Estuarine Ecosystem Series 4

FAUNA OF GODAVARI ESTUARY

ANDHRA PRADESH

ZOOLOGICAL SURVEY OF INDIA

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ANDHRA PRADESH

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CONTENTS

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Estuarine Ecosystem Series 4 : Fauna of Godavari Estuary : 1-5, 2001

AN OVERVIEW

C. A. NAGESWARA RAO
Estuarine Biological Station, Zoological Survey of India, Berhampur-760 005, India

INTRODUCTION

The river Godavari which is the second largest in India, of about 1465 Kms. traverses the states of Maharastra and Andhra Pradesh and opens into the Bay of Bengal on the east coast. It has a catchment area of about 3,12,812 Sq. Kms. which lies in the States of Maharastra, Madhya Pradesh, Karnataka, Orissa and Andhra Pradesh. Raising at Triambak which is about 110 Kms. north-east of Bombay, it receives several small tributaries and assumes imposing proportions towards its lower reaches. At Rajahmundry, it is about 3.2 Kms. wide and further down at the head of the delta near Dhowleswaram, a masonary Dam and recently a barrage was constructed in four sections across the river. At Dhowleswaram which is about 63 Kms. in a straight line from the sea, the river divides into two principal branches namely the Vasistha Godavari to the west and Gautami Godavari to the east. They flow through a wide delta into the sea. The Vasistha Godavari inturn branches at Gannavaram into two namely Vasistha Godavari to the west and Vaintheyam Godavari to the east both opening into the Bay of Bengal independently. The Gautami Godavari flows south-east and opens into the Bay of Bengal at two places south of Yanam, namely Kottapalem and Bhairavapalem villages. The Gautami Godavari is also connected to the big Kakinada Bay by two channels namely the Coringa arising at Yanam and the Gaderu arising at Bhairavapalem. (Fig. 1).

The Gautami Godavari estuary is a complex estuarine system due to its proximity and its connections to the vast Kakinada Bay into which the Coringa and Gaderu rivers (arising from Gautami Godavari) opens forming a part of the estuarine system. There are extensive mud flats and dense mangrove forests on the southern side of the Bay. The two rivers Coringa and Gaderu through which some water of the Gautami Godavari is drained into the Kakinada Bay during south west mansoon period. Dense mangrove vegetation is also noticed on the banks of both the rivers and in the extensive swampy areas surrounding between the two rivers. The swampy area is also traversed by a net work of creeks and canals connecting the two rivers. The Gautami Godavari estuary alongwith river Gaderu and Coringa forms a complex estuarine system as their hydrological conditions are affected by tidal influence from two sides, i.e. north through Kakinada Bay and South, through Godavari river. The opening of Gautami Godavari at Kottapalem and near Bhairavapalem are without much mangrove vegetation and the estuarine part of this branch of Godavari normally extends upto village Kotipalli which about 20 Kms. upstream from the mouth.

The remaining two branches of the Godavari i.e. middle one, Vaintheyam branch opens at Vodalarevu (near Amalapuram) without forming any swampy-mangrove habitats, while the southern most branch, Vasistha opens into the Bay of Bengal at Antervedi, near Narsapur town, where

also good mangrove formations not noticed. The estuarine waters of this branch extends upto about 15 Kms. upstream i.e. Narsapur.

The estuarine ecosystem is a dynamic one, influenced by the daily tidal cycle of the sea on one side and the seasonal changes of the river flow during summer/rainy seasonal floods on the other; thereby influencing the qualitative nature of the estuarine fauna markedly. Therefore for the complete assessment of the faunal diversity of the Godavari Estuary, about 7 faunistic surveys were conducted in this area during premonsoon, monsoon and post monsoon periods of 1992-95. Since this study is aimed at faunal exploration, maximum collection sites were fixed at mouth area of the estuaries and also at different localities along the estuarine course of three branches of the river Godavari, Coringa and Gaderu as well. From about 27 collection sites different faunistic constituents were collected during this study and at each collection centre some physico-chemical parameters viz. temperature, salinity, p^H, sediment nature etc. were noted at the time of collection which gives an understanding of the nature of the habitat, ecology of the fauna concerned. Brief details of all the 27 collection localities is given separately. Faunal collections were made by hand picking, through forceps, sieving the sediment etc. from the intertidal areas, exposed sandy swamps, among mangrove vegetation for benthos and also through different net operations for collection of fish, prawn, crabs etc. Fish landing centres along estuarine course of the river were also visited for collecting nekton fauna. In total about 115 exs. of coelenterata, 9 exs. of minor phyla (Sipulcula) 813 exs. of Polycheata, 17 exs. of shoreline insects, 2829 exs. of Crustacea, 2268 exs. of Mollusca and 7064 exs. of fishes were collected during this surveys for detailed taxonomic studies of the respective groups.

COLLECTION LOCALITIES

1. Yanam : Near Kakinada, it is under the state of Pondichery. It is a small town about 30 Kms. south of Kakinada town on the bank of river Gautami Godavari. There is a direct road from Kakinada to Yanam; River Godavari is very wide here. Beach is sandy with very little mud. Fauna is very less and there is no mangrove vegetation.

2. Bhairavapalem : This fishing village is about 10 Kms. from B. V. Palem (on the way of Yanam) by boat. The Gaderu river joins Godavari here. The mangrove swamps on either side of Gaderu are dense. This is actually the mouth of Gautami-Godavari branch of Godavari river opening into Bay of Bengal. This area is completely muddy and sandy towards the sea beach.

3. Gadimoga : This is also a fishing village about 3 Kms. from Bhairavapalem. Mangrove plants present on both sides of the Godavari river. Shore is muddy.

4. Dariyala Tippa : This is an island formation of sandy-clay in nature of about 3Kms. from Bhairavapalem by boat towards the upstream of the river Godavari. Mangrove forest is scattered. Shore is a mixture of sand/mud. It is a good fishing area.

5. Mouth of Cholangi channel : The Cholangi channel is an agriculture drainage canal opening into the Kakinada Bay and it is also connected to Coringa river. This is a very good landing centre for cataches of fishes, crabss prawns etc. from Kakinada Bay.

6. Boddu Venkatapalem (B. V. Palem) : This is a small fishing village situated on the bank of Coringa river about 16 Kms. south of Kakinada town on the way to Yanam. Mangrove swamps are best approached from this place by boat.

7. Back waters of Kakinada Bay : This locality is near the light house, Kakinada; Shoreline is sandy. This is a big fish landing centre for the catches from Kakinada Bay.

8. Girijampeta : This site is 10 Kms. away from Yanam on the bank of Godavari towards the

mouth of the river. There is no mangrove vegetation and shoreline is sandy.

9. Etimoga : This is a small fishing village at the end of the Kakinada canal. Through this canal cargo boats/Barges enter the Kakinada Bay; mud flats are extensive which are fully exposed during low tide at the confluence point.

10. Mondigattu : This village is about 15 Kms. from Bhairavapalem and is approached by boat only. There are many small channels branching off from the main channel which traverse through extensive mangrove swamps.

11. Coringa : This is a small fishing village about 13 Kms. from Kakinada town on the way to Yanam. Coringa river passes by the side of this village and the vast mangrove-estuarine complex at this area is being protected as "Coringa wild-life sanctuary"

12. Ramannapalem : This is a small fishing village on the way to Coringa from Bhairavapalem on boat. Mangrove swamps are dense here. Shoreline is muddy.

13. Matlapalem : It is a small fishing village on the way to Bhairavapalem. Matlapalem chanel which is a flood/drainage canal passes through this place and joins the Kakinada Bay. Mangrove swamps are dense on either side of the canal.

14. Moolagattu : It is about 2 Kms. from Mondigattu. The main canal joins the Kakinada Bay after this place. The beach is muddy and it is a good fishing centre.

15. Uppada : The site is approachable by road from Kakinada and this is a fishing village for both estuarine as well as marine fishes. This point is north of light house and is the northern point of Kakinada Bay.

16. Antervedi Ferry Point : This is situated 12 Kms. from Narsapur and approachable from Narsapur Ferry point by boat. This is the largest fish landing station of Vasistha Godavari; This station is nearer to river mouth. Tidal influence is significant here. No significant mangrove vegetation is observed. The coast is sandy while the upstream sediments consist of a mixture of sand and mud.

17. Antervedi Light House : This is near the mouth of Vasistha Godavari river and nearly 15 Kms. away from Narsapur on boat towards the sea. The shoreline of the river is sandy and nearly 100-150 mts. of the beach is exposed during the low tides. Fauna is very less at this spot.

18. Chinchinada : This is about 5 Kms. away from Narsapur towards the upstream of the river. Tidal influence is effective upto this zone. This is approachable by boat from Narsapur. The beach sediment is a mixture of sand and mud.

19. Sakhinetipalli : This place is on the bank of Vaistha Godavari opposite to Narsapur town. The shoreline is muddy with less sand and small mangrove plants are seen towards the down stream of river.

20. Darbharevu : This is 10 Kms. from Narsapur by boat on the western bank of Vasistha river towards the river mouth. Some mangrove swamps present in this area. The beach is sandy with muddy patches. Collection site Chakalitippa is near to this place.

21. Antervedi Temple area : This point is 10 Kms. from Narsapur by boat. On the eastern bank of Vasistha Godavari close to the river mouth. There is a ferry point to go to the temple. At this point vast muddy areas are exposed during low tide and which are rich in benthic animals.

22. Biyyapu Tippa : This place is 14 Kms. away from Narsapur by bus. This is an island formation close to Vasistha Godavari river mouth nearer to the western bank of the river. The sediment is muddy with mixture of clay and sand.

23. Rameswaram : This place is half-way from Narsapur to Antervedi towards the down stream of the river and situated on the eastern bank. Here the coast is muddy without any

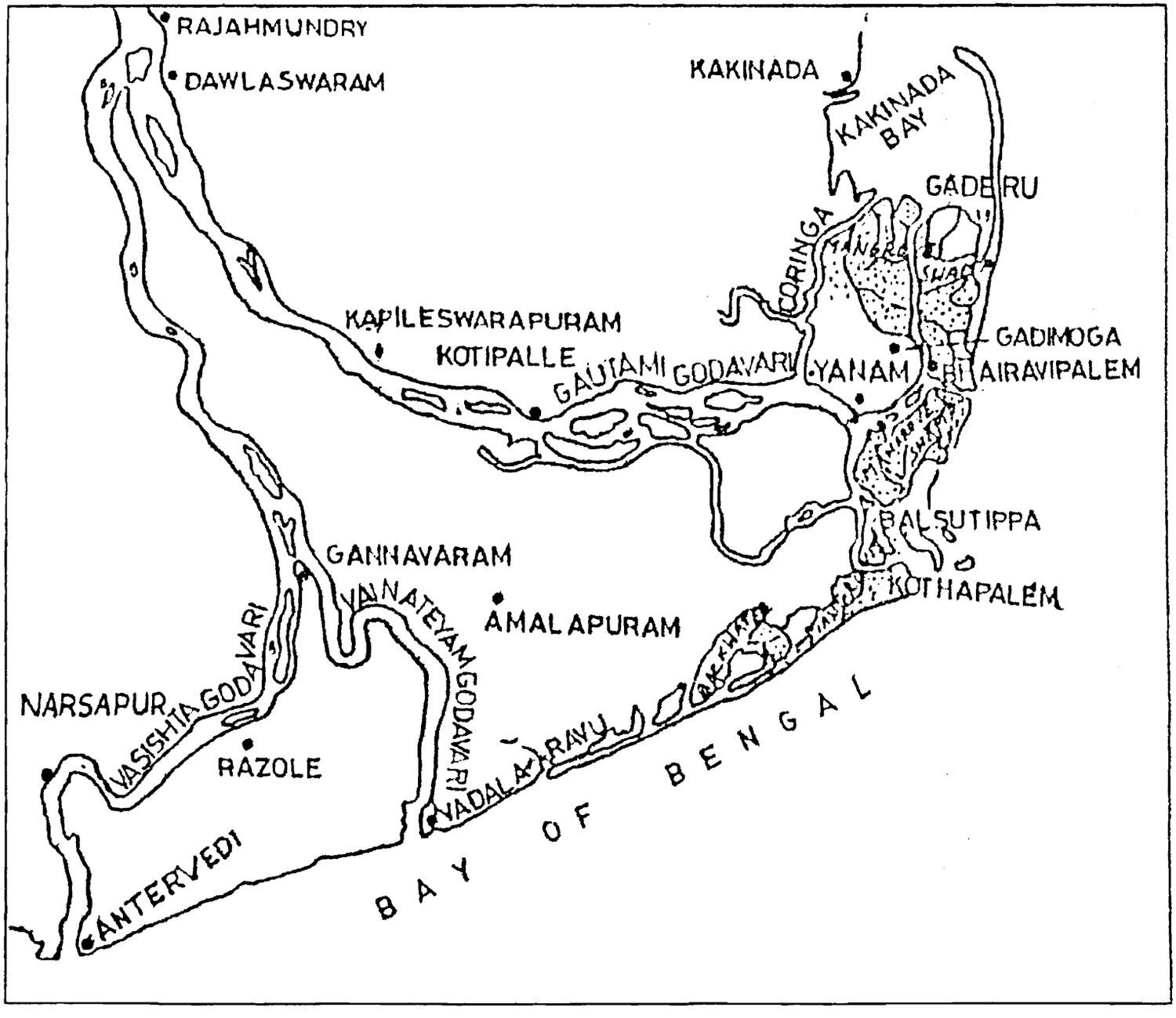

Fig. 1. Godavari river showing the opening of its three branches to the Bay of Bengal and Kakinada bay.

mangrove vegetation. Collection spots viz. Yenumula-lanks, Gudimellaanka, Sunkurevu and Navarasapalem are nearer to this place.

24. Perupalem : This is a place about 25 Kms. from Narsapur. A large flood canal of the Godavari irrigation system opens into sea at this place. The coast is sandy without any mangrove vegetation.

25. Vodalarevu : The Vaintheyam Godavari opening into the sea at this point. This spot is about 25 Kms. away from Amalapuram town by Road. No mangrove vegetation or marshy swamps present on either side of the river. This is a very big fish landing centre for estuarine as well as marine fishes. Traditional country boats as well as mechanised boats are used in this area. The coast is sandy with less silt content.

26. Karavaka : This is on the opposite side of the Vodalarevu. The coast is sandy with some mudflats. This spot is approachable by boat from Vodalarevu. Extensive prawn culture activity is found at this place.

27. Goganamatham : This spot is approachable by boat and is about 5 Kms. upstream from Vodalarevu. Shore is sandy mixed with mud. No mangrove vegetation present in this area.

The estuarine areas near the river mouths forming vast swamps with thick mangrove forests and inter-connecting creeks and channels once a difficult terrian to approach is now found to be centre of busy activity by local fisherman as well as others for collecting prawn seeds from the estuarine waters which got ready market and these areas are also mostly converted into prawn culture ponds due to their proximity to mixed waters. In this way this environment got distrurbed and destructed by the demolition of mangrove forest and literally filtering the coastal waters for prawn seed thus damaging the ecosystem of the coastal waters.

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Estuarine Ecosystem Series 4 : Fauna of Godavari Estuary : 7-9, 2001

PORIFERA

J. G. PATTANAYAK
Estuarine Biological Station, Zoological Survey of India, Berhampur-760 005, India

INTRODUCTION

In order to make an update account of the sponge fauna of Gadavari Estuary, Andhra Pradesh various extensive surveys were undertaken during the period from 1992 to 1995 to cover thoroughly the entire areas of the Estuary. River Godavari divides at Dhowleswaram into two principal distributories viz. Gautami and Vasistha. The Vasistha Godavari divides at Gannavaram into two branches namely the Vasistha proper and Vainatheyam. All the three distributories open independently into the Bay of Bengal. Vasistha joins sea at Antervedi near Narsapur and Vainatheyam joins the sea at Vodalarevu near Amalapuram. Gautami joins sea at Bhairavapalem near Yanam and at Kottapalem. The Gautami Godavari is also connected to the Kakinada Bay by two channels namely the Coringa arising at Yanam and Gaderu arising at Bhairavapalem. At the above mentioned mouth regions and upto zone of tidal effect of the estuary, the banks are either sandy or muddy or mixture of sand and mud. During the course of surveys of the Estuary, only two species of sponges, one is boring to molluscan shells and the other is dwelling in sand, were collected.

There are few works on sponges of Indian estuaries and brackish water lakes such as Annandale (1915), Pattanayak (1995), Thomas (1975).

There is no work on sponges of Godavari Estuary. The present account deals with sponges of Godavari Estuary which is a new record from the locality.

SYSTEMATIC ACCOUNT

Phylum PORIFERA Grant, 1926

Class DEMOSPONGIAE Sollas, 1885

Sub-class TETRACTINOMORPHA Lévi, 1956

Order SPIROPHORIDA Lévi, 1956

Family TETILLIDAE Sollas, 1886

Genus ***Tetilla*** Schmidt, 1868

Tetilla dactyloidea (Carter, 1869)

Tethya dactyloidea Carter, 1869, p. 15.

Tetilla dactyloidea Sollas, 1888, p. 45, Carter, 1887, p. 79; Dendy, 1916, p. 102; Burton and Rao, 1932, p. 326.

Tetilla dactyloidea var. lingua Annandale, 1915, p. 53.

Material examined : One lot, Moolagattu, A.P., 15.04.1995, Coll. J. G. Pattanayak; one lot, Bhairavapalem, 10.04.1995, Coll. J. G. Pattanayak.

Description : Sub-cylindrical, cylindrical, 45-55 mm from base to tip, 9-18 mm diameter; solitary, a long root tuft at lower end embedded in the sand; surface-smooth, porous; consistency-

soft, compressible; colour-light gray in spirit; oscules-terminal, single at upper extremity, 2 mm diameter.

Skeleton—Principal fibres of skeleton radiate from a 'nucleus' in a downward direction to lower end to form root tuft; radial skeleton composed mainly of oxeas along with protriaenes and anatriaenes, sigmaspires less in number scattered throughout body.

Megascleres—(1) Oxeas long, slender, 0.55-0.75 mm long and 0.008-0.010 mm wide, (2) Protriaenes, shaft slender, clads hair-like of unequal length, shaft 1.25-1.55 mm long, 0.002-0.004 mm wide, clads 0.015-0.018 mm long, (3) Anatriaenes, shaft very long, slender, hair-like, 1.75-2.35 mm long, 0.004-0.006 mm wide, clads strongly recurved 0.020-0.025 mm long, 0.003 mm wide.

Microscleres—Sigmaspires, chord 0.01 mm.

Distribution : *In India* : Andamans; Chilka Lagoon, Orissa; Godavari Estuary, Andhra Pradesh; Mahim Estuary, Maharastra; Okha Mandal, Gujarat.

Elsewhere : S. E. Cast of Arabia; King Island, Mergui Archipelago, Burma.

Remarks : This species is living in shallow water anchored in sand by its basal tuft. This species has high salinity range tolerance. This is the first report of this species from Godavari Estuary.

Order HADROMERIDA Topsent

Family CLIONIDAE Gray, 1867

Genus ***Cliona*** grant, 1867

Cliona vastifica Hancock, 1849.

Cliona vastifica Hancock, 1849, p. 342, Annandale, 1915, p. 34; Thomas, 1972, p. 345, pl. I. figs. 3, 3A, 3B; Thomas, 1975, p. 121; Thomas, 1979, p. 172, figs. 1E; 3N, O, Q, R; 4A, B; Pl. I fig. 3 Pl II, fig. 3, Pl. III fig. 2 Pl. IV figs. 2, 7; Thomas, 1985, p. 318, pl. VI, fig. 13.

Material examined : One lot, Antervedi, 18.11.1993, Coll. J. G. Pattanayak; one lot, Bairavapalem, 10.04.1995 Coll. J. G. Pattanayak; one lot, Yanam, 08.04.1995, Coll. J. G. Pattanayak.

Description : Boring on shells, opening on shells very small, 0.5-1 mm, irregularly arranged; colour gray in dry specimen; chambers inside shells different in shape 0.5-1.5 mm diameter and 0.5-2 mm apart.

Megascleres—(1) Tylostyles stright, sharply pointed, with spherical head, 0.12-0.20 mm long and 0.002-0.004 mm wide.

Microscleres—Spirasters with 3-6 angulations, spines at angular region only, 0.005-0.018 mm long, 0.002 mm wide.

Distribution : *In India* : Andamans; Chilka Lagoon, Mahanadi Estuary, Orissa; Gulf of Mannar; Zuary and Mandovi Estuaries; Godavari Estuary; Minicoy Island.

Elsewhere : Cosmopolitan.

Remarks : This is a cosmopolitan species with very high power of salinity tolerance and very common in estuaries. This species is recorded for the first time from Godavari Estuary.

SUMMARY

Results of the study of sponges of Godavari Estuary, Andhra Pradesh for the period from 1992 to 1995 are reported. Two species of sponges *Tetilla dactyloidea* (Carter, 1869) and *Cliona vastifica* Hancock, 1849 are reported for the first time from Godavari Estuary.

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Estuarine Ecosystem Series 4 : Fauna of Godavari Estuary : 11-14, 2001

SEA-ANEMONES (CNIDARIA : ACTINIARIA)

N. BAIRAGI
Zoological Survey of India, Calcutta

INTRODUCTION

The present work is an attempt to study the systematic of Actiniarians of the Godavari Estuary of the State of Andhra Pradesh. Material for this study was collected during 1992 to 1995 from Godavari Estuarine belt of Andhra Pradesh. Altogether 4 species belonging to 4 genera and 2 families have been worked out. These 4 species namely *E. jonesii, P. exul, P. gangeticus* and *P. ramunnii* have been added as new to the fauna of the state.

The paper deals with the diagnostic characters, distribution and key for identification of those four species from Andhra Pradesh. Synonymies have been reduced to avoid over repeatation but include the original and most recent references and authors responsible for major changes in nomenclature.

SYSTEMATIC ACCOUNT

Phylum CNIDARIA

Class ANTHOZOA

Order ACTINIARIA

Sub-order NYNANTHEAE

Family I. EDWARDSIIDAE

Genus (1) ***Edwardsia*** Quatrefages

(1) ***Edwardsia jonesii*** Seshaiya & Cuttress

Family II. HALIACTIIDAE Carlgren

Genus (2) ***Pelocoetes*** Annandale

(2) ***Pelocoetes exul*** Annandale

Genus (3) ***Phytocoetes*** Annandale

(3) ***Phytocoetes gangeticus*** Annandale

Genus (4) ***Phytocoeteopsis*** Panikkar

(4) ***Phytocoeteopsis ramunnii*** Panikkar

Key to the families

Acontia present ..... HALIACTIIDAE

Acontia absent..... EDWARDSIIDAE

Family I. EDWARDSIIDAE

Diagnosis : Body elongated vermiform, divided into regions, a long scapus provided with a cuticle and a short upper scapulus. Physa-naked, at the aboral end. Capitulum very thin and short, below the tentacles. Sphincter or acontia absent. Mesenteries divided into 8 macrocnemes and at least 4 microcnemes. Parietal muscles always distinct.

1. Genus ***Edwardsia*** Quatrefages

1842. *Edwardsia* Quatrefages, *Ann. Sci. nat.*, 18(2) : 68 (Type species : *E. beautempsi* Quatrefages).

Diagnosis : Body divided into physa, scapus and capitulum. Scapus long with batteries of nematocysts sunk in the mesogloea. Tentacles at least 12, shorter or longer. Ventral siphonoglyph weak.

(1) ***Edwardsia jonesii*** Seshaiya & Cuttress

1971. *Edwardsia jonesii* Seshaiya & Cuttress, *J. mar. biol. Ass. India*, 11(1 & 2) : 73, figs. 1, 2.

1987. *Edwardsia jonesii* : Anonymous, *Mangrove Ecosystem of Sundarbans Department of Marine Science, Calcutta University* : 71.

Material examined : 4 exs., Karavaku, Amalapuram, 23.1.1995, C. A. N. Rao & Party Reg. No. 2702; 5 exs., 13.1.1995, C. A. N. Rao & Party, Reg. No. 2655.

Diagnosis : Tentacles 12, smooth and arranged in two cycles of 6 each. Body distinctly divided into capitulum, scapulus and inflatable physa without cuticle. Capitulum thin-walled almost transparent, smooth and without cuticle. Scapus thick-walled, covered with thick shaggy rusty-red cuticle. Actinopharynx with 8 longitudinal ridges. Siphonoglyph indistinct.

Habitat : Burrowing forms in soft muddy substratum of intertidal zone.

Distribution : *In India* : West Bengal; Orissa; Andhra Pradesh; Tamil Nadu.

Remarks : This species is a common form in the estuarine areas of West Bengal (Mishra, 1976; Anonymous, 1987). This is the first record of this species from estuarine region of Andhra Pradesh.

Family II. HALIACTIIDAE

Diagnosis : Body elongated and rounded; column smooth. Distinct sphincter absent. Acontia present. Macrocnemes 6 pairs, filamented and fertile while microcnemes variable in numbers, non-filamented and sterile.

Key to the genera of Haliactiidae

1. Oral disc thrown into very distinct lobes .... *Pelocoetes*

— Oral disc not lobed 2

2. Tentacles and acontia typically arranged .... *Phytocoetes*

— Tentacles and acontia atypically arranged, youngest tentacles situated nearer the mouth than the next youngest ..... *Phytocoetopsis*

2. Genus ***Pelocoetes*** Annandale

1915. *Pelocoetes* Annandale, *Mem. Ind. Mus.*, 5 : 86.

Diagnosis : Elongated vermiform body. Column divided into capitulum, scapus and physa. Scapus with longitudinal rows of worts. Distinct sphincter absent. Actinopharynx long, upper part of capitulum and oral disc thrown out into 6 long outgrowths (Pedicels) each bifurcating two or three times.

(2) ***Pelocoetes exul*** Annandale

1915. *Pelocoetes exul* Annandale, *Mem. Ind. Mus.*,5 : 86, pl. 6, fig. 1; pl. 7, figs. 3, 3a, 3b; text fig. 5.

1987. *Pelocoetes exul* : Anonymous, *Mangrove Ecosystem of Sundarbans, Department of Marine Science (C.U.)* : 71.

Material examined : 4 exs., 24.1.1995, Gogana matham, C. A. N. Rao & party, Reg. No. 2709.

Diagnosis : Basal disc reduced, bluntly tapering and without physa. Column elongated. Longitudinal rows of nematocyst batteries alternating with cinclides on column. Tentacles branched hexamerously arranged. Oral disc lobed.

Habitat : Soft mud burrowing form in the intertidial zone.

Distribution : *In India* : West Bengal; Orissa; Andhra Pradesh; Tamil Nadu, Kerala; Goa; Maharashtra.

Remarks : This is the first record of this species from estuarine region of Andhra Pradesh.

3. Genus *Phytocoetes* Annandale

1907. *Metridium* Annandale, *Rec. Ind. Mus.*, 1 (1) : 48.

1915. *Phytocoetes* : Annandale, *Mem. Ind. Mus.* 5 : 79.

Diagnosis : Body elongated, not divisible into regions. Proximal end physa-like. Column smooth, with rows of cinclides in its upper part. Sphincter absent. Tentacles long, inner tentacles longer than the outer ones. Oral disc not divided into lobes.

Remarks : Endemic in India.

(3) *Phytocoetes gangeticus* Annandale

1915. *Phytocoetes gangeticus* Annandale, *Mem. Ind. Mus.*, 5 : 79, pl. 7a, figs. 3, 3a-b; text fig. 3.

1968. *Phytocoetes gangeticus* : Parulekar, *J. Bombay. nat. Hist. Soc.*, 65(1) : 141, pl. 1, fig. 4.

Material examined : 1 ex., 24.1.1995, Gogana matham, C. A. N. Rao & Party, Reg. No. 2709.

Diagnosis : Tentacles simple, 36 in number, column elongated, smooth with longitudinal rows of cinclides. Sphincter not visible on the anterior surface. Base narrow, physa-like.

Habitat : Soft and burrowing form in the intertidal zone.

Distribution : *In India* : West Bengal; Andhra Pradesh; Tamil Nadu; Kerala; Goa; Maharashtra.

Remarks : Endemic form, widely reported from various places of the Indian coast. This is the first record of this species from region of Andhra Pradesh.

4. Genus *Phytocoeteopsis* Panikkar

1936. *Phytocoeteopsis* Panikkar, *Pro. Zool. Soc.*, Part I : 229-249.

Diagnosis : Column elongated, smooth and without suckers or cuticle. Sphincter absent. Oral disc with redial muscles. Tentacles numerous, arranged in five to six cycles. Those of the last cycles atypically arranged in as much as the youngest tentacles situated nearer the mouth than the next youngest. Acontia well developed, atypically arranged.

Remarks : Endemic in India.

(4) *Phytocoeteopsis ramunnii* Panikkar

1936. *Phytocoeteopsis ramunnii* Panikkar, *Pro. Zool. Soc.*, Part I : 231, text figs. 1, 2A, 3, 6, 8.

1981. *Phytocoeteopsis ramunnii* : Misra & Soota, *Bull. Zool. Surv. India.*, 4 (2) : 151.

Material examined : 4 exs., 20.1.1992, Mouth of Cholangi Channel, near Kakinada, C. A. N. Rao & party, Reg. No. 2414.

Diagnosis : Tentacles 96, arranged in five cycles. Base usually reduced, physa-like and without ectodermal cinclides. Column thin and smooth. Capitulum narrow, scapus thick and long and very broad above and vermiform below.

Habitat : Soft mud burrowing in the intertidal zone.

Distribution : *In India* : West Bengal; Andhra Pradesh; Tamil Nadu; Kerala.

Remarks : This is the first record of this species from estuarine region of Andhra Pradesh. It is restricted in India, not recorded elsewhere.

SUMMARY

The paper deals with four species from the state of Andhra Pradesh. All of them are recorded for the first time from the area. It also furnishes the systematic account, key for identification and their distribution in the Indian region.

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Zool. Surv. India
Estuarine Ecosystem Series 4 : Fauna of Godavari Estuary : 15-20, 2001

SCYPHOMEDUSAE : CNIDARIA

BADRI PRASAD HALDAR
Zoological Survey of India, 27, Jawaharlal Nehru Road, Calcutta-700 016

INTRODUCTION

Scyphomedusae, the jelly fish or true medusae, are the inhabitants of marine, estuarine waters and even found in freshwater bodies like rivers. They possess a feeble power of movement but mainly they are drifted by watermasses.

There is a fairly considerable literature on the systematics of the medusae in the Indian seas but very few on the scyphomedusae (Menon, 1930, 1936; Rao, 1931 and Stiasny, 1937). Annandale, 1915 and Haldar & Choudhury, 1995 dealt with scyphomedusae of estuariune waters of Chilka lake and the river Ganges respectively.

A small collection of scyphomedusae dealt with in the present paper received from our Estuarine Biological Station, Berhampur. All the specimens are preserved in formalin and some are damaged during collection. From zoogeographical point of view the collection is of considerable interest. The material is derived from estuarine zone of the Godavari river.

For each species the most important references, previous records from the Indian waters, localities from where the species were collected, diagnostic characters and geographical distribution are given.

The collection contains six species under six genera and five families.

LIST OF SPECIES KNOWN FROM STUDY AREA

Phylum CNIDARIA

Class SCYPHOMEDUSAE

Order A. CORONATA

Family I. ATORELLIDAE

Genus (1) ***Atorella*** Vanhoffen, 1902

1. ***Atorella subglobosa*** Vanhoffen, 1902

Order B. SEMAEOSTOMEAE

Family II. PELAGIIDAE

Genus (2) ***Chrysaora*** Peron & Lesueur, 1809

2. ***Chrysaora helvola*** Brandt, 1838

Order C. RHIZOSTOMEAE

Family III. CASSIOPEIDAE

Genus (3) ***Cassiopea*** Peron & Lesueur, 1809

3. ***Cassiopea andromeda*** (Forskal, 1775)

Family IV. CEPHEIDAE

Genus (4) ***Netrostoma*** L.S. Schultze, 1898

4. ***Netrostoma coerulescens*** Maas, 1903

Family V. CATOSTYLIDAE

Genus (5) ***Crambione*** Maas, 1903

5. ***Crambione mastigophora*** Maas, 1903

Genus (6) ***Acromitus*** Light, 1914

6. ***Acromitus rabanchatu*** Annandale, 1915

SYSTEMATIC ACCOUNT

Family I. ATORELLIDAE

Diagnosis : Coronatae with 6 rhopalia.

Genus (1) ***Atorella*** Vanhoffen, 1902

1902. *Atorella* Vanhoffen, *Wiss. Ergebn. 'Valdivia'*, **3** : 33.

1961. *Atorella* : Kramp. *J. mar. biol. Ass. U. K.*, **40** : 313.

Diagnosis : Atorellidae with 6 marginal sense organs, 6 tentacles and 12 pedalia alternating with 12 marginal lappets; presence of coronal furrow; 4 lips and 4 interradial gonads; ring muscles poorly developed.

1. ***Atorella subglobosa*** Vanhoffen, 1902

1902. *Atorella subglobosa* Vanhoffen, *Wiss. Ergebn. 'Valdivia'* **3** : 33, pl. 3, fig. 11.

1961. *Atorella subglobosa* : Kramp. *J. mar. biol. Ass. U. K.*, **40** : 313.

Material examined : 3 exs., B. V. Palem, East Godavari Dist., Andhra Pradesh, 15. iii. 1995, S. C. Nahar.

Diagnosis : Bell globular, 16-20 mm in diameter; tentacles 6, solid, tapering and as long as bell radius; marginal sense club 6, arising from shallow niches in bell margin; marginal lappets wide and slightly cleft, ring furrow not deep; central disc of exumbrella more than twice as wide as zone of pedalia; pedalia 12, alternating with lappets and separated from one another by shallow furrows; mouth cruciform and tube 4-sided; gastric filaments brown, placed in 4 clusters, each cluster consisting of about 20 filaments. Gonads 4 yellowish-brown, swollen sac-like and interradial in position, and arising from floor of sub-umbrella beyond the zone of gastric filaments.

Status : The species is for the first time reported from the Indian estuary as well as from the Indian coast.

Distribution : Dar-es-Salam, east coast of Africa (Vanhoffen, 1902); Malay Archipelago (Mass, 1903); West of Canary Island (Ranson, 1945).

Family II. PELAGIIDAE

Diagnosis : Central stomach giving rise to completely separated unbranched radiating pouches; ring canal absent; tentacles arising from the umbrellar margin between the clefts of lappets; oral arms long, pointed and much folded.

Genus (2) ***Chrysaora*** Peron & Lesueur, 1809

1809. *Chrysaora* Peron & Lesueur, *Ann. Mus. Hist. nat.*, **14** : 364.

1961. *Chrysaora* : Kramp, *J. mar. biol. Ass. U. K.* **40** : 323.

Diagnosis : Rhopalia 8; marginal lappets 32-48 (or more), simple; stomach pouches 16, radiating in the rhopalar and tentacular radii; tentacles 24, three in each octant.

2. ***Chrysaora helvola*** Brandt, 1838

1838. *Chrysaora helvola* Brandt. *Mem, Acad. Sci. St.-Peters Sci. Nat.*, (6) **2** : 384, Pl. 15, text-figs. 1-4.

1961. *Chrysaora helvola* : Kramp, *J. mar. biol. Ass. U. K.*, **40** : 324-325.

Material examined : 2 exs., Cholangi near Kakinada, East Godavari Dist., Andhra Pradesh, 13.iv.1995, T. Venkateswarlu.

Diagnosis : Bell 80-100 mm wide, hemispherical; exumbrellar surface covered with numerous small warts; marginal lappets vary both in size and shape, tentacles 3 in each octant, flattened and incomplete; occular stomach pouches 8, in middle twice as wide, at the margins half as wide as tentacular pouches; gonads well developed and extending outside through subgenital ostia.

Distribution : *In India* : Orissa (Rao, 1931); east coast of India (Mayer, 1910).

Elsewhere : East coast of Africa (Mayer, 1910); Mergui Archipelago (Rao, 1931); Philippines

(Light, 1921); China (Uchida, 1954); Japan to Pacific coast of North America (Brandt, 1838).

Family III. CASSIOPEIDAE

Diagnosis : Subumbrellar muscles in feather-like arcs; radial canals usually about twice as many as rhopalia; without or with faintly indicated ring canal; with four completely separated subgenital cavities; subgenital ostia small and round; stomach circular, arm disk octagonal, with four primary canals.

Genus (3) *Cassiopea* Peron & Lesueur, 1809

1809. *Cassiopea* Peron & Lesueur, *Ann. Mus. Hist. nat.*, **14** : 356.

1961. *Cassiopea* : *Kramp, J. mar. biol. Ass. U. K.*, **40** : 348.

Diagnosis : Mouth-arms 8, pinnately or irregularly branched; mouth openings numerous and ventral; ring canal absent or faintly indicated; rhopalar and interrhopalar canals 16 each.

3. *Cassiopea andromeda* (Forskal, 1775)

1775. *Medusa andromeda* Forskal, *Descriptiones animalium avium, amphibiorum, piscium, insectorum, vermium* : 107, pl. 31.

1959. *Cassiopea andromeda* : Maaden, *Sea Fish. Res. Stn. Bull.*, **20** : 8.

1995. *Cassiopea andromeda* : Haldar & Choudhury, *Estuarine Ecosystem Series*, Part II : *Hugli Matla estuary* : 24-25.

Material examined : 3 exs., Coringa near Kakinada, East Godavari Dist., Andhra Pradesh, 24.xi.1992, T. Venkateswarlu; 3 exs., Matla Palem near Kakinada, East Godavari Dist., Andhra Pradesh, 28.x.1992, C.A.N. Rao; 5 exs., Bhairava Palem near Kakinada, East Godavari Dist., Andhra Pradesh, 26.xi.1992, T. Venkateswarlu.

Diagnosis : Bell flat, shield-shaped, 70-110 mm wide, 15-25 mm high; marginal sense organs usually 16; lappets variable, short and blunt; mouth arms 8, wide flat and as long as bell radius; 4-6 flat, short side branches arising from each arm in a tree-like manner and these in turn giving off side branches; numerous small and 5-7 large club-shaped vesicles on each arm between mouths; subgenital ostia 4 in number and small.

Distribution : *In India* : West Bengal : Sandheads (Haldar & Choudhury, 1995); Gulf of Mannar : Krusadai Island and Rameswaram (Menon, 1936); West coast of India (Browne, 1916).

Elsewhere : Widely distributed in the Indo-Pacific Ocean.

Family IV. CEPHEIDAE

Diagnosis : Subumbrellar muscles radial; rhopalar radial canals 8; ring canal absent; subgenital caivities 4, more or less separated; subgenital ostia small, round; stomach octogonal, with 8 primary canals.

Genus (4) *Netrostoma* L.S. Schultze, 1898

1898. *Netrostoma* Schultze, *Denkschr. med. natur. Ges., Jena*, **8** : 457.

1961. *Netrostoma* : Kramp, *J. mar. biol. Ass. U.K.*, **40** : 354.

Diagnosis : Interrhoplar canals 3 in each octant; exumbrella with large warts on central dome; appendages stiff on mouth arms and disk.

4. *Netrostoma coerulescens* Maas, 1903

1903. *Netrostoma coerulescens* Maas, *Siboga Exped., Monograph*, **11** (10) : 35, pl. 5, figs. 37 & 46, pl. 11, figs. 97 & 103.

1961. *Netrostoma coerulescens* : Kramp. *J. mar. biol. Ass. U.K.*, **40** : 356.

Material examined : 1 ex., Bhairava Palem near Kakinada, East Godavari Dist., Andhra Pradesh, 21.x.1992, C. A. N. Rao.

Diagnosis : Bell 150 mm wide; central dome with 8 wart-like projections; marginal lappets 8 in each octant and round-edged; mouth arms 8, short and massive, laterally compressed and curved outwards; each mouth-arm bifurcated at its outer end and giving rise to numerous very short lateral branches and further these lateral branches themselves branch dichotomously, giving rise to a

complex system of mouth bearing ramuli upon lower side of mouth-arm; two kinds of appendages between the mouths : one small, thin, tubular with prominent nematocyst warts and the other somewhat larger and spindle-shaped.

Distribution : *In India* : Tamil Nadu : Krusadai Island (Menon 1936); Kerala : Malabar coast (Ranson, 1945); Trivandrum (Nair, 1951); Calicut (George, 1953 as *Netrostoma* sp.); Arabian Sea (Stiasny, 1937).

Elsewhere : Maldive Islands (Mayer, 1910; Stiasny, 1931); Malay Archipelago (Maas, 1903); Philippines (Stiasny, 1922, ,1926); Australia (Stiasny, 1931); Japan (Uchida, 1954).

Family V. CATOSTYLİDAE

Diagnosis : Inscapulate with intracircular network of anastomosing canals communicating with right canal, but not always with 16 radial canals; rhopalar canals 8, extending to umbrella margin, the eight interrhopalar only to ring canal; mouth-arms pyramidal.

Genus (5) ***Crambione*** Maas, 1903

1903. *Crambione* Maas, *Siboga Exped., Monograph,* **11**(10) : 48, 81.

1961. *Crambione* : Kramp. *J. mar. biol. Ass. U. K.,* **40** : 372.

Diagnosis : Mouth-arms three-winged and wings bearing secondary branches; mouth-arms with clubs and whip-shaped filaments; terminal clubs absent; canal system of 8 vessels extending outward to bell margin in perradii and interradii and 8 adradial canals ending in ring canal ahead of bell margin.

5. ***Crambione mastigophora*** Maas, 1903

1903. *Crambione mastigophora* Maas, *Siboga Exped., Monograph,* **11**(10) : 49, pl. 6, figs., 47-53, pl. 8, figs. 71-74, pl. 11, fig. 100, pl. 12, fig. 113.

1961. *Crambione mastigophora* : Kramp. *J. mar. biol. Ass., U. K.,* **40** : 373.

Material examined : 1 ex., Matla Palem near Kakinada, East Godavari Dist., Andhra Pradesh, 9.iv.1995, T. Venkateswarlu.

Diagnosis : Bell 150 mm wide, highly arched and rounded; exumberella smooth, gelatinous substance of centre thick while margin thin-edged; marginal sense organs 8; velar lappets 8 in each octant, elongate with rounded outer edges and deep clefts between them; arm disk wide and 8 sided; adradial mouth-arms 8, grouped in four pairs, alternate in position with subgenital ostia and perradial fossae; central stomach cruciform; ring canal and 16 radial canals of uniform and moderate width.

Status : The species is for the first time recorded from the Indian estuary as well as from the Indian coast.

Distribution : *Elsewhere* : Malayan Archipelago (Maas, 1903; Stiasny, 1920, 1921, 1929, 1935); Ceylon (Stiasny, 1931); Turk Island, Central Pacific (Uchida, 1947).

Genus (6) ***Acromitus*** Light, 1914

1914. *Acromitus* Light, *Philippine J. sci.,* **9** : 212.

1961. *Acromitus* : Kramp, *J. mar. biol. Ass. U.K.,* **40** : 368.

Diagnosis : Broad intracircular anastomosing network in direct communication with ring canal and rhopalar canals only; mouth-arms each with a terminal whip-like appendage.

6. ***Acromitus rabanchatu*** Annandale, 1915

1915. *Acromitus rabanchatu* Annandale, *Mem. Indian Mus.,* **5** : 96.

1961. *Acromitus rabanchatu* : Kramp, *J. mar. biol. Ass. U.K.,* **40** : 369.

Material examined : 1 ex., Coringa near Kakinada, East Godavari Dist., Andhra Pradesh, 24.xi.1992, T. Venkateswarlu.

Diagnosis : 75 mm in diameter; exumbrella apparently smooth but actually finely granulated; mouth-arms 8, joined together in a circle and lower bifid portion of each arm about four-fifths of total length; rhopalia 8, a furrowed exumberellar

pit extending inwards down each rhopalium; rhopalar lappets 16, longer than others and meeting at any point; velar lappets 4 pairs in each octant, short and broad; genital ostia 4, subgenital cavity broadly cruciform; stomach cruciform having 8 rhopalar and 8 adradial canals; gastric filaments numerous but very small, short, cylindrical and bluntly pointed.

Distribution : *In India* : Orissa : Chilka Lake (Annandale, 1915) and Ganjam coast (Rao, 1931).

Elsewhere : Malay Archipelago (Stiasny, 1934 as *Acromitus hardenbergi;* Maaden, 1935 as a variety of *Acromitus maculosus*).

SUMMARY

The paper deals with a small collection of Scyphomedusae represented by six species under six genera and five families from the Godavari estuary of Andhra Pradesh. From zoogeographical point of view the collection is of considerable interest. All the species constitute new locality records from the area under study. Further, two species, namely, *Atorella subglobosa* Vanhoffen and *Crambione mastigophora* Maas, are reported from the Indian waters for the first time. For each species are given the most important references, previous records from the Indian waters, localities from where the species were taken, diagnostic characters and geographical distribution.

