elongated. Hind edge of scales distinctly toothed. A dark spot behind gill-opening. Centre of each scale in first row from above the darkest forming horizontal lines; flanks and belly silvery.

Distribution : Indo-West Pacific.

Remarks : Constitutes a supporting fishery.

55. ***Sardinella brachysoma*** Bleeker, 1852

1852. *Sardinella brachysoma* Bleeker, *Verh. batav.Genoot. Kunst. Wet.,* **24** : 19.

Description : Body deep and compressed, depth 2.5-3.6 in standard length; belly with 17 or 18 pre-pelvic and 12-14 post-pelvic scutes; lower gillrakers 49-65 on first arch. Dorsal with 14-15 and anal with 16-19 branched rays. Posterior scales with numerous vertical striae; posterior margin of scales much perforated. Back blue-green, flanks silvery.

Distribution : Indo-West Pacific.

Remarks : Seasonally commercial fishery exists.

56. ***Sardinella fimbriata*** (Valenciennes, 1847)

1847. *Spratella fimbriata* Valenciennes, *Hist. nat. Poiss.,***20** : 359, pl.601.

1984. *Sardinella fimbriata* Talwar and Kacker, *Comm. Sea Fish. India* : 142.

Description : Depth 25 to 35% of standard length. Pre-pelvic scutes 17 or 18, post pelvic 12-14. Gill-rakers on lower arm of first arch 53 to 82. Dorsal fin with 14–16 branched rays. Anal fin with 16–19 branched rays. Pelvic fin with 8 rays. Scales cycloid; anterior scales perforated and fimbriated at posterior margin; posterior scales with 4 or 5 vertical striae; interrupted at centre of scale. Back blue-green, the flanks silvery.

Distribution : India to the Philippines.

Remarks : Common in commercial catches.

57. ***Sardinella gibbosa*** (Bleeker, 1849)

1848. *Clupea gibbosa* Bleeker, *J. Ind. Arch.,* **3** : 72.

1982. *Sardinella gibbosa* Talwar & Kacker, *Comm. Sea Fish.India* : 144.

Description : Depth 22 to 31% of standard length; belly with 17-19 pre-pelvic and usually 15 post-pelvic scutes; lower gillrakers 38–65. Dorsal with 13–16 and anal with 14–18 branched rays; pelvic with 8 rays. Anterior scales fimbriated and broadly perforated; posterior scales with 4 or 5 striae, interrupted at center of scale. Blue-green above, flanks silvery, separated by a narrow yellow horizontal line.

Distribution : Indo–West Pacific.

Remarks : Forms a major part of sardine catches.

58. ***Sardinella longiceps*** Valenciennes, 1847

1847. *Sardinella longiceps* Valenciennes, *Hist. nat. Poiss,* **20** : 273.

Description : Body elongate, cylindrical; usually 18 or 19 pre-pelvic and 14 or 15 post-pelvic scutes. Head very long, 29 to 35% of standard length. Gill-rakers 150-250 on lower arm of first arch. Dorsal fin with 13-15, anal fin with 12-15 branched rays; pelvic fin with 9 rays. Scales cycloid. Back blue green, flanks silvery; a dark spot on hind margin of gill cover.

Distribution : Coasts of India.

Remarks : Commercially important fishery exists.

Family PRISTIGASTERIDAE

59. ***Ilisha elongata*** (Bennett, 1830)

1830. *Alosa elongata* Bennet, *Mem. Life of Raffles,* : 691.

1984. *Ilisha elongata* Talwar & Kacker, *Comm. Sea Fish India* : 151.

Description : Depth 3.2–3.7 in standard length. Belly keeled, with 24-26 + 10 –15, total 34-42 scutes Head 4.2-4.5 in standard length. Gillrakers 19-25 on lower arm of first arch. Dorsal with 14 or 15, anal with 40-49 branched rays. A single long tube from hind end of swim bladder passing back through muscles of right side of body. Back blue-green, flanks silvery.

Distribution : South-east coast of India to Japan.

Remarks : Commercially not viable.

60. ***Ilisha megaloptera*** (Swainson, 1839)

1839. *Platygaster megalopterus* Swainson, *Nat. Hist. Anim.,* **2** : 294.

1991. *Ilisha megaloptera* Talwar and Jhingran, *Inland Fishes of India* 1 : 119.

Description : Depth 2.6 to 3.5 in standard length; belly with 19-23 + 8-12, total 28-35 scutes; lower gill-rakers 18-23. Dorsal with 14–15, anal with 46–52 branched rays. Dorsal inserted near midpoint of body. Anal origin below hind part of dorsal base. Swimbladder with a single long tube passing back down right side of body above anal fin base. Dorsal profile dark, upper flanks light brown, anal margin black, caudal with dark pigment.

Distribution : Indian Ocean.

Remarks : Of commercial value.

61. ***Ilisha melastoma*** (Schneider, 1801)

1801. *Clupea melastoma* Schneider, *Syst. Ichth. Bloch* : 427.

1991. *Ilisha melastoma* Talwar and Jhingran, *Inland Fishes of India*, 1 : 121.

Description : Depth 2.4-3.0 in standard length; belly with usually 17-21 + 8 or 9, total 25-30 scutes; lower gillrakers 21-25. Dorsal inserted before midpoint of body. Anal origin under hind part of dorsal base. Dorsal with 15–17 and anal with 35–46 branched rays. Vertical striae on scales traversing whole scale or overlapping across centre of scale. Swimbladder with two tubes passing back in the muscles on either side of haemal spines. Back brown, fading to silvery-white, caudal margin dark.

Distribution : Southern coast of India to China Sea..

Remarks : Contributes to artisanal fishery.

62. ***Ilisha striatula*** Wongratana, 1983

1983. *Ilisha striatula* Wongratana, *Jap.J.Ichthyol.*, **29** (4) : 396, fig. 13.

Description : Depth 2.3–3.1 in standard length; belly with (18- 20) + (8-9) scutes; lower gillrakers 21–25. Dorsal fin with about 15 and anal fin with 35–40 branched rays; pectoral longer, 4.8–5.5 in standard length. Vertical striae on scales not continuous, but with a distinct gap across center of scales. Two slender tubes from hind end of swim-bladder passing back into the muscle on either side of haemal spines.

Distribution : India and Pakistan.

63. ***Opisthopterus tardoore*** (Cuvier, 1829)

1829. *Pristigaster tardoore* Cuvier, *Regne Anim.* (ed. 2), **2** : 381.

1991. *Opisthopterus tardoore* Talwar and Jhingran, *Inland Fishes of India*, **1** : 123.

Description : Body strongly compressed, its depth 3.3-3.7 in standard length; belly concave in front, with 29-35 scutes. Mouth pointing obliquely upward. Lower gill-rakers 22 -28, increasing with size. Dorsal fin small, with 11–14 rays, inserted well behind midpoint of body. Anal fin long, with 48–60 rays, its origin well before dorsal fin. Scales in lateral series 46-51. Back blue-green, flanks and belly silvery.

Distribution : Indian Ocean.

Remarks : Supports an artisanal fishery.

64. ***Pellona ditchela*** Valenciennes, 1847

1847. *Pellona ditchela* Valenciennes, *Hist. nat. Poiss.*, **20** : 314.

Description : Body moderately deep and compressed; belly with 18 or 19 + 8 or 9, total

26 to 28 scutes. Eyes large. Mouth oblique; teeth minute, in a single row on jaws; hypomaxilla toothed; lower gill-rakers 22-27. Dorsal fin inserted near midpoint of body. Dorsal with 13–16, anal with 31–36 branched rays. Scales with upper and lower vertical striae slightly overlapping each other at centre of scales. Silvery with a lateral band. Upper edge of dorsal fin slightly dark.

Distribution : Indo-West Pacific.

Remarks : Contributes to artisanal catches.

Family ENGRAULIDIDAE

65. *Coilia dussumieri* Valenciennes, 1848

1848. *Coilia dussumieri* Valenciennes, *Hist. nat. Poiss.*, **21** : 81, pl. 610.

Description : Body tapering, belly rounded before pelvic fins, with 5 or 6 plus 7 to 9, total 12 to 15 keeled scutes. Maxilla short, not quite reaching to edge of gill cover. Lower gillrakers 23 to 26. Pectoral fin with 6 long filaments and 9 to 11 branched rays; pelvic fin with 7 rays. Flanks and belly with golden or pearly spots along flanks.

Distribution : Indo-West Pacific.

Remarks : One of the most common food-fish.

66. *Coilia reynaldi* Valenciennes, 1848

1848. *Coilia reynaldi* Valenciennes, *Hist. nat. Poiss.* **21** : 81.

Description : Body tapering, belly rounded before pelvic fins, with 6 to 9 + 7 to 11 keeled scutes, from just behind pectoral fin base to anus. Maxilla short, not reaching to edge of gill cover. Lower gill-rakers 28 to 36. Pectoral fin with 10 to 13 long filaments and 6 to 7 branched fin rays, pelvic fin with 7 rays. Greenish body with golden flanks, fading to abdomen.

Distribution : Indian Ocean–Bay of Bengal.

Remarks : Common in commercial catches.

67. *Encrasicholina heteroloba* Ruppell, 1837

1837. *Engraulis heteroloba* Ruppell, *Neue Wirebeth. Fische* : 79, pl. 21, fig. 4.

1988. *Encrasicholina heteroloba* Whitehead *et al.*, *FAO Fish. Synop.*,(125) **7** (2) : 397.

Description : Body cylindrical, belly rounded, with 4 to 6 sharp needle-like pre-pelvic scutes. Maxilla tip pointed, projecting beyond anterior border of pre-operculum; isthmus short, preceded by a small bony plate on urohyal between branchial membranes. Lower gillrakers 22–30. Unbranched dorsal and anal fin rays only 2; anal short, with usually ii, 14-16 fin rays. Bright silvery stripe, with deep blue upper border, along flanks.

Distribution : Indian Ocean.

Remarks : Minor fishery exists.

68. ***Setipinna taty*** (Valenciennes, 1848)

1848. *Engraulis taty* Valenciennes, *Hist. nat. Poiss.*, **21** : 60.

1988. *Setipinna taty* Whitehead *et al*, *FAO. Fish. Synop.*, (125) **7** (2) : 457.

Description : Body strongly compressed, belly keeled with 20-29 plus 9-14, total 32-40 scutes. Lower gill-rakers 17-21, their serrae distinctly clumped; pectoral filament long, reaching to base of 23rd to last anal fin ray; anal fin rays iii 45-55. Scales present on dorsal and anal fins.

Distribution : Coastal areas of Indian Ocean.

69 ***Stolephorus andhraensis*** Babu-Rao, 1965

1965. *Stolephorus andhraensis* Babu-Rao, *Ann. Mag. nat. Hist.*, (13) **9** : 103.

Description : Body somewhat compressed, slender, depth less than upper jaw length; belly with 6 or 7 needle-like scutes. Maxilla tip projecting to edge of operculum; hind border of pre-operculum indented near maxilla tip. Lower gillrakers 20 or 21. Dorsal with iii, 12-14 rays, no pre-dorsal spine; anal with iii, 16-20 rays, originate below dorsal base. Body milk white, bright silvery stripe along flanks; no pigmented line on back.

Distribution : East coast of India; Singapore; New Guinea.

70. ***Stolephorus baganensis*** Hardenberg, 1931

1931. *Stolephorus baganensis* Hardenberg, *Treubia*, **13**(1) : 107.

Description : Body somewhat compressed, belly with 6 or 7 small needle-like pre-pelvic scutes. Maxilla pointed, reaching to or beyond edge of operculum; hind border of preoperculum evenly rounded near maxilla tip. Lower gill rakers usually 20 to 23. Predorsal spine and spine on pelvic scute present. Anal short, usually with iii, 18 or 19 rays. A double pigment line on back behind dorsal fin.

Distribution : East coast of India to Malayan Archipelago.

71. ***Stolephorus commersonii*** (Lacepede, 1803)

1803. *Stolephorus commersonii* Lacepede, *Hist. nat. Poiss.*, **5** : 381, 382, pl. 12, fig. 1.

Description : Body somewhat compressed, belly a little rounded, with 0 to 5 small needle-like pre-pelvic scutes. Maxilla tip pointed, reaching to or a little beyond hind border of pre-operculum, the latter convex, rounded. Lower gillrakers usually 23 to 28. Isthmus muscle tapering evenly forward to hind border of branchial membrane; pelvic fin tips reaching to below anterior dorsal fin rays; anal short, with usually iii, 18-19 fin rays, its origin below second half of dorsal base. A pair of dark patches behind occiput, followed by a pair of dark lines to dorsal fin origin.

Distribution : Indian Ocean.

Remarks : Commercial fishery exists. Of moderate food value.

72. ***Stolephorus indicus*** (van Hasselt, 1823)

1823. *Engraulis indica* van Hasselt, *Algemeene Knost-en Letter-Bode,* **1** (23) : 329.

1988. *Stolephorus indicus* Whitehead *et. al., FAO. Fish. Synop.* (125) **7** (2) : 412.

Description : Body slender, elongate, round in cross-section, belly rounded, with 2-6 pointed needle-like scutes. Hind border of preperculum evenly rounded near maxilla-tip; maxilla-tip reaching to or only just beyond front border of pre-operculum. Lower gill rakers 20-28. Pelvic not reaching below dorsal origin; anal short, with usually iii, 16–18 rays. Creamy-white.

Distribution : Indo-West Pacific.

Remarks : Minor commercial fishery exists.

73. ***Thryssa dayi*** Wongratana, 1983

1983. *Thryssa dayi* Wongratana, *Japan. J. Ichthyol.,* **29** (4) : 404, fig.24.

Description : Body compressed, belly with 15 or 16 plus 10 or 11, total 25 to 27 keeled scutes. Maxilla long, reaching to pectoral fin base. First supra-maxilla minute, oval; teeth in jaws enlarge, especially in lower jaw. Lower gillrakers 14-18. Tip of first pectoral fin-ray elongated into a short filament in some specimens. Anal fin rays iii, 41 to 46. A dark blotch indistinct or absent behind upper part of gill opening; a pair of dark lines along back.

Distribution : Indian Ocean.

74. ***Thryssa dussumeri*** (Valenciennes, 1848)

1848. *Engraulis dussumieri* Valenciennes, *Hist. nat. Poiss.,* **21** : 69.

1988. *Thryssa dussmieri* Whitehead *et. al., FAO. Fish. Synop,* (125) **7** (2) : 429.

Description : Body compressed, belly with 15 or 16 plus 6 to 9, total 21 to 24 keeled scutes. Maxilla very long, reaching at least half way along pectoral fin; first supra-maxilla absent; lower jaw slender. Lower gillrakers 17 to 19, the serrae in distinct clumps. Anal rays iii, 29 to 37. A dark blotch behind upper part of gill opening, some times joined to a dark saddle on nape.

Distribution : Indian Ocean.

Remarks : Significant commercial fishery exists.

75. ***Thryssa hamiltonii*** (Gray, 1835)

1835. *Thryssa hamiltonii* Gray, *Illustr. Ind. Zool. Hardwicke,* **2** : pl. 92, fig. 3.

1988. *Thryssa hamiltonii* Whitehead. *et al., FAO. Fish. Synop,* (125) **7** (2) : 432.

Description : Body compressed, belly with 16-19 plus 8 or 9, total 23-26 keeled scutes. Maxilla short or moderate, reaching to edge of gill cover or projecting slightly beyond; lower gillrakers 12 to 14. Anal with iii, 32 to 39 fin rays. A dark blotch behind upper part of gill opening. Pigment lines along back.

Distribution : Indo-West Pacific

Remarks : Commercially viable fishery exists in the east coast of India.

76. ***Thryssa malabarica*** (Bloch, 1795)

1795. *Clupea malabarica* Bloch, *Naturges .ausland. Fische,* (9) : 115, pl. 432.

1988. *Thryssa malabarica* Whitehead *et. al., FAO. Fish. Synop.,* (125) **7** (2) : 435.

Description : Body compressed, belly with 15 or 16 plus 9, total 23 to 26 keeled scutes. Maxilla moderate, projecting little beyond edge of gill cover, but not to pectoral fin base ; first supra-maxilla small; lower gillrakers 17–19. A black blotch behind upper part of gill-opening; small spots on cheek, gill cover, maxilla and paired fins; gill arches pinky orange, inside gill cover yellow and gold ; inner part of anal fin deep yellow, the margin milk white, pectorals black.

Distribution : India and Pakistan

Remarks : Of good commercial value.

77. ***Thryssa mystax*** (Schneider, 1801)

1801. *Clupea mystax* Schneider, *Syst. Ichthyol. Bloch* : 426, pl. 83.

1988. *Thryssa mystax* Whitehead *et al., FAO. Fish. Synop.,* (125) **7** (2) : 438.

Description : Body compressed, belly with 17 to 19 plus 8 to 13, total 23 to 32 keeled scutes. Maxilla long, reaching to or beyond pectoral base; first supra-maxilla oval, minute. Lower gill rakers 14 to 16, the serrae on the inner edge even and not clumped. Anal fin rays iii, 29 to 37. A dark blotch behind upper part of gill opening.

Distribution : India to Indonesia.

Remarks : Forms a very good fishery along Chennai coast.

78. ***Thryssa purava*** (Hamilton, 1822)

1822. *Clupea purava* Hamilton, *Fishes of Ganges* : 238, 382.

1991. *Thryssa purava* Talwar and Jhingran, *Inland Fishes of India* **1** : 146.

Description : Body compressed; belly keeled, with 15 to 17 plus 10 or 11 scutes. Head 4.0- 4.7 in standard length. Tip of snout a little above level of eye-centre. Maxilla moderate, projecting slightly beyond edge of gill-cover or at most to halfway to pectoral fin base; angle of mouth oblique; teeth on lower jaw slightly enlarged. Lower gill-rakers 17 to 21 (usually 18 to 19), their serrae uneven but clumped. Back brownish, flanks and belly silvery; an indistinct dark blotch behind upper part of gill-opening and faint dark line along back.

Distribution : Coast bordering Bay of Bengal.

Remarks : Contributes to artisanal catches.

79. ***Thryssa setirostris*** (Broussonet, 1782)

1782. *Clupea setirostris* Broussonet, *Ichthyol* : text & pl. 2, no pagination.

1988. *Thryssa setirostris* Whitehead *et. al., FAO. Fish. Synop.,* (125) **7** (2) : 443.

Description : Body fairly compressed, belly with 16-18 plus 9-10, total 25-28 keeled scutes. Very long maxilla, reaching at least tip of pectoral fin, usually to pelvic fin base or even to anal fin origin; also unique in the high coronoid process of the lower jaw, the jaw rising steeply in the mouth. Lower gill rakers 10 to 12. Brown with gold fins; anal and caudal deep yellow; black area behind upper part of gill opening.

Distribution : Indo-Pacific.

Remarks : Small commercial fishery exists.

80. ***Thryssa vitrirostris*** (Gilchrist & Thompson, 1908)

1908. *Engraulis vitrirostris* Gilchrist & Thompson, *Ann. S. Afr. Mus.,* **6** : 201.

1988. *Thryssa vitrirostris Whitehead et al., FAO. Fish. Synop.,* (125) **7** (2) : 445.

Description : Body compressed, belly with 16 to 19 plus 8 to 12, total 24 to 30 keeled scutes. Maxilla long reaching beyond base of first pectoral fin ray. Lower gill rakers 18 to 24, serrae with clumps. Anal with iii, 31 to 40 rays. A dark blotch behind upper part of gill opening, inside gill cavity bright orange.

Distribution : Indian Ocean.

Remarks : Of minor fishery value as occasional catch.

Family CHIROCENTRIDAE

81. ***Chirocentrus dorab*** (Forsskal, 1775)

1775. *Clupea dorab* Forsskal, *Descript. Anim.* : 72.

1984. *Chirocentrus dorab* Talwar and Kacker, *Comm. Sea Fish. India* : 206.

Description : Body very elongate, strongly compressed; belly sharp but without scutes. Head strongly compressed; 2 fang-like canines pointing forward in upper jaw, a series of canine teeth in lower jaw. Dorsal set far back on body; anal origin below about dorsal fin origin; pectoral fin short, its length about equal to distance between eye centre and hind border of gill cover. Upper part of dorsal black.

Distribution : Indo-West Pacific.

Remarks : Supports an important commercial fishery.

82. ***Chiroentrus nudus*** Swainson, 1839

1838. *Chirocentrus nudus* Swainson, *Nat. Hist. Anim.,* **2** : 294.

Description : Body strap-like, strongly compressed, belly sharp but without scutes. Large

canines in both jaws, two fang like canines pointing forward in upper jaw. Dorsal set far back on body; anal origin a little behind dorsal origin; pectoral long, its length greater than distance between eye centre and hind border of gill cover. Bluish green on back fading to silvery on belly; base of pectoral black.

Distribution : Indo-west Pacific.

Remarks : Dominant constituent of dorab fishery.

Order GONORHYNCHIFORMES

Family CHANIDAE

83. ***Chanos chanos*** (Forsskal, 1775)

1775. *Mugil chanos* Forsskal, *Descript. Animal.* : xiv, 74.

1984. *Chanos chanos* Talwar & Kacker, *Comm. Sea Fish. India* : 250.

Description : Body torpedo-shaped; mouth small, without teeth; lower jaw with a small symphysial tubercle at tip, fitting into a notch. Dorsal with 13-17 rays, its origin midway between front border of eye and caudal base; anal short, with 9-11 rays, close to caudal. Pectoral and pelvic with large axillary scales. Caudal deeply forked. Scales small, cycloid, head naked; lateral line present. Dorsal, anal, and caudal fins with dusky margins. Inner sides of pectoral and pelvic fins dusky.

Distribution : Indo-West Pacific.

Remarks : Commercially important, both in capture and culture fishery.

Order SILURIFORMES

Family ARIIDAE

84. ***Ariodes dussumieri*** (Valenciennes, 1840)

1840. *Arius dussumieri* Valenciennes, *Hist. nat. Poiss.*, **15** : 84.

1986. *Ariodes dussumieri* Taylor, *in* Smith & Heemstra, *Smith's Sea Fishes* : 59.

Description : Body elongate; head depressed; 3 pairs of well developed barbles around mouth. A prominent protuberance of the supra-ethmoid bone on either side of eye. Head shield granulated above. Premaxillary band of teeth about 3 times long as broad; teeth on palate in 2 patches on each side arranged in a longitudinal series; anterior patch small and posterior patch large, elliptical and diverging posteriorly. Pectoral spine shorter than dorsal spine. Body dirty bluish along the back, lighter on sides; adipose fin with a black spot.

Distribution : Madagascar, Pakistan, India, Sri Lanka, Bangladesh.

Remarks : An important commercial catfish with high trading value.

85. ***Arius arius*** (Hamilton, 1822)

1822. *Pimelodus arius* Hamilton, *Fishes of Ganges* : 170, 376.

1984. *Arius arius* Talwar & Kacker, *Comm. Sea Fish. India* : 258.

Description : Body elongate and robust; head depressed, snout blunt and rounded, eyes fairly large, 1.6-2.5 in interorbital width. Three pairs of barbels around mouth. Premaxillary tooth-band continuous, about 4 times long as broad; teeth on palate globular, forming two elliptical patches, one patch on each side, with a horn-like conical projection anteriorly. Pectoral spine shorter than dorsal spine, adipose dorsal small. Anal with 20- 21 rays. Dorsal and pectoral margins posteriorly dusky, adipose dorsal with a well defined black spot.

Distribution : West coast of India to Myanmar.

Remarks : An established fishery occurs.

86. ***Arius caelatus*** Valenciennes, 1840

1840. *Arius caelatus* Valenciennes, *Hist. nat. Poiss.*, **15** : 66.

Description : Body robust and elongate. Barbles 3 pairs, maxillary barbles extending to tip of pectoral. Head shield strongly rugose and granulated. Teeth on palate villiform, in a single small triangular patch on each side. Dorsal spine granulated; pectoral spine strong, granulated, shorter than dorsal spine. Tip of dorsal blackish, filament black. Adipose fin entirely black or bearing a large black blotch on upper half. Pectoral, pelvic and anal dusky.

Distribution : Indo-West Pacific

Remarks : This species is one of the commercially important catfishes of our area.

87. ***Arius jella*** Day, 1877

1877. *Arius jella* Day, *Fishes of India* : 467, pl. 106, fig. 3.

Description : Body elongate, head depressed; three pairs of barbels around mouth. Supra occipital process slightly keeled. Eye 6 -7 in head length, 2-3 in interorbital width. Teeth in jaws villiform. Teeth on palate globular, in one oval patch on each side. Dorsal and pectoral fin spines strong, the pectoral spine longer than the dorsal spine. Anal fin with 14-16 rays. Adipose dorsal fin with a black blotch.

Distribution : East coast of India to Burma.

Remarks : Taken commercially in large quantities. Common in the Madras Coast.

88. ***Arius maculatus*** (Thunberg, 1792)

1792. *Silurus maculates* Thunberg, *Kongl. Ver. Akad. Nya Handl Stockholm*, 13 : 31. pl. 1, fig. 2.

1984. *Arius maculatus* Talwar & Kacker, *Comm. Sea Fish. India* : 264

Description : Body elongate, snout pointed; eyes small, 2.6-4.0 in interorbital width. Barbels 3 pairs, maxillary pair extending to pectoral base. Head shield rugose and

granulated. Premaxillary teeth band 4-6 times long as broad; palatine teeth granular or molar like, in a single large, elliptical patch on each side. First dorsal fin ray often produced into a long filament, total anal rays 19-22. Dark brown above, side grey and belly whitish; all fins black tipped.

Distribution : Pakistan, India, east ward to the Philippines.

Remarks : This species is a commercially important species.

89. ***Arius sona*** (Hamilton, 1822)

1822. *Pimelodus sona* Hamilton, *Fishes of Ganges* : 172, 376.
1984. *Arius sona* Talwar & Kacker, *Comm. Sea Fish. India* : 267.

Description : Body elongate; head broad and depressed. Three pairs of barbels around mouth. Supra-occipital process as wide or wider at its base than long, convex at its posterior extremity; basal plate before dorsal narrow. Premaxillary band of teeth villiform; teeth in palate in two patches, placed side by side, the middle patches smaller than the outer, outer patch triangular. Dorsal and pectoral fins spines strong. Fins dusky to black terminally.

Distribution : Coastal areas of northern Indian Ocean.

Remarks : One of the commercially important marine catfishes.

90. ***Arius sumatranus*** (Bennett, 1830)

1830. *Bagrus sumatranus* Bennett, *Mem. Life of Sir S. Raffles* : 691.

1984. *Arius sumatranus* Jayaram, *in* Fischer & Bianchi, *FAO species identification sheets. W. Indian Ocean,* 1 : ARIID Ariu 29.

Description : Body elongate; snout blunt and rounded. Barbels 3 pairs, maxillary pair extending to pectoral base. Head shield thinly granulated, rugose on occipital region only; supraoccipital process keeled; median longitudinal groove narrow, reaching to base of supraoccipital process. Premaxillary teeth band 5 times long as broad; palatine teeth villiform, in a single ovate patch on each side, sparsely packed and well separated. First dorsal fin ray not produced; total anal rays 18-23; ventrals not reaching anal. Dark brown above, lighter below.

Distribution : Pakistan, India, eastward to the Philippines.

Remarks : Commercially valuable, but rare in occurrence.

91. ***Arius thalassinus*** (Ruppell, 1837)

1837. *Bagrus thalassinus* Ruppell, *Neue. Wirbelth. Fische. Rothen Meeres,* 75, pl. 20, fig. 2.

1984. *Arius thalassinus* Talwar & Kacker, *Comm. Sea Fish. India* : 271.

Description : Body elongate and robust; barbels 3 pairs. Supra-occipital process narrow, longer than broad at its base. Teeth on palate fine, in 3 patches on either side, closely set and

arranged in a large triangular group, two anterior patches small, posterior patch larger and extending backwards. Dorsal with a long spine; pectoral spine strong, as long as dorsal spine; adipose fin small. Body with numerous narrow, parallel, transverse, iridescent cross-bands corresponding with lines of papillae. Fins dark permanently.

Distribution : Indo-West Pacific.

Remarks : Commercially abundant.

92. ***Osteogeneiosus militaris*** (Linnaeus, 1758)

1758. *Silurus militaris* Linnaeus, *Syst. Nat.*, **1** (ed. 10) : 305.

1991. *Osteogeneiosus militaris* Talwar & Jhingran, *Inland Fishes of India*, **1** : 711.

Description : Body elongate, head strongly depressed; head-shield smooth. One pair of very stiff and osseous maxillary barbells, fairly longer then head. Dorsal and pectoral spines stronger and serrated. Back dark blue with silvery reflection; fins dotted black; tips of dorsal and adipose fin dark blue.

Distribution : India to Indonesia.

Remarks : Fairly common.

Family PLOTOSIDAE

93. ***Plotosus canius*** Hamilton, 1822

1822. *Plotosus canius* Hamilton, *Fishes of Ganges*, 142, 374, pl. 15, fig. 44.

Description : Body elongate, depth 6.5-10.5 in standard length. Mouth transverse, bordered by thick, fleshy and papillated lips. Four pairs of barbels around mouth, nasal barbels extending well behind eyes almost to nape, maxillary barbles extending to bases of pectoral fins, mandibular barbels shorter. Eyes small, 8.3-14.3 in head length. Gill rakers 22-26 on anterior face; vermiform papillae present between gillrakers and filaments on both faces of arches. Caudal pointed confluent with dorsal and anal. Body dark olive-green, below soiled creamy buff. First dorsal and pectoral darker.

Distribution : Indo-west Pacific.

Remarks : A commercially important catfish.

94. ***Plotosus lineatus*** (Thunberg, 1787)

1787. *Silurus lineatus* Thunberg, *K. Vetensk. Akad. Nya Handl.*, **12**, 190.

1991. *Plotosus lineatus* Talwar & Jhingran, *Inland Fishes of India*, **2** : 714.

Description : Body elongate, depth 6.2-7.5 in standard length. Mouth transverse, with thick and papillose lips; four pairs of barbels around mouth; nasal barbels not extending beyond eyes, maxillary extending slightly beyond eye; inner mandibular shorter. Gillrakers on anterior arm 22-32 ; gill-arch faces devoid of vermiform papillae. Caudal fin bluntly pointed, confluent with dorsal and anal fins. Body with 2 or 3 pale lateral bands; vertical fins black edged.

Distribution : Indo-West Pacific.

Remarks : Commercially viable but potentially dangerous fish resource.

Order AULOPIFORMES

Family SYNODONTIDAE

95. ***Saurida micropectoralis*** Shindo & Yamada, 1972

1972. *Saurida micropectoralis* Shindo & Yamada, *Uo. Jap. Soc. Ichthyol,* **11** : 1-13, **12** : 1-14.

Description : Body elongate; cylindrical; head lizard-like; teeth in jaws in several series. Dorsal with 11-13 rays; adipose dorsal small; anal with 9-11 rays, its tip not reaching to level of pelvic origin; pelvic with 9 rays. Lateral line scales 55-58. Brown, lighter below; flanks with blotches; bars on upper edge of caudal and anterior rays of dorsal; inner surface of operculum grey; stomach and pyloric caecae unpigmented.

Distribution : East coast of India, Andaman sea to south China sea, the Philippines.

Remarks : Of no fishery value.

96. ***Saurida pseudotumbil*** Dutt & Sagar, 1981

1981. *Saurida pseudotumbil* Dutt & Sagar, *Proc. Indian nat. Sci. Acad.,* **B 47**(6) : 845.

Description : Body elongate, cylindrical; head lizard like; teeth in jaws 3-4 rows, palatine teeth 3-4 rows anteriorly, 2 rows posteriorly. Dorsal with 10-12 rays, anal rays 10-11 ; pectoral with 14-15 rays, its tip not reaching to level of pelvic origin; pelvic with 9 rays. Brown, lighter below; flanks without blotches; indistinct bars on anterior rays of dorsal, no bar on upper edge of caudal; inner surface of opercle black, pyloric caecae striped and anterior 2/3 of stomach dark grey.

Distribution : East coast of India.

97. ***Saurida tumbil*** (Bloch, 1795)

1795. *Salmo tumbil* Bloch, *Naturges. ausland. Fische,* **9** : 112, pl. 430.

1984. *Saurida tumbil* Talwar & Kacker, *Comm. Sea Fish. India,* 284.

Description : Body elongate and cylindrical; head lizard-like. Mouth large, teeth in jaws in several rows; outer palatine teeth in 3-4 rows anteriorly. Dorsal with 11-13 rays; anal rays 10-11; pectoral with 14-15 rays, reaching to level of pelvic-fin base, pectoral axillary scale long and pointed; pelvic with 9 rays. Lateral line scales 55-58. No blotches on flanks; no dots/bars on dorsal or caudal; stomach and pyloric caecae unpigmented.

Distribution : Indo-West Pacific.

Remarks : Commercially important.

98. ***Synodus indicus*** (Day, 1873)

1873. *Saurus indicus* Day, *Jour. Linn. Soc. Lond., Zool.*, **11** : 526.

1986. *Synodus indicus* Cressey, *in* Smith & Heemstra, *Smith's Sea Fishes* : 79, pl. 11, fig. 79.7.

Description : Body elongate, cylindrical; head lizard-like. Mouth large, with sharp teeth, palatine teeth in a single band on each side; eyes opposite midpoint of upper jaw. Dorsal with 12-13 rays; anal with 9-11 rays, anal base shorter than dorsal base; pelvic with 8 rays. Nine dark blotches along lateral line; two small black streaks at upper edge of operculum.

Distribution : Indian Ocean.

99. ***Trachinocephalus myops*** (Schneider, 1801)

1801. *Salmo myops* Schneider, *Syst. Ichth.* : 421.

1984. *Trachinocephalus myops* Talwar & Kacker, *Comm Sea Fish. India* : 289.

Description : Body elongate and moderately compressed. Head lizard-like, eyes near tip of snout; mouth large, with small, close-set teeth; palatine teeth in a single band on each side. Dorsal with 11-14 rays; anal with 15-16 rays. Pectoral small; pelvic with 8 rays, the inner rays about three times longer than outer ray. Head and back greenish brown, upper flanks with faint blue green and yellow irregular longitudinal stripes; a black shoulder spot.

Distribution : Circum-tropical.

Remarks : Occasional in catches.

Family HARPADONTIDAE

100. ***Harpadon nehereus*** (Hamilton, 1822)

1822. *Osmerus nehereus* Hamilton, *Fishes of Ganges* : 209.

1991. *Harpadon nehereus* Talwar & Jhingran, *Inland Fishes of India*, **2** : 724.

Description : Body elongate and compressed. Eyes small, covered by adipose membrane; snout very short. Mouth very wide, with slender, recurved and depressible teeth of unequal size; palatine teeth large, depressible; lower jaw longer than upper. Pectorals and pelvics very long. Uniform light grey, speckled with black.

Distribution : Indo-West Pacific.

Remarks : Contributes a substantial fishery.

Order GADIFORMES

Family BREGMACEROTIDAE

101. ***Bregmaceros macclellandii*** Thompson, 1840

1840. *Bregmaceros macclellandii* Thompson, *Mag. Nat. Hist. Charlesworth*, **4** : 184.

Description : Body slender, depth 6.5-9.2 in standard length. Dorsal origin opposite anal origin; dorsal with I + 56-65 rays; anal with 58-69 rays. Ventrals jugular, with 5-7 rays, outer 3 rays very long and branched. Brown above with speckling, silvery below.

Distribution : Circumtropical, except from eastern Pacific.

Order OPHIDIIFORMES

Family CARAPIDAE

102. ***Carapus homei*** (Richardson, 1846)

1846. *Oxybeles homei* Richardson, *Zool. Voy. Erebus and Terror,* : 74.

1982. *Carapus homei* Munro, *The marine and freshwater fishes of Ceylon* : 207.

Description : Depth 9-11 in length. Jaws with band of cardiform teeth and outer series enlarged with some canines. Scales absent. Dorsal and anal enveloped in skin, dorsal lower then anal. Anal origin behind vent. Yellowish red, a silvery band from upper edge of opercle along first 1/4 of body; opercle silvery; tail end with black spots.

Distribution : Tropical Seas.

Family OPHIDIDAE

103. ***Brotula multibarbata*** Temminck & Schlegel, 1846

1846. *Brotula multibarbata* Temminck & Schlegel, *Fauna Japonica, Pisces* : 251, pl. 11. fig. 2.

Description : Body elongate, cylindrical. Barbels on snout and chin. Dorsal with 117-123 rays; anal with 88-100 rays; pectoral with 22-26 rays and pelvic with 2 rays. Dusky in adults; vertical fins pale, with black submarginal band; juveniles lighter.

Distribution : Indo-west Pacific.

Order LOPHIIFORMES

Family ANTENNARIIDAE

104. ***Antennarius hispidus*** (Bloch & Schneider, 1801)

1801. *Lophius hispidus* Bloch & Schneider, *Syst. Ichth.* : 142.

1986. *Antennarius hispidus* Pietsch, *in* Smith & Heemstra, *Smith's Sea Fishes* : 367, pl. 13, fig. 102.4.

Description : Dorsal with 3 separate spines and 12-13 rays; 1st spine as long as 2nd; esca with a large dense tuft of fine filaments; 2nd spine curved posteriorly with a narrow membrane connection to surface of head. Pterygiophore supporting dorsal spines extending slightly beyond upper jaw. Skin very rough, covered with small spines. Yellow to dark brown or black with dark spots and streaks, some radiating from eye. Marbling extending on to dorsal, but no round spots.

Distribution : Indo-west Pacific.

105. ***Antennarius nummifer*** (Cuvier, 1817)

1817. *Chironectes nummifer* Cuvier, *Mem. Mus. Hist. nat.*, **3** : 430, pl. 17, fig. 4.

1986. *Antennarius nummifer* Pietsch, *in* Smith & Heemstra, *Smith's Sea Fishes* : 368.

Description : Dorsal with 3 separate spines and 12 rays; 1st spine as long as 2nd; esca usually a cluster of spherical, darkly pigmented swelling with a number of filaments and a large pleated appendage; 2nd spine straight, without a connection to surface of head. Skin rough, covered with small spines; cutaneous fringes few. Brown to black with purplish tinge. Black ocellus with yellow edge behind and above end of pectoral base. Dorsal with a ocellus on 7th-8th ray; vertical fins with small dark spots.

Distribution : Indo-west Pacific.

Order CYPRINODONTIFORMES

Family EXOCOETIDAE

106. ***Cheilopogon furcatus*** (Mitchell, 1815)

1815. *Exocoetus furcatus* Mitchell, *Trans Lit. Phil. Soc. New York,* **1** : 449, pl. 5, fig. 2.

1986. *Cheilopogon furcatus* Heemstra & Perin, *in* Smith & Heemstra, *Smith's Sea Fishes* : 393.

Description : Body elongate, flattened ventrally. Jaws subequal, or lower a little longer; teeth in jaws unicuspid, with small cusps laterally; no palatine teeth; dorsal with 13 rays; anal with 10 to 12 rays, its origin below 5th -7th dorsal rays. Pectoral fins very long, extend to even end of dorsal; pelvic large, reaching well beyond middle of anal base. Juveniles with 2 barbels. Pectoral relatively dark with a pale margin, the central portion crossed by a pale, curved stripe.

Distribution : Indian Ocean : Atlantic and central Pacific.

Remarks : Taken commercially, only occasionally.

107. ***Cypselurus bahiensis*** (Ranzani, 1842)

1842. *Exocoetus bahiensis* Ranzani, *Nov. Com. Acad. Sc. Inst. Bonon,* **5** : 362.

1922. *Cypselurus bahiensis* Weber & de Beaufort, *Fish. Indo-Aust. Archip.*, **4** : 190.

Description : Depth about 5.0, head 4.1-4.3 in standard length. Lower jaw usually a little shorter than upper; at least some jaw teeth tricuspid. Anal origin opposite to 5th or 6th dorsal ray; ventrals reach mid anal base; pectorals reach the end of dorsal base. Juveniles with single chin barbell or without barbels. Dorsal some times with a dark mark on its summit; pectorals darker than other fins and sometimes nearly black in its last third.

Distribution : Tropical Seas.

108. *Cypselurus spilopterus* (Valenciennes, 1846)

1846. *Exocoetus spilopterus* Valenciennes, *Hist. nat. Poiss,* **19** : 113.

1984. *Cypselurus spilopterus* Talwar & Kacker, *Comm. Sea Fish. India* : 301.

Description : Body fairly robust, moderately compressed. Lower jaw usually a little shorter than upper; teeth comparatively well developed; atleast some jaw teeth tricuspid; palatine toothed. Dorsal with 12 -15 rays; anal with 9 -10 rays, its origin opposite to 6th ray of dorsal fin. Pectoral extending to posterior part of dorsal or further. Pelvic longer than head length, extending to about middle of anal base. Pectorals light bluish, with a narrow hyaline hind border and an indication of hyaline transverse band, with numerous black spots; caudal dusky. Pelvic and dorsal fins occasionally with a black spot posteriorly.

Distribution : Indian Ocean.

Remarks : Of minor commercial value.

109. *Parexocoetus mento* (Valenciennes, 1846)

1846. *Exocoetus mento* Valenciennes, *Hist. nat. Poiss.,* **19** : 124.

1986. *Parexocoetus mento* Heemstra & Parin, *in* Smith & Heemstra, *Smith's Sea Fishes* : 395, pl. 16, fig. 116. 10.

Description : Body elongate, compressed, rounded ventrally; depth 4.5-5.0 in standard length. Snout blunt, shorter than eye; upper jaw protrusible. Dorsal high, with 10-12 rays. Pectoral extending to opposite middle or end of dorsal base. Pelvic short. Scales large, 38-42 along lateral series; lateral line with a branch extending upwards to pectoral base; predorsal scale about 18. Gillrakers 25-30. Dorsal black; pectoral dark in their upper half.

Distribution : Indo-West Pacific.

Remarks : Occasional catches have limited fishery value.

Family HEMIRAMPHIDAE

110. *Hemiramphus far* (Forsskal, 1775)

1775. *Esox far* Forsskal, *Descript. Anim.* : 67.

1984. *Hemiramphus far* Talwar & Kacker, *Comm. Sea Fish. India* : 310.

Description : Body robust, elongate and fairly compressed, body width 1.3-1.8 in its depth; upper jaw short, triangular, much broader than long, scaleless. Fairly stout tricuspid teeth in 2-4 rows in jaws. Gill-rakers 6-10 + 19-26, total 25-36 on first arch. Dorsal with 12-14 rays; anal with 10-12 rays; caudal deeply forked, the lower lobe much longer than upper. Body with 8 to 9 more or less prominent blotches on sides, chiefly above lateral stripe. Upper lobe of caudal bright yellow, lower lobe blue.

Distribution : Indo-West Pacific.

Remarks : There is a fairly good fishery.

111. ***Hyporhamphus limbatus*** (Valenciennes, 1846)

1846. *Hemiramphus limbatus* Valenciennes, *Hist. nat. Poiss.*, **19** : 44.

1984. *Hyporhamphus limbatus* Talwar & Kacker. *Comm. Sea Fish. India* : 315.

Description : Body somewhat compressed. Head length 3.5-3.7 times in trunk; upper jaw convex, scaly, much broader than long; lower jaw equal to or longer than head length. Teeth minute, tricuspid, in many rows in both jaws. Dorsal with 12-16 rays; anal with 13-16 rays. Origin of pelvics midway between front border of eye and base of caudal. Caudal emarginate. Gillrakers 23-37 on first arch. Fins hyaline, with margins of dorsal and caudal dusky.

Distribution : Indo-West Pacific.

Remarks : This species is taken commercially in small quantities in our region.

112. ***Hyporhamphus xanthopterus*** (Valenciennes, 1846)

1846. *Hemirhamphus xanthopterus* Valenciennes, *Hist. nat. Poiss.*, **19** : 47.

1991. *Hyporhamphus xanthopterus* Talwar & Jhingran, *Inland Fishes of India*, **2** : 735.

Description : Body somewhat compressed. Lower jaw prolonged, shorter than head length; upper jaw triangular, scaly, its width 0.8-1.0 in its length. Dorsal with 14-16 rays; anal with 14-17 rays, anal originate opposite dorsal. Gillrakers 41-53 on first arch. Caudal forked, lower lobe longer. Silvery lateral stripe on flanks widening posteriorly ; fleshy tip of beak reddish; fins yellowish.

Distribution : India.

113. ***Rhynchorhamphus georgii*** (Valenciennes, 1846)

1846. *Hemirhamphus georgii* Valenciennes, *Hist. Nat. Poiss.*, **19** : 37.

1984. *Rhynchorhamphus georgii* Talwar & Kacker, *Comm. Sea Fish. India* : 316 (name only).

Description : Body cylindrical; nasal papillae fimbriate. Upper jaw highly domed, scaly, longer than broad. Gillrakers 52-60 on first arch. Dorsal with 15-17 rays; anal with 14-15 rays; sum of dorsal and anal rays usually 29 or more. Scales on lateral series 57-60; lateral line with two branches ascending behind opercle and from pectoral origin. Yellowish green dorsally with broad silvery lateral band, bordered above by narrow black band. Fringe on lower jaw black; dorsal and caudal bordered with black.

Distribution : Northern Indian Ocean.

114. ***Rhynchorhamphus malabaricus*** Collette, 1976

1976. *Rhynchorhamphus malabarius* Collette, *Bull. Mar. Sci.*, **26**(4) : 84, fig.8.

Description : Body almost cylindrical. Nasal papillae fimbriate. Upper jaw dome-shaped, much longer than broad, its length about equal to eye-diameter, scaled. Gill rakers 57-71 on

first arch. Dorsal fin with 13-15 rays, anal fin with 12-15 rays, sum of dorsal and anal rays usually 28 or less. Scales thin, 54-59 in lateral series; lateral line with two branches ascending behind opercle and from pectoral origin. Body with a silvery stripe on flanks, bordered by a narrow blue stripe. Mandibular flaps black; dorsal and caudal fins distinctly bordered with black.

Distribution : Coasts of southern India.

Remarks : The species is of high economic importance.

Family BELONIDAE

115. ***Strongylura strongylura*** (van Hasselt, 1823)

1823. *Belone strongylura* van Hasselt, *Alg, Knost., en Letterbode,* **2** : 130.

1984. *Strongylura strongylura* Talwar & Kacker, *Comm Sea Fish. India* : 322.

Description : Body elongate, rounded in cross-section. Upper and lower jaws greatly elongated and studded with sharp teeth. Eyes fairly small. Origin of dorsal above 4th ray of anal; dorsal with 12-14 rays; anal with 15-18 rays; caudal rounded or emarginate; no lateral keel on caudal peduncle. Body with prominent black spot at base of caudal; silvery lateral band, more distinct posteriorly where it is bordered with a dark stripe.

Distribution : Indo-West Pacific.

Remarks : Contribute to fairly good commercial catches.

116. ***Tylosurus crocodilus*** (Peron & LeSueur, 1821)

1821. *Belone crocodila* Peron & Le Sueur, *J. Acad. nat. Sci. Philad.,* **2**(2) : 129.

1984. *Tylosurus crocodilus* Talwar & Kacker, *Comm. Sea. Fish. India* : 326.

Description : Body elongate, rounded in cross-section. Upper and lower jaws greatly elongated and studded with sharp teeth; teeth directed anteriorly in juveniles. Head length 3.0-3.6 in body length. Dorsal with 22-23 rays; anal with 18-21 rays. Caudal forked. Scales small, lateral line forms a very slight keel on caudal peduncle. Body minutely dotted with black. Fins largely yellow-green, dusky on pectoral and caudal fins.

Distribution : Worldwide in tropical warm temperate seas.

Remarks : Taken commercially in small quantities.

Order ATHERINIFORMES

Family ATHERINIDAE

117. ***Atherinomorus duodecimalis*** (Valenciennes, 1835)

1835. *Atherina duodecimalis* Valenciennes, *in* Cuvier & Valenciennes, *Hist. nat. Poiss.,* **10** : 458.

1986. *Atherinomorus duodecimalis* Ivantsoff, *in* Smith & Heemstra, *Smith's Sea Fishes* : 382.

Description : Small robust body. Snout rounded. Pre-operculum with a distinct notch. Dentary sloping upwards and backwards with distinct tubercular elevation at its distal end. Midlateral scale count 33 to 38. Blue-green above fading to silver on belly.

Distribution : Indo-West Pacific.

Order BERYCIFORMES

Family HOLOCENTRIDAE

118. ***Myripristis murdjan*** (Forsskal, 1775)

1775. *Sciaena murdjan* Forsskal, *Descript. Animal.* : 48.

1986. *Myripristis murdjan* Randall & Heemstra, *in* Smith & Heemstra, *Smith's Sea Fishes* : 424, pl. 22, fig 132. 26.

Description : Body compressed; edges of membrane bone of head serrate; a single pair of tooth patch at symphysis of lower jaw just out side mouth; interorbital with 3.7-4.4 in head. Dorsal with 11 spines, 13–15 rays; anal with four spines, 11-13 rays; lateral line scales 28–30; gillrakers 36-43. No spines at angle of preoperculum. Reddish, edge of body scales darker. Black border to operculum and black tips to vertical fin lobes.

Distribution : Indo -West Pacific.

Remarks : Least commercial value.

Order PEGASIFORMES

Family PEGASIDAE

119. ***Pegasus volitans*** Linnaeus, 1758

1758. *Pegasus voitlans* Linnaeus, *Syst. Nat.*(ed.10) : 338.

Description : Body of 3 rings; 12 tail rings, with a fine spine at end of each plate on rear part of tail; rostrum sword-like with short retrose spine. Dorsal and anal each with 5 rays, pectoral with 11 rays, ventral with 1 spine and 2 rays. Brown, sometimes banded or spotted, fins with darker spots.

Distribution : Indo-West Pacific.

Order SYNGNATHIFORMES

Family FISTULARIIDAE

120. ***Fistularia petimba*** Lacepede, 1803

1830. *Fistularia petimba* Lacepede, *Hist. nat. Poiss.*, **5** : 89.

Description : Body extremely elongate, slightly depressed; snout produced, tubular; upper, lateral and lower ridges of snout serrate; post-temporal ridge with large antrorse serrae. Dorsal with 14–17 rays, anal with 14–15 rays; caudal forked, the middle rays greatly produced; pelvic with 6 rays. Anus close behind pelvics. Reddish to orange-brown.

Distribution : Circumtropical.

Remarks : Commercially captured.

Family CENTRISCIDAE

121. ***Centriscus scutatus*** Linnaeus, 1758

1758. *Centriscus scutatus* Linnaeus, *Syst. Nat.,* (ed. 10) : 336.

1982. *Centriscus scutatus* Munro, *The marine and freshwater fishes of Ceylon,* 81.

Description : Body extremely compressed, razor-like, with sharp ventral edge; body encased by thin, transparent, bony plates. Rear end of body twisted ventrally, so that dorsal placed in position of caudal. Dorsal with 3 spines, 10–12 rays, 1st spine fused with body armour plate; anal with 11-12 rays. Silvery with dark lateral band. The ventral plates golden with 7-8 conspicuous cross bars.

Distribution : Indo-West Pacific.

Family SYNGNATHIDAE

122. ***Hippichthys cyanospilos*** (Bleeker, 1854)

1854. *Syngnathus cyanospilos* Bleeker, *Nat. Tidjschr. Ned-Indie,* **6** : 114.

1986. *Hippichthys cyanospilos* Dawson, *in* Smith and Heemstra, *Smith's Sea Fishes* : 452.

Description : Body slender. Rings (12-14) + (32-35). Dorsal with 20-28 rays; pectoral with 13-16 rays; total subdorsal rings 4.2-6.0; dorsal origin on last or penultimate trunk ring; venter and side of trunk without dark bars, dorsal typically with 3-4 prominent brown spots on each ray.

Distribution : Indo-West Pacific.

Remarks : Of no interest to fishery.

123. ***Microphis brachyurus*** (Bleeker, 1853)

1853. *Syngnathus brachyurus* Bleeker, *Verh. batav.Genoot. Kunst. Wet.,* **25**(6) : 16.

1991. *Microphis brachyurus* Talwar & Jhingran, *Inland Fishes of India,* **1** : 770.

Description : Body slender, with (20-22) + (21-24) rings. Dorsal with 37-41 rays; pectoral with 19-22 rays; subdorsal rings (2.0 –0.25) + (6.5 –8.75). Head length 4.2-5.3 in standard length. Snout long, its depth 7.2-11.3 in snout length. Opercle with one or more supple-mental ridges below longitudinal ridge. Tail shorter than trunk. Operculum and anterior part of trunk with black spots; dark diffuse lateral band also on head.

Distribution : Central and eastern Indian Ocean.

Remarks : Of no interest to fishery.

124. ***Microphis cuncalus*** (Hamilton, 1822)

1822. *Syngnathus cuncalus* Hamilton, *Fishes of Ganges* : 12, 362.

1991. *Microphis cuncalus* Talwar & Jhingran, *Inland Fishes of India,* **1** : 770.

Description : Body slender, with (16-18) + (24-27) rings. Dorsal with 47-56 rays; pectoral with 16-19 rays; Subdorsal rings (3.5-2.0) + (5.75-7.5). Head length 7.3-8.8 in standard length; snout deep, its depth 4.7-5.7 in its length; opercle without supplemental ridges below longitudinal ridges. Superior trunk ridges often strongly elevated above, intervening dorsum in adult females; some adults with anal fin located in a distinct groove like depression and separated from anus by a transverse septum. Several dusky lines on back which intersect each other, forming a netwrok; along either side a longitudinal spotted stripe.

Distribution : India, Sri Lanka, Bangladesh.

Remarks : No interest to fishery.

125. ***Trachyrhamphus longirostris*** Kaup, 1856

1856. *Trachyrhamphus longirostris* Kaup, *Cat. Lophobr. Fish.* : 24.

Description : Body slender, with 23 + 49 rings. Dorsal with 27 rays; pectoral with 18 rays. Length of snout more than half length of head; no serrated crest on head, but with low rough median ridge. Subdorsal rings 4.5-6. Caudal present, tail fin with 8.9 rings; not coiled distally. Superior trunk and tail ridges discontinuous near dorsal base; inferior trunk and tail ridges discontinuous near anal ring. Greyish brown with darker rings.

Distribution : Indo-West Pacific.

126. ***Trachyrhamphus serratus*** (Schlegel, 1847)

1847. *Syngnathus serratus* Schlegel, *Fauna Japonica, Poiss.* : 272.

1982. *Trachyrhampus serratus* Munro, *The Marine and Freshwater Fishes of Ceylon* : 38.

Description : Body slender, with (21-23) + (45-49) rings. Dorsal with 25-29 rays, pectoral with 14-19 rays. Dorsal on (2-4) + (2-3) rings. Length of snout less than half head length; spiny serrated crest on head. Caudal present, tail not prehensile. Superior trunk and tail ridges near dorsal base and inferior trunk and tail ridges near anal ring discontinuous. Brown with 9-12 broad dark diffuse cross bands; also white spots.

Distribution : Indo-West Pacific.

Remarks : Of no interest to fishery.

Order DACTYLOPTERIFORMES

Family DACTYLOPTERIDAE

127. ***Dactyloptena orientalis*** (Cuvier, 1829)

1829. *Dactylopterus orientalis* Cuvier, *Hist. nat. Poiss.,* **4** : 134, pl. 86.

1986. *Dactyloptena orientalis* Eschmeyer, *in* Smith & Heemstra, *Smith's Sea Fishes* : 490, pl. 31, fig. 159.1.

Description : Body squarish, tapering behind. Head large, blunt, with bones united to form a bony helmet; preopercle spine very long. Mouth small, on underside of head. Two free dorsal spines, 1st just behind head, 2nd midway between 1st spine and remainder of spinous dorsal, which with 5 spines; 2nd dorsal with 9 rays. Pink, bluish along abdomen; dorsal and caudal rays spotted; pectoral grey-brown and spotted with red, yellow and blue; in young, a blue-edged black ocellus near pectoral base.

Distribution : Indo-Pacific.

Order SCORPAENIFORMES

Family SCORPAENIDAE

128. *Apistes carinatus* (Bloch, 1801)

1801. *Scorpaena carinata* Bloch, *Hist. nat. Poiss.* (ed. 2) : 193.

1986. *Apistes carinatus* Eschmeyer, *in* Smith & Heemstra, *Smith's Sea Fishes* : 464.

Description : Body robust, depth 3-4 in standard length. Dorsal with usually 15 spines, 8-10 rays; anal with 3-4 spines, 6-8 rays. Pectoral with 11-13 rays, lowermost ray free. Scales small, 65-85 on lateral series. Chin with 3 barbels. Bluish grey, belly pale; large black spot on rear half of spinous dorsal; soft dorsal and caudal spotted; pectoral jet black.

Distribution : Indo-West Pacific.

Remarks : Fairly common; of no interest to fisheries.

129. *Centropogon indicus* Day, 1875

1875. *Centropogon indicus* Day, *Fishes of India* : 155.

Description : Head and body strongly compressed; no groove on occiput. Preorbital with a strong spine, preopercle spinate; opercle armed. Interorbital slightly concave, traversed by two ridges. Dorsal with 14 spines and 8 rays. Anal with 3 spines and 5 rays. Pectoral with 10 branched rays. Head naked. Pinkish, with irregular bands on head; bars on body, anal and caudal.

Distribution : South-east coast of India near Madras.

Remarks : Status needs to be verified.

130. *Choridactylus multibarbus* Richardson, 1848

1848. *Choridactylus multibarbus* Richardson, *Voy. Samarang, Fishes* : 8.

Description : Body naked, without scales. Dorsal with 13 spines and 9 rays; anal with 2 spines and 8 rays; pectoral with 12 rays, the lowermost 3 detached from remainder. Depth 3.5 in standard length. Eyes with prominent orbits; interorbital concave. A fleshy tentacle on edge and a few smaller ones on chin. Ventrals large, most of inner edge adnate to abdomen.

Brown with yellow shoulder mark and 2-3 vertical orange bands ; base of anal and ventral with white spots. Fins blackish brown; dorsal and caudal with lighter band. Pectoral with orange margin.

Distribution : Indo-West Pacific.

Remarks : Of no interest to fisheries.

131. ***Minous monodactylus*** (Bloch & Schneider, 1801)

1801. *Scorpaena monodactylus* Bloch and Schneider, *Syst. Ichth.*, : 194.

1982. *Minous monodactylus* Munro, *The Marine and Freshwater Fishes of Ceylon* : 251.

Description : Body naked; head spinous, lacrimal bone movable; 2 preorbital spines extending over maxilla. Dorsal with 9-11 spines and 9-12 rays, 1st spine equal to or longer than the second, well separated from second. Anal with 2 spines and 7-10 rays. Lowermost pectoral ray detached. Body with pale bars and stripes dorsally; anterior part of soft dorsal with a large black spot; inner side of pectoral without markings; caudal with 2 broad vertical bars.

Distribution : Indo-West Pacific.

Remarks : Fairly common along Madras coast.

132. ***Pteroidichthys amboinensis*** Bleeker, 1856

1856. *Pteroidichthys amboinensis* Bleeker, *Act. Soc. Sci. Indo-Neerl.*, **1** : 1-76.

Description : Body compressed, elongate. Depth 2.6-2.5 in standard length. Skinny appendages on head well developed; supraocular tentacle very long. Mouth protractile, large, oblique. Preopercle with 2 distinct and 3 blunt spines; opercle with 2 divergent spines. Gillrakers (4-6) + (8-11). Dorsal with 12 spines and 9 rays; anal with 2 spines and 6 simple rays; pectoral with 15 branched and 15 simple rays. Interspinous membrane between 1st and 4th dorsal spine incised to middle; pectoral reaching to middle of anal base; ventrals to anal base. Pinkish and brownish; dorsal with irregular oblique bars; lower half of anal black; pectoral darker; distal half of ventrals blackish; caudal barred.

Distribution : Ambonia; Celebes; Vietnam; India : Madras coast.

133. ***Pterois miles*** (Bennett, 1828)

1828. *Scorpaena miles* Bennett, *Fish. Ceylon* : 9.

1982. *Pterois miles* Munro, *The Marine and Freshwater Fishes of Ceylon* : 246.

Description : Body compressed, head spines well developed. Dorsal with 13 spines and 10-11 rays; anal with 3 spines and 6-7 rays; pectoral with 14 rays, membrane between upper 3 rays deeply cleft. Orbital tentacles short. Interorbital space convex and scaly. Scales cycloid. Red with many dark vertical bands mostly radiating from eyes; dorsal spines with 5-6 bands; fins with small black spots.

Distribution : Indian Ocean.

134. ***Pterois mombasae*** (Smith, 1957)

1957. *Pteropterus mombasae* Smith, *Ichthyol. Bull. Rhodes Univ.*, (5) : 80, fig. 7, pl. 6, fig. D.

1986. *Pterois mombasae* Eschmeyer, *in* Smith & Heemstra, *Smith's Sea Fishes* : 467, pl. 25. fig. 149.9.

Description : Body compressed; head spines well developed. Dorsal with 13 spines and 10 rays; anal with 3 spines and 6-7 rays; pectoral with 18-20 rays, all rays simple, upper rays nearly free from fin membrane, reaching caudal base. Caudal rounded. Scales mostly ctenoid. Reddish-brown, lines on head radiate from eye and enclose a brown ocellus on subopercle; 8-10 pale lines on body, most bifurcate above and below. Dorsal spines with black and brown annular markings; soft dorsal and anal pinkish, with black spots; pectoral spotted.

Distribution : Indo-West Pacific.

Remarks : Rare in occurrence.

135. ***Pterois russelli*** (Bennett, 1831)

1831. *Pterois russelli* Bennett, *Proc. Zool. Soc. Lond.*, **1** : 128.

1982. *Pterois russelli* Munro, *The marine and freshwater fishes of Ceylon* : 246.

Description : Body moderately compressed; head with feeble spination in young, developed in adults. Dorsal with 13 spines, fin membrane strongly incised, and 10-12 rays; anal with 3 spines and 7-8 rays; pectoral rays 13. Scales cycloid; scale rows above lateral line 8-10. Reddish-brown, 4 dark cross bars on head and 10-11 bars on body. Soft dorsal, anal and caudal without spots.

Distribution : Indo-West Pacific.

136. ***Pterois volitans*** (Linnaeus, 1758)

1758. *Gasterosteus volitans* Linnaeus, *Syst. Nat.* (ed.10) : 296.

1982. *Pterois volitans* Munro, *The marine and freshwater fishes of Ceylon* : 245.

Description : Body compressed; head spines well developed. Dorsal with 13 spines and 10-11 rays; anal with 3 spines and 6-8 rays; pectoral rays 14-16. Scales cycloid. Interorbital space deeply concave and scaleless; nape without scale. Orbital tentalce very long, about half of head. Pectoral reaching to caudal base or beyond, membrane between upper 4 rays deeply cleft. Reddish, with vertical brown bands; 3-4 broad stripes radiating from eye. Soft dorsal, anal and caudal with rows of dark brown spots.

Distribution : Indo-West Pacific.

137. ***Scorpaenopsis roseus*** (Day, 1867)

1867. *Scopaena rosea* Day, *Proc. Zool. Soc, Lond.* 703.

1982. *Scorpaenopsis roseus* Murno, *The marine and freshwater fishes of Ceylon* : 247.

Description : Body robust; eye elevated, with a deep groove below; orbital tentacles broad, fleshy, longer than eye; interorbital deeply concave. Tentacles on snout, angle of mouth and under chin. Dorsal with 11 spines, followed by one spine and 9-10 rays; anal with 3 spines and 5 rays. Pectoral with 18 rays, lower 12 rays unbranched and minute fleshy appendages attached to them. Upper part of opercle scaled. Rosy, marbled with grey; one or two vertical grey bands on caudal; pectoral spotted, other fins with bands.

Distribution : Indian Ocean.

138. ***Sebastapistes strongia*** (Cuvier, 1829)

1829. *Scorpaena strongia* Cuvier, *Hist. nat. Poiss.*, **4** : 323.

1986. *Sebastapistes strongia* Eschmeyer, *in* Smith & Heemstra, *Smith's Sea Fishes* : 476.

Description : Body robust; supraorbital and suborbital ridge spinous; often a long tentacle above eye; head with tentacles. Dorsal with 12 spines and 8-9 rays; anal with 3 spines and 5 rays. Pectoral rays 14-17, lower 8 rays with free extremities. Brownish, banded darker, the 1st band passing through eye; a large brown spot on opercle; fins irregularly banded in dotted lines.

Distribution : Wide spread in Indo-Pacific.

139. ***Trachicephalus uranoscopus*** (Bloch & Schneider, 1801)

1801. *Synanceia uranoscopa* Bloch & Schneider, *Syst. Ichth.* : 195.

1929. *Trachicephalus uranoscopus* Fowler, *Proc. Acad. nat. Sci. Philad.*, **81** : 613.

Description : Elongate, depth 4.2-4.6 in standard length. Head flattened above, with bony ridges and spines; a blunt preorbital spine; preopercle edge with 5 blunt spines; opercle with 2 blunt spines. Dorsal with 12 spines and 11-14 rays; anal with 2 spines and 11-14 rays. Dorsal and anal covered by thick skin; ventrals inserted below pectoral. Skin naked. Brownish, with or without white spots; caudal with white edge.

Distribution : India, eastward to West-Pacific.

Family TETRAROGIDAE

140. ***Tetraroge niger*** (Cuvier, 1829)

1829. *Apistes niger* Cuvier, *Hist. nat. Poiss.*, **4** : 415.

1962. *Tetraroge niger* De Beaufort & Briggs, *Fish. Indo-Aust. Archip.*, **11** : 70.

Description : Depth 2.4-2.6 in standard length. Preorbital with a short spine and a long, slender posterior spine extending to middle of eye. A strong preopercular spine. Dorsal origin above posterior part of eye, with 13 spines and 8 rays; anal with 3 spines and 5 rays. Brownish-black, pink or white below, mottled with reddish-brown. All fins with white margin. Caudal yellowish or reddish with broad black submarginal band.

Distribution : India, eastward to the Philippines.

Family APLOACTINIDAE

141 *Cocotropus roseus* Day, 1875

1875. *Cocotropus roseus* Day, *Fishes of India* : 160

Description : Head and body strongly compressed. Preorbital and preopercle with strong blunt spines; opercle armed. Dorsal with 14 or 15 spines and 9 or10 rays, inserted over middle of eye. Anal with 2 spines and 7 or 8 rays. Pectoral rays 14. Caudal rounded. Pinkish; caudal edged with white.

Distribution : East coast of India.

Remarks : Very common along Madras coast.

Family TRIGLIDAE

142. *Lepidotrigla omanensis* Regan, 1905

1905. *Lepidotrigla omanensis* Regan, *J. Bombay nat. Hist. Soc.*, **16** : 324.

Description : Head large, triangular, with many ridges and spines, 2.3-2.6 in standard length; interorbital width 7.3-8.9% of standard length; rostral process with a single pair of prominent, blade-like spines. Bases of dorsals with small plates bearing strong lateral spines. First dorsal with 8 or 9 spine; second dorsal and anal with 15-17 rays; pectoral with 11 rays and 3 free rays. Scales fewer than 70 in lateral line; scales firmly attached, in even, distinct rows; 10-14 scale rows below lateral line. Red.

Distribution : Northern Indian Ocean.

143. *Lepidotrigla riggsi* Richards & Saksena, 1977

1977. *Lepidotrigla riggsi* Richards & Saksena, *Bull. Mar. Sci.*, **27** (2) : 215

Description : Head triangular, with many ridges and spines; rostral process with a single pair of prominent blade-like spines, much longer than other rostral spines. Bases of dorsal with small plates bearing strong lateral spines. First dorsal with 9 spines; second with 15-16 rays; anal with 15-17 rays. Pectoral with 11 rays and 3 free lower rays. Scales fewer than 70 in lateral line; scales very loosely attached, in uneven and indistinct rows. Red.

Distribution : India and Andaman Sea.

144. *Lepidotrigla spiloptera* Gunther, 1880

1880. *Lepidotrigla spiloptera* Gunther, *Challenger Exp. Zool.*, **1** (4) : 42.

Description : Head triangular with many ridges and spines. Rostral process with several prominent spines. Bases of dorsals with small plates bearing strong lateral spines. First dorsal with 9 spines, second with 15-16; and with 15-16rays; pectoral with 11 rays and 3 free rays. Lateral line with 62-66 scales; scales rows below lateral line 19 to 21. Red with definite silvery white breast and belly.

Distribution : Indo-West Pacific.

Family PLATYCEPHALIDAE

145. *Cociella crocodila* (Tilesius, 1812)

1812. *Platycephalus crocodilus* Tilesius, *Krusestern's Reise* : pl. 59, Fig. 2.

1986. *Cociella crocodila* Smith and Heemstra, *Smith's Sea Fishes*, 483.

Description : Body elongate, head strongly depressed; bony ridge crossing cheek below eye with 3 spines, one in front of eye the second under middle of eye; a third under rear margin of eye; pre-opercular spine 2. Gill rakers 1 + (4 - 5). First dorsal with 9 spines; second dorsal and anal with 11 rays; pectoral with 19-22 rays. Pored lateral line scales 52-55, anterior 2-16 bearing a small spine. Small, dark spots on tip of head and back, also on soft dorsal.

Distribution : Indo-West Pacific.

Remarks : Of very limited fishery value.

146. *Grammoplites scaber* (Linnaeus, 1758)

1758. *Cottus scaber* Linnaeus, *Syst. Nat.* (ed. 10), **1** : 264.

1991. *Grammoplites scaber* Talwar and Jhingran, *Inland Fishes of India*, **1** : 782.

Description : Body robust, sub-cylindrical; head depressed. Pre-opercular spine short, does not extend to gill-opening. First dorsal with 9 spines; second dorsal and anal with 12 rays; pectoral rays 20-21. Gill rakers 1 + (5 or 6). Pored lateral line scales 52-55, all most all bearing spines. Brown, with 4 dark vertical bands on back. First dorsal with minute dark spots, black on distal half; other fins with spots.

Distribution : Indo-West Pacific.

Remarks : Fairly common in Indian estuaries and contribute minor fishery.

147. *Grammoplites suppositus* (Troschel, 1840)

1840. *Platycephalus suppositus* Troschel, *Wiengmans Arch. Naturges.*, 6 : 269

1984. *Grammoplites suppositus* Knapp, *in* Fischer & Bianchi, *FAO Species Ident. Sheets. W. Indian Ocean*, **3** : PLATYC Gram 2.

Description : Body elongate; head strongly depressed. Pre-opercular spines 3, the upper long, reaching beyond margin of opercular membrane. Gill rakers 1 + 8 on first arch. First dorsal with 9 spines; second dorsal with 12 rays; anal with 13 rays; pectoral rays 22-23. Pored lateral line scales 51-55, all most all bearing spines. Brown; first dorsal with a large black blotch posteriorly; upper pectoral rays, upper caudal rays and second dorsal rays with dark spots.

Distribution : Red Sea to coasts of India

148. *Inegocia japonica* (Tilesius, 1820)

1820. *Inegocia japonica*, Tilesius, *Mem. Acad. Sci. St. Petersb.*, **7** : 301-310.

1984. *Inegocia japonica* Knapp, *in* Fischer & Bianchi, *FAO Species Ident. Sheets. W. Indian Ocean*, **3** : PLATYC Ineg 1.

Description : Body elongated; head moderately compressed. Bony ridge crossing cheek below eye with 2 spines, one below middle of eye, the second below rear margin of eye; pre-opercular spines 2 or 3. First dorsal with 9 spines; second dorsal and anal with 12 rays; pectoral rays 19-22. Gill rakers 1 + (4 - 5); pored lateral line scales 51-54, anterior 4-16 scales bearing a small spine. Back crossed by 4 to 6 vague dark bands. Caudal fin with bold brown spots; smaller brown spots on dorsal and pectoral fins.

Distribution : Indo-West Pacific.

149. ***Platycephalus indicus*** (Linnaeus, 1758)

1758. *Callionymus indicus* Linnaeus, *Syst. Nat.* (ed. 10) , **1** : 250.

1991. *Platycephalus indicus* Talwar & Jhingran, *Inland Fishes of India,* **2** : 782.

Description : Body elongate; head strongly depressed. A small pre-ocular spine and two pre-opercular spines. Ridges on head smooth. Vomerine teeth in a single transverse patch. First dorsal with 9 spines; second dorsal and anal with 13 rays; pectoral rays 18-20. Gill rakers (1-2) + (6-9). Pored lateral line scales 67-84. Brownish; several dark bands or blotches on back; pectorals and pelvic with small brown blotches; caudal with 2 or 3 horizontal black bars near rear margin.

Distribution : Indo-West Pacific.

150. ***Sorsogona tuberculata*** (Cuvier, 1829)

1829. *Platycephalus tuberculatus* Cuvier, *Hist. nat. Poiss.,* **4** : 258.

1993. *Sorsogona tuberculata* Krishnan and Mishra, *Rec. zool Surv. India,* **93** (1-2) : 221.

Description : Body elongate; head depressed; top of head with bony tubercles and bone ridges bearing small spines or serrations; pre-ocular spines 2 or 3; pre-opercular spines 4 or more. Gill rakers 1 + (7-8) on first arch. First dorsal with 9 spines; second dorsal and anal with 11 rays; pectoral rays 19-22. Pored lateral line scales 49-53, anterior 19-33 scales bearing a small spine. Brownish; 3 or 4 dark band crossing back.

Distribution : Indo-West Pacific.

151. ***Suggrundus bengalensis*** (Visweswara Rao, 1966)

1966. *Platycephalus bengalensis* Visweswara Rao. *Ann Mag. nat. Hist.* (13) **9** : 124 , fig.1.

1975. *Suggrundus bengalensis* Murty, *J. mar. biol. Ass. India,* **17** (3) : 691.

Description : Body elongate, head depressed. Bony ridge crossing below eye with 4 or more spines; pre-opercular spine not extending to gill-opening. First dorsal with 9 spines; 2nd dorsal with 11 rays; anal with 12 rays; pectoral rays 19-20. Gill rakers (2 or 3) + (8-10) on first arch. Pored lateral line scales 53-57, with 7 or 8 anterior scales with spine. Dark grey–brown with some irregular lighter blotches; spinous dorsal with a black blotch between 2nd and 3rd spine; soft dorsal without spots; a pale ocellus on pectoral while sides dark.

Distribution : East coast of India.

152. ***Suggrundus rodericensis*** (Cuvier, 1829)

1829. *Platycephalus rodericensis* Cuvier, *Hist. nat. Poiss.*, **4** : 253.

1975. *Suggrundus rodericensis* Murty, *J. mar. boil. Ass. India,* **17** (3) : 689.

Description : Body elongate, head depressed; bony ridge crossing cheek below eye with 4 or more spines; pre-opercular spine reaching onto base of pectoral. First dorsal with 9 spines; 2nd dorsal with 12 rays; anal with 12 or 13 rays; pectoral rays 20-23. Gill rakers 1+ 6 or 7 on first arch. Pored lateral line scales 51-57, anterior 15-20 scales bearing spine. Brownish; spinous dorsal blackish; soft dorsal with brown spots.

Distribution : Indo-West Pacific.

153. ***Thysanophrys celebicus*** (Bleeker, 1854)

1854. *Platycephalus celebicus* Bleeker, *Nat. Tijdschr. Ned-Indie,* **7** : 450.

1984. *Thysanophrys celebicus* Knapp *in* Fischer & Bianchi, *FAO species ident. Sheets. W.Indian Ocean,* **3** : PLATYC Thysan 1.

Description : Body elongate; head depressed; bony ridge crossing cheek below eye with 4 or more spines. Pre-ocular spines 2; pre-opercular spines 3. Iris lappet of eye with finger like lobes; a single small papilla on upper surface of eye. Gill rakers 1+ (4-6) on first arch. First dorsal with 9 spines; 2nd dorsal with 12 spines; anal with 13 rays; pectoral rays 18. Lateral line with about 54 pored scales, anterior 2-3 scales with spines. Body and tail with irregular brown cross bands; first dorsal with a broad brown terminal band; other fins spotted.

Distribution : Indo-West Pacific.

Order PERCIFORMES

Family CENTROPOMIDAE

154. ***Lates calcarifer*** (Bloch, 1790)

1790. *Holocentrus calcarifer* Bloch, *Naturges, ausland Fische*, 4 :100, pl. 244.

1984. *Lates calcarifer* Talwar and Kacker, *Comm. Sea Fish. India* : 356.

Description : Body elongate and moderately compressed with a deep caudal peduncle. Head pointed; operculum with a small spine; the upper jaw extending to behind eye; teeth villiform. Dorsal with 7-9 spines and 10 or 11 rays; anal rounded with 3 spines and 7 or 8 rays; pectorals short and rounded; caudal rounded. Olive-brown or greenish above and silvery below.

Distribution : Indo-Pacific.

Remarks : One of the best fishery resources of India both from capture and culture point of view.

Family AMBASSIDAE

155. ***Ambassis commersoni*** Cuvier, 1828

1828. *Ambassis commersoni* Cuvier, *Hist. nat. Poiss.*, **2** : 176, pl. 25.

Description : Body compressed; head massive. Supra-orbital ridge smooth, a single spine at posterior end; pre-orbital ridge serrate; mouth large and oblique; lower gill rakers 20–22. Dorsal with 7 spines, followed by a deep notch; second dorsal with 1 spine and 9 to 11 rays; anal with 3 spines and 9 to 10 rays. Lateral line complete; pre-dorsal scales 16-21. Body with a bright silvery lateral band; membrane between 2nd and 3rd dorsal spine dusky.

Distribution : Indo-West Pacific.

Remarks : Fairly common along the coasts of India.

156. ***Ambassis dayi*** Bleeker, 1874

1874. *Ambassis dayi* Bleeker, *Nat. Verh. Holl. Maatsch. Wetnsch. 3, Verz.*, **2**(1) : 95.

Description : Depth 3.0, head 4.5 in total length; eye 4.0-4.5 in head. First dorsal with 7 spines; second with one spine and 10 or 11 rays; anal with 3 spines and 10 rays; pectoral rays 16. Pre-opercle edge finely serrated; inter-opercle serrated; supra-orbital smooth with one spine posteriorly. Lateral line continuous with about 30 scales. Silvery, glossed purple; interspinous membrane between 2nd and 3rd dorsal spine dark.

Distribution : India.

157. ***Ambassis gymnocephalus*** (Lacepede, 1802)

1802. *Lutjanus gymnocephalus* Lacepede, *Hist nat. Pois.* **3** : 181 & 216, pl. 23, fig. 3.

1984. *Ambassis gymnocephalus* Talwar & Kacker, *Comm. Sea Fish. India* : 362.

Description : Body compressed; supra-orbital ridge serrated; pre-opercular edge smooth; lower gill rakers 23-26. Dorsal with 7 spines followed by a deep notch, second part with 1 spine and 9 or 10 rays; anal with 3 spines and 9 rays. Lateral line interrupted; scales small, cycloid. Body silvery with bright silvery lateral band. Membrane between 2nd and 3rd dorsal spines dusky.

Distribution : Indo-West Pacific.

Remarks : Caught in fairly large numbers along the coasts.

158. ***Ambassis interruptus*** Bleeker, 1852

1852. *Ambassis interruptus* Bleeker, *Natuurk. Tijdschr. Ned-Indie*, **3** : 696.

Description : Body deep and compressed. Head massive, 2.8 in standard length. First dorsal with 7 spines; second with 1 spine and 9 rays; anal with 3 spines and 9 rays. Lateral line interrupted by 2 or 3 scales below origin of soft dorsal; 23 to 26 pored scales in longitudinal series; pre-dorsal scales 14-19; cheek with 2 transverse scale-rows. Second dorsal spine bright orange; the membrane between 2nd to 3rd spines dusky; a dark longitudinal band along either caudal lobe.

Distribution : India to northern Australia.

159. ***Ambassis miops*** Gunther, 1871

1871. *Ambassis miops* Gunther, *Proc. zool.. Soc. Lond.* : 655.

Description : Body elongate and compressed; head massive; supra-orbital ridge smooth; pre-operculum denticulate; inter-opercular margin entire. First dorsal with 7 spines; second with 1 spine and 8 rays; anal with 3 spines and 9 rays. Lateral line complete, with about 28 scales; pre-dorsal scales 13 or 14; cheek with 2 transverse scale-rows. Dark pigmentation on scale margins of upper side; flanks and belly silvery; a thin black stripe along flank.

Distribution : Indo-West Pacific.

160. ***Ambassis urotaenia*** Bleeker, 1852

1852. *Ambassis urotaenia* Bleeker, *Natuurk, Tijdschr. Ned-Indie,* **3** : 527.

Description : Body slender and compressed. Head fairly large, 2.5 in standard length. Supra-orbital ridge smooth; pre-operculum denticulate; inter-operculum entire. Dorsal with 7 spines, second part with 1 spine and 9 rays; anal with 3 spines and 9 rays. Pre-dorsal scales 8-10. Lateral line interrupted twice, 24-25 scales in lateral series; cheek with one transverse scale-row. A silvery lateral band along flanks; membrane between 2nd and 3rd dorsal spines dusky.

Distribution : Indo-West Pacific.

Remarks : Fairly common in occurrence.

Family SERRANIDAE

161. ***Cephalopholis formosa*** (Shaw & Nodder, 1812)

1812. *Sciaena formosa* Shaw & Nodder, *Natur. Misc.* : 23, pl. 1007.

1993. *Cephalopholis formosa* Heemstra & Randall, *FAO Fish. Synop.,* (125) **16** : 42.

Description : Body depth 2.5-2.9, head 2.4-2.6 in standard length; pectoral 1.5-1.8, pelvic 1.6-2.0 in head length; gill rakers (8-10) + (14-18). Dorsal with 9 spines and 15-17 rays; anal with 3 spines and 8 rays; pectoral rays 16-18; lateral line scales 47-51; lateral scale series 91-109. Dark brown to yellowish brown, with slightly irregular dark blue lines on head, body and fins.

Distribution : India and west Pacific.

Remarks : Too small to be of commercial importance.

162. ***Cephalopholis sonnerati*** (Valenciennes, 1828)

1828. *Serranus sonnerati* Valenciennes, *Hist. nat. Poiss,* **2** : 299.

1993. *Cephalopholis sonnerati* Heemstra and Randall, *FAO Fish. Synop.,* (125) **16** : 57.

Description : Depth 2.3-2.8, head length 2.5-2.7 in standard length. Gill rakers 7-9 on upper limb, 14-16 on lower limb. Dorsal with 9 spines and 14-16 rays, anal with 3 spines and 9 rays. Pectoral rays 18-20. Pelvic reach or extend beyond anus. Caudal rounded. Reddish brown body with scattered small whitish or purple spots; purple network on head, maxilla and lips; pectoral orange distally; membranes of soft dorsal, anal and pelvic fin tips blackish.

Distribution : Indo-Pacific.

Remarks : Of commercial importance.

163. ***Epinephelus areolatus*** (Forsskal, 1775)

1775. *Perca areolata* Forsskal, *Descript. Anim.*, : 42.

1993. *Epinephelus areolatus* Heemstra & Randall, *FAO Fish. Synop.*, (125) **16** : 112.

Description : Body depth less than head length, depth 2.8-3.3, head 2.4-2.8 in standard length. Maxilla ending below rear half of eye; lower jaw with 2 rows of teeth. Gill rakers (8-10) + (14-16), total 23-25. Dorsal with 11 spines and 15-17 rays, the 3rd or 4th spines longest; anal with 2 spines and 8 rays. Pectoral rays 17-19. Pectoral longer than pelvic. Body and fins covered with numerous close set brown, brownish yellow or greenish yellow spots. Pectoral pale with small dark spots on the rays.

Distribution : Indo-West Pacific.

Remarks : A commercial fishery exists.

164. ***Epinephelus caeruleopunctatus*** (Bloch, 1790)

1790. *Holocentrus caeruleopunctatus* Bloch, *Naturges. ausland. Fische*, **4** : 94, pl. 242, fig. 2.

1993. *Epinephelus caeruleopunctatus* Heemstra & Randall, *FAO Fish. Synop.*, (125) **16** : 120.

Description : Body depth less than head length; depth 2.9-3.4, head 2.3-2.5 in standard length. Dorsal profile straight; pre-opercle rounded, finely serrate; opercular spines incon-spicuous. Gill rakers (8-10) + (13-17), intercalated bony tooth plates cover the rudiments. Dorsal with 11 spines and 15-17 rays; anal with 3 spines and 8 rays; pectoral rays 17-19. Pectoral 1.5-2.1, pelvic 2.0-2.7 in head length. Lateral line scales 51-61; lateral scale series 86-109. Brownish-grey, with small pale spots overlain with large pale blotches; oblique black saddle on rear half of peduncle.

Distribution : Indo-west Pacific.

Remarks : Taken commercially in small quantities.

165. ***Epinephelus coioides*** (Hamilton, 1822)

1822. *Serranus coioides* Hamilton, *Fishes of Ganges* : 82.

1993. *Epinephelus coioides* Heemstra and Randall, *FAO. Fish. Synop.*, (125) **16** : 130.

Description : Body elongate, depth 2.9-3.7, head length 2.3-2.6 in standard length. Gill rakers (8-10) + (14-17), total 23-26. Dorsal with 11 spines and 14-16 rays, anal with 3 spines and 8 rays, pectoral rays 18-20. Pyloric caecae numerous. Lateral body scales ctenoid; lateral line scales 58-65; lateral scale series 100-118. Numerous small brownish orange or reddish brown spots on head, body and median fins. Body with 5 giant, irregular, oblique, dark bars that bifurcate ventrally; first dark bar below anterior dorsal fin spines, last bar on caudal peduncle; 2 dark spots on inter-opercle and another 1 or 2 at junction of sub-and inter-opercle.

Distribution : Indo-West Pacific.

Remarks : Commonly occurring and of considerable economic importance.

166. ***Epinephelus diacanthus*** (Valenciennes, 1828)

1828. *Serranus diacanthus* Valenciennes, *Hist nat. Poiss.*, **2** : 319.

1991. *Epinephelus diacanthus* Heemstra & Randall, *FAO. Fish. Synop.*, (125) **16** : 140.

Description : Body depth 2.8-3.5, head 2.2-2.4 in standard length. Anterior nostrils tubular, maxilla reaches to or almost to vertical at rear edge of eye. Gill rakers (8-10) + (15-17). Dorsal with 11 spines and 15-17 rays; anal with 3 spines and 8 rays; pectoral with 17-20 rays. Caudal usually rounded or convex. Pyloric caecae 7 or 8. Body pale grayish brown, usually with 5 dark vertical bars, broader then interspaces, 4 below dorsal fin and fifth on caudal peduncle; fins dusky grey without spots.

Distribution : Northern Indian Ocean.

Remarks : An important component of the grouper fishery along west coast of India.

167. ***Epinephelus flavocaeruleus*** (Lacepede, 1802)

1802. *Holocentrus flavocaeruleus* Lacepede, *Hist. nat. Poiss*, 4. : 367.

1993. *Epinephelus flavocaeruleus* Heemstra & Randall, *FAO. Fish. Synop.*, (125) **16** : 154.

Description : Body deep and compressed; depth 2.3-2.7, head length 2.4-2.4 in standard length. Maxilla reaches to or slightly past vertical at rear edge of eye. Mid lateral part of lower jaw with 2 to 4 rows of teeth. Gill rakers (8-10) + (15-17). Dorsal with 11 spines and 16 or 17 rays; anal with 3 spines and 8 rays; pectoral rays 18-20. Pectoral length 1.7-2.1, pelvic 1.7-2.0 in head length. Scales ctenoid; lateral line scales 61-74; lateral scale series 129-148. Caudal fin truncate. Dark bluish violet; fins and jaws bright yellow; margin of vertical fins and tips of ventrals sometimes black.

Distribution : Indian Ocean.

168. ***Epinephelus latifasciatus*** (Temminck and Schlegel, 1842)

1842. *Serranus latifasciatus* Temminck and Schlegel, *Fauna Japonica, poissus* : 6.

1993. *Epinephelus latifasciatus* Heemstra & Randall, *FAO.Fish. Synop.*, (125) **16** : 176.

Description : Body depth 2.9-3.4, head length 2.3-2.6 in standard length. Maxilla reaches past vertical at rear edge of eye. Gill rakers (8-11) + (15-18). Dorsal with 11 spines and 12-4 rays; anal with 3 spines and 8 rays; pectoral rays 17-19. Lateral body scales smooth; lateral line scales 56-65; lateral scale series 91-106. Two black edged white longitudinal bands, the upper band from above eye to anterior dorsal fin rays and the lower band from below eye to lower caudal fin rays; dorsal and caudal with black spots and streaks; white bands disappearing on adults, the dark edges breaking into dashes and spots.

Distribution : Indo-West Pacific.

Remarks : Minor commercial fishery exists.

169. ***Epinephelus longispinis*** (Kner, 1864)

1864. *Serranus longispinis* Kner, *Sitzungsber. Oesterr. Akad. Wiss.*, **49** (1) : 483.

1993. *Epinephelus longispinis* Heemstra & Randall, *FAO Fish. Synop.*, (125) **16** : 178.

Description : Body depth 2.8-3.3, head 2.4-2.6 in standard length. Maxilla reaches to or past vertical at rear edge of eye. Gill rakers (8-10) + (15-17). Dorsal with 11 spines and 16 or 17 rays; anal with 3 spines and 8 rays; pectoral rays 17-19. Lateral body scales distinctly ctenoid, with numerous auxiliary scales; lateral line scales 49-53; lateral scale series 98-121. Grayish brown, with small, dark reddish brown spots that are round and widely spaced on head and anterior half of body, but obliquely elongated, closer together and darker posteriorly; a row of dark spots along distal margin of soft dorsal and caudal

Distribution : Indian Ocean.

Remarks : Although the first description was based on specimens from Madras, later to Day*(1878), it was never recorded from Madras, nor could we obtain any specimen during our decade long survey programme.

170. ***Epinephelus malabaricus*** (Schneider, 1801)

1801. *Holocentrus malabaricus* Schneider, *Syst. Ichthyol., Bloch* : 319, p. 63.

1984. *Epinephelus malabaricus* Talwar & Kacker, *Comm. Sea Fish. India* : 389.