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POLYCHAETA : ANNELIDA

C. A. NAGESWARA RAO
Estuarine Biological Station, Zoological Survey of India, Berhampur (Ganjam)

INTRODUCTION

Studies on the fauna and ecology of the coastal water bodies viz. estuaries, lagoons and brakishwaters have been the important field of research since these are considered to be highly productive areas; Polychaetous annelids form a major and dominent consistuent among the benthic fauna of the marine, estuarine and brackish water ecosystems, specially in tropics. Significant contributions of the biodiversity of the polychaeta population of Indian estuaries, lagoons and back waters are available and the work of Southern (1921) on Chilka lagoon is the pioneering one and detailed reports on the polychaeta fauna of Hugli-matla Estuary, Sundarbans, Chilka lagoon, Mahanadi Estuary, Pulicat lake, Adayar Estuary, Vellar Estuary, Kerala back waters and estuaries of Goa are available (Misra 1995, Rao CAN 1993, 1995 Sunderraj & Sanjeeva Raj, 1987, Krishnamurty, 1963, Balasubramanyanam K. 1964, Srikrishna Das et. al., 1987 and Parulekar et. al., 1980).

Godavari river, the major after Ganges in India, forms a vast and complex estuarine system with extensive mangroves and mud flats, though remained the field of work for several fishery scientists, deailed faunal sutides from this are meagre. Our knowledge of the polychaete ecology and taxanomy of Godavari estuary is due to Radhakrishna & Ganapati (1969) and Srinivasa Rao & Ramasarma, (1978, 1982, 1983). Radhakrishna & Ganapati, (1969) reported on the polycheata of Kakinada Bay, which is contiguous to the Gautami Godavari estuary while Srinivasa Rao & Ramasarma (1982 & 1983) reported on the polychaetes from the estuary of one branch of the Godavari river out of the three existing branches.

Faunastic surveys to Godavari estuarine systems was conducted from 1992 to 1995 during different seasons, viz. pre-monsoon, monsoon and post-monsoon periods and polychaeta fauna was collected from different localities along the estuarine course of the three brnahces of the Godavari river and also from some localities of Kakinada Bay. This paper deals with about 700 examples of polycheates identified upto species level and in the systematic account of each species, materials collected, (number of specimens, locality and date of collection) brief description and its geographic distribution was given; Salinity range at which each species collected was also mentioned; diagnostic characters for some species are given for guidence. All the material reported in this paper was collected by the author himself and Sri T. Venkateswalru, Scientist (Retd.) of this station.

SYSTEMATIC ACCOUNT

Family PILARGIDAE

Talehsapia annandalei Fauvel, 1932

Material : 1ex., Antervedi, Narsapur; 15.09.93. 1 ex., Chinchinada, Narsapur; 04.11.93. 2 exs., Sakhinetipalli, Narsapur, 19.01.95. 3 exs.,

Rameswaram, Near Antervedi; 16.1.95.

Description : Narrow and long specimens of about 20 cms. and brick-red in colour, Anterior four segments swollen and prostomium small, lobe-like without eyes, palps and antennae; Peristomium achaetous, without tentacles; Proboscis with a pair of horny jaws at its tip and four small cirri on either side. Parapodia uniramous with a blunt ventral lobe and 5-8 long capillary setae and small ventral cirri. Dorsal lobe reduced and knob-like with extended aciculum and 1-2 simple setae; a pair of anal cirri. The species are collected at salinity of 10-20%.

Distribution : Gangetic delta, Hugli-matla estuary, Mahanadi and Baitarini Estuary (Orissa).

Family PHYLLODOCIDAE

Phyllodoce (Anaitides) tenuissima Grube 1878

Material : 1 ex., Rameswarm, Narsapur; 16.01.1995.

Description : About 8 cm. in length; Dark brown in colour after preservation. Prostomium plate-like with a pair of large eyes, four tentacles and a small occipetal Papilla. Proboscis with 12 longitudinal rows of Papillae on the basal half. Dorsal cirri broad and lanceolate.

The specimen was collected at salinity of 20%.

Distribution : Vellary Estuary, Kakinada Bay.

Family NEREIDAE

Namalycastis indica (Southern 1921)

Material : 3 exs., Sunkurevu, Narsapur, 13.09.1993. 10 exs., Dariayalatippa, Yanam; 18.10.1992. 25 exs., Karavaka, Amalapuram 23.01 1995. 10 exs., Coringa, Kakinada, 29.01.1995.

Description : Paragnaths absent. Feet uniramous; Dorsal cirri elongated and flattend towards the posterier side, 1-2 dorsal capillary setae and several ventral falcigerous setae. Collected at salinity of 3-12%.

Distribution : Reported from estuaries and brakish waters all long the Indian coast.

Namalycastis fauveli Rao 1981

Material : 10 exs., Sakhimetipalli, Narsapur, 15.11.1993.

Description : Paraganaths absent, Feet Uniramous, Darsal cirri small and not expanded in Posterior segments; one limb of the lower piece of the ventral falcigerous setae long and nearly equal to the length of upper piece. Collected at salinity of 10%.

Distribution : Reported from Gangetic delta, Mahanadi estuary, Baitarini estuary, Chilka lagoon.

Lycastonereis indica Rao 1981

Material : 2 exs., Rameswaram, Narsapur, 16.01.1995.

Description : Small and narrow specimens of 4 cm. in length. Prostomium with a pair of bulbous palps, a pair of small antenna and two pairs of eyes. Three pairs of small tentacular cirri of equal sizes, posteroventral cirri missing. The anterier 10-12 segments with dark brown patches in three broken rows dorsally.

Proboscis with a pair of chitinous jaws and few fleshy papillae on the maxillary ring. Parapodia biramous with two ligules in each ramus in the anterier feet, and while the posterier feet with single ligule in both rami; Dorsal and ventral cirri small. Dorsal homogomph spingers, ventral spinigers and falcigers with oar-shaped end pieces; aciculum of black colour; Specimens were collected at Salinity of 20%.

Distribution : Gangetic delta, Baitarini estuary, Orissa.

Tylonereis bogoyawlenskyi Fauvel, 1911

Material : 10 exs., Perupalem, Narsapur, 18.01.1995.

Description : About 4 cm. in length. Proboscis with soft paragnaths only; feet biramous with only spinigers; Dorsal ligule of the notopodia leaf-like; Three ligules in the ventral lobes of anterior feet; collected at salinity of 10%.

Distribution : Reported from Kerala and Tamilnadu Coast, Pulicat lake.

Dendronereis arborifera Peters, 1854

Material : 15 exs., Darbarevu, Narsapur, 16.09.1993. 6 exs., Bhairavapalem, Kakinada, 10.04.1995. 5 exs., Sakhinetipalle, Narsapur, 19.04.1995. 10 exs., Dariyalatippa, Kakinada, 18.10.1992. 18 exs., Chollangi, Kakinada, 20.10.1992. 21 exs., Darbarevu, Narsapur, 14.11.1993. 5 exs., Sakkinetipalle, Narsapur, 11.11.1993. 5 exs., Chinchinada, Narsapur, 5.11.1993. 25 exs., Biyyaputippa, Narsapur, 22.4.1995. 3 exs., Chollangi, Kakinada, 19.10.1992. 25 exs., Coringa, Kakinada, 29.01.1995. 10 exs., Rameswaram, Narsapur, 16.01.1995.

Description : Proboscis with only soft Papillae; Dorsal cirri of the anterior segments from 6-20th with pinnate branchial filaments.

Distribution : Distributed all along Indian coasts near river mouth, lagoons and backwaters.

Dendronereides heteropoda (Southern 1921)

Material : 5 exs., Sakhinetipalle, Narsapur, 13.09.1993. 2 exs., Sunkurevu, Narsapur, 13.09.1993. 10 exs., Chakelitippa, Narsapur, 13.09.1993.

Description : Proboscis with soft papillae; Anterior feet with 3 dorsal ligules and 3-4 ventral ligules, Several tuft-like branchial filaments situated below the dorsal cirri in the 10-30th, segments; Postorier feet with single lobes both dorsally and ventrally. Specimens collected at salinity of 1-2%.

Distribution : Reported from gangetic delta, Mahanadi estuary, and Pulicat lake.

Dendronereides zululandica Day, 1951

Material : 15 exs., Bhairavapalem, Kakinada, 16.10.1992.

Description : About 6-10 cm. in length, Proboscis with soft paragnaths only. Anterior segments with three notopodial lobes, a dorsal cirrus and a single neuropodial lobe; Branchiae formed by the four pinnate divisions of the superior lobe of the notopodia in the anterier 8th-20th segments. Seate spinigers and falcigers. Collected at salinity of 5%.

Distribution : Earlier reported only from Vasistha Godavari estuary along Indian coast.

Ceratonereis costae (Grube 1840)

Material : 15 exs., Yanam, Kakinada, 21.01.1995. 10 exs., Gudimellanka, Narsapur, 19.01.1995. 20 exs., Yenumllanka, Narsapur, 15.01.1995. 1 ex., Antervedi, Narsapur, 15.09.1993

Description : About 2-4 cm. in length. Maxiallary ring of Proboscis with paragnaths on group I = 1, II = 3-4, III = many in a cluster, IV = many in a group. Paragnaths absent on oral ring. Feet with 2-3 ligules, in both dorsal and ventral lobes, Dorsal homogomph spinigers and ventral hetrogomph falcigers; Collected from salinties of 2-20%.

Distribution : Vellar estuary, Godavari estuary and Gujarat coast.

Nereis glandicincta (Southern 1921)

Material : 10 exs., Sakhinetipalli, Narsapur, 17.09.193. 3 exs., Sakhinetipalli, Narsapur, 13.09.1993. 10 exs., Dariyalatippa, Kakinada, 18.10.1992. 1 ex., Gadimaga, Kakinada, 17.10.1992. 20 exs., Navarsapalem, Narsapur, 14.7.1995. 15 exs., Chakalitippa, Narsapur, 14.9.1993.

Description : Specimens of 4-8 cm. in length. Proboscis with chitinous Paragnaths on all groups of maxillary ring and VI = 1-2. Both rami with three ligules. Dorsal spinigers and ventral falcigers; Brownish circular gland masses near the base of the dorsal cirri in the anterior and middle segments. Collected at salinities of 0-20%.

Distribution : Sundarbans, Chilka lagoon, Mahanadi estuary, Visakhapatnam coast, Pulicat lake and Kerala back waters.

Nereis (Nereis) lamellosa, Ehlers 1868

Material : 30 exs., Karavaka, Narsapur, 23.01.1995.

Description : 2-3 cms. in length; All groups of probosics with Chitinous paragnaths; Group I = 1-3, II = many in two rows, III = several in two rows, IV = a group of 10, VI = 10-12, VII-VIII = several in three rows; Anterior feet with three notopodial ligules and a short dorsal cirri. The superior lobe of the notopodia in the middle and posterior segments are expanded and lamellose with a short dorsal cirri situated at its terminal notch; Dorsal spinigers and ventral falcigers; Few falcigers seen in some notopodia also; Specimens collected at salinity of 12%.

Distribution : This is the first record of this species from Indian waters; Earlier reported from South African coast.

Perinereis nuntia (Savigny 1919)

Material : 10 exs., Coringa, Kakinada, 24.11 1992. 3 exs., Antervedi, Narsapur, 02.12.1992. 17 exs., Bhairavapalem, Kakinada, 27.11.1992. 30 exs., Navarasapalem, Narsapur, 14.01.1995.

Description : Specimens of 6-8 cm. in length. Some tentacular cirri reaching upto 8-10th segments. Proboscis of group I = 1-3, II = 2-6, III-IV = many in cluster, V = 0, or 1 to 3 in some; VI = a row 10-15 of small ones on each side, VII-VIII = several in 3-4 rows; Dorsal ligule of the posterier feet enlarged; Specimens collected from Salinities of 5-20%.

Distribution : Reported from Orissa Coast, Mahanadi estuary, Gulf of Mannar and Bombay coast.

Family NEPHTYIDAE

Naphtys oligobranchia Southern 1921

Material : 1 ex., Vodalarevu, Amalapuram, 24.09.1993. 1 ex., Antervedi, Narsapur, 15.09.1993. 1 ex., Sunkurevu, Narsapur, 13.09.1993. 3 exs., Chakalitippa, Narsapur, 14.09.1993. 1 ex., Sakhinetipalli, Narsapur, 18.10.1992.

Description : About 3-6 cm. in length and broad in the anterier region; Prostomium small, flattend with 4 small tentacles. Lamellose gills start from 6-7th segments and present upto 24th segment only. Posterior segments without gills; Proboscis with soft papillae. Specimens collected from salinities of 0-5%.

Distribution : Reported from Gangetic delta, Chilka Lagoon, Mahanadi Estuary, Visakhapatnam coast, Godavari estuary and Kerala coast.

Family GLYCERIDAE

Glycera longipinnis Grube, 1878

Material : 2 exs., Antervedi, Narsapur, 15.09.1993. 3 exs., Kakinada Bay, Kakinada, 22.10.1992.

Description : Specimens narrow of about 10 cms. in length and rust brown in colour; Prostomium pointed with small tentacles at the tip. Proboscis with fleshy papillae and four horny jaws at the oral end. Simple large branchiae situated at the dorsal edge of the foot below dorsal cirri and their size decreases towards the posterior part. Parapodia elongated with two anterior lobes and single posterior lobe. Dorsal setae simple and ventral setae compound. Specimens collected from salinities of 6.5-12%.

Distribution : Reported from Mahanadi estuary and from Kakinada Bay.

Glycera alba (Muller 1788)

Material : 2 exs., Navarasapalem, Narsapur, 14.01.1995. 5 exs., Perupalem, Narsapur, 18.01.1995. 3 exs., Vemuladeevi, Narsapur, 13.01.1995.

Description : Narrow specimens of 5-6 cm. in length and white in colour; small branchiae situated in the dorsal edge of the elongated parapodia, a knob-like dorsal cirri at the base of the foot. Parapodia with two pointed lobes anteriorly and two lobes posteriorly of which dorsal one pointed and ventral round, specimens collected from salinities 10-20%.

Distribution : Orissa Coast, Mahanadi Estuary, Pulicat Lake, Vellar estuary, Kerala backwaters.

Glycera rouxi Audouin & M. Edwards 1833

Material : 10 exs., Bhairavapalem, Kakinada, 30.01.1995. 3 exs., Goganamatham, Amalapuram, 24.01.1995.

Description : Narrow worms of 6-8 cm. in length; Pointed Prostomium. Proboscis with nail like Papillae. Parapodia elongated with a small knob-like dorsal cirri at its base; Simple branchiae situated in the mid anterior region of the feet and retractile. Feet with two lobes in each rami; Anterior lobe pointed, and posterier lobes unequal; collected from salinities of 12-17%.

Distribution : This is the first report of this species from this area. Earlier, reported from gangetic delta, Orissa coast. Mahanadi Estuary and gulf of Mannar.

Glycera lancadivae Schmarda 1861

Material : 1 ex., Gadimoga, Kakinada, 17.10.1992.

Description : Long and slender specimen of 6 cm. in length, white in colour, conical ringed prostomium; Proboscis with two kinds of Papillae, acuminate and rounded. Parapodia broad and not elongated with two equal sized anterior lobes and a single posterior lobe. Branchia absent; specimen collected from salinity of 7%.

Distribution : Gangetic delta, Orissa coast, Rushikulya estuary, Godavari estuary and Madras coast.

Family EUNICIDAE

Diopatra neapolitana Delle Chaije 1841

Material : 10 exs., Antervedi, Narsapur, 15.09.95. 10 exs., Sakinetipalli, Narsapur, 17.09.93. 1 ex., Antervedi, Narsapur, 02.12.92. 3 exs., Vemuladivi, Narsapur, 13.01.95. 3 exs., Goganamatham, Amalapuram, 24.07.1995.

Description : Specimens of 4-15 cm. enclosed in leathery/muddy tubes. Five long tentacles with ringed ceratophores at their base; A pair of small frontal tentacles; Branchieae with spirally arranged filaments start from 4-5th segment and continue upto 25-30th segments; Branchia reduced in the posterior segments. Anterior 4-5 segments with winged capileries and pseudo-compound hooks with tridentate tips; Remaining segments with winged capillaries, comb-setae and an acicular setae.

Specimens collected at salinities of 0-20%.

Distribution : Widely distributed on the Indian coasts, estuaries back waters and lagoons.

Arabella iricolor (Montagu 1804)

Material : 10 exs., Antervedi, Narsapur, 15.09.1993.

Description : Long, cylindrical specimens of 10-15 cm, white in colour. Prostomium cone-shaped without plaps and tentacles; four small eyes; First 1-2 segments achaetous, dorsal cirri rudimentary, ventral cirri absent. Parapodia bilobed with un-equal lobes. Simple winged capillary setae. Specimens collected from salinity of 30%.

Distribution : Reported from Visakhapatnam coast, Gulf of Mannar and Gujarat coast. This is the first record of this species from this area.

Lumbrineris heteropoda (Marenzeller, 1879)

Material : 3 exs., Antervedi, Narsapur, 15.09.1993. 1 ex., Sakinetipalli, Narsapur, 19.04.1995. 2 exs., Karavaka, Amalapuram 23.01.1995. 7 exs., Antervedi, Narsapur, 17.01.1995. 10 exs., Vemuladeevi, Narsapur,

13.02.1995. 5 exs., Bhairavapalem, Kakinada, 30.01.1995. 5 exs., Gudemellanka, Narsapur, 19.01.1995. 10 exs., Goganamatham, Amalapuram, 24.01.1995.

Description : Long, rounded worms of about 10-20 cm. in length; Prostomium cone-shaped, without palps and tentacles and eyes; Dorsal and ventral cirri absent. Parapodia with two unequal lobes of which one is cirriform and erect; capillary setae and simple hooded hooks; Branchia absent. Collected from salinities of 3-21%.

Distribution : Reported from Gangetic delta, Kakinada Bay, Pulicat Lake.

Marphysa sanguinea (Montagu 1815)

Material : 1 ex., Godavari river mouth, Vodalarevu, Amalapuram, 24.1.95.

Description : Very long and broad specimen of 30 cm. in length; Prostomium with bulbous palps and five tentacles. Gills with 3-6 filaments start from 15-16th segment and continue to the hind part. Few posterior segments without gills. Dorsal setae capillary and ventral setae compound knife like; acicular setae and comb setae present. Specimens collected from salinity of 12%.

Distribution : Gangetic delta, Pulicat lake, Gulf of Manner, Gujarat Coast and Kerala Coast.

Family ORBINIIDAE

Scoloplos marsupilis Southern 1921

Material : 14 exs., Light-house, Kakinada Bay, 22.10.1992.

Description : Worms broad and 5-6 cm. in length. Prostomium conical. Body divided into a flat thorax of 16-17 segments and a long cylindrical abdomen, Proboscis sac-like with several lobes. Pair of simple lanceolate gills from 15-16th segment and continue to the posterior end. Dorsal serrated capillaries; ventral capillary setae and hooks. A membranous pocket like structure present in between each foot from 17th segment onwards. Specimens collected at salinity of 12%.

Distribution : Reported from Chilka Lagoon, Vellar estuary, Pulicate lake and Gulf of Mannar. This is the first record of this species from Andhra Coast.

Family SPIONIDAE

Scolelepis squamata (Muller 1806)

Material : 5 exs., Vodalarevu, Amalapuram, 24.09.1993. 10 exs., Perupalem, Narsapur, 18.01.1995.

Description : White, very narrow specimens of about 2 cm. in length; Prosomium pointed with an occipetal keel posteriorly. A pair of long and stout coiled palps. Branchia start from 2nd setigers and continue to the posterior end and attached to the dorsal lamallae. Only capillary setae in the first few segments. Middle and posterior segments with dorsal capillaries and few bidentate hooks; ventral hooks tridentate; anus situated on a cushion like body. Specimens were collected at salinity of 1% and 13%.

Distribution : Orissa coast, Rushikulya estuary, Visakhapatnam coast. Pulicat lake and vellar estuary.

Family CAPITELLIDAE

Heteromastus similis Southern 1921

Material : 2 exs., Sakhinetipalli, Narsapur, 17.09.1993. 5 exs., Vodalarevu, Amalapuram, 23.09.1993. 12 exs., Sunkurevu, Narsapur, 13.09.1993. 6 exs., Chollangi canal, Kakinada, 19.10.1992. 10 exs., Chinchinada, Narsapur, 04.12.1992. 20 exs., Vemuladeevi, Narsapur, 13.1.1995. 20 exs., Navarasapalem, Narsapur, 14.01.1995.

Description : Long worms of about 6-10 cm. in length. Prostomium concial without any appendages; Body divided into thorax of 11 setigerous segments and a long abdomen. First five thoracic segments with capillary setae and the next 6 segments with-long hooks, abdomen with shorter hooks situated on tori; Small branchia

near the ventral tori; Specimens were collected at salinityof 0-20%.

Distribution : Chilka lagoon, Vellar estuary, Pulicat lake, Godavari estuary & Gulf of Mannar.

Pulliella armata Fauvel 1930

Material : 5 exs., Sakhinetipalli, Narsapur 18.10.1992.

Description : Small specimens of 2-3 cm. in length. Prostomium pointed; Body divided into a stout thorax of 9 setigers and narrow abdomen of several segments. Thoracic segments with capillaries in both rami and abdomen with hooded hooks. The posterior segments of abdomen are slightly swollen with 1-2 stout and long spines dorsally and ventral hooks. Branchiae absent. A pair of anal cirri. Specimens were collected at salinity of 5%.

Distribution : Chilka lagoon, Godavari estuary, Gulf of Mannar.

Notomastus latericeus (Sars, 1851)

Material : 1 ex., Rameswaram, Narsapur, 16.01.1995. 10 exs., Bhairavapalem, Kakinada, 21.10.1992.

Description : Stout and elongated specimens of 5-8 cm. in length. Prostomium pointed; body divided into thorax of 11 segments and long abdomen. Thoracic segments with capillary setae on both rami. Abdominal segments with long hooded hooks on elevated tori; Gills rudimentary and are seen as small projections of the dorsal edge of ventral tori. Specimens collected at salinity of 3% and 20%.

Distribution : Chilka lagoon, Andaman Islands & Gujarat coast.

Peraheteromastus tenuis Monro 1937

Material : 1 ex., Sakhinetipalli, Narsapur, 19.04.1995.

Description : Narrow specimen of 4 cm. in length; Prostomium conical; First 4 thoracic segments with capillary setae and the remaining 7 segments with large hooded hooks. Abdomen with smaller hooks arranged on tori; No gills. Specimen was collected at salinity of 20%.

Distribution : Gangetic delta, Rushikulya estuary, (Orissa) & Pulicat lake.

Family TEREBELLIDAE

Loimia medusa (Savigny 1820)

Material : 30 exs., Antervedi, Narsapur, 17.01.1995.

Description : Long and stout worms; Thorax of 17 setments and narrow abdomen of several segments. Several long filliform groved tentacles with purple coloured bonds; three pairs of arborescent gills; Thorax with dorsal capillary setae and ventral pectinate Uncini and abdomen with uncinigerous pinnules. Thorax with broad ventral pads. Specimens collected at salinity of 30‰.

Distribution : Commonly found along Indian coasts, river mouth etc., Gangetic delta Chilka lagoon, Mahanadi estuary, Kakinada Bay, Pulicat lake & Vellar estuary.

SUMMARY

The present study resulted in the report of 29 Nos. of species of Polychaetes belonging to 10 families and nereids are found to be dominant group both in variety and abundance. Radhakrishna & Ganapati (1969) reported 24 species of Polychaetes along with other benthic fauna from Kakinada Bay which is connected to the Bay of Bengal on northern side and to the estuarine regions of Godavari river on the south. Later Srinivasa Rao & Rama Sarma (1978) reported about 40 species of polychaetes from the estuary of Vasistha branch of Godavari river and Nereids, Glycerids and spionids are found to be dominant in their study. The list of Polycheates reported from Kakinada Bay, Vasistha Godavari estuary and the present study is given in table-1.

Table I : List of Polychaetes Reported from Godavari Estuary & Kakinada Bay

Kakinada Bay, (Radhakrishna & Ganapati, 1969	**Vasistha Godavari Estuary (Srinivasa Rao 1978)**	**Present Study**
Family APHRODITIDAE		
1. *Gattayana deludens*	—	—
2. *Harmothoe indica*	—	—
3. *Sthenolepis boa*	—	—
4. *Panthalis oerstedi*	*Panthalis oerstedi*	—
5. —	*Polydontes melanonotus*	—
6. *Harmathoe ampullifera*	—	—
Family AMPHINOMIDAE		
7. *Eurythoe parvicarunculata*	—	—
Family HESIONIDAE		
8. *Hesione pantherina*	—	—
9. —	*Hesione splendida*	—
10. —	*Leocrates claparedii*	—
Family PILARGIDAE		
11. —	*Ancistrosyllis parva*	—
12. —	—	*Talehsapia annandalei*
Family PHYLLODOCIDAE		
13. *Phyllodoce tenuissima*	*Phyllodoce tenuissima*	*Phyllodoce tenuissima*
14. *Eteone ornata*	—	—
15. —	*Mystides southerni*	—
Family NEREIDAE		
16. *Leptonereis sp.*	—	—
17. *Ceratonereis burmensis*	—	—
18. —	*Ceratonereis costae*	*Ceratonereis costae*
19. *Dendronereis aestuarina*	—	—
20. *Dendronereis arborifera*	*Dendronereis arborifera*	*Dendronereis arborifera*
21. —	*Dendronereides Zululandica*	*Dendronereides zululandica*
22. —	*Dendronereides heteropoda*	*Dendronereides heteropoda*
23. —	*Namalycastis indica*	*Namalycastis indica*
24. —	—	*Namalycastis fauveli*
25. —	—	*Lycastonereis indica*
26. —	*Tylonereis bogoyawlenskyi*	*Tylonereis bogoyawlenskyi*

Kakinada Bay, (Radhakrishna & Ganapati, 1969	Vasistha Godavari Estuary (Srinivasa Rao 1978)	Present Study
27. —	*Nereis Lamellosa*	*Nereis lamellosa*
28. —	*Ceratonereis erythrensis*	—
29. —	*Nereis capensis*	—
30. —	*Nectoneanthes ijimai*	—
31. —	—	*Nereis glandicincta*
32. —	—	*Perinereis nuntia*
Family NEPHTYIDAE		
33. *Nephthys dibranchis*	—	—
34. —	*Nephthys oligobranchia*	*Nephthys oligobranchia*
Family GLYCERIDAE		
35. *Glycera longipinnis*	*Glycera longipinnis*	*Glycera longipinnis*
36. —	*Glycera lancadivae*	*Glycera lancadivae*
37. —	*Glycera alba*	*Glycera alba*
38. —	*Glycera tesselata*	—
39. —	*Glycinde oligodon*	—
40. —	—	*Glycera rouxii*
Family EUNICIDAE		
41. *Eunice savigny*	—	—
42. *Eunice gracilis*	—	—
43. —	*Marphysa sanguinea*	*Marphysa sanguinea*
44. *Diopatra neapolitana*	*Diopatra neapolitana*	*Diopatra neapolitana*
45. —	—	*Arbella irricolor*
46. *Lumbrineris heteropoda*	*Lumbrineris heteropoda*	*Lumbrineris heteropoda*
47. *Lumbrineris pseudobifilaris*	—	—
Family SPIONIDAE		
48. *Prionospio cirrifera*	*Prionespio cirnifera*	—
49. *Prinospio pinnata*	*Prionospio pinnata*	—
50. —	*Prionospio cirrobranchiata*	—
51. —	*Pironospio saldhana*	—
52. —	*Prionospio Krusadensis*	—
53. *Polydora Kempi*	*Polydora kempi*	—
54. —	—	*Scolelepis squamata*
Family ORBINIDAE		
55. —	—	*Scoloplos marsupialis*

Kakinada Bay, (Radhakrishna & Ganapati, 1969	Vasistha Godavari Estuary (Srinivasa Rao 1978)	Present Study
Family MALDANIDAE		
56. *Clymene(E) annandalei*	—	—
Family MAGELONIDAE		
57. —	*Magelona cincta*	—
Family COSSURIDAE		
58. —	*Cossura coasta*	—
Family CAPITELLIDAE		
59. —	*Hetromastus similis*	*Hetromastus similis*
60. —	*Pulliella armata*	*Pulliella armata*
61. —	*Dasybranchus caducus*	—
62. —	—	*Notomastus letericeus*
63. —	—	*Paraheteromastus tenuis*
Family STERNASPIDAE		
64. —	*Sternaspis scutata*	—
Family TEREBELLIDAE		
65. *Loimia medusa*	—	*Loimia medusa*
66. *Polymnia nebulosa*	—	—
Family AMPHERETIDAE		
67. —	*Amphicteis gunneri*	—
68. —	*Isolda pulchella*	—
Family TROCHOCHAETIDAE		
69. —	*Poecilochaetus serpens*	—
70. —	*Poecilochaetus johnsoni*	—

In all about 70 species of polychaetes are till now reported from Godavari estuary and Kakinada bay as seen from the above table. Based on the available information on polychaete distribution from estuaries & lagoons (Brackishwaters) of the Indian coast alongwith the present studies, polychaetes of Godavari estuary may be grouped into categories vis. marine, (enter estuaries only at times of high salinity), euryhaline marine forms, (occuring in marine, estuarine and brackishwater zones) estuarine, & brackishwater forms.

Marine forms : These are purely of marine nature and enter/encounter in the estuaries at times of high salinities only. Polycheates of the family Aphroditidae, Amphinomidae, Hesionidae and Terebellidae comes under this category. Polycheates species viz. *G. deludens, S. boa, H. Indca, H. amipullifea, P. oerstedi, P. melanonotus, E. parvicarunculata, H. pantherina, H. splendida, L. claparedii, E. ornata, P. nebulosa, C buremensis,* L. medusa comes under this category.

Marine euryhaline forms : Many of the polychaetes reported from estuaries, backwaters and brackish waters comes under this category. These forms though are of marine nature prefers to inhabit in the areas of fluctuating salinities as these are endowed with capicity of high tolerance of salinity changes.

Under this category Polychaete species viz. *P. tenuissima, M. southerni, A. parva, G. longipinnis, G. alba, G. tesselata, G. rouxi, G. lancadivae, G. oligodon, E. savigny, E. gracilis, Marphysa sanguinea, D. neapolitana, A. irricolor, L. heteropoda, L. pseudobifilaris, N. dibranchis, P. serpens, P. jonnsoni, M. cincta, C. (E) annandalei, C. costa, S. scutata, A. guneri, I. pulchella and the spionids P. cirrifera, P. pinnata, P. cirrobranchiata, P. saldhana and P. Krusadensis.*

Estuarine forms : These are encountered only in esturies, not entering marine zone. Under this category *T. annandalei, N. fauveli, Lycastoneceis indica, T. bogoyawlrnskyi, D. zululandica, D. arborifera, N. lamellosa* are included.

Estuarine and brackish waters forms : These species generally inhabit backwaters, brackish-waters (lagoons) and may be encountered in Estuaries, (marine zone) occasionally. Polycheates viz. *D. aestuarina, N. indica, C. costae, D. heteropoda, N. glandicincta, P. nuntia, N. oligobranchia and S. squamata.* All capitellids reported herein comes under this category. These are *H. similis, P. armata, N. latericeus, D. caducus, P. tenuis* and *spionid P. kempi* and *S. marsupialis.*

The above categorization is based on the distributional pattern of different species of polychaetes reported from various localities viz. Gangetic delta, Chilka lagoon, estuaries of Orissa, Pulicat lake and Vellar estuary etc. Further this grouping is more of generalised nature and very difficult some times to follow in strict sense for certain species of Terebellids, Nereids, Glycerdis, spionids and capitellids. As reported, factors viz. sub-stratum and salinity are the main criterion for the colonization of polychaetes at any habitat. The very dynamic nature of the estuarine environment makes it difficult to categorize its benthic fauna into marine/estuarine in a strict sense without sufficient data of population structure and its dynamics for each species during the course of the year. This is in view of the fact that the situation in one estuary may be completely different from the other, as even at the mouth of one estuary completely fresh water environment exists while a reverse situation at a different estuary at the same time. This makes the variations in the Polychaeta population & species composition of different estuaries along Indian coast.

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SHORE-LINE INSECTS

S. C. NAHAR
Gangetic Plains Regional Station, Zoological Survey of India, Patna-800 016, India

INTRODUCTION

The shore-line insect fauna of Godavari Estuary has not been mentioned any where by earlier workers (vide Fowler, 1912). Hence extensive surveys of Godavari estuary were under-taken from 1992 to 1995. Vigorous efforts were made to have an exhaustive collections of the shore-line insects from the area but only 1 species has been found during the course of studies as a regular shore-line visitor. This species has been recorded for the first time from Godavari estuary.

Other insects like Dragon flies, Damsel flies, Butterflies and Moths etc. are occassionally coming to the sea-shore for drinking water. Perhaps due to lower concentration of calcium in sea water, high salinity, other physical contraints of buoyancy and surface tension and physiological problems of respiration as well as osmoregulation other insects are not observed.

The shore-line insects were observed to be more prevalent near light house at Kakinada back water. They were also collected from West Godavari District near Narsapur. Near the mouth region of estuary at Antervedi also they have been collected. They were also collected from other sites at Narsapur. From East Godavari District at Amlapuram also they have been collected from Vodala Revu site.

It is observed that shore-line insects are more prevalent near the mouth of Godavari estuary. They are available mostly on sandy shore of the estuary.

Practically there is no work on shore-line insects of Godavari estuary. Fowler (1912) and Vazirani (1984) are the major contemporary works on the aquatic Coleopteran insects of Indian region.

SYSTEMATIC ACCOUNT

Order COLEOPTERA

Family CICINDELIDAE

Cicindela biramosa Fabricius, 1781

Cicindela biramosa, Fabricius, 1781. *Spec. Ins.* I, p. 286.

Cicindela tridentata, Thunberg, 1784. *Nov. Ins. Sp*, p. 26, fig. 40.

Cicindela biramosa Var, *contracta* Flentiaux, 1893. *Ann. Soc. Ent. France*, p. 488.

Cicindela biramosa, Fowler, 1912. *The Fauna of British India including Ceylon and Burma : Cicindelidae and Paussidae*, pp. 431-432.

Material examined : 5 exs., back water near light house, Kakinada, East Godavari District, Andhra Pradesh, 22-10-1992, coll. C. A. N. Rao & Party; 3 exs., Antervedi near Narsapur, Godavari estuary, West Godavari District, 15.9.1993, coll. C. A. N. Rao & Party; 2 exs., Antervedi near light house, mouth area, Godavari estuary, West Godavari District, 20.9.93, coll. C. A. N. Rao & Party; 2 exs., Vodalarevu, Amalapuram, East Godavari District, 23.9.1993, coll. C. A. N. Rao & Party; 4 exs., Parupalem, near Narsapur, Godavari estuary, west Godavari District, 18.1.1995, coll. C. A. N. Rao & Party; 1 ex.,

Goganamatam near Amalapuram, East Godavari District, 24.1.1995, coll. C. A. N. Rao & Party.

Description : Length 10-14 mm, shining and smooth, dark bronze green having a coppery reflection observable mainly on the head and pronotum; Labrum testaceous, head striated within the eyes; eyes conspicuously large and prominent; pronotum as long as broad, with the sides gently rounded, finely sculptured, central line distinct but not strongly marked; elytra very shining, sparsely sculptured, more distinctly in front than behind, with an irregular row of larger punctures near the suture, dark with the margins more or less broadly white from the shoulder to the apex; from the margin at about the middle proceeds a blunt transverse spot reaching about the middle of the disc, the hinder white portion is thickened at its apex, the space forming a lunule continuing the margin; legs coppery and green, trochanters dark, metallic, under side coppery green, and violaceous, almost bare in the centre, with thick but very fugitive pubescence at the sides; genae bare, sides of prosternum with large punctures.

Distribution : Sunderbans, Bengal, Orissa, Andaman Islands; Burma; Bangladesh; Ceylon; Tenasserim; Malacca and China.

Remarks : *Cicindela biramosa* Fabricius is found on sea-shore. The food of this species of insect seems to consist mostly of insects which have accidentally fallen into the estuary or live naturally on the surface and the washed ashore. It is very active on the wing and is collected with much difficulties. It has been observed flying during night as well as day. On clear observation it has been noticed that *C. biramosa* is not available on every sandy shore within its range of distribution. This species has also been recorded from Mahanadi estuary and it is also recorded for the first time from Godavari estuary.

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BRACHYURAN CRABS (CRUSTACEA : DECAPODA : BRACHYURA)

M. K. DEV ROY AND S. BHADRA
Zoological Survey of India, 27 Jawaharlal Nehru Road, Kolkata-700016

INTRODUCTION

Although brachyuran crabs of Indian Waters are well documented (Alcock, 1895, 1896, 1898, 1899a, b, 1900, 1910 and 1901; Bairagi, 1995; Bhadra, 1995; Chakraborty *et. al.*, 1986; Chhapgar, 1957 a, b; Chopra, 1993, 1935; Deb, 1987, 1989; Das and Dev Roy, 1989, Dev Roy and Das, 2000; Dev Roy and Nandi, 1991; Gravely, 1927, 1941; Kemp. 1915, 1918, 1919 a, b; Nandi and Pramanik, 1994; Pillai, 1951; Sankarankutty, 1961 a, b) studies on crabs of Godavari estuary as such are not available excepting reports of a single species, *Parilia alcocki* by Wood-Mason (1891) and six species, namely, *Philyra sexangula, Charybdis (Charybdis) annulata, Metaplax elegans, M. intermedia, Uca dussumieri and Nectopanope rhodobaphes* by Alcock *(op. cit.)*. In the present study, a total of 21 species of crabs belonging to 15 genera and 7 families have been communicated based on the collections made by Estuarine Biological Station, Zoological Survey of India, Berhampore. Barring the seven species as mentioned earlier, the remaining 14 species (marked with asterisk) are reported for the first time from this estuary and also from the state of Andhra Pradesh. All the 21 species are known from India and often reported. In view of above, key to the species are not incorporated in the present communication. Synonymies are provided from generic levels onwards.

SYSTEMATIC LIST OF BRACHYURAN CRABS RECORDED FROM GODAVARI ESTUARY

(After Bowman and Abele, 1982)

Phylum, Subphylum or Superclass CRUSTACEA Pennant, 1777

Class MALACOSTRACA Latreille, 1806

Subclass EUMALACOSTRACA Grobben, 1892

Superorder EUCARIDA Calman, 1904

Order DECAPODA Latreille, 1803

Suborder PLEOCYEMATA Burkenroad, 1963

Infraorder BRACHYURA Latreille, 1803

Section OXYSTOMATA H. Milne Edwards, 1834

Superfamily LEUCOSIOIDEA Samouelle, 1819

Family LEUCOSIIDAE Samouelle, 1819

1. ***Philyra sexangula*** Alcock, 1896
2. ***Parilia alcocki*** Wood-Mason, 1891

Family CALAPPIDAE de Haan, 1833

*3. ***Matuta lunaris*** (Forskål, 1775)

Section OXYRHYNCHA Latreille, 1803

Superfamily PARTHENOPOIDEA MacLeay, 1838

Family PARTHENOPIDAE MacLeay, 1838

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

Section BRACHYRHYNCHA Borradaile, 1907

Superfamily PORTUNOIDEA Rafineseque, 1815

Family PORTUNIDAE Rafinesque, 1815

*5. ***Scylla serrata*** (Forskål, 1775)

*6. ***Portunus pelagicus*** (Linnaeus, 1758)

*7. ***Portunus sanguinolentus*** (Herbst, 1783)

8. ***Charybdis (Charybdis) annulata*** (Fabricius, 1798)

*9. ***Charybdis (Charybdis) feriata*** (Linnaeus, 1758)

*10. ***Charybdis (Charybdis) rostrata*** A. Milne Edwards, 1861)

*11. ***Podophthalmus vigil*** (Fabricius, 1798)

Superfamily XANTHOIDEA MacLeay, 1838

Family PILUMNIDAE Samouelle, 1819

12. ***Nectopanope rhodobaphes*** Wood-Mason, 1891

Superfamily GRAPSIDOIDEA MacLeay, 1838

Family GRAPSIDAE MacLeay, 1838

*13. ***Sesarma (Parasesarma) plicatum*** (Fabricius, 1798)

*14. ***Neoepisesarma (Neoepisesarma) taeniolata*** (White, 1847)

*15. ***Metaplax crenulata*** (Gerstaecker, 1856)

16. ***Metaplax elegans*** de Man, 1888

17. ***Metaplax intermedia*** de Man, 1888

*18. ***Varuna litterata*** (Fabricius, 1798)

Superfamily OCYPODOIDEA Rafinesque, 1815

Family OCYPODIDAE Rafinesque, 1815

*19. ***Ocypode ceratophthalma*** (Pallas, 1772)

20. ***Uca dussumieri*** (H. Milne Edwards, 1852)

*21. ***Uca lactea*** (de Haan, 1835)

Section OXYSTOMATA H. Milne Edwards, 1834

Diagnosis : Carapace oval, subcircular or polygonal in shape. Epistome rudimentary or absent. Buccal frame elongate, triangular. Gills six to nine on each side. Last pair of legs normal or subdorsal, no epipodite on pereiopods. First abdominal somite of female without any appendage.

Remarks : The section Oxystomata has been found to be represented by a single superfamily, namely, Leucosioidea Samouelle, 1819 in Godavari estuary.

Superfamily LEUCOSIOIDEA Samouelle, 1819

Diagnosis : Carapace subcircular, oval or polygonal in shape. Abdomen not reduced but fully turned under the sternum. All pereiopods well developed.

Remarks : The Superfamily contains two families namely, Leucosiidae Samouelle, 1819 and Calappidae de Haan, 1835. Both are represented in Godavari estuary.

Family LEUCOSIIDAE Samouelle, 1819

Diagnosis : Carapace round, oval or polygonal in outline. Front narrow but broader than the orbits. The afferent branchial channels opening at the base of third maxillipeds.

Remarks : The family Leucosiidae is divided into four subfamilies namely Ebaliinae Stimpson (1871), Iliinae Stimpson (1871), Leucosiinae Samouelle (1819) and Cryptocneminae Stimpson (1858). According to Glaessner (1969)..."this family is commonly divided into subfamilies which are constituted and defined differently by different authors (Miers, Alcock, Ihle, Rathbun, Balss) and are not considered helpful to palaeontologists at

Species marked with asterisk (*) indicates new records from Godavari estuary.

the present stage of out knowledge of the family" In the present communication, the system of Ihle (1918) as followed by Manning and Holthuis (1981) has been adopted.

The family is represented by a single subfamily namely, Leucosiinae Samouelle, 1819 in Godavari estuary.

Subfamily LEUCOSIINAE Samouelle, 1819

Diagnosis : Merus of third maxillipeds less than half the length of ischium when measured along the inner border. Anterior extremity of buccal cavity terminating at the level of anteior boundary of pterygostomian regions. Generally, sub-orbital lobes and epistome rudimentary.

Genus ***Philyra*** Leach, 1817

1817. *Philyra* Leach, *Zool. Misc. III* : 18

Diagnosis : Carapace circular and depressed with the branchial regions well demarcated by grooves or creases. No thoracic sinus. Front broad.

Remarks : The genus is represented by a single species in Godavari estuary.

1. ***Philyra sexangula*** Alcock, 1896

1896. *Philyra sexangula* Alcock, *J. Asiat. Soc. Bengal,* **65**(2) : 237.

Diagnosis : The entire body of crab (both dorsal and ventral surfaces) excepting finger tips and dactyli densely covered with short, microscopic velvet-like hairs. Carapace sharply hexagonal, posterior borders almost straight and their outer angles tooth-like. Carapace traversed from front to back by an interrupted median carina and with an oblique carina on each side of the branchial region. Upper surface of chelipeds also traversed by a prominent ridge from base of the arm to the finger cleft.

Distribution : Indian Ocean. India : Sacramento Shoal, Godavari coast (Andhra Pradesh). Elsewhere : Persian Gulf.

Remarks : This species was earlier reported from coastal Godavari by Alcock (1895). However, the present collection does not contain this species. So far, the species is known only from the east coast.

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

1891. *Parilia* Wood-Mason, *Ann. Mag. nat. Hist.,* (6) **7** : 264.

1976. *Parilia* Sakai, *Crabs of Japan and the Adjacent Seas* : 105.

Diagnosis : Carapace strongly convex and granular bearing three spines on the posterior margin. Front bilobed, epistome projecting. Antennules obliquely folded, antenna lodged in the gap at the inner canthus of the orbit. Buccal cavity much broader than long, exognath of external maxillipeds markedly broad. Branchial chambers tumid. Chelipeds slender and more than four times the length of carapace. Male abdomen made up of five distinct segments, female abdomen 7-segmented.

Remarks : The genus is represented by a single species in Godavari estuary.

2. ***Parilia alcocki*** Wood-Mason, 1891

1891. *Parilia alcocki* Wood-Mason, *Ann. Mag. nat. Hist.* (6) **7** : 264.