Description : Body elongate, depth 3.0-3.7, head 2.3-2.6 in standard length. Gill rakers (8-10) + (14-18)., outer face of gill arch covered by small bony platelets. Dorsal with 11 spines and 14-16 rays; anal with 3 spines and 8 rays; pectoral rays 18-20. Lateral body scales ctenoid, with auxiliary scales; lateral line scales 54-64, anterior lateral line tubes branched; lateral scale series 101-117. Pyloric caecae numerous, more than 80 branches. Brownish, covered with small, well-separated, blackish brown spots and blotches; five irregular, broad, dark bars on body, last three bifurcate ventrally; usually 3 dark blotches on interopercle; small and spaced white spots on head and body; fins brownish black with small dark spots.

Distribution : Indo-West Pacific.

Remarks : One of the most important groupers and fairly common in the trawling grounds, also captured by hook-and-line and traps.

171. ***Epinephelus morrhua*** (Valenciennes, 1833)

1833. *Serranus morrhua* Valenciennes, *Hist. nat. Poiss.*, **9** : 434.

1993. *Epinephelus morrhua* Heemstra and Randall, *FAO. Fish. Synop.*, (125) **16** : 196.

Description : Body depth 2.8-3.1, head 2.3-2.5 in standard length. Maxilla reaches to or past vertical at rear edge of eye; mid lateral part of lower jaw with 2 rows of teeth. Gill rakers (8-10) + (15-18). Dorsal with 11 spines and 14-15 rays; anal with 3 spines and 7 or 8 rays; pectoral rays 17 or 18. Caudal convex to moderately rounded. Head and body with dark brown bands. Small dark brown spots often present in pale areas between bands and usually arranged in series paralleling the bands.

Distribution : Indo-west Pacific.

Remarks : A deep water species and an excellent food fish.

172. ***Epinephelus undulosus*** (Quoy & Gaimard, 1824)

1824. *Bodianus undulosus* Quoy & Gaimard, *Voy. Uranie et Physic. Zool. Poiss.* : 310.

1993. *Epinephelus undulosus* Heemstra & Randall, *FAO Fish. Synop.,* (125) **16** : 250.

Description : Body depth 2.7-3.1, head 2.5-2.7 in standard length. Maxilla reaches to vertical at rear edge of eye. Mid lateral part of lower jaw with 2 rows of teeth. Gill rakers (12-16) + (20-23), total 32-38. Dorsal with 11 spines and 17-19 rays; anal with 3 spines and 8 rays; pectoral rays 18-19. Pectoral shorter than pelvic fins. Caudal truncate to emarginate. Body brownish grey with brown to golden brown dots on head and wavy longitudinal lines of the same colour on dorsal part of body. Margin of spinous dorsal fin narrowly blackish.

Distribution : Indo-West Pacific.

Remarks : This species is of some importance in the fishery along the Tamil Nadu coast of India.

Family TERAPONIDAE

173. ***Pelates quadrilineatus*** (Bloch, 1790)

1790. *Holocentrus quadrilineatus* Bloch, *Naturges., ausland. Fische.,* (4) 82 : pl. 238, fig. 2.

1984. *Pelates quadrilineatus.*Talwar & Kacker, *Comm. Sea. Fish. India* : 404.

Description : Body moderately deep and compressed. Depth 2.6-3.2 in standard length; mouth oblique; teeth in 2 rows in lower jaw; in 3 or more rows in upper jaw; no teeth on vomer or palatines. Gill rakers 22-27. Dorsal with 12-13 spines and 9-10 rays; caudal slightly emarginate. Body silvery with 5 horizontal black stripes. A blotch of variable intensity on side of body posterior to nape; dorsal with black blotch, between 3rd and 4th spines; anal yellow, darker along edges; caudal yellow with dusky edges.

Distribution : Indo-West Pacific.

Remarks : A common species in the commercial catches.

174. ***Terapon jarbua*** (Forsskal, 1775)

1775. *Sciaena jarbua* Forsskal, *Descript. Anim.* : 50.

1984. *Terapon jarbua* Talwar & Kacker, *Comm. Sea Fish. India* : 406.

Description : Body moderately deep, slightly compressed. Mouth slightly oblique, teeth strong, slightly recurved, the outer row much enlarged; lower gill-rakers 12-15. Dorsal with 11-12 spines and 9-11 rays; anal with 3 spines and 7-10 rays. Caudal emarginate. Body with 3 or 4 longitudinal downwardly curved stripes. Spinous dorsal with an intensive large black spot; caudal with dark tips and three oblique stripes.

Distribution : Indo-West Pacific.

Remarks : Fairly common in catches.

175. ***Terapon puta*** Cuvier, 1829

1829. *Terapon puta* Cuvier, *Hist. nat. Poiss.*, **3** : 131.

Description : Body moderately compressed. Mouth horizontal; teeth strong, outer row enlarged; no teeth on roof of mouth. Lower gill rakers 18-24. Dorsal deeply notched, with 11-12 spines and 9-11 rays. Caudal emarginate. Scales small, 70-85 in lateral line. Body with 3 or 4 straight longitudinal stripes. Dorsal with blackish blotch along upper edge between 3rd or 4th and 7th or 8th spines. Caudal fin with oblique bar across upper lobe and blotch at tip, middle caudal rays with stripe; one or two bars running obliquely across lower caudal lobe.

Distribution : Indo-West Pacific.

Remarks : Common in the commercial catches.

176. ***Terapon theraps*** Cuvier, 1828

1828. *Terapon theraps* Cuvier, *Hist. nat. Poiss.*, **3** : 129, pl. 53.

Description : Body moderately deep, compressed. Mouth oblique. Lower gill rakers 14-17. Dorsal notched, with 11-13 spines and 9-11 rays. Caudal emarginate. Scales small, 46-56 in lateral line; 6-8 above lateral line. Body with 4 horizontal stripes; spinous part of anal uniformly dark in smaller juveniles, clear with a black blotch on upper membrane between 3rd and 7th spines in adults; soft anal black; caudal lobes with two bars, upper with black tip.

Distribution : Indo-West Pacific.

Remarks : A common species in the commercial catches.

Family PRIACANTHIDAE

177. ***Priacanthus hamrur*** (Forsskal, 1775)

1775. *Sciaena hamrur* Forsskal, *Descript. Anim.* : 45.

1984. *Priacanthus hamrur* Talwar & Kacker, *Comm. Sea Fish. India* : 415.

Description : Body stocky and compressed; eyes very large; mouth oblique, the lower jaw prominent. Pre-operculum serrated, the spine at angle short. Lower gill rakers 18-24. Dorsal with 10 spines and 14-15 rays; anal with 3 spines and 18-24 rays. Pelvic shorter than head; caudal feebly crescentic. Scales small, ctenoid, difficult to detach. Pelvic black or partly black; dusky margin on dorsal, and caudal.

Distribution : Indo-Pacific.

Remarks : Common in trawl catches.

178. ***Priacanthus tayenus*** Richardson, 1846

1846. *Priacanthus tayenus* Richardson, *Ichth. China and Japan* : 237.

Description : Body stocky and compressed; eyes very large. Mouth oblique; lower jaw prominent. Pre-operculum serrated, a strong serrated spine at angle. Lower gill rakers 17-18.

Dorsal with 10 spines and 12-13 rays. Pelvic joined to body by a membrane. Caudal lunate, its lobes often with filaments. Scales, ctenoid; body brilliant crimson red, paler below. Pelvics with distinct blackish red spots.

Distribution : Tropical Indo-Pacific.

Remarks : Common in the trawl catches in depths ranging from 60 to 90 meters in our area.

Family APOGONIDAE

179. *Apogon aureus* (Lacepede, 1802)

1802. *Centropomus aureus,* Lacepede, *Hist. nat. Poiss.,* **4** : 253, 273.

1986. *Apogon aureus* Gon, *in* Smith & Heemstra, *Smith's Sea Fishes* : 549, pl. 48, fig. 175.3.

Description : Depth 2.3-2.7, head 2.5-2.7 in standard length; eye 2.7-3.2 in head. Dorsal with 7 spines, second with 1 spine and 9 rays; anal with 2 spines and 8 rays; pectoral rays 14; lateral line scales 26-28; pre-dorsal scales 4-5; 2 scale rows between lateral line and dorsal base; gill rakers (5-7) + (15-19). Pre-opercular ridge and pre-orbital smooth; pre-opercular edge finely serrated. A dark stripe from snout to lower part of eye and another from snout over maxillary. A distinct dark longitudinal stripe from behind eye to hind border of operculum. Caudal peduncle encircled by a broad dark brown band. Base of anal with a row of dark spots between the rays.

Distribution : Indo-West Pacific.

180. *Apogon bandanensis* Bleeker, 1854

1854. *Apogon bandanensis* Bleeker, *Nat. Tijdschr. Ned.-Indie,* **6** : 95.

Description : Depth 2.4-2.8, head 2.4-2.7 in standard length; eye 2.1-2.5 in head. Dorsal with 7 spines, second with 1 spine and 9 rays; anal with 2 spines and 8 rays; pectoral rays 13; lateral line scales 25-27; 2 scales between lateral line and first dorsal. Pre-operculum edge finely serrated; pre-orbital and pre-opercular ridge smooth. Cloudy brown patches below first and 2nd dorsal; a dark brown band on upper part of caudal peduncle; a narrow oblique streak from eye to corner of pre-operculum.

Distribution : Indo-Pacific.

181. *Apogon kallosoma* Bleeker, 1852

1852. *Apogon kallosoma* Bleeker, *Nat. Tijdschr. Ned.-Indie* **3** : 448.

Description : Depth 3.2-3.3, head 2.6-2.8 in standard length; eye 3.0 in head. Pre-operculum denticulate. First dorsal with 7 spines; second with 1 spine and 9 rays; anal with 2 spines and 8 rays; pectoral rays 14-15. Second spine of dorsal more than half of third, which is longest and strongest. Lateral scale series 35-36; 3 scale rows between lateral line and first dorsal. Caudal rounded. Reddish brown; a dark lateral band from head to caudal base ending in a large caudal spot; a second band from upper part of opercle. Upper part of first dorsal blackish.

Distribution : India to central west-Pacific.

182. ***Apogon multitaeniatus*** Ehrenberg, 1828

1828. *Apogon multiaeniatus* Ehrenberg, *in* Cuvier & Valenciennes, *Hist. nat. Poiss.*, **2** : 159.

Description : Depth 2.6-2.8, head 2.7-2.8 in standard length; eye 3.0-3.5 in head. First dorsal with 7 spines, second with 1 spine and 9 rays; anal with 2 spines and 8 rays; pectoral rays 15; lateral line scales 43-45; pre-dorsal scales 4-5; gill rakers (5-6) + (14-16). Pre-operculum denticulate, its ridge and pre-orbital smooth. Second spine of first dorsal more than half of third. Caudal feebly incised, the lobes rounded. Scales ctenoid. Reddish brown, 18-20 dark longitudinal lines along scale rows. First dorsal black; other fins dusky; pectoral base black; tips of pelvic black.

Distribution : Indo-West Pacific.

Remarks : This is one of the largest cardinal fishes.

183. ***Apogon nigricans*** Day, 1875

1875. *Apogon nigricans* Day, *Fishes of India* : 58, pl. 16, fig. 3.

Description : Depth equals head length, 3.3 in total length; pre-opercle margin finely serrated. First dorsal with 7 weak spines and second with 1 spine and 9 rays; anal with 2 spines and 8 or 9 rays; pectoral rays 13; lateral line with 25-26 scales. Grey, several vertical dark bands on body and the free portion of tail; vertical fins black; pectoral with dark base.

Distribution : South-east coast of India, at Madras.

Remarks : Although the original description is based on specimens from Madras, during our decade long survey programme not a single specimen could be collected.

184. ***Apogon nigripinnis*** Cuvier, 1828

1828. *Apogon nigripinnis* Cuvier, *in* Cuvier & Valenciennes, *Hist. nat. Poiss.*, **2** : 113.

Description : Depth 2.2-2.3, head 2.4 in standard length; eye 3.3-3.6 in head. First dorsal with 7 spines, second with 1 spine and 9 rays; anal with 2 spines and 8 rays; pectoral rays 15-16; lateral line scales 27; pre-dorsal scales 2; developed gill rakers 12-13. Second spine of dorsal less than half of 3rd spine. Edge of pre-operculum finely serrated; pre-opercular ridge and pre-orbital smooth. Low hump above eyes; teeth villiform posteriorly on jaws, anteriorly larger and incurved. Caudal truncate. A dark vertical bar under each dorsal and another on caudal base; a large ocellus above pectoral; ventrals black.

Distribution : Indo-West Pacific.

Remarks : Fairly common along Madras coast.

185. ***Apogon quadrifasciatus*** Cuvier, 1828

1828. *Apogon quadrifasciatus* Cuvier, *Hist. nat. Poiss.*, **2** : 153.

Description : Depth 2.8-3.0, head 2.5-2.6 in standard length; eye 2.9-3.2 in head. First dorsal with 7 spines, second with 1 spine and 9 rays; anal with 2 spines and 8 rays; pectoral

rays 15-16; lateral line scales 28; pre-dorsal scales 5; gill rakers (5-6) + 14. Pre-opercle ridge smooth in young, becoming serrated around angle with age; sub-orbital usually undulate, sometimes with spinules. Second spine of first dorsal a little less than half of the third. Pectorals somewhat longer than ventrals; caudal feebly incised, the lobes rounded. Two dark longitudinal bands. Anus generally in a black spot. Anterior part of first dorsal, posterior part of second dorsal, anal and tip of ventrals dusky.

Distribution : Indo-West Pacific.

Remarks : Fairly common.

186. *Apogon taeniatus* Ehrenberg, 1828

1828. *Apogon taeniatus* Ehrenberg, *in* Cuvier & Valenciennes, *Hist. nat. Poiss.*, **2** : 159.

Description : Body robust and slightly compressed. Depth and head about 2.4 in standard length. Pre-opercular ridge smooth, its angle undulate, posterior and ventral edges smooth. Eye 3.0-3.3 in head. Developed gill rakers 9-11. First dorsal with 7 spines, the second with I spine and 9 rays; anal with 2 spines and 8 rays; pectoral rays 14-15. Scales ctenoid; lateral line complete, with 25-27 scales. Dull silvery, a dark vertical bar under each dorsal-fin; a black blotch near end of lateral line; ventrals and anterior spines of dorsal black.

Distribution : Indo-West Pacific.

187. *Apogon thurstoni* Day, 1888

1888. *Apogon thurstoni* Day, *Fishes of India, Suppl.* : 784.

Description : Depth 2.8, head 3.2 in total length; eye 3.6 in head, equal to interorbital. Preopercle edge serrated. First dorsal with 7 strong spines, the 3rd spine strongest and longest; 2nd dorsal with 1 spine and 9 rays; anal with 2 spines and 7 rays; pectoral rays 14; lateral line with about 26 scales; 2 scales between lateral line and first dorsal. Grayish; a dark band behind 2nd dorsal base; an oval black spot nearly as large as orbit and surrounded by a narrow yellow ring below the lateral line under first dorsal; vertical fins black, caudal yellowish.

Distribution : South-east coast of India, at Madras.

Remarks : We could not record any specimen.

188. *Apogonichthys ellioti* (Day, 1875)

1875. *Apogon ellioti* Day, *Fishes of India* : 63.

1982. *Apogonichthys ellioti* Munro, *The marine and freshwater fishes of Ceylon* : 119, pl. 21, fig. 326.

Description : Depth about 3.2, head about 2.8 in standard length; eye 3.5-3.7 in head. First dorsal with 7 spines, second with 1 spine and 9 rays; anal with 2 spines and 8 rays; pectoral rays 15; lateral line scales 25-26. Pre-opercle edge smooth; palatine teeth absent; supramaxilla present. Second dorsal much higher than first one; 3rd, 4th and 5th spine of first dorsal subequal. Caudal rounded or sub-truncate. Scales thin and easily displaced.

Upper part of first dorsal black; second dorsal with a marginal and median black band; anal with a black median band; caudal dusky. Young specimens with an indistinct lateral blotch on the tail.

Distribution : Indo-West Pacific.

189. *Apogonichthys ocellatus* (Weber, 1913)

1913. *Apogon ocellatus* Weber, *Siboga Exp. Fische* : 231.

1986. *Apogonichthys ocellatus* Gon, *in* Smith & Heemstra, *Smith's Sea Fishes* : 553, pl. 49, fig. 175.28.

Description : Depth 2.6-2.8, head 2.3-2.5 in standard length; eye 3.8-4.0 in head. First dorsal with 7 spines, second with 1 spine and 9 rays; anal with 2 spines and 8 rays; pectoral rays 15; lateral line scales 25; pre-dorsal scales 4; developed gill rakers 5-6. Pre-opercle edge poorly ossified or smooth; anterior nostril with a long flap. Third dorsal spine stronger and longer. Caudal rounded. Brown; a club-shaped dark band from eye to angle of pre-opercle; another stripe from eye to beginning of lateral line; large black ocellus on rear part of first dorsal; edge of soft dorsal, anal and caudal white.

Distribution : Indo-West Pacific.

190. *Apogon poecilopterus* (Kuhl & van Hasselt, 1828)

1828. *Apogon poecilopterus* Kuhl & van Hasselt, *in* Cuvier & Valenciennes, *Hist. nat. Poiss.*, **2** : 114.

Description : Body oblong; depth 2.6-3.0 in standard length. Eye 3.0-3.4 in head, snout two thirds of eye. Mouth oblique. Teeth in anterior third of premaxilla in one row or in an indistinct double one, caninoid and curved; posteriorly in a villiform band; teeth of lower jaw caninoid, in one row. First dorsal with 7 spines, second with 1 spine and 8-9 rays; anal with 2 spines and 8 rays; pectoral rays 16; lateral line scales 25-26. Preopercle edge smooth. Caudal very feebly rounded, almost truncate. Upper part of first dorsal black between third and fifth spine. Second dorsal and caudal dusky.

Distribution : Indo-West Pacific.

191. *Archamia lineolata* (Ehrenberg, 1828)

1828. *Apogon lineolatus* Ehrenberg, *in* Cuvier & Valenciennes, *Hist. nat. Poiss.*, **2** : 160.

1986. *Archamia lineolata* Gon, *in* Smith & Heemstra, *Smith's Sea Fishes* : 554.

Description : Depth and head 2.6-2.7 in standard length. Eye 2.8-3.0 in head. First dorsal with 7 spines, second with 1 spine and 9 rays; anal with 2 spines and 13 -14 rays; pectoral rays 14; lateral line scales 26-28. Preopercle edge serrated. First spine of dorsal about one-third or half of second; anterior soft rays of dorsal and anal longer than the posterior ones. Caudal incised. Head and body densely covered by small black spots; about 13 narrow red vertical bars on body; caudal spot 2.0-2.5 in least depth of peduncle.

Distribution : Indo-Pacific.

Family SILLAGINIDAE

192. *Sillago lutea* McKay, 1985

1985. *Sillago (Parasillago) lutea* McKay, *Mem. Queensland Mus.*, **23**(1) 40-42, figs. 10 D, 13 H-I, 18.

1992. *Sillago lutea* McKay, *FAO Fish. Synop.*, (125)**14** : 50.

Description : Body elongate, spindle shaped. First dorsal with 11 spines and second dorsal with I spines and 20-22 rays; anal with 2 spines and 21-23 rays. Lateral line scales 67-72. Swim bladder with a median anterior extension and with or without rudimentary anteriorly directed antero-lateral projections; posterior extension single, tapering to a fine point. First dorsal fin membrane tipped with a fine dusting of black; no dark spot at the base of pectoral.

Distribution : Indo-West Pacific.

Remarks : Commercially viable but of no importance at present.

193. *Sillago sihama* (Forsskal, 1775)

1775. *Sillago sihama,* Forsskal, *Descript. Anim.* : 70.

1992. *Sillago sihama* McKay, *FAO. Fish. Synop.*, (125)**14** : 59.

Description : First dorsal with 11 spines and second dorsal with 1 spine and 20-23 rays; anal with 2 spines and 21-23 rays; lower gill rakers 7-9. Scales small, cycloid; lateral line scales 67-72. Two posterior extensions to the swim bladder. Creamy white with silvery longitudinal stripe along sides; dorsals dusky terminally, with or without rows of dark brown spots on the membrane of second dorsal; caudal dusky terminally, no dark blotch at the base of pectoral.

Distribution : Indo-West Pacific.

Remarks : Small scale fishery exists.

194. *Sillago soringa* Dutt & Sujatha, 1983

1983. *Sillago soringa* Dutt & Sujatha, *Proc. Indian Natl. Sci. Acad.*, **B 48** (5) : 611-614, fig. 1.

Description : First dorsal with 11 spines; the second with 1 spine and 21 rays; anal with 2 spines and 22 rays; LL 64-68. Swim bladder with 3 anterior extensions, the middle one projecting forward and the anterolateral ones recurved backward for a short distance along the sides; a single short posterior extension. Grey-brown dorsally, paler laterally, milky white ventrally; spinous dorsal membrane with minute dots; membrane of 2nd dorsal with a more or less continuous grey band, running parallel to and close to anterior edge of each ray.

Distribution : East coast of India.

195. ***Sillago vincenti*** (McKay, 1980)

1980. *Sillago vincenti* McKay, *J. mar. biol. Ass. India*, **18**(2) : 378, fig. 1.

Description : First dorsal with 11 spines and second with 1 spine and 21-23 rays; anal with 2 spines and 22-24 rays. Lateral line with 70-74 scales. Swim bladder with a single posterior extension, a short bulbous projection anteriorly with one to three antero-lateral lobate or recurved projections, no tubular extensions anteriorly. Body unmarked; second dorsal spotted.

Distribution : Indo-West Pacific.

Remarks : Small scale fishery exists.

Family MALACANTHIIDAE

196. ***Hoplolatilus fronticinctus*** (Gunther, 1887)

1887. *Latilus fronticinctus* Gunther, *Proc. zool. Soc. Lond.*, : 550, pl. 48.

1986. *Hoplolatilus fronticinctus* Heemstra, *in* Smith & Heemstra, *Smith's Sea Fishes* : 614.

Description : Body depth 3.3-4.0, head 3.8-4.0 in standard length; eye 3.9-4.0 in head. Pre-opercle with enlarged spine at angle. Skinny protuberance on rear margin of gill cavity. Dorsal with 10 spines and 13 rays, penultimate ray prolonged; anal with 2 spines and 12 rays; gill rakers 25-28; lateral line scales 85-92. Caudal forked. Body pale olive-grey; dark bluish violet band joining eyes across front of snout.

Distribution : Indo-West Pacific.

Family LACTARIIDAE

197. ***Lactarius lactarius*** (Schneider, 1801)

1801. *Scomber lactarius*, Schneider, *Syst. Ichth. Bloch* : 31.

1984. *Lactarius lactarius* Talwar and Kacker, *Comm. Sea Fish. India* : 427.

Description : Body oblong, strongly compressed. Head large, about 2.5 in standard length. Mouth oblique, with prominent lower jaw; canine teeth in front of each jaw. First dorsal with 7 or 8 spines, second with 1 spine and 20-22 rays; anal with 3 spines and 25-28 rays, its base longer than 2nd dorsal. Pectoral long and pointed; pelvic just below pectoral base. Caudal forked. Scales cycloid. Silvery-grey, a dusky spot on upper part of operculum.

Distribution : Indo-West Pacific.

Remarks : Commercially valuable fish.

Family RACHYCENTRIDAE

198. ***Rachycentron canadus*** (Linnaeus, 1766)

1766. *Gasterosteus canadus* Linnaeus, *Syst. Nat*, **1** : 213.

1984. *Rachycentron canadus* Talwar & Kacker, *Comm. Sea Fish. India* : 429.

Description : Body cigar-shaped; mouth large, terminal ; two dorsals, the first with 6 to 9 short free spines; second long with one to three spines and 26-33 rays; anal with 2 or 3 spines and 22- 28 rays. Caudal lunate in adults, rounded in young. Two narrow black bands along the sides.

Distribution : Circum global, tropical and subtropical.

Remarks : Occurs all round the year in the commercial catches.

Family ECHENEIDAE

199. *Echeneis naucrates* Linnaeus, 1758

1758. *Echeneis neucrates* Linnaeus, *Syst. Nat.*, **1** : 261 (species name misspelled).

Description : Body long and slender, depth 10-14 in standard length. Head flattened on top and bearing a laminated adhesive disc; disc laminae 21-28. Dorsal with 34-42 rays; anal with 32-38 rays; pectoral rays 21-24; lower gill-rakers 11-16 (excluding rudiments). Brown to black.

Distribution : All warm waters, except eastern Pacific.

Remarks : This is the most abundant species of the remoras.

200. *Remora brachyptera* (Lowe, 1839)

1839. *Echeneis brachyptera* Lowe, *Proc. zool. Soc. Lond.*, **7** : 89.

1986. *Remora brachyptera* Heemstra, *in* Smith & Heemstra, *Smith's Sea Fishes* : 663.

Description : Body robust, depth 5-8 in standard length. Head flattened on top and bearing an adhesive disc; disc laminae 14-27. Dorsal with 27-34 rays; anal with 25-34 rays; pectoral rays 23-27; lower gill-rakers 12-14, including rudiments. Brownish.

Distribution : Worldwide.

Family CARANGIDAE

201. *Alectis ciliaris* (Bloch, 1788)

1788. *Zeus ciliaris* Bloch, *Nat. ausland. Fische*, **6** : 29, pl. 191.

1984. *Alectis ciliaris* Talwar & Kacker, *Comm. Sea Fish. India* : 434.

Description : Body compressed and deep; head elevated. Depth 1.7 in standard length; eye 2.5-2.9 in head length. Teeth in villiform bands in jaws. Suborbital depth relatively narrow, 1.7-3.0 in upper jaw length. First dorsal with 6 minute spines; the second with one spine and 15-17 rays; anterior dorsal and anal rays extremely long and filamentous in young; anal with 2 detached spines and 1 spine and 15-17 rays. Pectoral falcate. Gill rakers long and strong, (4-6) + (12-17) on first arch. A dark patch on upper edge of operculum in adults. Pectoral outer edge dusky. Juveniles with 5-7 dark transverse bands.

Distribution : Indo-Pacific.

Remarks : Forms a part of commercial catches.

202. ***Alectis indicus*** (Ruppell, 1830)

1830. *Scyris indicus* Ruppell, *Atlas nordl. Afrika Fische, Rothen Meeres* : 128, pl. 22, fig.1.

1984. *Alectis indicus* Talwar and Kacker, *Comm. Sea. Fish. India* : 435.

Description : Body compressed and deep; depth 1.6-1.9 in standard length; eye 3.3-4.3 in head; teeth in villiform bands in jaws. Suborbital depth broad, 0.8-1.0 in upper jaw length. Gill rakers (8-11) + (21-26). First dorsal with 6 spines; second dorsal with 1 spine and 18 or 19 rays; anal with 2 detached spines and 1 spine and 16-18 rays. Pectoral long and falcate; pelvic also falcate. A dusky spot on upper edge of opercle; dark cross bars on sides in juveniles. Dorsal, anal and pelvic with dusky tips.

Distribution : Indo-West Pacific.

Remarks : Forms a part of commercial fishery.

203. ***Alepes djedaba*** (Forsskal, 1775)

1775. *Scomber djedaba* Forsskal, *Descript. Anim.* : 56.

1984. *Alepes djedaba* Talwar & Kacker, *Comm. Sea Fish. India* : 438.

Description : Body compressed and oblong. Eye 3.5-4.0 in length of head, adipose eyelid well developed. Both jaw with a single row of comb like teeth. Lower gill-rakers 27-31. First dorsal with a procumbent spine and 8 normal spines; second dorsal with 1 spine and 23-25 rays; anal with 2 detached spines followed by 1 spine and 18-20 rays; pectoral falcate. Lateral line with 33-51 scutes. A distinct dusky spot on upper edge of operculum; spinous dorsal pale.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery value in our region

204. ***Alepes melanoptera*** Swainson, 1839

1839. *Alepes melanoptera* Swainson, *Nat. Hist. Animals,* **2** : 176.

Description : Body oblong and compressed, eye 4.0-4.5 in head; adipose eyelid well developed. Both jaw with a single row of comb like teeth. First dorsal with a procumbent spine and 8 normal spines; second dorsal with 1 spine and 23 or 24 rays. Anal with 2 detached spines, followed by 1 spine and 20 or 21 rays; anal base shorter than second dorsal base. Pectoral falcate. Straight part of lateral line with 48-56 scutes. Spinous dorsal distinctly black.

Distribution : Indo-West Pacific.

Remarks : Of little commercial importance.

205. ***Atropus atropos*** (Bloch, 1801)

1801. *Brama atropus* Bloch, *Syst. Ichth.* : 98.

1984. *Atropus atropos* Talwar & Kacker, *Comm. Sea Fish. India* : 442.

Description : Body ovate, compressed; abdomen with a deep longitudinal groove before

anal to accommodate ventrals. First dorsal with one procumbent spine and 8 normal spines; second with 1 spine and 22 or 23 rays; anal with 2 detached spines followed by 1 spine and 18 rays; ventrals equal to head length. Lateral line scutes 30-35. Ventrals deep black; juveniles with vertical bands.

Distribution : Indo-West Pacific.

Remarks : Forms a part of commercial catch.

206. ***Atule mate*** (Cuvier, 1833)

1833. *Caranx mate* Cuvier, *Hist. nat. Poiss.*, **9** : 54.

1984. *Atule mate* Talwar & Kacker, *Comm. Sea Fish. India* : 452.

Description : Body oblong, compressed. Adipose eyelid covering all but central slit. Both jaws with single series of small, conspicuous teeth; in adults, upper jaw with 2-3 rows of small canines anteriorly. First dorsal with 8 spines; second with 1 spine and 22-25 rays; anal with 2 detached spines followed by 1 spine and 18-21 rays; last dorsal and anal rays finlet-like, but joined to adjacent rays. Lateral line with about 40 scutes. Blue-green above, silvery below with 9-10 faint, dusky cross-bars; a black blotch on gill cover.

Distribution : Indo-West Pacific.

Remarks : Considerably contributes to commercial catches.

207. ***Carangoides armatus*** (Ruppell, 1830)

1830. *Citula armata* Ruppell, *Atlas. nordl. Africa Fische,Rothen Meeres* : 103.

1984. *Carangoides armatus* Talwar & Kacker, *Comm. Sea Fish. India* : 447.

Description : Body compressed, very deep; teeth in jaws villiform. Gill rakers on first arch (10-15) + (20-24), total 31-37. First dorsal with one procumbent spine and 8 normal spines; second dorsal with 1 spine and 19-22 rays, rays produced into a long filament; dorsal lobe falcate, longer than head length. Anal with 2 detached spines followed by 1 spine and 16-18 rays. Pectorals long and falcate. Breast naked in a large triangular area to behind pelvic and up the pectoral base; 11-24 feeble scutes on straight portion of lateral line. Black spot on operculum.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery value in our region.

208. ***Carangoides caeruleopinnatus*** (Ruppel, 1830)

1830. *Caranx caeruleopinnatus* Ruppell, *Atlas nordl. Afrika Fische Rothen Meeres* : 100, pl. 13, fig 2.

1984. *Carangoides caeruleopinnatus* Talwar & Kacker, *Comm. Sea Fish. India* : 448.

Description : Body ovate, strongly compressed. Teeth in jaws in villiform bands. Lower gill rakers 17 or 18. First dorsal with one procumbent spine and 8 normal spines; second with

one spine and 22 or 23 rays; its lobe not longer than head. Anal with 2 detached spines followed by one spine and 18 or 19 rays. Breast naked in a triangular area opposite inner ray of pelvic to base of pectoral. Straight lateral line with 20-28 scutes.

Distribution : Indo-West Pacific.

Remarks : Of minor commercial significance.

209. *Carangoides chrysophrys* (Cuvier, 1833)

1833. *Caranx chrysophrys* Cuvier, *Hist. nat. Poiss.*, **9** : 77, pl. 247.

1984. *Carangoides chrysophrys* Talwar & Kacker, *Comm. Sea Fish. India* : 449.

Description : Body ovoid and compressed. Eye 4.5-5.0 in head length. Teeth in jaws in villiform bands; lower gill rakers 15-17. First dorsal with one procumbent spine and 8 normal spines. Second dorsal with one spine and 18-20 rays. Anal with 2 detached spines followed by one spine and 15-17 rays. Pectorals falcate. Breast naked to behind pelvic origin and laterally to pectoral base; 17-26 feeble scutes on lateral line. A black spot on operculum.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery value in our region.

210. *Carangoides gymnostethus* (Cuvier, 1833)

1833. *Caranx gymnostethus* Cuvier, *Hist. nat. Poiss.*, **9** : 73.

1984. *Carangoides gymnostethus* Talwar & Kacker, *Comm. Sea Fish. India* : 452.

Description : Body elongate, compressed. Eye 4.2-5.0 in head length. Teeth in villiform bands in both jaws. Lower gill rakers 19-20 on first arch. First dorsal with one procumbent spine and 7 or 8 normal spines, second with one spine and 28-32 rays; anal with 2 detached spines followed by one spine and 28-26 rays. Pectorals long and falcate. Breast naked to behind pelvic origin and laterally to pectoral base; lateral line with 15-20 scutes. A diffuse opercular spot present.

Distribution : Indo-West Pacific.

Remarks : A commercial fishery exists.

211. *Carangoides malabaricus* (Bloch & Schneider, 1801)

1801. *Scomber malabaricus* Bloch & Schneider, *Syst. Ichth.* : 31.

1984. *Carangoides malabaricus* Talwar & Kacker, *Comm. Sea Fish. India* : 453.

Description : Body compressed, ovate in young, subovate in large adults. Eye 2.4-4.0 in head. Teeth in jaws villiform. Lower gill rakers 23-27. First dorsal with one procumbent spine and 8 normal spines; 2nd dorsal with 1 spine and 20-23 rays. Dorsal and anal subequal. Anal with 2 detached spines followed by 1 spine and 17 or 18 rays. Pectoral falcate. Breast naked to behind pelvic origin and laterally to pectoral base, including small area anteriorly just above pectoral ; 25-28 feeble scutes on lateral line. A black blotch on operculum ; small white spots often at base of anal rays.

Distribution : Indo-West Pacific.

Remarks : Of minor commercial value.

212. *Carangoides oblongus* (Cuvier, 1833)

1833. *Caranx oblongus* Cuvier, *Hist. nat. Poiss.*, **9** : 128.

1984. *Carangoides oblongus* Talwar & Kacker, *Comm. Sea Fish. India* : 455.

Description : Body oblong, compressed; teeth in jaws small, in villiform bands; lower gill rakers 17-19. First dorsal with 1 procumbent spine and 8 normal spines; second dorsal with 1 spine and 20-23 rays; anal with 2 detached spines followed by 1 spine and 20-22 rays. Pectoral falcate. Breast naked to pelvic origin, laterally naked area separated pectoral base by broad band of scales; lateral line with 37-45 strong scutes, mainly on caudal peduncle. Body with faint dark cross bands; some dusky patches on dorsal and anal.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery value in our region.

213. *Carangoides praeustus* (Bennett, 1830)

1830. *Caranx praeustus* Bennett, *Cat. Fish. Sumatra, In Life of Raffles* : 689.

1984. *Carangoides praeustus,* Talwar & Kacker, *Comm. Sea Fish. India* : 456.

Description : Body oblong and compressed. Eye 3.0-3.5 in head length. Teeth in jaws villiform bands. First dorsal with one procumbent spine and 8 normal weak spines; second dorsal with a spine and 23 or 24 rays. Anal with 2 detached spines, followed by one spine and 19 or 20 rays. Pectoral falcate. Breast scaled; lateral line with 25-30 scutes. No opercular spot; fin tips dusky.

Distribution : Indo-West Pacific.

Remarks : Of minor commercial significance.

214. *Carangoides talamparoides* Bleeker, 1852

1852. *Carangoides talamparoides* Bleeker, *Makreel. Vissch. Verh. batav. Gen.*, 24 : 91.

Description : Body compressed, ovate in young. Teeth in jaws in villiform band. Depth 1.9, head 2.9 in standard length; eye 3.3 in head. Gill rakers (8-12) + (21-27), total 27-31. First dorsal with one procumbent spine and 8 normal spines; second dorsal with 1 spine and 18 rays; anal with 2 detached spines followed by 1 spine and 18 rays. Breast naked ventrally to behind pelvics, laterally extends diagonally to naked base of pectoral and a small area above it. Silvery white, upper margin of opercle with a black spot.

Distribution : Indo-West Pacific.

215. *Caranx carangus* (Bloch, 1793)

1793. *Scomber carangus*, Bloch, *Naturges. Ausland. Fische.*, **7** : 69.

1984. *Caranx carangus* Talwar & Kacker, *Comm. Sea. Fish. India* : 459.

Description : Body oblong, compressed. Eye 3.5-4.0 in head; teeth in upper jaw in a narrow band, with an outer row of conical teeth; in lower jaw in a single series, intermixed with larger ones. First dorsal with 1 procumbent spine and 8 normal spines, second with 1 spine and 20-22 rays; anal with 2 detached spines, followed by 1 spine and 15-18 rays. Breast ventrally naked except a small median patch of minute scales before pelvic; lateral line with 33-37 strong scutes. Small opercular spot; entire margin of soft dorsal and upper lobe of caudal blackish; young with 4-5 dark cross-bars.

Distribution : Indo-West Pacific and tropical Atlantic.

Remarks : Fairly common along the coast and caught in large quantities.

216. ***Caranx ignobilis*** (Forsskal, 1775)

1775. *Scomber ignobilis* Forsskal, *Descript. Animal.* : 55

1984. *Caranx ignobilis* Talwar & Kacker, *Comm. Sea Fish. India* : 461.

Description : Body deep, compressed. Eye 3.3-7.5 in head. Upper jaw with an outer row of strong conical teeth and an inner band of small villiform teeth; lower jaw with a single row of strong conical teeth. Lower gill rakers 11-16. First dorsal with one procumbent spine and 8 normal spines; second with 1 spine and 19 or 20 rays; anal with 2 detached spines, followed by 1 spine and 15-17 rays; pectorals falcate. Lateral line moderately arched anteriorly; 28-30 scutes on straight portion. Breast naked ventrally, with a small patch of prepelvic scales.

Distribution : Indo-West Pacific.

Remarks : Contribute to good commercial fishery in our region.

217. ***Caranx para*** Cuvier, 1833

1833. *Caranx para* Cuvier, *Hist. nat. Poiss.*, **9** : 58.

1876. *Caranx kalla* Day. Fishes of India, 219, pl. 49, fig. 5

Description : Body oblong and moderately compressed; ventral profile distinctly more convex than dorsal. Eye 3.0-4.0 in head. Teeth villiform, lower gill rakers 28-30. First dorsal with 8 spines; second dorsal with 1 spine and 23 or 24 rays; anal with 2 detached spines, followed by 1 spine and 18-20 rays. Pectoral falcate, much longer than head. Caudal deeply forked. Lateral line with 40-46 scutes. A conspicuous black spot on operculum; anterior spines of dorsal blackish.

Distribution : Indo-Pacific.

Remarks : It was reported as *Alepes para* by Cuvier in 1833 and earlier reported as *C. kalla* by Day in sxthe year 1876 and 1889. Of minor commercial importance.

218. ***Caranx sexfasciatus*** Quoy & Gaimard, 1825

1825. *Caranx sexfasciatus* Quoy & Gaimard, *Voy. "Uranie" et Physic., Zool.*, **2** : 358, pl. 65, fig. 4.

Description : Body oblong; dorsal and ventral profile equally convex. Upper jaw with a outer row of conical and inner band of villiform teeth. First dorsal with 1 procumbent spine and 8 normal spines; second with 1 spine and 18-21 rays; anal with 2 detached spines, followed by 1 spine and 14-16 rays. Breast fully scaled; lateral line with 24-34 scutes. A small black spot on upper edge of opercle.

Distribution : Indo-West Pacific.

Remarks : Of minor commercial importance.

219. ***Decapterus russelli*** (Ruppell, 1828)

1828. *Caranx russellii* Ruppell, *Atlas Reise nordl. Africa, Fische Rothen Meeres* : 99.

1984. *Decapterus russelli* Talwar & Kacker, *Comm. Sea Fish. India* : 468.

Description : Body elongate, fusiform and moderately compressed, its depth 4.4-4.7 in standard length. Teeth in jaws in a single series. First dorsal with 8 spines; second dorsal with 1 spine and 27-31 rays; anal with 2 detached spines, followed by one spine and 28-30 rays; pectorals subfalcate; caudal deeply forked. Scutes 30-37 on lateral line. Dark axillary patch on pectoral; distinct opercular spot above level of pectoral base.

Distribution : Indo-West Pacific.

Remarks : Found sporadically, in large numbers.

220. ***Elagatis bipinnulatus*** (Quoy & Gaimard, 1824)

1824. *Seriola bipinnulata* Quoy & Gaimard, *Voy. "Uranie" et Physic., Zool.*, **1** : 363, pl. 61, fig. 3.

1984. *Elagatis bipinnulatus* Talwar & Kacker, *Comm. Sea Fish. India* : 469.

Description : Body cigar-shaped. First dorsal with 6 spines; second with one spine and 24-27 rays; one 2-rayed finlet behind dorsal and anal; anal with 2 detached spines, followed by 1 spine and 15-17 rays. Caudal forked, its lobes equal. No scutes on lateral line. Two narrow parallel blue bands along each side, with a yellow stripe between them; fins dusky yellow.

Distribution : Indo-West Pacific.

Remarks : Of minor commercial importance

221. ***Megalaspis cordyla*** (Linnaeus, 1758)

1758. *Scomber cordyla* Linnaeus, *Syst. Nat.*, **1** (ed.10) : 298.

1984. *Megalaspis cordyla* Talwar & Kacker, *Comm. Sea Fish. India* : 472.

Description : Body elongate, fusiform, slightly compressed. Depth 3.8-4.2 in standard length. Villiform teeth in jaws. First dorsal with 8 or 9 spines; second dorsal with 1 spine and 10 rays, and 8 or 9 finlets; anal with 2 detached spines followed by 1 spine and 10 rays and 6-8 finlets. Caudal forked. Lateral line strongly curved anteriorly, armed with 53-58 strong keeled scutes. A prominent black spot on posterior edge of operculum.

Distribution : Indo-West Pacific.

Remarks : Contributes a major catch of India.

222. ***Parastromateus niger*** (Bloch, 1795)

1795. *Stromateus niger* Bloch, *Naturges. ausland. Fische,* 9 : 93, pl. 422.

1986. *Parastromateus niger* Smith-Vaniz, *in* Smith & Heemstra, *Smith's sea Fishes* : 654.

Description : Body diamond shaped, deep and compressed. Dorsal spines 4-5, embedded and not apparent in all but young; second dorsal with one spine and 41-44 rays; anal with 2 detached spines, followed by 1 spine and 35-39 rays; profile of soft dorsal and anal nearly identical with elevated, broadly rounded anterior lobes; minute ventral present in young, absent in adults. Lateral line with 8-19 week scutes, forming a low keel on caudal peduncle. Dark blotch on rear margin of opercle opposite pectoral; young with dark bands and black jugular ventral.

Distribution : Indo-West Pacific.

Remarks : Of high commercial value.

223. ***Scomberoides lysan*** (Forsskal, 1775)

1775. *Scomber lysan* Forsskal, *Descript. Anim.* : 54.

1984. *Scomberoides lysan* Talwar & Kacker, *Comm. Sea Fish. India* : 447.

Description : Body compressed and elongate. Eye 4.1-5.7 in head. Upper jaw with single row of small conical teeth; lower jaw with two rows of small conical teeth separated by a groove. Gill rakers (3-8) + (5-20), total 21-27 on first arch. First dorsal with 1 procumbent spine and 7 normal spines; second with 1 spine and 19-21 rays. Dorsal and anal with 8-10 rays, finlet like but not fully separated. Anal with 2 detached spines, followed by 1 spine and 17-19 rays. No scutes, scales on mid-body lanceolate. Flanks of adults with a double series of 6-8 dusky round blotches above and below lateral line. Tip of second dorsal abruptly and heavily pigmented.

Distribution : Indo-West Pacific.

Remarks : This species supports a seasonal fishery of considerable importance.

224. ***Scomberoides tala*** (Cuvier, 1831)

1831. *Chorinemus tala* Cuvier, *Hist. nat. Poiss.,* **8** : 377.

1984. *Scomberoides tala* Talwar & Kacker, *Comm Sea Fish. India* : 478.

Description : Body compressed and elongate, eye 4.5-5.0 in head length; teeth in upper jaw in a single row and in 2 rows in lower jaw; gill rakers (1-3) + (7-11), total 11-15 on first arch. First dorsal with 1 procumbent spine and 6 or 7 normal spines; second with 1 spine and 19-21 rays; anal with 2 detached spines, followed by 1 spine and 17-19 rays. No scutes, scales on mid-body lanceolate. Body silvery, flanks with 4-8 vertically elongate blotches, most of them intersecting lateral line.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery significance.

225. *Scomberoides tol* (Cuvier, 1832)

1831. *Chorinemus tol* Cuvier, *Hist. nat. Poiss.*, **8** : 385.