1896. *Parilia alcocki,* Alcock, *J. Asiat. Soc. Bengal,* **65** (2) : 198.

Diagnosis : Carapace transversely oval and markedly convex dorsally bearing fine granules. Regions well outlined by broad shallow grooves and lines of dimples, hepatic region inflated. Epistome projecting well beyond the edge of the front. Fingers of chelipeds sinuous in male, stout and slightly curved in female. Legs shorter than arm in male but slightly larger in female. Females with an erect spine at the middle of the sternum in between the genital openings.

Distribution : Indian Ocean. India : Godavari Delta (Andhra Pradesh) and Mahanadi Delta (Orissa).

Remarks : This species was earlier recorded from Godavari Delta by Wood-Mason (1891). It

is not represented in the present collection. So far, the species is known only from the east coast.

Family CALAPPIDAE de Haan, 1833

Diagnosis : Carapace oval or subcircular. Front almost as broad as orbit. Lateral borders either with (1) a small tooth or a strong spine at the junction of the antero and postero-lateral borders or (2) a postero-lateral vault-like expansion over the walking legs. External maxillipeds may or may not close the buccal cavity fully, their palps either concealed in repose or always exposed.

Remarks : These are intertidal crabs usually living on sandy shores. The family is represented by a single subfamily, namely, Matutinae de Haan, 1835 in Godavari estuary.

Subfamily MATUTINAE de Haan, 1835

Diagnosis : Carapace circular with a stout spine at the junction of the antero and postero-lateral borders. Merus of external maxillipeds elongate with an acute tip, concealing the flagellum entirely in repose. Legs adapted for swimming.

Genus ***Matuta Weber,*** 1795

1795. *Matuta* Weber, *Nomenclator entomologicus* : 92.

1896. *Matuta*, Alcock, *J. Asiat. Soc. Bengal*, **65** (2) : 153.

Diagnosis : Carapace subcircular, nearly flat. Front almost as broad as the orbit. Postero-lateral borders strongly convergent, generally with a strong spine at the junction of the antero and postero-lateral borders. Antenna extremely small, inconspicuous. Antennules folded almost longitudinally. Orbits large, oval with a deep groove in the lower border near external orbital angle and a narrow gap at the inner angle. Chelipeds massive, equal. Legs adapted for swimming and burrowing, propodus and dactylus of ambulatory legs broadened enormously in the first and last pair. Abdomen of male consisting of five segments (3rd to 5th segments fused) and that of female of seven separate segments.

Remarks : The genus contains a single species in Godavari estuary.

3. ***Matuta lunaris*** (Forskål, 1775)

1775. *Cancer lunaris* Forskål, *Descr. Anim.* : 91.

1976. *Matuta lunaris* Sakai, *Crabs of Japan and the Adjacent Seas* : 140, pl. 44, fig. 1.

2000. *Matuta lunaris* Dev Roy and Das, *Rec. zool. Surv. India, Occ. Paper* No. **185** : 21.

Material examined : 1 ex., Upapara near Kakinada, East Godavari Dist., 18.3.1995, S. C. Nahar & Party, Reg. No. 2759.

Diagnosis : Front wider than orbit. Longitudinal ridge of dactylus of chelipeds milled strongly. A distinct spine-like tooth present at the base of the lower outer angle of palm at its juncture with the wrist.

Distribution : Indo-West Pacific. India : East Coast : Sunderbans (West Bengal); Mahanadi Delta, Chandipur, Balassore (Orissa); Chennai, Palk Bay, Gulf of Mannar (Tamil Nadu); Andaman and Nicobar Islands. West Coast : Gulf of Kachchh (Gujarat); Umarsadi; Kolak; Mumbai (Maharashtra); Karwar (Karnataka); Travancore coast (Kerala). Elsewhere : East coast of Africa, South Africa, Red Sea, Madagascar, Seychelles, Mauritius, Pakistan, Sri Lanka, Myanmar, Malay Peninsula, Java, Celebes, Philippines, South China Sea, Japan, New Guinea, Australia and Samoa.

Remarks : This species has a wide distribution throughout the Indo-Pacific. It occurs extensively in both the coasts of India. This crab is eaten by the poorer sections of people at Mumbai.

Section OXYRHYNCHA Latreille, 1833

Diagnosis : Carapace narrowed anteriorly and usually produced forward forming a distinct rostrum. Branchial regions considerably developed, inflated; hepatic region small. Epistome large. Buccal cavity squarish. Branchiae nine on each side. Antennules infolded longitudinally.

Remarks : The section Oxyrhyncha is represented by four superfamilies, namely, Majoidea Samouelle, 1819, Hymenosomatoidea MacLeay, 1838, Mimilambroidea Williams, 1979 and Parthenopoidea MacLeay, 1838. However, of

these, representatives belonging to the last superfamily only occurs in Godavari estuary.

Superfamily PARTHENOPOIDEA MacLeay, 1838

Diagnosis : Carapace generally triangular, often suboval or subpentagonal. Rostrum simple. Branchial regions deeply separated from the cardiac. Chelipeds much larger than the legs.

Remarks : The superfamily Parthenopoidea MacLeay, 1838 contains a single family namely, Parthenopidae MacLeay, 1838.

Family PARTHENOPIDAE MacLeay, 1838

Diagnosis : Carapace triangular or pentagonal. Eyes usually retractile within small, circular, well defined orbits. Antenna small, deeply imbeded in between inner angle of the orbit and antennular fossa, basal segment neither fused with the epistome nor with the front. Chelipds not specially mobile, usually much longer and more massive than the ambulatory legs, fingers bent on palm towards the side of fixed finger.

Remarks : The family is divided into three subfamilies, namely, Parthenopinae MacLeay, 1838, Eumedoninae MacLeay, 1838 and Aethrinae Dana, 1852. The present collection, however, includes representatives of the subfamily Pathenopinae only.

Subfamily PARTHENOPINAE MacLeay, 1838

Diagnosis : Carapace commonly equilaterally triangular, often subpentagonal or ovate-pentagonal and occasionally semi-circular or semi-elliptical in outline, surface extremely uneven and covered with granules and tubercles of various sizes. Rostrum simple or weakly trilobed. Gastric and cardiac regions sharply marked off from the branchial region. Chelipeds enormously long and much more massive than the ambulatory legs.

Genus ***Pathenope Weber,*** 1795

1795. *Parthenope* Weber, *Nomenclator entomologicus* : 92.

1815. *Lambrus* Leach, *Trans. Linn. Soc. London,* **11** : 308, 310.

Diagnosis : Carapace broadly triangular or ovate-pentagonal, surface granular, tubercular or spiny. Front pointed, exceedingly short. Eyes contained in distinct orbits. Antennules transversely folded. Antenna small, basal joint extremely short not meeting the front and wedged in between antennulary fossa and the large lobe constituting floor of orbit. Chelipeds monstrous in size, ambulatory legs slender. Male abdomen consisting of five or six segments, that of female of seven segments.

Remarks : The genus Parthenope Weber, 1795 is divided into five subgenera, namely, *Parthenope* Weber, 1795, *Platylambrus* Stimpson, 1871, *Rhinolambrus* A. Milne Edwards, 1878, *Pseudolambrus* Paulson, 1875 and *Aulacolambrus* Paulson, 1875. It is represented by a single subgenus, *Parthenope* in Godavari estuary.

Subgenus ***Parthenope*** Weber, 1795

1795. *Parthenope* Weber, *Nomenclator entomologicus* : 92.

1958. *Parthenope,* Garth, *Allan Hancock Pacific Expeditions* : **21** (1) : 436.

Diagnosis : Rostrum not projected beyond the outline of carapace. Buccal frame slightly narrowed in front.

Remarks : This subgenus is represented by a single species, *Parthenope (Parthenope) longimanus* in Godavari estuary.

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

1764. *Cancer longimanus* Linnaeus, *Mus. Ludovici ulrici* : 441 (not seen).

1895. *Lambrus longimanus* Alcock, *J. Asiat. Soc. Bengal,* **64** (2) : 260.

1976. *Parthenope (Parthenope) longimanus* Sakai, *Crabs of Japan and the Adjacent Seas* : 266, Text. fig. 144.

Material examined : 1 ex., Darbharevu Island near Narsapur, West Godavari Dist., 23.4.1995, T. Venkateswarlu & Party, Reg. No. 2852.

Diagnosis : Carapace ovate pentagonal in shape, its surface roughened with sharp granules and tubercles of various sizes. Rostrum thin, exceedingly short and tri-lobed. Chelipeds

enormously long, much more massive than the ambulatories; merus of chelipeds prismatic, upper and lower edges of it armed with numerous curved spines arranged larger and smaller alternately; wrist with few sharp teeth on the outer margin; palm trigonal bearing sharp laciniated teeth on its outer edge alternately larger and smaller. Second segment of abdomen with a sharp transverse crest, forming a prominent line in the centre besides bearing a tooth on each side.

Distribution : Indo-Pacific. India : East Coast : Gopalpore (Orissa); 'Madras' Coast (Tamil Nadu); Andaman Islands. Elsewhere : Mauritius, Sri Lanka, Myanmar, Gulf of Thailand, Taiwan, Japan, Philippines, Singapore, Celebes, Moluccas, Ambon, New Guinea, Java and Australia.

Remarks : The specimen exhibits pale liliac colour dorsally and white ventrally as observed by Alcock (*op. cit.*). These colours are found to be prominent even on preserved specimens.

Section BRACHYRHYNCHA Borradaile, 1907

Diagnosis : Carapace wide anteriorly, not narrowed in front and more or less oval, circular or square in outline, Rostrum reduced or absent. Epistome well developed. Buccal frame squarish. Orbits almost complete. Last pair of legs normal, often reduced.

Remarks : The section Brachyrhyncha has been found to be represented by three super-families, namely, Portunoidea Rafinesque, 1815, Grapsidoidea MacLeay, 1838 and Ocypodoidea Rafinesque, 1815 in Godavari estuary.

Superfamily PORTUNOIDEA Rafinesque, 1815

Diagnosis : Carapace flat, squarish or oval in outline, usually broader than long; surface mostly with transverse ridges. Front narrow or broad, dentate or lobed. Last two joints of the legs usually broadened, flattened and paddle-like.

Remarks : This superfamily contains two families, namely, Geryonidae Colosi, 1923 and Portunidae Rafinesque, 1815 (Bowman and Abele, 1982 *op. cit.*) of which representatives of the family Portunidae has only been found to occur in Godavari estuary.

Family PORTUNIDAE Rafinesque, 1815

Diagnosis : Carapace hexagonal, subquadrate, elongate oval or sub-circular, generally broader than long. Front broad, horizontal and cut into two to six teeth or lobes. Antero-lateral teeth varying from four to nine. Last pair of legs usually modified for swimming.

Remarks : These are intertidal crabs living in burrows of mud flats, among rocks and corals. They also inhabit mangrove swamps, estuaries or rivers (Dev Roy and Das, 2000).

The family is represented by two subfamilies, namely, Portuninae Rafinesque, 1815 and Podophthalminae Miers, 1886.

Subfamily PORTUNINAE Rafinesque, 1815

Diagnosis : Carapace distinctly broad and of typical Portunid-shape. Antero-lateral borders with upto to nine teeth. Legs shorter than chelipeds, fifth pair shaped like a paddle.

Genus ***Scylla*** de Haan, 1833

1833. *Scylla* de Haan. *Faun. Japan Crust.* : 11

1899a. *Scylla* Alcock, *J. Asiat. Soc. Bengal,* **68** (2) : 27

Diagnosis : Carapace broad, moderately convex with an almost even surface. Front cut into four teeth of almost equal size. Basal antenna-joint short, broad, its antero-external angle forming a lobule lying in the orbit, flagellum lodged in the orbital hiatus. Chelipeds massive. Legs stout, in the last pair merus and carpus shortened and broadened. Propodus and dactylus typically foliaceous for swimming. Male abdomen broadly triangular, five-segmented, third to fifth terga fused.

Remarks : There is much controversy over the exact number of species within the genus *Scylla* as discussed in details by Dev Roy and Das (*op. cit.*).

5. ***Scylla serrata*** (Forskål, 1775)

1775. *Cancer serratus* Forskål, *Descr. Anim.* : 90

1899a. *Scylla serrata,* Alcock, *J. Asiat. Soc. Bengal,* **68** (2) : 27.

2000. *Scylla serrata,* Dev Roy and Das, *Rec. zool. Surv. India, Occ. Paper* No. **185** : 26.

Material examined : 1 ex., Pondicherry State, Yanam, 14.3.1995, S. C. Nahar & Party, Reg. No. 2737; 4 exs., B. V. Palem, East Godavari Dist., 15.3.1995, S. C. Nahar & Party. Reg. No. 2739; 9 exs., B. V. Palem, East Godavari Dist.; 17.3.1995, S. C. Nahar & Party, Reg. No. 2756; 3 exs., Ramannapalem near Kakinada, East Godavari Dist., 7.4.1995, T. Venkateswarlu & Party, Reg. No. 2773; 5 exs., Chollangi near Kakinada, East Godavari Dist., 9.4.1995, T. Venkateswarlu & Party, Reg. No. 2783; 7 exs., B. V. Palem, East Godavari Dist., 11.4.1995, T. Venkateswarlu & Party, Reg. No. 2796; 4 exs., B. V. Palem, East Godavari Dist., 12.4.1995, T. Venkateswarlu & Party, Reg. No. 2803; 3 exs., Chollangi near Kakinada, East Godavari Dist., 13.4.1995, T. Venkateswarlu & Party, Reg. No. 2808; 4 exs., Ramannapalem, near Kakinada, East Godavari Dist., 14.4.1995, T. Venkateswarlu & Party, Reg. No. 2815; 1 ex., Moolagattu near Kakinada, East Godavari Dist., 15.4.1995, T. Venkateswarlu & Party, Reg. No. 2819; 2 exs., Chinchinada near Narsapur, East Godavari Dist., 18.4.1995, T. Venkateswarlu & Party, Reg. No. 2822; 4 exs., Sekhinetipalli, 19.4.1995, T. Venkateswarlu & Party, Reg. No. 2826; 1 ex., Antervedi Temple near Narsapur, West Godavari Dist., 20.4.1995, T. Venkateswarlu & Party, Reg. No. 2830; 3 exs., Darbharevu Island near Narspur, West Godavari Dist., 24.4.1995, T. Venkateswarlu & Party. Reg. No. 2857; 1 ex., Biyyappu Thippa near Narsapur, West Godavari Dist., 25.4.1995, T. Venkatewarlu & Party, Reg. No. 2861; 4 exs., Sekhinetipalli near Narsapur, West Godavari Dist., 26.4.1995, T. Venkateswarlu & Party, Reg. No. 2864; 2 exs., Chinchinada near Narsapur, West Godavari Dist., 27.4.1995, T. Venkateswarlu & Party, Reg. No. 2867.

Diagnosis : Carapace oval, smooth, regions indistinct. Antero-lateral border of carapace cut into nine sharp acuminate teeth of almost equal size. Arm of larger cheliped adorned with three spines on the anterior border and two on the posterior border. Leg joints unarmed.

Distribution : Indo-West Pacific. India : East Coast : Sunderbans (West Bengal); Chilka Lake (Orissa); Chennai, Pulicat Lake, Palk Bay (Tamil Nadu); North Bay, Ross Island, Sippighat, Carbyn's Cove, Ferrargunj (South Andaman); Yerata jetty, Rangat (Middle Andaman); Mayabunder (North Andaman). West Coast : Gulf of Kachchh (Gujarat); Kolak, Mumbai (Maharashtra); Zuari estuary (Goa), Karwar (Karnataka). Elsewhere : East and South coast of Africa, Red Sea, Pakistan, Sri Lanka, Thailand, Japan, China, Philippines, Indonesia, Australia, New Zealand, Tahiti and Hawaiian Islands.

Remarks : All materials examined were juvenile specimens only.

Genus ***Portunus*** Weber, 1795

1795. *Portunus* Weber, *Nomenclator entomologicus* : 93.

1899a. *Neptunus* Alcock, *J. Asiat. Soc. Bengal,* 68(2) : 28.

Diagnosis : Carapace transversely broad, depressed or slightly convex. Front broad and cut into three to six teeth. Antero-lateral borders cut into nine regular teeth, last tooth often enlarged. Basal antenna-joint short, its antero-external angle produced forming a lobule or spine and extends into the orbit, flagellum lodged in the orbital hiatus. Chelipeds long, massive. Legs compressed, in the fourth pair merus and carpus broadened and shortened, propodus and dactylus typically foliaceous and paddle like for swimming. Male abdomen five-jointed, third to fifth segments fused.

Remarks : This genus is represented by two species namely, *Portunus pelagicus* (Linnaeus, 1758) and *P. sanguinolentus* (Herbst, 1796) in Godavari estuary.

6. ***Portunus pelagicus*** (Linnaeus, 1758)

1758. *Cancer pelagicus* Linnaeus, *Syst. Nat. 10th ed.,* **1** : 626.

1899a. *Neptunus pelagicus,* Alcock, *J. Asiat. Soc. Bengal,* **68**(2) : 34.

2000. *Portunus pelagicus,* Dev Roy and Das, *Rec. zool. Surv. India, Occ. Paper* No. **185** : 31.

Material examined : 1 ex., Ramannapalem near Kakinada, East Godavari Dist., 7.4.1995, T.

Venkateswarlu & Party, Reg. No. 2773; 6 exs., Chollangi near Kakinada, East Godavari Dist., 9.4.1995, T. Venkateswarlu & Party, Reg. No. 2783; 1 ex., Chollangi near Kakinada, East Godavari Dist., 13.4.1995, T. Venkateswarlu & Party, Reg. No. 2808; 1 ex., Ramannapalem near Kakinada, East Godavari Dist., 14.4.1995, T. Venkateswarlu & Party, Reg. No. 2815; 4 exs., Antervedi Temple near Narsapur, West Godavari Dist., 20.4.1995, T. Venkateswarlu & Party, Reg. No. 2830; 1 ex., Biyyappu Thippa near Narsapur, West Godavari Dist., 22.4.1995, T. Venkateswarlu & Party, Reg. No. 2845; 2 exs., Darbharevu Island near Narsapur, West Godavari Dist., 23.4.1995, T. Venkateswarlu & Party, Reg. No. 2852; 1 ex., Darbharevu Island near Narsapur, West Godavari Dist., 24.4.1995, T. Venkateswarlu & Party, Reg. No. 2857; 2 exs., Biyyappu Thippa near Narsapur, West Godavari Dist., 25.4.1995, T. Venkateswarlu & Party, Reg. No. 2861; 1 ex., Chinchinada near Narsapur, West Godavari Dist., 27.4.1995, T. Venkateswarlu & Party, Reg. No. 2867.

Diagnosis : Surface of Carapace studded with miliary granules. Posterior border of the arm of cheliped armed with a spine. Two spines on palm just behind the finger-joint.

Distribution : Indo-West Pacific. India : East Coast : Sunderbans (West Bengal); Chilka Lake (Orissa); Palk Bay and Gulf of Mannar (Tamil Nadu); Mayabunder, Austin Island, North Bay (Andaman Islands). West Coast : Gulf of Kachchh (Gujarat); Mumbai (Maharashtra); Karwar (Karnataka); Travancore (Kerala). Elsewhere : East and South coasts of Africa, the Mediterranean, Red Sea, Persian Gulf, Sri Lanka; Mergui Archipelago, Singapore, Philippines, Hong Kong, Japan, Australia, New Caledonia, New Zealand and Tahiti.

Remarks : This species is widely distributed throughout the Indo-Pacific. The species is also very common in both the coasts of India. It supports a good crab fishery at Kakinada Bay (Lalitha Devi, 1985).

7. ***Portunus sanguinolentus*** (Herbst, 1796)

1796. *Cancer sanguinolentus* Herbst, *Krabben und Krebse,* **1**(2) : 161, pl. 8, figs. 56, 57.

1899a. *Neptunus sanguinolentus* Alcock, *J. Asiat. Soc. Bengal,* **68**(2) : 32.

2000. *Portunus sanguinolentus* Dev Roy and Das, *Rec. Zool. Surv. India, Occ. Paper* No. **185** : 33.

Material examined : 1 ex., Upapara near Kakinada, East Godavari Dist., 18.3.1995, S. C. Nahar & Party, Reg. No. 2759.

Diagnosis : Presence of three large blood red spots on the carapace. No spine on posterior border of the arm of the chelipeds. A single spine on palm just behind the finger-joint.

Distribution : Indo-West Pacific. India : East Coast : Sunderbans (West Bengal); Chennai, Palk Bay (Tamil Nadu); Andaman and Nicobar Islands. West Coast : Mumbai (Maharashtra); Karwar (Karnataka); Travancore (Kerala). Elsewhere : East Africa, Red Sea, Persian Gulf, Sri Lanka; Malay Peninsula, Philippines, Hong Kong, Formosa, Japan, Australia, New Zealand and as far as Hawaii.

Remarks : This species of crab is widely distributed throughout the Indo-Pacific occurring extensively in both the coasts of India. They contribute an important fishery at Kakinada Bay (Lalitha Devi, 1985).

Genus ***Charybdis*** de Haan, 1833

1833. *Charybdis* de Haan, *Faun. Japan Crust.* : 9, 10.

1899a. *Charybdis* Alcock, *J. Asiat. Soc. Bengal,* **68**(2) : 47.

Diagnosis : Carapace hexagonal, moderately broad, depressed or slightly convex with more or less transverse granular ridges in the anterior half. Front cut into six lobes or teeth excluding the supra-orbital angles. Antero-lateral teeth varying from five to seven but usally six (including the outer orbital angles). Basal antenna-joint short, broad; its outer angle lobule-like, filling the orbital hiatus, meeting the front and excluding flagellum from the hiatus. Chelipeds massive. Legs compressed; merus and carpus of the last pair shortened and broadened, propodus and dactylus

typically foliaceous for swimming. Abdomen of male five-jointed, third to fifth segments fused together.

Remarks : The genus *Charybdis* de Haan, 1833 is divided into five subgenera (Stephenson *et. al.*, 1957), namely *Gonioneptunus* Ortmann, 1893, *Charybdis* de Haan, 1833, *Goniosupradens* Leene, 1938, *Gonioinfradens* Leene, 1938 and *Goniohellenus* Alcock, 1899. However, it is represented by a single subgenus, namely, *Charybdis* de Haan, 1833 in Godavari estuary.

Subgenus *Charybdis* de Haan, 1833

1833. *Charybdis* de Haan, *Faun. Japan Crust* : 9, 10.

1899a. *Goniosoma* Alcock, *J. Asiat. Soc. Bengal*, 68(2) : 48, 49.

Diagnosis : Four median teeth of the front almost of same size. Anterolateral teeth usually six, often seven. Posterior border of arm of the cheliped without any spine.

Remarks : The subgenus is represented by three species namely, *Charybdis (Charybdis) annulata* (Fabricius, 1798), *Charybdis (Charybdis) feriata* (Linnaeus, 1758) and *Charybdis (Charybdis) rostrata* A. Milne Edwards, 1861 in Godavari estuary.

8. ***Charybdis (Charybdis) annulata*** (Fabricius, 1798)

1798. *Portunus annulatus.* Fabricius, *Suppl. Entom. Syst.* : 341.

1899a. *Charybdis annulata* Alcock, *J. Asiat. Soc. Bengal*, 68(2) : 54.

1976. *Charybdis (Charybdis) annulata* Sakai, *Crabs of Japan and the Adjacent Sea.* 356, Text-fig. 192.

Diagnosis : Anterolateral teeth regular, first tooth small and acute, second not much larger than the first and the last the smallest. Major diameter of orbit barely a fourth the breadth of front. In the last pair of legs, merus about twice as long as broad and posterior border of propodus serrated in a large part of its extent. In male, sixth abdominal segment almost as long as broad with its sides parallel for three-fourths of their extent.

Distribution : Indian Ocean. India : East Coast : Visakhapatnam, Bimplipatnam, Waltair (Andhra Pradesh); Tuticorin, Krusadai Island, Cape Comorin (Tamil Nadu). West Coast : Dwarka, Port Okha (Gujarat) Travancore (Kerala). Elsewhere : Pakistan, Sri Lanka, Myanmar and Thailand.

Remarks : This species was earlier reported by Alcock (1899a) from the Godavari estuary. However, it has not been collected during the present investigation.

9. ***Charybdis (Charybdis) feriata*** (Linnaeus, 1758)

1758. *Cancer feriatus* Linnaeus, *Syst. Nat., 10th. ed.* : 627.

1976. *Charybdis (Charybdis) feriata* Sakai, *Crabs of Japan and the Adjacent Seas* : 357, pl. 122.

1991. *Charybdis feriata,* Dev Roy and Nandi, *J. Indian Soc. Coastal agric. Res.*, 9(1-2) : 71.

Material examined : 2 exs., Upapara near Kakinada, East Godavari Dist., 18.3.1995, S. C. Nahar & Party, Reg. No. 2759.

Diagnosis : No distinct transverse ridge behind the level of last spine of the antero-lateral borders. First antero-lateral spine truncated and notched anteriorly. Major diameter of orbits about one-third the width of front. Fingers almost as long as their palms. Propodus of fourth ambulatory legs with one or two inconspicuous denticles near distal end of its posterior border. Sixth segment of male abdomen much broader than long with gently curved sides. Colour markings in the form of a large yellow cross.

Distribution : Indo-West Pacific. India : East Coast : Sunderbans (West Bengal); Mahanadi estuary, Baleswar, Puri (Orissa); Pulicat Lake, Palk Bay (Tamil Nadu); Andaman and Nicobar Islands. West Coast : Mumbai (Maharashtra). Elsewhere : South Africa, Pakistan, Bangladesh, China Sea, Singapore, Malay Peninsula, Hong Kong, Formosa, Japan and Australia.

Remarks : This species has wide distribution throughout the Indo-Pacific. The crab is also found in both the coasts of India although it is more common in the east coast. It is an edible species.

10. ***Charybdis (Charybdis) rostrata*** A. Milne Edwards, 1861

1861. *Goniosoma rostratum* A. Milne Edwards, *Archiv. du Mus.*, **10** : 379, 385, pl. 35, fig. 2.

1899a. *Charybdis (Goniosoma) rostrata* Alcock, *J. Asiat. Soc. Bengal*, **68**(2) : 59.

1991. *Charybdis rostrata* Dev Roy and Nandi, *J. Indian Soc. Coastal agric. Res.*, **9**(1-2) : 71.

Material examined : 3 exs., Antervedi Light House near Narsapur, West Godavari Dist., 21.4.1995, T. Venkateswarlu & Party, Reg. No. 2837.

Diagnosis : Front cut into six teeth, middle two bluntly pointed but prominent projecting far beyond the others. First antero-lateral tooth very acute, spine-like. Palm of the larger cheliped with two spines.

Distribution : Indian Ocean. India : East Coast : Sunderbans (West Bengal); Chandipur; Orissa; 'Madras' (Tamil Nadu); Andaman Islands. Elsewhere : Sri Lanka; Mergui Archipelago; Gulf of Martaban.

Remarks : This species has not yet been reported from the west coast.

Subfamily PODOPHTHALMINAE Miers, 1886

Diagnosis : Front extremely narrow, T-shaped. Orbits very long, occupying entire anterior border of carapace. Antero-lateral teeth few. Chelipeds elongate.

Genus ***Podophthalmus*** Lamarck, 1801

1801. *Podophthalmus* Lamarck, *Syst. Anim. sans. vert.* : 152.

1899a. *Podophthalmus*, Alcock, *J. Asiat. Soc. Bengal*, **68**(2) : 92.

Diagnosis : Carapace extremely broad. Antero-lateral borders transverse in the greater part of their extent turning obliquely backwards and culminating in a large spine. Epibranchial spine rudimentary, standing a little behind the large outer orbital angle. Front extremely narrow. Antennules stout, lodged in fossa beneath the front. Antenna standing in the orbital hiatus, its basal joint short, flagellum long and slender. Orbits very long, transversely grooved. Chelipeds long, massive. Legs adapted for swimming.

Remarks : This genus contains two species namely, *Podophthalmus nacreus* Alcock, 1899a and *P. vigil* (Fabricius, 1798) in Indian waters. However, our present collection includes the last species only.

11. ***Podophthalmus vigil*** (Fabricius, 1798)

1798. *Portunus vigil* Fabricius, *Suppl. Entom. Syst.* : 368.

1976. *Podophthalmus vigil* Sakai, *Crabs of Japan and the Adjacent Seas* : 383.

1978. *Podophthalmus vigil* Raman and Srinivasagam, *J. Inland Fish. Soc. India*, **10** : 171.

Material examined : 1 ex., Biyyappu Thippa near Narsapur, West Godavari Dist., 22.4.1995. T. Venkateswarlu & Party, Reg. No. 2845.

Diagnosis : Carapace very much broadened anteriorly and then converging obliquely backwards. Eye-stalk enormously long, eyes jointed to the end of the stalk. Buccal cavity squarish, almost closed by the external maxillipeds producing antero-laterally into a round lobe, epistome linear. Both outer and inner surfaces of palm sharply carinated, fingers much shorter than the palm.

Distribution : Indo-West Pacific. India : East Coast : Sinnur, Porto Novo, Ennore and Pulicat estuaries (Tamil Nadu). West Coast : Cochin (Kerala). Elsewhere : Red Sea, Madagascar, Malay Peninsula, Philippines, Formosa, Japan, Australia and as far as Hawaii.

Remarks : This species was reported for the first time from India by Premkumar (1962) and that too from east coast. Subsequently, this species was reported from Ennore and Pulicat estuaries by Raman and Srinivasagam (1978). From west coast also, this species has been recorded (Pillay, 1964). During the present study, this species is reported for the first time from Godavari estuaries vis-a-vis Andhra Pradesh.

Superfamily XANTHOIDEA MacLeay, 1838

Diagnosis : Carapace transversely oval or squarish, usually broader than long. Front broad

but never rostriform. Antennules infolded obliquely or transversely, antennal flagella short or slender. Legs gressorial. Male genital opening coxal or sternal.

Remarks : This superfamily is presently splitted into five families viz. Xanthidae MacLeay, 1838, Carpilidae Ortmann, 1893, Menippidae Ortmann, 1893, Trapeziidae Miers, 1886 and Pilumnidae Samouelle, 1819 as discussed in details by Dev Roy and Das (2000). Only the last family is represented in Godavari estuary.

Family PILUMNIDAE Samouelle, 1819

Diagnosis : Carapace thin or thick, inflated or not, surface sharply or plainly granular. Antero-lateral sides generally shorter than the postero-laterals and usually armed with spines or teeth. Front bilobed, outer angle of each forming an independent tooth or spine-like lobule, separated from the supraorbital angle by a notch or groove. Basal joint of antenna may or may not be in contact with front.

Remarks : The family is divided into five subfamilies namely, Halimedinae Alcock, 1898, Planopilumninae Serène, 1984, Heteropilumninae Serène, 1984, Pilumninae Alcock, 1898 and Heteropanopeinae Alock, 1898. It is represented by a single subfamily, namely pilumninae Alcock, 1898 in Godavari estuary.

Subfamily PILUMNINAE Alcock, 1898

Diagnosis : Carapace moderately broad, smooth, granular or spinose, tomentose or not with the regions either not at all or very well defined. Antero-lateral teeth varying from 3-4, sharp and prominent. Chelipeds asymmetrical, either granular or spinose or at least partly setose.

Remarks : This subfamily is represented by the genus *Nectopanope* from Godavari estuary.

Genus *Nectopanope* Wood-Mason, 1891

1891. *Nectopanope* Wood-Mason, *Ann. Mag. nat. Hist.*, (6) **7** : 261.

1898. *Nectopanope* Alcock, *J. Asiat. Soc. Bengal*, **67**(2) : 212.

Diagnosis : Carapace broad, smooth, convex from front to back, branchial regions very much inflated, other regions not well defined. First antero-lateral tooth confluent with the outer orbital angle. Front projecting a little beyond the supra-orbital angle and sharply cut off from it by an angular notch on each side. Antennules transversely folded; basal antennal joint extremely short, flagellum considerably longer than major diameter of the orbit. Chelipeds equal in females, fingers compressed and pointed. Legs long, slender; propodus and dactylus of last pair markedly compressed and slightly broadened.

Remarks : The genus contains a single species in Godavari estuary.

12. *Nectopanope rhodobaphes* Wood-Mason, 1891

1891. *Nectopanope rhodobaphes* Wood-Mason, *Ann. Mag. nat. Hist.*, (6) **7** : 261.

1898. *Nectopanope rhodobaphes*, Alcock, *J. Asiat. Soc. Bengal*, **67**(2) : 213.

Diagnosis : Carapace much broader than long. Front indistinctly grooved in the middle. First antero-lateral tooth broad, rounded and confluent with the orbit. Fingers armed with thin, laciniate teeth, fixed finger very broad. First three pair of legs much shorter than chelipeds, propodus thin and blade-like in the last pair.

Distribution : Indian Ocean. India : Godavari coast (Andhra Pradesh).

Remarks : This species was earlier reported from Godavari coast by Alcock (1895). However, the present collection does not contain this species. At present, the species is known only from the east coast.

Superfamily GRAPSIDOIDEA MacLeay, 1838

Diagnosis : Carapace thick, transversely oval, globose or quadrangular. Lateral borders straight or arched. Front narrow or broad. Orbits at or very adjacent to the anterolateral angles. Buccal cavity squarish.

Remarks : The superfamily Grapsidoidea MacLeay, 1838 includes three families namely,

Gecarcinidae MacLeay, 1838, Grapsidae MacLeay, 1838 and Mictyridae Dana, 1851. All materials dealt with in this communication has been found to belong a single family namely, Grapsidae.

Family GRAPSIDAE MacLeay, 1838

Diagnosis : Carapace thick or depressed, squarish with the lateral sides either straight or very little arched. Front very broad. Orbits at or very close to the antero-lateral angles. Buccal cavity squarish, a gap often wide and rhomboidal in outline left between the external maxillipeds. Chelipeds massive. Legs strong.

Remarks : These crabs are usually found among rocks or pelagic on drift timber and weeds. They also inhabit mangrove swamps, estuaries, rivers, fresh water and even land (Dev Roy and Das, 2000).

The family is represented by two sub-families namely, Grapsinae MacLeay, 1838 and Sesarminae Dana, 1852 but only the representatives of the last one occurs in Godavari estuary.

Subfamily SESARMINAE Dana, 1852

Diagnosis : Carapace thick. External maxillipeds traversed by an oblique hairy crest across ischium and merus, their palp articulating at the summit or near the antero-external angle of merus; exognath partly or completely hidden. Male abdomen filling or not filling entire space between the last pair of ambulatory legs.

Genus ***Sesarma*** Say, 1817

1817. *Sesarma* Say, *J. Acad. Nat. Sci. Philad,* 1 : 76.

1900. *Sesarma,* Alcock, *J. Asiat. Soc. Bengal,* **69**(2) : 409.

Diagnosis : Carapace squarish, usually deep, often depressed, gastric region well outlined and divided into five subregions, the four antero-lateral sub-regions projecting as four prominent post-frontal lobes. Front broad, deflexed obliquely or vertically. Lateral borders straight and parallel, with or without tooth behind the external orbital angle, postero-lateral regions generally crossed by oblique parallel lines. Pterygostomial region and vertical walls with fine hairs. Antennules transverse, antenna in the orbital hiatus. Buccal cavity square-cut, external maxillipeds leaving between them a large rhomboidal gap. Chelipeds massive, unequal in male, subequal in female. Third pair of legs longest, first and fourth pair shortest. Abdomen consisting of seven distinct segments in both sexes.

Remarks : The taxonomy and nomenclature of the genus *Sesarma sensu lato* are still in a state of confusion and quite unsatisfactory. This has been discussed in details by Dev Roy and Das (*Op. cit.*). However, the present materials belonging to the genus *Sesarma* have been included under a single subgenus namely, *Parasesarma* de Man, 1895.

Subgenus ***Parasesarma*** de Man, 1895

1895. *Parasesarma* de Man, *Zool. Jb. (Syst.),* **9** : 181.

1976. *Parasesarma* Sakai, *Crabs of Japan and the Adjacent Seas* : 655.

Diagnosis : Lateral borders of carapace entire.

Remarks : The subgenus is represented by a single species in Godavari estuary.

13. ***Sesarma (Parasesarma) plicatum*** (Fabricius, 1798)

1798. *Cancer quadratus* Fabricius, *Suppl. Entom. Syst* : 341.

1900. *Sesarma quadrata* Alcock, *J. Asiat. Soc. Bengal,* **69**(2) : 413.

1976. *Sesarma (Parasesarma) plicatum* Sakai, *Crabs of Japan and the Adjacent Seas.* 656, pl. 226, fig. 1.

Material examined : 1 ex., Sekhinetipalli near Narsapur, West Godavari Dist., 26.4.1995, T. Venkateswarlu & Party, Reg. No. 2864; 2 exs., Chinchinada near Narsapur, West Godavari Dist., 18.4.1995, T. Venkateswarlu & Party, Reg. No. 2822.

Diagnosis : Lateral borders of carapace not dentate but entire. In male, upper border of dactylus of cheliped elegantly milled with 10-20 blunt, transverse lamellae.

Distribution : Indo-West Pacific. East Coast : Sunderbans (West Bengal); Mahanadi estuary (Orissa); Yereta Jetty, Panchawati (Middle Andaman); Rangachang, Carbyn's Cove (South Andaman); Great Nicobar (Nicobars). West Coast : Gulf of Kachchh (Gujarat); Umarsadi, Kolak (Maharashtra); Karwar (Karnataka); Travancore (Kerala). Elsewhere : East coast of Africa, Madagascar, Pakistan, Sri Lanka, Myanmar, Malay Archipelago, China, Korea and Japan.

Remarks : This species is usually found in open mudflats and mangrove swamps, under stones or logs. This crab is recorded even from the vicinity of fresh water. It is a small species.

Genus ***Neoepisesarma*** Serène and Soh, 1970

1970. Neoepisesarma Serène and Soh, *Treubia*, **27**(4) : 395, 405.

1976. *Neoepisesarma*, Sakai, *Crabs of Japan and the Adjacent Seas* : 661.

Diagnosis : Almost similar to the preceding genus *Sesarma* Say but differing from it by its relatively narrower carapace and front. Antero-lateral tooth very prominent instead of just indicated as in *Sesarma*. Anterior border of arm of male cheliped with a sub-distal triangular dentate process instead of granular subdistal convexity as in *Sesarma*. A longitudinal pectinated crest in upper part of palm of male cheliped running parallel to its margin instead of a granulated line not distinct from the margin as in *Sesarma*. Dactylar tubercles on male cheliped conspicuously shaped instead of seven to nine depressed spinules as in *Sesarma*.

Remarks : The genus *Neoepisesarma* contains three subgenera namely, *Neoepisesarma* Serène and Soh, 1970, *Muradium* Serène and Soh, 1970 and *Selatium* Serène and Soh, 1970 in the Indo-Pacific. It is represented by a single subgenus namely, *Neoepisesarma* in Godavari estuary.

Subgenus ***Neoepisesarma*** Serène and Soh, 1970

1970. *Neoepisesarma* Serène and Soh, *Treubia*, **27**(4) : 396.

1976. *Neoepisesarma*, Sakai, *Crabs of Japan and the Adjacent Seas* : 659, 661.

Diagnosis : Carapace squarish and dorsally flattened. Pectinated crest of palm low, running from its proximal to distal margin in male chelipeds. Transverse dactylar tubercles swollen, closely arranged together in a rim and with above transverse sulci.

Remarks : The subgenus includes a single species from Godavari estuary.

14. ***Neoepisesarma (Neoepisesarma) taeniolata*** (White, 1847)

1847. *Sesarma taeniolatum* White, *List of the specimens of Crustacea in the collection of the British Museum. London* : 38.

1957b. *Sesarma (Sesarma) taeniolata*, Chhapgar, *J. Bomaby nat. Hist. Soc.*, **54**(3) : 521, pl. 16, figs. h-j.

1970. *Neoepisesarma (Neoepisesarma) taeniolata* Serène and Soh, *Treubia*, **27**(4) : 395, 405.

Material examined : 1 ex., Moolagattu near Kakinada, East Godavari Dist., 15.4.1995, T. Venkateswarlu & Party, Reg. No. 2819; 2 exs., Biyyappu Thippa near Narsapur, West Godavari Dist., 22.4.1995, T. Venkateswarlu & Party, Reg. No. 2845.

Diagnosis : Carapace flat, square-shaped. Pectinated crest of palm of chelipeds in male extending from its promixal to distal margin and upper border of dactylus of chelipeds elegantly milled with 40-60 fine lamellae.

Distribution : Indo-West Pacific. India : East Coast : Sunderbans (West Bengal); Waltair (Andhra Pradesh); Wright Myo, Carbyn's Cove (South Andamans). West Coast : Ratnagiri (Maharashtra). Elsewhere : Pakistan, Mergui Archipelago, Malay Peninsula, Singapore, Indonesia, Thailand, China and Philippines.

Remarks : This is a large size species usually found in landward mangrove thickets.

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

1852. *Metaplax* H. Milne Edwards, *Annals. Sci. nat. (Zool.)*. **18**(3) : 161.

1900. *Metaplax* Alcock, *J. Asiat. Soc. Bengal*, **69**(2) : 431.

Diagnosis : Carapace quadrilateral, flattish, much broader than long. Cervical and branchial

grooves distinct. Lateral borders straight or slightly curved anteriorly and cut into four or five teeth. Chelipeds shorter and slenderer than legs in females but longer and much more massive than legs in males. Males always with a short oblique horny crest for scraping against the lower border of the orbit to produce a musical sound. Legs slender, third pair longest. Abdomen consisting of seven distinct segments in both sexes; third to fifth segments often fused together in males, seventh segment small and deeply impacted in the sixth in females.

Remarks : The genus is represented by three species in Godavari estuary.

15. ***Metaplax crenulata*** (Gerstaecker, 1856)

1856. *Rhaconotus crenulatus* Gerstaecker, *Arch. Naturgesch. Johrg,* **22**(1) : 142.

1900. *Metaplax crenulata* Alcock, *J. Asiat. Soc. Bengal,* **69**(2) : 435.

1995. *Metaplax crenulata,* Ghosh, *Zool. Surv. India. Estuarine Ecosystem Series, Part* **2** : *Hugli Matla Estuary* : 235.

Material examined : 1 ex., Biyyappu Thippa near Narsapur, West Godavari Dist., 22.4.1995, T. Venkateswarlu & Party, Reg. No. 2845.

Diagnosis : Regional areas of carapace very prominent and well outlined by deep grooves. Lateral borders cut into five teeth. Cheliped about three times the length of carapace in male and devoid of any prominent lobe on its dentary edge. Legs spiny.

Distribution : Indian Ocean. India : East Coast : Sunderbans (West Bengal); Yereta jetty (Middle Andaman), Baratang Island (South Andaman). Elsewhere : Mergui Archipelago, Malay Peninsula and Thailand.

Remarks : Spination of leg joints are very much prominent even in juvenile specimens. It is the largest species within the genus. The species is at present known only from the east coast.

16. ***Metaplax elegans*** de Man, 1888

1888. *Metaplax elegans* de Man, *J. Linn. Soc. Zool.,* **22** : 164, pl. 11, figs. 4-6.

1900. *Metaplax elegans* Alcock, *J. Asiat. Soc. Bengal,* **69** (2) : 434.

Diagnosis : Regional areas of carapace not well outlined. Lower border of the orbit very finely and regularly pectinated. Palm of larger cheliped longer than high. Dactylus of male cheliped with a distinct lobe on the dentary edge.

Distribution : Indian Ocean. India : East Coast : Godavari Delta (Andhra Pradesh); Bakultala (Middle Andaman). Elsewhere : Mergui Archipelago, Malay Peninsula, Thailand and Indonesia.

Remarks : This species was earlier reported from Godavari estuary by Alcock (1900). However, it has not been collected during the present investigation. The species is at present known only from the east coast.

17. ***Metaplax intermedia*** de Man, 1888

1888. *Metaplax internedius* de Man, *J. Linn. Soc., Zool.,* **22** : 166.

1900. *Metaplax intermedia* Alcock, *J. Asiat. Soc. Bengal,* **69**(2) : 435.

1995. *Metaplax intermedia,* Ghosh, *Zool. Surv. India. Estuarine Ecosystem Series, Part 2* : *Hugli-Matla Estuary* : 237.

Diagnosis : Lower end of orbit extended beyond the first antero-lateral notch cutting into 5 or 6 teeth at its inner end diminishing in size from within outwards. Palm of larger cheliped higher than long in male, dactylus with a prominent lobe on its dentary edge.

Distribution : Indian Ocean. India : East Coast : Sunderbans (West Bengal); Chandipur (Orissa); Godavari Delta (Andhra Pradesh). Elsewhere : Myanmar.

Remarks : This species of crab was earlier recorded from Godavari estuary by Alcock (1900). However, it is not represented in the present survey material. The species has not yet been reported from the west coast.