1986. *Scomberoides tol* Smith-Vaniz, *in* Smith & Heemstra, *Smith's Sea Fishes* : 655.

Description : Body compressed and elongate; teeth in upper jaw in a single row, in two rows in lower jaw. Dorsal with 6-7 spines, second with 1 spine and 19-21 rays; anal with 2 detached spines, followed by 1 spine and 18-20 rays. Gill rakers (4-7)+(17-20) on first arch. No scutes; scales on mid-body needle like. Posterior soft dorsal and anal with semi-detached finlets. Maxilla extends to rear margin of pupil in adults. Adults with 5-8 oval or vertically oblong black blotches, the first 4 or 5 of which intersect lateral line; distal half of dorsal lobe abruptly and heavily pigmented.

Distribution : Indo-Pacific.

Remarks : Of minor fishery value.

226. *Selar crumenophthalmus* (Bloch, 1793)

1793. *Scomber crumenophthalmus* Bloch, *Naturges. ausland. Fische.*, **7** : 77, pl. 343.

1984. *Selar crumenophthalmus* Talwar & Kacker, *Comm. Sea Fish. India* : 481.

Description : Body oblong and moderately compressed. Eyes large, 2.7-3.0 in head length; teeth fine, in both jaws, lower gill rakers 23-27 on first arch. First dorsal with 1 procumbent spine and 8 normal spines; second dorsal with 1 spine and 24-26 rays; anal with 2 detached spines, followed by 1 spines and 21-23 rays; pectoral short and falcate. Lateral line becoming straight below middle of soft dorsal and with 32-38 scutes. Operculum with a dark brown spot, tips of caudal dusky.

Distribution : Indo-Pacific.

Remarks : Forms an important fishery.

227. *Selaroides leptolepis* (Cuvier, 1833)

1833. *Caranx leptolepis* Cuvier, *Hist. nat. Poiss.*, **9** : 63.

1984. *Selaroides leptolepis* Talwar & Kacker, *Comm. Sea Fish. India* : 482.

Description : Body oblong and compressed. Eye large, diameter 3.2 to 3.5 times in head. Minute teeth in a single series in lower jaw and some rudimentary teeth on tongue, no teeth on upper jaw or on vomer and palatines. First dorsal with 8 spines; second dorsal with one spine and 25 rays; second dorsal with one spine and 25 rays; anal with 2 detached spines, followed by one spine and 20 rays. Pectoral falcate. A golden yellow lateral band from eye to caudal fin; a distinct dusky spot on operculum.

Distribution : Indo-Pacific.

Remarks : This species contribute a good fishery along our coast.

228. *Seriolina nigrofasciata* (Ruppell, 1828)

1828. *Nomeus nigrofasciatus* Ruppell, *Atlas nordl. Afrika, Fische Rothern Meeres* : 92, pl. 24, fig. 2.

1984. *Seriolina nigrofasciata* Talwar & Kacker, *Comm. Sea Fish. India* : 484.

Description : Body oblong and moderately compressed. Teeth in villiform bands in jaws. Gill rakers not normal, reduced to small knobs, 5 knobs on lower arm of first arch. First dorsal with 1 procumbent spine and 5-7 normal spines; second dorsal with 1 spine and 31-34 rays; anal with 2 detached spines, followed by 1 spine and 15-17 rays; pectoral shorter than length of head. No scutes. Body and head with 5 to 6 dusky black oblique bands; fins brown.

Distribution : Indo-Pacific.

Remarks : Found occasionally in catches.

229. *Trachinotus mookalee* Cuvier, 1832

1832. *Trachinotus mookalee* Cuvier, *Hist. nat. Poiss.*, 8 : 423.

Description : Body ovate in young to subovate in adults and compressed; snout profile broadly rounded. Both jaw with villiform teeth; tongue with a narrow band of teeth. Gill rakers (5-8) + (8-10). First dorsal with 6 short spines; second with 1 spine and 18-20 rays; anal with 2 detached spines, followed by 1 spine and 16-18 rays; height of 2nd dorsal 24-34% of fork length. First pre-dorsal bone inverted 'L'-shaped with the arm projecting anteriorly. Silvery; anal bright dirty yellow, lobe without a brownish anterior margin. Juveniles silvery with pale yellow fins, except distal half of dorsal black.

Distribution : Indo- West Pacific.

Family CORYPHAENIDAE

230. *Coryphaena hippurus* Linnaeus, 1758

1758. *Coryphaena hippurus* Linnaeus, *Syst. Nat.* (ed.10) : 261.

Description : Body elongate, compressed. Cleft of mouth wide, oblique. Bands of teeth on jaws, vomer and palatines; tooth patch on tongue small and oval. Dorsal extending from above eyes almost to caudal, with 55-65 rays; anal from vent almost to caudal; pectoral more than half of head length; caudal deeply forked. Body with minute cycloid scales. A row of dark spots or golden blotches running besides dorsal and one or more rows on and below lateral line; dorsal and anal black, the later with a white edge.

Distribution : Circum-global in tropical and subtropical seas.

Remarks : Of minor commercial value.

Family LEIOGNATHIDAE

231. *Gazza minuta* (Bloch, 1797)

1797. *Scomber minutus* Bloch, *Ichthyol.* : 110, pl. 429, fig. 2.

1984. *Gazza minuta* Talwar & Kacker, *Comm. Sea Fish. India* : 500.

Description : Body oval and compressed; dorsal and ventral profiles equally convex; small protracted mouth points forward. Dorsal with 8 spines and 16 rays; anal with 3 spines and 14 rays. Scales on body very small; head and breast naked. Body silvery, with brownish wavy line no upper half and red and blue mark above pectoral. Pectoral axil black.

Distribution : Indo-Pacific.

232. *Leiognathus berbis* (Valenciennes, 1835)

1832. *Equula berbis* Valenciennes, *Hist. nat. Poiss.*, 10 : 85.

1984. *Leiognathus berbis* Talwar & Kacker, *Comm. Sea Fish. India* : 503.

Description : Body slender; depth 2.6-3.0 in standard length. Mouth small, pointing downwards when protracted; teeth small, in a single row in both jaws. Dorsal with 8 slender spines and 16 rays; anal with 3 spines and 14 rays. Breast scaled. Body silvery with greenish vermicular pattern on back.

Distribution : Indo-Pacific.

Remarks : Fairly in the commercial catches.

233. *Legiognathus bindus* (Valenciennes, 1835)

1835. *Equula bindus* Valenciennes, *Hist. nat. Poiss.*, **10** : 78.

1984. *Leiognathus bindus* Talwar & Kacker, *Comm. Sea Fish. India* : 584.

Description : Body deep, strongly compressed. Depth 2.6-3.0 in standard length; ventral profile distinctly more convex than its dorsal profile; mouth small; pointing downward when protracted; teeth small, in a single row in both jaws. Dorsal with 8 spines and 16 rays; anal with 3 spines and 14 rays. Snout dusky. Tips of dorsal and anal orange, pectoral axil with dark spot. Silvery, with grey vermicular pattern on back.

Distribution : Indo-West Pacific.

Remarks : This species is an important element in the pony fish catches.

234. *Leiognathus blochii* (Valenciennes, 1835)

1835. *Equula blochii*Valenciennes, *Hist. nat. Poiss.*, **10** : 84.

1984. *Leiognathus blochii* Talwar & Kacker, *Comm. Sea Fish. India* : 505.

Description : Body oval and compressed; mouth small; pointing downwards when protracted; cleft of mouth opposite lower third of eye. Dorsal with 8 spines and 16 rays; anal with 3 spines and 14 rays. A dark saddle-shaped blotch on nape and vertical zig-zag stripes on back and sides of body. A black blotch in upper half of dorsal form the 3rd to 5th spines.

Distribution : Indo-West Pacific.

Remarks : Fairly common along the coast.

235. ***Leiognathus brevirostris*** (Valenciennes, 1835)

1835. *Equula brevirostris* Valenciennes, *Hist. nat. Poiss.*, **10** : 83.

1984. *Leiognathus brevirostris* Talwar & Kacker, *Comm. Sea Fish. India* : 506.

Description : Body oval; depth 2.1 in standard length; dorsal and ventral profiles equally convex. Cleft of mouth opposite lower border of eye. Dorsal with 8 spines and 16 rays; anal with 3 spines and 14 rays. Body with small scales; head and breast naked. Body silvery; brownish vertical irregular markings on back and a dark brown saddle-shaped blotch on nape; a yellow narrow stripe along lateral line; spinous dorsal golden at mid-height; pectoral axil dark; a yellow blotch on abdomen below pectoral fin.

Distribution : Indo-West Pacific.

Remarks : Fairly abundant along our coast.

236. ***Leiognathus daura*** (Cuvier, 1829)

1829. *Equula daura* Cuvier, *Regne Anim.*, (ed. 2) **2** : 212.

1984. *Leiognathus daura* Talwar & Kacker, *Comm. Sea Fish. India* : 507.

Description : Body rhomboid and compressed; depth 2.2 in standard length; cleft of mouth opposite third of eye. Dorsal with 8 spines and 16 rays; anal with 3 spines and 14 rays. Body scaled, breast and head naked. A yellow band along lateral line; upper half of spinous dorsal with a black blotch between 2nd and 6th spines; pectoral axil black.

Distribution : Indo-West Pacific.

Remarks : Fairly common along the coast.

237. ***Leiognathus dussumieri*** (Valenciennes, 1835)

1835. *Equula dussumieri* Valenciennes, *Hist. nat. Poiss.*, **10** : 77, pl. 283.

1984. *Leiognathus dussumieri* Talwar & Kacker, *Comm. Sea Fish. India* : 509.

Description : Body oblong and compressed; depth 2.0-2.3 in standard length; cleft of mouth opposite lower edge of eye. Teeth small, in a single row in both jaws. Dorsal with 8 spines and 16 rays; anal with 3 spines and 14 rays. Pelvic reaching to anal or nearly so. Body silvery, with faint wavy vertical lines on back. Fins yellowish and with orange tinge.

Distribution : Indo-West Pacific.

Remarks : This species is considered to be an important commercial fish for its abundance.

238. ***Leiognathus equulus*** (Forsskal, 1775)

1775. *Scomber equula* Forsskal, *Descript. Animal* : 75.

1984. *Leiognathus equulus* Talwar & Kacker, *Comm. Sea Fish. India* : 510.

Description : Body compressed; depth 1.7-1.9 in standard length. Teeth small, in a single row in both jaws. Dorsal with 8 spines and 16 rays; anal with 3 spines and 14 rays. Pelvic reaching to anal origin or nearly so. Head naked. Body silvery with faint, narrow, vertical

stripes on back; a small brown saddle-shaped blotch on caudal peduncle usually present; pectoral axil dusky.

Distribution : Indo-West Pacific.

Remarks : A commercially important species; fairly common in our coast.

239. ***Leiognathus fasciatus*** (Laceepede, 1803)

1803. *Clupea fasciata* Lacepede, *Hist. nat. Poiss.*, **5** : 460, 463.

1984. *Leiognathus fasciatus* Talwar & Kacker, *Comm. Sea Fish. India* : 511.

Description : Body compressed; depth 1.7-2.0 in standard length. Dorsal with 8 spines and 16 rays, the second spine greatly elongated and filiform. Anal with 3 spines and 14 rays, the second spine slightly elongate. Body silvery with dark irregular vertical stripes on back; a small dark saddle-shaped blotch on caudal peduncle; pectoral axil yellowish.

Distribution : Indo-West Pacific.

Remarks : Fairly common in our coast.

240. ***Leiognathus leuciscus*** (Gunther, 1860)

1860. *Equula leuciscus* Gunther, *Cat. Fishes. Br. Mus.*, **2** : 503.

1984. *Leiognathus leuciscus* Talwar & Kacker, *Comm. Sea Fish. India* : 514.

Description : Body compressed and rather elongate; depth 2.3-2.9 in standard length. Cleft of mouth opposite lower third of eye. Dorsal with 8 spines and 16 rays, the second spine greatly elongated and filiform. Anal with 3 spines and 14 rays, the second spine slightly elongated. Gill rakers 14-17 on first arch. Body silvery with greenish vermicular pattern on back; soft dorsal with fine yellow margin; pectoral axil with minute dark dots. Large specimens have yellow spots below lateral line and sometimes a line of small black dots below.

Distribution : Bay of Bengal to West-Pacific.

Remarks : Fairly common in our coast.

241. ***Leiognathus lineolatus*** (Valenciennes, 1835)

1835. *Equula lineolata* Valenciennes, *Hist. nat. Poiss.*, **10** : 86.

1975. *Leiognathus lineolatus* James, *J. mar. boil. Ass. India*, **17** (1) : 163.

Description : Body compressed dorsal and ventral profile equally convex; depth 2.38-2.98 in standard length. Dorsal with 8 spines and 16 rays; anal with 3 spines and 14 rays. Gill rakers 16-18 on first arch. Back with irregular vermiculations extending down to little below lateral line, the lowest marks in the form of blotches in a row. Snout and inner side of pectoral base dotted black; yellow mark on spinous dorsal and along margins of soft dorsal, anal and caudal.

Distribution : Indo-West Pacific.

242. ***Leiognathus splendens*** (Cuvier, 1829)

1829. *Equula splendens* Cuvier, *Regne Anim.* (ed.2), **2** : 212.

1984. *Leiognathus splendens* Talwar & Kacker, *Comm. Sea Fish. India* : 516.

Description : Body compressed and rather deep, depth 1.7-2.0 in standard length. Pre-operculum with its lower arm and ridge distinctly serrated. Dorsal with 8 spines and 16 rays; anal with 3 spines and 14 rays. Pelvic not reaching to anal in adults. Body silvery with close-set brownish zig-zag stripes on back. Snout tip dusky; a jet black blotch on upper third of spinous dorsal.

Distribution : Indo-West Pacific.

243. ***Secutor insidiator*** (Bloch, 1787)

1787. *Zeus insidiator* Bloch, *Naturges. ausland. Fische,* **8** : 41, pl. 192, fig. 2 & 3.

1984. *Secutor insidiator* Talwar & Kacker, *Comm. Sea Fish. India* : 518.

Description : Body oval and compressed; depth 2.0-2.3 in standard length. Mouth small, pointing upward when protracted; maxilla tip reaching well below level of lower margin of eye. Dorsal with 8 spines and 16 rays; anal with 3 spines and 14 rays. Body silvery with blue spots on back forming minute dots. Tip of dorsal black, with yellow band below. Pectoral axil yellowish, with dark dots, sometimes appearing black.

Distribution : Indo-West Pacific.

Remarks : Dominant component of the pony fish catches on the east coast.

244. ***Secutor ruconius*** (Hamilton, 1822)

1822. *Chanda ruconius* Hamilton, *Fishes of Ganges* : 106, 371, pl. 12, fig. 35.

1984. *Secutor ruconius* Talwar & Kacker, *Comm. Sea Fish. India* : 519.

Description : Body strongly compressed; depth 1.5-1.8 in standard length. Mouth small, pointing upward when protracted. Dorsal with 8 spines and 16 rays; anal with 3 spines and 14 rays. Body silvery with blue spots on upper half; belly usually uniform silvery often spotted with black spots; a distinct black line from orbit to chin. Tip of dorsal black with yellow band below; pectoral axil black.

Distribution : Indo-West Pacific.

Remarks : Fairly common in our coast.

Family LUTJANIDAE

245. ***Lutjanus argentimaculatus*** (Forsskal, 1775)

1775. *Sciaena argentimaculata* Forsskal, *Descript. Anim.* : 47.

1985. *Lutjanus argentimaculatus* Alen, *FAO. Fish. Synop.,* (125) **6** : 58.

Description : Body moderately deep. Snout somewhat pointed. Preopercular notch and knob poorly developed. Vomerine tooth patch crescentic, without a medial posterior

extension. Lower gill rakers 16-20. Dorsal with 10 spines and 13-14 rays; anal with 3 spines and 8 rays; pectoral rays 16 or 17. Caudal emarginate to nearly truncate. Deep red, each scale along flank with a silvery spot in the center; 1 or 2 blue lines across cheek. Juveniles with a series of about 8 whitish bars crossing sides.

Distribution : Indo-Pacific.

246. ***Lutjanus fulviflamma*** (Forsskal, 1775)

1775. *Sciaena fulviflamma* Forsskal, *Descript. Anim.* : 45.

1985. *Lutjanus fulviflamma* Allen, *FAO. Fish. Synop.*, (125) **6** : 80.

Description : Body moderately deep to some what slender. Preopercular notch and knob poorly developed. Gill rakers on fist arch 16-19. Dorsal with 10 spines and 12-14 rays; anal with 3 spines and 8 rays; pectoral rays 15-17. Caudal truncate. Scale-rows above lateral line rise steeply to dorsal profile. Body yellow with longitudinal stripes on sides; a prominent black spot at level of lateral line below anterior part of soft dorsal.

Distribution : Indo-Pacific.

247. ***Lutjanus fulvus*** (Schneider, 1801)

1801. *Holocentrus fulvus* Schneider, *Syst. Ichth.* : 318.

1985. *Lutjanus fulvus* Allen, *FAO. Fish. Synop.*, (125) **6** : 82.

Description : Dorsal profile of head deeply sloped. Preopercular notch and knob well developed. Tongue smooth, without teeth; lower gill rakers 10-13, total 16-20 on first arch. Dorsal with 10 spines and 14 rays; anal with 3 spines and 8 rays; pectoral rays 16. Caudal emarginate. Yellowish red, often with a series of narrow yellow or golden brown stripes on sides. Caudal blackish, dorsal and caudal with a narrow border.

Distribution : Indo-Pacific.

248. ***Lutjanus johni*** (Bloch, 1792)

1792. *Anthias johni* Bloch, *Naturges. ausland. Fische,* **6** : 113, 318.

1985. *Lutjanus johni* Allen, *FAO. Fish. Synop.*, (125) **6** : 94.

Description : Body moderately deep; notch and knob of preopercle poorly developed. Vomerine tooth patch crescentic, without a medial posterior extension; tongue with a patch of granular teeth; gill rakers on first arch 17 or 18. Dorsal with 10 spines and 13 or 14 rays; anal with 3 spines and 8 rays; pectoral rays 16 or 17. Caudal truncate or slightly emarginate. Scale rows above lateral line parallel to it. Centre of each scale often with a reddish-brown spot forming lines on sides; a round black spot, larger than eye on back, at above lateral line and below anterior dorsal rays.

Distribution : Indo-West Pacific.

Remarks : Fairly abundant along the coast.

249. ***Lutjanus kasmira*** (Forsskal, 1775)

1775. *Sciaena kasmira* Forsskal, *Descript. Anim.* : 46.

1985. *Lutjanus kasmira* Allen, *FAO, Fish.Synop.* (125) **6** : 96.

Description : Body moderately deep; notch and knob of preopercle well developed. Vomerine tooth patch crescentic, without a medial posterior extension; tongue smooth, without teeth; gill rakers on first arch 20-22. Dorsal with 10 spines and 14-15 rays; anal with 3 spines and 7-8 rays; pectoral rays 15-16. Caudal slightly emarginate. Bright canary yellow with four bright blue stripes on side; a large blotch below soft dorsal.

Distribution : Indo-West Pacific.

250. ***Lutjanus lemniscatus*** (Valenciennes, 1828)

1828. *Serranus lemniscatus* Valenciennes, *Hist. nat. Poiss.*, **2** : 240.

1985. *Lutjanus lemniscatus* Allen, *FAO Fish. Synop.*, (125) **6** : 106.

Description : Body depth 2.5-2.8 in standard length; preopercular notch shallow and knob poorly developed. Lower gill rakers 9-12. Dorsal with 10 spines and 13-14 rays; anal with 3 spines and 8 rays; pectoral rays 16. Lateral line scales 49; scale rows above lateral line rising obliquely; 6-7 scale rows on cheek. Dusky brown, grading to white or pinkish below. Juveniles with 3-6 broad, horizontal black stripes; caudal blackish; anal, ventral and pectorals bright yellow.

Distribution : Indo-West Pacific.

251. ***Lutjanus lutjanus*** Bloch, 1790

1790. *Lutjanus lutjanus* Bloch, *Naturges. ausland. Fische*, **4** : 107.

Description : Body fusiform and slender. Preopercular notch and knob poorly developed; vomerine tooth patch triangular with a medial posterior extension; tongue with a patch of granular teeth; lower gill rakers (including rudiments) 17-19, total 24-26. Dorsal with 10-12 spines and 12 rays; anal with 3 spines and 8 rays; pectoral rays 16-17; caudal truncate or slightly emarginate. A broad yellow to brownish stripe from eye to caudal base. A series of yellow horizontal lines on lower half of body.

Distribution : Indo-West Pacific.

252. ***Lutjanus madras*** (Valenciennes, 1831)

1831. *Meroprion madras* Valenciennes, *Hist. nat. Poiss.*, **7** : 446.

1985. *Lutjanus madras* Allen, *FAO. Fish. Synop.*, (125) **6** : 110.

Description : Body fusiform, somewhat slender, preopercular notch and knob poorly developed; vomerine tooth patch triangular with a medial posterior extension or diamond-shaped; granular teeth patch on tongue; lower gill rakers 12-15, total 18-21 on first arch. Dorsal with 10 spines and 13 rays; anal with 3 spines and 8 rays; pectoral rays 16-17; caudal truncate or slightly emarginated. Sides whitish with series of fine yellow horizontal lines.

Distribution : Indian Ocean.

253. *Lutjanus malabaricus* (Schneider, 1801)

1801. *Sparus malabaricus* Schneider, *Syst. Ichth.*, : 278.

1985. *Lutjanus malabaricus* Allen, *FAO. Fish. Synop.*, (125) **6** : 102.

Description : Body relatively deep; preopercular notch and knob poorly developed; vomerine tooth patch crescentic or triangular, without a medial posterior extension; tongue smooth, without teeth; lower gill rakers 12-14; total 18-20 on fist arch. Dorsal with 11 spines and 12-14 rays; anal with 3 spines and 8-9 rays; pectoral rays 16-17; caudal truncate. Juveniles with a broad, oblique brown or black band from upper jaw to beginning of dorsal fin, and a prominent black band across caudal peduncle with a pearly-white anterior border. Adults crimson red.

Distribution : Indo-West Pacific.

254. *Lutjanus rivulatus* (Cuvier, 1828)

1828. *Diacope rivulatus* Cuvier, *Hist. nat. Poiss.*, **2** : 414, pl. 38.

1985. *Lutjanus rivulatus* Allen, *FAO. Fish. Synop.*, (125) **6** : 112.

Description : Body depth 2.0-2.2 in standard length; preopercular notch shallow, knob distinct; vomerine teeth crescentic, without medial extension. Dorsal with 10 spines and 15-16 rays; anal with 3 spines and 8 rays; pectoral rays 17. Lower gill rakers 12-13. Scales from behind eyes; temporal region naked; scale rows above lateral line rise obliquely; lateral line with 46-49 scales. Head with fine, wavy, blue lines; pearly blotch with black edge on lateral line below anterior soft dorsal; scales with white spots. Juveniles with broad dark bar across body at pectoral base.

Distribution : Indo-West Pacific.

255. *Lutjanus russelli* (Bleeker, 1849)

1849. *Mesoprion russelli* Bleeker, *Verh. batav.Gen.*, **22** : 41.

1985. *Lutjanus russelli* Allen, *FAO. Fish. Synop.*, (125) **6** : 113.

Description : Body moderately deep to somewhat slender. Preopercular notch and knob poorly developed. Vomerine tooth patch triangular, with a medial posterior extension or diamond-shaped; tongue with a patch of granular teeth; lower gill rakers 7-11, total 13-18 on first arch. Dorsal with 10 spines and 14 rays; anal with 3 spines and 8 rays; pectoral rays 16-17; caudal truncate or slightly emarginate. Reddish-brown; a black spot, mostly above lateral line and below anterior rays of soft dorsal; about 5-8 golden or light brown lines on body.

Distribution : Indo-West Pacific.

256. *Lutjanus sanguineus* (Cuvier, 1828)

1828. *Diacope sanguinea* Cuvier, *Hist. nat. Poiss.*, **2** : 437.

1985. *Lutjanus sanguineus* Allen, *FAO. Fish. Synop.*, (125) **6** : 115.

Description : Body relatively deep; preopercular notch and knob poorly developed; vomerine tooth patch crescentic, without a posterior medial extension; tongue smooth, without teeth; lower gill rakers 13-14, total 19-21 on first arch. Dorsal with 10 spines and 13-14 rays; anal with 3 spines and 8 rays; pectoral rays 16-17; caudal truncate or slightly emarginate. Deep red; a large blackish saddle on caudal peduncle preceded by a pearly white patch. A broad dark bend from eye to dorsal origin in young.

Distribution : Indo-West Pacific.

257. *Lutjanus sebae* (Cuvier, 1828)

1828. *Diacope sebae* Cuvier, *Hist. nat. Poiss.*, **2** : 411.

1985. *Lutianus sebae* Allen, *FAO. Fish. Synop.* (125) **6** : 116.

Description : Body very deep; preopercular notch and knob moderately developed; vomerine tooth patch crescentic or triangular, no medial posterior extension; tongue smooth; lower gill rakers (including rudiments) 10-12, total 16-19 on first arch. Dorsal with 11 spines and 15-16 rays; anal with 3 spines and 10 rays; pectoral rays 17. Pink with a dark red band from first dorsal spine through eye to tip of snout; a second band from middle of spinous part of dorsal to pelvic; a third band from base of last dorsal spines running obliquely downward across caudal peduncle and along lower edge of caudal.

Distribution : Indian Ocean.

258. *Lutjanus vittus* (Quoy & Gaimard, 1824)

1824. *Sparus vittus* Quoy & Gaimard, *Voy.Uranie, Zool.* : 315, pl. 58, fig. 3.

1985. *Lutjanus vittus* Allen, *FAO. Fish. Synop.*, (125) **6** : 122.

Description : Body slender; preopercular notch and knob strong ; vomerine tooth V-shaped, without a medial posterior extension; tongue without teeth. Wide space between eye and upper jaw. Dorsal with 10 spines and 14-15 rays; anal with 3 spines and 8 rays; pectoral rays 16-17. Caudal truncate or slightly emarginate. Bright yellow, with brown lines along scale-rows; a distinct broad black band from eye to caudal base.

Distribution : India, to West-Pacific.

Family GERREIDAE

259. *Gerres abbreviatus* Bleeker, 1850

1850. *Gerres abbreviatus* Bleeker, *Nat. Tijdschr. Ned.-Indie*, **1** : 103.

Description : Body depth 1.9-2.3 in standard length; mouth small, protractile. Dorsal with 9 spines and 10 rays, the 2nd spine longest; anal with 3 spines and 7 spines; pectoral long, reaching anal origin. Lateral line with 38-41 scales; 6 scale rows between lateral line and dorsal origin. Silvery with indistinct lines along scale rows; dorsal margin black.

Distribution : Indo-West Pacific.

260. *Gerres filamentosus* Cuvier, 1829

1829. *Gerres filamentosus* Cuvier, *Regne. Anim.* (ed.2), **2** : 188.

Description : Body oblong, moderately compressed; depth 2.0-2.5 in standard length. Mouth small, strongly protrusible; fine teeth in jaws. Dorsal with 9 spines and 10-11 rays, the second spine greatly elongated into a filament and longer than head. Anal with 3 spines and 7 rays. Lateral line with 44-47 scales. Body silvery with 6-8 vertical or horizontal rows of dusky blotches on back and side of the body.

Distribution : Indo-West Pacific.

Remarks : Forms an important fishery.

261. *Gerres limbatus* Cuvier, 1830

1830. *Gerres limbatus* Cuvier, *Hist. nat. Poiss.*, **6** : 476.

Description : Body oblong, slightly compressed, depth 2.3-2.7 in standard length. Mouth small, strongly protractile, fine teeth in both jaws. Dorsal with 9 spines and 10 rays, the third spine longest but much shorter than head. Anal with 3 spines and 7 rays. Pectoral long, extending to or beyond anal origin. Lateral line scales 33-39; 4 rows of scales between 5th dorsal spine base and lateral line. Body silvery; 3 gaint grey vertical bands below dorsal; dorsal margin dusky.

Distribution : Seas of India.

262. *Gerres lucidus* Cuvier, 1830

1830. *Gerres lucidus* Cuvier, *Hist. nat. Poiss.*, **6** : 477.

Description : Body oblong, depth 2.3-2.7 in standard length. Mouth small, protractile; fine teeth in jaws. Dorsal with 9 spines and 10 rays; anal with 3 spines and 7 rays; pectoral tip reaching to level of anus, but not to anal origin. Lateral line with 33-35 scales; 3 rows of scales between 5th dorsal spine base and lateral line. Silvery, with 4 diffuse, dark saddles along back; spinous dorsal tip black.

Distribution : West coast of India, eastward to South China Sea.

Remarks : Confused with *G. limbatus* Cuvier.

263. *Gerres oblongus* Cuvier, 1830

1830. *Gerres oblongus* Cuvier, *Hist.nat. Poiss.*, **6** : 479.

Description : Body elongate, slightly compressed, depth 3.0-3.5 in standard length. Mouth small, strongly protrusible; fine teeth in jaws. Dorsal with 9 slender spines and 10 rays, the second spine shorter than head. Anal with 3 spines and 7 rays. Lateral line with 42-45 scales; 4.5-5.5 scale rows between lateral line and 5th dorsal spine base. Body silvery; young with 6-7 indistinct cross-bars on upper half of body.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery significance in our region.

264. ***Gerres oyena*** (Forsskal, 1775)

1775. *Labrus oyena,* Forsskal, *Descript. Anim.,* : 35.

1984. *Gerres oyena* Talwar & Kacker, *Comm. Sea Fish. India* : 584.

Description : Body oblong, slightly compressed; depth 3.0-3.3 in standard length. Mouth strongly protractile; fine teeth in jaws. Dorsal with 9 slender spines and 10 rays, the second spine shorter than head. Dorsal base with scaly sheath. Anal with 3 slender spines and 7 rays. Pectoral long, reaching beyond anal origin. Back greenish with dots forming faint longitudinal lines along scale rows; belly silvery. Spinous part of dorsal with blackish margin and brown spots on base; caudal dusky; 7-8 dusky bars on sides in young.

Distribution : Indo-West Pacific.

265. ***Gerres poieti*** Cuvier, 1829

1829. *Gerres poieti* Cuvier, *Regne Animal* (ed. 2), **2** : 188.

Description : Body oblong, moderately compressed, depth 2.1-2.3 in standard length. Mouth small, strongly protrusible; fine teeth in jaws. Dorsal with 9 spines and 10 rays, the second spine shorter than head. Anal with 3 spines and 7 rays; dorsal and anal spines very strong and broad. Pectoral scarcely longer than head, not extending to anal origin. Lateral line with 34-38 scales, 4 scale rows between lateral line and 5th dorsal spine base. Body silvery, darker on dorsal surface.

Distribution : Indo-West Pacific.

266. ***Gerreomorpha setifer*** (Hamilton, 1822)

1822. *Chanda setifer* Hamilton, *Fishes of Ganges* : 105, 370.

1984. *Gerreomorpha setifer* Talwar & Kacker, *Comm. Sea Fish. India* : 586.

Description : Body oblong, slightly compressed. Mouth small, strongly protractile; teeth in jaws in villiform bands; no canines. Dorsal with 10 spines and 9 or 10 rays. Anal with 3 spines and 7 rays. Pectoral long, reaching to almost anal origin. Spinous dorsal dark edged and a brown spot on each dorsal ray just about the scaly sheath.

Distribution : East coast of India.

Remarks : This species is common in the commercial catches.

267. ***Pentaprion longimanus*** (Cantor, 1850)

1850. *Equula longimana* Cantor. *J. Asiat. Soc. Bengal.,* **18** : 134.

1984. *Pentaprion longimanus* Talwar & Kacker, *Comm. Fish. India* : 587.

Description : A small, elongate species; mouth small, strongly protractile. Small acute teeth present in jaws. Dorsal with 10 spines and 15 rays; anal with 5 spines and 12 or 13 rays, its base longer than soft part of dorsal. Pectoral long and pointed, extending beyond anal origin. Body silvery or pinkish with a mirror-like stripe from eye to caudal.

Distribution : India, eastward to the Philippines.

Remarks : Common in trawl catches.

Family HAEMULIDAE

269. *Plectorhinchus cuvieri* (Bennett, 1830)

1830. *Bodian cuvieri* Bennett, *Fishes of Ceylon* : 13.

1936. *Plectorhinchus cuvieri* Weber & de Beaufort, *Fish. Indo-Aust. Archip.*, **7** : 423.

Description : Depth 3.0, head 2.9 in standard length. Chin with 6 pores, no median pit. Dorsal with 13 spines and 17 rays; anal with 3 spines and 8 rays. Scale rows above lateral line 11. Yellowish, with 7 or 8 broad transverse black bands; much broader than interspaces on back and narrower than interspaces on sides and belly. Caudal with brownish margin and with large brown spots.

Distribution : Indo-Pacific.

270. *Plectorhinchus gibbosus* (Lacepede, 1802)

1802. *Holocentrus gibbosus* Lacepede, *Hist. nat. Poiss.* 9 : 344, 389.

1986. *Plectorhinchus gibbosus* Smith & McKey, *in* Smith & Heemstra, *Smith's Sea Fishes* : 566.

Description : Lips, especially upper, greatly swollen with age. Dorsal with 14 spines and 15-16 rays; spines strong and 4th-5th longest, fin deeply notched; base of spinous dorsal 2.0 (Juvenile)–1.8 (Adult) in base of soft dorsal. Anal with 3 spines and 7 rays; 2nd spine longer and stouter than 3rd. Pectoral slightly longer than ventral. Scales do not reach nostrils. Gill rakers (9-10) + (19-20). Uniform dark, sometimes with reddish tinge; iris brown to yellow; juveniles with caudal, distal soft dorsal and anal yellowish or pink.

Distribution : Indo-West Pacific.

271. *Plectorhinchus orientalis* (Bloch, 1793)

1793. *Anthias orientalis* Bloch, *Naturges. ausland. Fische*, **7** : 10.

1984. *Plectorhinchus orientalis* McKey, *in* Fischer & Bianchi, *FAO Species Ident. Sheets, W. Indian Ocean*, **2** : HEAM Plect 11.

Description : Depth 2.9, head 3.3 in standard length. Lips fleshy; chin with 6 pores, no median pit. Dorsal with 13 or 14 spines and 17-20 rays; anal with 3 spines and 8 rays. Gill rakers (9-11) + (21-24) on first arch. Scales ctenoid; lateral line with about 65 tubed scales; scale rows above lateral line 13. Juveniles with connected black blotches and spots; adults with horizontal bands. Pectoral black in young, uniform yellow in adults; caudal spotted with age.

Distribution : Indo-West Pacific.

272. *Plectorhinchus pictus* (Thunberg, 1792)

1792. *Perca picta* Thunberg, *Vet. Akad. Nya Handl.*, **13** : 141.

1984. *Plectorhinchus pictus* McKey, *in* Fischer & Bianchi, *FAO Species Ident. Sheets, W. Indian Ocean*, **2** : HEAM Plect 13.

Description : Depth 2.5-2.7, head 3.0-3.5 in standard length. Lips not markedly swollen; chin with 6 pores, no median pit. Dorsal with 12 spines and 15-16 rays; anal with 3 spines and 8 rays. Gill rakers 22 (7 + 1 + 14) on first arch. Scales ctenoid; lateral line with 50-54 tubed scales. Greyish brown with round black spots on back and flanks; pectoral olive; pelvic dusky; dorsal with a white submarginal band. In young 3 longitudinal brownish bands which may be broken into blotches; numerous dark spots between two uppermost bands.

Distribution : Indo-West Pacific.

273. ***Pomadasys argenteus*** (Forsskal, 1775)

1775. *Pomadasys argenteus* Forsskal, *Descript. Anim.* : 51.

1991. *Pomadasys argenteus* Talwar & Jhingran, *Inland Fishes of India,* **1** : 844.

Description : Body oblong and compressed, depth 2.7-2.8 in standard length. Head blunt, its upper profile convex. Mouth small; maxilla reaching to eye; 2 pores and a median pit on chin. Dorsal with 12 spines and 13-14 rays; anal with 3 spines and 7-8 rays. Scales ctenoid; lateral line with about 45 scales; 5 scale rows between lateral line and dorsal origin. In juveniles, back with irregular longitudinal streaks on alternate scale-rows; dorsal with dusky membrane; a dark spot on gill-cover. In adults, dark blotches on dorsal and numerous dark spots on body.

Distribution : Indo-West Pacific.

274. ***Pomadasys argyreus*** (Valenciennes, 1833)

1833. *Pristipoma argyreum* Valenciennes, *Hist. nat. Poiss.,* **9** : 385.

1991. *Pomadasys argyreus* Talwar & Jhingran, *Inland Fishes of India,* **2** : 844.

Description : Depth 2.4-2.9 in standard length. Chin with 2 pores and a median pit. Dorsal with 12 spines and 13-14 rays; anal with 3 spines and 7-8 rays. Scales ctenoid; lateral line with 44-50 scales; 6 scale rows between dorsal origin and lateral line. Silvery; a large blue-black blotch on gill-cover, indistinct in adults; no spot on dorsal.

Distribution : Indo-West Pacific.

275. ***Pomadasys furcatum*** (Schneider, 1801)

1801. *Pristipoma furcatus* Schneider, *Syst. Ichth.* : 187, pl. 43.

1986. *Pomadasys furcatum* Smith & McKey, *in* Smith & Heemstra, *Smith's Sea Fishes* : 569.

Description : Depth 2.9-3.0 in standard length. Two pores and a median pit on chin. Dorsal with 12 spines and 14 rays; anal with 3 spines and 8 rays. Gill rakers 5 + (12-13) on first arch. A row of interradial scales behind dorsal and anal rays, above basal sheath; lateral line with 50-52 scales; 6-9 scale rows between lateral line and dorsal origin. Body purplish brown above, with 6 longitudinal dark stripes. In juveniles, the bands bifurcated anteriorly and in adults, form double lines.

Distribution : Indian Ocean.

276. ***Pomadasys kaakan*** (Cuvier, 1830)

1830. *Pristipoma kaakan* Cuvier, *Hist. nat. Poiss.*, **5** : 224.

1986. *Pomadasys kaakan* Smith & McKey, *in* Smith & Heemstra, *Smith's Sea Fishes* : 569.

Description : Depth 2.5-2.8 in standard length. Chin with 2 pores and a median pit. Dorsal with 12 spines and 13-15 rays; anal with 3 spines and 7-8 rays; fin spines very strong. Gill rakers (5-6) + (13-14). Scales ctenoid; 43-47 scales in lateral line. Silvery, with about 7-11 double dark spots, forming trnseverse bars in juveniles; dorsal with 2 or 3 rows of spots.

Distribution : Indo-Pacific.

Remarks : A commercially valuable and fairly common species.

277. ***Pomadasys maculatum*** (Bloch, 1797)

1797. *Anthias maculatus* Bloch, *Naturges. ausland. Fische,*. **7** : 9, pl. 326, fig. 2.

1986. *Pomadasys maculatum* Smith & McKey, *in* Smith & Heemstra, *Smith's Sea Fishes* : 570.

Description : Body oblong and compressed, depth 2.7-2.9 in standard length. Dorsal with 12 spines and 13-15 rays; anal with 3 spines and 7-8 rays, second spine distinctly longer than third. Body silvery-grey, nape and back with a series of incomplete cross-bars on upper half of body, sometimes broken into irregular blotches; spinous dorsal with a large black blotch; soft dorsal and caudal edged with black.

Distribution : Indo-West Pacific.

Remarks : An abundant, well known fish along the Indian Coast.

Family SPARIDAE

278. ***Acanthopagrus berda*** (Forsskal, 1775)

1775. *Sparus berda* Forsskal, *Descript. Anim.* : 32.

1991. *Acanthopagrus berda* Talwar & Jhingran, *Inland Fishes of India,* **2** : 620.

Description : Body fairly deep, depth 2.0-2.4 in standard length. Four to six canine teeth in front of upper jaw, 6-8 on lower jaw, follwed by 3-5 rows of molars. Dorsal with 11 spines and 11-12 rays; anal with 3 spines and 8-9 rays. Lateral line with 44-47 scales; 6 rows of scales on operculum. Silvery-grey; anal yellowish, the membrane blackish basally.

Distribution : Indo-Pacific.

Remarks : Common in commercial catches.

279. ***Acanthopagrus latus*** (Houttuyn, 1782)

1782. *Sparus latus* Houttuyn, *Verh. Holland, Maatsch. Wet. Hearlem*, **20** : 322.

1991. *Acanthopagrus latus* Talwar & Jhingran, *Inland Fishes of India,* **2** : 847.

Description : Body fairly deep, depth 2.6-2.8 in standard length. Four to six canine teeth in front of either jaw, with 3-5 rows of molars behind them. Dorsal with 11-12 spines and

10-12 rays; anal with 3 spines and 8-9 rays. Lateral line with 46-48 scales; 4-5 rows of scales on operculum. Dusky-grey; scales with darks bases and silvery edges; often a dark band between eyes and a dark spot at origin of lateral line. Pectoral and anal dusky at base yellow at margin.

Distribution : Indo-west Pacific.

Remarks : Occasionally taken in commercial catches.

280. ***Argyrops spinifer*** (Forsskal, 1775)

1775. *Sparus spinifer* Forskal, *Descript. Animal* : 32.

1984. *Argyrops spinifer* Talwar & Kacker, *Comm. Sea Fish. India* : 624.

Description : Body robust, very deep, strongly compressed; eyes large, close to front profile. Four canines in front of upper jaw and 3 rows of molars on each side; in lower jaw 6 much smaller canines and 2 rows of molars on each side. Dorsal with 11-12 spines and 10-11 rays, the first two spines very short, 3rd to 5th spines flattened and much elongated. Anal with 3 spines and 8-9 rays. Caudal emarginate with pointed lobes. Silvery with red iridescence; several vertical red bars in young.

Distribution : Indo-west Pacific.

281. ***Crenidens crenidens*** (Forsskal, 1775)

1775. *Sparus crenidens* Forsskal, *Descript. Anim.* : xv, 15.

1991. *Crenidens crenidens* Talwar & Jhingran, *Inland Fishes of India*, **2** : 848.

Description : Body fairly deep, depth about 2.5 in standard length. No group of enlarged teeth in front of each jaw. Interorbital scaleless; soft dorsal and anal with marked basal sheeths; cheeks scally. Dorsal with 11 spines and 10-11 rays; anal with 3 spines and 10-11 rays. Caudal emarginated. Greyish-silver; dark lines along rows of scales. Dorsal and anal black; pectoral with a black spot in axilla.

Distribution : Indian Ocean.

Remarks : Fairly common along the east coast and has a good market value.

282. ***Rhabdosargus sarba*** (Forsskal, 1775)

1775. *Sparus sarba* Forsskal, *Descript. Anim.* : xi, 31.

1984. *Rhabdosargus sarba* Talwar & Kacker, *Comm. Sea Fish. India* : 631.

Description : Body deeper than head length, depth about 2.0 in standard length. Upper jaw with 4-6 enlarged canines anteriorly, followed by 3-4 series of large molars in each jaw. Gill rakers 7-9 on lower arm of first arch. Dorsal with 11 spines and 12-13 rays; anal with 3 spines and 11 rays. Caudal deeply emerginate. Silvery-grey; each scale has a golden centre, forming yellow longitudinal lines along body; belly with a yellow band. Dorsal dusky at margin. Pectoral and pelvic yellowish green.

Distribution : Indo-West Pacific.

Remarks : Occasionally taken commercially.

Family LETHRINIDAE

283. ***Lethrinus nebulosus*** (Forsskal, 1775)

1775. *Sciaena nebulosa* Forsskal, *Descript. Anim.* : 52, fig. 133, pl. VI, 35, 36.

1989. *Lethrinus nebulosus* Carpenter & Allen, *FAO Fish. Synop.*, (125) **9** : 75.

Description : Body moderately deep, depth 2.5-2.8 in standard length. Dorsal with 10 spines and 9 rays; anal with 3 spines and 8 rays; pectoral rays 13. Inner surface of pectoral base scaled; 6 scale rows between lateral line and median dorsal spine. Olive-green; centres of many scales with a white or light blue spot; sometimes irregular dark indistinct bars on sides and a square black blotch above pectoral, bordering below lateral line; 3 blue streaks and series of blue spots radiating forward ventrally from eye. Fins whitish or yellowish, edge of dorsal reddish.

Distribution : Indo-Pacific.

Remarks : Fairly common and a very important commercial fish.

Family NEMIPTERIDAE

284. ***Nemipterus bipunctatus*** (Ehrenberg, 1830)

1830. *Dentex bipunctatus* Ehrenberg, *in* Cuvier & Valenciennes, *Hist. nat. Poiss.*, **6** : 247.

1990. *Nemipterus bipunctatus* Russell, *FAO Fish. Synop.*, (125) **12** : 31.