Genus ***Varuna*** H. Milne Edwards, 1830

1830. *Varuna* H. Milne Edwards, *Dict. Hist. Nat.* **16** : 511.

1900. *Varuna* Alcock, *J. Asiat. Soc. Bengal,* **69**(2) : 400.

Diagnosis : Carapace flat, slightly broader than long, regions fairly indicated. Front broad, straight, distinct and little deflexed. Antero-lateral borders curved and divided into two teeth (excluding the outer orbital angle). Orbits small, lower borders broken and incomplete. Antennules obliquely folded, antennae lodged in the orbital hiatus. Epistome well defined. Buccal cavity square-cut. Antero-external angle of external maxillipeds considerably produced, the palps articulating near middle of the anterior border. Chelipeds massive. Three terminal joints of legs flattened, dialated and plumed for swimming; middle pair of legs longest, last pair shortest. Abdomen consisting of seven distinct segments.

Remarks : The genus is represented by the species *Varuna litterata* (Fabricius, 1798) in Godavari estuary.

18. ***Varuna litterata*** (Fabricius, 1798)

1798. *Cancer litteratus* Fabricus, *Suppl. Entom. Syst.* : 342.

1900. *Varuna litterata,* Alcock, *J. Asiat. Soc. Bengal,* **69**(2) : 401.

1991. *Varuna litterata,* Dev Roy and Nandi, *J. Indian Soc. Coastal agric. Res.* 9(1-2) : 74.

Material examined : 1 ex., Moolagattu near Kakinada, East Godavari Dist., 15.4.1995, T. Venkateswarlu & Party, Reg. No. 2819.

Diagnosis : Carapace depressed with a H-shaped groove at its middle. Antero-lateral borders arched and cut into two teeth (excluding the outer orbital angle). Three terminal joints of legs compressed, dialated and plumed for swimming.

Distribution : Indo-West Pacific. India : East Coast : Sunderbans (West Bengal); Chilka Lake, Puri, Cuttak (Orissa); Machilipatnam, Vizagapatnam (Andhra Pradesh); Chennai, Gulf of Mannar and Palk Bay (Tamil Nadu). West Coast : Mumbai (Maharashtra); Trivandrum (Kerala). Elsewhere : East Africa, Bangladesh, Myanmar, Singapore, Hong Kong, Japan, Australia and New Zealand.

Remarks : This crab is usually found in brackish water near river mouths, creeks and estuaries. It is frequently found clinging to logs of drift wood in the open sea which accounts for its wide distribution.

Superfamily OCYPODOIDEA Rafinesque, 1815

Diagnosis : Carapace rectangular, deep or flat, generally broader than long. Front narrow, projecting. Orbits large, developed as long grooves containing the elongate eye-stalks.

Remarks : This superfamily is represented by three families, namely, Ocypodidae Rafinesque, 1815, Palicidae Rathbun, 1898 and Retroplumidae Gill, 1894 (Bowman and Abele, 1982). Out of these, representatives belonging to the family, Ocypodidae has been found to occur in Godavari estuary.

Family OCYPODIDAE Rafinesque, 1815

Diagnosis : Carapace thick or flat, sub-quadrangular, sub-cubical or sub-globose, usually broader than long. Regional boundaries indistinct. Front narrow, deflexed usually a mere lobe between the long eye stalks. Orbits occupying nearly the entire anterior border of carapace; eye-stalks slender, often elongate. Palp of external maxillipeds coarse, articulating at or near the antero-external angle of merus; buccal cavity covered entirely by carapace. Chelipeds markedly unequal either in both sexes or in males only. Male abdomen narrow. With an orifice or recess thickly fringed with hairs along the edges between bases of second and third pair of legs.

Remarks : The family is divided into four subfamilies, namely, Ocypodinae Rafinesque, 1815, Dotillinae Stimpson, 1858, Macrophthalminae Dana, 1851 and Camptandriinae Stimpson, 1858. But the representatives of only one subfamily, namely, Ocypodinae occurs in Godavari estuary.

Crabs belonging to this family are inter-tidal, marine or estuarine living on sandy or muddy shores of the tropics, burrowing and are usually gregarious in habit.

Subfamily OCYPODINAE Rafinesque, 1815

Diagnosis : Carapace deep, subquadrilateral. Lateral borders with or without any tooth behind

the outer orbital angle. Buccal cavity closed entirely by the external maxillipeds. An orifice or recess present near bases of second and third pair of legs. Chelipeds unequal, often markedly in males.

Remarks : The subfamily is represented by two genera, *Ocypode* Weber, 1795 and *Uca* Leach, 1814 in Godavari estuary.

Genus ***Ocypode*** Weber, 1795

1795. *Ocypode* Weber, *Nomenclator entomologicus* : 92.

1801. *Ocypoda* Lamarck, *Systême des animaux sans vertèbres* : 149.

Diagnosis : Carapace sub-quadrilateral, deep. Front narow, deflexed. Lateral borders with or without any tooth behind the outer orbital angle. Antennular flagella rudimentary, completely concealed under front; antenna small, almost rudimentary. Eyes very large, occupying major part of ventral surface of eye-stalks. Buccal cavity as broad as long in its widest part, but narrowed anteriorly. Chelipeds unequal in both sexes, palm of the larger chela with a stridulating ridge of granules or striae. Legs strong, fourth pair much shorter and less massive than the other pairs. An orifice thickly fringed with hairs between bases or second and third pairs of legs. Abdomen seven-segmented.

Remarks : The genus is represented by a single species in Godavari estuary.

19. ***Ocypode ceratophthalma*** (Pallas, 1772)

1772. *Cancer ceratophthalmus* Pallas, *Specilegia Zool. IX* : 83, pl. 5, fig. 7.

1900. *Ocypoda ceratophthalma* Alcock, *J. Asiat. Soc. Bengal*, **69**(2) : 345.

1976. *Ocypode ceratophthalma* Sakai, *Crabs of Japan and the Adjacent Seas* : 600, pl. 207, fig. 326.

Material examined : 3 exs., Antervedi Light House near Narsapur, West Godavari Dist., 21.4.1995, T. Venkateswarlu & Party, Reg. No. 2837.

Diagnosis : Surface of carapace studded with fine granules. Eye-stalks extended beyond the carapace forming a horn or style. A stridulatory organ present on inner surface of palm of larger chela.

Distribution : Indo-West Pacific. India : East Coast : Sunderbans (West Bengal); Palk Bay and Gulf of Mannar (Tamil Nadu); Carlew Island (North Andamans); Chidyatapu, Peel Island, Neill and Havelock Islands (South Andaman); Nicobars. West Coast : Umarsadi, Kolak, Mumbai (Maharashtra); Karwar (Karnataka); Kavaratti, Amindivi and Minicoy Island (Lakshadweep). Elsewhere : East coast of Africa, Madagascar, Mauritius, Maldives, Sri Lanka, Malay Peninsula, Singapore, Indonesia, Japan, Australia, Sandwich Islands, Tahiti and Hawaii.

Remarks : All the specimens studied are juveniles only.

Genus ***Uca*** Leach, 1814

1814. *Uca* Leach, *Edin. Encyc.*,**7** : 430.

1817. *Gelasimus* Latreille, *Nouv. Dict. Hist. Nat.*, **12** : 517.

Diagnosis : Carapace deep, sub-quadrilateral or sub-hexagonal, broader than long, usually with smooth surface, regions not well marked excepting the H-form depression. Front deflexed, broad or narrow. Antero-lateral angles produced and acute, often at right angle. Antero-lateral margins absent or moderately parallel, converging or often slightly diverging. Antennae with well developed flagella. Antennules very small and obliquely folded. Orbits deep, little sinuous and oblique, suborbital border cut into numerous truncated lobules; eyes small, terminal; eye-stalk slender. Epistome short, quite distinct. Palp of external maxillipeds articulating at or near antero-external angle of merus; exognath slender, often concealed; buccal cavity covered by the maxillipeds entirely. Chelipeds markedly unequal in male, small and equal in female. Legs stout, meropodites of second and third pair foliaceous, dactyli very sharp. Abdomen made up of seven separate segments in both sexes, two or more segments often fused together.

Remarks : The systematics of the fiddler crabs is still very puzzling and in a confused state

as discussed in details by Dev Roy and Das (2000). In the present communication, a simple binomial nomenclature has been used to deal with the species of *Uca* following Hagen (1976) and George and Jones (1982).

20. *Uca dussumieri* (H. Milne Edwards, 1852)

1852. *Gelasimus dussumieri* H. Milne Edwards, *Annals. Sci. nat. (Zool.)*, **18**(3) : 148, pl. 4, fig. 2.

1975. *Uca (Deltuca) dussumieri spinata* Crane, *Fiddler Crabs of the World* : *Ocypodidae* : Genus *Uca* : 37, pl. 3, figs. E-H, figs. 27 A-C, 38 E-H, 46B, 60 A-B, 61G.

1982. *Uca dussumieri*, George and Jones, *A Revision of the Fiddler Crabs of Australia (Ocypodinae : Uca)* : 31, figs. 19a, 20a, 39 a-g, 55e.

Diagnosis : With a narrow front. Two distinct long grooves running most of the length in major dactyl of male on its outer surface and a similar groove on outer pollex. Inner dorsal margin of arm of male major chela adorned with an enlarged bicuspid distal tubercle. Merus of last pair of leg in male markedly slender, that of female bordered conspicuously with pile along its postero-ventral margin.

Distribution : Indo-West Pacific. India : East Coast : Sunderbans (West Bengal); Orissa; Bimlipatnam, Vizagapatnam (Andhra Pradesh); Austin Island (North Andaman); Uttara jetty, Bakultala, Betapur, Rangat, Pitcher Nallah (Middle Andaman); Sippighat, Guptapara, Wandoor, Manjeri, Chidyatapu, Kadakachang, Wright Myo, Ferrargunj, Bambooflat, Gandhighat jetty, Rangachang, Baratang and Rutland Islands (South Andaman); Dugong Creek, Hut Bay, South Bay (Little Andaman); Car Nicobar, Great Nicobar (Nicobar Islands); West Coast : Gulf of Kachchh (Gujarat); Umarsadi, Kolak, Mumbai (Maharashtra). Elsewhere : Madagascar, Mergui Archipelago, Malay Peninsula, Singapore, Indonesia, Thailand, Philippines, Hong Kong, China, Japan, Ryukyu Island, Palau Island, East Indies, New Guinea, Australia, New Caledonia, Solomon and Caroline islands.

Remarks : This species was earlier reported from Godavari estuary by Alcock (1900). However, it has not been collected during the present investigation.

21. *Uca lactea* (de Haan, 1835)

1835. *Ocypode (Glasimus) lacteus* de Haan, *Faun. Japan Crust.*, : 54, pl. 15, fig. 5.

1900. *Gelasimus lacteus* Alcock, *J. Asiat. Soc. Bengal*, **69**(2) : 355.

1961. *Uca annulipes* Sankarankutty, *J. mar. biol. Ass. India*, 3 (1-2) : 113.

1975. *Uca (Celuca) lactea lactea* Crane, 1975. *Fiddler Crabs of the World* : *Ocypodidae* : Genus *Uca* : 300, pls. 40 A-B, figs. 19a, 54 J-JJ.

Material examined : 2 exs., Chollangi near Kakinada, East Godavari Dist., 13.4.1995, T. Venkateswarlu & Party, Reg. No. 2808; 3 exs., Yanam near Kakinada, State of Pondicherry, 14.3.1995, S. C. Nahar & Party, Reg. No. 2737; 8 exs., Yanam near Kakinada, State of Pondicherry, 8.4.1995, T. Venkateswarlu & Party, Reg. No. 2775.

Diagnosis : Carapace sub-quadrilateral, its antero-lateral angles acute, claw-like and produced diagonally outwards. Lateral borders nearly straight and converging. Front broad. Tip of fixed finger of the major cheliped in male appearing as notched-truncate due to the presence of an enlarged tooth. An oblique tuberculate ridge present inside palm of major chela in male.

Distribution : Indo-West Pacific. India : East Coast : Sunderbans (West Bengal); Chilka Lake (Orissa); Chennai, Gulf of Mannar (Tamil Nadu); Pondicherry; Mayabunder, Stewart Island (North Andaman); Uttara jetty, Betapur, Bakultala, Pitcher Nallah, Panchawati, Rangat (Middle Andaman); Carbyn's Cove, Aberdeen Bay, Gandhighat jetty, Chidyatapu, Wandoor, Manjeri, Guptapara, Bambooflat, Bimleton, Baratang Island, Rutland, Neill and Havelock Islands (South Andaman); Hut Bay, South Bay (Little Andaman); Car Nicobar, Great Nicobar (Nicobars). West Coast : Gulf of Kachchh (Gujarat), Umarsadi, Kolak, Mumbai (Maharashtra); Karwar (Karnataka); Travancore (Kerala). Elsewhere : South Africa, East Africa, Madagascar, Mauritius, Red Sea, Persian Gulf,

Pakistan, Mergui Archipelago, Malay Peninsula, Singapore, Thailand, East Indies, Philippines, China, Japan, Ryukyu Island, New Guinea, Australia, New Caledonia and Samoa.

Remarks : This is a very common species in Godavari estuary occuring in mudflats around mangroves and also along the banks of creeks and rivers.

SUMMARY

21 species of brachyuran crabs under 15 genera and 7 families have been recorded from the Godavari estuarine areas of Andhra Pradesh. Of these, 14 species namely, *Matuta lunaris* (Forskål), *Parthenope (Parthenope) longimanus* (Linnaeus), *Scylla serrata* (Forskål), *Portunus pelagicus* (Linnaeus), *P. sanguinolentus* (Herbst), *Charybdis (Charybdis) feriata* (Linnaeus), *C. (C.) rostrata* A. Milne Edwards, *Podophthalmus vigil* (Fabricius), *Sesarma (Parasesarma) plicatum* (Fabricius), *Neoepisesarma (Neoepisesarma) taeniolata* White, *Metaplax crenulata* (Gerstaecker), *Varuna litterata* (Fabricius), *Ocypode ceratophthalma* (Pallas), *Uca dussumieri* (H. Milne Edwards) and *U. lactea* (de Haan) are recorded for the first time from the area under study.

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MOLLUSCA

A. MOHAPATRA
Estuarine Biological Station, Zoological Survey of India, Berhampur, Orissa

INTRODUCTION

Brackish water molluscs of major Indian estuaries & backwaters have been studied by several workers. Estuarine molluscs of Gangetic delta were studied by Stoliczka (1869), Neville (1880, 1884), Preston (1915) & Annandale & Prasad (1921); Hugli Matla Estuary by Subba Rao et al. (1995); Mahanadi estuary by Subba Rao & Mukherjee (1975), Subba Rao (1968) & Subba Rao et al. (1998).

Godavari is one of the major rivers of India. Before opening in to Bay of Bengal, the river is divided into branches forming vast estuarine & mangrove areas at different places.

Malacological studies of the Godavari estuary are limited with notable contributions from Radhakrishna & Janakiraman (1975) & Radhakrishna & Ganapati (1969) in relation to mangrove areas & Kakinada Bay.

Since the information available on the molluscs of Godavari estuarine system is inadequate and scattered in few publications, this study has been undertaken to present in greater detail. Several surveys have been conducted by the scientists of Estuarine Biological Station during 1992-95 and samples have been collected from 27 stations viz. Bhairabipalem, B. V. Palem (Boddu Venketapalem), Yanam, Cholangi, Gadimoga, Coringa, Mondigattu, Uppapara, Kakinada backwater, Antervedi, Vodlarevu, Perupalem, Gognamatam, Dariyalteppa, Girijampetta, Chinchunada, Sunkurevu, Chaklitipa, Sakhineti palli, Vemuladivi, Navarasapalem, Rameswaram, Karvaka, Darbharevu, Biyaputhipa, Yenumululenka and Chintawari petta.

The collected samples have been preserved and deposited with the Estuarine Biological Station, Berhampur.

A total no. of 59 species belonging to 54 genera brought under 39 families have been studied. Arrangement of families is as per Subba Rao (1991) & genus and speices allocation is in alphabetical order. Measurements of shells is expressed in milimeters.

Diagnostic characters, distribution pattern and additional information as remarks have been provided for easy identification.

ABBREVIATIONS USED

CANR = C. A. Nageswar Rao; D = Diameter; ex. = Example; HA = Height of the aperture; HS = Height of spire; Ht = Height; L = Length; no. = Number; nr. = Near; SCN = S. C. NAHAR; T = Thickness; TV = T. Venkateswarlu; WA = Width of the aperture; W = Width.

MATERIAL & METHOD

Random collections were made from different localities of estuary (Mouth area, Upper reaches & connecting channels). Shells were hand picked

on the exposed mud flats during low tide, sandy & muddy shores. Most of the collections are kept as dry collection while some are preserved in 4% formaldehyde solution or 70% alcohol (for soft bodied).

SYSTEMATIC LIST OF MOLLUSCS

Class GASTROPODA

Subclass PROSOBRANCHIA

Order ARCHEOGASTROPODA

Family TROCHIDAE

1. ***Umbonium vestiarium*** (Linnaeus, 1758)

Family NERITIDAE

2. ***Neritina (Dostia) violacea*** (Gmelin, 1791)
3. ***Clithon oualaniensis*** (Lesson, 1831)

Family VIVIPARIDAE

4. ***Bellamya bengalensis f. typica*** (Lamarck, 1822)

Family PILIDAE

5. ***Pila globosa*** (Swainson, 1822)

Order MESOGASTROPODA

Family LITTORINIDAE

6. ***Littorina (Littorinopsis) melanostoma*** Gray, 1839
7. ***Littorina (Littorinopsis) scabra scabra*** (Linnaeus, 1758)

Family ASSIMINEIDAE

8. ***Asseminea brevicula*** (Pfeiffer, 1854)

Family TURRITELLIDAE

9. ***Turritella acutaangula*** (Linnaeus, 1758)

Family THIARIDAE

10. ***Thiara (Terebia) lineata*** (Gray, 1828)
11. ***Thiara (Thiara) scabra*** (Muller, 1774)

Family POTAMIDIDAE

12. ***Cerithidea (Cerithideopsilla) cingulata*** (Gmelin, 1791)
13. ***Cerithidea (Cerithidea) obtusa*** (Lamarck, 1822)
14. ***Telescopium (Telescopium) telescopium*** (Linnaeus, 1758)

Family NATICIDAE

15. ***Natica gualterina*** (Recluz, 1844)
16. ***Natica tigrina*** (Roeding, 1798)
17. ***Polinices (Glossaulax) didyma*** (Roeding, 1798)

Family TONNIDAE

18. ***Tonna dolium*** (Linnaeus, 1758)

Family FICIDAE

19. ***Ficus variegata*** R'o'eding, 1798

Family CYMATIIDAE

20. ***Gyrinum natator*** (R'o'eding, 1778)

Order NEOGASTROPODA

Family MURICIDAE

Subfamily MURICINAE

21. ***Murex tribulus*** (Linnaeus, 1758)
22. ***Murex trapa*** R'o'eding, 1798

Subfamily THAIDINAE

23. ***Cymia lacera*** (Born, 1778)

Family MELOGENIDAE

24. ***Pugilina cochlidium*** (Linnaeus, 1758)

Family NASSARIIDAE

25. ***Nassarius (Zeuxis) fovealatus*** (Dunker, 1847)

26. ***Nassarius (Hima) stolatus*** (Gmelin, 1791)

Family HARPIDAE

27. ***Harpa davidis*** R'o'eding, 1798

Subclass OPISTHOBRANCHIA

Order CEPHALASPIDAE

Family ATYIDAE

28. ***Atys*** sp.

Order NOTASPIDAE

Family ARMINIDAE

29. ***Armina*** sp.

Subclass PULMONATA

Order BASSOMATOPHORA

Family ELLOBIIDAE

30. ***Ellobium (Auriculina) gangeticum*** (Pfeiffer, 1855)

31. ***Melampus*** sp.

32. ***Pythia plicata*** (Gray, 1825)

Family PLANORBIDAE

33. ***Indoplanorbis exustus*** (Deshayes, 1834)

Order SOLEOLIFERA

Family ONCHIDIIDAE

34. ***Onchidium verruculatum*** Cuvier, 1830

Class BIVALVIA

Order ARCOIDA

Family ARCIDAE

35. ***Anadara granosa*** (Linnaeus, 1758)

36. ***Anadara rhombea*** (Born, 1780)

37. ***Scapharca inaequivalvis*** (Bruguiere, 1798)

Order MYTILOIDA

Family MYTILLIDAE

38. ***Modiolus undulatus*** (Dunker, 1856)

Order PTERIOIDA

Family PECTINIDAE

39. ***Amusium pleuronectes*** (Linnaeus, 1758)

Family ANOMIIDAE

40. ***Anomia achaeus*** Gray, 1849

41. ***Anomia*** sp.

42. ***Placuna placenta*** (Linnaeus, 1758)

Family OSTREIDAE

43. ***Crassostrea cuttackensis*** (Newton & Smith, 1912)

44. ***Saccostrea cucullata*** (Born, 1778)

Order VENEROIDA

Family CARDIIDAE

45. ***Acanthocardia coronata*** (Schroeter, 1786)

Family MACTRIDAE

46. ***Mactra (Mactra) cuneata*** (Gmelin, 1791)

47. ***Mactra (Mactra) luzonica*** Deshayes, 1854

Family SOLENIDAE

48. ***Solen*** sp.

Family CULTELLIDAE

49. ***Neosolen aquaedulcioris*** Ghosh, 1916

Family TELLINIDAE

50. ***Macoma (Psammacoma) birmanica*** (Philippi, 1849)

51. ***Angulus philippinarum*** (Hanley, 1844)

52. ***Strigilla (Aeretica) splendida*** (Anton, 1839)

Family DONACIDAE

53. ***Donax (Hecuba) scortum*** (Linnaeus, 1758)

Family PSAMMOBIIDAE

54. ***Sanguinolaria (Soletellina) acuminata*** (Deshayes, 1857)

Family CORBICULIDAE

55. ***Corbicula striatella*** (Deshayes, 1854)

56. ***Geloina erosa*** (Solander, 1786)

Family VENERIDAE

57. ***Meretrix casta*** (Gmelin, 1791)

58. ***Meretrix meretrix*** (Linnaeus, 1758)

59. ***Marcia pinguis*** (Schroeter, 1788)

60. ***Paphia malabarica*** (Schroeter, 1788)

Family GLAUCONOMIDAE

61. ***Glauconome sculpta*** Sowerby, 1894

Order MYOIDA

Family PHOLADIDAE

62. ***Pholas (monothyra) orientalis*** Gmelin, 1791

Class CEPHALOPODA

Family SEPIIDAE

63. ***Sepia aculeata Ferussac*** & d' orbigny, 1835-48

64. ***Sepiella inermis*** Ferussac & d' orbigny, 1835-48

SYSTEMATIC ACCOUNT

Class GASTROPODA

Subclass PROSOBRANCHIA

Order ARCHAEGASTROPODA

Family TROCHIDAE

Genus 1. ***Umbonium*** Link, 1807

1. ***Umbonium vestiarium*** (Linnaeus)

1758. *Trochus vestiarius* Linnaeus, *Syst. Nat., Ed.* **10** : 758, sp. 515 (Type locality : "M. Mediterranes, Asiatico, Chinensis").

1915. *Umbonium Vestiarium* : Preston, *Rec. Indian Mus.*, **11** : 297.

1916. *Umbonium Vestiarium* : Annandale and Kemp, *Mem. Indian Mus.*, **5** : 343.

1978. *Umbonium vestiarium* : Rajagopal & Mookherjee, *Rec. zool. Surv. India, Occ. Pap.* **12** : 29.

Material examined : 2 exs., CANR., 16.10.92, Bhairabipalem, M-1719; 3 exs., CANR., 17.10.92, Gadimoga, M-1738; 1 ex., CANR., 20.10.92, Mouth of Cholangi Channel, M-1699; 20 exs., CANR., 22.10.92, Kakinada backwater near light House, M-1707; 11 exs., CANR, 22.9.93, Vodlarevu, M-1805; 3 exs., CANR., 23.9.93, Vodlarevu, M-1814; 1 ex., CANR., 18.1.95, Perupalem, M-1945; 35 exs., CANR., 24.1.95, Goganamatam, M-1978; 40 exs., CANR., 31.1.95, Bhairabipalem, M-1959; 23 exs., SCN., 16.3.95, Bhairabipalem; M-2002, 11 exs., TV, 10.4.95, Bhairabipalem; M-2067, 7 exs., TV, 21.4.95, Antervedi, M-2061.

Measurement : L. 3-8; D. 4-14.

Diagnostic Character : Button shaped shell; spire depressed; Umbilicus closed; highly polished; brightly coloured; shows polymorphism.

Distribution : India : Andhra Pradesh : Godavari estuary, Pulicat lake; Gujarat; Goa; Kerala : Cochin; Maharastra : Bassei, Bombay; Orissa : Chilika Lagoon, Gopalpur, Mahanadi estuary; Pondichery : Karikkal; Tamil Nadu : Madras, Porto Novo, Mandapam, Krusadai Island, Tuticorin. Elsewhere : Mediterranean; Indo Pacific.

Remarks : Seen on both the coasts of India. Occurs in shallow beaches on sandy coast near backwaters and estuary. Commonly known as button shell and is used as ornament and household decorative items.

Family NERITIDAE

Genus 2. ***Neritina*** Lamarck, 1816

Subgenus ***Dostia*** Gray, 1840

2. ***Neritina (Dostia) violacea*** (Gmelin)

1791. *Nerita Violacea* Gmelin, *Syst. Nat. ed.* **13** : 3686, sp. 68 (Type locality : Not given).

1975. *Neritina violacea* : Subha Rao and Mookerjee, *Rec. Zool. Surv. India, Occ. pap.* **12** : 44.

Material examined : 2 exs., CANR., 16.10.92, Bhairabipalem, M-1717; 2 exs., CANR., 18.10.92, Dariyal teppa, M-1698; 2 exs., CANR., 23.10.92, Girijampeta, M-1733; 4 exs., TV 26.11.92, Bhairabipalem, M-1785; 4 exs., TV, 27.11.92, M-1759; 1 ex., TV, 4.12.92, Chinchunada, M-1771; 4 exs., CANR., 13.9.93, Sunkurevu, M-1802; 1 ex., CANR., 13.9.93, Sukurevu, M-1789; 6 exs., CANR., 14.9.93, Chaklitipa, M-1830, 1 ex., CANR., 16.9.93, Darbharevu, M-1823; 4 exs., CANR., 17.9.92, Sakhinetipalli, M-1792; 8 exs., CANR, Vemuladivi, M-1810; 1 ex., CANR, 20.9.93, Antervedi, M-1826, 1 ex., CANR., 14.11.93, Darbharevu, M-1845; 1 ex., TV, 14.11.93, Darbharevu, M-1858; 20 exs., TV, 15.11.93, Sakhinetipalli, M-1855; 3 exs., TV, 15.11.93, Sakhinetipalli, M-1889, 7 exs., CANR, 14.1.95, Navarasapalem, M-1975 exs., CANR., 16.1.95, Rameswaram, M-1929, 1 ex., CANR., 17.1.95, Antervedi M-1969; 19 exs., CANR., 18.1.95, Perupalem, M-1948, 19 exs., CANR., 18.1.95, Perupalem, M-1948; 6 exs., CANR., 23.1.95, Karvaka, M-1939; 1 ex., CANR., 24.1.95, Goganamatam, M-1979; 6 exs., CANR., 29.1.95, Coringa M-1955; 2 exs., CANR., 31.1.95, Bhairabipalem, M-1962; 1 ex, TV, 6.4.95, Mondigatta, M-2057; 2 exs., TV, 8.4.95, Yanam, M-2041; 4 exs., TV, 11.4.95, B. V. Palem, M-2055; 3 exs., TV, 20.4.95, Antervedi, M-2074; 2 exs., TV, 23.4.95, Darbharevu, M-2026; 1 ex., TV, 24.4.95, Darbharevu, M-2072.

Measurement : L. 3-10; D. 7-21.

Diagnostic Character : Shell elongately ovate, thick, spire obsolete; aperture semicircular.

Distribution : India : Andhra Pradesh : Kakinada, Godavari and Krishna estuaries; Andaman & Nicobar Islands; Goa; Karnataka : Netravati estuary nr. Manglore, Kumta, Kodibag nr. Manglore, Kumta, Kodibag nr. Kanwar; Kerala : Cochin backwater; Maharastra : Ratnagiri; Orissa : Mahanadi estuary nr., Paradeep; Tamil Nadu : Porto Novo, Killai estuary; West Bengal : Port Canning, Calcutta. Elsewhere : Myanmar : Mergui arhipelago; Philippines; China; Japan.

Remarks : A common gastropod of Indian estuaries & back waters.

Genus 3. ***Clithon Montfort,*** 1910

3. ***Clithon oualaniensis*** (Lesson)

1831. *Neritina oualaniensis* lesson, *Voy. Coquille. Zool.*, 3 (1) : 379 (Type locality : Qulan, fiji).

1978. *Clithon oualaniensis* : Rajgopal and Mookherjee, *Rec. Zool. Surv. India,* Occ, Pap, 12 : 43.

Material examined : 42 exs., CANR., 18.10.92, Darialtepa, M-1969, 1 ex., CANR., 13.9.93, Sunkurevu, M-1788, 47 exs., CANR., 14.9.93, Chaklitipa, M-1831, 10 exs., CANR., 17.9.93, Sakhinetipali, M-1794, 1 ex., CANR., 14.1.95, Navarasapalem, M-1935, 1 ex., CANR., 18.1.95, Perupalem, M-1949, 1 ex., CANR., 23.1.95, Karvaka, M-1941, 11 exs., CANR., 23.1.95, Karvaka, M-1970, 1 ex., CANR., 24.1.95, Goganamatam, M-1976, 13 exs., CANR., 31.1.95, Vairabipalem, M-1961, 6 ex., TV, 9.4.95 Cholangi, M-2081, 1 ex., TV, 10.4.95, Bhairabipalem, M-2065, 1 ex., TV, 13.4.95, Cholangi, M-2070.

Measurement : L. 4-10; D. 4-10.

Diagnostic Character : Shell globose; Columella finely dentate; brightly coloured, exhibits polymorphism.

Distribution : India : Andhra Pradesh : Godavari estuary, Bhimilipatnam, Andaman & Nicobar Island; Karnataka : Netravati estuary nr. Mangalore, Murdeswar, Kodibag; Kerala : Quilon; Orissa : Kushabhadra estuary near Konark, Arakakuda nr. Chilika mouth, Brhmagiri at Chilika, Gopalpur, Mahanadi estuary; Tamil Nadu : Vellar estuary nr. Portonovo, Mandapam, Rameswaram, Kundugal point. Elsewhere : Indonesia : Java, Sumatra; Srilanka; Thailand.

Remarks : Usually found in brackish water near estuary either on mudflats or on sand patches. Smaller in size. Exhibit polymorphism.

Family VIVIPARIDAE

Genus 4. ***Bellamya*** Jousseasume, 1886

4. ***Bellamya bengalensis f. typica*** (Lamarck)

1822. *Paludina bengalensis* Lamarck, *Hist. nat. Anim. Sans vert.* **6** (2) : 174.

1921. *Vivipara bengalensis* race bengalensis : Annandale & Sewell, *Rec. Indian Mus.*, **22** : 270, pl. 1, figs. 1-3.

1980. *Bellamya bengalensis form. typica* (Lamarck) : Subba Rao, Das & Mitra, *Rec. zool. Surv. India*, **77** : 228, pl. 1, figs. 5.

Material examined : 5 exs., CANR., 23.10.92, Girijampeta, M-1734, 8 exs., TV, 20.11.92, Yanam, M-1751, 1 ex., TV, 7.12.92, Antervedi, M-1749, 1 ex., CANR., 13.9.93, Sunkurevu; M-1803, 1 ex., CANR., 14.9.93, Chaklitipa, M-1828, 12 exs., CANR., 14.9.93, Chaklitipa, M-1797, 1 ex., CANR., 15.9.93, M-1808, 4 exs., TV, 11.11.93, Sankhinetipali, M-1921, 1 ex., CANR., 14.1.95, Navarasapalem, M-1933, 3 exs., CANR., 18.1.95, Perupalem, M-1947, 1 ex., CANR., 23.1.95, Karvaka, M-1971, 5 ex, SCN, 14.3.95, Yanam, M-1998, 3 exs., TV, 8.4.95, Yanam, M-2042, 9 exs., TV, 22.4.95.

Measurement : L. 9-33; D. 7-24; HA. 4-14; WA. 3-11.

Diagnostic Character : Shell elongate, with dark spiral bands; sutures not greatly impressed; aperture sub-circular; Body whorl perfectly rounded with conical spire.

Distribution : Common throughout India.

Remarks : Shells of this species show considerable variations for which a number of infraspecific forms have been named by different authors. A freshwater gastropod, usually occur in large ponds or marshes with ample vegatation.

Genus 5. ***Pila*** (Botten) Roeding, 1798

5. ***Pila globosa*** (Swainson)

1822. *Ampullaria globosa* Swainson, *Zool. Illustr.*, (1) Vol. **2** : pl. 119.

1925. *Pila globosa* : Prashad, *Mem. Indian Mus.*, **8** : 70, pl. 13.

Material examined : 1 ex., CANR., 22.10.92, Kakinada backwater nr. Light House, M-1702, 3 exs., TV, 27.11.92, Bhairabipalem, M-1757, 3 exs., TV, 4.12.92, Chinchunada, M-1769, 1 ex., TV, 15.11.93, Sakhinetipalli, M-1887, 1 ex., SCN, 14.3.95, Yanam, M-1997, 1 ex., SCN, 15.3.95, B. V. Palem, 2 exs., TV, 22.4.95, BIyaputhipa, M-2035.

Measurement : L. 28-48; D. 26-41, HA. 19-31; WA. 11-20.

Diagnostic Character : Shell large, globosely turbinate with a large convex bodywhorl; operculum calcareous.

Distribution : India : Common throughout India except peninsular region.

Remarks : A freshwater gastropod.

Order MESOGASTROPODA

Family LITTORINIDAE

Genus 6. ***Littorina*** Ferussac, 1822

Subgenus ***Littorinopsis*** Moerch, 1876

6. ***Littorina (Littorinopsis) melanostoma*** Gray

1839. *Littorina melanostoma* Gray, *Zoology of Captain Beechyes 'Voyage H. M. S. blossom, Mollusks* : 140 (type locality : Indian Ocean, Panang, Malaysia).

1970. *Littorina (Littorinopsis) melanostoma* : Rosewater, *Indo-Pacific. Mollusca*, **2** (11) : 462, pl. 325, figs. 28, 29; pl. 355, figs. 1-4.

Material examined : 1 ex., TV, 27.11.92, Bhairabipalem, M-1760, 1 ex., CANR., 14.1.95, Navarasapalem, m-1937, 8 ex. CANR., 29.1.95, Coringa Channel, M-1953, 1 ex., CANR., 13.1.95, Vemuladivi, M-1957.

Measurement : L. 11-22; D. 6-11.

Diagnostic Character : Yellowish white in colour with brown longitudinal markings between spiral striae arranged axially; body flattened; spiral tip black.

Distribution : India : Andhra Pradesh : Godavari estuary; Orissa : Hukitola; Tamil Nadu :

Mandapam, Pulli Island; West Bengal : Port Canning, Matla, Ganga Sagar, Muriganga estuary in Sunderban. Elsewhere : Myanmar : Murgui Archipelago, Akyab; Philipines; Singapore; Srilanka.

Remarks : Usually found clinging to the branches and leaves of mamgrove plants in estuaries.

7. ***Littorina (Littorinopsis) scabra scabra*** (Linnaeus)

1758. *Helix scabra linnaeus, Syst. Nat. ed.* 10 : 770 (Type locality, Amboina, Moluccas, Lectotype designated by Rosewater, 1970).

1970. *Littorina (Littorinopsis) Scabra Scabra* : Rose water, *Indo-Pacific, Mollusca,* **2** (11) : 456, pls. 325, figs. 1-4; pls. 352, 353.

1975. *Littorina scabra* : Subba Rao and Mookherjee, *Recent Researches in ESturine Biology (ed. Natarajan)* : 166.

1982. *Littorina (Littorinopsis) Scabra Scabra* : Rajagopal and Mookherjee, *Rec. Zool. Surv. India, Occ. pap,* **28** : 9.

Material examined : 1 ex., CANR., 18.9.93, Vemuladivi, M-1813.

Measurement : L. 6; D. 4.

Diagnostic Character : Shell small, aperture without a ridge inside.

Distribution : India : Andhra Pradesh : Godavari estuary; Andamans; Goa; Karnataka; Mangalore; Kerala : Cochin; Maharastra : Bombay; Orissa : Hukitiola, Chatrapur nr. Gopalpur; Tamil Nadu : Madras, Gulf of Mannar, Tuticorin; West Bengal : Port Canning. Elsewhere : Common throughout Indo-Pacific.

Remarks : Usually occurs in the crevices in intertidal region. Also prefers stems and leaves of mangrove vegetation in back waters & estuaries.

Family ASSIMINEIDAE

Genus 7. ***Assiminea*** Fleming, 1828

8. ***Asseminea brevicula*** (Pfeiffer)

1854. Hydrocen brevicula Pfeiffer, *Proc. Zool. Soc. Lond,* P. 306.

1995. *Assiminea brevicula* Subba Rao. *Estuarine Ecosystem Seris, Hugli Matla Estuary, West Bengal (ZSI Publication),* **2** : 57.

Material examined : 10 exs., CANR., 21.10.92, Boddu Venkatapalem, M-1731, 5 exs., TV, 6.12.92, Darbharevu Island, M-1782, 8 exs., CANR., 13.9.93, Sunkurevu, M-1790, 22 exs., CANR., 16.9.93, Darbharevu, M-1821, 5 exs., CANR., 18.9.93, Vemuladivi, M-1811, 1 ex., CANR., 14.11.93, Darbharevu, M-1846, 1 ex., CANR., Vemuladivi, 13.1.95, M-1985, 4 exs., TV, 9.4.95, Cholangi, M-2079.

Measurement : L. 3-7; D. 3-6.

Diagnostic Character : Small, pinkish coloured; Bodywhorl globose; spire elevated.

Distribution : India : Andhra Pradesh : Godavari Estuary; West Bengal; Hugli Matla estuary.

Remarks : Usually found either crawling on the mud or remains attached to grasses in muddy localities. Copulating paris are found frequently during August to December in Hugli-matla estuary.

Family TURRITELLIDAE

Genus 8. ***Turritela*** Lamarck, 1799

9. ***Turritella acutangula*** (Linnaeus)

1758. *Turbo acutangulus* Linnaeus, *Syst. Nat., ed.* 10 : 766, sp. 599 (type locality; not given).

1982. *Turritella acutangula;* Rajagopal and Mookherjee, *Rec. zool. Surv. India Occ. pap,* **28** : 15.

Material examined : 10 exs., CANR., 22.10.92, Kakinada backwater near Light House, M-1710, 1 ex., SCN., 16.3.95, Bhairabipalem, M-2004.

Measurement : L. 28-126; D. 12-26.

Diagnostic Character : Shell large, whorls keeled in middle, strong spiral ridges.

Distribution : India : Andhra Pradesh : Kakinada; Gujarat : Gulf of Kutch; Maharastra :

Bombay, Devgarh; Pondichery : Karaikal; Orissa : Chandipur, Chandrabhaga nr. Konark, Ganjam coast, Paradeep; Tamil Nadu : Madras, Mandapam, Rameswaram, Calimere, Tranquebar. Elsewhere : Myanmar : Maungamagon; Indonesia; Madagascar; Philippines; Sri Lanka.

Remarks : Commonly known as screw shell or turret shells. Generally occurs buried in the sandy bottom of marine littoral region.

Family THIARIDAE

Genus 9. ***Thiara*** R'o'eding, 1798

Subgenus ***Terebia***

10. ***Thiara (Terebia) lineata*** (Gray)

1828. *Helix lineata* Gray in wood's Index *Test. Suppl.*, p. 24, fig. 68.

1915. *Tiara (Tarebia) lineata* : Preston, *Fauna Brit. India. Mollusca (Freshwater grastropoda & pellcypoda)* : 34.

Material examined : 1 ex., CANR., 14.9.93, Chakalitipa, M-1799.

Measurement : L. 18; D. 8; HA. 8; WA. 7.

Diagnostic Character : Shell sculptured with dark spiral lines; differ from *T. tuberculata* by having broader shell & a propertionately wider body whorl; upper whorls nodulose.

Distribution : India : Assam, Bihar, Maharastra, Madhya Pradesh, Orissa, Uttar Pradesh. Elsewhere : Bhutan, Burma & Sri Lanka.

Subgenus ***Thiara***

11. ***Thiara (Thiara) Scabra*** (Muller)

1774. *Buccinum scabra Muller Hist. Varm. Terr. Fluv.*, **2** : 126. Type locality : Tranqueber.

1850. *Melamia acanthica* Linnaeus, *Proc. Zool. Soc. Lond.*, p. 194.

1973. *Thiara (Thiara) scabrs* : Pace, *Malac Review. Suppl.* **1** : 52, pl. 12, figs., 1, 2, pl. 13, fig. 3.

Material examined : 10 exs., CANR., 14.9.93, Chaklitipa, M-1833, 3 exs., CANR., 17.9.93, Sakhinetipalli, M-1796, 2 exs., CANR., 14.1.95, Navarasapalem, M-1936, 1 ex., CANR., 21.1.95, Goganamatam, M-1981.

Measurement : L. 9-18; D. 5-8, HA. 4-8; WA. 3-4.

Diagnostic Character : Whorls angulate; sculptured with spines; spire nearly equal to body whorl.

Distribution : India : Andhra Pradesh : Godavari estuary; West Bengal : Hugli Matla estuary.

Remarks : Members of this genus are generally found in fresh water but this species shows salinity tolerance & occurs in brackish water.

Family POTAMIDIDAE

Genus 10. ***Cerithidea Swainson,*** 1840

Subgenus ***Cerithideopsilla Thiele,*** 1929

12. ***Cerithidea (Cerithideopsilla) cingulata*** (Gmelin)

1791. *Murex cingulatus* Gmelin, *syst. Nat. ed.* 13 (6) : 3561, sp. 138 (Type locality : Tranquebar).

1975. *Cerithidea cingulata* : Subba Rao and Mookherjee, *Recent Research in Estuarine Biology* (ed. Natarajan) : 169.

1982. *Cerithidea (Cerithideopsilla) cingulata* : Rajagopal and Mookherjee, *Rec. zool. Surv. India Occ. pap.*, **28** : 27.

Material examined : 19 exs., CANR., 16.10.92, Bhairabipalem, M-1718, 55 exs., CANR., 18.10.92, Dariyal teppa, M-1695, 40 exs., CANR., 19.10.92, Mouth of Cholangi Channel, M-1712, 7 exs., CANR., 20.10.92, Mouth of Cholangi Channel, M-1700, 3 exs., CANR., 22.10.92, Kakinada backwater nr. Light House, M-1703, 7 exs., CANR., 23.10.92, Girijampeta, M-1737, 1 ex., TV, 20.11.92, Yanam, M-1753, 19 exs., TV, 26.11.92, Bhairabipalem, M-1784, 14 exs., CANR., 13.9.93, Sunkurevu, M-1800, 58 exs., CANR., 14.9.93, Chaklitipa, M-1829, 17 exs., CANR., 15.9.93, Antervedi, M-1809, 16 exs., CANR., 16.9.93, Darbharevu, M-1828, 1 ex., CANR.,

18.9.93, Vemuladivi, M-1812, 46 exs., TV, 9.11.93, Biyaputhipa, M-1852, 46 exs., CANR., 13.11.93, BIyaputhipa, M-1848, 26 exs., TV, 14.11.93, Darbharevu, M-1856, 51 exs., CANR., 14.11.93, Darbharevu, M-1843, 28 exs., TV, 15.11.93, M-1854, 20 exs., TV, 16.11.93, M-1850, 2 exs., TV, 19.11.93, Antervedi, M-1923, 43 exs., CANR., 13.1.95, Vemuladivi, M-1956, Yenmululenka, M-1930, 6 exs., CANR., 17.1.95, Antervedi, M-1967, 5 exs., CANR., 18.1.95, Perupalem, M-1944, 5 exs., 23.1.95, Karvaka, M-1973, 2 exs., CANR., 29.1.95, Coringa Channel, M-1952, 3 exs., SCN., 14.3.95. Bhairabipalem, M-1999, 98 exs., SCN., 16.3.95, Bhairabipalem, M-2001, 18 exs., TV, 10.4.95, Bhairabipalem, M-2064, 1 ex., TV, 11.4.95, B. V. Palem, M-2056, 30 exs., TV, 13.4.95, Cholangi, M-2068, 6 exs., TV, 20.4.95, Antervedi, M-2075, 3 exs., TV, 21.4.95, Antervedi M-2062, 4 exs., TV, 22.4.95, Biyaputhipa, M-2032,

Measurement : L. 5-34; D. 3-9; HS. 4-30.