Description : Depth 3.4-3.9 in standard length. Eye 3.1-3.9 in head. Pectorals moderately long. Pelvics long, reaching to level of anal origin or beyond. Upper and lower lobes of caudal more or less equal in length. Gill rackers 10-14. Scales below lateral line in ascending rows anteriorly. Upper part of body pinkish; 5-7 greenish yellow upward-curved stripes on body below lateral line. Dorsal pale pink, with reddish margin and a yellow sub-marginal stripe; anal pale bluish-white with 2-4 irregular longitudinal yellow stripes; caudal yellowish pink.

Distribution : Indian Ocean.

Remarks : Of minor fishery value.

285. ***Nemipterus japonicus*** (Bloch, 1791)

1791. *Sparus japonicus*, Bloch, *Naturges. ausland. Fische.*, **5** : 110.

1990. *Nemipterus japonicus* Russell, *FAO Fish. Synop*, (125) **12** : 40.

Description : Depth 2.7-3.5 in standard length; eye 3.2-4.4 in head; lower margin of eye above a line from tip of snout to upper part of pectoral. Suborbital depth 1.0-1.9 in eye. Pectorals very long, reaching to or beyond level of anal origin; pelvics moderately long, not reaching to level of anal origin. Upper lobe of caudal slightly longer than lower and

produced in to a filament. Gill rakers 14-17. Body with 11-12 pale golden yellow stripes along body from behind head to base of caudal; a prominent red-surfaced yellow blotch below origin of lateral line.

Distribution : Indo-west Pacific.

Remarks : Forms a viable commercial fishery.

286. ***Nemipterus nematophorus*** (Bleeker, 1853)

1853. *Dentex nematophorus* Bleeker, *Nat. Tijdschr. Ned.Indie*, **5** : 500.

1990. *Nemipterus nematophorus* Russell, *FAO. Fish. Synop.*, (125) **12** : 45.

Description : Depth 2.9-3.5 in standard length; eye 3.0-4.0 in head. Anterior pair of spines of dorsal close together, almost fused and produced into a long filament. Pectorals and pelvics long, reaching to a level between anus and anal origin. Upper lobe of caudal produced into a filament. Gill rakers 10-12. Three narrow golden yellow stripes laterally along ventral half of the body.

Distribution : Indo-West Pacific.

Remarks : No major fishery exists.

287. ***Nemipterus peronii*** (Valenciennes, 1830)

1830. *Pentex peronii* Valenciennes, *Hist. nat. Poiss*, **6** : 245, pl. 154.

1990. *Nemipterus peronii* Russell, *FAO Fish. Synop.* (125) **12** : 49.

Description : Depth 3.1-4.1 in standard length. Dorsal spines elongate, interspinous membrane deeply incised; pectoral short; pelvic moderately long, reaching to level of anus; upper lobe of caudal pointed and slightly longer than the lower. Gill rackers 9-12. A difuse pale reddish spot below and just behind origin of lateral line.

Distribution : Indian Ocean.

Remarks : A minor fishery exists.

288. ***Nemipterus randalli*** Ruppell, 1986

1986. *Nemipterus randalli* Russell, *Sneckenberg. Bio.*, **67** : 23, fig. 2.

Description : Depth 2.9-3.5 in standard length. Sub-orbital depth 1.7-4.0 in eye. Gill rakers 12-15. Pectorals and pelvics very long, reaching to or just beyond level of anal origin. Caudal forked, upper rays produced into a long filament. Body with 3-4 faint yellow stripes on sides below lateral line; fins pale-bluish with narrow yellow medial stripe.

Distribution : Indian Ocean.

289. ***Scolopsis bimaculatus*** Ruppell, 1828

1828. *Scolopsis bimaculatus* Ruppell, *Fische. Des. Rothen Meeres*, **8** : pl. 2, fig. 2.

Description : Depth 2.6-3.3 in standard length. Antrorse suborbital spine present. Lower limb of preopercle scaly; lateral line scales 45-48; 4-5 scale rows between lateral line and

dorsal origin; head scales reaching forward to or infront of anterior margin of eye. Pectoral rays ii, 15-17. Pelvics long, reaching to between level of anus and anal origin. An elongate brownish blotch on upper flank, beginning below 7th or 8th dorsal spine and intersected by lateral line; a blue stripe joining edges.

Distribution : Indo-West Pacific.

Remarks : No major fishery exists.

290. ***Scolopsis vosmeri*** (Bloch, 1792)

1792. *Anthias vosmeri* Bloch, *Neturges. ausland. Fische,* **6** : 120, pl. 321.

1990. *Scolopsis vosmeri* Russell, *FAO. Fish. Synop.,* (125) **12** : 122.

Description : Depth 2.0-2.6 in standard length. Snout length a little less than diameter of eye; head scales reaching to anterior nostrils. Lower limb of pre-opercule scaly; antrose sub-orbital spine present beneath eye. Sub-orbital depth 1.7-3.8 in eye diameter. Lateral line scales 39-45. Pectorals short, not reaching to level of anus. Pelvics long, reaching to or just beyond level of anus. Scales on sides with dark spots. Opercule membrane blood-red.

Distribution : Indo-West Pacific.

Remarks : No major fishery exists.

Family SCIAENIDAE

291. ***Dendrophysa russelli*** (Cuvier, 1830)

1830. *Umbrina russelli* Cuvier, *Hist. nat. Poiss.,* **5** : 178.

1984. *Dendrophysa russelli* Talwar & Kacker, *Comm. Sea. Fish. India* : 642.

Description : A fairly small species, mouth inferior, single barbel on chin. Teeth in upper jaw a villose band, outer series slightly enlarged; teeth in lower jaw uniformly small. Lower gill rackers 8-9 on first arch. Dorsal with 1 spine and 25-28 rays; anal with 2 spines and 7 rays, the second spine strong and slightly less than ½ of head length. Caudal rhomboid. Scales mostly ctenoid. Gas bladder carrot shaped, with 15-17 pairs of arborescent appen-dages, the first entering head. Spinous dorsal dark.

Distribution : Indo-West Pacific.

Remarks : Fairly common in the commercial catches.

292. ***Johnieops dussumieri*** (Cuvier, 1830)

1830. *Corvina dussumieri* Cuvier, *Hist. nat. Poiss,* **5** : 119.

1995. *Johnieops dussumieri* Talwar, *Fauna of India, Sciaenidae* : 117.

Description : Mouth subterminal. Snout rounded and projecting a little beyond upper jaw. No mental barbel. Lower gill rakers 13-16, short, curved and coarsely toothed. Teeth villiform, slightly differentiated in jaws; outer upper jaw teeth spaced. Scales cycloid on head and snout, ctenoid over body. Gas bladder hammer-shaped with 14-15 pairs of arbores-cent appendages. Opercle with a steel-blue blotch.

Distribution : Indian Ocean.

Remarks : Forms a part of sciaenid fishery. Lower gill rakess 13-15 in *J. sina*

293. ***Johnieops macrorhynus*** Mohan, 1976

1976. *Johnieops macrorhynus* Mohan, *Matsya,* **1** : 20, fig. 2.

Description : Mouth inferior; snout rounded, projecting. Teeth in villiform bands, weakly differentiated; outer upper row slightly enlarged. Lower gill rakers 5-8, short and stumpy with minute spines. First dorsal with 10 spines; the second with 1 spine and 26-30 rays; anal with 2 spines and 7 rays, 2nd spine about ¼ of head. Gas bladder hammer-shaped with 13-14 pairs of arborescent appendages. Pale brown dorsally, yellow on flanks and belly; a faint steel blue blotch on opercle.

Distribution : India, Sri Lanka, Andaman Sea and Singapore.

294. ***Johnieops sina*** (Cuvier, 1830)

1830. *Corvina sina* Cuvier, *Hist. nat. Poiss.,* **5** : 122.

1991. *Johnieops sina* Talwar & Jhingran, *Inland Fishes of India,* **2** : 854.

Description : Mouth inferior; snout evenly decurved, not swollen or projecting before mouth. Lower gill rakers 13-15, long and slender. Teeth differentiated; enlarged outer row of upper jaw teeth spaced. Second anal spine 1/3 of head. Gas bladder hammer-shaped with 12-17 pairs of arborescent appendages. A steel-blue blotch on opercle; upper 2/3 of spinous dorsal dusky.

Distribution : Indo-West Pacific.

Remarks : Fairly common in the catches along the east coast of India. Lower gill rekers 12-16 in *J. dussumieri.* Snout swallen.

295. ***Johnius belangerii*** (Cuvier, 1830)

1830. *Corvina belangerii* Cuvier, *Hist. nat. Poiss.,* **5** : 120.

1984. *Johnius belongerii* Talwar & Kacker, *Comm. Sea Fish. India* : 647.

Description : Mouth inferior; snout steeply rounded; no barbels on chin. Teeth in villiform bands in jaws, no canine. Lower gill rakers 8-9, short. Dorsal with 9 spines; the second with 1 spine and 27-31 rays; anal with 2 spines and 7-8 rays, the 2nd spine rather strong and about 1/2 of head length. Gas bladder hammer-shaped, with 11-14 pairs of arborescent appendages, the 1st entering head. Darkly pigmented; spinous dorsal black.

Distribution : Indo-Pacific.

Remarks : Fairly common in commercial catches from coastal waters, down to 40 m.

296. ***Johnius carutta*** Bloch, 1793

1793. *Johnius carutta* Bloch, *Naturges. ausland. Fische.,* **7** : 135, pl. 356.

Description : A small species with a rounded snout and a small, inferior mouth; no barbel

on chin. Teeth villiform, no canines; lower gill rakers 7-9, short. Dorsal with 9-10 spines; the second with 1 spine and 25-28 rays; anal with 2 spines and 7 rays, the 2nd spine weak. Caudal rhomboid. Gas bladder hammer-shaped with 15-16 pairs of arborescent appendages, first one largest and branching in head. Spinous dorsal dusky; lateral line silvery with a characteristic pale yellow median streak along its entire length.

Distribution : Northern Indian Ocean.

Remarks : Forms a minor fishery.

297. ***Johnius coitor*** (Hamilton, 1822)

1822. *Bola coitor* Hamilton, *Fishes of Ganges* : 75, 368, pl. 27, fig. 24.

1991. *Johnius coitor* Talwar & Jhingran, *Inland Fishes of India*, **2** : 858.

Description : Snout conspicuously prominent, swollen and projecting, about 1.5 in eye. Mouth inferior; teeth villiform, close-set, differentiated in size on upper jaw only. Lower gill rakers 10-13. Caudal acutely rhomboid. Scales cycloid on snout and below, ctenoid on top of head and body. Gas bladder hammer-shaped with 11-13 appendages, all but last arbores-cent. Light golden-yellow; dorsal with dusky edge.

Distribution : East coast of India to east coast of Australia.

298. ***Johnius dussumieri*** (Valenciennes, 1833)

1833. *Umbrina dussumieri* Valenciennes, *Hist. nat. Poiss.*, **9** : 481.

1995. *Johnius dussumieri* Talwar, *Fauna of India, Sciaenidae* : 94.

Description : Snout rounded, projecting. Mouth ventral; a short, solid imperforate mental barbell on chin; teeth differentiated in size in upper jaw only, close-set, no canine. Lower gill rakers 5-9, short. Second dorsal with 1 spine and 22-26 rays. Scales cycloid. Gas bladder hammer-shaped with 14-15 pairs of arborescent tubules. Upper part of spinous dorsal dusky black.

Distribution : Indo-West Pacific.

Remarks : Fairly common in commercial catches.

299. ***Johnius macropterus*** (Bleeker, 1853)

1853. *Umbrina macropterus* Bleeker, *Nat. Tijdschr. Ned.Indie*, **4** : 254.

1984. *Johnius macropterus* Talwar & Kacker. *Comm. Sea Fish. India* : 652.

Description : A medium-sized species; snout rounded and slightly projecting; mouth inferior; a short, stiff, blunt barbel behind the median mental pore. Teeth in villiform bands, close-set. Lower gill rakers 9-11, short. Second dorsal with 1 spine and 27-33 rays. Caudal rhomboid. Gas bladder hammer-shaped, with 12-15 pairs of arborescent appendages. Spinous dorsal grey.

Distribution : Indo-West Pacific.

Remarks : Fairly common in commercial catches along Madras coast.

300. ***Kathala axillaris*** (Cuvier, 1830)

1829. *Corvina axillaris* Cuvier, *Hist. nat. Poiss,* **5** : 113.

1984. *Kathala axillaris* Talwar & Kacker, *Comm. Sea Fish. India* : 656.

Description : Depth 32.5-38.7% of standard length. Snout rounded, mouth terminal and oblique; teeth villiform. Lower gill rakers 19-24, lanceolate. Dorsal with 9-10 spines; second with 1 spine and 26-29 rays; anal with 2 spines and 7 rays; caudal bluntly truncate. Gas bladder carrot-shaped, with a pair of short, horn-like simple appendage at its broad anterior end and extend into head. A black prominent blotch on pectoral axil; upper two-thirds of spinous dorsal dusky.

Distribution : Coasts of India.

Remarks : Common in the commercial catches.

301. ***Nibea maculata*** (Schneider, 1801)

1801. *Johnius maculates* Schneider, *Syst. Ichthyol.* : 75.

1995. *Nibea maculata* Talwar, *Fauna of India, Scaenidae* : 87, fig. 25.

Description : Snout acute and prominent; mouth inferior; teeth differentiated in size in both jaws; lower gill rakers 5-10, with few flat tooth-plates between them. Scales cycloid on head and snout, ctenoid on rest of body. Gas bladder carrot-shaped, with 18-21 pairs of arborescent appendages, anterior pair extending into head. Five dark bands extending obliquely from back to lower part of flank.

Distribution : India, east ward to the Malay Peninsula.

Remarks : Forms an important constituent of trawl catches.

302. ***Otolithes cuvieri*** Trewavas, 1974

1974. *Otolithes cuvieri* Trewavas, *in* Fischer & Whitehead, *FAO Species Ident. Sheets,* **3** : SCIAEN Otol 1, fig.

Description : Depth 3.25-4.5 in standard length. Mouth large, terminal, lower jaw projecting; 1- 2 pairs of strong canines on sides of symphysis of upper jaw. Lower gill rakers 11-16, lanceolate. Scales cycloid anteriorly, ctenoid posteriorly. Dorsal with 10 spines; second part with 1 spine and 29-32 rays. Gas bladder carrot-shaped with 25-28 pairs of arborescent appendages, anterior pair branching on posterior surface of transverse septum. Brown above, silvery with a golden tinge on flanks; axilla with a bluish spot.

Distribution : Coasts of India.

303. ***Otolithes ruber*** (Schneider, 1801)

1801. *Johnius ruber* Schneider, *Syst. Ichthyol.* : 75, pl. 17.

1995. *Otolithes ruber* Talwar, *Fauna of India, Scaenidae* : 58, fig,16.

Description : Depth 4-5 in standard length. Mouth large, terminal; upper jaw with 1-2 pairs of strong canines on sides of symphysis. Lower gill rakers 8-11, long, slender. Scales

cycloid; a few ctenoid, on posterior lower part of body. Dorsal with 9-10 spines; second part with 1 spine and 27-30 rays. Gas bladder carrot-shaped with 32-36 pairs of arborescent appendages, anterior pair branching on posterior surface of transverse septum. Brownish above, silvery with a golden sheen on flanks and belly.

Distribution : Indo-West Pacific.

Remarks : Abundant in trawl catches.

304. ***Pennahia macrophthalmus*** (Bleeker, 1850)

1850. *Otolithus macrophthalmus* Bleeker, *Verh. batav. Genoot. Kunst Wet.*, **23** : 16.

1995. *Pennahia macrophthalmus* Talwar, *Fauna of India, Sciaenidae* : 37, fig. 9.

Description : Body deep; mouth large, terminal and oblique; lower jaw projecting; teeth in both jaws well differentiated in size, upper outer series spaced, no canine. Dorsal with 9-10 spines, second part with 1 spine and 21-26 rays. Scales cycloid on snout, ctenoid elsewhere. Lower gill rakers 8-11, lanceolate. Gas bladder carrot-shaped with 18-21 pairs of arborescent appendages, anterior pair not entering head. Silvery white; nape with a diffused dusky blotch; upper 2/3 of spinous dorsal dusky.

Distribution : Indo-West Pacific.

Remarks : Contributes a good fishery. Previously it was reported as *Sciaena aneus* Day, 1876

305. ***Protonibea diacanthus*** (Lacepede, 1802)

1802. *Lutjanus diacanthus* Lacepede, *Hist. nat. Poiss.*, **4** : 240.

1984. *Protonibea dicanthus* Talwar & Kacker, *Comm. Sea Fish. India* : 670.

Description : Snout acute; mouth terminal, large. Teeth in both jaws well differentiated; outer series in upper jaw enlarged and spaced, anterior 1 or 2 pairs caniniform. Lower gill rakers 5-8, lanceolate. Gas bladder carrot-shaped, with 16-26 pairs of arborescent appen-dages, the first not entering head. Scales cycloid on snout and below eyes, elsewhere ctenoid. Caudal rhomboid. Body with 5 dark blotches on back, small dots over top of head, upper half of body and dorsal and caudal. Pectoral, pelvic and lower part of caudal black.

Distribution : Indo-West Pacific

Remarks : This species forms an important constituent of trawl fishery.

Family MULLIDAE

306. ***Mulloides vanicolensis*** (Valenciennes, 1831)

1831. *Upeneus vanicolensis* Valenciennes, *Hist. nat. Poiss*, **7** : 521.

1986. *Upeneus vanicolensis* Smith & Heemstra, *Smith's Sea Fishes* : 611.

Description : Depth 3.3-4.0, head 3.2-3.4 in standard length; snout 2.5-2.8, eye 3.1-3.5, interorbital 3.3-3.6, barbels 1.3-1.4; peduncle depth 3.0-3.4, peduncle length 1.2-1.4 in head. Gill rakers 32-36 on first arch. Body red orange to olive on back and whitish on sides and

belly; yellow longitudinal lines on sides present; no dark blotch on sides under middle of 1st dorsal.

Distribution : Indo-West Pacific and Red Sea.

Remarks : Contributes minor fishery.

307. ***Parupeneus indicus*** (Shaw, 1803)

1802. *Mullus indicus* Shaw, *Gen. Zoology*, **4** : 611.

1984. *Parupeneus indicus* Talwar & Kacker, *Comm. Sea Fish. India* : 678.

Description : Body deep; two moderately long barbels on chin; teeth in jaws in single row. First dorsal with 8 spines; second with 1 spine and 8 rays; anal with 1 spine and 7 rays. Head with 3-5 violet or blue lines from snout to operculum. A large elongate yellow blotch, mostly above lateral line, extending from below hind part of 1st dorsal to below front part of 2nd dorsal; a large black blotch immediately behind midpoint of caudal peduncle, 2/3 of it above lateral line. Second dorsal with horizontal violet or pink stripes.

Distribution : Indo-West Pacific.

Remarks : Dominant species of the goatfish fishery along Tamil Nadu coast.

308. ***Upeneus bensasi*** (Temminck & Schlegel, 1842)

1842. *Mullus bensasi* Temminck & Schlegel, *Fauna Japonica, Pisces* : 30, pl. 1, fig. 2.

1984. *Uppeneus bensasi* Kumaran, *in* Fischer & Bianchi, *FAO Species Ident. Sheets, W.Indian Ocean*, **3** : MULL Upen 4.

Description : Depth 4.0-4.3 in standard length. Chin with 2 slender barbels. Teeth villiform in jaws, on vomer and palatines. Gill rakers 23-27 on first arch. First dorsal with 7 spines, the first spine longest. Scale rows $4\frac{1}{2}$ between dorsals; 10-11 rows along upper part of caudal peduncle. Back dark brown, sides golden, belly white. Both dorsal golden with 2-4 red stripes. Pelvic with red stripes. Caudal with 4-5 red bands on upper lobe and lower lobe with about 7 red bars.

Distribution : Indo-Pacific.

Remarks : Occasionally captured commercially.

309. ***Upeneus luzonius*** Jordan & Seale, 1907

1907. *Upeneus luzonius* Jordan & Seale, *Bull. U. S. Bur. Fish.*, **26** : 25, fig. 9.

Description : Depth 4.0-4.9, head 4.0-4.4 in standard length. Chin with 2 barbels; teeth villiform in jaws, vomer and palatine. Gill rakers 19-22 on first arch. First dorsal with 8 spines, the first minute; pectoral rays usually 14. A dark brown longitudinal band running from eye to caudal; a large, dark saddle-like blotch dorsally on caudal peduncle just behind second dorsal; dorsal clouded; each lobe of caudal with about 6 oblique cross bands.

Distribution : India, east ward to tne Philippines.

310. *Upeneus moluccensis* (Bleeker, 1855)

1855. *Upenoides moluccensis* Bleeker, *Nat. Tijdschr. Ned-Indie,* **8** : 409.

1984. *Upeneus moluccensis* Kumaran, *in* Fischer & Bianchi, *FAO Species Ident. Sheets, W. Indian Ocean,* **3** : MULL Upen 1.

Description : Depth 3.5-3.9 in standard length. Chin with 2 barbels; teeth villiform in jaws, on vomer and palatine. Gill rakers 27-31 on first arch. First dorsal with 8 spines, the first minute; pectoral rays usually 16. A golden yellow stripe about as broad as pupil passing from eye to caudal base, above lateral line; both dorsal with about 3 orange stripes; upper caudal lobe with about 6 cross-bars and lower lobe with orange and white longitudinal streaks.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery value in our region.

311. *Upeneus sulphureus* Cuvier, 1829

1829. *Upeneus sulphureus* Cuvier, *Hist. nat. Poiss.,* **3** : 450.

Description : Depth 3.2-3.6 in standard length. Chin with 2 barbels; teeth villiform in jaws, on vomer and palatine. Gill rakers 26-32 on first arch. First dorsal with 8 spines, the first minute; pectoral rays usually 16. Two lemon yellow longitudinal stripes along sides, the upper from eye to caudal peduncle and the lower from pectoral axil. Dorsal with 3 horizontal stripes, the upper most black. Caudal with a dusky margin, no dark bands.

Distribution : Indo-West Pacific.

Remarks : A recognizable fishery exists.

312. *Upeneus taeniopterus* Cuvier, 1829

1829. *Upeneus taeniopterus* Cuvier, *Hist. nat. Poiss.,* **3** : 451.

Description : Depth 3.6-4.2 in standard length. Chin with 2 barbels; teeth villiform in jaws, on vomer and palatine. Gill rakers 21-24 on first arch. First dorsal with 8 spines, the first minute; pectoral rays 13-14; pelvics as long as pectorals. Silvery pink on back, silvery white on sides and belly, with 2 narrow yellow stripes, one at level of upper edge of eye and the other at mid-pectoral base. Dorsal with 3 brownish bands, tips darker. Upper lobe of caudal with 6 blackish bands and lower lobe with 4-5 bands, the two lowermost broader and darker.

Distribution : Indo-Pacific.

313. *Upeneus tragula* Richardson, 1846

1846. *Upeneus tragula* Richardson, *Rep. Br. Ass. Adv. Sci. 15th Meet* : 220.

Description : Depth 3.7-4.3, head 3.4-3.7 in standard length. Barbels 2, not reaching pre-opercle margin; teeth villiform in jaws, on vomer and palatine. Gill rakers 21-25. First dorsal spines 8, the first minute; pectoral rays 12-14; pelvic equales pectoral. A dark reddish

brown stripe passing from snout to mid-base of caudal; irregular dots and blotches on back, below white with rows of dots. Dorsals with 3 irregular dark bands. Upper lobe of caudal with 4-6 and lower lobe with 5-7 black cross-bars.

Distribution : Indo-West Pacific.

Remarks : This species is the most dominant species of the goat fish fishery along with *Parupenius indicus.*

314. ***Upeneus vittatus*** (Forsskal, 1775)

1775. *Mullus vittatus* Forsskal, *Descript. Anim.* : 31.

1984. *Upeneus vittatus* Kumaran, *in* Fischer & Bianchi, *FAO Species Ident. Sheets, W. Indian Ocean,* **3** : MULL Upen 3.

Description : Depth 3.3-3.7, head 3.2-3.4 in standard length. Barbels 2; teeth villiform in jaws, on vomer and palatine. Gill rakers 26-31. First dorsal spines 8, the first minute; pectoral rays 15-17; pelvics 2/3 of pectorals. Greenish on back, white on sides and belly pale yellow, with 3 deep bronze longitudinal bands above lateral line and two yellow bands below lateral line; both dorsals with 3 horizontal stripes; upper caudal lobe with 4-5 grey or black-cross bars; lower lobe with 3-4 black cross-bars, the third one broadest and darkest, forming a characteristic black square.

Distribution : Indo-Pacific.

Remarks : This species constitute an important element of the goat fish fishery.

Family MONODACTYLIDAE

315. ***Monodactylus argenteus*** (Linnaeus, 1758)

1758. *Chaetodon argenteus* Linnaeus, *Syst. Nat.* (ed.10), **1** : 272.

1984. *Monodactylus argenteus* Talwar & Kacker, *Comm. Sea Fish. India* : 688.

Description : Body compressed, depth 1.2-1.5 in standard length. Eyes moderately large. Mouth small and terminal; villiform teeth bands in both jaws. Dorsal with 7-8 spines, almost hidden in scaly sheath, and 28-31 rays; anal with 3 spines and 28-32 rays. Pectoral short, rounded; pelvic reduced to a short spine, the rays rudimentary. Caudal margin concave. Scales small, ctenoid. Brilliant silvery. Juveniles with 2 dusky bars across head.

Distribution : Indo-Pacific.

Remarks : Common in the coastal waters, but low in importance as a food fish.

Family PEMPHERIDIDAE

316. ***Pempheris moluca*** Cuvier, 1831

1831. *Pempheris moluca* Cuvier, *Hist. nat. Poiss.*, **7** : 304.

Description : Body compressed, deep anteriorly, narrowing sharply from anus to caudal peduncle; rostro-frontal line nearly straight, inter-orbital space slightly convex to flatened. Mouth large; wide band of very small granular teeth in jaws, outer series large and conical;

anterior teeth in lower jaw partly directed forward and outward and visible from below. Dorsal with 6 spines and 9 rays; anal with 3 spines and 41 rays. Brownish on back and coppery on flanks; pectoral base with a blackish patch.

Distribution : Indo-Pacific.

Remarks : Fairly common along our coast.

Family EPHIPPIDIDAE

317. ***Ephippus orbis*** (Bloch, 1787)

1787. *Chaetodon orbis* Bloch, *Naturges. ausland. Fische,* **3** : 81, pl. 202, fig. 2.

1984. *Ephippus orbis* Talwar & Kacker, *Comm. Sea Fish. India* : 700.

Description : Body strongly compressed, rounded in shape, depth 1.2-1.3 in standard length. Mouth small, terminal, not protractile. Dorsal with 1 procumbent spine and 9 normal spines and 19-20 rays, the 4th spine longest; anal with 3 spines and 15-16 rays. Scales smooth. Body silvery, with 4-5 vertical black bands from back, almost to belly. Margins of soft dorsal, anal, pelvic and caudal dusky black.

Distribution : Indo-West Pacific.

Remarks : Contribute a minor fishery.

Family PLATACIDAE

318. ***Platax pinnatus*** (Linnaeus, 1758)

1758. *Chaetodon pinnatus* Linnaeus, *Syst. Nat.,* **1** (ed. 10) : 272

1984. *Platax pinnatus* Talwar & Kacker, *Comm. Sea Fish. India* : 702.

Description : Body compressed, much elevated and rounded. Body as deep as long. Mouth small and terminal, with long, slender, tricuspid teeth. Dorsal with 5 spines and 35-39 rays; anal with 3 spines and 25-28 rays; pectoral short and rounded; pelvic well developed, first ray reaching anal; caudal truncate. A broad vertical band anteriorly through eye, a second broad black vertical band from dorsal origin across the pectoral base to pelvic, a third black band over posterior part of body. Dorsal and anal greyish black with narrow dusky border. Pectoral and pelvic black.

Distribution : Indo-Pacific.

Remarks : Of minor commercial significance.

Family DREPANIDAE

319. ***Drepane punctatus*** (Linnaeus, 1758)

1758. *Chaetodon punctatus* Linnaeus, *Syst. Nat.,* **1** (ed. 10) : 273.

1991. *Drepane punctatus* Talwar & Jhingran, *Inland Fishes of India,* **2** : 874.

Description : Head and body deep, strongly compressed. Mouth protrusible, teeth pointed, slender, crowded together; a fringe of 4-6 short cirri ventrally on lower jaw, absent

in adults. Pectoral long and pointed, reaching to base of caudal. A large orange spot just above base of pectoral; 4-11 vertical bars of small black spots on upper half of body. Margins of dorsal, anal, caudal and pelvic greyish-black.

Distribution : Indo-West Pacific.

Remarks : Fairly common in our area.

Family SCATOPHAGIDAE

320. ***Scatophagus argus*** (Bloch, 1766)

1766. *Chaetodon argus* Linnaeus, *Systema Naturae,* (ed.12) **1** : 464.

1984. *Scatophagus argus* Talwar & Kacker, *Comm. Sea Fish. India* : 704.

Description : Body squarish with bluntly pointed and triangular head; a deep concavity above the eyes. Mouth very small not protrusible; teeth small movable, tricuspid, in bands in jaws. Dorsal notched, with 11 strong spines and 16-18 rays; anal with 4 spines and 14-15 rays. Body with numerous triangular large round brown spots which may extend on to soft dorsal.

Distribution : India, eastward to Australia and Solomon Islands.

Remarks : Of minor fishery significance in our area. Young ones attractive as aquarium fish.

Family CHEATODONTIDAE

321. ***Chaetodon collare*** Bloch, 1787

1787. *Chaetodon collare* Bloch, *Nat. ausland. Fische,* **3** : 116.

Description : Body strongly compressed. Dorsal with 12 spines and 25-27 rays; anal with 3 spines and 20-22 rays. Brownish olive with yellow in centre of each scale. A blue-white band from before first dorsal across opercle to throat, a second across inter-orbital and a third across snout to chin. Dorsal and anal tinged with reddish violet. Soft dorsal margine with alternate bands of white, black, scarlet, black, white and black. Anal similarly banded with white, black and scarlet. Caudal scarlet basally, white distally with a black band at middle.

Distribution : East coast of India.

Remarks : Of minor fishery value.

322. ***Chaetodon decussatus*** Cuvier, 1831

1831. *Chaetodon decussatus* Cuvier, *Hist. nat. Poiss.*, **7** : 54.

Description : Body elevated and strongly compressed. Snout 3.0-4.0 in head. Mouth small; teeth brush-like. Dorsal with 13 spines and 24-25 rays; anal with 3 spines and 20-21 rays. Five or six diagonal lines extending from upper part of head to base of dorsal spines; 11-12 diagonal lines extending at right angles from last of previous lines towards anal; upper lip and adjacent part of snout dusky; dorsal, anal and caudal peduncle black.

Distribution : Indo-West Pacific.

Remarks : Of aquarium interest. Fairly common in the trap fishery.

323. *Chaetodon octofasciatus* Bloch, 1787

1787. *Chaetodon octofasciatus* Bloch, *Nat. ausland. Fische,* **3** : 113.

Description : Body orbicular; dorsal profile more elevated. Dorsal with 11 spines and 18-20 rays; anal with 3 spines and 16-17 rays. Lateral line terminating at a level before soft dorsal. Pectorals broad, shorter than head; pelvics pointed, nearly reaching anal. Body yellowish, grayish ventrally with 6 complete transverse blackish brown bands separated by wide interspaces on sides, the first from nape through eye to chest, the 2nd and 3rd before and behind pectoral; rest 3 from dorsal to anal; a 7th band on vertical part of soft dorsal and anal and root of caudal peduncle; the 8th on the base of caudal and distal edges of dorsal and anal.

Distribution : India, eastward to the Solomon Islands.

324. *Chaetodon vagabundus* Linnaeus, 1758

1758. *Chaetodon vagabundus* Linnaeus, *Syst. Nat.* (ed. 10), **1** : 276.

Description : Body elevated and strongly compressed; snout 2.5-3.2 in head. Mouth small, teeth brush-like. Dorsal with 13 spines and 23-25 rays; anal with 3 spines and 19-20 rays. Six diagonal lines running from head to spinous dorsal, 11-12 running at right angles from the last of these to the anal and caudal peduncle; a black band from spinous dorsal to caudal peduncle, extending into anal; eye-bands broadly jointed at nape. Slightly faded between nape and eye. Dorsal and anal partially black.

Distribution : Indo-Pacific.

Remarks : Fairly common in the trap fishery.

325. *Heniochus acuminatus* (Linnaeus, 1758)

1758. *Chaetodon acuminatus* Linnaeus, *Mus. Ad. Fried* : t. 33, f.3.

1965. *Heniochus acuminatus,* Smith, The sea fishes of Southern Africa, 236.

Description : Body compressed, rounded. Mouth small and terminal; snout pointed. Dorsal with 11 spines and 22-26 rays, the 4th spine elongated and filamentose; anal with 3 spines and 17-19 rays. Lateral line complete, with 49-56 scales. A dark bar across inter-orbital; snout with black blotch; a broad band from first 3 dorsal spines across side extending on to pelvic base and anal spines; another band from hind part of dorsal to posterior third of anal; other fins bright yellow.

Distribution : Indo-West Pacific.

Remarks : Usually seen alone or in pairs.

Family POMACANTHIDAE

326. *Apolemichthys xanthurus* (Bennett, 1832)

1832. *Holacanthus xanthurus* Bennett, *Proc. zool. Soc., London* : 183.

1982. *Apolemichthys xanthurus* Munro, *The Marine and Freshwater Fishes of Ceylon* : 171.

Description : Body compressed, much elevated. Dorsal with 14 spines and 19 rays; anal with 3 spines and 18 rays; caudal truncate. Lateral line scales 48-50, terminating at end of soft dorsal. Light brown, with a light opercular band and shoulder spot; each scale on upper part of body with a pale edge, those below with white centre. Dorsal and anal rich brown; pelvics and caudal yellow.

Distribution : Indian Ocean.

Remarks : No fishery value.

Family CICHLIDAE

327. ***Etroplus suratensis*** (Bloch, 1785)

1785. *Chaetodon suratensis* Bloch, *Syst. Ichth.* : 217.

1991. *Etroplus suratensis* Talwar & Jhingran, *Inland Fishes of India*, **2** : 885.

Description : Body very deep, oval and strongly compressed. Eyes large; mouth small; teeth villiform. Dorsal with 18-19 spines and 14-15 rays; anal with 12-13 spines and 11-12 rays. Caudal slightly emarginate. Scales weakly ctenoid. Lateral line interrupted at 16-18th scale, 35-40 scales in longitudinal series. Light green with 6-8 vertical bands; most of scales above lateral line with a central white pearly spot; some irregular black spots on abdomen. Juveniles with a large black ocellus with white margin at soft dorsal base.

Distribution : East and west coast of India.

Remarks : Of minor fishery significance.

Family POMACENTRIDAE

328. ***Pristotis jerdoni*** (Day, 1873)

1873. *Pomacentrus jerdoni* Day, *Proc. zool. Soc. London,* : 237.

1982. *Pristotis jerdoni* Munro, *The marine and freshwater fishes of Ceylon* : 179.

Description : Body short, deep and compressed; depth 3.9 in standard length. Dorsal with 13 spines and 12-13 rays; anal with 2 spines and 12-14 rays. Lateral line interrupted, with 21 + 12 scales; 30-34 scales on lateral series. Olive above, lighter below; 7 rows of light blue spots across gill-cover, one row along sub-orbitals, one over snout. Light lines along scale rows. Pectoral base with black spot.

Distribution : Indian Ocean.

Family CIRRHITIDAE

329. ***Cirrhitichthys aureus*** (Temminck & Schlegel, 1843)

1843. *Cirrhites aureus* Temminck & Schlegel, *Fauna Jap. Poiss.* : 15, pl. 7, fig. 2.

1982. *Cirrhitichthys aureus* Munro, *The marine and freshwater fishes of Ceylon* : 198.

Description : Body moderately elongate and compressed. Small mouth with villiform teeth on vomer, palatines and jaws. Posterior border of pre-opercle strongly denticulated,

large scales on interopercle; opercle spinate. Dorsal with 10 spines and 12-13 rays, first ray prolonged; anal with 3 spines and 6-7 rays; pectoral with 7 rays plus 6-7 upper free rays. Rosy, with lighter longitudinal lines and ill-defined blotches. Caudal with red spots.

Distribution : Indian Ocean.

Remarks : Common at Madras Coast.

Family CEPOLIDAE

330. ***Acanthocepola abbreviata*** (Valenciennes, 1835)

1835. *Cepola abbreviata* Valenciennes, *Hist. nat. Poiss,* **10** : 403.

1936. *Acanthocepola abbreviata* Weber & de Beaufort, *Fish. Indo-Aust. Archip.,* **7** : 553.

Description : Body compressed, tapering; mouth oblique, large. A strong spine at the angle of pre-operculum. Dorsal continuous, with 67-74 rays. Anal with 67-74 rays. Pelvic origin before pectoral; caudal lanceolate. Scales cycloid. Body red with dark spot on anterior aspect of dorsal.

Distribution : India, through the East Indies to China.

Family MUGILIDAE

331. ***Liza macrolepis*** (Smith, 1849)

1849. *Mugil macrolepis* Smith, *Illust. Zool. S. Africa,* **4** : 28, fig. 2.

1991. *Liza macrolepis* Talwar & Jhingran, *Inland Fishes of India,* **2** : 891.

Description : Body moderately robust; head 23-28% of standard length. First dorsal origin nearer to caudal base than to snout tip. First dorsal with 4 spines and second with 1 spine and 8 rays; anal with 3 spines and 9 rays; pectorals short; pelvics reaching vertical behind base of 3rd spine of first dorsal. Scales in lateral series 31-34; 12 transverse rows of scales. Scales cycloid in juveniles, ctenoid in adults. Body dark greenish above, silvery on sides and belly. Fins dusky along margins.

Distribution : Indo-West Pacific.

Remarks : This is the second most important species of mullets in India.

332. ***Liza melinoptera*** (Valenciennes, 1836)

1836. *Mugil melinoptera* Valenciennes, *Hist. nat. Poiss.,* **11** : 146, pl. 313.

1991. *Liza melinoptera* Talwar and Jhingran, *Inland Fishes of India,* **2** : 892.

Description : Body robust, Head 26-29% of standard length. First dorsal origin nearer to caudal base than to snout tip. First dorsal with 4 spines; second with 1 spine and 8 rays; anal with 3 spines and 9 rays. Pectoral 73-77% of head length. Pectoral axillary scale absent; 2nd dorsal and anal densely scaled; scales in lateral series 26-31; 9-10 transverse scales from first dorsal origin to pelvic origin. Greenish-brown above, white to silvery below. Fins dusky.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery value.

333. ***Liza parsia*** (Hamilton, 1822)

1822. *Mugil parsia* Hamilton, *Fishes of Ganges* : 215, pl. 17, fig, 71.

1984. *Liza parsia,* Talwar & Kacker, *Comm. Sea Fish. India* : 721.

Description : Body slender. First dorsal origin nearer to snout tip than to caudal base. First dorsal with 4 spines; second with 1 spine and 8 rays; anal with 3 spines and 9 rays. Pectoral short. Scales on lateral series 31-36; 11 transverse scale rows of scales. Body greenish-brown above, flanks and belly white to silvery, a golden spot on upper portion of operculum; edge of dorsal dusky.

Distribution : Northern Indian Ocean.

Remarks : Common, but forms a minor fishery.

334. ***Liza tade*** (Forsskal, 1775)

1775. *Mugil crenilabrus tade* Forsskal, *Descript. Anim.*, 74.

1984. *Liza tade* Talwar & Kacker, *Comm. Sea Fish. India* : 723.

Description : Body slender, elongate; head 19-25% of standard length. First dorsal origin nearer to snout tip than to caudal base. First dorsal with 4 spines; second with 1 spine and 8 rays. Second dorsal inserted over posterior half of anal base. Pectoral very short 75-79% of head. Scales in lateral series 30-35. Often with 5-7 indistinct longitudinal lines on sides.

Distribution : Indian Ocean.

Remarks : If forms an important fishery.

335. ***Liza vaigiensis*** (Quoy & Gaimard, 1825)

1825. *Mugil vaigiensis* Quoy & Gaimard, *Voy. Uranie et Physic., Zool.* : 337.

1991. *Liza vaigiensis* Talwar & Jhingran, *Inland Fishes of India,* **2** : 895.

Description : Body robust; head 24-27% of standard length. First dorsal with 4 spines; second with 1 spine and 8 rays. First dorsal inserted nearer to caudal base than to snout tip; second dorsal origin over anterior half of anal base. Caudal slight emarginate. Scales in lateral series 24-27; 10-12 scales in transverse series. Light olive above, silvery on sides, dirty yellow below; dusky streaks along upper scale rows.

Distribution : Indo-West Pacific.

336. ***Mugil cephalus*** Linnaeus, 1758

1758. *Mugil cephalus* Linnaeus, *Systema Naturae* (ed. 10), **1** : 316.

Description : Body robust; adipose eyelids well developed, covering most of eye in adults. Two widely separated dorsal, first with 4 spines, second with 1 spine and 8 rays. Anal with 3 spines and 8 rays. Pectoral short, not reaching first dorsal origin, with long axillary

scale. Caudal forked. Scales in lateral series 38-42; 14-15 scales in transverse rows. Olive-green above, 6-7 indistinct longitudinal brown bars down flanks; a dark purple blotch at pectoral base.

Distribution : Worldwide in temperate and tropical waters.

Remarks : The most common and widely distributed species of the mullets in India.

337. ***Valamugil buchanani*** (Bleeker, 1853)

1853. *Mugil buchanani* Bleeker, *Verh. batav. Gen.*, **25** : 99.

1984. *Valamugil buchanani* Talwar & Kacker, *Comm. Sea Fish. India* : 729.

Description : Body robust; head wide, 25-26% of the standard length. Adipose eyelids feeble. First dorsal with 4 spines; second with 1 spine and 8 rays. Second dorsal inserted on vertical through anal origin and opposite to 21-23rd scale of lateral series. Anal with 3 spines and 9 rays. Pectoral equal to head or slightly shorter, with elongated axillary scale. Caudal forked. Scales with a membranous digitated hind margin; 32-35 scales in lateral series. Dark grey above, silvery below; a dark spot at pectoral base.

Distribution : Indo-West Pacific.

Remarks : A common species along east coast.

338. ***Valamugil cunnesius*** (Valenciennes, 1836)

1836. *Mugil cunnesius* Velenciennes, *Hist. nat. Poiss,* **11** : 114.

1984. *Valamugil cunnesius* Talwar & Kacker, *Comm. Sea Fish. India* : 730.

Description : Body robust; head 24-26% of standard length. Adipose eyelids well developed. First dorsal with 4 spines; second with 1 spine and 8 rays. Second dorsal origin on vertical through end of anterior third of anal base. Anal with 3 spines and 9 rays. Pectoral long, equal to or slightly shorter than head length, with a long axillary scale. Scales with digitated hind margin; 30-35 in lateral series. Caudal forked. Dark spot on pectoral base; dorsal and anal tip black.

Distribution : Indo-West Pacific.

Remarks : Of limited contribution to fisheries.

339. ***Valamugil speigleri*** (Bleeker, 1858)

1858. *Mugil speigleri* Bleeker, *Nat. Tijdschr. Ned-Indie*, **16** : 279.

1984. *Valamugil speigleri* Talwar & Kacker, *Comm. Sea Fish. India* : 733.

Description : Body robust; head 23-24% of standard length. Adipose eyelids well developed. First dorsal with 4 spines; second with 1 spine and 8 rays. Second dorsal origin vertical through end of anterior third of anal base. Anal with 3 spines and 9 rays. Pectorals slightly shorter than head length. Pectoral axillary scale long; scales with digitated hind margin; 37-40 scales in lateral series. Pectoral with black spot at axil, margin of first dorsal black.

Distribution : Indo-West Pacific.

Remarks : Of limited commercial fishery.

Family SPHYRAENIDAE

340. ***Sphyraena forsteri*** Cuvier, 1829

1829. *Sphyraena forsteri* Cuvier, *Hist. nat. Poiss.*, **3** : 261.

Description : Body elongate, sub-cylindrical; head large, with long pointed snout. No gill rakers, first arch with distinctive plate-lets, each bearing several small spines. First dorsal with 5 spines; second with 1 spine and 9 rays; anal with 2 spines and 8 rays. Lateral line with 105-115 pored scales. No cross-bars on body; black axillary blotch at pectoral base.

Distribution : Indo-Pacific.

Remarks : Of minor fishery importance.

341. ***Sphyraena jello*** Cuvier, 1829

1829. *Sphyraena jello* Cuvier, *Hist. nat. Poiss.*, **3** : 258.

Description : Body elongate and cylindrical; head large with long pointed snout; edge of pre-opercle smoothly rounded. No gill rakers on first arch. First dorsal with 5 spines; second with 1 spine and 9 rays; anal with 2 spines and 8 rays. Lateral line with 130-140 pored scales. Body with 10-20 vertical dusky serpentine cross-bands on back.

Distribution : Indo-West Pacific.

Remarks : Taken commercially in small quantities.

342. ***Sphyraena obtusata*** Cuvier, 1829

1829. *Sphyraena obtusata* Cuvier, *Hist. nat. Poiss.*, **3** : 350, pl. 10, fig. 2.