Diagnostic Character : Shell narrowly elongate; whorls sculptured with both spiral & axial ribs; body whorl with varix; columella not twisted.

Distribution : India : Estuaries & back waters of the state Andhra Pradesh, Goa, Gujarat, Karnataka, Kerala, Maharastra, Tamil Nadu & West Bengal. Elsewhere : Common in Indo-Pacific region.

Remarks : Very common in the Indian waters, used as raw material for manufacture of lime.

Subgenus ***Cerithidea*** S.S.

13. ***Cerithidea (Cerithidea) obtusa*** (Lamarck)

1822. *Cerithium obtusum* Lamarck, *Hist. Nat. Anim. Sanr. Vert.*, **7** : 71.

1975. *Cerithidea obtusa* : Subha Rao and Mookherjee, *Recent Researches in Estuarine Biology* (ed. Natarajan) : 170.

Material examined : 1 ex., CANR., 16.10.92, Bhairabipalem, M-1720, 4 exs., CANR., 17.10.92, Godimoga, M-1738, 3 exs., CANR., 19.10.92, Mouth of Cholangi Channel, 2 exs., TV, 27.11.92, Bhairabipalem, M-1756, 1 ex., CANR., 15.9.93, Antervedi, M-1807, 2 exs., SCN., 15.3.95, B. V. Palem, M-1994, 1 ex., 8.4.95, Yanam, M-2043, 1 ex., TV, 22.4.95, Biyaputhipa, M-2033.

Measurement : L. 37-46; D. 17-20; HS. 22-31.

Diagnostic Character : Shell broadly elongate, yellowish in colour; aperture round; whorl not keeled in middle; Apex blunt.

Distribution : India : Andhra Pradesh : Godavary estuarine area; Nicobars; Orissa : Kasafal nr. chandipur, Flase point, Gopalpur back waters; West Bengal : Sunderban. Elsewhere : Indian Ocean to western pacific.

Remarks : It occurs in the mangrove ecosystem & in back water. Also seen crawling on submerged mangrove plants.

Genus 11. ***Telescopium Montfort,*** 1810

14. ***Telescopium telescopium*** (Linnaeus)

1758. *Trochus telescopium* Linnaeus, *Syst. Nat. ed.* 10 : 760 sp. 521 (type locality : not given).

1916. *Potamides (Telescopium) Fuscum* : Annadale and Kemp, *Mem. Indian Mus.*, **5** : 344.

1924. *Telescopium telescopium* : Annandale, *Mem. Indian Mus.*, **5** : 865.

1975. *Telescopium telescopium* : Subba Rao & Mookherjee, *Recent Researches in Estuarine Biology* (ed. Natarajan) : 169.

1982. *Telescopium telescopium* : Rajagopal & Mookherjee, *Rec. zool. Surv. India, Occ. pap.*, **28** : 30.

Material examined : 2 exs., CANR., 16.10.92, Bhairabipalem, M-1716, 21 exs., CANR., 23.10.92, Girijampeta, M-1732, 2 exs., TV, 27.11.92, Bhairabipalem, M-1758, 2 exs., TV, 7.12.92, Antervedi, M-1750, 5 exs., CANR., 13.9.93, Sunkurevu, M-1800, 1 ex., CANR., 14.9.93, Chaklitipa, M-1798, 2 ex., CANR., 15.9.93, Antervedi, M-1806, 1 ex., CANR., 29.9.93, Antervedi, M-1825, 7 ex., CANR., 14.11.93, M-1844, 1 ex., TV, 15.11.93, Sakhiteitipalli, M-1885, 1 ex., SCN., 15.3.95, B. V. Palem, M-1991.

Measurement : L. 20-98; D. 10-36; H.

Diagnostic Character : Shell broadly elongate; Whorls sculptured with spiral ribs; body whorl without varix; columella twisted.

Distribution : India : Andhra Pradesh : Bhimilipatnam, Godavari and Krishna estuaries; Andaman & Nicobar Islands; Gujarat : Gulf of Kutch, Kandla Port, Salya beach, Murdeswar; Kerala : Cochin; Pondichery : Karaikal; Orissa : Chandipur, Mahanadi river, Paradeep, Chilika lagoon, Gopalpur, Konark. Elsewhere : Myanmar ; Indonesia; Malaya Peninsula; Madagaskar; North Australia; Philippines; Singapore; Sri Lanka.

Remarks : Commonly known as Horn shell, used in manufacture of lime. Extensively used as food in the Philippines (Talavcra & Faustino : 1933).

Family NATICIDAE

Genus 12. ***Natica Scopoli,*** 1777

15. ***Natica gualterianna*** (Recluz)

1844. *Natica gualteriana* Recluz, *Proc. Zool. Soc. Lond.* 1844 : 208 (Type locality; Sual, Luzon Island, Philippines).

1915. *Natica marochiensis* (non Gmelin) Preston, *Rec. Indian Mus.*, **11** : 294.

1976. *Natica (Natica) gualteriana* : Kilburn, *Ann. Natal. Mus.*, **22** (3) : 835.

Material examined : 1 ex., CANR., 24.1.95, Goganamatam, M-1980, 2 exs., CANR., 31.1.95, Vairabipalem, M-1964.

Measurement : L. 10-16; D. 9-12; HA. 17-18; WA. 4-5.

Diagnostic Character : Shell globular, colour greish to light brown or base white; Axial striations below suture more prominent.

Distribution : India : Andhra Pradesh : Godavari estuary; Kerala : Cochin, Ernakulam; Orissa : Chandrabhaga beach nr. Konark, Chilka lagoon; Tamil Nadu : Ennur backwaters, Krusadai Island, Kundugal point; West Bengal : Digha, Muri ganga estuary, Ganga Sagar. Elsewhere : Australia; Japan; North Africa, Panama; Philippines; Sri Lanka; West Indies.

Remarks : Earlier recorded under the name. N. marochiensis from Indian waters.

16. ***Natica tigrina*** (Roeding)

1798. *Cochlis tigrina* Roeding, *Museum Boltenianum* : 147, sp. 1843 (Type locality : Not given).

1915. *Natica maculosa* : Preston, *Rec. Indian Mus.*, **11** : 294, PGP, 75 : 44, pl. 6, fig. 28.

1952. *Natica tigrina* : Satyamurti, Bull. Madras Govt. Mus. new. Ser. **1** (2) pt. 6 : 108, pl. 8, fig. 2.

Material examined : 2 exs., CANR., 31.1.95, Bhairabipalem, M-1963, 2 exs., TV, Cholangi, M-2017, 1 ex., TV, 13.4.95, M-2069.

Measurement : L. 9-30; D. 7-25; HA. 5-17; WA. 3-11.

Diagnostic Character : Axial sculpture below suture not prominent; colour white motted pinkish brown dots arranged in rows.

Distribution : India : Andhra Pradesh : Godavari estuary; Gujarat : Pirotan Island in Gulf of Kutch; Kerala : Cochin; Maharastra : Bombay; Orissa : Chandipur, Mahanadi estuary nr. Paradeep; Tamil Nadu : Madras, Pamban, Coromandel coast; West Bengal : Digha, Muriganga estuary, Ganga Sagar in Sunderban. Elsewhere : Myanmar : Akyab; China; Hongking; Indonesia; Java; Japan; Malaysia; Penang; Persian Gulf; Philippines; Singapore; Sri Lanka.

Remarks : Commonly occurs in river mouths on fine sand intermixed with mud. The egg masses are laid in typical "Sand collars" and reported to be common during premonsoon period.

Genus 13. ***Polinices Montfort,*** 1810

Subgenus ***Glossaulax Pilsbry,*** 1929

17. ***Polinices (Glossaulax) didyma*** (Roeding)

1798. *Albula didyma* Roeding, *Muscum Boltenianum* : 29, sp. 145 (refers chemnitz, 1781, pl. 186, figs. 1856.

1972. *Polinices (Glossaulax) didyma* : Cemohrky, *Marine shells of the Pacific,* pt. **2** : 100, pl. 16, fig. 3.

1985. *Polinices (Glossaulax) didyma* : Mookherjee, *Rec. zool. Sur. India, Occ. Pap* **75** : 54, pl. 9, fig. 37.

Material examined : 2 exs., TV, 27.11.92, Bhairabipalem, M-1761.

Measurement : L. 13-37: D. 14-39, HA. 9-25; WA. 6-16.

Diagnostic Character : Shell thick, laterally compressed; less elevated spine; parietal callus dark brown & tongue shaped with a deep groove.

Distribution : India : Gujarat : Pirotan Island in Gulf of Kutch; Maharastra : Bombay; Orissa : Chandipur, Mahanadi estuary nr. Paradeep, Puri; Tamil Nadu : Madras, Krusadai Island, Kundugal point; West Bengal : Digha. Elsewhere : Queensland, Australia to Indian Ocean.

Remarks : Young shell is broader than length but shell above 50 mm are longer than width/ Diameter.

Family TONNIDAE

Genus 14. ***Tonna Bruennich,*** 1772

18. ***Tonna dolium*** (Linnaeus)

1758. *Buccinum dolium* Linnaeus, *Syst. Nat., ed.* **10** : 735 (Type locality : M. siculo).

1985. *Tonna dolium* : Mookherjee, *Rec. zool. Surv. India, Occ. Pap.,* **75** : 68, pl. 12, fig. 47.

Material examined : 1 ex., SCN., 15.3.95, B. V. Palem, M-1990, 1 ex., TV, 23.4.95, Darbha Revu, M-2028.

Measurement : L. 52-95; D. 27-77; HA. 37-70; WA. 19-40.

Diagnostic Character : Shell globose; aperture broad; sculpture of broad, flat spiral ridges alternating with spiral threads; ridges maculated with brown spots on white back ground.

Distribution : Andhra Pradesh; Andaman & Nicobars : Nicobar Islands; Maharastra : Bombay; Orissa : Chandipur, Paradeep; Tamil Nadu : Madras, Pamban, Krusadai & Shingle Islands. Elsewhere : Uncommon in western pacific, common in Indonesia, ranges from Indian Ocean to Philippines, Japan, Fizi, New Zealand.

Remarks : Commonly known as Tun shells; prefers deeper waters; Occassionally found washed into intertidal region or collected in fishing nets.

Family FICIDAE

Genus 15. ***Ficus Roeding,*** 1798

19. ***Ficus variegata*** Roeding

1798. *Ficus variegata* Roeding, *Museum Boltenianum* : 148 sp. 1852 (Type locality : Not given).

1985. *Ficus variegata* : Mookherjee, *Rec. zool. Surv. India, Occ. Pap,* **75** : 71, pl. 12, fig. 50.

Material examined : 1 ex., CANR., 22.10.92, Kakinada backwater, M-1708.

Measurement : L. 30-75; D. 19-44.

Diagnostic Character : Shell thin; spine very low; aperture wide; interior violet; shell mottled with irregular brown markings; crenulate outer lip margin.

Distribution : India : Andhra Pradesh : Visakhapatnam, Kakinada; Gujarat : Gulf of Kuthc; Kerala : Malabar coast; Maharastra : Bombay; Orissa : R. Lion's rump nr. Paradeep, Puri; Pondichery; Tamil Nadu : Madras, Tuticorin, Tranquebar, Nagapattinam, point calimere, keelakkarai. Elsewhere : Myanmar : Maunga-magan, Tavoy coast; China; Gulf of Thailand; Indonesia; Iran : Makran coast; Japan; Mauritius; Malagassay; Philippines; Persian gulf; Red sea; South Africa : Natal; Sri Lanka; Singapore; Tanzania : Zanzibar.

Remarks : Commonly known as "Fig shell", Occasionally collected by fishing trawls from inhore waters.

Family CYMATIDAE

Genus 16. ***Gyrinum***

20. ***Gyrinum natator*** (Roeding)

1778. *Tritonium natator* Roeding, *Mus. Bolten* : 127 sp. No. 1636.

1941. *Gyrinum natator* : Crichton, *J. Bombay nat. Hist. Soc.*, **42** (2) : 336, pl. 2, fig. 9.

1985. *Gyrinum natator* : Mookherjee, *Rec. zool. Surv. India. Occ. paper* No. **75** : 80, pl. XV, fig. 57a, 57b.

Material examined : 1 ex., CANR., 22.10.92, Kakinada backwater near Light House, M-1705.

Measurement : L. 24; D. 14.

Diagnostic Character : Shell small; whorls are slightly flattened and each with a pair of varices; ornamented with spiral rows of close set rounded knobs; white band around the body whorl and a white middle ridge on the varices; outer lip having seven teeth.

Distribution : Common in tropical regions.

Remarks : Live in shallow and as well as deep water. .Similarity with *Bursa granularis* but differ by not having posterior (upper) siphon.

Order NEOGASTROPODA

Family MURICIDAE

Subfamily MURICINAE

Genus 17. ***Murex linnaeus,*** 1758

21. ***Murex tribulus*** (Linnaeus)

1758. *Murex tribulus* Linnaeus, *Syst. Nat. ed.* **10** : 746, (Type locality : O. Asia).

1976. *Murex tribulus* Radwin & D 'Attilio, *Murex shells of the world* : 72, pl. 10, figs. 8-9 text. figs. 40-42.

1977. *Murex tribulus* : Ray, *Contribution to the knowledge of the Molluscan fauna of maungmagan, Lower Burina* : 46.

Material examined : 1 ex., TV, 8.11.93, Chinchunada, M-1926.

Measurement : L. 30; D. 12.

Diagnostic Character : Shell club shaped; canal elongate, narrow; varices with long spines.

Distribution : India : very common on both the coasts. Elsewhere : Indo-west Pacific.

Remarks : Generally occurs in the marine littoral region.

22. ***Murex trapa*** Roeding

1798. *Murex trapa* Roeding, *Museum Boltexianum* : 145 (Type locality : Not given).

1976. *Murex trapa* : Radwin & D Attilio, *Murex shells of the world* : 72, pl. 10, fig. 14.

Material examined : 1 ex., CANR., 22.10.92, Kakinada Back water near Light house, M-1709, 1 ex., CANR., 19.10.92, Mouth of cholangi channel, M-1713.

Measurement : L. 64; D. 27.

Diagnostic Character : This speices has resemblence with *M. tribulus* but differs in having angular whorls and long labial tooth on outer margin.

Distribution : India : Common to East coast of India from sand heads in Hooghly mouth to Madras & Andaman Island.

Remarks : Usually collected in fishermen's nets in shallow water.

Subfamily THAIDINAE

Genus 18. ***Cymia Moerch,*** 1861

23. ***Cymia lacera*** (Born)

1778. *Purpura lacera* Born, *Index Rerum Naturatium Musei Casesarei Vinodobonensis* : 308.

1916. *Thais carinifera,* Annandale & Kemp, *Rec. Ind. Mus.* **5** : 343.

1975. *Cymia carinifera,* Subba Rao & Mookherjee, *Recent Researches in Estuarine Biology (ed.) Natarajan* : 170.

1991. *Cymia lacera*, Rao, Rao & Maitra, *State Fauna Series* 1 : *Fauna of Orissa* (Part 3) : 64.

Material examined : 1 ex., CANR., 13.9.93, Sunkurevu, M-1804, 2 exs., CANR., 15.1.95, M-1931, 2 exs., SCN., 15.3.95, B. V. Palem, M-2016, 2 exs., SCN., 16.3.95, Bhairabi Palem, M-2006, 1 ex., TV, 9.4.95, Cholangi, M-2018, 1 ex., TV, 22.4.95, Biyaputhipa, M-2036.

Measurement : L. 26-47; D. 18-32.

Diagnostic Character : Shell spindle shaped; whorls angulate; surface with spiral ribs and groves; aperture lirate inside on outer lip; body whorl with two rows of spinose tubercles.

Distribution : India : Andhra Pradesh : Visakhapatnam, Godavri estuary; Gujarat; Goa; Karnataka : Mangalore, Malpe, Karwar; Kerala : Cochin; Maharastra : Bombay; Orissa : Chandipur, Hukitola, Lion's Rump, Chilika lagoon; Tamil Nadu : Madras, Ennur back water; West Bengal : Port Canning, Sagar Island, Sunderban & Digha.

Remarks : Commonly found attached to rocks and jetty piles near estuary.

Family MELOGENIDAE

Genus 19. *Pugilina Schumacher,* 1817

24. *Pugilina cochlidium* (Linnaeus)

1758. *Murex cochlidium* Linnaeus, *Syst. Nat. ed.* **10** : 753, sp. 482. (Type locality : Not given).

1975. *Semifusus pugilinus* : Subba Rao & Mookherjee, *Recent Researches in estuarine Biology. (ed.) Natarajan* : 171.

1982. *Pugilina cochlidium* : Abbott and Dance, *Compendium of Sea shells* : 176, fig. coll. Bengal fisheries (Golden Crown).

Material examined : 1 ex., TV, 7.12.92, Antervedi, M-1748, 1 ex., SCN., 15.3.95, BV Palem, M. 1989.

Measurement : L. 95-103; D. 51-56.

Diagnostic Character : Shell large, elongately fusoid; spire high; whorl angulate; siphorial canal wide; outerlip without a notch at anterior part nor forming a wing like structure.

Remarks : Generally found in brackish or muddy water in tropics.

Family NASSARIIDAE

Genus 20. *Nassarius Dumeril,* 1806

Subgenus *Zeuxis H. & A. Adams,* 1953

25. *Nassarius (Zeuxis) fovealatus* (Dunker)

1847. *Buccinum foveolatum* Dunker, *Zeit. f. Malakozool.*, **4** : 63, (Type locality : Orient India).

1915. *Nassia marratii* : Preston, *Rec. Indian Mus.*, **11** : 290.

1916. *Nassa marrattii* : Annandale and Kemp, *Mem. Indian Mus.*, **5** : 342.

1975. *Nassarius foveolatus* : Cernohorsky, *Rec. Auckland Inst. Mus.*, **12** : 44, figs. 51, 51a.

Material examined : 1 ex., CANR., 17.9.93, Sakhinetipalli, M-2093, 1 ex., CANR., 19.10.92, Mouth of Cholangi Channel, M-2083, 3 exs., CANR., 24.1.95, Goganamatar, M-1932.

Measurement : L. 9-19; D. 5-10.

Diagnostic Character : Shell oblong, surface of the shell smooth; sculpture restricted to spiral whorls only; suture channeled; inner lip less curved.

Distribution : India : Kerala : Calicut; Maharastra : Bombay; Orissa : Chilika lagoon; Tamil Nadu : Madras; West Bengal : Digha, Ganga sagar. Elsewhere : Myanmar : Chaduba, Akyab; Hong kong; Malaysia : Penang; Mauritius; Srilanka.

Remarks : Generally found crawling on mudflat in estuary.

Subgenus *Hima Gray,* 1852

26. *Nassarius (Hima) stolatus* (Gmelin)

1791. *Buccinum stolatum* Gmelin, *Syst. Nat.* ed. **13** : 3496, sp. no. 121 Type locality : Tranquebar).

1874. *Nassa (Hima) sistroidea* G. H. Nevill, *J. Asiat. Soc. beng;* (2) **43** : 24, pl. 1, fig. 6 (Type locality; Andamans).

1914. *Nassa sistroidea* : Preston, *Rec. Indian Mus.*, **10** : 270.

1915. *Nassa sistroidea* : Preston, *Rec. Indian Mus.* **11** : 290.

1916. *Nassa sistroidea* : Annandale and Kemp, *Mem. Indian Mus.*, 5 : 342.

1975. *Nassairus (Hima) stolatus* : Subba Rao and Mookherjee, *Recent Research in Estuarine Biology (ed. natarajan)* : 170.

Material examined : 1 ex., CNAR., 18.10.92, Dariyal tepa, M-1697, 2 exs., CANR., 19.10.92, Mouth of Cholangi, M-1711, 2 exs., CANR., 20.10.92, Mouth of Cholangi, M-1701, 24 exs., TV, 9.11.93, Biyaputhipa, M-1853, 2 exs., CANR., 13.11.93, Biyaputhipa, M-1869, 3 exs., TV, 14.11.93, Darbharevu, M-1857, 1 ex., CANR., 13.1.95, Vemuladivi, M-1958, 5 exs., CANR., 14.1.95, Nalavasapalem, M-1934, 16 exs., CANR., 18.1.95, Perupalem, M-1950, 3 exs., CANR., 23.1.95, Karavaka, M-1972, 2 exs., CANR., 31.1.95, Bhairabipalem, M-1966, 4 exs., SCN., 16.3.95, Bhairabipalem, M-2003, 1 ex., TV, 9.4.95, Cholangi, M-2080, 1 ex., TV, 21.4.95, 2 exs., TV, 23.4.95.

Measurement : L. 10-21; D. 6-12.

Diagnostic Character : Shell with few spiral cords below suture; body whorl with broad chestnut bands.

Distribution : India : Andhra Pradesh : Kakinada Bay; Maharastra : Bombay; Orissa : Chatrapur, Chilika lagoon, Mahanadi estuary (Hukitola); Chilika langoon; Tamil Nadu : Tranquebar, Pamban, Madras; West Bengal : Calcutta, Sagar Island, Digha. Elsewhere : Gulf of Aden, Persian Gulf, Red sed to philippines & to Japan (Subba Rao & Mookherjee, 1975).

Remarks : Spiral ridges are more prominent in juvenile.

Family HARPIDAE

Genus 21. *Harpa Roeding,* 1798

27. *Harpa davidis* R'o'eding

1798. *Harpa davidividis* R'o'eding, Museum Boltenianum, pl. 2., p. 150, No. 1878; refers to martini, conchyl-cab., vol. 3, pl. 119, f. 1092.

1798. *Harpa cancellata* R'o'eding, Loc. Cit., P. 150, no. 1879; refers to Chemnitz, Conchyl-Cab. Vol. 10, pl. 152, f. 1453 (Tranqueber); 1857, Kuster, Conchyl.-Cab., (ed. 2), Vol. 3, pl. 1 B, p. 96, pl. 70, f. 4, 5.

1807. *Harpalis davidis* Link, Beschr. *Nat. Samml. Univ. Rostock,* pl. 3, p. 114.

1816. *Harpa striata* Lamarck, Liste in Tabl. Encycl. Meth, pl. 23, Moll. et polypes Div., p. 3; referer to pl. 404, f. 4, 1822, Lamarck, *Hist. Ans. Vert.*, Vol. 7, p. 257; 1883, *Tryon. Man. Conch.*, Vol. 5, p. 99, pl. 41, f. 74-75.

1852. *Harpa nablium* 'Mart.', M'o'rch, Cat. Concl. Yoldi, pl. 1, p. 125; 1860 Sowerby, Thes. Conch., vol. 3, p. 170 (in part), pl. 232, f. 15-16, pl. 233, f. 24; 1877, *Sutor, Jahrb. deutsch. Malak. Ges.*, Vol. 4, p. 107.

1857. *Harpa articularis* var. C K'u'ster, *Conchyl.-Cab., ed.* 2, Vol. 3, pt. 1B, p. 87, pl. 70, f. 2.

1942. *Harpa conoidalis* Lam., Gravely, *Bull. Madras Govt. Museum N. S., Nat. Hist. Section,* Vol. 5, No. 2, p. 67 f. 12 h; 1952, *Satyamurti, op. cit.*, Vol. 1, No. 2, pl. 6, p. 196, pl. 19, f. 19, 1 b.

Material examined : 1 ex., CANR., 22.10.92, Kakinada back water nr. Light House, M-1706.

Measurement : L. 55; D. 38.

Diagnostic Character : Shell ovoid; sculptured with transpiral ribs; columella smooth without folds; outerlip folded. Distinctly pinkish colour.

Distribution : Common.

Remarks : Similarity with *H. ventricosa* found in the Gulf of Mannar. But it differ by its colour. H. ventricosa is redish in colour.

Sub-class OPISTHOBRANCHIA

Order CEPHALASPIDEA

Family ATYIDAE

Genus 22. ***Atys Mont. Fort,*** 1810

28. ***Atys*** sp.

Material examined : 6 exs., TV, 20.4.95, Antervedi, M-2076, 8 exs., TV, 24.4.95, Darbha Revu Island, M-2073.

Measurement : L. 14-19; D. 10-12.

Description : Shell subcylindrical, Convolute; apertature not broad towards lower part.

Order NOTASPIDEA

Family ARMINIDAE

Genus 23. ***Armina Rafinesque***

29. ***Armina*** Sp.

Material examined : 1 ex., TV, 13.4.95, Cholangi, M-2085.

Measurement : L. 35; W. 17.

Description : Mouth is situated on a round thickening infront of the foot; anterior shield is wide & extended laterally; Pedal gland at posterior region.

Subclass PULMONATA

Order BASSOMATOPHORA

Family ELLOBIDAE

Genus 24. ***Ellobium Roeding,*** 1798

30. ***Ellobium (Auriculina) gangeticum*** (Pfeiffer)

1855. *Auricula gangetica* (Benson, MSS) Pfeiffer, *Malak. Blott.*, **2** : 7.

1855. *Auricula gangetica* : Pfeiffer, *Novit. conch. Moll.*, 1 (1) : 46, 136, pl. 12, fig. 13-14 (Type locality : Hooghly River, Calcutta).

1934. *Auricularia gangetica* : Sewell, *Rec. Indian Mus.*, **36** : 56.

1975. *Ellobium (Auriculina) gangeticum* : Subba Rao & Mookherjee. *Recent Researches in Estuarine Biology (ed. Natarajan)* : 172.

Material examined : 4 exs., CANR., 16.10.92, Bhairabipalem, M-2084, 2 exs., TV, 27.11.92, Bhairabi palem, M-2092.

Measurement : L. 11-22; D. 5-10.

Diagnostic Character : Shell oblong oval; Whorls not compressed; Columella with two folds elevated spire, which consists of seven whorls.

Distribution : India : Andhra Pradesh : Godavari, Krishna estuary; Maharastra : Bombay; Orissa : False point nr. Paradeep; Tamil Nadu : Vellar estuary; West Bengal Sunderbans. Elsewhere : Myanmar : Irrawady delta; Sri Lanka.

Remarks : Generally inhabit salt marshes & estuary crawling on damp mud banks and among roots of the mangrove trees.

Genus 25. ***Melampus Mont*** fort

31. ***Melampus*** sp.

Material examined : 6 exs., CANR. 16.10.92, Bhairabipalem, M-2085, 2 exs., CANR., 17.10.92, Gadimoga, M-1089, 1 ex., TV, 27.11.92, Bhairabipalem, M-2091, 1 ex., CANR., 18.9.93, Vemula divi., M-2097, 1 ex., CANR., 20.9.93, Antervedi, M-2099, 1 ex., TV, 10.4.95, Bhairabipalem, M-2066 (eroded shells).

Measurement : L. 9-14; D. 6-8.

Description : Shell ovate; depressed spire; columella & outer lip dentate internally; Whorl not compressed.

Genus 26. ***Pythia Roeding,*** 1798

32. ***Pythia plicata*** (Gray)

1825. *Scarabus plicatus (Ferassac)* Gray, *Ann. Phil.*, **25** : 415.

1975. *Pythia plicata* : Subba & Rao & Mukherjee, *Recent Researches in estuarine Biology* (ed. Natarajan).

Material examined : 9 exs., CANR., 16.10.92, Bhairabipalem, M-2086, 2 exs., CANR., 17.10.92,

Gadimoga, M-2088, 1 ex., TV, 27.11.92, Bhairabipalem, M-2090, 1 ex., CANR., 15.9.93, Antervedi, M-2096, 1 ex., CANR., 17.9.93, Sakhinetipali, M-2094, 1 ex., CANR., 20.9.93, Antervedi, M-2100, 1 ex., SCN., 16.3.95, Bhairabipalem, M-2005.

Measurement : L. 10-20; D. 7-14.

Diagnostic Character : Shell ovate; outer lip thin, dentate internally (six teeths); whorls compressed with a varix on either side; Columella plicated.

Distribution : India : Andhra Pradesh : Godavari estuary; Orissa : False point nr. Paradeep; Pondichery; Tamil Nadu : Madras, Portonovo; West Bengal : Port Canning, Sunderbans.

Remarks : Generally occur in moist places near shed in woods; on land found under stones, dead leaves and holes in rotten tree trunks; after shower they are seen crawling actively in the night.

Genus 27. *Indoplanorbis Annandale and Prashad,* 1920

33. *Indoplanorbis exustus* (Deshayes)

1834. *Planorbis exustus* Deshayes, *Voyage Belanger Indes Orientales, Zoologie;* 417, pl. 1, fig. 11-13.

1921. *Indoplanorbis exustus* : Annandale & Prashad, *Rec. Indian Mus.,* **22** : 472.

Material examined : 3 exs., CANR., 23.10.92, Girijampeta, M-1735, 1 ex., TV, 20.11.92, Yanam, M-1752, 8 exs., CANR., 17.9.93, Sakhinetipalli, M-1793, 1 ex., TV, 15.11.93, Sakhinethapalli, M-1888, 6 exs., CANR., 18.1.95, Purupalem, M-1943, 1 ex., CANR., 14.1.95, Goganamatam, M-1977, 1 ex., SCN., 14.3.95, Yanam, M-2000, 4 ex., TV, 22.4.95, Biyaputhipa, M-2034.

Measurement : L. 5-11; W. 8-20.

Diagnostic Character : Shell discoidal, with spirally coiled whorls, spire not raised.

Distribution : Common throughout India.

Remarks : A freshwater gastropod.

Order SOLEOLIFERA

Family ONCHIDIIDAE

Genus 28. *Onchidium Buchanan,* 1800

34. *Onchidium verruculatum* Cuvier

1830. *Onchidium verruculatum* Cuvier, Le Regne Anila 2nd ed. **3** : 46.

1975. *Onchidium verruculatum* : Subba Rao and Mookherjee, *Recent Research in Estuarine Biology (ed. Natarajan)* : 172 (for other references).

Material examined : 1 ex., CANR., 13.9.93, Sunkurevu, M-1839, 16 exs., TV, 14.11.93, Darbharevu, M-1859.

Measurement : L. 12-20; W. 10-26.

Diagnostic Character : Usually large, elongately oval in shape, covered with thick & warty mantle; foot elongate, transversely wrinkled; dorsal surface covered with isolated or groups of tubercles, latter more towards posterior part. Two retractile tentacles on the ventral surface with eyes on their tips.

Distribution : India : Common in estuaries & mud flats. Elsewhere Widely distributed in Indo Pacific region extending from Red Sea to New Calnonia, from Japan to Australia and Honolulu.

Remarks Usually, occurs in marine (supra littoral zone) and brackish water habitat on tree trunks in the mangrove swamps and rock crevices and under stones.

Class BIVALVIA

Order ARCOIDA

Family ARCIDAE

Genus 29. *Anadara Gray,* 1847

35. *Anadara granosa* (Linaeus)

1758. *Arca granosa* Linnaeus, *Syst. Nat.* ed. **10** : 694 (Type locality : 'O' Europe, Mardionalis).

1916. *Arca (Anadara) granosa* : Annandale and Kemp, *Mem. Indian Mus.*, 5 : 350.

1868. *Anadara (Tegillarca) granosa* : Linnaeus, *Proceedings of symposium on Mollusca*, Pt. 1 : 68, fig. 6A.

1991. *Anadara granosa*, Rao, Rao & Maitra, *State Fauna Series 1 : Fauna of Orissa* (Part 3) : 102.

Material examined : 2 valve, CANR., 18.10.92, Dariyal tepa, M-1722, 12 exs., CANR., 10.10.92, Mouth of Cholangi Channel, M-1745, 1 ex., CANR., 20.10.92, Mouth area of cholangi channell, M-1692, 4 valve, CANR., 23.10.92, Girijampeta, M-1727, 1 valve, TV, 20.11.92, Yanam, M-1766, 1 Valve, TV, 6.12.92, Darbharevu, Island, M-1762, 11 exs., CANR., 13.9.93, Sunkarevu, M-1817, 5 valve, TV, 6.11.93, Antervedi, M-1876, 5 valve, TV, 7.11.93, Antervedi ferry point, M-1883, 5 valve, TV, 15.11.93, Sakhinetipali Lanka, M-1891, 1 valve, TV, 18.11.93, Antervedi nr. ferry point, M-1905, 3 valve, TV, 12.11.93, Chinchunada, M-1925, 3 exs., TV, 20.11.93, Antervedi nr. Light house, 1 ex., TV, 21.11.93, Antervedi M-1872, 1 valve, TV, 24.11.93, Antervedi near ferry point, M-1905, 1 valve, CANR., 23.1.95, karvaka, M-1938, 2 exs., SCN., 14.3.95, Yanam, M-2013, 1 ex., SCN., 15.3.95, B. V. Palem, M-1995, 10 exs., SCN., 16.3.98, Bhairabipalem, M-2007, 6 exs., 9.4.95, Cholangi, M-2020, 2 exs., TV, 13.4.95, Cholangi, M-2059.

Measurement : L. 9-95; Ht. 7-95.

Diagnostic Character : Shell thick, not rhomoboidal, equi-valve; keel on posterior part absent; ribs nodulose.

Distribution : India : Andhra Pradesh : Kakinada; Kerala : Malabar coast; Maharastra : Bombay; Orissa : Chandipur, Mahanadi estuary, Chilka lagoon, Puri; Tamil Nadu : Ennur back waters, Tranquebar; West Bengal : Gangetic Delta.

Remarks : Commonly known as 'Ark Shell', found burried in soft mud in estuary and back waters. Commercially cultured as its soft parts are edible, shell is used in lime industry.

36. *Anadara rhombea* (Born)

1780. *Arca rhombea* Born, Test. Mus. Caesaeri Vindobnonsis, 90.

1948. *Arca (Cunearca) rhombea* : *Ray, Rec. Indian Mus.*, 46 : 110.

1977. *Cunearca rhombea* : Ray, *Contribution to the knowledge of Molluscan fauna of Maungmagan, Lower Burma* : 89.

1991. *Anadara rhombea*, Rao, Rao & Maitra, *State Fauna Series* 1 : *Fauna of Orissa* (Part 3) : 103.

Material examined : 2 valve, CANR., 15.9.93, Antervedi, M-1837, 2 valve, CANR., 22.10.92, Kakinada back water nr. Light House, M-1724.

Measurement L. 24-40; Ht. 24-37.

Diagnostic Character : Shell rhomboidal in shape, higher than long; ligamental area broad; prominent keel at posterior part; ribs on posterior slope not nodulose.

Distribution : India : Andhra Pradesh : Godavari estuary; Andaman and Nicobar Islands; Gujarat : Gulf of Kutch; Maharastra Ratnagiri, Bombay; Orissa Chandipur, Hukitola, Konark, Gopalpur; Tamil Nadu : Coromandal coast, Madras, Tranquebar. Elsewhere : China Sea; Indonesia : Salong, Sumatra, Java; Philippines; Pakistan Karachi; Sri Lanka.

Remarks The species can be distinguished from *A. granosa* in having more no. of ribs which are nodulose except for posterior slope and in having angulate postero-ventral margin.

Genus 30. *Scapharca Gray*, 1847

37. *Scapharca inaequvalvis* (Bruigiere)

1789. *Arca inaequivalvis* Brugiere, *Ency. Meth. vers.* 1, 106, pl. 305, fig. 3c (Type locality : unknown).

1971. *Scapharca inaequivalvis* : Kuroda, Habe and Oyama, the sea shells of sagami bay; 333, pl. 69, fig. 3 & 4.

1977. *Scapharea inaequivalvis* : Ray, *Contribution to the knowledge of molluscan fauna of Moungmagan*, Lower Burma : 89.

Material examined : 2 valve, TV, 5.12.92, Sakhinetipalli, M-1781, 2 valve, TV, 7.12.92,

Antervedi near temple, M-1777, 2 valve, TV, 2.11.93, Antervedi nr. Light House, M-1862, 2 valve, TV, 10.11.93, Antervedi nr. ferry point, M-1909, 7 valve, TV, 6.11.93, Antervedi nr. ferry point, M-1877, 2 exs., TV, 16.11.93, Chintawarapeta, M-1918, 3 valve, TV, 19.11.93, Antervedi nr. temple, M-1916, 4 valve, TV, 20.11.93, Antervedi nr. Light House, M-1896, 3 exs., TV, 21.11.93, Antervedi nr. temple, M-1873, 1 valve, TV, 24.11.93, Antervedi nr. ferry point, M-1904, 1 ex., TV, 8.4.95, Yanam, M-2040, 1 valve, TV, 20.4.95, Bhairabipalem, M-2024, 2 exs., TV, 22.4.95, Biyaputhipa, M-2044.

Measurement : L. 15-32; Ht. 13-32.

Diagnostic Character : Shell thin, rhombodial, inequivalve; surface sculptured with flat radial ribs, more than thirty in number.

Distribution : India : Andhra Pradesh : Godavari estuary; Goa; Gujarat : Pirotan Island in Gulf of Kutch; Kerala : Cochin; Maharastra : Bombay; Orissa : Chandipur, False point, Konark, Ganjam coast; Tamil Nadu : Madras, Krusadai, Kudugal point, Tranquebar. Elsewhere : Myanmar : Mergui-Archipelago; China; Indonesia; Japan; Philippines; Persian Gulf.

Order MYTILOIDA

Family MYTILIDAE

Genus 31. *Modiolus Lamarck,* 1799

38. *Modiolus undulatus* (Dunker)

1856. *Volsella undulata* Dunker, *Proc. Zool. Soc., Lond,* **26** : 363.

1911. *Modiola Chilkaensis* Preston, *Rec. Indian Mus.,* **6** : 41, fig. 6 (Type locality : Ramba, Chilka lake).

1914. *Modiola undulata* var, *crassicostata* Preston, *Rec. Indian Mus.,* **10** : 304, fig. 15 (Type locality : Off Samal Island, Lake Chilka).

1916. *Modiola undulata* : Annandale and Kemp, *Mem. Indian Mus.,* **5** : 350, 358, Pl. XV, figs. 1-6, pl. Xvp, fig. 1.

1991. *Modiolus undulatus* : Rao, Rao & Maitra, *State Fauna Ser.* 1 : *Fauna of Orissa (Part 3)* : 108, pl. XVII, fig. 1, 2, 5, 6.

Material examined : 12 exs., TV, 24.11.92, Coringa, M-1783, 3 exs., CANR., 14.9.93, Chakalitipa, M-1819.

Measurement : L. 6-9; Ht. 15-21; T. 5-8.

Diagnostic Character : Shell thin, some time transparent, small, not exceeding 30 mm in length; umbo situated behind anterior end; ventral margin straight (Not concave); dorsal margin not arched; surface with pinkish brown undulating markings.

Distribution : India : Andhra Pradesh : Godavari estuary; Orissa : Chilika lagoon; West Bengal : Sunderbans. Elsewhere : Indonesia : Moluccas.

Remarks : Differ from *M. striatutus* in having thin and fragile shell with reddish undulating markings on its surface, rediating striae towards anterior and posterior parts.

Order PTERIOIDA

Family PECTINIDAE

Genus 32. *Amusium Roeding,* 1798

39. *Amusium pleuronectes* (Linnaeus)

1758. *Ostrea pleuronectes* Linnaeus, *Syst. Nat., ed.,* **10** : 696, sp. 159 (Type locality : Indies).

1853. *Pecten pleuronectes* : Reeve, *Conch. Icon.,* **8** : Pecten, Sp. 48, pl. 13, fig. 48.

1941. *Amusium pleuronectes* : Crichton, *J. Bombay nat. Hist. Soc.,* **42** (2) : 331.

Material examined : 2 exs., TV, 20.4.95, Antervedi nr. temple, M-2077.

Measurement : L. 53-54; Ht. 53-55; T. 10-10.

Diagnostic Character : Shell light, smooth equivalve; hinge without teeth and corresponding cavities; markings of rays on the outer surface of left valve.

Distribution : India : Andhra Pradesh : Visakhapatnam; Andamans; West Bengal; Orissa : Gopalpur; Tamil Nadu : Madras. Elsewhere : China, Japan, South West Pacific.

Remarks : Closely resembles *A. japonicum (Gmelin)* but differ in having markings or rays. Generally collected by fishing nets (trawls) from inshore and off shore waters in India.

Family ANOMIIDAE

Genus 33. *Anomia Linnaeus,* 1758

40. *Anomia achaeus* Gray

1849. *Anomia achaeus* Gray, *proc. Zool. Soc. Lond;* 116.

1859. *Anomia achaeus* : Reeve, Conch, Icon, 11, Anomia, Sp. 12, pl. 3, fig. 12.

1965. *Anomia achaeus* : Kundu, *J. Bombay nat. Hist. Soc.*, 65 : fig.

Material examined : 1 ex., TV, 10.11.93, Antervedi nr. ferry point, M-1910, 1 valve, TV, 19.11.93, Antervedi nr. temple, M-1915.

Measurement : L. 35-38; Ht. 31-36.

Diagnostic Character : Shell iregular in shape, small not exceeding 40 mm in length, upper valve more inflated, lower valve flat with hole through which byssus thread passes.

Distribution : India : Andhra Pradesh; Godavari estuary; Gujarat; Maharastra; Orissa : Chilika lagoon; West Bengal.

Remarks : Sometime shells found attached to oysters.

41. *Aomia* sp.

Material examined : 1 valve, CANR., 20.10.92, Mouth of cholangi channel, M-1693, 1 valve, TV, 20.11.93, Antervedi nr. Light House, M-1898, 2 exs., TV, 22.4.95, Biyaputhipa, M-2050.

Measurement : L. 33-37; Ht. 26-31.

Description : Dirty white coloured, concave, inner surface glossy & smooth outer surface rough, roundish in shape.

Genus 34. *Placuna Light foot,* 1786

42. *Placuna placenta* (Linnaeus)

1758. Anomia placenta Linnaeus, *Syst. Nat.*, ed. 10, p. 703.

1995. *Placuna placenta* : Subba Rao *et al. Estuarine Ecosystem system series, Hugli Matla Estuary,* West Bengal, (ZSI publication), 2 : 64.

Material examined : 1 ex., CANR., 19.10.92, Mouth of Cholangi channel, M-1746, 12 exs., TV, 6.12.92, Darbharevu Island, M-1765, 2 valve, TV, 7.11.93, Antervedi nr. ferry point, M-1899, 11 exs., TV, 21.11.93, Antervedi nr. temple, M-1868, 2 exs., TV, 9.4.95, Cholangi, M-2021, 5 exs., TV, 22.4.95, Biyaputhipa, M-2053, 5 exs., TV, 23.4.95, Darbharevu, M-2030.

Measurement : L. 50-118; W. 56-116.

Diagnostic Character : Shell orbicular, large, exceeding 40 mm in length, compressed, upper valve slightly inflated, lower valve flat; without hole.

Distribution : Common in certain lagoons and estuaries of India (Back water of Kakinada, Ennur, marshy area of Gulf of Kutch, Chilika lagoon); Indo-Pacific.

Remarks : Under this genus single species has been reported from India.

Family OSTREIDAE

Subfamily OSTREINAE

Genus 35. *Crassostrea Sacco,* 1897

43. *Crassostrea cuttackenisis* (Newton & Smith)

1912. *Ostrea gryphoides* var *cuttakensis* Newton and Smith, *Rec. Geol. Surv. India.*

1916. *Ostrea madrasensis* Preston, *Rec. Indian Mus.*, **12** : 33, fig. 11.

1916. *Ostrea virginiana* : Annandale & Kemp, *Mem. Indian Mus.*, **5** : 348.

1967. *Crassostrea lugubris* : Ranson, *Rev. Trav. Inst. Peches marit.*, **31** (2) : 166, fig. 14.

1975. *Crastostrea gryphoides* var : *cuttackensis* : Subba Rao & Mookherjee, *Recent Researches in Estuarine Biology* (ed. Natarajan) : 173.

1998. Crassostrea cuttackensis : Surya Rao et. al. Estuarine Ecosystem Series, Mahanadi Estuary, Orissa (ZSI Publication), **3** : 184.

Material examined : 3 exs., TV, 22.4.95, Biyaputhipa, M-2052.

Measurement : L. 47-47; Ht. 63-75.

Diagnostic Character Shell moderately thick, extenrally scaly, Inner surface of the valve procellanous and whitish.

Distribution : Occur in most of the estuaries and backwater along the east coast. Along the west coast it is confined to southern region (Kerala).

Remarks : Extensive beds are found in the Mahanadi estuary in Orissa, Ennur back water & Pulicate lake in Tamil Nadu, Gokulapalli in A.P. & Vembanad lake in Kerala.

Genus 36. *Saccostrea Dollfus and Dautzenberng,* 1920

44. *Saccostrea cucullata* (Born)

1778. *Ostrea cucullata* Born, *Index Rerum Naturalium Musei Caesarei Vinodbonensis* : 100.

1780. *Ostrea cucullata* : Born, Testacea Musei Caesarei Vinodobonensis : 114, pl. 6, fig. 11 & 12 (Type locality : Indies and Ascesion Island).

1916. *Ostrea cucullata* : Annandale and Kemp, *Mem, Indian Mus.*, 5 : 349.