Description : Body elongate, sub-cylindrical; head large, with long pointed snout. First dorsal with 5 spines, second with 1 spines and 9 rays; anal with 2 spines and 9 rays. Pectoral reaches past origin of 1st dorsal; height of 1st dorsal equal to or greater than post-orbital length of head. Two gill rakers on first arch, one at the angle and 2nd on lower arm. Lateral line with 85-96 pored scales First dorsal dusky second dorsal and caudal with dark margin.

Distribution : Indo-Pacific.

Remarks : Frequently occur in the commercial catches and forms a good fishery.

Family POLYNEMIDAE

343. ***Eleutheronema teradactylum*** (Shaw, 1804)

1804. *Polynemus tetradactylus* Shaw, *General Zoology*, **5** : 155.

1984. *Eleutheronema tetradactylum* Talwar & Kacker, *Comm. Sea Fish. India* : 745.

Description : Body elongate and compressed; snout prominent and projecting. Mouth large; lower lip absent except towards rictus; teeth extending on exterior part of jaws. First

dorsal with 8 spines; the second with 1 spine and 13-15 rays; anal with 2 spines and 13-15 rays; pectoral with upper 17 simple rays and 4 filamentous, free lower rays. Airbladder absent. Silvery-green above, yellowish-white below; dorsal and caudal with dusky edges.

Distribution : Indo-Pacific.

Remarks : An excellent food fish and contribute a good fishery.

344. ***Polydactylus heptadactylus*** (Cuvier, 1829)

1829. *Polynemus heptadactylus* Cuvier, *Hist. nat. Poiss.*, **3** : 390.

1984. *Polydactylus heptadactylus* Talwar & Kacker, *Comm. Sea Fishes of India*, 747.

Description : Body oblong and somewhat compressed. Eyes large, about 3.5 in head length. First dorsal with 8 spines; second with 1 spine and 11-13 rays; anal with 3 spines and 11-12 rays. Pectoral with upper 12-14 simple rays and 7 free, filamentous lower rays of which 3rd to 5th are longest and extend usually to anal. Airbladder present. Scales large, lateral series scales 48-50. Body golden with a distinct shoulder blotch. Pectorals black, others distally black.

Distribution : Indo-West Pacific.

Remarks : An important component of the inshore fishery. There exists confusion over identification and nomenclature. Earlier reported as *P. mutiradiatus* (Gunther, 1860)

345. ***Polydactylus indicus*** (Shaw, 1804)

1804. *Polydactylus indicus* Shaw, *General Zoology*, **5** : 155.

1984. *Polydactylus indicus* Talwar & Kacker, *Comm. Sea Fish. India* : 749.

Description : Body oblong and slightly compressed. Eyes small, about 7 in head. First dorsal with 8 spines; second with 1 spine and 13-14 rays; anal with 3 spines and 11-12 rays. Pectoral with 15 branched upper rays and 5 free, filamentous lower rays of which the upper one is longest and extends nearly to anal. Caudal deeply lunate, with pointed lobes ending in filaments. Scales small, ctenoid; lateral series with 70-75 scales. Airbladder large. Golden-olive, with faint dusky stripes along sides of body. Fins yellowish.

Distribution : Indo-West Pacific.

Remarks : Forms one of the major thread-fin fishery of the country.

346. ***Polydactylus plebeius*** (Broussonet, 1782)

1782. *Polynemus plebeius* Broussonet, *Ichthyol.* : 23, pl. 8.

1984. *Polydactylus plebeius* Talwar & Kacker, *Comm. Sea Fish. India* : 751.

Description : Body oblong and slightly compressed, snout projecting; mouth large; eye 3.8-4.0 in head. First dorsal with 8 spines; second with 1 spine and 13 rays; anal with 3 spines and 11 rays. Pectoral with 17 simple upper rays and with 5 free, filamentous lower rays of which upper 2 are longest and reaching to or near tip of pelvic. Caudal forked. Lateral series with 60-65 scales. Airbladder elongated, narrow and single. Body golden-olive to silvery with few narrow dusky stripes along scale rows. Pectorals black.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery value.

347. ***Polydactylus sexfilis*** (Valenciennes, 1831)

1831. *Polynemus sexifilis* Valenciennes, *Hist. nat. Poiss.*, **7** : 515.

1982. *Polydactylus sexifilis* Munro, *The marine and freshwater fishes of Ceylon* : 97.

Description : Body oblong and somewhat compressed; mouth large; eye about 4.5 in head. First dorsal with 8 spines; second with 1 spine and 12-13 rays; anal with 3 spines and 11-12 rays. Pectoral with upper 15 simple rays and lower 6 free, filamentous rays, of which upper 2 reaching pelvic tip or beyond. Scales on lateral series 46-50. Airbladder present. Golden; pectoral deep black; anal with black margin and pelvic dark in the middle.

Distribution : Indian Ocean.

Remarks : Some authors confuse it with *P. kuru* (Bleeker)

348. ***Polydactylus sextarius*** (Schneider, 1801)

1801. *Polynemus sextarius* Bloch. *Syst. Ichth.* : 18, pl. 4.

1984. *Polydactylus sextarius* Talwar & Kacker, *Comm. Sea Fish. India* : 752.

Description : Body oblong, slightly compressed; snout projecting; mouth large. Eyes large, 3.0- 3.8 in head. First dorsal with 8 spines; second with 1 spine and 12-13 rays; anal with 3 spines and 12-13 rays. Pectoral with 13-15 mostly branched upper rays and with 6 free, filamentous lower rays of which the upper 2 longest and extending to pelvic tip. Caudal forked, lobes equal. Scales small, ctenoid; 44-50 scales on lateral series. Airbladder simple and small. Body golden, a large black blotch at beginning of lateral line; inner side of operculum dusky; fins yellowish with black spots.

Distribution : Indo-West Pacific.

Remarks : Fairly common and a major species supporting the polynemid fishery at Chennai.

Family LABRIDAE

349. ***Cheilinus bimaculatus*** Valenciennes, 1840

1840. *Cheilinus biamculatus* Valenciennes, *Hist. nat. Poiss.*, **14** : 96.

Description : Head scaled dorsally to above middle of eye; depth 2.7-3.2 in standard length; dorsal profile of head convex; mouth terminal or with lower jaw slightly projecting; a single canine teeth anteriorly on each side of jaws and with a row of conical teeth on sides. Dorsal with 9 spines and 9-11 rays; anal with 3 spines and 8 rays. Lateral line interrupted, with (14-16) + (5-7) scales. Yellowish brown to greenish, the young with a broad dark, lateral stripe which breaks into blotches in adults; irregular orange-red spots and short lines on head, many radiating from eye.

Distribution : Indo-Pacific.

350. *Xyrichthys pavo* Valenciennes, 1840

1840. *Xyrichthys pavo* Valenciennes, *Hist. nat. Poiss.*, **14** : 61, pl. 394.

Description : Body depth of adults 2.4-2.7 (of juveniles, 2.8-3.3) in standard length. Head compressed into a knife-like edge dorsally. Dorsal with 9 spines and 12 rays, inserted above eye; first 2 spines markedly longer and more flexible than other, connected by membrane, but separated by a gap from rest of fin. Anal with 3 spines and 12 rays; pectoral rays ii,10; caudal rounded. Lateral line interrupted, with (20-22) + (4-5) scales. 1 or 2 scales dorsally on opercle. A prominent blue-edged black spot immediately above lateral line below 6th dorsal spine; 3 or 4 ill-defined broad, green vertical bars on sides.

Distribution : Indo-Pacific.

351. *Xyrichthys pentadactylus* (Linnaeus, 1758)

1758. *Coryphaena pentadactyla* Linnaeus, *Systema Nature*, (ed. 10) **1** : 261.

1986. *Xyrichthys pentadactylus* Smith & Heemstra, *Smith's Sea Fishes* : 706.

Description : Body depth of adults 2.8-3.0 in standard length. Head compressed into a knife-like edge dorsally; snout steep. Dorsal continuous, with 9 spines and 12 rays; inserted above eye; first 2 spines longer and more flexible; a deep notch in membrane between 2nd and 3rd spine. Anal with 3 spines and 12 rays; pectoral rays ii,10; caudal rounded. Lateral line interrupted, with 20 + (4-5) scales; about 8 vertical rows of small scales on cheek; a few scales dorsally on opercle. Several prominent bright red spots outlined in pink on and below lateral line, and above pectoral base. Several reddish stripes on median fins.

Distribution : Indo-West Pacific.

Family SCARIDAE

352. *Scarus blochii* Valenciennes, 1839

1839. *Scarus blochii* Valenciennes, *Hist. nat. Poiss.*, **14** : 219.

Description : Depth 3.25 in standard length. Dorsal with 9 spines and 10-11 rays; anal with 3 spines and 9 rays; gill rakers 14 + 27; lateral line scales 23-24; three rows of scales on cheek; inferior pre-opercular limb with 1 or 2 scales. Green, scales with a reddish margin; upper lip with one, lower lip with two cross bands of yellow passing into a triangular spot between eye and angle of mouth; three short lines radiate from eye. Dorsal and anal rosy, a narrow band along their bases, and green margins.

Distribution : Indo-West Pacific.

Remarks : Earlier reported as *Scarus quoyi* by Cuvier and Valenciennes, 1839.

353. *Scarus dubius* Bennett, 1828

1828. *Scarus dubius* Bennett, *Zool. Journ.*, **4** : 37.

Description : Depth 2.7-3.0 in standard length. Dorsal with 9 spines and 10 rays; anal with 3 spines and 9 rays; lateral line with 24 scales; 2 rows of scales on cheek; inferior pre-opercular

limb with 2 scales. Caudal rounded, upper and lower lobes produced. Brownish, with 2 or 3 silvery longitudinal bands on belly. Median fins red; paired fins yellowish.

Distribution : Indo-West Pacific.

Remarks : It is at present equally identified as *S. globiogs*

354. ***Scarus sordidus*** Forsskal, 1775

1775. *Scarus sordidus* Forsskal, *Descript Animal.* : 30.

Description : Depth 2.3-3.0 in standard length. Median pre-dorsal scales 4, progressively larger anteriorly; cheek scale rows 2; pectoral with 14-16 rays; gill rakers 42-51; dental plates broadly exposed. Caudal truncate to slightly rounded. Initial phase dark brown, becoming red around mouth; often with 2 longitudinal rows of 5 or 6 whitish spots on sides; a broad whitish bar having a large round blackish spot, sometimes present on caudal peduncle. Terminal phase green, scales edged salmon pink, except caudal peduncle which is solid light green; green bands radiating from eye; upper and lower edges of caudal blue with a sub-marginal band of salmon pink.

Distribution : Indo-Pacific.

Remarks : This is the most common species of parrot fish. No fishery value in our region.

Family OPISTOGNATHIDAE

355. ***Opistognathus rosenbergii*** Bleeker, 1856

1856. *Opisthognathus rosenbergii* Bleeker, *Nat. Tijdschr. Ned.-Indie,* **12** : 220.

Description : Body small, elongate, narrowly tapering. Maxilla truncated, reaching to just behind posterior edge of eye. Eyes large, high on head. Cleft of mouth opposite middle of eye. Dorsal with 10 spines and 14 rays; anal with 2 spines and 13 rays; pectoral rays 21; lateral series of scales 76; gill rakers 11 + 23. Marbled; dorsal and anal edged with black; 4 or 5 large black blotches along base of dorsal; ventrals black.

Distribution : Indian Ocean.

Remarks : Of no interest to fisheries.

Family URANOSCOPIDAE

356. ***Uranoscopus cognatus*** Cantor, 1850

1850. *Uranoscopus cognatus.* Cantor, *J. Asiatic Soc. Bengal,* **18** (2) : 1003.

Description : Body thick, compressed posteriorly; head massive, flattened dorsally. Depth 4.0-5.1, head 2.3-3.1 in total length. Humeral spine obliquely directed upwards and backwards; 4 spines along lower edge of pre-opercle; 3 pairs of short, forwardly directed spines under head. Lower lip with a row of fleshy tentacles, upper lip with short tentacles. Dorsal with 3 weak spines and 14 rays; anal with 13 rays; pectoral rays 17; lateral line scales 60-67. Brown above, light below; anterior part of dorsal black.

Distribution : India, eastward to Indonesia.

357. ***Uranoscopus guttatus*** Cuvier, 1829

1829. *Uranoscopus guttatus* Cuvier, *Hist. nat. Poiss.*, **3** : 305.

Description : Body thick, head massive, flattened dorsally. Depth 4.0-4.3, head 3.3-3.5 in total length. Mouth vertical; 4-7 spines along lower edge of pre-opercle. Two large humeral spines directed upwards and backwards. Chestnut or slaty-brown, with 2-3 rows of bluish-white spots along the back and halfway down the sides. First dorsal pure white, upper 2/3 black, 2nd dorsal black along upper 2/3; caudal black.

Distribution : Seas of India.

Family TRICHONOTIDAE

358. ***Trichonotus setiger*** Bloch & Schneider, 1801

1801. *Trichonotus setiger* Bloch & Schneider, *Syst. Ichth.* : 179.

Description : Body very elongate; depth 16.5-17.3 in standard length. Teeth pointed, those of lower jaw hooked. Dorsal with 46-47 rays, begins over pectoral base; anterior rays in males prolonged and filamentous. Anal with 36 rays, ventral rays elongated. Lateral line with 60 scales. Brown with a black spot at hind border of each lateral line scale; dorsal, posterior part of caudal with many black-edged ocelli in rows.

Distribution : Indo-West Pacific

Family MUGILOIDIDAE

359. ***Parapercis pulchella*** (Temminck & Schlegel, 1843)

1843. *Percis pulchella* Temminck & Schlegel, *Fauna Japonica Pisces* : 24, pl. 10, fig. 2.

1986. *Parapercis pulchella* Heemstra, *in* Smith & Heemstra, *Smith's Sea Fishes* : 740.

Description : Body elongate. Lower law with 8 canines in outer row at front. Dorsal with 5 spines and 21 rays; anal with 1 spine and 17 rays; pectoral rays 16-17; lateral line with 58-64 scales; 4-6 scales above lateral line to 1st dorsal ray and 17-18 scale below it; 30-34 scales around caudal peduncle. Reddish with 6 or more cross-bars extending on to belly; 3 vertical blue bands across cheek. Dorsal yellow, black basally. Anal with 5 rows of canary yellow spots and red margin. Caudal yellow in middle, red below and fine vertical bars above.

Distribution : Indo-West Pacific.

Remarks : Commonly found in our area.

360. ***Parapercis punctulata*** (Cuvier, 1829)

1829. *Percis punctulata* Cuvier, *Hist. nat. Poiss.*, **3** : 266.

1986. *Parapercis punctulata* Smith & Heemstra, *Smith's Sea Fishes* : 40.

Description : Body elongate. Lower law with 6 canines in outer row at front. Dorsal with 5 spines and 21 rays; anal with 1 spine and 17 rays; pectoral rays 17-18; lateral line with

55-60 scales; 5 scales above lateral line to 1st dorsal ray and 14-16 scale below it; 26 scales around caudal peduncle; gill rakers (5-6) + (8-10). A cluster of serrae at near end of sub-opercle. Upper half of body with reddish cross-bars, brown blotches and black spots. A golden line from below eye to dorsal base and another from center of eye to snout. Female with 3 distinct black spots on each side of belly; male with 2 blackish brown lines across belly; caudal with 2 grey bands.

Distribution : Indo-West Pacific.

Remarks : Fairly common along the coast.

Family BLENNIIDAE

361. ***Omobranchus zebra*** (Bleeker, 1868)

1868. *Petroscirtes zebra* Bleeker, *Versl. Med. Kon. Akad. Wet. Letterkunde Sch. Kun. Amsterdam,* (2) **2** : 279.

1991. *Omobranchus zebra* Talwar & Jhingran, *Inland Fishes of India,* **2** : 914.

Description : Body elongate. Gill opening restricted to upper part of pectoral. Dorsal with 12 spines and 18-20 rays; anal with 2 spines and 20-22 rays; pectoral rays 14; bi-pored lateral line tubes 1-4, extend posteriorly to below 2-5th dorsal spine. Circum-orbital bones 4. Four broad dark bands on head; about 8 dark band on body in males, which are either faint or absent in female.

Distribution : East coast of India to Singapore.

Remarks : Reported from Chennai coast as *Petroscirtes bhattacharyae* Choudhary, 1916.

362. ***Xiphasia setifer*** Swainson, 1839

1839. *Xiphasia setifer* Swainson, *Nat. Hist. Fishes,* **11** : 259.

Description : Body eel-like. Mouth terminal, almost horizontal. A posterior small canine in the upper jaw and a very long one in the lower jaw. Gill opening small. Dorsal tapering in height posteriorly. Anal beginning far forward. Both fins broadly united to the rounded caudal. Pectoral rays 24-28; central caudal ray elongated. A small black, white edged ocellus between the 5th-6th dorsal rays and another elongate one, more or less diffuse posteriorly, between the 10th-14th rays. Alternate dark and pale bands along the length of body.

Distribution : Red Sea and Indo-Pacific.

Family AMMODYTIDAE

363. ***Bleekeria kallolepis*** (Gunther, 1863)

1863. *Bleekeria kallolepis* Gunther, *Cat. Br. Mus.,* **4** : 387.

Description : Body elongate, cylindrical. Depth 10.25, head 5.0 in standard length. Lower jaw slightly longer, the upper very protractile. Dorsal with 37-40 rays, does not extended to base of caudal. Anal with 14 -15 rays, commences below last 2 spines of dorsal, its rays rather higher. Caudal deeply forked. Bluish, with about 5 horizontal bands. Dorsal with bluish base; anal with a bluish band along center.

Distribution : Indian Ocean.

Family CALLIONYMIDAE

364. *Callionymus japonicus* Houttuyn, 1782

1782. *Callionymus japonicus* Houttuyn, *Verh. Holl. Maatsch. Wet. Harlem,* **20** : 311.

Description : Body elongate. Depth 13.5-16.0. Pre-opercular process with 7-8 barbs. Dorsal with 4 spines and 9-10 rays, 1st and 2nd dorsal spines produced into filaments in males. Anal with 8 simple rays; pectoral rays 20; caudal very long and pointed. Pink above with brown and white spots and stripes. Small purple dots on opercle arranged in an oblique band. Dorsal whitish, freckled with darker colour and with a large black spot between 1st and 3rd spine. Anal white basally and brown distally.

Distribution : Indian Ocean.

Remarks : Of no fishery value.

365. *Callionymus sagitta* Pallas, 1770

1770. *Callionymus sagitta* Pallas, *Specil. Zool. Fasc.,* **8** : 27.

Description : Body elongate; head depressed. Depth 10.0-11.8. Snout pointed when seen from above. Pre-opercular process with feeble spine directed forwards and a posterior spine curved inwards and 4-5 thorn-like lateral processes. No dorsal spine produced. Dorsal with 4 spines and 9 rays; anal with 9-10 rays; pectoral rays 17-19. A row of dark brown blotches along sides. Spinous dorsal black in females; white basally in males. Soft dorsal and caudal spotted.

Distribution : Indian Ocean.

Remarks : Of no fishery value.

366. *Eleutherochir opercularis* (Valenciennes, 1837)

1837. *Callionymus opercularis* Valenciennes, *Hist. nat. Poiss.,* **12** : 305.

1991. *Eleutherochir opercularis* Talwar & Jhingran, *Inland Fishes of India,* **2** : 917.

Description : Body elongate and compressed. Head depressed, about 3.0 in standard length. Occipital region with a smooth bony plate. Operculum with a free flap of skin. Branchial opening sub-lateral in position. Lower lip with 7-9 very small papillae. First dorsal low, with 4 spines; second distally convex, with 9 rays. Anal with 9 rays, inserted below second ray of second dorsal. Pectoral rays 20-24. Caudal distally truncate or slightly convex. Brownish, with small light blotches and dark spots on back. First dorsal and pelvic blackish; rays of second dorsal, caudal, pectoral and often anal spotted dark brown.

Distribution : Indo-West Pacific.

Remarks : Of no interest to fishery.

367. *Synchiropus lineolatus* (Valenciennes, 1837)

1837. *Callionymus lineolatus* Valenciennes, *Hist. nat. Poiss.,* **12** : 307.

1984. *Synchiropus lineolatus* Fricke, *in* Fischer & Bianchi, *FAO Species Ident. Sheets, W. Indian Ocean,* **3** : CALLIONYMIDAE 4. (Name only).

Description : Depth 6.0, head 4.5-5.0 in total length; eye 4.0 in head. Pre-opercular spine with 2 accessory spines, no antrorse spine at its base. Dorsal with 4 spines and 8 rays; anal with 7-8 rays; pectoral rays 15. Five or six grayish bands across the back, continued down the sides, one more crosses the head. Upper dorsal with irregular and round spots in males; only round spots in female; 3 oblique bands on ventral and caudal; anal red with dark edge, rays spotted.

Distribution : Indian Ocean.

Family ELEOTRIDAE

368. ***Eleotris fusca*** (Schneider, 1801)

1801. *Pocilia fusca* Schneider, *Syst. Ichth.* : 453.

1991. *Eleotris fusca* Talwar & Jhingran *Inland Fishes of India,* **2** : 975.

Description : Body elongate and somewhat compressed. Mouth oblique, maxilla extends to below middle of eye; pre-opercle with a single ventrally directed spine. First dorsal with 6 spines; second with 1 spine and 8-9 rays; anal with 1 spine and 8 rays. Numerous short papilla rows on cheek, rows developing with increase in size; anterior most and third papillae rows under eye extend below longitudinal row. Scales ctenoid posteriorly, cycloid anteriorly; head scaled above, behind eyes, on cheeks and opercle; pre-dorsal scales about 50; scale in longitudinal series 60-68. Body and fins dark brown to black; numerous horizontal dark lines on body; fins spotted in young.

Distribution : Indo-West Pacific.

Remarks : Of no interest to fishery.

369. ***Prionobutis koilomatodon*** (Bleeker, 1849)

1849. *Eleotris koilomatodon* Bleeker, *Verh. batav. Genoot. Kunst. Wet.,* **22** : 21.

1953. *Prionobutis koilomatodon* Koumans, *Fish. Indo-Aust. Archip.,* **10** : 313.

Description : Body cylindrical, compressed posteriorly. Depth 3.7-4.0, head 3.0-3.2 in standard length. Head convex, scaled behind eye, upper part of cheek and opercle. Orbital crest denticulate, 2 crests on each side of snout. Jaws sub-equal; snout rounded, sub-equal to eye. Dorsal with 6 spines; second dorsal and anal with 1 spine and 8 rays; pectoral rays 19-21; 30 scales on lateral series; 7-10 scales on transverse series; pre-dorsal scales 12-14. Olivaceous, lighter below; pectoral base with a black spot bordered with red; 2nd dorsal and anal spotted.

Distribution : Indian Ocean.

Family GOBIIDAE

370. ***Acentrogobius cyanomos*** (Bleeker, 1849)

1849. *Gobius cyanomos* Bleeker, *Verh. batav. Genoot. Kunst. Wet.,* **22** : 25.

1991. *Acentrogobius cyanomos* Talwar & Jhingran, *Inland Fishes of India* **2** : 924.

Description : Body elongate, cylindrical, compressed posteriorly. Eyes 4-6 in head. First dorsal with 6 spines; second with 1 spine and 10 rays; anal with 1 spine and 8-10 rays; pectoral rays 18-19. Scales large, about 30 in longitudinal series; Pre-dorsal scales 14. A blue blotch on shoulder; membrane of second dorsal and caudal with 3-5 rows of spots between rays, base of caudal with a dark blotch. Scales with shiny greenish spots.

Distribution : Indo-West Pacific.

371. *Acentrogobius ennorensis* Menon & Remadevi, 1980

1980. *Acentrogobius ennorensis* Menon & Remadevi, *Matsya*, **6** : 57.

Description : Head and body compressed; a row of papillae below eye and 2 rows across middle of cheek. Mouth moderate, teeth in several rows; tongue rounded. First dorsal with 6 spines, 2nd to 5th elongate; second dorsal and anal with 1 spine and 9 rays. Scales in longitudinal series 28; 10-11 scales in transverse series; pre-dorsal scales 8-11; cheek and opercle naked; head scaled above behind eye. Five large blackish spots on the sides and irregular, ill-defined dots on upper part of body. First dorsal with a dark band towards the base; second dorsal with 2 or 3 rows of dots; oblique bar on opercle, cheek and below eye.

Distribution : Chennai (Madras) coast.

372. *Acentrogobius globiceps* (Hora, 1923)

1923. *Ctenogobius globiceps* Hora, *Mem. Indian Mus.*, **5** : 74, fig. 24 & 25.

1991. *Acentrogobius globiceps* Talwar & Jhingran, *Inland Fishes of India*, **2** : 924.

Description : Body elongate and slightly compressed. Eyes large, about 3.3 in head. First dorsal with 6 spines; second with 1 spine and 10 rays; anal with 1 spine and 9 rays; pectoral rays 17. Scales large, 26-27 in longitudinal series; pre-dorsal scales 7-8. Back and flanks yellowish-green, belly reddish-yellow; on head and body blackish-brown spots. First dorsal with a blackish spot behind the 5th ray; second dorsal and caudal with a white stripe.

Distribution : East coast of India, to Indonesia.

Remarks : Of no interest to fisheries.

373. *Acentrogobius griseus* (Day, 1876)

1876. *Gobius griseus* Day, *Fishes of India* : 285, pl. 63, fig. 3.

1991. *Acentrogobius griseus* Talwar & Jhingran, *Inland Fishes of India*, **2** : 925.

Description : Body elongate and compressed. Eyes moderate, 4.5 in head. First dorsal with 6 spines; second with 1 spine and 10 rays; anal with 1 spine and 9 rays; pectoral rays 17. Cheeks and opercle with some very thin scales along the upper margins. Scales small, 40-50 in longitudinal series; pre-dorsal scales over 20. Olivaceous, with bands and many well-marked deep brown or black spots. Base of first dorsal yellowish with 3-4 horizontal brown band.

Distribution : East coast of India.

Remarks : Of no interest to fisheries.

374. *Acentrogobius madraspatensis* (Day, 1868)

1868. *Gobius madraspatensis* Day, *Proc. zool. Soc. Lond.* : 152.

1991. *Acentrogobius madraspatensis* Talwar & Jhingran, *Inland Fishes of India,* **2** : 925.

Description : Body elongate and compressed. First dorsal with 6 spines; second dorsal and anal with 1 spine and 9 rays. Scales in longitudinal series 28-29; pre-dorsal scales about 18. Cheeks and operculum naked. Body with ill-defined brownish blotches and dots; 5-8 very narrow vertical black lines from back to belly. First dorsal with a dark broad band in middle. Caudal minutely doted in rows.

Distribution : East coast of India.

375. *Acentrogobius ornatus* (Ruppell, 1830)

1830. *Gobius ornatus* Ruppell, *Atl. Reise. N. Afr. Fische* : 135.

1953. *Acentrogobius ornatus* Koumans, *Fish. Indo-Aust. Archip.*, **10** : 71.

Description : Body elongate. Eye 3-4 in head; 2-3 longitudinal mucous canals over cheek. First dorsal with 6 spines; second with 1 spine and 10-11 rays; anal with 1 spine and 8-9 rays; pectoral rays 19-20. Head scaled above behind eyes; pre-dorsal scales 10-12; scales on lateral series 28 and on transverse series 8-9. Olivaceous or green; lateral body scales with a shiny spot. Head with small yellowish spots and 3 purple transverse streaks on sides. Scattered violet spots on upper half of body; 2 longitudinal rows of violet spots on lower half. Pectoral base with 2-3 dark spots.

Distribution : Indo-West Pacific.

376. *Acentrogobius viridipunctatus* (Valenciennes, 1837)

1837. *Gobius viridipunctatus* Valenciennes, *Hist. nat. Poiss.*, **12** : 62.

1991. *Acentrogobius viridipunctatus* Talwar & Jhingran, *Inland fishes of India,* **2** : 926.

Description : Body elongate; eye moderate; head scaled above and behind eye. First dorsal with 6 spines; second with 1 spine and 10 rays; anal with 1 spine and 9 rays; pectoral rays 18-20; 35-36 scales in longitudinal series; pre-dorsal scales about 30. Body with dark spots, half way the flank a longitudinal row of larger dark spots; scales with small shiny spots, a blackish longitudinal band on first dorsal and 2 on second dorsal. Caudal membrane with blackish spots.

Distribution : Indo-West Pacific.

377. *Apocryptes bato* (Hamilton, 1822)

1822. *Gobius bato* Hamilton, *Fish. Ganges* : 40, 365, pl. 37, fig. 10.

1991. *Apocryptes bato* Talwar & Jhingran, *Inland Fishes of India,* **2** : 951.

Description : Body very elongate. Head sub-cylindrical, about 4.5 in standard length. Mouth sub-horizontal; teeth uniserial, bilobed. First dorsal with 5 spines; second with 1 spine and 20-21 rays; anal with 1 spine and 21-22 rays; 23-25 pectoral rays. About 100 scales in

longitudinal series. Greenish white, with about 12 ill-defined narrow bands, descending from back, scales with brown points; fins white, but also with minute dots; a dark band at pectoral base.

Distribution : India, Bangladesh and Myanmar.

378. *Apocryptichthys cantoris* (Day, 1870)

1870. *Apocryptes cantoris* Day, *Proc. zool. Soc. Lond.*, **3** : 693.

1953. *Apocryptichthys cantoris* Koumans, *Fish. Indo-Aust. Archip.*, **10** : 252.

Description : Body very elongate, depth 5-6 in standard length. Eye not prominent, 6 in head. A pair of canines behind symphysis. First dorsal with 6 spines; second with 1 spine and 26 rays; anal with 1 spine and 25 rays; pectoral rays 19. Scales in longitudinal series about 90 and on transverse series 17. Gill opening narrow. Olive; first dorsal dark, with 3 black longitudinal bands. Upper part of caudal spotted. Cheek and lower side of head with black spots.

Distribution : East coast of India to Indonesia.

379. *Apocryptodon madurensis* (Bleeker, 1849)

1849. *Apocryptes madurensis* Bleeker, *Verh. batav. Genoot. Kunst. Wet.*, **22** : 35.

1991. *Apocryptodon madurensis* Talwar & Jhingran, *Inland Fishes of India*, **2** : 952.

Description : Body very elongate. Head 4.0 in standard length. Eyes small. Mouth oblique; teeth on both jaw uniserial, in upper jaw caninoid, in lower jaw horizontal, biolobate with symphysial canines. First dorsal with 6 spines; second with 1 spine and 22 rays; anal with 1 spine and 19-20 rays; pectoral rays 21-22. Scales small, deciduous, 50-55 in longitudinal series. Grayish, laterally with 5 indistinct red blotches, lower part of head with numerous black spots. Fins yellowish, anal black.

Distribution : Indo-West Pacific.

Remarks : Earlier reports were as *Apocryptodon glyphisodon* (Bleeker).

380. *Awaous gutum* (Hamilton, 1822)

1823. *Gobius gutum* Hamilton, *Fishes of Ganges* : 50, 366.

1991. *Awaous gutum* Talwar & Jhingran, *Inland Fishes of India*, **2** : 928.

Description : Body elongate. Eyes small, 4.5-5.0 in head. Head broader than deep; small finger-like flaps on shoulder girdle. Mouth oblique; lips thick; tongue bilobate. First dorsal with 6 spines; second dorsal and anal with 1 spine and 10 rays; pectoral rays 17-24; 51-58 scales in longitudinal series; pre-dorsal scales 17-24. Olive-green; head with irregular blackish spots and 2 longitudinal streaks from eye to maxilla; body with blackish spots. First dorsal with 3–4, and second with 5-6 longitudinal dark streaks.

Distribution : India and Bangladesh.

Remarks : Earlier reported as *Gobius striatus* (Day) and *Awaous stamineus* (Valenciennes). Tropical species primarily found in fresh water and upper parts of estuaries.

381. ***Bathygobius ostreicola*** (Chaudhuri, 1916)

1916. *Gobius ostreicola* Chaudhari, *Rec. Indian Mus.*, **12** : 105.

1991. *Bathygibius ostreicola* Talwar & Jhingran, *Inland Fishes of India*, **2** : 929.

Description : Body elongate; head depressed. Mouth oblique; tongue rounded. First dorsal with 6 spines; second with 1 spine and 9-10 rays; anal with 1 spine and 8-9 rays; pectoral rays 18, upper 3-4 rays free and silk-like. Scales in longitudinal series 38-40; pre-dorsal scales rudimentary. Grayish with dark spots; 2-3 faint irregular blotches below dorsals. Dorsal and caudal spotted; anal dusky.

Distribution : East coast of India.

382. ***Boleophthalmus boddarti*** (Pallas, 1770)

1770. *Gobius boddarti* Pallas, *Spicilegia*, **8** : 11, pl. 1, fig. 4, 5.

1991. *Boleophthalmus boddarti* Talwar & Jhingran, *Inland Fishes of India*, **2** : 954.

Description : Body very elongate; depth 4.7-5.8 in standard length. Head sub-cylindrical, 3.3-4.0 in standard length. Eye 4.8-6.2 in head, erectile above dorsal profile; lower eyelid present. Scales 75-100 in longitudinal series. Greenish-blue with 6-8 dark vertical bands; head with brownish spots. First dorsal with bluish-white spots; pelvic purplish; caudal blackish.

Distribution : India, eastward to the East Indies.

383. ***Boleophthalmus sculptus*** Gunther, 1861

1861. *Boleophthalmus sculptus* Gunther, *Cat. Fish. Brit. Mus.*, **3** : 104.

Description : Body very elongate, six canines in front of upper jaw. Scales cycloid, rudimentary on head and anterior part of body. First dorsal with 6 spines, 3rd ray filiform; second dorsal with 1 spine and 24 rays; anal with 1 spine and 23 rays. Scales on longitudinal series about 73. Six rather indistinct darker bands descend obliquely from back towards belly. Dorsals without blue spots; second dorsal with 5 white blotches at the base. Caudal with 3 horizontal streaks.

Distribution : India.

Remarks : No fishery value.

384. ***Brachygobius nunus*** (Hamilton, 1822)

1822. *Gobius nunus* Hamilton, *Fishes of Ganges* : 54, 366.

1991. *Brachygobius nunus* Talwar & Jhingran, *Inland Fishes of India*, **2** : 930.

Description : Body elongate and compressed. Eyes large, equal to inter-orbital width. Mouth very oblique; tongue rounded; lower jaw prominent. First dorsal with 6 spines; second dorsal and anal with 1 spine and 7-8 rays. Body reddish brown with 6 conspicuous vertical yellow and blackish bands.

Distribution : India, eastward to Borneo.

Remarks : Of no interest to fisheries.

385. *Cryptocentrus gymnocephalus* (Bleeker, 1853)

1853. *Gobius gymnocephalus* Bleeker, *Nat. Tijdschr. Ned.- Indie*, **4** : 473.

1991. *Cryptocentrus gymnocephalus* Talwar & Jhingran, *Inland Fishes of India*, **2** : 933.

Description : Body elongate, compressed. Head obtuse, compressed, 4.2-5.0 in standard length. Eye 4.0-4.4 in head; inter-orbital less than 1/3 eye diameter. Mouth oblique; teeth in many rows. First dorsal with 6 spines; second with 1 spine and 18-19 rays; anal with 1 spine and 19-20 rays; pectoral rays 17-19; 117-124 scales in longitudinal series. Greenish; lighter below; 4 faint transverse wide bands on flanks; fins yellowish-brown.

Distribution : Indian Ocean.

Remarks : No fishery value.

386. *Favonigobius reichei* (Bleeker, 1853)

1853. *Gobius reichei* Bleeker, *Nat. Tijdschr. Ned.-Indie*, **5** : 509.

1991. *Favonigobius reichei* Talwar & Jhingran, *Inland Fishes of India*, **2** : 934.

Description : Body elongate; eye 3-4 in head. Mouth oblique; teeth in several rows; tongue truncate. An oblique narrow band of mucous canals running to maxillary below eye. First dorsal with 6 spines; second dorsal and anal with 1 spine and 8 rays; pectoral rays 16; caudal obtusely rounded, shorter than head. Head scaled above behind eyes; cheek and opercle naked; scales in longitudinal series 27-29 and on transverse series 7-8; pre-dorsal scales 12. Green; cheek and opercle with violet streaks; numerous small spots on body, mid-side with 4-5 elongated groups of black spots; a bar from eye to upper jaw; median fins spotted.

Distribution : Indo-West Pacific.

387. *Glossogobius biocellatus* (Valenciennes, 1837)

1837. *Gobius biocellatus* Valenciennes, *Hist. nat. Poiss*, **12** : 73.

1991. *Glossogobius biocellatus* Talwar & Jhingran, *Inland Fishes of India*, **2** : 935.

Description : Body elongate, compressed posteriorly; snout pointed, maxilla extends to below posterior margin of eye; teeth in many rows. Three longitudinal canals on cheek. Branchiostegal membrane form a free fold across isthmus. First dorsal with 6 spines; second dorsal with 1 spine and 8 rays; pectoral rays 17-19; scales on lateral series 27-30; pre-dorsal scales 14-17. Caudal rounded. Dark with black spots in longitudinal rows, 5-6 longer blotches on upper part of body; 2-3 broad saddles on back to flanks. First dorsal black; pelvic with dark cross-bands.

Distribution : Indo-West Pacific.

388. *Glossogobius giuris* (Hamilton, 1822)

1822. *Gobius giuris* Hamilton, *Fishes of Ganges* : 51, pl. 33, fig. 15.

1991. *Glossogobius giuris* Talwar & Jhingran, *Inland Fishes of India*, **2** : 936.

Description : Body elongate and somewhat compressed. Eyes small; lips thick. First dorsal with 6 spines; second with 1 spine and 8-9 rays; anal with 1 spine and 7-8 rays; pectoral rays 17-22. Branchiostegal membranes attached to sides of isthmus. Yellowish-brown; 5 dark blotches on flanks; sides of head with irregular violet spots. Dorsal, pectoral and caudal spotted.

Distribution : Indo-West Pacific

Remarks : Forms a minor fishery.

389. *Gobiopterus chuno* (Hamilton, 1822)

1822. *Gobius chuno* Hamilton, *Fishes of Ganges* : 53.

1991. *Gobiopterus chuno* Talwar & Jhingran, *Inland Fishes of India*, **2** : 936.

Description : Body elongate and compressed; depth 4.5-5.0, head 3.7-4.0 in standard length. Mouth oblique; teeth on jaws uniserial, distantly placed; a pair of canines in lower jaw behind symphysis. First dorsal with 5 spines; second with 1 spine and 7-8 rays; anal with 1 spine and 9-10 rays; pectoral rays 13-15; pelvics united, but not adherent to belly. Scales 27-30 in longitudinal series. Greenish-yellow; tip of lower jaw brownish. A series of black spots along back and from anal origin to caudal base.

Distribution : India, eastward to Singapore.

390. *Mahidolia mystacina* (Valenciennes, 1837)

1837. *Gobius mystacinus* Valenciennes, *Hist. nat. Poiss.*, **12** : 124.

1991. *Mahidolia mystacina* Talwar & Jhingran, *Inland Fishes of India*, **2** : 938.

Description : Depth 4.2, head 3.0 in standard length. Eyes prominent, above dorsal profile oh head, 3.5 in head. Mouth oblique; lower jaw prominent, maxillary prolonged posteriorly beyond eye; tongue rounded; teeth in jaws in several rows. First dorsal with 6 spines; second with 1 spine and 10 rays; anal with 1 spine and 9 rays; pectoral rays 17; caudal oblong, shorter than head. Body with 5 or 6 dark irregular cross-bars; head with small blue or brown spots.

Distribution : Indo-West Pacific

391. *Oligolepis acutipennis* (Valenciennes, 1837)

1837. *Gobius acutipennis* Valenciennes, *Hist. nat. Poiss*, **12** : 80.

1991. *Oligolepis acutipennis* Talwar & Jhingran , *Inland Fishes of India*, **2** : 939.

Description : Body elongate and compressed, mouth oblique. Dorsal with 6 spines, 3rd-5th prolonged and filamentous in male. Second dorsal and anal with 1 spine and 10-11 rays each; pectoral rays 20-22. Scales on longitudinal series 27-30; pre-dorsal, pectoral base and pre-pelvic naked. Body with numerous dark blotches along back, a series of faint blotches, equal to eye on mid side, the last blotch at caudal base. Fins hyaline to dusky, often spotted.

Distribution : Indo-West Pacific.

Remarks : Of no interest to fisheries.

392. *Oligolepis cylindriceps* (Hora, 1923)

1923. *Ctenogobius cylindriceps* Hora, *Mem. Indian. Mus.*, **5** : 745, figs. 26, 27, 28.
1991. *Oligolepis cylindriceps* Talwar & Jhingran, *Inland Fishes of India,* **2** : 939.

Description : Body elongate and slightly compressed. Mouth slightly oblique. First dorsal with 6 spines; second dorsal and anal with 1 spine and 9 rays each; pectoral rays 17. Scales large and ctenoid, about 25 in longitudinal series. Yellowish; 7-11 vertical narrow dark yellowish bands on flank; round black spots on head. First dorsal with minute black spots; seconds dorsal variegated; anal dusky; pelvic dark.

Distribution : India.

Remarks : No fishery value.

393.*Oplopomus caninoides* (Bleeker, 1852)

1852. *Gobius caninoides* Bleeker, *Nat. Tijdschr. Ned.- Indie.*, **3** : 274.
1953. *Oplopomus caninoides* Koumans, *Fish. Indo-Aust. Archip.*, **10** : 31.

Description : Body elongate, compressed, depth 4.25-4.75 in standard length. Mouth oblique; lower jaw prominent; tongue truncate. Eyes 3.5-4.0 in head; pre-opercle armed with 1 or 2 short spines. First ray of both dorsals strong and bony. First dorsal with 6 spines; second dorsal and anal with 1 spine and 10 rays; pectoral rays 17-19; scales on longitudinal series 30, on transverse series 7 or 8; pre-dorsal scales 12; cheek and opercle naked. Olivaceous-reddish green; many blackish pearl-like coloured points and blackish spots on sides and a longitudinal row of larger blackish spots. Dorsal and caudal with rows of black spots.

Distribution : Northern Indian Ocean and central West Pacific.

Remarks : No fishery value.

394. *Oxuderces dentatus* Eydoux & Souleyet, 1842

1842. *Oxuderces dentatus* Eydoux and Souleyet, Zoologie, 1(2)
1991. *Oxuderces dentatus* Talwar P.K and Jhingran A. G. Inland fishes of India, 2 : 955.

Description : Body elongate; eyes small, ventral eyelid present; mouth wide; teeth on both jaws uniserial, with obtuse tips; upper jaw with 1 or 2 prominent canines near symphysis; lower jaw teeth laterally projecting. Dorsals connected by membrane; first dorsal with 6 spines; second with 25-27 rays; anal with 1 spine and 25-26 rays; pectoral rays 22-24; caudal lanceolate. Scales 60-70 in longitudinal series. Light violet; dorsal with a dark spot posteriorly; an irregular pattern of small, dusky vermiculations on head and anteriorly on body.

Distribution : East coast of India to Indonesia and China.

395. *Oxyurichthys formosanus* Nichols, 1959.

1959. *Oxyurichthys formosanus* Nichols, *Amer. Mus. Novit,* (1876) : 2.

Description : Body elongate and compressed. Eye without a bump dorsally. First dorsal with 6 spines; second with 1 spine and 10 rays; anal with 1 spine and 11-12 rays; pectoral rays 18-20. Head, nape and pre-pelvic naked; scales ctenoid, 26-28 scales in longitudinal series. Brownish, with a conspicuous dark vertical band below eye; a dark blotch on base of caudal. First elongated spine of dorsal marked with 5 black blotches.

Distribution : East coast of India; and Taiwan.

396. ***Oxyurichthys microlepis*** (Bleeker, 1849)

1849. *Gobius microlepis* Bleeker, *Verh. batav. Genoot. Kunst. Wet.*, **22** : 35.

1991. *Oxyurichthys microlepis* Talwar & Jhingran, *Inland Fishes of India*, **2** : 941.

Description : Body elongate and compressed. First dorsal with 6 spines; second with 1 spine and 12 rays; anal with 1 spine and 13 rays; pectoral rays 20-22. No dump on eye, head scaled above behind eyes; scales of head and anterior part of body cycloid, weakly ctenoid posteriorly; about 55 scales in longitudinal series. Violet; vertical fins pink; first dorsal with two blue lines, second dorsal with blue spots; pectoral orange with violet spots below; anal pink with yellow and violet margin, pelvics orange.

Distribution : Indo-West Pacific.

Remarks : No fishery value.

397. ***Oxyurichthys tentacularis*** (Valenciennes, 1837)

1837. *Gobius tentacularis* Valenciennes, *Hist. nat. Poiss.*, **12** : 128.

1991. *Oxyurichthys tentacularis* Talwar & Jhingran, *Inland Fishes of India*, **2** : 942.

Description : Body elongate and compressed. Distinct elongate tentacle over eye. First dorsal with 6 spines; second with 1 spine and 12 rays; anal with 1 spine and 13-14 rays; pectoral rays 19-22. Head scaled above behind eyes; median line of head and nape naked. Scales of head and anterior part of body cycloid, posteriorly ctenoid; 52-65 scales in longitudinal series. Each scale of back and sides with a round red spot at margin; an oblong spot below eye; first dorsal with 3 longitudinal rows of reddish-violet spots; second dorsal with 5-6 alternating longitudinal rows of oblong reddish-violet spots.

Distribution : Indo-West Pacific.

Remarks : No fishery value.

398.***Parachaeturichthys polynema*** (Bleeker, 1853)

1853. *Chaeturichthys polynema* Bleeker, *Natuurk. Tjdschr. Ned-Indie.*, **5** : 325.

1991. *Parachaeturichthys polynema* Talwar & Jhingran, *Inland Fishes of India*, **2** : 943.

Description : Body elongate. Head slightly depressed. Mouth oblique, some short barbels along rami of lower jaw. Dorsal bases sub-continuous. First dorsal with 6 spines; second with 1 spine and 9-10 rays; anal with 1 spine and 9 rays; pectoral rays 20-21. Scales of head, nape, breast and belly cycloid; 28-30 scales in longitudinal series; pre-dorsal scales 12-13. Greenish above, lighter below; upper base of caudal with a large black spot surrounded by yellow ; fins dark.

Distribution : Indo-West Pacific.

399. ***Parapocryptes rictuosus*** (Valenciennes, 1837)

1837. *Apocryptes rictuosus* Valenciennes, *Hist. nat. Poiss.*, **12** : 151.

1991. *Parapocryptes rictuosus* Talwar & Jhingran, *Inland Fishes of India*, **2** : 957.

Description : Body very elongate; depth 10-12 in standard length. Eyes small, 6-7 in head. Mouth oblique; maxillary extends well beyond eye; teeth uniserial, in lower jaw horizontal and pointed. Dorsals continuous at bases. First dorsal with 6 spines, followed by 1 spine and 23-26 rays; anal with 1 spine and 24-28 rays; pectoral rays 20; about 75 scales in longitudinal series. Greyish, lighter towards abdomen, with badly defined oblique bands passing downwards and forwards from base of dorsal halfway to abdomen. Inside of the mouth with black spots.

Distribution : Seas and estuaries of India.

Remarks : No fishery value.

400. ***Parapocryptes serperaster*** (Richardson, 1846)

1845. *Apocryptes serperaster* Richardson, *Rep. Br. Ass. Adv. Sci.*, **15** : 206.

1991. *Parapocryptes serperaster* Talwar & Jhingran, *Inland Fishes of India*, **2** : 957.

Description : Body elongate; depth 6.0-8.5 in standard length; eyes small, 5.5-5.7 in head. Mouth oblique; maxilla extends to below hind edge of eye; teeth uniserial, in lower jaw horizontal and pointed. Dorsals separate; first dorsal with 6 spines; second with 26-27 rays; anal with 1 spine and 25-26 rays; pectoral rays 20-21; 65-75 scales in longitudinal series. Dull greenish above with brown marks on back and cheek; second dorsal rays spotted; caudal barred.

Distribution : India, eastward to West Pacific.

Remarks : No fishery value.

401. ***Periophthalmus chrysospilos*** Bleeker, 1853.

1853. *Periophthalmus chrysospilos* Bleeker, *Nat. Tijdschr. Ned.-Indie*, **3** : 728.

Description : Body elongate; head truncate, 3.7-4.0 in standard length. Eyes 4.3-5.0 in head. First dorsal with 9-10 spines; second with 1 spine and 11-13 rays; anal with 1 spine and 10-13 rays; pectoral rays 14-15; pelvics totally united, not emarginate, basal membrane well-developed. Scales 70-75 in lateral series. Brownish; head and body with orange spots. First dorsal black, outer margin red anteriorly; second dorsal with a dark longitudinal band half-way.

Distribution : East coast of India and Malay Peninsula.

402. ***Periophthalamus koelreuteri*** (Pallas, 1770)

1770. *Gobius koelreuteri* Pallas, *Spicilegia (Zool.)*, **8** : pl. 2, fig. 1-3.

1991. *Periophthalmus koelreuteri* Talwar & Jhingran, *Inland Fishes of India*, **2** : 965.

Description : Body elongate; head truncate, about 3.3 in standard length. Eyes contiguous, 4 in head. Dorsals separate; first dorsal with 10-15 spines; second dorsal and anal with 1 spine and 11-12 rays each; pectoral rays 14-15; inner rays of pelvics united at base by a narrow, deeply emarginate membrane, basal membrane moderate to weak. Scales 70-90 in longitudinal series. Brownish, with white spots. First dorsal with a dark brown sub-marginal band; the second with broad white margin, a dark brown sub-marginal band, and below which short dark stripes, bordered with white; anal white.

Distribution : Indo-West Pacific.

403. ***Periophthalmus pearsei*** Eggert, 1935

1935. *Periophthalmus pearsei* Eggert, *Zool. Jahrb. Jena Syst.*, **67**: 57, pl. 3, fig. 10.

1991. *Periophthalmus pearsei* Talwar and Jhingran, *Inland fishes of India*, 2 : 965.

Description : Head about 3.8 in standard length. Eyes large and contiguous, 4 in head. Dorsals very close to each other; first dorsal with 8-10 spines; second dorsal and anal with 1 spine and 11-12 rays; pectoral rays 13-14; pelvics united, but emarginate, basal membrane well-developed. Scales 66-77 in longitudinal series. Brownish, head with irregular spots. First dorsal dark grey; second with 2 blackish longitudinal bands; caudal blackish in middle.

Distribution : East wast of India.

Remarks : Inhabits brackish water and sea. Earlier reported from West Bengal.

404. ***Periophthalmus variabilis*** Eggert, 1935

1935. *Periophthalmus variabilis* Eggert, *Zool. Jahrb. Jena Syst.*, **67** : pl. 3, fig. 13 & pl. 4, figs. 14, 15.

Description : Body elongate; head truncate, 4.0-4.4 in standard length. First dorsal with 9 or 10 spines; second with 1 spine and 12-13 rays; anal with 1 spine and 12 rays; pectoral rays 11; basal membrane of pelvics moderate to weak, two halves united by a narrow membrane along inner rays. Scales 60-75 in longitudinal series. Colour variable.

Distribution : East coast of India; Thailand, Java.

Remarks : No Fishery value. Inhabits ponds and brackish waters. Earlier reported from Vizagapatinam (A.P)

405. ***Pseudapocryptes lanceolatus*** (Bloch & Schneider, 1801)

1801. *Eleotris lanceolata* Bloch & Schneider, *Syst. Ichth.* : 67, pl. 15.

1991. *Pseudapocryptes lanceolatus* Talwar & Jhingran, *Inland Fishes of India*, **2** : 958.

Description : Body very elongate, posteriorly compressed. Depth 7 in standard length. Head 5.5 in standard length. Eye 6-7 in head. Mouth nearly horizontal. Maxillary extends to below posterior margin of eye. Teeth uniserial; pointed and horizontal in lower jaw. First dorsal with 5 spines; second with 1 spine and 30-31 rays; anal with 1 spine and 28-29 rays; pectoral rays 16-19; caudal pointed, longer than head. Scales about 200 in longitudinal series. Dull greenish, with brown spots on back and cheek. Fins yellowish; 2nd dorsal spotted ; caudal barred.

Distribution : India, eastward to West Pacific.

Remarks : Of no interest to fisheries. *P. lanceolatus* is a junior synonym of *P. elongates* (Bloch), seen in large numbers during premonsoon months. Inhabits sea and estuaries.

406. ***Stenogobius malabaricus*** (Day, 1865)

1865. *Gobius malabaricus* Day, *Proc. zool. Soc. Lond.* : 27.

1982. *Stenogobius malabaricus* Munro, *The marine and freshwater fishes of Ceylon* : 236.

Description : Depth 4.0, head 3.7-4.0 in standard length. Mouth oblique; lower jaw prominent; teeth in several rows, outer row enlarged. Longitudinal and transverse mucous canals over cheek. Some fleshy flaps on inner edge of shoulder girdle. First dorsal with 6 spines; 2nd dorsal and anal with 1 spine and 10 rays. Scales about 50 in longitudinal series and 9-10 in transverse series. Head scaled above behind eye, median line scaled. Light brown with irregular dusky bands on the back and sides, a dark band descends from eye, and some brown blotches about the head. A deep black crescentic mark on first dorsal.

Distribution : India.

Remarks : Of no fishery value.

407. ***Stigmatogobius javanicus*** (Bleeker, 1856)

1856. *Gobius javanicus* Bleeker, *Nat. Tijdschr. Ned.-Indie.* **11** : 88.

1991. *Stigmatogobius javanicus* Talwar & Jhingran, *Inland Fishes of India*, **2** : 947.

Description : Body elongate. Mouth slightly oblique, upper jaw prominent; teeth on jaws in several rows, inner row in lower jaw not enlarged. Cheek naked, 2-3 mucous canals over cheek. An unpaired inter orbital pore. First dorsal with 6 spines; 2nd dorsal and anal with 1 spine and 6-7 rays; pectoral rays 15. Scales on longitudinal series 25-27; pre-dorsal scales 6-8. Greenish above, reddish-green below; dark stripe from eye to maxillary and dark oblong spots on cheek; two alternating rows of dark blotches on flanks; below 1st dorsal a dark stripe obliquely below forward; 1st dorsal with a dark spot; dorsal and caudal rays spotted; pectoral base with 2 dark spots.

Distribution : India, eastward to the Philippines, and Australia.

Remarks : No fishery value.

408. ***Yongeichthys criniger*** (Valenciennes, 1837)

1837. *Gobius criniger* Valenciennes, *Hist. nat. Poiss.*, **12** : 82.

1993. *Yongeichthys criniger* Remadevi, *Rec. zool. surv. India*, **90** (1-4) : 173.

Description : Body elongate, compressed. Depth 4-5, head 3.3-3.6 in standard length. eyes 3.0-3.6 in head. Mucous canals in 4-5 longitudinal rows over cheek. First dorsal with 6 spines; 2nd dorsal and anal with 1 spine and 9 rays each; pectoral rays 17-19; caudal obtusely rounded, shorter than head. Head, cheek and opercle naked; 30-32 scales in lateral series, 11-12 scales in transverse series. Olivaceous to orange-green above; head and upper half of

body with irregular black spots; 3 large black spots, one below 1st dorsal, second below 2nd dorsal and third at caudal base. Dorsals with 3-4 rows of blackish spots.

Distribution : Indo-Pacific.

Family GOBIOIDIDAE

409. ***Brachyamblyopus urolepis*** (Bleeker, 1852)

1852. *Amblyopus urolepis* Bleeker, *Natuurk. Tijdschr. Ned.-Indie*, **3** : 581.

1991. *Brachyamblyopus urolepis* Talwar & Jhingran. *Inland Fishes of India*, **2** : 982.

Description : Body very elongate and compressed; head sub-cylindrical; eyes small. Mouth oblique, lower jaw prominent. Teeth on upper jaw biserial, in lower jaw multiserial. Dorsal with 6 spines and 32-33 rays; anal with 1 spine and 33 rays. Pectoral rays 17-18, fins short and rounded. Flanks and belly speckled with brown spots, eyes black. Fins brownish.

Distribution : India and East Indies.

Remarks : Of no interest to fisheries.

410. ***Taenioides anguillaris*** (Linnaeus, 1758)

1758. *Gobius anguillaris* Linnaeus, *Systema Naturae*, (ed.10) **1** : 264.

1991. *Taenioides anguillaris* Talwar & Jhingran, *Inland Fishes of India*, **2** : 984.

Description : Body very elongate and compressed. Head sub-cylindrical; eyes minute. Mouth vertical; chin with 3 pairs of short barbels. Teeth in bands on both jaws, upper jaw with 6-7 canines and lower jaw with 4-5 canines on each side. Dorsal and anal enveloped in skin and confluent with caudal. Dorsal with 6 spines and 41-46 rays; anal with 1 spine and 39-44 rays; pectoral rays 15-16; caudal pointed. Body scale less. Yellowish; vertical fins yellowish.

Distribution : India, eastward to China

Remarks : Of no interest to fisheries.

411. ***Taenioides buchanani*** (Day, 1873)

1873. *Amblyopus buchanani* Day, *Proc. zool. Soc. Lond.* : 110.

1991. *Taenioides buchanani* Talwar & Jhingran, *Inland Fishes of India*, **2** : 985.

Description : Body very elongate and compressed. Head sub-cylindrical; eyes small but distinct; mouth vertical; chin with 3 pairs of short barbels. Teeth in bands on both jaws, about 5 canines on each side. Dorsal with 6 spines and 42 rays; anal with 1 spine and 35-36 rays; pectoral rays 18-19. Dorsal and anal confluent with caudal. Caudal pointed; scales rudimentary. Vertical fins blackish.

Distribution : East coast of India to Myanmar.

Remarks : It is of no interest to fisheries.

Family TRYPAUCHENIDAE

412. *Ctenotrypacuchen microcephalus* (Bleeker, 1860)

1860. *Trypauchen microcephalus* Bleeker, *Acta. Soc. Sci. Indo-Neerl.*, **8** : 62.

1991. *Ctenotrypauchen microcephalus* Talwar & Jhingran, *Inland Fishes of India*, **2** : 987.

Description : Body very elongate, compressed. Head obtuse; mouth very oblique, lower jaw prominent; teeth in outer row enlarged, no canines. Dorsal with 6 spines and 48-51 rays; anal with 1 spine and 44-49 rays; dorsal and anal continuous with caudal. Head, nape, breast and belly naked. Pelvics connected basally, ends free. Pink; fins reddish hyaline.

Distribution : Indo-West Pacific.

413. *Trypauchen vagina* (Bloch & Schneider,1801)

1801. *Gobius vagina* Bloch & Schneider, *Syst. Ichth*, : 73.

1991. *Trypauchen vagina* Talwar & Jhingran, *Inland Fishes of India*, **2** : 988.

Description : Body elongate and compressed; Eyes minute. Mouth oblique; teeth in several rows, pointed, outer row enlarged and caninoid. Dorsal with 6 spines and 39-47 rays; anal with 1 spine and 40-46 rays; dorsal and anal confluent with caudal. Scales small. Head naked. Pinkish-white; eyes blackish; dorsal, anal and caudal with a grey margin.

Distribution : Indo-West Pacific.

Remarks : Of no interest to fisheries.

Family ACANTHURIDAE

414. *Acanthurus bleekeri* Gunther, 1861

1861. *Acanthurus bleekeri* Gunther, *Cat. Fish. Br. Mus.*, **3** : 335.

Description : Body compressed, depth 2.1-2.5 in standard length. Mouth small; snout 6.6-6.9 in standard length. Teeth small, 14-18 in upper and 16-24 in lower jaw. Dorsal with 9 spines and 24-26 rays; anal with 3 spines and 23-24 rays. Caudal lunate. Lancet shaped spine on caudal peduncle which folds in a deep horizontal groove. Dark brown with blue line on head and body, a yellow area behind eye, and 2 yellow bands extending anterior to eye, one from the upper edge and one from the lower.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery significance.

415. *Acanthurus celebicus* Bleeker, 1861

1861. *Acanthurus celebicus* Bleeker, *Nat. Tijdschr. Ned.-Indie*, **3** : 761.

Description : Body compressed. Depth 1.9-2.0, head 3.4-3.6 in standard length. Snout profile concave; mouth somewhat produced; teeth long, slender, median ones lobate. Dorsal with 8 spines and 27-28 rays, origin above gill opening, first spine minute. Anal with 3 spines and 24-25 rays. Brownish; mouth and chin black. A white ring encircling gill opening; pectoral fin and spine on caudal peduncle black.

Distribution : Indo-Pacific.

416. *Acanthurus nigrofuscus* (Forsskal, 1775)

1775. *Chaetodon nigrofuscus* Forsskal, *Descript. Anim.* : 64.

1984. *Acanthurus nigrofusus* Talwar & Kacker, *Comm. Sea Fish. India* : 767.

Description : Body compressed; depth 2.0-2.3 in standard length. Mouth small; teeth slender and strongly lobate, 8 on each side of both jaws. Dorsal with 9 spines and 24-27 rays. Anal with 3 spines and 22-24 rays. Caudal lunate, the upper lobe the longer. Lancet-shaped spine on side of caudal peduncle folding into a deep horizontal groove. A black post-ocular bar extending posteriorly from gill opening; a black spot at base of last few rays of both dorsal and anal. Fins deep brown with dusky tinge, edge of caudal narrowly white a narrow pointed black streak extending anteriorly from caudal spine.

Distribution : Tropical Indo-West Pacific.

Remarks : Of minor fishery significance in our region.

417. *Acanthurus triostegus* (Linnaeus, 1758)

1758. *Chaetodon triostegus* Linnaeus *Syst. Nat.* (ed. 10) **1** : 274.

1984. *Acanthurus triostegus* Talwar & Kacker, *Comm. Sea. Fish. India* : 778.

Description : Body compressed; depth 1.8-2.1 in standard length. Mouth small, teeth spatulate, close-set, with denticulate edges. Gill-rakers 19-22. Dorsal with 9 spines and 21-24 rays. Caudal truncate. Lancet-shaped spine on each side of caudal peduncle folding into a deep horizontal groove. Body light greenish-grey; white ventrally, with narrow dark bars, one on head passing through eye, 4 on body beneath dorsal, and one on caudal peduncle.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery significance.

418. *Acanthurus xanthopterus* Valenciennes, 1835.

1835. *Acanthurus xanthopterus* Valenciennes, *Hist. nat. Poiss,* **10** : 215.

Description : Body compressed, depth 1.9-2.25 in standard length. Mouth small, snout 3.9-3.5 in standard length. Teeth 12-18 in upper jaw, 14-21 in lower jaw. Dorsal with 9 spines and 25-27 rays. Anal with 3 spines and 23-25 rays. Caudal lunate. Caudal spine small, 5.5 in head, and with a definite sheath. Body with dark grey lines; a narrow bluish grey band at the base of dorsal and anal; basal two-third of pectoral dusky; outer one-third yellow. Base of caudal and posterior part of caudal peduncle dull white.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery value.

Family SIGANIDAE

419. *Siganus canaliculatus* (Park, 1797)

1797. *Chaetodon canaliculatus* Park, *Trans. Linn. Soc. Lond.*, **3** : 33.

1984. *Siganus canaliculatus* Talwar & Kacker, *Comm. Sea Fish. India* : 775.

Description : Body oval and compressed; depth 2.4-2.8 in standard length. Head profile slightly concave above eye; anterior nostril with a small dark flap. A sharp, forwardly projecting spine in front of dorsal, dorsal with 13 spines and 10 rays, the last spine the shortest. Anal with 7 spines and 9 rays. Caudal truncate or forked. Scales minute and thin; scale-rows between mid-dorsal base and lateral line 21-23. Back light brown or greenish, belly silvery; a large dark brown blotch behind upper part of gill opening; numerous pale bluish spots on back and sides.

Distribution : Indo-West Pacific.

Remarks : Occasionally form a part of commercial catches.

420. ***Siganus guttatus*** (Bloch, 1787)

1787. *Chaetodon guttatus* Bloch, *Nat. ausland. Fische,* **3** : 55.

1990. *Siganus guttatus* Woodland, *Indo-Pacific Fishes,* (19) : 93.

Description : Body oval and compressed. Depth 2.0-2.1 in standard length. Profile of head concave at nape. Dorsal with 17 spines and 10 rays; anal with 7 spines and 9 rays; pectoral rays 15-17. Scale rows above lateral line 20-25. Anterior gill rakers 4 + (18-21). Dusky blue above, silvery below; large, round, bronze-gold spots on body, close packed on nape to form honey-comb pattern. A bright yellow spot, about size of orbit, immediately adjacent to last few rays of dorsal. Alternating blue and yellow lines radiating from mouth to opercular margin.

Distribution : Central West Pacific and Andaman Islands.

Remarks : Probably the specimens from Madras coast refer to very similar species *S. lineatus* (Valenciennes) in which "golden stripes running length of sides of body, breaking into spots near bases of dorsal and anal.

421. ***Siganus javus*** (Linnaeus, 1766)

1766. *Teuthis javus* Linnaeus, *Syst. Nat.* (ed.12), **1** : 507.

1984. *Siganus javus* Talwar & Kacker, *Comm. Sea. Fish. India* : 776.

Description : Body oval and compressed; depth 2.0-2.3 in standard length. Head profile slightly concave above eye; tip of snout blunt; anterior nostril with a small triangular flap reaching halfway to posterior nostril. A sharp, forward projecting spine in front of dorsal, dorsal with 13 spines and 10 rays, the first spine much shorter than the last. Anal with 7 spines and 9 rays. Caudal truncate to emarginate. Back greenish brown, belly silvery, numerous small grey spots on head and upper flanks, elongate undulating lines of flanks and belly.

Distribution : Indo-Pacific.

Remarks : This is a common siganid along Madras coast but commercial catches contain only small quantities.

422. ***Siganus spinus*** (Linnaeus, 1758)

1758. *Sparus spinus* Linnaeus, *Syst. Nat.* (ed. 10), **1** : 281.

1982. *Siganus spinus* Munro, *The marine and freshwater fishes of Ceylon* : 209.

Description : Body oval and compressed; depth 3.0-3.3 in standard length. Head profile slightly concave above eye. Dorsal with 13 spines and 10 rays; anal with 7 spines and 9 rays. Scales between mid-dorsal base and lateral line 17-18. Brownish, covered all over the back with blue vermiculated lines which become longitudinally sinuous along the sides. Head covered with similar lines. Body sometimes with indistinct vertical cross bars and blotches.

Distribution : Indian Ocean.

Family TRICHIURIDAE

423. ***Eupleurogrammus muticus*** (Gray, 1831)

1831. *Trichiurus muticus* Gray, *Zool. Misc.*, **1** : 10.

1992. *Eupleurogrammus muticus* Nakamura & Parin, *FAO Fish. Synop.*, (125) **15** : 86.

Description : Body extremely elongate and compressed, ribbon-like, tapering to a point. Mouth large with a dermal process and tip of each jaw; 2-3 fangs in upper jaw. Lower hind margin of gill cover convex; eyes small. Dorsal with 3 spines and about 140 rays; anal reduced to minute spinules buried in skin. Pectoral about as large as snout, with 1 spine and 12 rays. Pelvic reduced to a small scale like process; caudal absent. Body steel blue with metallic reflections. A small pale black spot on base of anterior margin of pectoral.

Distribution : Indo-West Pacific.

Remarks : A commercial fishery exists.

424. ***Lepturacanthus savala*** (Cuvier, 1829)

1829. *Trichiurus savala* Cuvier, *Regne Anim.* **2** (ed. 2) : 219.

1993. *Lepturacanthus savala* Nakamura & Parin, *FAO Fish. Synop.*, (125) **15** : 100.

Description : Body extremely elongate and strongly compressed, ribbon-like, tapering to a point, eyes small, mouth very large; 2-3 fangs with barbs and 2 small forwardly directed canine in upper jaw, anterior most fangs at tip of jaw. A single, long based, dorsal fin with 3-4 spines and 110-120 rays, anal reduced to small spinules, post-anal spinule prominent. Pectoral with one spine and 10 rays. Pelvic and caudal absent. Body steel blue, with metallic reflections; tip of both jaws black.

Distribution : Indo-West Pacific.

Remarks : Commercially viable fishery exists.

425. ***Trichiurus lepturus*** Linnaeus, 1758

1758. *Trichiurus lepturus* Linnaeus, *Syst. Nat.* (ed. 10) **1** : 246.

Description : Body extremely elongate and strongly compressed, ribbon-like, tapering to a point, mouth large, with a dermal process at tip of each jaw; 2-3 pairs of enlarged fangs with barbs near tip of upper jaw and another pair near tip of lower jaw. Dorsal rather high

and long, with 3 spines and 130-135 rays; anal reduced to about 100-105 minute spinules, embedded into skin; pectoral with 1 spine and 11-13 rays; pelvic and caudal absent. Scales absent on body. Body steel blue, with metallic reflections.

Distribution : Cosmopolitan in tropical and temperate waters.

Remarks : Commercially very important.

Family SCOMBRIDAE

426. ***Euthynnus affinis*** (Cantor, 1850)

1850. *Thynnus affinis* Cantor, *J. Roy. Asiat. Soc. Bengal*, **18** : 1088.

1984. *Euthynnus affinis* Talwar & Kacker, *Comm. Sea. Fish. India* : 799.

Description : Body robust, elongate and fusiform. Gill rakers 29-34 on first arch. Dorsals narrowly separated; first with 14 spines, second with 11-14 rays, followed by 8-10 finlets. Pectoral short, its tip not extending to interspace between dorsals. Caudal peduncle very slender with a prominent lateral keel between 2 smaller keels at base of caudal. Back bluish black, with a complicated striped pattern which does not extend forward beyond middle of first dorsal; several (1-8) characteristic small dark spots below pectoral.

Distribution : Indo-West Pacific.

Remarks : Forms a fishery of some magnitude.

427. ***Rastrelliger faughni*** Matsui, 1967

1967. *Rastrelliger faughni* Matsui, *Copeia*, 74, fig.1,

1984. *Rasterlliger faughni* Talwar and Kacker, *Comm. Sea. Fish. India*, 806.

Description : Body fusiform, head longer than depth, depth 5.0 in standard length. Gill rakers short and stout, 20-25 on lower arm of first arch. Teeth in a single series, minute and pointed in both jaws, absent on vomer and palatines. First dorsal with 8-10 weak spines, second with 1 spine and 11 rays; anal with 1 rudimentary spine and 11 rays; dorsal and anal each followed by 5 finlets. Two rows of black spots on back bellow dorsal base from origin of first dorsal, to caudal peduncle; 2-6 large spots at the base of first dorsal; a blotch behind pectoral base.

Distribution : South-east coast of India, Indonesia to the Philippines.

Remarks : A minor fishery exists.

428. ***Rastrelliger kanagurta*** (Cuvier, 1817)

1817. *Scomber kanagurta* Cuvier, *Regne Anim.*, **2** : 313.

1984. *Rasterlliger kanagurta* Talwar & Kacker, *Comm. Sea Fish. India* : 807.

Description : Body fusiform; depth 4.0-4.8 in standard length; head longer than body depth. Gill rakers very long, 30-46 on lower arm of first arch. Teeth minute and pointed in a single row in both jaws. First dorsal with 8-10 weak spines, the second with 1 spine and 11 rays; anal with 1 rudimentary spine and 11 rays; 5 finlets behind dorsal and anal. Two rows

of small spots on sides of dorsal base, narrow dark longitudinal bands on upper part of body and a black spot on body near lower margin of pectoral.

Distribution : Indo-Pacific.

Remarks : This mackerel forms a high magnitude fishery.

429. *Scomberomorus commerson* (Lacepde, 1800)

1800. *Scomber commerson* Lacepede *Hist. nat. Poiss.*, **2** : 598, pl. 20(1).

1984. *Scomberomorus commerson* Talwar & Kacker, *Comm. Sea Fish. India* : 812.

Description : Body elongate and rather strongly compressed. Jaw teeth strong and compressed, serrated along their edges. Gill rakers (0-1) + (3-6) on first arch. First dorsal with 14-17 spines; second with 14-19 rays, followed by 8-10 finlets. Anal with 14-18 rays, followed by 8-10 finlets. Pectoral somewhat falcate. Lateral line abruptly curving downward under 2nd dorsal fin. Back of body iridescent blue-grey, sides below lateral line silvery with bluish reflections.

Distribution : Indo-West Pacific.

Remarks : A commercially important fish.

430. *Scomberomorus guttatus* (Bloch & Schneider, 1801)

1801. *Scomber guttatus* Bloch & Schneider, *Syst. Ichth*, : 23, pl. 5.

1984. *Scomberomorus guttatus* Talwar & Kacker, *Comm. Sea Fish. India* : 813.

Description : Body elongate and strongly compressed; greatest depth of body equal to or less than head length. Jaw teeth moderately compressed. Gill rakers (1-4) + (6-9) on first arch. First dorsal with 15-17 spines; second with 19-23 rays, followed by 8-9 finlets; anal with 20-22 rays, followed by 8-10 finlets. Sides of body usually with 3 irregular rows of dark round spots along the. Spinous dorsal black up to the 8th spine and the rest white and tipped with black.

Distribution : Indo-West Pacific.

Remarks : This is a most common species, forming a minor fishery.

431. *Scomberomorus lineolatus* (Cuvier, 1831)

1831. *Cybium lineolatum* Cuvier, *Hist. nat. Poiss*, **8** : 170.

1984. *Scomberomorus lineolatus* Talwar & Kacker, *Comm. Sea Fish. India* : 815.

Description : Body elongate and strongly compressed. Teeth in jaws pointed and strongly compressed. Gill rakers (2-4) + (8-12) on first arch. First dorsal with 15-17 spines; second with 19-20 rays, followed by 8-10 finlets. Anal with 18-20 rays, followed by 8-10 finlets. Bluish-grey on back of body, silvery with a pattern of spots and dashes on the sides.

Distribution : India, eastward to Java.

Remarks : An important element in the fishery of India.

Family ISTIOPHORIDAE

432. *Istiophorus platypterus* (Shaw & Nodder, 1791)

1791. *Xyphias platypterus* Shaw & Nodder, *Natural. Misc.*, **10** : 28, pl. 8.

1984. *Istiophours platypterus* Talwar & Kacker, *Comm. Sea Fish. India* : 827.

Description : Body elongate and laterally compressed. Snout long, round in cross section; lower jaw slender and pointed, its tip nearer to front of eye than tip of upper jaw. The first dorsal extremely high, sail-like, central rays longest, with 40-50 rays; second dorsal with 6-7 rays. Two anals, the first with 6-7 rays. Pectoral low on body, falcate. Pelvic with 1 spine and 2 rays. Caudal deeply forked. Dark blue, fading to white or silvery on ventral side; a number of paler vertical bars, sometimes made up of rows of pale spots. Vertical fins bright blue.

Distribution : Indo-Pacific.

Remarks : A commercial fishery exists.

433. *Makaira indica* (Cuvier, 1831)

1831. *Tetrapturus indicus* Cuvier, *Hist. nat. Poiss*, **8** : 286.

1984. Makaira indica Talwar & Kacker, *Comm. Sea. Fish. India* : 829.

Description : Body elongate, compressed laterally. First dorsal slightly elevated in front; second nearly equal to second anal in size and shape, its origin about opposite each other. Pectoral long, pelvic shorter than pectoral. Single lateral line, obscure. Dark blue fading to silvery white.

Distribution : Indo-Pacific.

Remarks : A minor fishery exists.

Family NOMEIDAE

434. *Psenes cyanophrys* Valenciennes, 1833

1833. *Psenes cyanophrys* Valenciennes, *Hist. nat. Poiss*, **9** : 261, pl. 265.

Description : Body firm, deep and compressed; depth 1.8–2.4, head 2.4-3.5 in standard length; eyes small, usually less than snout. Teeth in both jaws small, pointed, not laterally flattened. First dorsal with 9-10 spines; second with 1 spine and 23-28 rays; anal with 3 spines and 23-28 rays. Pectoral equal to or less than head, with 17-20 rays. Gill rakers 8 + (18-21) on first arch. Numerous dark horizontal lines on sides.

Distribution : Circum-tropical.

Remarks : Minor fishery exists.

Family ARIOMMATIDAE

435. *Ariomma indica* (Day, 1870)

1870. *Cubiceps indicus* Day, *Proc. Zool. Soc. Lond.* : 690.

1984. *Ariomma indica* Talwar & Kacker, *Comm. Sea. Fish. India* : 835.

Description : Body oval and compressed. Depth 1.8-2.4, head 2.5-3.1 in standard length. Head covered by thick adipose tissue. Ridge over eye prominent. Gill rakers 8 + (14-16) on first arch. Dorsals scarcely separated, the first with 10-12 long and slender spines; second with 1 spine and 13-16 rays. Anal with 3 spines and 14-16 rays. A median groove along belly for reception of folded pelvic. Caudal peduncle square in cross section, with 2 low fleshy keels on each side. Scales cycloid, very thin and easily detached. Lateral line scales 39-49. Body silvery with purple tinge; fins greyish.

Distribution : Indo-West Pacific.

Remarks : A minor fishery exists.

Family STROMATEIDAE

436. ***Pampus argenteus*** (Euphrasen, 1788)

1788. *Stromateus argenteus* Euphrasen, *Kongl. Vetensk. Acad. Handl. Stockholm,* **9** : 49.

1984. *Pampus argenteus* Talwar & Kacker, *Comm. Sea. Fish. India* : 837.

Description : Body deep and compressed. Eye with feeble adipose lid. Teeth small, in a single row in both jaws. Single dorsal, falcate; anal falcate; median fins preceded by 5-10 blade-like spine with anterior and posterior points. No pelvic; caudal deeply forked, lower lobe longer. Back grey, merging to silvery white towards belly, very small black dots all over body.

Distribution : Indo-West Pacific.

Remarks : Commercially important fishery exists.

437. ***Pampus chinensis*** (Euphrasen, 1788)

1786. *Stromateus chinensis* Euphrasen, *Kongl. Ventensk. Acad. Handl. Stockholm,* **9** : 53, fig. 9.

1984. *Pampus chinensis* Talwar & Kacker, *Comm. Sea Fish. India* : 838.

Description : Body very deep and compressed. Eye with narrow adipose lid. Small teeth in a single row in both jaws. Single dorsal; dorsal and anal not falcate, but gradually diminishing in height posteriorly; no spines before the median fins. Caudal emarginate in young, slightly forked in adult. Grey-brown on back, merging to silvery white towards belly. Fins dusky.

Distribution : Indo-West Pacific.

Remarks : Abundant in the coastal water of our area and fairly common in the catches.

Order PLEURONECTIFORMES

Family PSETTODIDAE

438. ***Psettodes erumei*** (Schneider, 1801)

1801. *Pleuronectes erumei* Schneider, *Syst. Ichth. Bloch* : 150.

1984. *Psettodes erumei* Talwar & Kacker, *Comm. Sea. Fish. India* : 842.

Description : Body oval and flat, but thicker than any other flat fishes. Both eyes on either left or right side, the upper eye very close to dorsal edge of body. Mouth large, maxilla extends well beyond hind edge of lower eye. Gill rakers in the form of groups of minute spines. Teeth in jaws strong, barbed. Single long dorsal, originate well behind eyes; anterior fin rays spinous. Lateral line straight, with 70-75 scales. Dark brown; young with 4 broad dark cross bars.

Distribution : Indo-West Pacific.

Remarks : An important food fish and occurs in small quantities. It forms an important fishery at Madras.

Family CITHARIDAE

439. ***Brachypleura novemzealandiae*** Gunther, 1862

1862. *Brachypleura novemzealandiae* Gunther, *Cat. Fishes Br. Mus.*, **4** : 419.

Description : Depth 2.4-2.7, head 3.2-3.6 in length. Snout shorter than eye; eyes on right side, separated by a narrow bony ridge; cleft of mouth curved; maxilla reaching to below middle of eye or beyond, its length 1/2 or more than 1/2 of head. Gill rakers long, slender, denticulate, 8-10 on lower arm of first arch. Scales ciliated on ocular side, 29-32 scales on longitudinal series. Dorsal with 66-74 rays, anterior rays prolonged in males; anal with 43-49 rays; pelvic with 1 flexible spine and 5 rays. Yellowish or grayish brown; vertical fins often with small black spots.

Distribution : Indo-West Pacific.

Family BOTHIDAE

440. ***Arnoglossus intermedius*** (Bleeker, 1866)

1866. *Platophrys (Arnoglossus) intermedius* Bleeker, *Ned. Tijdschr. Dierk.*, **3** : 47.

1927. *Arnoglossus intermedius* Norman, *Rec. Indian Mus.*, **29**(1) : 21.

Description : Depth 2.0-2.2, head 3.2-3.6 in standard length. Eyes on left side, inter-orbital space 1/3 of eye and with a row of scales. Mouth small, maxillary reaching beyond front border of eye; teeth pointed, curved, uniserial in both jaws. Dorsal with 79-84 rays; anal with 55-60 rays. Lateral line with 48-54 scales. Brownish; more or less variegated with darker marks.

Distribution : Indo-West Pacific.

441. ***Bothus pantherinus*** (Ruppell, 1828)

1828. *Rhombus pantherinus* Ruppell, *Atlas. Reise. Nordl. Afrika, Fische Rothen Meeres* : 121, pl. 3, fig. 1.

1984. *Bothus pantherinus* Talwar & Kacker, *Comm. Sea. Fish. India* : 846.

Description : Body oval and flat. Both eyes on left side; a wide inter-orbital space, larger than eye diameter. Maxilla about 2.7-3.3 in head. Gill rakers very short, 6-8 on lower arm of first arch. Scales ctenoid on ocular side, cycloid on blind side; 80-92 scales in lateral line.

Males with spines near eyes; a larger space between eyes and extremely long pectoral extending to the tip of tail. Ocular side reddish brown, with paler and darker markings (spots, blotches, rings or ocelli); large dark blotch on middle of straight portion of lateral line.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery significance in our area.

442. ***Crossorhombus azureus*** (Alcock, 1889)

1889. *Rhomboidichthys azureus* Alcock, *J. Asiatic. Soc. Bengal,* **58** : 283.

1982. *Crossorhombus azureus* Munro, *The marine and freshwater fishes of Ceylon* : 261.

Description : Body depth nearly twice in length. Maxilla extending slightly beyond anterior edge of eye, length 3.6-3.8 in head. Scales in lateral line 53-57. Dorsal with 84-90 rays; anal with 64-73 rays. Left pectoral with 11-12 simple rays, uppermost not prolonged in males, 1.25-1.4 in head, right pectoral 1/2 of head. Brownish, marked with pale and darker. One or two dark blotches on lateral line; males with 2 series of azure spots on head.

Distribution : Indian Ocean.

Remarks : Of minor fishery value.

443. ***Crossorhombus valderostratus*** (Alcock, 1890)

1890. *Rhomboidichthys valderostratus* Alcock, *Ann. Mag. nat. Hist.,* (6) **6** : 435.

1982. *Crossorhombus valderostratus* Munro, *The marine and freshwater fishes of Ceylon* : 261

Description : Depth 1.8-2.0 in length. Anterior profile of head notched in front of eyes, more vertical in males. Males with a strong spine on snout, some smaller spines on orbital margin. Maxilla scarcely reaching anterior edge of eye, length nearly 4 in head. Dorsal with 85-88 rays; anal with 68-72 rays. Left pectoral with 10-11 rays, uppermost ray prolonged in adult males, length 1.25-1.75 in head, right pectoral 1/2 in head. Scales ctenoid on ocular side, cycloid on blind side. Grey brown with darker spots and blotches.

Distribution : Indian Ocean.

Remarks : Small scale fishery exists.

444. ***Engyprosopon grandisquama*** (Temminck & Schlegel, 1846)

1846. *Rhombus grandisquama* Temminck & Schlegel, *Fauna Japan., Pisces* : 183, pl. 92, figs. 3 & 4.

1984. *Engyprosopon grandisquama* Hensley, *in* Smith & Heemstra, *Smith's Sea Fishes* : 858.

Description : Body oval and flat. Both eyes on left side; mouth small; gill-rakers short, 5-7 on lower arm of first arch. Lateral line curved above pectoral and absent from head. Scales of ocular side weakly ctenoid, those of blind side cycloid; 36-48 scales in lateral line. Adult males with spines on snout and near eyes. Ocular side light brownish, with some irregular dark spots and markings; caudal with 2 distinctive large, dark spots. Dorsal, anal and caudal usually with small brown spots.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery significance.

445. *Laeops guentheri* Alcock, 1890

1890. *Laeops guentheri* Alcock, *Ann. Mag. nat. Hist.*, (6) **6** : 438.

Description : Body depth 2.5-3.0, head 4.3-5.0 in length Dorsal profile of head notched in front of eye. Lower eye in advance of upper, which bulges into dorsal profile of head. Maxilla hardly reaching anterior edge of eye, length 4.0-4.6 in head. Narrow band of villiform teeth in each jaw, almost entirely confined to the blind side. Lower gill rakers 6-8, small. Scales cycloid on both sides; about 95 in lateral line. Dorsal with 97-102 rays, first 2 rays separated; anal with 77-81 rays. Left pectoral with 14 rays, 1.4-1.7 in head; right pectoral 2.0-2.4 in head. Brownish; vertical fins with darker edge.

Distribution : Northern Indian Ocean.

446. *Pseudorhombus arsius* (Hamilton,1822)

1822. *Pleuronectes arsius* Hamilton, *Fishes of Ganges* : 128.

1984. *Pseudorhombus arsius* Talwar & Kacker, *Comm. Sea Fish. India* : 851.

Description : Body oval and flat. Both eyes on left side, separated by a narrow bony ridge. Gill rakers lanceolate, 9-13 on lower arm of first arch. Canine teeth present anteriorly, 6-13 in lower jaw of blind side. Dorsal origin in front of upper eye. Scales of ocular side ctenoid, those of blind side cycloid. Lateral line curved above pectoral, forming 2 branches on head, the upper ending between 8th to 12th dorsal rays. Brownish on ocular side, with a varying pattern of dusky spots and blotches, but always a distinctive larger blotch on anterior end of straight part of lateral line and a smaller blotch halfway to caudal base.

Distribution : Indo-West Pacific.

Remarks : A commercial fishery exists.

447. *Pseudorhombus elevatus* Ogilby, 1912

1912. *Pseudorhombus elevatus* Ogilby, *Mem. Queensland Mus.*, **1** : 45.

Description : Body oval and flat, depth 1.8-2.0 in standard length; dorsal profile of head slightly notched in front of eyes. Eyes on left side. Maxilla extending below middle of lower eye, 2.2-2.5 in head. Gill rakers lanceolate, 11-15 on lower arm of first arch. Teeth small in both jaws, scarcely enlarged anteriorly, 23-32 teeth on blind side of lower jaw. Dorsal origin above anterior nostril of blind side. Scales ctenoid on eyed-side, cycloid on blind side. Lateral line curved above pectoral and forming 2 branches on head, the upper ending between 9th to 11th dorsal rays. Ocular side pale brown, numerous faint blotches arranged in 5 irregular rows along body, 3 large distinct blotches along straight part of lateral line; 2 additional smaller blotches, one above curve of lateral line and the other below tip of pectoral. Median fins with brown spots and markings.

Distribution : Indo-Pacific.

Remarks : Of minor fishery significance.

448. ***Pseudorhombus malayanus*** Bleeker, 1866

1866. *Pseudorhombus malayanus* Bleeker, *Ned. Tijdschr. Dierk*, **3** : 43.

Description : Body oval and flat, both eyes on left side. Gill rakers moderate or rather short, 8-10 on lower arm of fist arch. Teeth small in both jaws, teeth of lower jaw stronger and wider, 7-11 teeth on blind side of lower jaw. Scales on both sides ctenoid. Lateral line curved above pectoral and forming 2 branches on head, the upper ending between 9th to 11th dorsal rays. Eyed side brownish; a dark blotch anteriorly on straight part of lateral line.

Distribution : East coast of India, eastward to the Philippines.

Remarks : Of minor fishery significance on the east coast of India.

449. ***Pseudorhombus triocellatus*** (Bloch & Schneider, 1801)

1801. *Pleuronectes triocellatus* Bloch & Schneider, *Syst. Ichth.* : 145.

1984. *Psedorhombus triocellatus* Talwar & Kacker, *Comm. Sea Fish. India* : 857.

Description : Body oval and flat; dorsal profile of head sometimes slightly notched in front of eyes; both eyes on left side. Teeth minute. Gill rakers long and slender, about 23 on lower arm of first arch. Dorsal origin above anterior nostril of blind side, anterior rays longer. Lateral line curved above pectoral, forming 2 branches on head, the upper ending between 10th-13th rays of dorsal. Scales ctenoid on ocular side, cycloid on blind side; ctenoid, anteriorly and near the bases of vertical fins. Ocular side brownish, with darker spots and markings; 3 conspicuous and large dark ocelli arranged in the form of a triangle; dorsal, anal and caudal with dark spots and blotches.

Distribution : East coast of India, to Malay Archipelago.

Remarks : Taken commercially in small quantities.

Family CYNOGLOSSIDAE

450. ***Cynoglossus arel*** (Schneider, 1801)

1801. *Pleuronectes arel* Schneider, *Syst. Ichth. Bloch* : 159.

1984. *Cynoglossus arel* Talwar & Kacker, *Comm. Sea. Fish. India* : 873.

Description : Body flat and elongate. Two nostrils on ocular side, the anterior one tubular in front of lower eye; posterior one simple, in anterior half of inter-orbital space. Snout obtusely pointed; rostral hook short; 2 lateral lines on ocular side, medial lateral line with 56-70 scales, 7-9 rows of scales between them. No lateral line on blind side. Scales large, ctenoid on ocular side, cycloid on blind side. Dorsal with 116-130 rays; anal with 85-98 rays; caudal rays 10. Ocular side of body uniform brown, with a dark patch on gill cover.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery value in our area.

451. *Cynoglossus bilineatus* (Lacepede, 1802)

1802. *Achirus bilineatus* Lacepede, *Hist. nat. Poiss.*, **4** : 659, 663.