1956. *Ostrea forskalli* : Satyamurti, *Bull. Madras Govt. Mus, New Ser.* 1 (20) pt., 7 : 67, Pt. 10. fig. 4.

1967. *Crassostrea cucullata* : Ranson, *Rev. Trav. Inst. Peeches, marit.*, **31** (2) : 185, fig. 23.

1975. *Saccostrea cucullata* : Ahmed, *Advances in Marine Biology.* **13** : 381.

Material examined 2 valves, TV, 26.11.92, Bhairabipalem, M-1776, 2 valve, CNR., 23.1.95, Karvaka, M-1942.

Measurement : L. 32-33; Ht. 37-42.

Diagnostic Character : Shell small, not exceeding 50 mm in length; lower valve with its margin crenulate; rows of tubercles present on either side of the umbonal grove.

Distribution : India : Andhra Pradesh : Bhimlipatnam, Visakhapatnam; Andaman & Nicobars; Gujarat : Gulf of Kutch; Kerala : Malabar coast; Maharastra : Bombay; Orissa : Chandipur, Paradeep Port, Gopalpur; Tamil Nadu : Madras, Krusadai Island, Shingle Island, Pamban; West Bengal : Port Canning. Elsewhere Widely distributed in Indo Pacific area.

Remarks : Grows in clusters on rocks & coral reefs. Usually marine in habitat but also seen on backwaters. Species is highly variable.

Order VENEROIDA

Family CARDIIDAE

Genus 37. *Acanthocardia Gray,* 1851

45. *Acanthocardia coronata* (Schroeter)

1786. *Cardium coronatum* schroeter, *Einl. Conchill.*, **3** : 53 sp. 4, pl. 7, fig. 13.

1977. *Acanthocardia coronata* : Ray, *Contribution to the knowledge of molluscan fauna of Maungmagan, Lower Burma* : 116 (for other synonyms).

Material examined : 1 ex., TV, 16.11.93, Chintawara petta, M-2101, 1 ex., TV, 22.11.93, Antervedi nr. Light House.

Measurement L. 15-17; Ht. 15-18.

Diagnostic Character : Shell thin, height is almost equal to length, rounded in shape; ribs rounded; valves more inflated.

Distribution : India : Andhra Pradesh : Godavari estuary, Visakhapatnam; Andamans & Nicobars; Gujarat : Gulf of Kutch; Maharastra : Deogadh, Bombay; Orissa : Chandipur, Paradeep, Konark; Tamil Nadu : Madras, Kundugal point, Krusadai, Palk Bay, Mandapam. Elsewhere : Myanmar : Arakan coast, Maungamagan; Indonesia : Sumatra; Persian Gulf.

Remarks : Grows to fairly large size. Extensively collected by fishermen from knee deep and on the Bombay coast (Subrahamanyam, 1949).

Family MACTRIDAE

Genus 38. ***Mactra Linnaeus,*** 1758

46. ***Mactra (Mactra) cuneata*** Gmelin

1791. *Mactra cuneata* Gmelin, *Syst. Nat., ed.* 13 : 3260 sp. 19 (Type locality : Not given).

1854. *Mactra corbiculoides* Deshayes. *Proc. Zool. Soc. Lond* : 62.

1977. *Mactra (Mactra) Cuneata* : Ray, *Contribution to the knowledge of Molluscan fauna of Maugmagan, Lower Burma* : 133.

Material examined : 8 exs., CANR., 18.1.95, Purupalem; M-1987.

Measurement : L. 12-20; Ht. 10-14; T. 5-6.

Diagnostic Character : Shell triangularly wedge shaped, compressed, anterior margin broadly rounded, posterior angulate, prominent keel running postero ventral.

Distribution : India : Andhra Pradesh : Visakhapatnam, Godavari estuary; Gujarat : Veraval; Nicobars; Orissa : Konark, Gopalpur & Cuttack Coast.

Remarks : Shell is thin.

47. ***Mactra (Mactra) luzonica*** Deshayes

1854. *Mactra luzonica* Deshayes, *Proc. Zool. Soc. Lond,* 64 sp. 12 (Type locality : Luzon, Philippines).

1977. *Mactra (Mactra) luzonica* : Ray, *Contribution to the knowledge of Molluscan fauna of Moungmagan, Lower Burma* : 135 (for other references).

Material examined : 1 valve, TV, Antervedi nr. ferry point, M-1902.

Measurement : L. 35; Ht. 24.

Diagnostic Character : Shell with resilium & ligament separated by lamellae, shape of the shell transversely tringular, straw coloured; anterior white with deep violet in umbonal area.

Distribution : India Andhra Pradesh : Godavari estuary; Andamans; Goa; Maharastra Bombay; Orissa : Chandipur, Puri beach, Gopalpur; Tamil Nadu : Madras, Gulf of Mannar; West Bengal : Digha, Sagar Island. Elsewhere Australia : Queens land; Myanmar; Botany Bay; Philippines; Sri Lanka.

Remarks : Widely distributed in tropical and subtropical waters; Usually occur in sandy mud in shallow water.

Family SOLENIDAE

Genus 39. ***Solen Limaeus,*** 1758

48. ***Solen*** sp.

Material examined : 8 ex, CANR., 15.9.93, Antervedi, M-1840, 1 ex., CANR., 18.1.95, Perupalem, M-1986.

Measurement : L. 3-4, Ht. 17-28, T. 2.

Description : Straw yellow coloured; Sheel almost straight with flattened tapering posterior end.

Family CULTELLIDAE

Genus 40. ***Neosolen Ghosh,*** 1920

49. ***Neosolen aquaedulcioris*** Ghosh

1916. *Solen fonesi* : Annandale and Kemp, *Mem. Indian Mus.,* 5 : 354, text fig. 5, pl. fig. 7 (Type locality : Off samal Island, Chilka Lake).

1916. *Solen fonesi* : Ghosh, *Mem Indian Mus.,* 5 : 368, figs. 1-3

1920. *Neosolen aquae-dulciris* Ghosh, *Rec. Indian Mus.,* 19 (2) : 57, pl. 2, fig. 12, pl. 3, figs. 13-14.

1941. *Solen aquae-dulciris* : Gravely, *Bull. Madras Govt. Mus.,* 5 (1) : 64.

1991. *Neosolen aquae-dulcioris* Ghosh : Rao & Rao & Maitra, *State Fauna Series* 1 : *Fauna of Orissa* (Part 3) : 131.

Material examined : 8 exs., CANR., 20.10.92, Mouth of Cholangi channel, M-1742.

Measurement : L. 2-3; Ht. 15-19; T. 2.

Diagnostic Character : Shell small, not exceeding 30 mm in length; anterior margin truncate, deep furrow behind; hinge with single long tooth.

Distribution : India : Andhra Pradesh : Godavari estuary; Kerala : Cochin; Orissa : Off Samal Island, Chilka lagoon (Syntype), Chilika lagoon (off Balugaon, off Barkuda Island, Rambha Bay).

Remarks : Body is considerably abbreviated antero-posteriorly in comparision with that of the species of solen.

Family TELLINIDAE

Subfamily MACOMINAE

Genus 41. ***Macoma Leach,*** 1819

50. ***Macoma (Psammacoma) birmanica*** (Philippi)

1849. *Tellina birmanica philippi,* Abdil, Reschr, **3** : 27, 55 No. 1 (Type locality : Mergui Archipelago).

1981. *Macoma (Psammacoma) birmanica;* Dey, studies on Indian Tellinids, *Ph.D. Thesis, Ranchi Univ.* : 211, pl. 34, fig. 1.

Material examined : 1 valve, CANR., 18.10.92, Dariyaltepa, M-1721, 3 valve, CANR., 20.10.92, Mouth of cholangi, M-1694, 1 ex., CANR., 20.10.92, Mouth of Cholangi Channel, M-1744, 2 valves, TV, 6.12.92, Darvarevu, M-1764, 1 ex., CANR., 13.9.98, Sunkurevu, M-1842, 5 valve, CANR., 17.9.93, Sakhinetipalli, M-1820, 1 valve, TV, 6.11.93, Antervedi nr. Ferry point, M-1875, 1 valve, TV, 10.11.93, Antervedi nr. ferry point, M-1908, 1 ex., TV, 21.11.93, M-1869, 1 valve, TV, 22.11.93, Antervedi nr. Light House, M-1864, 1 ex., CANR., 13.1.95, Vemuladivi, M-1984, 1 ex., TV, 22.4.95, Biyaputhipa, M-2054, 1 ex., TV, 23.4.95, Darbharevu Island, M-2031.

Measurement : L. 7-78; Ht. 5-46.

Diagnostic Character : Shell elongately ovate; pallial sinus large, occupied entire shell, reaching anterior muscle scar.

Distribution : India : Andhra Pradesh : Kakinada Bay, Godavari estuary; Orissa : Baleswar coast; West Bengal : Digha, Chemaguri nr. Sagar Island, Port Canning. Elsewhere : Myanmar.

Remarks : Its siphons are long and golden colour in live condition. It burries in loose & muddy substrata at a depth of about 15 to 30 cms.

Genus 42. ***Angulus***

51. ***Angulus philippinarum*** (Hanley)

1844. *Tellina philippinarum,* Hanley, *Proc. Zool. Soc. London, pt.* **12** : 69.

1870. *Tellina (Angulu) philippinarum,* Kuster, in *Martini and Chemnitz's syst. Conch.-Cab, Nuruberg, Tellina,* **10** (3/4) : 140, No. 83, pl. xxxi, figs. 1-4.

1890. *Tellina (Tellinula) philippinarum,* Paetel, *Cat. Conghyl.-Samml., Berlin,* **3** : 49.

1899. *Tellina (Angulus) philippinarum,* Melvill and Standen., *J. Linn. Soc. London, Zool.* **27** : 201, No. 438, *Summary of phil. mar. and Fresh. Moll. Manila,* p. 88.

Material examined : 2 valve, CANR., 22.10.92, Kakinada backwater nr. Light House, M-1726.

Measurement : L. 18-21; Ht. 14-16.

Diagnostic Character : Palial sinus large.

Distribution : India : Andamans. Elsewhere : Akyab, Torres, Trait and Philippines (Ceb, Luzon, Negros, Manila)—Maungmagan, Philippine Islands, st. Nicholas, Island of Zebu & Jimmamailan & Island of Negros.

Genus 43. ***Strigilla Turton,*** 1822

52. ***Strigilla (Aeretica) splendida*** (Anton)

1839. *Tellina splendida* Anton, *Verz. Conch.* : 5 (Type locality : Isle of Samar, Philippines).

1908. *Strigilla denestriata* Preston, *Rec. Indian Mus.,* **2** : 210 (Type locality : Andamans).

1981. *Strigilla (Aretica) Splendida* : Dey, studies on Indian Tellinids, *Ph.D., Thesis, Ranchi University* : 205, pl. 32, figs. 1-3, pl. 33, figs. 4-6.

Material examined : 2 valve, CANR., 22.10.92, Kakinada Backwater, M-1725.

Measurement : L. 14; Ht. 11.

Diagnostic Character : Shell with one lateral tooth at least in one valve, sculpture with oblique riblets on anterior part, light pink colour on umbonal area & variable colouration on the surface.

Distribution : India : Orissa; West Bengal : Digha, Sagar Island, Bokhali, Muriganga estuary, Kakdwip; Andhra Pradesh : Kakinada Bay; Andaman. Elsewhere : Indonesia, Philippines.

Remarks : Usually found in muddy, sandy botton from shallow to deep water.

Family DONACIDAE

Genus 44. ***Donax Linnaeus,*** 1758

Subgenus ***Hecuba Schumacher,*** 1817

53. ***Donax (Hecuba) Scortum*** (Linnaeus)

1758. *Venus Scortum* Linnaeus, *Syst. Nat., ed.* **10** : 685, No. 103 (Type Locality : American).

1928. *Donax (Hecuba)* Scortum : Melvill, *Proc. malac. Soc. Lond.*, **18** : 115.

1986. *Donax (Hecuba)* Scortum : Subba Rao & Dey, *Rec. zool. Surv. India Occ. Pap.* **91** : 7, figs. 4, 20-21.

Material examined : 1 valve, TV, 24.11.93, Antervedi nr. ferry point, M-1907.

Measurement : L. 58, Ht. 36.

Diagnostic Character : Shell thick; strongly sculptured with concentric & radial ribs; keel prominent extending from Umbo to postero-ventral margin.

Distribution : India : Andhra Pradesh : Visakhapatnam, Godavari estuary; Gujarat : Gulf of Kutch; Kerala : Malabar coast; Maharastra : Bombay; Orissa : Chandipur, Puri, Ganjam coast; Pondichery; Tamil Nadu : Madras, Krusadai Island, Shingle Island, Kundugal point; West Bengal : Digha.

Remarks : Commonly known as wedge clam, Burrows in sandy & muddy substratum in shallow water.

Family PSAMOBIIDAE

Subfamily SANGUINOLARIINAE

Genus 45. ***Sanguinolaria Lamarek,*** 1799

Subgenus ***Soletellina De blainville,*** 1824

54. ***Sanguinolaria (Soletellina) acuminata*** Deshayes

1857. *Soletellina acuminata* Deshayes, In *Reeve's Conch. Icon.*, 10; Soletellina, Sp. 12, Pl. 3, fig. 12 (Type locality : Phillippine Islands).

1977. *Sanguinolaria (Soletellina)* acuminata : Subba Rao, *Newsl. Zool. Surv. India* **3** (5) : 300.

Material examined : 1 valve, TV, 20.11.93, Antervedi nr. Light House, M-1897, 1 ex., TV, 22.4.95, Biyaputhipa, M-2049.

Measurement : L. 69-73; Ht. 30-33.

Diagnostic Character : Shell much compressed; gap on posterior end broad; posterior end narrower than anterior.

Distribution : India : Andhra Pradesh : Godavari estuary; Kerala : Astamudi nr. Travancore; Orissa : Chandipur, Puri, Ganjam Coast; West Bengal : Digha, Sagar Island. Elsewhere : Pakistan : Karachi.

Family CORBICULIDAE

Genus 46. ***Corbicula Megerle*** Von Miihpfeld, 1811

55. ***Corbicula Striatella*** (Deshayes)

1854. *Corbicula striatella* Deshayes, *Porc. Zool. Soc., London*, **22** : 344.

1928. *Corbicula striatella* : Prashad, *Mem. Indian Mus.*, **9** : 18, pl. 3, figs. 9-11.

Material examined : 1 ex., CANR., Vodlarevu, M-1816, 5 exs., CANR., 14.9.93, Chaklitipa, M-1818, 1 ex., CANR., 17.10.92, Godimoga, M-1740.

Measurement : L. 8-16; Ht. 6-13; T. 4-7.

Diagnostic Character : Shell thick, moderate, tubid, ovately triangular, colour shining brown; strongly and concentrically ribbed; Umbo distinctly raised.

Distributton : India : Common throught. Elsewhere : Myanmar; Pakistan.

Remarks : A freshwater mollusc.

Genus 47. *Geloina Gay,* 1842

56. *Geloina erosa* (Solander)

1786. *Venus erosa* Solander, *Portland Catalogue, pp. 71, 186.*

1932. *Gelonia erosa* : Prashad, *Siboga Expedition, pelecypoda,* **55** c : 174.

Material examined : 4 valve, TV, 26.11.92, Bhairabipalem, M-1773, 1 valve, SCN., 16.3.95, Bhairabipalem, M-2008.

Measurement : L. 59-68; Ht. 55-64.

Diagnostic Character : Shell sub trigerial, heavy, tumid, concentrically & roughly striated.

Distribution : India : Andhra Pradesh : Godavari estuary; Orissa : Mahanadi estuary; West Bengal : Gangetic delta. Elsewhere : Common in Indo-Pacific regions.

Remarks : Generally occur in fresh water but also found in estuarine regions.

Family VENERIDAE

Genus 48. *Meretrix Lamarck,* 1799

57. *Meretrix casta* (Gmelin)

1791. *Venus casta* Gmelin, *Syst. Nat., ed.* 13 : 3278, sp. 42 (refers to Chemnitz, 1782), (Type locality : India).

1914. *Corbicula (Velorita) sataparaensis* Preston, *Rec. Indian Mus.;* **10** : 306, fig. 22, 22a (Type locality : on shore at satapara, Chilika lake, Orissa).

1915. *Meretrix ovum* : Preston, *Rec. Indian Mus.,* **11** : 300 (not larger valve).

1916. *Meretrix casta* : Annandale and Kemp, *Mem. Indian Mus.,* **5** : 351 (not *M. ovum* which is *M. meretrix impudica juv.).*

1976. *Meretrix casta* : Fischer-Piette, *Rec. zool. Surv. India,* **70** : 240 (for other references).

Material examined : 4 valves, TV, 20.11.92, Yanam, M-1767, 4 exs., TV, 5.12.92, M-1780, 2 valves, TV, 7.12.92, Antervedi, M-1777, 2 valves, TV, 8.11.93, Chinchunada, M-1928, 1 valve, TV, 16.11.93, Chintawarapeta M-1920, 2 valves, SCN., 14.3.95, Yanam, M-2015, 5 exs., SCN., 18.3.95, Upapara, M-2012, 1 ex., 9.4.95, Cholangi, M-2019.

Measurement : L. 12-70; Ht. 10-60.

Diagnostic Character : Hinge broad; valves thick, more inflated, posterior end without band.

Distribution : India : Occurs in both coasts of India in backwaters & connecting canals. Elsewhere : Myanmar : Arkan; Malaysia : Malacca; Singapore; Sri Lanka.

Remarks : Variable in its shape, Colouratron & thickness. As per revisionary work of Hornell (1917) on Indian species of *Meretrix* remarked that 'typical' form occurs from Chilika Lagoon to Cape comrin on east coast and a variety satparaensis occurs in sub fossil condition in shell deposits in Chilika Lagoon, Sonapur, Pulicat & Madras Backwaters, Shellpits in Mandapam, Korampalem near tuticorin and no living individuals appear to assume this form.

58. *Meretrix meretrix* (Linnaeus)

1758. *Venus meretrix* Linnaeus, *Syst. Nat., ed.* **10** : 686, Sp. 102 (Type locality : 'o'. Indico).

1916. *Meretrix meretrix* : Annandale and kemp, *Mem. Indian Mus.,* **5** : 351.

1976. *Meretrix meretrix* : Fischer-piette, *Rec. zool. Surv. India,* **70** : 240 (For distribution).

Material examined : 1 valve, CANR., Deriyaltepa, M-1723, Yanam M-1754, 31 exs., TV, 20.11.92, Yanam, M-1768, 1 valve, TV, 20.11.92, Bhairabipalem, M-1775, 25 valve, TV, 5.12.92, Sakhinetapalli, M-1779, 1 ex., CANR., 18.9.93, Vemuladivi, M-1835, 1 ex., CANR., 23.9.93, Vodlarevu, M-1815, 3 valve, TV, 6.11.93, Antervedi nr. ferry point, 1 valve, TV, 7.11.93, 6

exs., TV, 15.11.93, Sakhinetipalli, M-1590, 1 valve, TV, 16.11.93, Chintawarapeta, M-1920, 1 valve, TV, 18.11.93, Antervedi nr. ferry point, M-1900, 3 valve, TV, 19.11.93, M-1913, 4 valve, TV, 20.11.93, Chinchunada, M-1927, 2 exs., CANR., 9.11.93, Biyaputhipa, M-1847, 3 exs., TV, 21.11.93, Antervedi nr. temple, M-1871, 6 exs., TV, 22.11.93, Antervedi nr. Light House, M-1860, TV, 24,11.93, Antervedi nr. ferry point, M-1906, 3 exs., CANR., 13.1.95, Vemuladivi, M-1983, 1 valve, CANR., 14.1.95, Navarasapalem, M-1974, 1 valve, SCN., 14.3.95, Yanam, M-2014, 3 exs., SCN., 18.3.95, Upapara, M-2011, 16 valves, TV, 8.4.95, Yanam, M-2039, 2 valve, TV, 22.4.95, Biyaputhipa, M-2051, 2 exs., TV, 23.4.95, Darbharevu, M-2029.

Measurement : L. 9-66; Ht. 7-64.

Diagnostic Character : Hinge narrow; shell longer than height; posterior end with dark band; valve thin, less inflated.

Distribution India Commonly occurs in esturies & backwaters on both the coasts of India. Elsewhere : Sri Lanka.

Remarks : It can be distinguished from *M. casta* by its ventricose form, more compressed, narrow hinge and very district anterior cardinal teeth on left valve. Highly variable in its shape & colouration for which description of several varieites viz. morphina, impudica, Zonaria, castanca & durora.

Subfamily TAPETINAE

Genus 49. *Marcia H. & A. Adams*, 1857

59. *Marcia Pinguis* (Schroeter)

1788. *Venus pinguis.* Schroeter, *Namen, Register in Conch. Cab.*, **10** : 112 (Type locality : East Indian Seas).

1915. *Tapes pinguis* : Preston, *Rec. Indian Mus.*, **11** : 300.

1915. *Tapes ceylonensis* Preston, *Rec. Indian Mus.*, **11** : 301.

1916. Tapes ceylonensis : Annandale and kemp, Mem. Indian Mus., 5 : 532.

1948. *Katelysia opima* : Ray, *Rec. Indian Mus.*, **46** : 118.

1956. *Catelysia opima* : Satyamurti; *Bull. Madras Govt. Mus. New. Ser.* 1 (2) Pt. 7 : 128, pl. 19, fig. 6 a-c.

1976. *Marcia pinguis* : Fisher-Piette, *Rec. Zool. Surv. India*, 70 : 248 (for other refemeces).

Material examined : 1 valve, CANR., 20.10.92, Mouth of cholangi, M-1691, 1 valve, CANR., 23.10.92, Girijampeta, M-1729, 1 valve, TV, 6.11.93, Antervedi nr. ferry point, M-1879, 3 valve, TV, 7.11.93, M-1881, 2 valve, TV, 12.11.93, chinchunada, M-1924, 5 valve, TV, 18.11.93, Antervedi nr. ferry point, M-1901, 3 valve, TV, 19.11.93, Antervedi nr. temple, M-1914, 3 valve, TV, 20.11.93, Antervedi nr. Light House, M-1893, 4 exs., TV, 21.11.93, Antervedi nr. temple, M-1870, 1 ex., TV, 21.4.95, Antervedi nr. Light House, M-2060, 1 valve, TV, 22.4.95, Biyaputhipa, M-2045.

Measurement : L. 25-58; Ht. 20-47.

Diagnostic Character : Shell inflated, Oval; lunule broad; surface smooth except for concentric stirae, without markings.

Distribution : India : Common in back waters & estuaries along both the coasts of India : Elsewhere : Australia; Myanmar; Gulf of Aden; persian gulf.

Remarks : Well known as *Katelysia opima (Gmelin)* of authors. Juvenile forms are more elongate than adults.

Genus 50. *Paphia Roeding*, 1798

60. *Paphia malabarica* (Schroeter)

1788. *Venus malabarica schroeter, Namen, Register, in conch. Cab.* **10** : 112 (refers Chemnitz) (Type locality : Malabar).

1976. *Paphia malabarica* : Fischer-Piette, *Rec. zool. Surv. India*, **70** : 247 (for other synonyms).

Material examined : 1 valve, CANR., 23.10.92, Girijampeta, M-2087, 1 valve, SCN., 15.3.95, BV palem, M-1996, 1 ex., TV, 9.4.95, Cholangi, M-2022, 1 ex., TV, 10.4.95, Bhairabipalem, M-2025.

Measurement : L. 52-75; Ht. 40-61.

Diagnostic Character : Shell clongate, compressed; Iunule narrow, elongate, concentrically ribed.

Distribution : India : Andhra Pradesh : Visakhapatnam, Godavari estuary; Andamans; Gujarat : Gulf of Kutch; Maharastra : Bombay; Kerala : Malabar Coast; Orissa : Chandipur, Puri; Tamil Nadu : Madras, Porto Novo, Pamban, Tranquebar.

Remarks : Occurs in estuaries & backwaters of India, used as food by fisherman at Bombay.

Family GLAUCONOMIDAE

Genus 51. ***Glauconome Gray,*** 1828

61. ***Glauconome sculpta*** sowerby

1894. *Glauconome sculpta* Sowerby, *Proc. Malac. Soc. Lond.*, **1** : 40 (Type locality : Bay of Bengal).

1977. *Glauconome sculpta* : Subba Rao, *Newsl. Zool. Surv. India*, **3** (5) : 301.

Material examined : 4 valves, TV, 26.11.92, Bhairabipalem, M-1772, 6 valves, TV, 6.12.92, Darbharevu Island, M-1763, 13 exs., CANR., 13.9.93, Sunkurevu, M-1841, 9 exs., CANR., 15.9.93, Antervedi, M-1836, 2 valve, CANR., 23.1.95, Karvaka, M-1940, 2 exs., TV, 22.4.95, Biyaputhipa, M-2048.

Measurement : L. 19-44; Ht. 9-21.

Diagnostic Character : Shell elongate, thin, brittle; surface finely striated; covered with green periostracum; laterals absent.

Distribution : India : Orissa Chandipur, Mahanadi estuary; West Bengal : Muriganga estuary, Sagar Island in Sunderbans. Elsewhere : Bay of Bengal.

Remarks : It occurs in hard muddy substratum in the estuary with adult, partly exposing their bodies above surface level. It differs from *G. angulata* having longer, narrower form.

Order MYOIDA

Family PHOLADIDAE

Subfamily PHOLADINAE

Genus 52. ***Pholas Linnaeus,*** 1758

Subgenus ***Monothyra Tryon,*** 1862

62. ***Pholas (Monothyra) orientalis*** Gmelin

1791. *Pholas orientalis* Gmelin, *Syst. Nat.* ed., **13** : 3216, Sp. 7 (Type locality Singapore).

1956. *Pholas orientalis* : Satyamurti, *Bull. Madras Govt. Mus., new ser.* 1 (2) pt. 7; 167, Pl. 25, fig. 1.

1991. *Pholas (Monothyra) Orientalis* : Rao, Rao & Maitra. *State Fauna Ser.* 1 : *Fauna of Orissa* (Part-3) : 157.

Material examined : 1 valve, TV, 10.11.93, Antervedi nr. ferry point, M-1912, 1 valve, TV, Antervedi nr. Light House, M-1867, 1 valve, TV, 22.4.95, Biyaputhipa, M-2046.

Measurement : L. 37-87; Ht. 11-27.

Diagnostic Character : Umbonal reflection separate; anterior part with strong radial ribs, robs nodose; posterior part with concentric growth lines.

Distribution : India : Andhra Pradesh : Godavari estuary; Kerala : Cochin; Orissa : Chandipur; Tamil Nadu : Madras. Elsewhere Indo-Pacific.

Class CEPHALOPODA

Order SEPIOIDA

Family SEPIIDAE

Genus 53. ***Sepia Linnaeus,*** 1758

63. ***Sepia aculeata*** Ferussac & d' Orbigny

1835-48. *Sepia aculeata* Ferussac & d' Oribingny, *Hist. nat. Gen. et. Part, Ceph. Acctabi* : 287 Pl. 5, fig. 25 (Type locality : Java).

1916. *Sepia aculeata* : Massy, *Rec. Indian Mus.*, **12** : 233.

1968. *Sepia aculeata* : Silas, *Proceedings of symposium on Mollusca*, pt. 1 : 294 (for synonyms and distribution).

Material examined : 1 ex., Antervedi nr. Light House, M-2078.

Measurement : Having mantle length. 96; width of mantle. 57.

Diagnostic Character : Body wide, flatened; fins narrow extending entire body; shell present internally, thick & calcarious & has a rostum on its lower part.

Distribution : India : Common in Indian Seas; Andhra Pradesh : Godavari estuary; Karnataka : Karwar; Kerala : Cochin; Maharastra : Bombay; Orissa : Baleswar Bay; Tamil Nadu : Madras, Ennur, Gulf of Manner. Elsewhere : Indo-Pacific.

Remarks : Longer than *Sepiella inermis*, commonly occurs in offshore, exclusively marine in their habitat.

Genus 54. ***Sepiella Gray,*** 1849

64. ***Sepiella inermis*** Ferussac et. d' Orbigny

1835-48. *Sepiella inermis* ferrusac et. d' orbigny, *Hist. Nat. Gen et.* part ceph. acetab : 226, Pl. 6; 1848 : 286, Pl. 20 figs. 1-9.

1916. *Sepiella inermis* : Massy, *Rec. Indian Mus.*, **12** : 231, Pl. 23, fig. 6, pl. 24, figs. 1-9.

1968. *Sepiella inermis* : Silas, *Proceedings on symposium on mollusca,* pt. 1 : 303.

Material examined : 3 ex., TV, 8.12.92, Antervedi nr. ferry point, M-1787.

Measurement : Mantle length. 32-37; width of mantle. 26-27.

Diagnostic Character : Internal shell is without any rostrum on its lower part, small, narrowly ovate; Body oblong, width 2/3 of length; arms short.

Distribution : India : Andhra Pradesh : Godavari estuary; Andamans; Kerala : Cannanore, Cochin, Tellicherry; Lakshadeep; Maharastra : Bombay; Orissa : Baleswar Bay, Off Paradeep, Puri, Chilika Lagoon, Gopalpur; Tamil Nadu; Madras, Palak Bay, Pamban, Rameswaram & Kundugal point.

Remarks : Exclusively marine in their habitat. Commonly occur in off shore.

DISCUSSION

In an estuary there are different bitopes like mangroves, mud flats, creeks & jetties. Estuarine fauna can be brought under two broad categories—residents & non-residents. Residents category includes molluscs, polychaetes, crustaceans & few vertibrates. Depending on the topography of the estuary, the extent of fresh water flow, tides & the time of the year, factors like temperature, salinity range & nature of substratum play an important role in influencing the distribution of organism in an estuary. The percentage of organic carbon, dissolved oxygen, pH of water & sediment also influence their distribution. Majority of the speices especially bivalves, occurs in the vicinity of mangals. In a suitable substratum majority of gastropods can withstand large exposure to air.

In the checklist of mollusc of Indian estuaries a total of 245 species (120 of gastropoda & 125 of Bivalvia) have been reported [Subba Rao & Surya Rao (1985)].

In this estuary 3 classes of phyllum mollusca, namely gastropoda, Bivalvia & Cephalopoda have their representatives. The families Trochidae, Neritidae, Littornidae, Assimineidae, Potamididae, Naticidae, Muricidae, Nassariidae, Ellobiidae, Arcidae, Tellinidae & Veneridae are important from population, wide distribution & diversity point of view in this estuary.

The gastopoda species which are common to all Indian estuaries are *Neritina (Dostia) violacea, Littorina melanostoma, Littorina scabra, Assiminea brevicula, Telescopium telescopium, Cerithidea cingulata, Cerithidea obstusa, Natica tigrina, Natica gualteriana & Nassarius stolatus.*

The richness of malaco fauna of this estuary may be due to age & largeness of the estuary, rich sediments and more stable condition in certain areas.

SUMMARY

In this study 59 species of molluscs belonging to 54 genera and 39 families have been reported. This also includes fresh water & marine forms besides brackish Water Species.

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Estuarine Ecosystem Series 4 : Fauna of Godavari Estuary : 83-84, 2001

ECHINODERMATA

D. R. K. SASTRY
Zoological Survey of India, Port Blair-744 102

INTRODUCTION

Echinoderms are generally considered as wholly marine inhabitants. A few however, are known to tolerate dilution to a limited extent and extend their distribution into estuarine areas with relatively higher salinities. Godavari estuarine system seems to be no exception. Radhakrishna and Ganapati (1969) reported the asteroid *Astropecten indicus* Deoderlein, the echinoids *Temnopleurus toreumaticus* (Leske) and *Echinodiscus auritus* Leske and the holothurians *Synapta* sp. and *Molpadia* sp. from the Kakinada Bay of the Godavari estuarine system. Similarly, Sastry (1995) reported 15 species of echinoderms from the Hugli Matla Estuary. James (1987) gave the correct identity of *Molpadia* sp. from Kakinada Bay as *Acaudina molpadioides* (Semper). Based on the salinity structure and well being of the specimens, Radhakrishna and Ganapati (1969) remarked that *Echinodiscus auritus* and *Synapta* sp. belong to euryhaline component and the other three to be stenohaline component.

Recent collections during the survey by Estuarine Biological Station of Zoological Survey of India, included 10 specimens of *Astropecten hemprichi* Mueller and Troschel. Details of the localities and salinity structure can be found elsewhere in this volume. In addition, the author earlier identified for Zoology Department of Andhra University, Visakhapatnam, a sample of several hundreds of young *Temnopleurus toreumaticus* collected from Narsapur area of the Godavari estuarine system.

Phylum ECHINODERMATA

Class ASTEROIDEA

Order PAXILLOSIDA

Family ASTROPECTINIDAE

Astropecten hemprichi Mueller and Troschel

1842. *Astropecten hemprichi* Mueller and Troschel, *System der Asteriden*, p. 71.

1971. *Astropecten hemprichi* : Clark and Rowe, *Monograph of shallow-water Indo-west Pacific echinoderms*, 30-31 (distribution), 45 (key).

Material : Four specimens—Antarvedi Light House, Narsapur; Coll : T. Venkateswarlu; dt. 3.xii.1992. One specimen—Darbharevu, Narsapur; Coll : T. Venkateswarlu; dt. 6.xii.1992. Five specimens—Biyyaputippa, Narsapur; Coll : T. Venkateswarlu; dt. 22.iv.1995.

Description : The specimens range from 20 to 43 in R, with R/r—3.4 to 4. Paxillar area varied from 46.7 percent to 66.3 percent of the breadth of the arm at the base. The superomarginal plates 20-24 in number, broader than long on the arms and without any spines. Inferomarginal plates with a single marginal spine, a shorter spine a little longer than the marginal spine in length and actinal surface with pointed spinelets, blunt in larger specimens. Actinal plates two in three interradii and three in two interradii. Adambulacrals usually with three furrow spines, the middle longest, rarely four proximally in larger specimens, the

second largest; two subambulacral spines, the distal larger and 1-3 smaller spines outer to these.

Remarks : The stomach contents in a specimen of 33 mm in R included two hermit crabs in cerithiid shells.

Distribution : Red Sea to East Indies as per Clark and Rowe (1971) attributing Bay of Bengal records to Doederlein (1889) and Herdman and Herdman (1904) from Sri Lanka; Sladen (1889) from Mergui Archipelago and East Indies record to Doederlein (1917). However, Clark (1989) restricted the distribution from Red Sea and Arabian Gulf to Natal Coast.

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FISHES

S. KRISHNAN AND S. S. MISHRA
Zoological Survey of India, Estuarine Biological Station, Berhampur, Orissa-760 005

INTRODUCTION

The present paper summarises our knowledge of the distribution of 312 species of freshwater to marine elements of fishes belonging to 189 genera accommodated in 88 families. It is based on approximately 1400 samples collected from different localities of Godavari estuarine system (Map 1) by various survey parties from 1992 to 1995 and incorporation of information available in literature [Day, 1875-78 (1888); Koumans, 1941, 1953; Munro, 1955; de Beaufort and Briggs, 1962; Babu Rao 1962, 1973, 1976; Rao, 1971, 1972, 1974, 1976; Fischer and Whitehead, 1974; Fischer and Bianchi, 1984; Talwar and Kacker, 1984; Smith and Heemstra, 1986; Whitehead *et al.*, 1988; Venkateswarlu, 1990; Talwar and Jhingran, 1991; Barman, 1993, Mohapatra and Venkateswarlu, 1995 and Talwar, 1995].

New locality records of occurrence in Godavari estuarine system has been effected for 74 species, thus enhancing information available in literature from 240 species to 314 species as a result of the present study. Information available on *Argyrosomus argentatus* (Houttuyn) and *Cottogobius kapuri* Rao are inconclusive.

MATERIAL AND METHODS

The material studied by us have been collected as random samples by the survey parties from the brackish water regions of the two estuaries, Gautami Godavari and Vasishta Godavari forming the Godavari estuarine system, complexed by the drainage of the Gadimoga and Coringa channels into the Kakinada Bay.

The body proportions and meristic characters are mostly from actual observations. The various body measurements are given in relation to standard length, except when mentioned. In order to enhance utility of the paper and to avoid confusion, the first description of the species and the current name with appropriate literature only are cited. All the preserved samples have been registered and deposited with the Estuarine Biological Station of the Zoological Survey of India at Berhampur. Majority of the figures used here have been retrieved from various sources to facilitate easy identification.

Arrangement of families is according to the universally accepted system of Nelson (1984), while genera and species in alphabetical order. Abbreviations used are : SL—Standard length; TL—Total length; D—Dorsal fin; A—Anal fin; P—Pectoral fin; V—Pelvic fin; C—Caudal fin; GR—Gill rakers; LL—Lateral line scales; LS—Lateral series scales; Ltr—Lateral transverse scales; pre D—Predorsal scales; CANR—C.A. Nageswara Rao; TV—T. Venkateswarlu; SCN—S. C. Nahar.

SYSTEMATIC LIST

Class CHONDRICHTHYES

Subclass ELASMOBRANCHII

Order CARCHARHINIFORMES

Family CARCHARHINIDAE

Genus ***Scoliodon*** Muller & Henle, 1837

1. ***Scoliodon laticaudus* Muller & Henle, 1838

Order RAJIFORMES

Family DASYATIDAE

Genus ***Himantura*** Muller & Henle, 1837

2. ***Himantura uarnak*** (Forsskal, 1775)

Order MYLIOBATIFORMES

Family MYLIOBATIDAE

Genus ***Aetobatus*** Blainville, 1816

3. ***Aetobatus narinari*** (Euphrasen, 1790)

Class OSTEICHTHYES

Subclass ACTINOPTERYGII

Subdivision TELEOSTEI

Order OSTEOGLOSSIFORMES

Family NOTOPTERIDAE

Genus ***Notopterus*** Lacepede, 1800

4. ***Notopterus notopterus*** (Pallas, 1769)

Order ELOPIFORMES

Family ELOPIDAE

Genus ***Elops*** Linnaeus, 1766

*5. ***Elops machnata*** (Forsskal, 1775)

Family MEGALOPIDAE

Genus ***Megalops*** Lacepede, 1803

*6. ***Megalops cyprinoides*** (Broussonet, 1782)

Order ANGUILLIFORMES

Family MORINGUIDAE

Genus ***Moringua*** Gray, 1831

*7. ***Moringua raitaborua*** (Hamilton, 1822)

Class MURAENIDAE

Genus ***Lycodontis*** McClelland, 1844

8. ***Lycodontis punctatus*** (Bloch & Schneider, 1801)

9. ***Lycodontis sathete* (Hamilton, 1822)

Genus ***Thyrsoidea*** Kaup, 1856

10. ***Thyrsoidea macrura* (Bleeker, 1854)

Family OPHICHTHIDAE

Genus ***Bascanichthys*** Jordan & Devis, 1892

11. ***Bascanichthys deraniagalai* Menon, 1961

Genus ***Cirrhimuraena*** Kaup, 1856

12. ***Cirrhimuraena playfairii* (Gunther, 1870)

Genus ***Muraenichthys*** Bleeker, 1853

13. ***Muraenichthys gymnopterus* (Bleeker, 1853)

14. ***Muraenichthys macropterus* Bleeker, 1857

Genus ***Pisodonophis*** Kaup, 1856

*15. ***Pisodonophis boro*** (Hamilton, 1822)

Family CONGRIDAE

Genus ***Ariosoma*** Swainson, 1838

16. ***Ariosoma anago*** (Temminck & Schlegel, 1846)

Genus ***Uroconger*** Kaup, 1856

*17. ***Uroconger lepturus*** (Richardson, 1845)

In the systematic list single asterisk (*) means samples examined by us and double asterisk (**) are new records for Godavari estuarine system.

Family MURAENESOCIDAE

Genus ***Congresox*** Gill, 1890

18. ***Congresox talabon* (Cuvier, 1829)

Genus ***Muraenesox*** McClelland, 1843

19. ***Muraenesox bagio* (Hamilton, 1822)

Order CLUPEIFORMES

Family CLUPEIDAE

Genus ***Anodontosoma*** Bleeker, 1849

*20. ***Anodontosoma chacunda*** (Hamilton, 1822)

Genus ***Dayella*** Talwar & Whitehead, 1971

21. ***Dayella malabarica*** (Day, 1873)

Genus ***Dussumieria*** Valenciennes, 1847

22. ***Dussumieria acuta*** Valenciennes, 1847

*23. ***Dussumieria elopsoides*** Bleeker, 1849

Genus ***Escualosa*** Whitley, 1940

*24. ***Escualosa thoracata*** (Valenciennes, 1847)

Genus ***Hilsa*** Regan, 1917

*25. ***Hilsa kelee*** (Cuvier, 1829)

Genus ***Nematalosa*** Regan, 1917

*26. ***Nematalosa nasus*** (Bloch, 1795)

Genus ***Sardinella*** Valenciennes, 1847

27. ***Sardinella fimbriata* (Valenciennes, 1847)

Genus ***Tenualosa*** Fowler, 1934

*28. ***Tenualosa ilisha*** (Hamilton, 1822)

29. ***Tenualosa toli*** (Valenciennes, 1847)

Family PRISTIGASTERIDAE

Genus ***Ilisha*** Richardson, 1846

*30. ***Ilisha elongata*** (Bennett, 1830)

*31. ***Ilisha filigera*** (Valenciennes, 1847)

32. ***Ilisha kampeni* (Weber & de Beaufort, 1913)

Genus ***Opisthopterus*** Gill, 1861

33. ***Opisthopterus tardoor*** (Cuvier, 1829)

Genus ***Raconda*** Gray, 1831

34. ***Raconda russeliana*** Gray, 1831

Family ENGRAULIDIDAE

Genus ***Coilia*** Gray, 1830

*35. ***Coilia dussumieri*** Valenciennes, 1848

36. ***Coilia neglecta* Whitehead, 1968

*37. ***Coilia ramcarati*** (Hamilton, 1822)

*38. ***Coilia reynaldi*** Valenciennes, 1848

Genus ***Encrasicholina*** Fowler, 1934

39. ***Encrasicholina heteroloba* (Ruppell, 1837)

Genus ***Setipinna*** Swainson, 1839

*40. ***Setipinna taty*** (Valenciennes, 1848)

*41. ***Setipinna tenuifilis*** Valenciennes, 1848

Genus ***Stolephorus*** Lacepede, 1803

*42. ***Stolephorus andhraensis*** Babu Rao, 1965

*43. ***Stolephorus baganensis*** Hardenberg, 1931

*44. ***Stolephorus commersonii*** Lacepede, 1803

45. ***Stolephorus dubiosus*** Wongratana, 1983

*46. ***Stolephorus indicus*** (van Hasselt, 1823)

47. ***Stolephorus insularis*** Hardenberg, 1933

48. ***Stolephorus waitei* Jordan & Seale, 1926

Genus ***Thryssa*** Cuvier, 1829

*49. ***Thryssa dussumieri*** (Valenciennes, 1848)

*50. ***Thryssa gautamiensis*** Babu Rao, 1971

*51. ***Thryssa hamiltonii*** (Gray, 1853)

52. ***Thryssa kammalensoides*** Wongratana, 1983

*53. ***Thryssa mystax*** (Schneider, 1801)

*54. ***Thryssa purava*** (Hamilton, 1822)

55. ***Thryssa setirostris*** (Broussonet, 1782)

56. ***Thryssa stenosoma*** Wongratana, 1983

Order GONORHYNCHIFORMES

Family CHANIDAE

Genus ***Chanos*** Lacepede, 1803

57. ***Chanos chanos*** (Forsskal, 1775)

Order CYPRINIFORMES

Family CYPRINIDAE

Genus ***Catla*** Valenciennes, 1842

*58. ***Catla catla*** (Hamilton, 1822)

Genus ***Cirrhinus*** Cuvier, 1817

59. ***Cirrhinus cirrhosus* (Bloch, 1795)

60. ***Cirrhinus mrigala*** (Hamilton, 1822)

61. ***Cirrhinus reba*** (Hamilton, 1822)

Genus ***Danio*** Hamilton, 1822

62. ***Danio devario* (Hamilton, 1822)

Genus ***Esomus*** Swainson, 1839

*63. ***Esomus danricus*** (Hamilton, 1822)

Genus ***Labeo*** Cuvier, 1817

64. ***Labeo boga* (Hamilton, 1822)

65. ***Labeo boggut* (Sykes, 1838)

*66. ***Labeo calbasu*** (Hamilton, 1822)

67. ***Labeo fimbriatus*** (Bloch, 1795)

*68. ***Labeo rohita*** (Hamilton, 1822)

Genus ***Osteobrama*** Haeckel, 1842

69. ***Osteobrama cotio peninsularis* Silas, 1952

Genus ***Puntius*** Hamilton, 1822

70. ***Puntius conchonius* (Hamilton, 1822)

71. ***Puntius sophore* (Hamilton, 1822)

72. ***Puntius ticto*** (Hamilton, 1822)

73. ***Puntius vittatus*** Day, 1865

Genus ***Salmostoma*** Swainson, 1839

74. ***Salmostoma bacaila*** (Hamilton, 1822)

Family COBITIDAE

Genus ***Lepidocephalus*** Bleeker, 1859

75. ***Lepidocephalus guntea* (Hamilton, 1822)

Order SILURIFORMES

Family BAGRIDAE

Genus ***Aorichthys*** Wu, 1939

76. ***Aorichthys seenghala*** (Sykes, 1841)

Genus ***Mystus*** Scopoli, 1777

*77. ***Mystus gulio*** (Hamilton, 1822)

*78. ***Mystus vittatus*** (Bloch, 1797)

Genus ***Rita*** Bleeker, 1858

79. ***Rita pavimentatus* (Valenciennes, 1832)

Family SILURIDAE

Genus ***Wallago*** Bleeker, 1851

80. ***Wallago attu*** (Schneider, 1801)

Family SCHILBEIDAE

Genus ***Pseudeutropius*** Bleeker, 1862

81. ***Pseudeutropius atherinoides*** (Bloch, 1794)

Genus ***Silonia*** Swainson, 1839

82. ***Silonia childreni* (Sykes, 1838)

Family PANGASIIDAE

Genus ***Pangasius*** Valenciennes, 1849

*83. ***Pangasius pangasius*** (Hamilton, 1822)

Family SISORIDAE

Genus ***Bagarius*** Bleeker, 1853

84. ***Bagarius bagarius*** (Hamilton, 1822)

Family CLARIIDAE

Genus ***Clarias*** Scopoli, 1777

85. ***Clarias batrachus* (Linnaeus, 1758)

Family HETEROPNEUSTIDAE

Genus ***Heteropneustes*** Muller, 1840

86. ***Heteropneustes fossilis*** (Bloch, 1794)

Family ARIIDAE

Genus ***Ariodes*** Muller & Troschel, 1849

87. ***Ariodes dussumieri* (Valenciennes, 1840)

Genus ***Arius*** Valenciennes, 1840

88. ***Arius arius* (Hamilton, 1822)

*89. ***Arius jella*** Day, 1877

Family PLOTOSIDAE

Genus ***Plotosus*** Lacepede, 1803

*90. ***Plotosus canius*** Hamilton, 1822

Order AULOPIFORMES

Family SYNODONTIDAE

Genus ***Saurida*** Valenciennes, 1849

91. ***Saurida micropectoralis* Shindo & Yamada, 1972

92. ***Saurida tumbil*** (Bloch, 1795)

Genus ***Synodus*** Scopoli, 1777

93. ***Synodus indicus*** (Day, 1873)

Genus ***Trachinocephalus*** Gill, 1861

94. ***Trachinocephalus myops*** (Forster, 1801)

Family HARPADONTIDAE

Genus ***Harpadon*** Le Sueur, 1825

*95. ***Harpadon nehereus*** (Hamilton, 1822)

Order GADIFORMES

Family BREGMACEROTIDAE

Genus ***Bregmaceros*** Thompson, 1840

96. ***Bregmaceros macclellandii*** Thompson, 1840

Order OPHIDIIFORMES

Family OPHIDIIDAE

Genus ***Brotula*** Cuvier, 1829

97. ***Brotula multibarbata*** Temminck & Schlegel, 1846

Order BATRACHOIDIFORMES

Family BATRACHOIDIDAE

Genus ***Batrichthys*** Smith, 1934

98. ***Batrichthys grunniens*** (Linnaeus, 1758)

Order CYPRINODONTIFORMES

Family HEMIRAMPHIDAE

Genus ***Hyporhamphus*** Gill, 1859

*99. ***Hyporhamphus limbatus*** (Valenciennes, 1846)

100. ***Hyporhamphus xanthopterus*** (Valenciennes, 1846)

Genus ***Euleptorhamphus*** Gill, 1860

101. ***Euleptorhamphus viridis*** (van Hasselt, 1823)

Family BELONIDAE

Genus ***Strongylura*** van Hasselt, 1824

102. ***Strongylura leiura*** (Bleeker, 1851)

*103. ***Strongylura strongylura*** (van Hasselt, 1823)

Genus ***Xenentodon*** Regan, 1911

104. ***Xenentodon cancila*** (Hamilton, 1822)

Family ORYZIIDAE

Genus ***Orizias*** Jordan & Snyder, 1906

*105. ***Oryzias melastigma*** (McClelland, 1839)

Family APLOCHEILIDAE

Genus ***Aplocheilus*** McClelland, 1839

106. ***Aplocheilus blocki*** (Arnold, 1911)

Order ATHERINIFORMES

Family ATHERINIDAE

Genus ***Atherinomorus*** Fowler, 1903

107. ***Atherinomorus duodecimalis* (Valenciennes, 1835)

Order SYNGNATHIFORMES

Family SYNGNATHIDAE

Genus ***Halicampus*** Kaup, 1856

108. ***Halicampus koilomatodon*** (Bleeker, 1858)

Genus ***Hippichthys*** Bleeker, 1849

109. ***Hippichthys cyanospilos*** (Bleeker, 1854)

110. ***Hippichthys spicifer*** (Ruppell, 1838)

Genus ***Microphis*** Kaup, 1853

111. ***Microphis brachyurus*** (Bleeker, 1853)

Order SYNBRANCHIFORMES

Family SYNBRANCHIDAE

Genus ***Ophisternon*** McClelland, 1845

*112. ***Ophisternon bengalense*** McClelland, 1845

Order SCORPAENIFORMES

Family SCORPAENIDAE

Genus ***Minous*** Cuvier, 1829

*113. ***Minous monodactylus*** (Bloch & Schneider, 1801)

Genus ***Trachicephalus*** Swainson, 1839

114. ***Trachicephalus uranoscopus*** (Bloch & Schneider, 1801)

Family PLATYCEPHALIDAE

Genus ***Grammoplites*** Fowler, 1904

*115. ***Grammoplites scaber*** (Linnaeus, 1758)

Genus ***Platycephalus*** Bloch, 1795

*116. ***Platycephalus indicus*** (Linnaeus, 1758)

Order PERCIFORMES

Family CENTROPOMIDAE

Genus ***Lates*** Cuvier, 1828

*117. ***Lates calcarifer*** (Bloch, 1790)

Family AMBASSIDAE

Genus ***Ambassis*** Cuvier, 1828

*118. ***Ambassis commersoni*** Cuvier, 1828

119. ***Ambassis gymnocephalus* (Lacepede, 1802)

120. ***Ambassis kopsii* Bleeker, 1858

121. ***Ambassis miops* Gunther, 1871

Genus ***Pseudambassis*** Bleeker, 1874

122. ***Pseudambassis ranga*** (Hamilton, 1822)

Family SERRANIDAE

Genus ***Epinephelus*** Bloch, 1793

123. ***Epinephelus coioides* (Hamilton, 1822)

124. ***Epinephelus malabaricus*** (Schneider, 1801)

Genus ***Promicrops*** Gill, 1868

125. ***Promicrops lanceolatus*** (Bloch, 1790)

Family TERAPONIDAE

Genus ***Terapon*** Cuvier, 1816

*126. ***Terapon jarbua*** (Forrskal, 1775)

127. ***Terapon theraps*** (Cuvier, 1829)

Family APOGONIDAE

Genus ***Archamia*** Gill, 1863

*128. ***Archamia lineolata*** (Ehrenberg, 1828)

Family SILLAGINIDAE

Genus ***Sillaginopsis*** Gill, 1861

129. ***Sillaginopsis panijus*** (Hamilton, 1822)

Genus ***Sillago*** Cuvier, 1817

*130. ***Sillago sihama*** (Forsskal, 1775)

131. ***Sillago vincenti* McKay, 1980

Family LACTARIIDAE

Genus ***Lactarius*** Valenciennes, 1833

132. ***Lactarius lactarius*** (Schneider, 1801)

Family RACHYCENTRIDAE

Genus ***Rachycentron*** Kaup, 1826

133. ***Rachycentron canadus* (Linnaeus, 1766)

Family CARANGIDAE

Genus ***Alectis*** Rafinesque, 1815

134. ***Alectis indicus*** (Ruppell, 1830)

Genus ***Atropus*** Oken, 1817

*135. ***Atropus atropos*** (Bloch, 1801)

Genus ***Carangoides*** Bleeker, 1851

136. ***Carangoides oblongus*** (Cuvier, 1833)

Genus ***Caranx*** Lacepede, 1801

137. ***Caranx carangus*** (Bloch, 1793)

138. ***Caranx ignobilis* (Forsskal, 1775)

*139. ***Caranx para*** Cuvier, 1833

140. ***Caranx sexfasciatus* Quoy & Gaimard, 1825

Genus ***Megalaspis*** Bleeker, 1851

141. ***Megalaspis cordyla*** (Linnaeus, 1758)

Genus ***Parastromateus*** Cuvier, 1831

142. ***Parastromateus niger*** (Bloch, 1795)

Genus ***Scomberoides*** Lacepede, 1802

*143. ***Scomberoides lysan*** (Forrskal, 1775)

144. ***Scomberoides tala*** (Cuvier, 1832)

145. ***Scomberoides tol*** (Cuvier, 1832)

Genus ***Trachinotus*** Lacepede, 1801

146. ***Trachinotus blochii*** (Lacepede, 1801)

147. ***Trachinotus mookalee* Cuvier, 1832

Family LEIOGNATHIDAE

Genus ***Leiognathus*** Lacepede, 1803

148. ***Leiognathus blochii* (Valenciennes, 1835)

149. ***Leiognathus brevirostris*** (Valenciennes, 1835)

150. ***Leiognathus dussumieri*** (Valenciennes, 1835)

*151. ***Leiognathus equulus*** (Forsskal, 1775)

152. ***Leiognathus fasciatus*** (Lacepede, 1803)

*153. ***Leiognathus splendens*** (Cuvier, 1829)

Genus ***Secutor*** Gistel, 1848

*154. ***Secutor insidiator*** (Bloch, 1787)

*155. ***Secutor ruconius*** (Hamilton, 1822)

Family LUTJANIDAE

Genus ***Lutjanus*** Bloch, 1790

*156. ***Lutjanus argentimaculatus*** (Forsskal, 1775)

157. ***Lutjanus fulviflammus* (Forsskal, 1775)

*158. ***Lutjanus johni*** (Bloch, 1792)

159. ***Lutjanus kasmira*** (Forsskal, 1775)

160. ***Lutjanus russelli* (Bleeker, 1849)

Family. LOBOTIDAE

Genus ***Lobotes*** Cuvier, 1829

161. ***Lobotes surinamensis*** (Bloch, 1790)

Family GERREIDAE

Genus ***Gerres*** Cuvier, 1824

162. ***Gerres acinaces* Bleeker, 1854

*163. ***Gerres filamentosus*** Cuvier, 1829

164. ***Gerres lucidus* Cuvier, 1830

165. ***Gerres macracanthus* Bleeker, 1854

166. ***Gerres oyena*** (Forsskal, 1775)

Family HAEMULIDAE

Genus ***Pomadasys*** Lacepede, 1803

*167. ***Pomadasys argyreus*** (Valenciennes, 1833)

*168. ***Pomadasys kaakan*** (Cuvier, 1830)

*169. ***Pomadasys maculatum*** (Bloch, 1797)

170. ***Pomadasys olivaceum*** (Day, 1875)

Family SPARIDAE

Genus ***Acanthopagrus*** Peters, 1855

171. ***Acanthopagrus berda*** (Forrskal, 1775)

172. ***Acanthopagrus latus*** (Houttuyn, 1782)

Family SCIAENIDAE

Genus ***Chrysochir*** Trewavas & Yazdani, 1966

173. ***Chrysochir aureus* (Richardson, 1846)

Genus ***Daysciaena*** Talwar, 1970

174. ***Daysciaena albida* (Cuvier, 1830)

Genus ***Dendrophysa*** Trewavas, 1964

*175. ***Dendrophysa russelli*** (Cuvier, 1830)

Genus ***Johnieops*** Mohan, 1972

176. ***Johnieops aneus*** (Bloch, 1793)

*177. ***Johnieops dussumieri*** (Cuvier, 1830)

*178. ***Johnieops sina*** (Cuvier, 1830)

Genus ***Johnius*** Bloch, 1793

179. ***Johnius belangeri* (Cuvier, 1830)

*180. ***Johnius coitor*** (Hamilton, 1822)

*181. ***Johnius dussumieri*** (Valenciennes, 1833)

Genus ***Nibea*** Jordan & Thompson, 1911

182. ***Nibea maculata* (Schneider, 1801)

*183. ***Nibea soldado*** (Lacepede, 1802)

Genus ***Otolithes*** Fowler, 1933

184. ***Otolithes ruber* (Schneider, 1801)

Genus ***Panna*** Mohan, 1969

*185. ***Panna microdon*** (Bleeker, 1849)

Genus ***Protonibea*** Trewavas, 1971

186. ***Protonibea diacanthus*** (Lacepede, 1802)

Family MULLIDAE

Genus ***Upeneus*** Cuvier, 1829

187. ***Upeneus sulphureus*** Cuvier, 1829

Family DREPANIDAE

Genus ***Drepane*** Cuvier, 1831

188. ***Drepane longimanus* (Bloch & Schneider, 1801)

189. ***Drepane punctatus*** (Linnaeus, 1758)

Family PLATACIDAE

Genus ***Platax*** Cuvier, 1817

190. ***Platax orbicularis*** (Forsskal, 1775)

191. ***Platax teira*** (Forsskal, 1775)

Family SCATOPHAGIDAE

Genus ***Scatophagus*** Cuvier, 1831

*192. ***Scatophagus argus*** (Linnaeus, 1766)

Family NANDIDAE

Genus ***Nandus*** Valenciennes, 1831

193. ***Nandus nandus*** (Hamilton, 1822)

Family CICHLIDAE

Genus ***Etroplus*** Cuvier, 1830

194. ***Etroplus maculatus* (Bloch, 1785)

Family MUGILIDAE

Genus *Liza* Jordan & Swain, 1884

195. ***Liza macrolepis*** (Smith, 1849)

*196. ***Liza melinoptera*** (Valenciennes, 1836)

*197. ***Liza parsia*** (Hamilton, 1822)

198. ***Liza subviridis* (Valenciennes, 1836)

*199. ***Liza tade*** (Forsskal, 1775)

Genus *Mugil* Linnaeus, 1758

*200. ***Mugil cephalus*** Linnaeus, 1758

Genus *Rhinomugil* Gill, 1863

*201. ***Rhinomugil corsula*** (Hamilton, 1822)

Genus *Valamugil* Smith, 1948

*202. ***Valamugil cunnesius*** (Valenciennes, 1836)

203. ***Valamugil seheli*** (Forsskal, 1775)

Family SPHYRAENIDAE

Genus *Sphyraena* Rose, 1793

*204. ***Sphyraena jello*** Cuvier, 1829

205. ***Sphyraena obtusata* Cuvier, 1829

Family POLYNEMIDAE

Genus *Eleutheronema* Bleeker, 1862

*206. ***Eleutheronema tetradactylum*** (Shaw, 1804)

Genus *Polydactylus* Lacepede, 1803

207. ***Polydactylus sexfilis*** (Valenciennes, 1831)

208. ***Polydactylus sextarius*** (Bloch, 1801)

Family URANOSCOPIDAE

Genus *Uranoscopus* Linnaeus, 1758

209. ***Uranoscopus cognatus* Cantor, 1850

Family BLENNIDAE

Genus *Omobranchus* Ehrenberg, 1836

210. ***Omobranchus ferox*** (Herre, 1927)

211. ***Omobranchus punctatus*** (Valenciennes, 1836)

212. ***Omobranchus zebra*** (Bleeker, 1868)

Family CALLIONYMIDAE

Genus *Callionymus* Linnaeus, 1758

213. ***Callionymus filamentosus* (Valenciennes, 1837)

*214. ***Callionymus fluviatilis*** Day, 1876

215. ***Callionymus sagitta*** Pallas, 1770

Family GOBIIDAE

Genus *Acentrogobius* Bleeker, 1874

216. ***Acentrogobius caninus*** (Valenciennes, 1837)

*217. ***Acentrogobius cyanomos*** (Bleeker, 1849)

218. ***Acentrogobius madraspatensis*** (Day, 1868)

219. ***Acentrogobius masoni* (Day, 1873)

*220. ***Acentrogobius viridipunctatus*** (Valenciennes, 1837)

Genus *Apocryptes* Valenciennes, 1837

221. ***Apocryptes bato*** (Hamilton, 1822)

Genus *Apocryptodon* Bleeker, 1874

*222. ***Apocryptodon madurensis*** (Bleeker, 1849)

Genus *Bathygobius* Bleeker, 1878

223. ***Bathygobius fuscus*** (Ruppell, 1828)

224. ***Bathygobius ostreicola*** (Chaudhuri, 1916)

Genus *Boleophthalmus* Valenciennes, 1837

*225. ***Boleophthalmus boddarti*** (Pallas, 1770)

226. ***Boleophthalmus dussumieri*** Valenciennes, 1837

Genus *Callogobius* Bleeker, 1874

227. ***Callogobius melanoptera*** Rao, 1971

Genus *Chiramenu* Rao, 1971

228. ***Chiramenu fluviatilis*** Rao, 1971

Genus ***Favonigobius*** Whitley, 1930

*229. ***Favonigobius reichei*** (Bleeker, 1853)

Genus ***Glossogobius*** Gill, 1862

*230. ***Glossogobius biocellatus*** (Valenciennes, 1837)

*231. ***Glossogobius giuris*** (Hamilton, 1822)

Genus ***Gobiopsis*** Steindachner, 1860

232. ***Gobiopsis macrostoma*** Steindachner, 1860

Genus ***Mahidolia*** Smith, 1932

233. ***Mahidolia mystacina*** (Valenciennes, 1837)

Genus ***Oligolepis*** Bleeker, 1874

*234. ***Oligolepis acutipennis*** (Valenciennes, 1837)

Genus ***Oxyurichthys*** Bleeker, 1860

*235. ***Oxyurichthys formosanus*** Nichols, 1959

*236. ***Oxyurichthys microlepis*** (Bleeker, 1849)

*237. ***Oxyurichthys tentacularis*** (Valenciennes, 1837)

Genus ***Parachaeturichthys*** Bleeker, 1874

*238. ***Parachaeturichthys polynema*** (Bleeker, 1853)

Genus ***Paragobiopsis*** Koumans, 1841

239. ***Paragobiopsis orbicularis*** Rao, 1971

Genus ***Parapocryptes*** Bleeker, 1874

*240. ***Parapocryptes macrolepis*** (Bleeker, 1851)

241. ***Parapocryptes rictuosus* (Valenciennes, 1837)

*242. ***Parapocryptes serperaster*** (Richardson, 1846)

Genus ***Periophthalnus*** Bloch & Schneider, 1801

*243. ***Periophthalmus koelreuteri*** (Pallas, 1770)

Genus ***Pseudapocryptes*** Bleeker, 1874

*244. ***Pseudapocryptes lanceolatus*** (Bloch & Schneider, 1801)

Genus ***Scartelaos*** Swainson, 1847

245. ***Scartelaos histophorus*** (Valenciennes, 1837)

Genus ***Silhouttea*** Smith, 1959

246. ***Silhouttea indicus*** Rao, 1971

Genus ***Stigmatogobius*** Bleeker, 1874

247. ***Stigmatogobius javanicus* (Bleeker, 1856)

248. ***Stigmatogobius micrognathus*** Rao, 1971

249. ***Stigmatogobius minima*** (Hora, 1923)

*250. ***Stigmatogobius sadanundio*** (Hamilton, 1822)

251. ***Stigmatogobius yanamensis*** Rao, 1971

Genus ***Yongeichthys*** Whitley, 1932

*252. ***Yongeichthys criniger*** (Valenciennes, 1837)

Family GOBIOIDIDAE

Genus ***Odontamblyopus*** Bleeker, 1874

253. ***Odontamblyopus rubicundus*** (Hamilton, 1822)

Genus ***Pseudotrypauchen*** Hardenberg, 1931

*254. ***Pseudotrypauchen multiradiatus*** Hardenberg, 1931

Genus ***Taenioides*** Lacepede, 1798

*255. ***Taenioides anguillaris*** (Linnaeus, 1758)

*256. ***Taenioides buchanani*** (Day, 1873)

257. ***Taenioides cirratus*** (Blyth, 1861)

Family TRYPAUCHENIDAE

Genus ***Amblyotrypauchen*** Hora, 1924

258. ***Amblyotrypauchen arctocephalus*** (Alcock, 1890)

Genus ***Ctenotrypauchen*** Steindachner, 1867

259. ***Ctenotrypauchen microcephalus*** (Bleeker, 1860)

Genus ***Trypauchen*** Valenciennes, 1837

*260. ***Trypauchen vagina*** (Bloch & Schneider, 1801)

Family ELEOTRIDIDAE

Genus ***Bunaka*** Herre, 1927

261. ***Bunaka gyrinoides*** (Bleeker, 1853)

Genus ***Butis*** Bleeker, 1874

*262. ***Butis butis*** (Hamilton, 1822)

*263. ***Butis melanostigma*** (Bleeker, 1849)

Genus ***Eleotris*** Schneider, 1801

*264. ***Eleotris fusca*** (Schneider, 1801)

265. ***Eleotris melanosoma* Bleeker, 1852

Genus ***Incara*** Rao, 1971

266. ***Incara multisquamatus*** Rao, 1971

Genus ***Odonteleotris*** Gill, 1863

267. ***Odonteleotris canina*** (Bleeker, 1849)

Genus ***Ophieleotris*** Aurich, 1938

268. ***Ophieleotris aporos* (Bleeker, 1854)

Genus ***Prionobutis*** Bleeker, 1874

*269. ***Prionobutis koilomatodon*** (Bleeker, 1849)

Family KURTIDAE

Genus ***Kurtus*** Bloch, 1786

*270. ***Kurtus indicus*** Bloch, 1786

Family ACANTHURIDAE

Genus ***Acanthurus*** Forsskal, 1775

271. ***Acanthurus bleekeri*** Gunther, 1861

272. ***Acanthurus xanthopterus*** Valenciennes, 1835

Family SIGANIDAE

Genus ***Siganus*** Forsskal, 1775

273. ***Siganus canaliculatus* (Park, 1797)

Family TRICHIURIDAE

Genus ***Eupleurogrammus*** Gill, 1863

274. ***Eupleurogrammus muticus*** (Gray, 1831)

Genus ***Lepturacanthus*** Fowler, 1905

*275. ***Lepturacanthus savala*** (Cuvier, 1829)

Genus ***Trichiurus*** Linnaeus, 1758

*276. ***Trichiurus lepturus*** Linnaeus, 1758

Family SCOMBRIDAE

Genus ***Rastrelliger*** Jordan & Starks, 1908

*277. ***Rastrelliger kanagurta*** (Cuvier, 1817)

Genus ***Scomberomorus*** Lacepede, 1802

*278. ***Scomberomorus commerson*** (Lacepede, 1800)

*279. ***Scomberomorus guttatus*** (Bloch & Schneider, 1801)

Family STROMATEIDAE

Genus ***Pampus*** Bonaparte, 1841

*280. ***Pampus argenteus*** (Euphrasen, 1788)

281. ***Pampus chinensis*** (Euphrasen, 1788)

Family ANABANTIDAE

Genus ***Anabas*** Cuvier & Cloquet, 1816

282. ***Anabas cobojius* (Hamilton, 1822)

Family BELONTIDAE

Genus ***Colisa*** Cuvier, 1831

283. ***Colisa fasciatus*** (Schneider, 1801)

Family CHANNIDAE

Genus ***Channa*** Scopoli, 1777

*284. ***Channa punctatus*** (Bloch, 1793)

Family MASTACEMBELIDAE

Genus ***Macrognathus*** Lacepede, 1800

*285. ***Macrognathus aral*** (Bloch & Schneider, 1801)

286. ***Macrognathus pancalus* Hamilton, 1822

Order PLEURONECTIFORMES

Family BOTHIDAE

Genus ***Pseudorhombus*** Bleeker, 1862

*287. ***Pseudorhombus arsius*** (Hamilton, 1822)

*288. ***Pseudorhombus elevatus*** Ogilby, 1912

289. ***Pseudorhombus triocellatus* (Bloch, 1801)

Family SOLEIDAE

Genus ***Euryglossa*** Kaup, 1858

290. ***Euryglossa orientalis*** (Bloch & Schneider, 1801)

291. ***Euryglossa pan*** (Hamilton, 1822)

Genus ***Solea*** Quensel, 1806

292. ***Solea ovata*** Richardson, 1846

Genus ***Synaptura*** Cantor, 1850

293. ***Synaptura albomaculata* Kaup, 1858

Family CYNOGLOSSIDAE

Genus ***Cynoglossus*** Hamilton, 1822

294. ***Cynoglossus arel* (Schneider, 1801)

295. ***Cynoglossus bilineatus* (Lacepede, 1802)

296. ***Cynoglossus cynoglossus* (Hamilton, 1822)

297. ***Cynoglossus lida* (Bleeker, 1851)

*298. ***Cynoglossus lingua*** Hamilton, 1822

299. ***Cynoglossus macrostomus* Norman, 1928

300. ***Cynoglossus punticeps* (Richardson, 1846)

301. ***Cynoglossus semifasciatus*** Day, 1876

Genus ***Paraplagusia*** Bleeker, 1865

*302. ***Paraplagusia bilineata*** (Bloch, 1784)

303. ***Paraplagusia blochii* (Bleeker, 1851)

Order TETRAODONTIFORMES

Family TRIACANTHIDAE

Genus ***Triacanthus*** Oken, 1817

304. ***Triacanthus brevirostris*** Schlegel, 1850

Family OSTRACIIDAE

Genus ***Ostracion*** Linnaeus, 1758

305. ***Ostracion tuberculatus*** Linnaeus, 1758

Family TETRAODONTIDAE

Genus ***Arothron*** Muller, 1841

306. ***Arothron reticularis*** (Bloch & Schneider, 1801)

307. ***Arothron stellatus*** (Bloch & Schneider, 1801)

Genus ***Chelonodon*** Muller, 1839

*308. ***Chelonodon fluviatilis*** (Hamilton, 1822)

309. ***Chelonodon patoca* (Hamilton, 1822)

Genus ***Lagocephalus*** Swainson, 1839

*310. ***Lagocephalus lunaris*** (Bloch & Schneider, 1801)

311. ***Lagocephalus spadiceus* (Richardson, 1845)

Genus ***Takifugu*** Abe, 1949

*312. ***Takifugu oblongus*** (Bloch, 1786)

SYSTEMATIC ACCOUNT

1. *Scoliodon laticaudus* Muller & Henle

1838. *Scoliodon laticaudus* Muller and Henle, *Syst. Bescher, Plagiost.*, (1) : 27 ("Aus Indien").

Material examined : 1 ex., 240 mm, TV, 24.11.93, Antervedi, F-1238; 1 ex., 260 mm, TV, 03.12.92, Antervedi, F-1669.

Diagnostic features : Body slender and fusiform. Head broadly depressed with a long, flat, trowel-shaped snout. Upper labial furrow poorly developed, as a short crease directed at right angle from lower furrow. Teeth small, smooth-edged, blade-like, with oblique cusps, distal blades and no cusplets. Free rear-tip of first D about over midbases of V; 2nd D considerably smaller than first D. P broadly triangular, its length from origin to free rear tips about equal to their anterier margins. Postventral margin of C only moderately concave. Bronzy grey above, white below; fins often darker than body.

Distribution : Indo-west Pacific. Inhabits inshore and offshore coasts, enters estuaries/ brackish waters.

Remarks : Recorded for the first time from the Godavari estuary.

2. *Himantura uarnak* (Forsskal)

1775. *Raja uarnak* Forsskal, *Descript. Animal.* : viii, 18 (Arabia).

1991. *Himantura uarnak* : Talwar and Jhingran, *Inland Fishes*, 1 : 46.

Material examined : Not examined by us.

Diagnostic features : Disc diamond-shaped, with median tubercles. Four fleshy papillae on floor of mouth. Tail longer than disc, with a single functional sting. Dorsal surface brown to balck with cream or yellow reticulation. Juveniles with alternating dark and light bands on tail.

Distribution : Indo-west Pacific. Inhabits shallow coastal waters, lagoons and estuaries.

3. *Aetobatus narinari* (Euphrasen)

1790. *Raja narinari* Euphrasen, *Handl. K. Vetensk. Akad.*, 11 : 217, pl. 10 (St. Bartholomew, West Indies).

1991. *Aetobatus narinari* : Talwar and Jhingran, *Inland Fishes*, 1 : 51.

Material examined : Not examined by us.

Diagnostic features : Disc rhomboid, much broader than long. Snout 1.3 in mouth width; jaws with a single series of large teeth; floor and roof of mouth with a row of papillae; outer corners of P pointed. Dorsal surface of disc gray to brown with whitish spots or rings.

Distribution : Atlantic, Indian and Pacific Oceans. Inhabits coastal surface waters, enters estuaries.

4. *Notopterus notopterus* (Pallas)

1769. *Gymnotus notopterus* Pallas, *Spicil. Zool.*, 7 : 40, pl. 6, fig. 2 (? Indian Ocean).

1991. *Notopterus notopterus* : Talwar and Jhingran, *Inland Fishes*, 1 : 64.

Material examined : Not examined by us.

Diagnostic features : D 7-9; A + C 100-110; V 5-6. Body oblong, compressed; head 4.5 in SL; preorbital serrated; maxilla extends to below middle of eye. D origin nearer to snout-tip than to C base. Scales minute, larger on opercles. Silvery-white with fine gray spots.

Distribution : Pakistan, India, Nepal, Bangladesh, Myanmar, Thailand, Malaya and Indonesia. Inhabits fresh and brackish waters.

5. *Elops machnata* (Forsskal)

1775. *Agentina machnata* Forsskal, *Descript. Animal.* : xii, 68 (Jiddah, Red Sea).

1991. *Elops machnata* : Talwar and Jhingan, *Inland Fishes*, 1 : 67.

Material examined : 1 ex., 160 mm, CANR, 21.10.92, B. V. Palem, F-979; 1 ex., 103 mm, CANR, 22.10.92, Kakinada, F-1082; 1 ex., 110 mm, TV, 25.11.93, Ramannapalem, F-1246; 1 ex., 80 mm, CANR, 15.09.93, Antervedi, F-1292.

Diagnostic features : D 20-25; A 14-17; P 17-18; V 12-16; GR (7-9) + (13-15); LL 90-100. Body round or oval in cross-section; maxilla reaching well behind eye; teeth on jaws villiform. D origin in posterior half of body, behind V base. A base shooter than D base. Back blue or gray, sides silvery with yellow tinge.

Distribution : Indo-west Pacific. Inhabits coastal waters, entering lagoons and estuaries.

Remarks : Earlier recorded from Godavari estuary as *Elops saurus* (Linnaeus) by Babu Rao (1976).

6. *Megalops cyprinoides* (Broussonet)

1782. *Clupea cyprinoides* Broussonet, *Ichthyol.* : pl. 9 (Tanna Ids., New Hebrides).

1991. *Megalops cyprinoides* : Talwar and Jhingan, *Inland Fishes,* 1 : 69.

Material examined : 1 ex., 165 mm, CANR, 22.10.92, Kakinada, F-1074.

Diagnostic features : D 17-20; A 24-31; P 15-16; V 10-11; GR (15-17) + (30-35); LL 37-42. Eyes large, more than interorbital space; lower jaw projecting; no teeth on jaws. Last ray of D produced, filamentous; that of A slightly elongated; A base longer than D base. Blue or green above, flanks silvery.

Distribution : Indo-west Pacific. Coastal, pelagic, solitary, swift-swimming, predatory species; entering lagoons, estuaries and fresh waters.

7. *Moringua raitaborua* (Hamilton)

1822. *Muraena raitaborua* Hamilton, *Fishes of Ganges* : 25, 364 (Ganges river).

1991. *Moringua raitaborua* : Talwar and Jhingran, *Inland fishes,* 1 : 77.

Material examined : 1 ex., 117 mm TL, TV, 04.12.92, Chinchunada, F-804; 2 ex., 235-250 mm, TV, 21.11.92, B. V. Palem, F-1289.

Diagnostic features : Depth 31-45 in TL; head not conspicuous from rest of body, 8-10 in TL; occipital crest not elevated. Purplish above, silvery below.

Distribution : India : Gangetic estuary and probably Bangladesh.

Remarks : Recorded for the first time from Godavari estuary, and the range extended. The report of occurrence of *M. macrochir* Bleeker, 1855 (Rao, 1976) is questionable since its range ceases in the Indonesian group of Islands. It may be a misidentification by Dr. V. V. Rao—*M. raitaborua* for *M. macrochir.* On examination *M. arundinacea (nec* McClelland) reported by Mohapatra and Venkateswarlu (1995) turned out to be *M. raitaborua.*

8. *Lycodontis punctatus* (Bloch & Schneider)

1801. *Muraena punctatus* Bloch and Schneider, *Syst. Ichthyol.* : 526.

1984. *Lycodontis punctatus* : Castle, *in* Fischer and Bianchi, *FAO species identification sheets for fishery purposes. W. Indian Ocean (Fishing Area 51)* : Muraenidae : 5 (name only).

Material examined : Not examined by us.

Diagnostic features : Depth 16-23, head 7.5-8 in TL; D 4 times as high as A; teeth on jaws uniserial, 18-22 on each side of mandible, the anterior longest; vomer with 4-9 teeth in single row. Purplish black; with black streaks radiating from eye; body covered with white spots having dark edge, larger posteriorly but not more than the size of the pupil of eye.

Distribution : Coromandel coast of India.

9. *Lycodontis sathete* (Hamilton)

1822. *Muraenophis sathete* Hamilton, *Fishes of Ganges* : 17, 363 (Gangetic estuary near Calcutta).

1991. *Lycodontis sathete* : Talwar and Jhingran, *Inland Fishes,* 1 : 79.

Material examined : 1 ex., 385 mm, CANR, 21.10.92, B. V. Palem, F-983; 1 ex., 580 mm, CANR, 18.10.92, Dariyal Teppa, F-1003, 1 ex., 900 mm, TV, 26.11.92, Bhairavapalem, F-1213; 1 ex., 390 mm, TV. 21.11.92, B. V. Palem, F-1286.

Diagnostic features : Tail longer than rest of body; eyes small; teeth small, biserial, inner series

enlarged. Dark greenish-olive, becoming greenish-yellow below; with silvery dots along the sides, commonly confused as lateral line pores.

Distribution : India : Hooghly estuary and Bay of Bengal.

Remarks : Recorded for the first time from the Godavari estuary.

10. *Thyrsoidea macrura* (Bleeker)

1854. *Muraena macrurus* Bleeker, *Nat. Tijdschr. Ned.-Indie*, 7 : 324 (Indonesia).

1991. *Thyrsoidea macrura* : Talwar and Jhingran, *Inland Fishes*, 1 : 80.

Material examined : 1 ex., 715 mm, CANR, 18.10.92, Dariyal Teppa, F-1013.

Diagnostic features : Body very elongate and slender; head 12, depth about 40 in TL; tail twice as long as rest of body. Mouth very large, extending to well beyond eye; biserial sharp teeth on jaws, those in front and in inner row longer; a few depressible fangs on intermaxillary; uniserial, much smaller, teeth on vomer. D inserted on head before gill-opening. Brownish-gray above, lighter below.

Distribution : Indo-west Pacific. Inhabits turbid waters of estuaries.

Remarks : Recorded for the first time from the Godavari estuary.

11. *Bascanichthys deraniyagalai* Menon

1961. *Bascanichthys deraniyagalai* Menon, *J. zool. Soc. India*, 13 (1) : 13, fig. (Arasalar river at Karaikal, Tamil Nadu).

Material examined : 1 ex., 283 mm, CANR, 13.01.95, Veemuladeevi, F-2914.

Diagnostic features : Body slender, cylindrical; trunk slightly longer than tail. Snout blunt; eyes small; mouth small; teeth small, conical, uniserial on jaws. Gill-opening lateral, nearly horizontal. D origin well forward on head, a little before gill-opening. P vestigial, as a flap of skin. Olive-brown dorsally, yellow ventrally.

Distribution : *In India* : Arasalar river mouth (Tamil Nadu); Sri Lanka.

Remarks : The identification was confirmed after examining the type specimens at Z.S.I., H.Q., Calcutta. This is the first record of this species outside its type locality and since its discovery.

12. *Cirrhimuraena playfairii* (Gunther)

1870. *Ophichthys playfairii* Gunther, *Cat. Brit. Mus.*, **8 : 76** (Zanzibar).

1986. *Cirrhimuraena playfairii* : McCosker and Castle, *in* Smith and Heemstra, *Smith's Sea Fishes* : 179. Fig. 42.6.

Material examined : 1 ex., 500 mm, SCN, 18.03.95, Upapara, F-1576.

Diagnostic features : Head 3.0-3.8 in trunk, 11-14 in TL; depth 35-40, tail 1.5 in TL; P well developed, 3.5-3.8 in head; a fringe of cirri along upper lip; lower lip entire. No canine teeth; all teeth small, slender, sharp; uniserial or biserial on jaws and vomer in young, increasing to 3-4 series with age; a few teeth on intermaxillary. Gill opening mid lateral; D origin ahead of gill openings; P restricted to upper half of gill-opening; tail tip a hard finless point.

Distribution : Indo-Pacific

Remarks : Occurrence in Godavari estuary at Yanam is recently reported by Rema Devi and Ravichandran (1997).

13. *Muraenichthys gymnopterus* (Bleeker)

1853. *Muraena gymnopterus* Bleeker, *Verh. batav. Gen. Kunst. Wet*, 25 : 52.

1913. *Muraenichthys gymnopterus* : Weber and de Beaufort, *Fish. Indo-Aust. Archip.*, 3 : 276.

Material examined : 1 ex., 255 mm, TV, 21.11.92, B. V. Palem, F-1288.

Diagnostic features : Body depth about 30; head 7.5-8.5 in TL. D origin in advance of vent, nearer to vent than gill-opening. Cleft of mouth reaching more than 3 eye-diameter behind eye. Vomerine and mandibular teeth anteriorly 3 rows, and posteriorly 1-2 rows; maxillary teeth in narrow band. Brownish.

Distribution : India, eastward to west-Pacific.

Remarks : This is the first record of occurrence from the Godavari estuary.

14. ***Muraenichthys macropterus*** Bleeker

1857. *Muraenichthys macropterus* Bleeker, *Act. Soc. Sc. Indo-neerl.*, 2 : 91 (Ambon).

Material examined : 1 ex., 255 mm, CANR, 29.01.95, Coringa channel, F-1282.

Diagnostic features : Body depth 28-40, head about 7.5 in TL. D origin in advance of vent, nearer to gill openings than to vent. Cleft of mouth reaching behind eye. Teeth in jaws and vomer biserial. Brown.

Distribution : India, eastward to west-Pacific.

Remarks : Recorded for the first time from the Godavari estuary.

15. ***Pisodonophis boro*** (Hamilton)

1822. *Ophisurus boro* Hamilton, *Fishes of Ganges* : 20, 363, pl. 5, fig. 5 (Hooghly estuary near Calcutta).

1991. *Pisodonophis boro* : Talwar and Jhingran, *Inland Fishes*, 1 : 86.

Material examined : 1 ex., 313 mm, CANR, 21.10.92, B. V. Palem. F-981; 1 ex., 340 mm, TV, 24.11.92, Coringa, F-1042; 2 ex., 335-760 mm, TV, 26.11.92, Bhairavapalem. F-1214; 4 ex., 270-415 mm, TV, 21.11.92, B. V. Palem, F-1285.

Diagnostic features : Body depth 30-36; head 9-12 (3.5-4 in trunk); tail 1.6-1.8 in TL. Teeth molariform, multiserial bands on jaws and vomer. D origin about P length behind P tip; tail tip stiff and finless. Uniform olive-brown above, lighter below; D with a narrow black edge.

Distribution : Indo-Pacific. Inhabits mostly in estuaries, entering fresh water and paddy fields.

16. ***Ariosoma anago*** (Temminck & Schlegel)

1846. *Conger anago* Temminck and Schlegel, *Fauna Japonica, Pisces* : 259, pl. 113, fig. 1 (Japan).

1955. *Ariosoma anago* : Munro, *The marine and fresh water fishes of Ceylon* : 64, pl. 12. Fig. 180.

Material examined : Not examined by us.

Diagnostic features : D 170-190 (about 80 before vent); A 124-135; P 14; LL pore about 150 (about 60 before vent). Depth 16-18, head 6 in TL. Anterior nostril tubular. Teeth in several series, pointed and not forming cutting edge. D origin above P base. Brown to grayish.

Distribution : From east coast of India to Malaya Archipelago, Japan.

17. ***Uroconger lepturus*** (Richardson)

1845. *Conger lepturus* Richardson, *Zool. Voy. Sulphur* : 106, pl. 56, Figs. 1-6 (Canton).

1984. *Uroconger lepturus* : Talwar and Kacker, *Commercial Sea Fishes of India* : 232.

Material examined : 3 ex., 225-285 mm, CANR, 29.01.95, Coringa Channel, F-1281; 1 ex., 270 mm, TV, 24.04.95, Antervedi, F-1666.

Diagnostic features : Body elongate, cylindrical, tail tapering to a point. Head 7.4-8.3, depth 20-25 in TL. Snout broad, blunt, projecting in front of lower jaw. Teeth prominent and sharp, biserial on jaws, the inner row larger; 10-20 small teeth in one row on vomer; intermaxillary teeth in a small patch, almost exposed outside of mouth when closed. Light gray-brown, lighter below, fins darker, LL pores pale.

Distribution : Indo-Pacific.

18. ***Congresox talabon*** (Cuvier)

1829. *Conger talabon* Cuvier, *Regne Animal*, 2 (ed. 2.) : 350.

1991. *Congresox talabon* : Talwar and Jhingran, *Inland Fishes*, 1 : 89.

Material examined : 2 ex., 230-270 mm, CANR, 29.01.95, Coringa Channel, F-1279.

Diagnostic features : D 70-75 rays before vent; LL 35-40 pores before vent; P 2.5-3.0 in head; teeth on lower jaws and vomer sharp, conical, needle-like.

Distribution : East coast of Inida to Indonesia.

Remarks : This is the first record of occurrence from the Godavari estuary.

19. *Muraenesox bagio* (Hamilton)

1822. *Muraena bagio* Hamilton, *Fishes of Ganges* : 364 (Ganges estuary).

1991. *Muraenesox bagio* : Talwar and Jhingran, *Inland Fishes*, 1 : 91.

Material examined : 2 exs., 204-312 mm, CANR, 20.10.92, Cholangi Channel mouth, F-995; 2 ex., 150-292 mm, CANR, 18.10.92, Deriyal Teppa, F-1008; 2 ex., 315-345 mm, TV, 26.11.92, Bhairavapalem, F-1215; 3 ex., 195-270 mm, CANR, 29.01.95, Coringa Channel, F-1280; 5 ex., 180-290 mm, TV, 21.11.92, B. V. Palem, F-1284.

Diagnostic features : D 47-59 before vent; LL pores 33-39 before vent; eye about 3 in snout; interorbital width 10-11 in head; largest teeth on lower jaw and vomer laterally compressed, sharp with prominent anterior and posterior basal bulges.

Distribution : Indo-west Pacific. Inhabits coastal soft bottoms and estuaries.

Remarks : This is the first record of occurrence from the Godavari estuary.

20. *Anodontosoma chacunda* (Hamilton)

1822. *Clupanodon chacunda* Hamilton, *Fishes of Ganges* : 246 (Ganges estuaries).

1991. *Anodontosoma chacunda* : Talwar and Jhingran, *Inland fishes*, 1 : 104.

Material examined : 3 ex., 90-97 mm, CANR, 19.10.92, Cholangi Channel mouth, F-976; 1 ex., 140 mm, TV, 21.11.93, Antervedi, F-1599; 3 ex., 57-64 mm, CANR, 24.07.95, Chinchunada, F-1612.

Diagnostic features : D iii-v, 13-15; A ii-iv, 16-18; P i, 14-15; V i, 7; lower GR 54-96, shorter than corresponding gill-filaments; LL 40-43; belly scutes (15-18) + (9-12). Depth 1.4-2.5 in SL. Silvery; a large black spot behind gill opening.

Distribution : From the "Gulf", through India, to west-Pacific.

21. *Dayella malabarica* (Day)

1873. *Spartelloides malabaricus* Day, *Proc. zool. Soc. Lond.* : 240 (Malabar).

1991. *Dayella malabarica* : Talwar and Jhingran, *Inland Fishes*, 1 : 114.

Material examined : Not examined by us.

Diagnostic features : D iii, 10-11; A iii, 15-16; P i, 12; V i, 7; lower GR 24-27. Body slender; belly rather rounded, with 1-4 thin, unkeeled and irregular scutes without vertical arms. Lower jaw slightly projecting; second supramaxilla spatulate, long, about three-fourths of maxilla blade. D origin in advance of V. Light yellowish-green above; abdomen silvery; a silver stripe along flank.