1984. *Cynoglossus bilineatus* Talwar & Kacker, *Comm. Sea. Fish. India* : 874.

Description : Body flat and elongate. Two nostrils on ocular side. Snout rounded; rostral hook short, reaching hardly before vertical through front border of anterior nostril. Two lateral lines on ocular side; 88-96 scales on median lateral line, 13-16 rows of scales between lateral lines. Two lateral lines on blind side. Scales ctenoid on ocular side. Dorsal 107-113 rays; anal with 80-88 rays; caudal with 12 rays. Body brown, with irregular dark blotch on operculum.

Distribution : Indo-West Pacific.

Remarks : Forms a part of commercial catches.

452. *Cynoglossus dispar* Day, 1877

1877. *Cynoglossus dispar* Day, *Fishes of India* : 434, pl. 96, fig. 2.

Description : Body flat and elongate, eyes large and widely separate. Two nostrils on ocular side. Snout rounded; rostral hook short; angle of mouth nearer to snout tip than gill-opening. Two lateral line on ocular side, 102-119 scales on median line; 18-20 rows between two lines; two lateral lines on blind side. Scales ctenoid on ocular side except those on lateral line; scales on blind side cycloid; dorsal with 109 to 113 rays; anal with 90 to 92 rays; caudal with 10 rays. Body brownish with somewhat darker irregular blotches.

Distribution : India and Pakistan.

Remarks : Of minor fishery significance.

453. *Cynoglossus kopsi* (Bleeker, 1851)

1851. *Plagusia kopsii* Bleeker, *Nat. Tijdschr. Ned.-Indie*, **2** : 494.

1977. *Cynoglossus kopsi* Menon, *Smithson. Contr. Zool.*, (238) : 42.

Description : Body flat and elongate. Eyes contiguous. Two nostrils on ocular side, the anterior one tubular, in front of lower eye; the posterior one simple, in between anterior part of eyes. Maxilla extending to below posterior half of fixed eye; angle of mouth nearer to snout tip than to gill-opening. Scales ctenoid on both sides; usually 2 or 3 lateral lines on ocular side; mid lateral line with 57-72 scales; 7-12 scales between upper and middle line; no lateral line on blind side. Brownish, with irregular darker spots.

Distribution : Indo-West Pacific

454. *Cynoglossus lida* (Bleeker, 1851)

1851. *Plagusia lida* Bleeker, *Nat. Tijdschr. Ned.-Indie*, **1** : 413.

1984. *Cynoglossus lida* Talwar & Kacker, *Comm. Sea Fish. India* : 879.

Description : Body flat and elongate. Two nostrils on ocular side. Rostral hook long, angle of mouth nearer to gill-opening than to snout tip. Two lateral lines on ocular side; median line with 72-90 scales, 12-15 rows of scales between the lines; no lateral line on blind side. Scales ctenoid on both sides of body. Dorsal with 99-108 rays; anal with 77-85 rays; caudal rays 10. Ocular side light brownish, blind side whitish.

Distribution : Indo-West Pacific.

Remarks : Taken commercially in small quantities.

455. *Cynoglossus lingua* Hamilton, 1822

1822. *Cynoglossus lingua* Hamilton *Fishes of Ganges* : 32.

Description : Body flat and very elongate. Two nostrils on ocular side. Rostral hook short. Two lateral lines on ocular side. No lateral line on blind side. Scales ctenoid on ocular side, with cycloid scales on head and on lateral lines; 11-12 rows between lateral lines; mid lateral line with 90-100 scales. Scales cycloid on blind side, fairly large. Dorsal with 126-138 rays; anal with 97-114 rays; caudal with 10 rays. Ocular side sometimes with irregular brown–black patches, with a large black blotch on operculum.

Distribution : India, eastward to the Philippines.

Remarks : Of minor fishery significance.

456. *Cynoglossus macrostomus* Norman, 1928

1928. *Cynoglossus macrostomus* Norman, *Rec. Indian Mus.*, **30** (2) : 204.

Description : Body flat and elongate. Inter-orbital space narrow or sometimes absent. Two nostrils on ocular side, the anterior tubular, in front of lower eye; posterior one simple and between anterior part of eyes. Snout obtusely pointed. Maxilla extending to well beyond posterior margin of fixed eye; angle of mouth nearer to snout tip than to gill-opening. Scales ctenoid on both sides; two lateral line on ocular side; mid lateral line with 80-92 scales; 14-16 scales between them; no lateral line on blind side. Light brownish with dark brown mottling on it.

Distribution : Coasts of India.

457. *Cynoglossus punticeps* (Richardson, 1846)

1846. *Plaguisa punticeps* Richardson, *Rept. Br. Assoc. Adv. Sci.* : 280.

1984. *Cynoglossus punticeps* Talwar & Kacker, *Comm. Sea Fish. India* : 882.

Description : Body flat and elongate. Eyes with a narrow interspace between them. Two nostrils on ocular side, the anterior nostril tubular, in front of lower eye. Two lateral lines on ocular side; median line with 78-99 scales; 15-19 rows of scales between them; no lateral line on blind side; scales ctenoid on both sides of body. Dorsal with 90-100 rays; anal with 72-78 rays; caudal with 10 rays. Ocular side yellowish-brown with very distinct irregular dark brown blotches.

Distribution : Indo-West Pacific.

Remarks : Common in commercial catches.

458. *Cynoglossus semifasciatus* Day, 1877

1877. *Cynoglossus semifasciates* Day, *Fishes of India* : 346, pl. 97, fig. 5.

Description : Body flat and elongate; eyes small, separated by a small inter-orbital space. Two nostrils on ocular side, the anterior nostril tubular, in front of lower eye. Two lateral lines on ocular side; mid lateral line with 70-78 scales; 11-14 between them. No lateral line on blind side. Scales ctenoid on both sides of body. Dorsal with 99-107 rays; anal with 75-83 rays; caudal with 10 rays. Ocular side light brownish with a number of irregular vertical dark bands.

Distribution : India.

Remarks : Of minor fishery importance on the east coast of India.

459. *Paraplagusia bilineata* (Bloch, 1784)

1784. *Pleuronectes bilineata* Bloch, *Naturges. ausland Fische.*, **3** : 29, pl. 188.

1984. *Paraplagusia bilineata* Talwar & Kacker, *Comm. Sea Fish. India* : 885.

Description : Body flat and elongate; snout rounded; rostral hook long and usually extending beyond lower eye; lips with rows of fringed tentacles. Two or 3 lateral lines on ocular sides, no lateral line on blind side. Scales ctenoid on both sides of body; 16-19 scales between upper and middle lateral lines. Dorsal with 100-114 rays; anal with 72-89 rays. Ocular side brownish, spotted or marbled with darker patches.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery significance.

460. *Paraplagusia blochii* (Bleeker, 1851)

1851. *Plagusia blochii* Bleeker, *Nat. Tijdschr. Ned.- Indie.*, **1** : 411.

1984. *Paraplagusia blochii* Talwar & Kacker, *Comm. Sea. Fish. India* : 886.

Description : Body flat and elongate; snout rounded; rostral hook rather short and usually not reaching below middle or posterior part of lower eye; lips with fringed tentacles. Two lateral lines on ocular side, no lateral line on blind side; scales ctenoid on both sides of body; 13-15 scales between upper and middle lateral lines. Dorsal with 77-94 rays; anal with 76-82 rays. Ocular side uniformly brownish.

Distribution : India, eastward to Australia.

Remarks : Of minor fishery significance.

Family SOLEIDAE

461. *Aesopia cornuta* Kaup, 1858

1858. *Aesopia cornuta* Kaup, *Archiv. Naturges*, **4**(1) : 98.

Description : Body oblong and compressed, depth about 3.0 in total length. Eyes contiguous; nasal tube short. Dorsal and anal confluent with caudal; dorsal with 69-79 rays, the first ray swollen, large and free. Body grey or brown, with 13 dark brown cross band extending on to vertical fins. Caudal dark brown.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery values on the east coast of India.

462. ***Euryglossa orientalis*** (Bloch, 1801)

1801. *Pleuronectes orientalis* Bloch, *Syst. Ichthyol.* : 157.

1984. *Euryglossa orientalis* Talwar & Kacker, *Comm. Sea Fish. India* : 861.

Description : Body oblong. Eyes separated by a scaly interspace. Mouth small; caudal confluent with dorsal and anal; caudal rays 18-20; pectoral well developed. Scales ctenoid on both side, scales on head and nape of same size as of body; on blind side head scales modified into cutaneous sensory processes. Body grey or brown with cloudy indistinct patches; right pectoral dark.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery value.

463. ***Solea elongata*** Day, 1877

1877. *Solea elongata* Day, *Fishes of India* : 426, pl. 90, fig. 4.

Description : Body elongate and flat; depth 2.6-3.0 in total length. Eyes on right side of body, separated by a narrow scaly space. Snout obtusely pointed with series of short cutaneous sensory process on blind side. Mouth small and curved. Dorsal with 72-77 rays; anal with 59-63 rays. Pectoral on ocular side longer than that of blind side. Scales ctenoid on both sides of body. Olive-brown, with spots and black blotches on ocular sides. Often tend to form irregular vertical bands; a black blotch on distal part of pectoral.

Distribution : Northern Indian Ocean.

Remarks : Of minor fishery significance.

464. ***Solea ovata*** Richardson, 1846

1846. *Solea ovata* Richardson, *Rep. Br. Assoc. Adv. Sci.* : 279.

Description : Body ovate and flat; depth 2.0-2.2 in total length. Eyes on right side, separated by a small concave scaly space of moderate width. Snout obtusely pointed, with series of short cutaneous sensory processes on blind side. Mouth small and curved. Dorsal with 58-67 rays, anal with 41-51 rays. Pectoral on ocular side about twice as long as that of blind side. Scales ctenoid on both sides of body. Olive-brown, with spots and black blotches on ocular side of body and fins; deep black blotches on outer two-thirds of pectoral.

Distribution : India, eastward to China.

Remarks : Of minor fishery value.

465. ***Synaptura albomaculata*** Kaup, 1858

1858. *Synaptura albomacualta* Kaup. *Archiv. Naturgesch.*, **24** (1) : 96.

Description : Mouth small; lower lip fringed. A small tentacle present between the tubular nostrils on ocular side of body. Dorsal with 72-80 rays; anal with 57-63 rays. Pectoral 2.5-3.0 in head. Scales on head and body similar in size; scales on blind side of head modified into cutaneous sensory processes. Brownish, with 2- 3 rows of white spots on ocular side of body; vertical fins blackish towards their edges on both sides, with a narrow white margin.

Distribution : East coast of India, and Myanmar.

Remarks : Taken commercially in small quantities on the east coast of India.

466. ***Synaptura commersoniana*** (Lacepede, 1802)

1802. *Pleuronectes commersonianus* Lacepede, *Hist. nat. Poiss,* **3** : pl. 12, fig. 2.

1984. *Synaptura commersoniana* Talwar & Kacker, *Comm. Sea Fish. India* : 867.

Description : Mouth small, lower lip distinctly fringed. Dorsal with 72-81 rays; anal with 57-8 rays. Pectoral 5-6 in head length. Scales on head and nape on eyed-side larger than those on body and scales on blind side modified into cutaneous sensory processes. Grey-brown on ocular side of body; dorsal, anal and caudal dusky towards edges on both sides and with a conspicuous white margin.

Distribution : Indo-West Pacific.

Remarks : Taken commercially in small quantities.

467. ***Zebrias quagga*** (Kaup, 1858)

1858. *Aesopia quagga* Kaup, *Achiv. Naturges* : 98.

1984. *Zebrias quagga* Talwar & Kacker, *Comm. Sea Fish. India* : 869.

Description : Body elongate and flat with scales moderately ctenoid on both sides. Eyes on right side, practically contiguous; each eye with a small tentacle. Mouth curved. Dorsal and anal confluent with caudal, the outline of fins continuous around caudal. Upper rays of right pectoral produced, left pectoral rather smaller. Brownish, with 10-11 dark cross-bars on ocular side of body, extending on to vertical fins. Caudal irregularly marked with yellowish-white and black.

Distribution : Indo-West Pacific.

Remarks : Of minor fishery significance.

468. ***Zebrias synapturoides*** (Jenkins, 1910)

1910. *Synaptura synapturoides* Jenkins, *Mem. Indian Mus.*, **3** : 28, pl. 3. fig. 4.

1984. *Zebrias synapturoides* Talwar & Kacker, *Comm. Sea. Fish. India* : 870.

Description : Body elongate and flat, with strongly ctenoid scales on both sides. Eyes on right side, nearly contiguous, without tentacles. Mouth curved. Posterior rays of dorsal and

anal joined only to basal half of caudal, leaving the later distinct; right pectoral shorter than eye, the upper rays not produced. Scales in longitudinal series 61-71. Body brownish, with 13 dark cross-bands on ocular side.

Distribution : India.

Remarks : Of minor fishery significance.

Order TETRAODONTIFORMES

Family TRIACANTHIDAE

469. ***Pseudotriacanthus striglifer*** (Cantor, 1849)

1849. *Tricanthus strigilifer* Cantor, *Jour. Asiastic. Soc. Bengal,* **18** (2) : 263.

1962. *Pseudotriacanthus strigilifer* De Beaufort & Briggs, *Fish. Indo-Aust. Archip.,* **11** : 472.

Description : Body compressed, covered with small scales of several transverse rows. Mouth small; gill opening restricted. First dorsal with 5 spines, the 2nd spine more than half the length of the 1st spine; second dorsal with 22-23 rays; anal with 15-16 rays; pectoral rays 12-14; pelvic with a single strong spine. Silvery; some irregular yellow lines and blotches on head and body.

Distribution : Indo-West Pacific.

470. ***Triacanthus brevirostris*** Schlegel, 1850.

1850. *Triacanthus brevirostris* Schlegel, *in* Temmink & Schlegel, *Fauna Japonica, Pisces* : 294, pl. 129, fig. 2.

Description : Body compressed, covered with small scales with a prominent spinule on top of a cruciform ridge. Depth 2.5-2.6, head 3.3-3.6 in standard length. Mouth small; upper profile of snout straight. First dorsal with 5 spines, 2nd spine about 1/3 of 1st spine; 2nd dorsal with 22-25 rays; anal with 16-20 rays; pectoral rays 13-14. Caudal peduncle depth 1.5-1.6 in standard length. Pelvis between ventral spines scarcely narrowed posteriorly. Silvery, slight brownish on back; 1st dorsal spine base and membrane black. Usually with a dark supra-orbital blotch.

Distribution : India, eastward to West-Pacific.

Remarks : Earlier reported as *Balistes biaculeatus* Bloch. Inhabits shallow coastal waters and estuarine areas.

Family BALISTIDAE

471. ***Abalistes stellatus*** (Lacepede, 1798)

1798. *Balistes stellatus* Lacepede, *Allegemeine Literature- Zeitung,* **3** (288) : 682.

1986. *Abalistes stellatus* Smith & Heemstra, *Smith's Sea Fishes* : 877.

Description : Body deep and compressed, with leathery armour of scales in regular rows; head scale rows 27-32; enlarged bony scales behind gill slit. A deep, narrow groove before

eye, below nostrils. First dorsal with 3 short spines, the 1st compressed and locked erect by the 2nd; soft dorsal with 25-27 rays; anal with 23-26 rays; caudal double emarginate, upper and lower lobes extended with growth. Olive brown with numerous blue spots on back; 3 large white blotches on back and mid-lateral stripe disappear with growth; 3-4 yellow lines from mouth to pectoral base.

Distribution : Red Sea and Indo-West Pacific.

472. ***Balistes vetula*** Linnaeus, 1758

1758. *Balistes vetula* Linnaeus, *Systema Nature,* (ed. 10) **1** : 329.

Description : Dorsal profile of head slightly arched. Mouth terminal; a deep, narrow groove before eye, below nostrils. First dorsal with 3 spines; second with 29-32 rays; anal with 27-29 rays; pectoral rays 13-15. Anterior rays of dorsal and outer rays of caudal filamentous in large adults. A series of large bony plates behind gill opening. Least depth of caudal peduncle about 1.7 in its length. Dark brown lines radiating from eye; a blue band from snout to base of pectoral.

Distribution : Atlantic and Indian Ocean.

473. ***Canthidermis maculatus*** (Bloch, 1786)

1787. *Balistes maculatus* Bloch, *Naturges. ausland. Fische,* **2** : 25, pl. 151.

1986. *Canthidermis maculatus* Smith & Heemstra, *Smith's Sea Fishes* : 878.

Description : Dorsal profile of head slightly convex. Mouth terminal; a deep groove before eye, below nostrils; no groove on cheek. First dorsal with 3 spines; second with 26-27 rays; anal with 24-25 rays; pectoral rays 15. Caudal peduncle normal, without spines, ridges or tubercles. Small juveniles with spots; in adult, body and head dark, lighter below with elongated white spots which disappear with age; fins dark.

Distribution : All warm and temperate oceans.

Remarks : In literature reported as *C. rotundatus.*

Family MONACANTHIDAE

474. ***Aluterus scriptus*** (Osbeck, 1765)

1765. *Balistes scriptus* Osbeck, *in* Georgi, *Reise Ostind. China* : 145.

1986. *Aluterus scriptus* Hutchins, *in* Smith & Heemstra, *Smith's Sea Fishes* : 883.

Description : Body oblong; snout produced, upper profile concave. Dorsal spine fully erectile, locked in position by a 2nd very small spine, originates over eye; 2nd dorsal with 43-49 rays; anal with 46-52 rays; pectoral rays 13-15; caudal longer than snout. No ventral spine. Caudal peduncle deeper than long. Olive brown to grey; juveniles yellowish brown with dark spots.

Distribution : Worldwide in tropical and subtropical seas.

475. ***Paramonacanthus choirocephalus*** (Bleeker, 1852)

1852. *Monacanthus choirocephalus* Bleeker, *Nat. Tijdschr. Ned.-Indie,* **1** : 411.

1982. *Paramonacanthus choirocephalus* Munro, *The marine and freshwater fishes of Ceylon* : 274.

Description : Dorsal profile of snout slightly concave. Depth at 2nd dorsal origin 2.0-2.1 in standard length. First dorsal spine erectile, locked in position by a 2nd minute spine, originates above eye, anteriorly with blunt spinules and posteriorly with 2 rows of strong barbs. Second dorsal and anal with 28-30 rays; pelvic spine movable; caudal rounded. Small fleshy tentacles on body. Brownish to grey, with a dark blotch below anterior part of soft dorsal and 2 transverse bands on caudal.

Distribution : East coast of India, to Indonesia.

Remarks : Common along Chennai coast.

476. ***Psilocephalus barbatus*** (Gray, 1831)

1831. *Anacanthus barbatus* Gray, *Zool. Misc.* : 8.

1962. *Psilocephalus barbatus* De Beaufort & Briggs, *Fish. Indo-Aust. Archip.,* **11** : 344.

Description : Body very elongate, compressed; depth about 11 in standard length. Snout long, pointed; mouth superior; a fleshy barbel on chin; gill opening small, horizontal, before and below front border of eye. Single, setiform dorsal spine; soft dorsal with 48-50 rays; anal with 58-62 rays; pectoral rays 8-10. In male, a skinny prolongation from throat, continued nearly to anal. Grayish brown; fins yellowish; caudal with about 6 vertical or angular dark bands.

Distribution : East coast of India, eastward to the Philippines, Australia.

Family OSTRACIIDAE

477. ***Ostracion cubicus*** Linnaeus, 1758

1758. *Ostracion cubicus* Linnaeus, *Syst. Nat.* (ed. 10) **1** : 332.

Description : Carapace 4-angled with no ridge on dorsal midline; lateral and pelvic ridges rounded; snout not projecting; back gently concave. Length of anterior opening of carapace (mouth) 1.3-2.0 in horizontal eye diameter. Dorsal with 8-9, anal with 9, pectoral with 10-11 and caudal with 10-12 rays. Adult males brilliant yellow with larger round black spots; adults with dark edged pale blue or white spots on carapace and dark spots on caudal and peduncle.

Distribution : Indo-West Pacific.

478. ***Rhynchostracion nasus*** (Bloch, 1784)

1784. *Ostracion nasus* Bloch, *Naturges. ausland. Fische,* **1** : 118.

1982. *Rhynchostracion nasus* Munro, *The Marine and Freshwater Fishes of Ceylon* : 277.

Description : Carapace 5 ridged, spineless; ridges rather sharp. Body wider inferiorly than high; a distinct ridge along median line of back. Inter-orbital space concave, more in adults, in which a hump exists above mouth. Dorsal and anal with 9 rays each; pectoral rays 10. Caudal rounded, about 1/5 of total length. Scutes 11-12 between branchial opening and caudal base; 7-8 across ventral surface; 6-7 transversely. Greenish yellow, with small irregularly scattered round black spots; abdomen whitish, black spots on tail and caudal fin.

Distribution : Seas of India to Malay Archipelago and Pacific.

479. ***Tetrosomus gibbosus*** (Linnaeus, 1758)

1758. *Ostracion gibbosus* Linnaeus, *Syst. Nat.* (ed.10) : 332.

1955. *Tetrosomus gibbosus* Munro, *The marine and freshwater fishes of Ceylon* : 276, pl. 54, fig. 805.

Description : Carapace three-ridged. A large sharp triangular spine on middle of dorsal ridge, which diminishes in size with age. Ventral ridges well developed, each armed with 4 backward-directed strong spine. Dorsal with 9, anal with 9-10, pectoral with 10-11 and caudal with 10 rays. Olive brown with 3 ill-defined dark bands inferiorly. A light blue spot in center of each scute.

Distribution : Indo-West Pacific.

Family TETRAODONTIDAE

480. ***Arothron hispidus*** (Linnaeus, 1758)

1758. *Tetraodon hispidus* Linnaeus, *Syst. Nat.* (ed. 10) **1** : 333.

1986. *Arothron hispidus* Smith & Heemstra, *Smith's Sea Fishes* : 896.

Description : Body heavy and broad. Nasal organ a bifid tentacle, apposing surface of each tentacle with minute pits. Caudal peduncle depth less than its length. Dorsal and anal with 10 rays; pectoral with 17-19 rays. A single lateral line. White spots on head, back and sides; 1-2 yellow rings and several yellow spots around pectoral; 2-5 bars across sides, always a short dark bar below eye and another below pectoral.

Distribution : Tropical Indo-West Pacific.

481. ***Arothron immaculatus*** (Bloch & Schneider, 1801)

1801. *Tetrodon immaculatus* Bloch & Schneider, *Syst. Ichth.* : 507.

1986. *Arothron immaculatus* Smith & Heemstra, *Smith's Sea Fishes* : 896.

Description : Body heavy and broad. Whole body spiny except lips and caudal peduncle. Nasal tentacles separated by nasal fossa. Dorsal and anal with 9-10 rays; pectoral rays 16-17. Yellowish-olive above, lighter below. Black edge of caudal and a blotch at pectoral base are characteristic.

Distribution : Indo-West Pacific.

Remarks : Common along Chennai coast.

482. *Arothron leopardus* (Day, 1878)

1878. *Tetrodon leopardus* Day, *Fish. India* : 706, pl. 180, fig. 2.

1982. *Arothron leopardus* Munro, *The marine and freshwater fishes of Ceylon* : 282.

Description : Body heavy and broad. Nasal organ a bifid tentacle. Eyes of moderate size, 1.5 diameter apart; inter-orbital space flat. Dorsal with 11 rays; anal with 8-9 rays; pectoral rays 18. Spines along back, from front edge of eyes to dorsal, widely separated; below closer together and reach up to vent. Olive above, extending two-thirds down sides, with an interrupted black network surrounding white spots. Three black cross bands, one over a head, with a V-shaped light inter-orbital band, second above pectoral and the third from the base of dorsal.

Distribution : Coasts of India.

483. *Arothron nigropunctatus* (Bloch & Schneider, 1801)

1801. *Tetrodon nigropunctatus* Bloch & Schneider, *Syst. Ichth.* : 507.

1986. *Arothron nigropunctatus* Smith & Heemstra, *Smith's Sea Fishes* : 897.

Description : Body heavy, broad, mostly spiny; spines small. Two nasal tentacles on each side. Eye small, 3 diameters apart. Dorsal with 10-11 rays; anal with 10-12 rays; pectoral with 18-19 rays. Greenish above, fading below; scattered black spots over body. Anus in a black spot.

Distribution : Indo-West Pacific.

484. *Arothron reticularis* (Bloch & Schneider, 1801)

1801. *Tetrodon reticularis* Bloch & Schneider, *Syst. Ichth* : 506.

1991. *Arothron reticularis* Talwar & Jhingran, *Inland Fishes of India*, **2** : 1054.

Description : Body oblong. Inter-orbital space broad and flat. Lateral line inconspicuous. Dorsal and anal rounded and with 10-11 rays; pectoral with 19 rays; caudal rounded. Small spinules on head and body except on caudal peduncle and anterior part of snout. Deep grey or brown above, white below; small whitish spots on back; belly with longitudinal brown stripes, curving upward on sides of head. Dorsal, anal and pectoral yellowish hyaline.

Distribution : Indo-West Pacific.

485. *Arothron stellatus* (Bloch & Schneider, 1801)

1801. *Tetrodon stellatus* Bloch & Schneider, *Syst. Ichth* : 503.

1991. *Arothron stellatus* Talwar & Jhingran, *Inland Fishes of India*, **2** : 1054.

Description : Body oblong. Inter-orbital space broad and flat. Lateral line inconspicuous. Dorsal and anal rounded with 10-12 rays each; pectoral with 17-19 rays; caudal rounded. Head and body covered with small spinules; lips naked; tail posteriorly naked. Brownish yellow on back and sides with white spots. Juveniles with dark stripes on belly. Fins without spots.

Distribution : Indo-West Pacific.

Remarks : It is of no interest to fishery.

486.*Canthigaster margaritatus* (Ruppell, 1829)

1829. *Tetrodon margaritatus* Ruppell, *Atlas Reise Nordl, Africa* : 66.

1982. *Canthigaster margaritatus* Munro, *The marine and freshwater fishes of Ceylon* : 279.

Description : Back compressed into a keel; nasal organs inconspicuous. Eyes rather high up and in posterior half of length of head. Upper profile of snout rather concave. Dorsal with 9-10 rays; anal with 9 rays; pectoral with 14-16 rays. Dorsal situated in almost last fourth of length, spines minute. Dull reddish, becoming light beneath, fins yellow. Large black blue edged ocellus at dorsal base; horizontal blue lines and dark edged blue spots on head, cheek and back; caudal orange with yellow spots.

Distribution : Indo-West Pacific.

Remarks : Of aquarium interest.

487. *Chelonodon fluviatilis* (Hamilton, 1822)

1822. *Tetrodon fluviatilis* Hamilton, *Fishes of Ganges* : 6, 362, pl. 30, fig. 1

1991. *Chelonodon fluviatilis* Talwar & Jhingran, *Inalnd Fishes of India,* **2** : 1055.

Description : Body oblong and compressed laterally. Inter-orbital convex. Nasal organ cup-like, with two rounded lobes at its tip. Dorsal with 14-16 rays; anal with 12-15 rays; pectoral with 22 rays. Two inconspicuous lateral line. Three large yellowish encircled dark patches on back between eyes and dorsal. Anterior half of head variably coloured, often irregularly dark. Sides with 5-28 rounded, mostly ocellated, dark spots of which always one at base of dorsal, one at base of caudal. Belly with confluent spots on sides. Caudal with numerous dark cross bands.

Distribution : India.

Remarks : Common along Chennai coast; but being poisonous, of no interest to fisheries.

488. *Chelonodon patoca* (Hamilton, 1822)

1822. *Tetrodon patoca* Hamilton, *Fishes of Ganges* : 7, 362, pi. 18, fig. 2.

1990. *Chelonodon patoca* Talwar & Jhingran, *Inland Fishes of India,* **2** : 1057.

Description : Body fairly elongate; head broad, upper profile evenly arched; inter-orbital space flat and broad. Nasal organ a round depression, surrounded by a low rim produced into a posterior and anterior flap. Dorsal with 9-10 rays; anal with 10 rays; pectoral with 15-16 rays. Upper lateral line bent downward below dorsal, lower lateral line running along lower half of tail on a feeble ridge; lateral lines often inconspicuous. Body with a spiny patch on back, throat and belly; sides naked. Blackish above with numerous small round yellowish spots, flanks and lower parts silvery. Juveniles with 3-4 dark cross bands extending from back to middle of side.

Distribution : Tropical Indo-West Pacific.

Remarks : Common, but of no interest to fishery.

489. ***Lagocephalus inermis*** (Schlegel, 1850)

1850. *Tetrodon inermis* Schlegel, *in* Temminck & Schlegel, *Fauna Japan, Pisces* : 278, pl. 122, fig. 2.

1986. *Lagocephalus inermis* Smith & Heemstra, *Smith's Sea Fishes* : 901.

Description : Body elongate; minute, embedded spinules on belly from below eye almost to anus, otherwise body and head smooth; caudal slightly concave. Dorsal with 12-13 rays; anal with 10-12 rays; pectoral with 16-17 rays. Distance from dorsal origin to caudal base 1.8-2.3 in distance from upper jaw to dorsal origin. Greenish or dark grey above, silvery white below. Gill opening black internally; peritoneum pale grey. Fins pale, except dorsal and caudal dusky distally.

Distribution : Indo-West Pacific.

490. ***Lagocephalus lunaris*** (Bloch & Schneider, 1801)

1801. *Tetrodon lunaris* Bloch & Schneider, *Syst. Ichth* : 505.

1991. *Lagocephalus lunaris* Talwar & Jhingran, *Inland Fishes of India,* **2** : 1058.

Description : Body elongate; inter-orbital space flat. Nasal papilla low, scarcely raised above surface of snout. Dorsal with 11-12 rays; anal with 10-11 rays; pectoral with 16-17 rays. Caudal lunate. Two lateral lines, lower line a low and straight ridge from chin to lower part of caudal peduncle. Spinules on back from nostrils to dorsal, snout, sides and caudal peduncle smooth. Greenish-olive on back; sides and belly creamy white; a yellowish streak from eye to caudal; fins yellowish.

Distribution : Indo-West Pacific.

Remarks : Common along our coast, but of no interest to fisheries.

491. ***Lagocephalus spadiceus*** (Richardson, 1845)

1845. *Tetrodon spadiceus* Richardson, *Voy. Sulphur. Ichth* : 123, pl. 58, fig. 4, 5.

1991. *Lagocephalus spadiceus* Talwar & Jhingran, *Inland Fishes of India,* **2** : 1059.

Description : Body rather elongate with rounded back. Head broad, bony inter-orbital space flat. Nasal papilla low. Dorsal and anal with 11-12 rays; pectoral with 17 rays; caudal lunate. Two lateral lines, lower line a low and straight ridge from chin to lower part of caudal peduncle. Spinules on dorsal surface of body extend only about halfway from interorbital region to dorsal. Greenish olive above, flanks and belly whitish. Posterior margin of caudal entirely white.

Distribution : Indo-West Pacific.

Remarks : A common puffer fish of our coast but of no interest to fisheries.

492. *Takifugu oblongus* (Bloch, 1786)

1786. *Takifugu oblongus* Bloch, *Naturges. ausland. Fische*, (2) : 6, pl. 146, fig. 1.

1991. *Takifugu oblongus* Talwar & Jhingran, *Inland Fishes of India*, **2** : 1059.

Description : Body fairly elongate. Head broad; bony inter-orbital space flat or slightly convex, Longer than snout. Nasal organ covered by a small sac with two nostrils. Dorsal with 12-13 rays; anal with 10-11 rays; pectoral with 16 rays; caudal truncate. Top of head, front part of back, and belly with spinules. Brownish above with pale spots, yellowish white below; narrow dark bars on sides. Fins stained with orange.

Distribution : Indo-West Pacific.

Remarks : Inhabits shallow coastal waters, enters brackish waters. No interest to fisheries.

493. *Torquigener hypselogeneion* (Bleeker,1852)

1852. *Tetraodon hypselogeneion* Bleeker, *Verh. batav. Genoot. Kunst. Wet.*, **24** : 24.

1986. *Torquigener hypselogeneion* Smith & Heemstra, *Smith's Sea Fishes* : 902.

Description : Body elongate. Head 2.5-2.9, caudal peduncle 4.6-5.4 in standard length; bony inter-orbital 5-7 in head. Dorsal with 8-9 rays; anal with 7-8 rays; pectoral with 13-14 rays. Spinules on back not reaching dorsal origin; 14-17 spinules between pectoral bases, widely spaced on belly. Lower edge of gill opening with a cartilaginous spur overlaid by 2 or 3 short spinules. No raised keel on caudal peduncle. Dorsal surface dark brown with pale greenish spots, separated from white ventral surface by a pale yellow zone ; three dark vertical bands on sides of head.

Distribution : Indo-West Pacific.

DISCUSSION

Madras, presently known as Chennai has a unique coastline bounded by two urban estuaries, Ennore in the north and Adyar in the south. The coastal configuration is complexed by the

- Drainage of Cooum river which carries heavy loads of organic and inorganic contaminants.
- Construction of fishing harbour at Kasimedu and a breakwater in the harbour.
- Sand bar formation obstructing the flow of the rivers into the sea.
- Nesting grounds of olive-ridley turtles.
- Accelerated urbanisation.

The upwelling phenomenon in the inshore waters is tied to the monsoons which fail frequently. The entire coastal stretch is subject to heavy fishing activity by deployment of trawlers and conventional catamarans. The fishing gears include shore seines, gill nets, other trawls and local, modified nets of different sizes and shapes. The coastline is dominantly sandy and the longshore drift is powerful. Its faunal diversity is yet to be understood in detail. This ichthyofaunal inventory is only an attempt to invite further work.

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REPTILES

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INTRODUCTION

Reptiles form only a small fraction of animal life in the sea as a consequence of which they have been paid little attention. However, studies on the sea turtles and their conservation have been taken up while the research on the sea snakes has lagged behind. This paper is an attempt to gain an insight into the available resources of marine reptiles found in on and off the waters of the coast of Chennai. This work is based mainly on the recent publications on the subject notably by Murthy (1977, 1992) and Sharma (1998).

SPECIES ACCOUNTS

Class REPTILIA

Turtles

Order TESTUDINES

Suborder CRYPTODIRA

Family CHELONIDAE

1. *Lepidochelys olivacea* (Eschscholtz,1829)

Lizards

Order SQUAMATA

Suborder SAURIA

Family VARANIDAE

2. *Varanus bengalensis* (Daudin,1802)

Snakes

Suborder SERPENTES

Family HYDROPHIIDAE

3. *Enhydrina schistosa* (Daudin,1803)

4. *Hydrophis spiralis* (Shaw,1802)
5. *Hydrophis cyanocinctus* Daudin,1803
6. *Hydrophis caerulescens* (Shaw,1802)
7. *Hydrophis fasciatus* (Schneider,1799)
8. *Lapemis curtus* (Shaw,1802)
9. *Microcephalophis gracilis* (Shaw,1802)
10. *Pelamis platurus* (Linnaeus,1766)
11. *Kerilia jerdoni* Gray,1849
12 *Praescutata viperina* (Schmidt, 1852)

1. ***Lepidochelys olivacea*** (Eschscholtz, 1829)

(Olive Ridley Turtle)

1829. *Chelonia olivacea* Eschscholtz, *Zool. Atlas*, p. 3.

Description : Small, broad and flattened marine turtle; its head is large and triangular in shape. The carapace in adult is arched and devoid of keels, margin is slightly serrated on the posterior aspect. Shields of the carapace are juxtaposed. The costal scutes are 5-9 (generally 6 or 7) on each side; neural or central scutes are 8-9; marginal shields are 27-29 (including one precentral or nuchal and a pair of post central or supra caudal scutes) and the mid-marginals are much wider. The plastron consists of paired gular, humeral, pectoral, abdominal, femoral and anal shields. Intergular is variable, may be single, double, or even absent; 4 pairs of inframarginals is on the ridge, each is provided with pores on the hinder margin. Head is covered with sym-metrical shields; two pairs of prefrontals are present. Three dorsal keels are present in small young turtles which become inconspicuous in adults. Single claw is present in each flipper. Tail is quite short in comparison to the body. Dorsal colouration is grey to olive-grey or olive-green, carapace is generally olive-grey. The top of the head is grey-brown, the shields yellow-white, the plastron creamy-yellow and the edges of the flippers light yellow brown. Carapace length varies between 56.5 and 75cm.

Distribution : Widely distributed in the tropical waters of the Pacific, Indian and Atlantic Oceans.

Remarks : Endangered.

2. ***Varanus bengalensis*** (Daudin, 1802)

(Indian Monitor)

1802. *Typinambis bengalensis* Daudin, *Hist. Nat. Rept*, iii, p. 67.

Description : Medium sized with head and body length measuring 72 to 75 cm with a long and compressed tail averaging 100 cms. Snout convex with an oblique slit like nostril, lying midway between end of snout and the eye; teeth are long sharp and recurved; tongue

very long forked and protrusible; scales on crown larger than those on the neck region, rounded in the anterior part and keeled posteriorly. Dark brown, the young possessing pale ring like spots and dark cross bars, which some times persist in the adult.

Distribution : India, Sri Lanka, Mynmar, South east Persia and Waziristan.

Remarks : Vulnerable.

3. ***Enhydrina schistosa*** (Daudin, 1803)

(Hook-nosed Sea Snake)

1803. *Hydrophis shistosus* Daudin, *Hist. nat. Rept.* **vii**, p. 386.

Description : Growing to a length of 1100 mm, the species is characterized by a narrow and depth rostral; the prefrontal narrowing anteriroly, small frontal, one pre and one or two post oculars; 7-8 supra labials with the last few smaller with the 3rd and 4th or the 5th only touching the eye, a single anterior temporal, narrow and elongate mental which is partly hidden in a groove in the symphysis, infra labials are five in number and adjacent to the genial v.239-322(354). Adult with a uniform greyish back, young are grey or bluish grey above and white below, with dark bands broadest dorsally.

Distribution : From Persian Gulf to the coast of Cochin, China and north coasts of Australia.

Remarks : Commonest sea snake around Chennai Coast.

4. ***Hydrophis spiralis*** (Shaw, 1802)

(Yellow Sea Snake)

1802. *Hydrus spiralis* Shaw, *Gen. Zool.*, **iii**, p. 564.

Description : Elongate body of uniform width, head with a single large anterior temporal with one pre and one or two post oculars; 6-8 supra labials with the second in contact with prefrontal with the following two or three reaching the eye; four infra-labials are in contact with the genial v.295-362. Adult yellowish or yellowish green, scales on the dorsum with black margins, annuli narrow black and complete with broad inter spaces with dorsal spots; young with blackish head with a yellow, horse-shoe shaped mark above and sometimes a black ventral line on body may be present.

Distribution : Persian Gulf of Malay Peninsula and Archipelago.

Remarks : Murthy (1977) recorded this species in good number.

5. ***Hydrophis cyanocinctus*** Daudin, 1803

(Annulated Sea Snake)

1803. *Hydrophis cyanocinctus* Daudin, *Hist. nat. Rept.* **Vii**, p. 383.

Description : Body elongate and compressed posteriorly; eyes small in the adult with one pre and two post oculars and usually two superposed anterior temporals;7-8 supra labials,

the 2nd in contact with the prefrontal and the subsequent two or three touching the eye; four infra-labials in contact with the genials. v.290-390. Yellowish or olive above with 47-65 dark bars on the dorsum; juveniles with a horse-shoe shaped mark on top of head.

Distribution : Persian Gulf of the seas of Japan, Sri Lanka, Islands of Indonesia.

Remarks : This is the second most abundant sea snake off Chennai coast.

6. ***Hydrophis caerulescens*** (Shaw, 1802)

(Malacca Sea Snake)

1802. *Hydrus caerulescens* Shaw, *Gen. Zool.*, **iii**, p. 561.

Description : Body stout anteriorly, compressed posteriorly; eyes with one pre and one or two post oculars, two or three anterior temporals and seven to eight supra-labials, of which the 2nd reaches the prefrontals and the 3rd and 4th extend to the eye; four infra-labials in contact with the genials. v.253-334. Black uniform grey in adults, and yellowish white below with about 40-60 broad bands, twice as broad as the interspaces and tapering towards the belly at the anterior part of the body which become indistinct in older specimens.

Distribution : Coasts of Pakistan, India to China and south along the Malay Archipelago.

Remarks : Not common.

7. ***Hydrophis fasciatus*** (Schneider, 1799)

(Banded Sea Snake)

1799. *Hydrus fasciatus* Schneider, *Hist. Amphib.*, **i**, p. 240.

Description : Body long and slender anteriorly and compressed posteriorly; head very small with one pre and one or two post oculars, a single large anterior temporal, five to seven supra-labials of which the second reaches the prefrontal the 3rd and 4th reaching the eye; four infra-labials in contact with the genial v.323-514. Anterior part of the body shiny black to dark olive, with yellowish spots on sides which may be continuous as dorsal bars which may extend down the sides of the body as complete annuli in the young.

Distribution : From the Gulf of Siam to the Gulf of Tony-King (Hainan) through the Indo-Australian seas to the north coast of Australia.

Remarks : Recorded from the east and west coasts of India.

8. ***Lapemis curtus*** (Shaw, 1802)

(Short Sea Snake)

1802. *Hydrus curtus* Shaw, *Gen. Zool.* iii, p. 562.

Description : Characterised by a large head and stout body; the diameter of the neck equals half or more than half the greatest diameter of the body; head with one pre and one to two post oculars, two to three anterior temporals, seven supra-labials of which the 2nd is normally in contact with the prefrontal and the 3rd and 4th eye; parietals made of small

shields; three to four infra-labials in contact with the genials. V.154-168. Adult olive or greyish above, and lighter below with about 45 to 55 dark dorsal bands tapering along the flanks and often confluent along the vertebral tine. Head blackish in the young with or without the yellow curved mark above.

Distribution : From the shores of Arabia to the west coast of Peninsular India and Sri Lanka.

Remarks : Common, along the east and west coasts of India.

9. ***Microcephalophis gracilis*** (Shaw, 1802)

(Common Narrow-headed Sea Snake)

1802. *Hydrus gracilis* Shaw, *Gen. Zool.*, **iii**, p. 560.

Description : Body elongate, compressed posteriorly and slender anteriorly with a very small head; mouth subterminal with the snout projecting beyond the lower jaw; temporal anterior followed by a scale as large or larger, rostral large, frontal small; one pre and one postocular; six supra-labials of which the 2nd reaches the prefrontal and the 3rd and 4th the eye; four infra-labials which touch the genials. V.220-287. Adult greyish above and paler below with olivaceous to yellowish head; faint whitish bands are seen in the thickest part of the body, which bands are prominent in the young as dorsal bands and lateral blotches, and as continuous bands posteriorly which number 40-60.

Distribution : From the Persian Gulf of southern China and the coast of Australia.

Remarks : Common, along the Malabar and Coromandal coasts.

10. ***Pelamis platurus*** (Linnaeus, 1766)

(Black and Yellow Sea Snake)

1766. *Anguis platurus* Linnaeus, *Syst. nat.*, ed. **12**, p. 391.

Description : Body much compressed with a narrow head. A large frontal and two or three small temporals one or two pre and two or three post oculars. Of the 7-8 supra-labials 2nd reaches the prefrontal, 4th and 5th below the eye being separates by the sub-oculars, V.264-406. Commonly with a blackish back and yellow belly; tail with black and white bars.

Distribution : Indo-Australian seas. Siberia and south of Tasmania.

Remarks : A pelagic species ; occasionally recorded.

11. ***Kerilia jerdoni*** Gray, 1849

(Jerdon's Sea Snake)

1849. *Kerilia jerdoni* Gray, *Cat. Sn.Brit. Mus.* p. 57.

Description : Body elongate with a short head with small prefrontals which rarely reach the supra-labials which number six of which the 3rd and 4th reach the eye; one pre and one post ocular; seven to eight infra-labials, the first three are in contact with the genials.

V.225-253. Body olive above and yellowish or white below, dorsum with dark rhomboidal or round spots which encircle the body as bands in the young.

Distribution : From the east coast of India and the coasts of Sri Lanka to the traits of Malacca; east as far as south Vietnam and south of Borneo.

Remarks : Recorded from the coastal waters off Chennai (Murthy, 1977).

12. ***Praescutata viperina*** (Schmidt, 1852)

(Viperine Sea Snake)

1852. *Thalassophis viperina* Schmidt, *Abn. Nat. ver. Humburg*, ii, p. 79.

Description : Body elongate with a short and depressed head which is clearly demarcated from the neck; prefrontals not reaching labials; one or two pre and post oculars; supra-labials number seven to nine of which the 3rd to 5th or only two of them reaching eye; anterior shield single or two to three in numbers; four infra-labials in contact with the genials, the posterior larger and in contact with one another. Of the usual colour being green above and lighter beneath.

Distribution : From the Persian Gulf to southern China and the Malay Archipelago.

Remarks : Present status is not known.

SUMMARY

The paper gives on updated account of marine reptiles comprising one sea turtle, one Monitor lizard and ten species of sea snakes recorded with certainity from the coast and coastal waters of Chennai, Tamil Nadu. Besides brief descriptions of the species, remarks on their distribution and present status provided

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