Distribution : South-western India.

Remarks : Talwar and Jhingran (1991) opine that the listing of this species from the Godavari estuary by Babu Rao (1976) needs confirmation.

22. *Dussumieria acuta* Valenciennes

1847. *Dussumieria acuta* Valenciennes, *Hist. nat. Poiss.*, 20 : 467, pl. 606 (Bombay, Coromandel).

Material examined : Not examined by us.

Diagnostic features : D iii-iv, 16-17; A ii-iii, 13-14; P i, 13; V i, 7; LS 40-42; Ltr. 11/12; lower GR 19-26; branchiostegal rays 12-15. Depth 3.4-4.5 in SL. Posterior part of scales with numerous tiny radiating striae. Black irridescent blue with a shiny golden line below.

Distribution : Tropical Indo-west Pacific.

23. *Dussumieria elopsoides* Bleeker

1849. *Dussumieria elopsoides* Bleeker, *Verh. batav. Gen. Kunst. Wet.*, 22 : 42.

Material examined : 3 ex.,, 50-62 mm, SCN, 18.03.95, Upapara, F-1573.

Diagnostic features : D iii-iv, 14-16; A ii-iii, 13; P i, 14; A i, 7; LS 52-56; Ltr. 12-13; lower GR 21-32; branchiostegal rays 13-17. Depth 4.5-6.2 in SL. No striae on posterior part of scales. Colour similar as *D. acuta*.

Distribution : Tropical Indo-west Pacific.

24. ***Escualosa thoracata*** (Valenciennes)

1847. *Kowala thoracata* Valenciennes, *Hist. nat. Poiss.* 20 : 363 (Pondicherry).

1984. *Escualosa thoracata* : Talwar and Kacker, *Commercial Sea Fishes of India* : 133.

Material examined : 17 ex., 53-56 mm, TV, 10.12.92, Antervedi, F-1017; 1 ex., 57 mm, TV, 24.11.93, Antervedi, F-1239; 6 ex., 52-62 mm, TV, 25.11.93, Biyyaputippa, F-1254; 4 ex., 50-64 mm, CANR, 29.01.95, Coringa Channel, F-1271; 5 ex., 55-67 mm, TV, 02.12.92, Antervedi, F-1536; 5 ex., 37-42 mm, CANR, 13.09.93, Sunkurevu, F-1591.

Diagnostic features : D iii, 12-14; A ii-iii, 14-18; V i, 6; lower GR 28-40; LL 35-40; belly scutes (17-19) + (10-12). Back dull white, flanks with silvery lateral stripe; a dark double mid-dorsal line.

Distribution : Pakistan, India, through Indonesia, to Queensland (Australia).

25. ***Hilsa kelee*** (Cuvier)

1829. *Clupea kelee* Cuvier, *Regne Animal* (2nd ed.), 2 : 320 (Vizagapatnam).

1985. *Hilsa kelee* : Whitehead, *FAO Fish. Synop.*, (125) 7(1) : 220.

Material examined : 1 ex., 180 mm, CANR, 20.10.92, Cholangi Channel mouth, F-969; 1 ex., 150 mm, TV, 21.11.93, Antervedi, F-1600.

Diagnostic features : D iv, 13-14; A iii, 17-19; P i, 14-15; V i, 7; LS 39-44; lower GR 75-175; scutes (15-17) + (12-14). Depth 2.5-3.3 in SL. Distinct median notch in upper jaw. Fronto-parietal striae exposed. GR on 2nd arch curled outward. Scales perforated. A black blotch behind gill opening. Usually followed by a series of oval blotches down flank.

Distribution : Indo-west Pacific. Marine, pelagic, entering estuaries and able to tolerate quite low salinity.

26. ***Nematalosa nasus*** (Bloch)

1795. *Clupea nasus* Bloch, *Naturges. ausland. Fische*, (19) : 116, pl. 429, fig. 1 (Malabar).

1991. *Nematalosa nasus* : Talwar and Jhingran, *Inland Fishes*, 1 : 111.

Material examined : 1 ex., 64 mm, TV, 30.11.92, B. V. Palem, F-1672.

Diagnostic features : D iii-v, 11-14; A ii-iv, 18-23; P i, 14; V i, 7; LS 46-49; GR numerous; belly scutes (17-19) + (10-13), total 28-32. Depth 2.4-2.9 in SL. Mouth inferior; lower jaw strongly flared outward. Hind edge of scales strongly toothed. Body dark bluish dorsally, silvery below; a dark spot behind gill-opening.

Distribution : Indo-west Pacific. Marine, entering estuaries.

27. ***Sardinella fimbriata*** (Valenciennes)

1847. *Spratella fimbriata* Valenciennes, *Hist. nat. Poiss.*, 20 : 359, pl. 601 (Malabar).

1985. *Sardinella fimbriata* : Whitehead, *FAO Fish. Synop.*, (125) 7 (1) : 98.

Material examined : 3 ex., 65-71 mm, CANR, 29.01.95, Coringa Channel, F-1275.

Diagnostic features : D iii-iv, 14-16; A iii, 16-19; P i, 13-15; V i, 7; LS 40-45; lower GR 53-82 (at 50-120 mm SL); scutes (17-18) + (12-14). Body depth 2.9-4.0 in SL. Vertical striae on scales not meeting at center, hind part of scales with a few perforations and somewhat produced posteriorly. Back blue-green; flanks silvery; a dark spot at D origin.

Distribution : Southern cost of India, Bay of Bengal to the Philippines; also eastern tip of Papua New Guinea. Marine, coastal.

Remarks : Possibly a stray catch.

28. ***Tenualosa ilisha*** (Hamilton)

1822. *Chupanodon ilisha* Hamilton, *Fishes of Ganges* : 243, 382, pl. 19, fig. 73 (Ganges estuaries).

1985. *Tenualosa ilisha* : Whitehead, *FAO Fish. Synop.*, (125) 7 (1) : 222.

Material examined : 1 ex., 120 mm, SCN, 16.03.95, Bhairavapalem, F-1656.

Diagnostic features : D iv-v, 14-16; A ii-iii, 16-20; P i, 14, V i, 7; lower GR 100-250; belly scutes 30-33. Body depth 3.1-3.7, head 3.3-3.6, C 3.2-4.0 in SL. A black blotch behind gill-opening, followed by a series of small spots along flanks in the immature.

Distribution : From 'the Gulf', through India, to Myanmar.

29. *Tenualosa toli* (Valenciennes)

1847. *Alausa toli* Valenciennes, *Hist. nat. Poiss.*, 20 : 435 (Pondicherry).

1985. *Tenualosa toli* : Whitehead, *FAO Fish. Synop.*, (125) 7 (1) : 226.

Material examined : Not examined by us.

Diagnostic features : D iv-v, 14-15; A iii, 15-17; P i, 13; V i, 7; lower GR 60-100; belly scutes 28-30. Body depth 2.8-3.3., head 3.6-4.0, C 2.9-3.2 in SL. A diffuse dark blotch behind gill-opening.

Distribution : West coast of India to Java Sea and South China Sea.

30. *Ilisha elongata* (Bennett)

1830. *Alosa elongata* Bennett, *Mem. Life of Raffles* : 691 (Sumatra).

1984. *Ilisha elongata* : Talwar and Kacker, *Commercial Sea Fishes of India* : 151.

Material examined : 2 ex., 190-200 mm, TV, 24.11.93, Antervedi, F-1235; 4 ex., 47-176 mm, TV, 03.12.92, Antervedi, F-1518.

Diagnostic features : D ii, 14-15; A ii, 40-49; P i, 15-16; V i, 6; lower GR 19-25; belly scutes (24-26) + (10-15). Body depth 3.2-3.7, head 4.2-4.5 in SL. Vertical striae on scales not continuous. D origin nearer to C base than snout-tip. Swimbladder with a single post-coelomic extension, on right side. Back blue-green, flanks silvery.

Distribution : South-east coast of India to Sumatra, China and Japan.

31. *Ilisha filigera* (Valenciennes)

1847. *Pellona filigera* Valenciennes, *Hist. nat. Poiss.*, 20 : 322 (Coromandel coast, Bombay).

1984. *Ilisha filigera* : Talwar and Kacker, *Commercial Sea Fishes of India* : 153.

Material examined : 1 ex., 59 mm, TV, 02.12.92, Antervedi, F-1539; 1 ex., 215 mm, TV, 21.11.93, Antervedi, F-1603.

Diagnostic features : D ii, 14-17; A ii, 43-49; P i, 15-17; V i, 6; lower GR 19-23; belly scutes (23-26) + (11-13). Body depth 2.8-3.2 in SL. Vertical striae on scales not continuous. D origin at midpoint between C base and snout-tip or slightly nearer to snout-tip. Swim-bladder with a single post-coelomic extension, on right side. Body dark brown, flanks silvery-white.

Distribution : India and Borneo.

32. *Ilisha kampeni* (Weber & de Beaufort)

1913. *Pellona kampeni* Weber and de Beaufort, *Fish. Indo-Aust. Archip.*, 2 : 87 (Java, Borneo).

1991. *Ilisha kampeni* : Talwar and Jhingran, *Inland Fishes* 1 : 119.

Material examined : 2 ex., 56-75 mm, TV, 10.12.92, Antervedi, F-1029; 5 ex., 45-65 mm, TV, 21.11.92, B. V. Palem, F-1099; 2 ex., 47-60 mm, CANR, 14.09.93, Chakkali Tippa, F-1529.

Diagnostic features : D ii, 14-16; A ii, 35-42; P i, 14-15; V i, 6; lower GR 20-24; belly scutes (19-21) + 8. Body depth 3.1-4.1; P length 5.9-6.6 in SL. D origin at about midpoint of body. Vertical striae on scales not continuous. Swim-bladder with two post-coelomic extensions, on either side of haemal spine. Dorsal profile greenish to dark grey, flanks silvery.

Distribution : East coast of India, Indonesia.

Remarks : This is the first record of occurrence from the Godavari estuary.

33. *Opisthopterus tardoore* (Cuvier)

1829. *Pristigaster tardoore* Cuvier, *Regne Animal.* (2nd ed.), 2 : 381 (Vizagapatnam).

1991. *Opisthopterus tardoore* : Talwar and Jhingran, *Inland Fishes*, 1 : 123.

Material examined : Not examined by us.

Diagnostic features : D ii-iii, 11-14; A iii, 48-60; P i, 11-13; V absent; lower GR 22-28; LS 46-51; belly scutes 29-35. Body depth 3.3-3.7 in SL. D in posterior half of body. Back blue-green, silvery below.

Distribution : Gulf of Oman, India, Sri Lanka, Myanmar, Indonesia.

34. ***Raconda russeliana*** Gray

1831. *Raconda russeliana* Gray, *Zool. Miscellany*, 1 : 9 (Sangar Roads, India).

Material examined : Not examined by us.

Diagnostic features : D absent; A ii, 79-88; V absent; lower GR 23-27; belly scutes 33-38. Body depth 3.6-4.0 in SL; P length equal to head. Back dark bluish, flanks yellowish, silvery below; a dark spot behind gill-opening; juveniles purplish with silvery band on sides.

Distribution : East coast of India, Singapore, Java Sea.

35. ***Coilia dussumieri*** Valenciennes

1848. *Coilia dussumieri* Valenciennes, *Hist. nat. Poiss.*, 21 : 81, pl. 610 (Bombay)

Material examined : 1 ex., 140 mm, TV, 24.11.93, Antervedi; F-1233; 1 ex., 66 mm, TV, 25.11.93, Biyyaputippa, F-1252.

Diagnostic features : D iii, 10-12; A ii, 100-103; P vi + 8-9; V i, 6; lower GR 24-26; scutes (4-6) + (7-9). Maxilla not quite reaching to edge of operculum. Back light brown, silvery below, with rows of pearly or gold spots (light organs, silvery when preserved).

Distribution : India, to South-east Asia.

36. ***Coilia neglecta*** Whitehead

1968. *Coilia neglecta* Whitehead, *J. mar. biol. Ass. India*, 9 (1) : 33, fig. 4 (Arabian Sea, NW of Bombay; also off Indus, Ganges and Irrawaddy deltas).

Material examined : 1 ex., 140 mm, TV, 02.12.92, Antervedi, F-1134; 1 ex., 95 mm, TV, 21.11.93, Antervedi; F-1605.

Diagnostic features : D iii, 10-11; A iii, 96-107; P vi + 10-11; V i, 6; lower GR 23-27; scutes (6-9) + (7-11). Maxilla reaching to edge of operculum. Back light brown, flanks silvery.

Distribution : India, Sri Lanka, to southeast Asia.

Remarks : This is the first record of occurrence from the Godavari estuary.

37. ***Coilia ramcarati*** (Hamilton)

1822. *Mystus ramcarati* Hamilton, *Fishes of Ganges* : 232, 382 (Ganges estuaries).

1991. *Coilia ramcarati* : Talwar and Jhingran, *Inland Fishes*, 1 : 130.

Material examined : 1 ex., 145 mm, TV, 07.12.92, Antervedi, F-1101; 2 ex., 150-160 mm, TV, 02.12.92, Antervedi, F-1133; 1 ex., 225 mm, CANR, 15.09.93, Antervedi, F-1298.

Diagnostic features : D iii, 13-14; A ii, 90; P vi + 5-6; V i, 8-9; lower GR 29-30; scutes 5 + 10 or 11. Golden-brown with darkish pigmentation behind gill-opening.

Distribution : Ganges delta and Andaman Sea, south of Rangoon.

38. ***Coilia reynaldi*** Valenciennes

1848. *Coilia reynaldi* Valenciennes, *Hist. nat. Poiss.*, 21 : 81 (Irrawaddy River at Rangoon, Burma).

Material examined : 27 ex., 95-110 mm, TV, 07.12.92, Antervedi, F-1100; 1 ex., 100 mm, TV, 02.12.92, Antervedi, F-1135; 1 ex., 95 mm, CANR, 29.01.95, Coringa channel, F-1272.

Diagnostic features : D iii, 11; A ii, 111; P x-xiii + 6-7; V i, 6; lower GR 28-36; scutes (6-9) + (7-11). Back greenish, flanks golden yellow, abdomen pale yellow.

Distribution : East coast of India, Myanmar.

39. *Encrasicholina heteroloba* (Ruppell)

1837. *Engraulis heterolobus* Ruppell, *Neue Wirbeth., Fische* : 79, pl. 21. Fig. 4 (Red Sea).

1988. *Encrasicholina heteroloba* : Whitehead *et al., FAO Fish. Synop.*, (125) 7 (2) : 397.

Material examined : 1 ex., 35 mm, SCN, 18.03.95, Upapara, F-1567.

Diagnostic features : D ii, 11-13; A ii, 14-16; A origin little behind last D ray; lower GR 23-29; scutes 4-6, needle like, before V. Urohyal plate bony (exposed). Maxilla tip pointed, reaching well beyond anterior border of pre-operculum. Bright silvery stripes, with deep blue upper border, along flanks.

Distribution : East coast of Africa, Red Sea, through India, Indonesia, to Japan, Queensland (Australia).

Remarks : Possibly a stray catch. Recorded for the first time from the Godavari estuary.

40. *Setipinna taty* (Valenciennes)

1848. *Engraulis taty* Valenciennes, *Hist. nat. Poiss.*, 21 : 60 (Pondicherry).

1988. *Setipinna taty* : Whitehead *et al., FAO Fish. Synop.*, (125) 7 (2) : 457.

Material examined : 2 ex., 110-122 mm, TV, 24.11.93, Antervedi, F-1236; 3 ex., 95-131 mm, TV, 21.11.93, Antervedi, F-1606.

Diagnostic features : D i, 15-16; A iii, 45-55; P i, 22-24; V i, 6; lower GR 18-21, serrae in distinct clumps; scutes (20-29) + (10-14). Back yellowish-brown or bluish, silvery below.

Distribution : Sri Lanka, east coast of India, Andaman Islands, Indonesia.

41. *Setipinna tenuifilis* Valenciennes

1848. *Setipinna tenuifilis* Valenciennes, *Hist. nat. Poiss.*, 21 : 62 (Rangoon, Burma).

Material examined : 1 ex., 90 mm, TV, 02.12.92, Antervedi, F-1534; 1 ex., 115 mm, TV; 21.11.93, Antervedi, F-1607.

Diagnostic features : D i, 15; A iii, 46-56; P i, 10-12; V i, 6; lower GR 13-14, serrae uneven, with slight or often distinct clumps; scutes (18-20) + 7. Back greenish-black, flanks silvery dashed with gold.

Distribution : Bay of Bengal and Northern Borneo.

Remarks : *Setipinna godavariensis* reported by Babu Rao (1962, 1976) and Babu Rao and Joglekar (1968) is a synonym of this species (Whitehead, 1973; Whitehead *et al.*, 1988).

42. *Stolephorus andhraensis* Babu Rao

1965. *Stolephorus andhraensis* Babu Rao, *Ann. Mag. nat. Hist.*, (13) 9 : 103 (Waltair, Kakinada).

Material examined : 1 ex., 102 mm, TV, 22.11.92, B. V. Palem, F-1678.

Diagnostic features : D iii, 11-14; A iii, 16-20; lower GR 20-21; belly with usually 6 needle-like pre-pelvic scutes, no spine on pelvic scute. Hind border of pre-operculum indented (concave) near maxilla tip. Body milky white, with bright silvery stripe along flanks; no double pigment line along back, melanophores irregularly scattered or absent.

Distribution : East coast of India; Great Nicobar Island; Singapore; Papua New Guinea.

43. *Stolephorus baganensis* Hardenberg

1931. *Stolpehorus baganensis* Hardenberg, *Treubia*, 13 (1) : 107 (Rokan River mouth).

Material examined : 5 ex., 52-70 mm, CANR, 29.01.95, Coringa Channel, F-1273; 1 ex., 40 mm, TV, 03.12.92, Antervedi, F-1517; 1 ex., 47 mm, TV, 02.12.92, Antervedi, F-1531; 3 ex., 65-67 mm, TV, 30.11.92, B. V. Palem, F-1671.

Diagnostic features : D iii, 11-13, A iii, 17-20; lower GR 18-24; belly with 6-7 prepelvic scutes, pelvic scute with a distinct spine; a small predorsal spine present. Hind border of pre-operculum evently rounded near maxilla tip. Maxilla tip truncated, not reaching to anterier border of pre-operculum. Pale creamy white with bright silvery stripe on flanks; double pigment line along back behind D.

Distribution : East coast of India, to Indonesia.

44. *Stolephorus commersonii* Lacepede

1803. *Stolephorus commersonii* Lacepede, *Hist. nat. Poiss.*, 5 : 381, pl. 12, fig. 1. (Mauritius).

Material examined : 1 ex., 53 mm, TV, 10.12.92, Antervedi, F-1031; 4 ex., 35-80 mm, SCN, 18.03.95, Upapara, F-1568.

Diagnostic features : D iii, 12-14; A iii, 18-19; lower GR 23-28; belly with 1-4 needle like pre-pelvic scutes; no spine on pelvic scute and before D. Hind border of pre-operculum evenly rounded near maxilla tip. Maxilla tips reaching to gill-opening. V tips reaching beyond D origin. Creamy with a silvery stripe along flanks; a double pigment line on back before D.

Distribution : East coast of Africa, India, Indonesia, to Samoa.

45. *Stolephorus dubiosus* Wongratana

1983. *Stolephorus dubiosus* Wongratana, *Jap. J. Ichthyol.*, 29 (4) : 400, Fig. 18 (Songkhala Lake, Thailand; and Chilka Lake, Orissa, India).

Material examined : Not examined by us.

Diagnostic features : D ii, 14; A iii, 18-19; lower GR 25-31; belly with 6-7 needle like pre-pelvic scutes; pre-dorsal spine and spine on pelvic scute present. Hind border of pre-operculum evenly rounded near maxilla tip; maxilla tip pointed, reaching to or beyond posterior border of pre-operculum. A silvery stripe along flanks; double pigment line along back behind D.

Distribution : India : Chilka lake and Godavari estuary; and the Gulf of Thailand.

46. *Stolephorus indicus* (van Hasselt)

1823. *Engraulis indica* van Hasselt, *Algemeene Konst.-en Letterbode*, 1 (23) : 329 (Java).

1988. *Stolephorus indicus* : Whitehead *et al.*, *FAO Fish. Synop.*, (125) 7 (2) : 412.

Material examined : 1 ex., 52 mm, CANR, 20.10.92, Cholangi Channel mouth, F-966; 1 ex., 46 mm, TV, 10.12.92, Antervedi, F-1032; 4 ex., 40-50 mm, SCN, 18.03.95, Upapara, F-1569.

Diagnostic features : D iii, 12-14; A iii, 16-18; lower GR 21-28; belly with 3-5 needle-like pre-pelvic scute; no pre-dorsal spine, no spine on pelvic scutes. Hind border of pre-operculum evenly rounded near maxilla tip; maxilla tip pointed, reaching to or just beyond anterior border of pre-operculum. A silvery stripe along flanks.

Distribution : Indo-west Pacific.

47. *Stolephorus insularis* Hardenberg

1933. *Stolephorus insularis* Hardenberg, *Nat. Tijdschr. Ned.-Indie*, 93 (2) : 260 (Java, Lingga, Bawean, Kangean, Moluccas) *(partim.)*.

Material examined : Not examined by us.

Diagnostic features : D iii, 11-14; A iii, 16-20; lower GR 20-24; belly with 5-7 needle-like pre-pelvic scutes; pre-dorsal spine sometimes present, no spine on pelvic scute. Hind border of pre-operculum indented (concave) near maxilla tip. Bright silvery stripes along flanks; double pigment line along back behind D.

Distribution : Gulf of Aden, India, Indonesia, to Taiwan.

Remarks : Record from Godavari estuary by Babu Rao (1973, 1976) possibly due to misidentification (Whitehead *et al.*, 1988 : 414).

48. *Stolephorus waiteri* Jordan & Seale

1926. *Stolephorus waitei* Jordan and Seale, *Bull. Mus. comp. Zool. Harvard*, 67 (11) : 380 (Queensland).

Material examined : 2 exs., 63-66 mm, TV, 29.11.92, B. V. Palem, F-1203; 4 exs., 66-79 mm, TV, 25.11.93, Biyyaputippa, F-1253.

Diagnostic features : D iii, 12-14; A iii, 17-20; lower GR 19-25; belly with 5-7 needle like pre-pelvic scutes; no pre-dorsal spine; no spine on pelvic scute. Hind border of pre-operculum evenly rounded near maxilla tip; maxilla tip pointed, projecting beyond posterior border of pre-operculum. V tips not reaching to vertical from D

origin. No double pigment line on back; a silvery stripe along flanks.

Distribution : India, Indonesia, to the Philippines, Taiwan.

Remarks : Recorded for the first time from the Godavari estuary.

49. *Thryssa dussumieri* (Valenciennes)

1848. *Engraulis dussumieri* Valenciennes, *Hist. nat. Poiss.*, 21 : 69 (Arabian Sea).

1988. *Thryssa dussumieri* : Whitehead *et al.*, *FAO Fish Synop.*, (125) 7 (2) : 429.

Material examined : 6 exs., 35-95 mm, SCN, 18.03.95, Upapara, F-1571.

Diagnostic features : D iii, 9-12; A iii, 31-35; P i, 9; V i, 6; lower GR 17-19, serrae in distinct clumps; scutes (15-16) + (6-9). Maxilla very long, reaching at least half way along P; first supra-maxilla absent. A dark blotch behind upper part of gill-opening, often joined to a dark saddle on nape.

Distribution : Pakistan, India, Sri Lanka, Myanmar, and western Pacific.

50. *Thryssa gautamiensis* Babu Rao

1971. *Thryssa gautamiensis* Babu Rao, *Copeia*, (3) : 473, fig. 1. (Godavari estuary).

Material examined : 4 exs., 51-61 mm, TV, 10.12.92, Antervedi, F-1030. 5 exs., 41-55 mm; SCN, 18.03.95, Upapara, F-1572; 1 ex., 57 mm, TV, 09.12.92, Antervedi, F-1634.

Diagnostic features : D iii, 10; A iii, 34-37; P i, 13; V i, 6; lower GR 17-20; scutes (14-17) + 10. Tip of snout at about upper rim of eye. Maxilla projecting slightly beyond edge of gill-cover. A dark blotch behind upper part of gill-opening; a pair of dark lines on back, from nape to C.

Distribution : East coast of India.

51. *Thryssa hamiltonii* (Gray)

1835. *Thrissa hamiltonii* Gray, *Illustrations Indian Zoology*, 2 : pl. 92, fig. 3 (no locality).

1988. *Thryssa hamiltonii* : Whitehead *et al.*, *FAO Fish. Synop.*, (125) 7 (2) : 432.

Material examined : 1 ex., 150 mm, CANR, 19.10.92, Cholangi Channel mouth, F-971; 1 ex., 116 mm, TV, 02.12.92, Antervedi, F-1136.

Diagnostic features : D iii, 10-12; A iii, 32-39; P i, 11-12; V i, 6; lower GR 12-14; scutes (16-19) + (8-9). Maxilla tip reaching to edge of gill-cover or projecting slightly beyond. A dark blotch behind upper part of gill-opening; pigment line along back.

Distribution : Indo-west Pacific.

52. *Thryssa kammalensoides* Wongratana

1983. *Thryssa (Scutengraulis) kammalensoides* Wongratana, *Jap. J. Ichthyol.*, 29 (4) : 401, fig. 20 (Godavari estuary).

1988. *Thryssa kammalensoides* : Whitehead *et al.*, *FAO Fish. Synop.*, (125) 7 (2) : 434.

Material examined : Not examined by us.

Diagnostic features : D iii, 13-14; A iii, 31-32; P i, 12; V i, 6; lower GR 24-25; scutes (16-18) + (10-11). Maxilla tip pointed, reaching just to edge of gill-cover; first supra-maxilla absent. A dark saddle on nape, extending to area behind upper part of gill-opening.

Distribution : North-east coast of India.

Remarks : Earlier reported as *T. kammalensis* (Bleeker, 1849) (Whitehead, 1973: Babu Rao, 1976). Its' marine existence and distribution along the north-east coast of India was confirmed by Mishra and Krishnan (1997).

53. *Thryssa mystax* (Schneider)

1801. *Clupea mystax* Schneider, *Syst. Ichthyol. Bloch* : 426, pl. 83 (Malabar).

1973. *Thryssa mystax* : Whitehead, *J. mar. biol. Ass. India*, 14 (1) : 231, fig. 54.

Material examined : 2 ex., 82-85 mm, CANR, 29.01.95, Coringa Channel, F-1274; 2 ex., 45-51 mm, TV, 02.12.92, Antervedi, F-1532; 1 ex., 71 mm, SCN, 18.03.95, Upapara, F-1570.

Diagnostic features : D iii, 10-12; A iii, 29-37; P i, 12; V i, 6; lower GR 13-16, serrae not clumped; scutes (16-20) + (8-13). Maxilla tip reaching to or beyond P base. A dark venulose area behind upper part of gill opening.

Distribution : India, Sri Lanka, Myanmar, Indonesia.

54. *Thryssa purava* (Hamilton)

1822. *Clupea purava* Hamilton, *Fishes of Ganges* : 238, 382 (Ganges estuaries).

1988. *Thryssa purava* : Whitehead *et al., FAO Fish. Synop.*, (125) 7 (2) : 440.

Material examined : 1 ex., 155 mm, CANR, 15.09.93, Antervedi, F-1299; 1 ex., 108 mm, TV, 22.11.92, B. V. Palem, F-1679.

Diagnostic features : D iii, 9-12; A iii, 38-44; P i, 14; V i, 6 : lower GR 17-21; scutes (15-17) + (10-11). Maxilla tip projecting slightly beyond edge of gill cover or to half way to P base. An indistinct blotch behind upper part of gill-opening and a faint mid-dorsal line.

Distribution : East coast of India.

55. *Thryssa setirostris* (Broussonet)

1782. *Clupea setirostris* Broussonet, *Ichthyol* : text and pl. 2, no pagination (near Tanna Island, Society Islands).

1984. *Thryssa setirostris* : Talwar and Kacker, *Commercial Sea Fishes of India* : 204.

Material examined : Not examined by us.

Diagnostic features : D iii, 10-12; A iii, 29-36; P i, 12-13; V i, 6; lower GR 10-12; scutes (16-18) + (9-10). Maxilla very long, extending beyond P tip. A faint venulose area behind upper part of gill-opening.

Distribution : Indo-Pacific.

Remarks : Babu Rao (1976 : 34) has reported it from Godavari estuary which is based on stray specimens (Talwar and Jhingran, 1991).

56. *Thryssa stenosoma* Wongratana

1983. *Thryssa (Scutengraulis) stenosoma* Wongratana, *Jap. J. Ichthyol.*, 29 (4) : 404, fig. 23 (Godavari estuary, Ganga estuary).

1988. *Thryssa stenosoma* : Whitehead *et al., FAO Fish. Synop.*, (125) 7 (2) : 444.

Material examined : Not examined by us.

Diagnostic features : D iii, 12; A iii, 40-45; P i, 12; V i, 6; lower GR 17-19; scutes (15-17) + (10-12). Maxilla reaching to P base or slightly beyond; first supra-maxilla minute. A pair of dark pigment line along back.

Distribution : Godavari and Hooghly estuaries in India, Bangladesh.

57. *Chanos chanos* (Forsskal)

1775. *Mugil chanos* Forsskal, *Descript. Animal.* : xiv, 74 (Djedda, Red Sea).

1991. *Chanos chanos* : Talwar and Jhingran, *Inland Fishes*, 1 : 150.

Material examined : Not examined by us.

Diagnostic features : D 13-17; A 9-11; P 15-17; V 11-12; LL 75-90; GR (147-160) + (107-165). Depth 3.1-4.7 in SL. Mouth small, terminal, toothless. Scales small, cycloid; P and V with large axillary scales. Body briliant silvery, darker dorsally.

Distribution : Indo-west Pacific. Inhabits coastal waters, entering estuaries, rivers and lakes.

58. *Catla catla* (Hamilton)

1822. *Cyprinus catla* Hamilton, *Fishes of Ganges* : 287, 318, pl. 13, fig. 81 (Rivers and tanks of Bengal).

1991. *Catla catla* : Talwar and Jhingran, *Inland Fishes*, 1 : 163.

Material examined : 1 ex., 185 mm, TV, 24.11.92, Coringa, F-1036; 1 ex., 176 mm, TV, 25.11.92, Ramannapalem, F-1125.

Diagnostic features : D iii-iv, 14-16; A iii, 5; P i, 20; V i, 8; LL 40-43. Depth 2.5-3.0, head 3.6-4.3 in SL; eyes 6-7 in head. Dorsal profile arched. Upper lip absent; no barbels. D inserted in advance of V. Grayish on back and flanks, silvery-white below.

Distribution : Pakistan, India, Bangladesh, Nepal and Myanmar. Also introduced in Sri Lanka and China.

59. *Cirrhinus cirrhosus* (Bloch)

1795. *Cyprinus cirrhosus* Bloch, *Naturges. ausland. Fische*, 9 : 52, fig. 411 (Cauvery river, Tamil Nadu).

1991. *Cirrhinus cirrhosus* : Talwar and Jhingran, *Inland Fishes*, 1 :170.

Material examined : 1 ex., 58 mm, TV, 25.11.93, Ramannapalem, F-1245.

Diagnostic features : D iii-iv, 13-15; A iii, 5; P i, 18; V i, 8; LL 42-46. Depth 4.5-5.0, head 5.5-6.0 in TL; eye 3.0-3.5 in eye. Upper lip entire; barbles 2 pairs. D origin in advance of V. Silvery on back and flanks, belly with yellowish tinge; tips of A and P blackish.

Distribution : Peninsular India : Godavari, Krishna and Cauvery river systems.

Remarks : Recorded for the first time from Godavari estuary.

60. *Cirrhinus mrigala* (Hamilton)

1822. *Cyprinus mrigala* Hamilton, *Fishes of Ganges* : 279, 386, pl. 6, fig. 79 (Ponds and freshwater rivers of Gangetic provinces).

1981. *Cirrhinus mrigala* : Jayaram, *Handbook. Freshw. Fish. India* : 127.

Material examined : Not examined by us.

Diagnostic features : D iii-iv, 12-13; A iii, 5; P i, 17; V i, 8; LL 40-45; Ltr. 6-7/5$^{1}/_{2}$-6; GR 40-49. Depth 4.0-5.5, head 5.0-5.3 in TL; eye 3.5-4.0 in head. Upper lip entire; one pair short, rostral barbel only. Dark gray along back, often with coppery tinge, silvery below.

Distribution : Pakistan; northern India; Bangladesh.

61. *Cirrhinus reba* (Hamilton)

1822. *Cyprinus reba* Hamilton, *Fishes of Ganges* : 280, 386 (Rivers and ponds of Bengal and Bihar).

1991. *Cirrhinus reba* : Talwar and Jhingran, *Inland Fishes;* 1 : 173.

Material examined : Not examined by us.

Diagnostic features : D ii-iii, 8; A iii, 5; P i, 15; V i, 8; LL 34-38; Ltr. 7/5-6. Depth 4.0-5.0, head 5.25-6.0 in TL, eye 4.0-4.3 in head. Upper lip fringed in young and often entire in adult. Barbels one pair of short rostrals. D height less than body depth. Dark gray dorsally, silvery below; scales darkest at edges, forming bluish longitudinal bands above LL. Juveniles with a leaden-coloured band along the side, or even D with dusky tip.

Distribution : Pakistan, India, Nepal, Bangladesh.

62. *Danio devario* (Hamilton)

1822. *Cyprinus devario* Hamilton, *Fishes of Ganges* : 341, 393, pl. 6, fig. 94 (Rivers and ponds of Bengal).

1991. *Danio devario* : Talwar and Jhingran, *Inland Fishes*, 1 : 367.

Material examined : 1 ex., 36 mm, TV, 22.11.92, B. V. Palem, F-1689.

Diagnostic features : D ii-iii, 15-17; A ii-iii, 16-17; P i, 11-12; V i, 7; LL 33-38, complete; Pre D. 15-17. Depth 2.6-2.9, head 3.9-4.3 in SL; eye 2.6-3.0, snout 4-5 in head. No pre-orbital spine on front margin of orbit. No barbles. D inserted slightly anterior to A origin. Back greenish, silvery below; three blue lines, divided by yellow lines, extending backwards to C.

Distribution : Pakistan; India : northern India to the Krishna-Godavari river system; Nepal and Bangladesh.

Remarks : Recorded for the first time from the Godavari estuary.

63. *Esomus danricus* (Hamilton)

1822. *Cyprinus danrica* Hamilton, *Fishes of Ganges* : 325, 390, pl. 16, fig. 88 (Ponds and ditches of Bengal).

1991. *Esomus danricus* : Talwar and Jhingran, *Inland Fishes*, 1 : 377.

Material examined : 1 ex., 41 mm, TV, 08.11.93, Chinchunada, F-831.

Diagnostic features : D ii, 6; A iii, 5; P i, 14-15; V i, 6-7; LS 27-30; LL 4-6, incomplete; pre D. 16-17; scales around caudal peduncle 14. Depth 3.3-4.8, head 3.5-5.0 in SL. Barbels two

pairs, maxillary pair extremely long. A broad dark lateral band from mouth to C base.

Distribution : Pakistan, India, Nepal, Myanmar and Sri Lanka.

64. ***Labeo boga*** (Hamilton)

1822. *Cyprinus boga* Hamilton, *Fishes of Ganges* : 286, 386, pl. 412, fig. 1 (Brahmaputra river).

1991. *Labeo boga* : Talwar and Jhingran, *Inland Fishes*, 1 : 200.

Material examined : 1 ex., 60 mm, 21.11.92, B. V. Palem, F-1087; 1 ex., 65 mm, TV, 30.11.92, B. V. Palem, F-1674.

Diagnostic features : D ii-iii, 9-10; A ii, 5; P i, 15; V i, 8; LL 37-39. Depth 4.7-5.3, head 4.5-5.0 in SL; eye 3.7-4.0 in head. Snout devoid of lateral lobe. Mouth narrow; lips thick; lower lip joined to isthmus by a bridge. Barbels a minute maxiallary pair only. D inserted above or slightly anterior to tip of P. P does not reach V. Five scale rows between LL and V base. Often with a dark spot above P.

Distribution : Pakistan, India, Nepal, Bangladesh and Myanmar.

Remarks : Recorded for the first time from Godavari estuary.

65. ***Labeo boggut*** (Sykes)

1838. *Chondrostoma boggut* Sykes, *Proc. zool. Soc. Lond*, 6 : 160 (Poona waterways, Maharastra).

1991. *Labeo boggut* : Talwar and Jhingran, *Inland Fishes*, 1 : 201.

Material examined : 1 ex., 64 mm, TV, 23.11.92, Mundigattu, F-1062.

Diagnostic features : D iii, 8-9; A ii, 5; P i, 16; V i, 8; LL 60-65; 8-9 scale rows between LL and V base. Depth 5.5-6.3, head 5.5-6.0 in TL; eye 4.5-5.0 in head. Snout thick, projecting, pored; without lateral lobe. Lips thick; lower lip fimbriated, joined to isthmus by a narrow bridge. Barbels a short maxillary pair only. Body silvery; a few longitudinal light lines or a bluish band along flank; a dark spot usually near C base and sometimes a smaller one on LL above P.

Distribution : Pakistan, India and Bangladesh.

Remarks : Recorded for the first time from Godavari estuary.

66. ***Labeo calbasu*** (Hamilton)

1822. *Cyprinus calbasu* Hamilton, *Fishes of Ganges* : 297, 387, pl. 2, fig. 33 (Rivers and ponds of Bengal and in the western province).

1991. *Labeo calbasu* : Talwar and Jhingran, *Inland Fishes*, 1 : 203.

Material examined : 1 ex., 43 mm, CANR, 13.09.93, Sunkurevu, F-1588.

Diagnostic features : D iii-iv, 13-16, A ii-iii, 5; P i, 16-18; V i, 8; LL 40-44; 5-6 scale rows between LL and V; pre D. 15-18. Depth 4.0-4.3, head 5-6 in TL; eye 4.2-4.5 in head. Lips thick, fringed, each having an inner fold. Snout obtuse, pored. Barbels two pairs (rostral and maxillary). D origin in advance of V. Blackish-green, lighter below; flanks buff pink or with scarlet spots; fins black, upper lobe of C usually tipped with white.

Distribution : Pakistan, India, Bangladesh, Myanmar, Thailand and Yunan in South China.

67. ***Labeo fimbriatus*** (Bloch)

1795. *Cyprinus fimbriatus* Bloch, *Naturges. ausland. Fische*, 12 : 50, pl. 409 ("Malabarischen Kueste" = ? Madras).

1991. *Labeo fimbriatus* : Talwar and Jhingran, *Inland Fishes*, 1 : 208.

Material examined : Not examined by us.

Diagnostic features : D iii-iv, 15-18; A ii-iii, 5; P i, 15-18; V i, 8; LL 43-47; 6-7 scale-rows between LL and V base; pre D. 13-18. Depth 4.0-4.5, head 6.2-6.5 in TL; eye 3.7-4.5 in head. Snout blunt, swollen, pored and without lateral lobe. Lips thick, fringed, continuous and with inner folds. Barbels two short pairs. P as long as head. Dark brown on back, silvery below; a diffused black blotch often present at C base.

Distribution : Pakistan, India, Nepal; Myanmar.

68. *Labeo rohita* (Hamilton)

1822. *Cyprinus rohita* Hamilton, *Fishes of Ganges* : 301, 388, pl. 36, fig. 85 (Fresh water rivers of Gangetic province).

1991. *Labeo rohita* : Talwar and Jhingran, *Inland Fishes* : 1 : 219.

Material examined : 1 ex., 75 mm, TV, 23.11.92, Mundigattu, F-1061; 1 ex., 91 mm, CANR, 23.10.92, Girijampetta, F-1077.

Diagnostic features : D iii-iv, 12-14; A ii-iii, 5; P i, 16-18; V i, 8; LL 40-44; 6-6$^1/_2$ scale-rows between LL and V base; pre D. 12-16. Depth 4.5, head 4.5-5.0 in TL; eye 4-6 in head. Snout depressed, projecting, without lateral lobe. Mouth small, inferior; lips thick, fringed, with distinct inner folds. A pair of short, maxillary barbels. Back bluish, silvery bellow; eyes reddish.

Distribution : Pakistan; north and central India; Bangladesh; Terai region of Nepal, and Myanmar.

69. *Osteobrama cotio peninsularis* Silas

1952. *Osteobrama cotio* var. *peninsularis* Silas, *Proc. nat. Inst. Sci. India,* 18 (5) : 433 (Poona).

Material examined : 1 ex., 33 mm, CANR, 13.09.93, Sunkurevu, F-1590.

Diagnostic features : D iii-iv, 8-9; A iii, 28-31; P i, 12-14; V i, 9; LL 55-60; scale rows 7$^1/_2$-9$^1/_2$ between LL and V base; pre D. 21-24. Depth 2.2-2.8 in SL. Barbels absent. D spine weak and serrated. Silvery with scattered pigments on back; a dark blotch on nape.

Distribution : Peninsular India—Maharashtra, Orissa, Andhra Pradesh.

Remarks : This is the first record of occurrence from Godavari estuary. The other species of *Osteobrama* known to occur in Godavari river, are *O. belangeri* (David, 1963), *O. dayi* (Hora & Misra, 1940); *O. cotio cotio* and *O. vigorsii* (Barman, 1993). Along with having a rudimentary maxillary pair of barbels, *O. vigorsii* (Sykes) has LL 73-85, and *O. dayi* (Hora and Misra) has LL 68-70, A iii, 16-18. *O. belangeri* (Valenciennes) also has A iii, 17-18; while *O. cotio cotio* (Hamilton) has A iii, 33-38 and scale rows 10$^1/_2$ between LL and V base.

70. *Puntius conchonius* (Hamilton)

1822. *Cyprinus conchonius* Hamilton, *Fishes of Ganges* : 317, 389 (Ponds of northeast Bengal; Kosi river and Ami river).

1991. *Puntinus conchonius* : Talwar and Jhingran, *Inland Fishes,* 1 : 266.

Material examined : 1 ex., 37 mm, TV, 08.11.93, Chinchunada, F-830.

Diagnostic features : D iii, 7-8; A ii-iii, 5; P i, 18; V i, 8; LS 24-26; LL 10-13, incomplete. Depth 2.2-2.5, head 4.1-4.5 in SL. D insertion equidistant between tip of snout and C base; its last unbranched ray osseous, moderately strong and seratted. A slightly ocellated black, golden-yellow bordered blotch over posterior portion of A.

Distribution : Afghanistan, Pakistan, Nepal, Bangladesh, India-Ganga, Brahmaputra, Mahanadi and Cauvery river systems.

Remarks : Mohapatra and Venkateswarlu (1995) have described this specimen as *Puntius parrah* (Day). But on examination, due to absence of barbels and other associated characters the same is reidentified as *Puntius conchonius* (Hamilton).

71. *Puntius sophore* (Hamilton)

1822. *Cyprinus sophore* Hamilton, *Fishes of Ganges* : 310. 389 (Ponds and rivers in Gangetic provinces).

1991. *Puntinus sophore* : Talwar and Jhingran, *Inland Fishes,* 1 : 288.

Material examined : 1 ex., 51 mm, TV, 25.11.93, Ramannapalem, F-1244; 1 ex., 47 mm, TV, 30.11.92, B. V. Palem, F-1673, 1 ex., 42 mm, TV, 22.11.92, B. V. Palem, F-1690.

Diagnostic features : D iii-iv, 8-9; A iii, 5, P i, 14-16; V i, 8; LL 22-27, incomplete; Ltr. 4-5/3; pre D. 8-10. Depth 2.7-3.0, head 3.8-4.1 in SL. No barbels. D inserted equidistant between tip of snout and C base; its last unbranched ray osseous and smooth. A black blotch at C base and another blotch on central part of D.

Distribution : Pakistan, India, Nepal, Bangladesh, Myanmar and Yunnan (China).

Remarks : Recorded for the first time from Godavari estuary.

72. ***Puntius ticto*** (Hamilton)

1822. *Cyprinus ticto* Hamilton, *Fishes of Ganges* : 314, 398, pl. 8, fig. 87 (South-eastern parts of Bengal).

1991. *Puntius ticto* : Talwar and Jhingran, *Inland Fishes*, 1 : 291.

Material examined : Not examined by us.

Diagnostic features : D iii-iv, 8; A ii-iii, 5; P i, 12-14; V i, 8; LS 23-25; LL 6-8, incomplete; Ltr. 4-5/4; pre D. 9-11. Depth 2.4-2.9, head 3.5-4.0 in SL. No barbels. D inserted slightly posterior to V origin; its last unbranched ray osseous, fairly strong and serrated at its posterior edge. Silvery; a long transverse black blotch above P and another similar but golden-edged, on caudal peduncle over posterior end of A.

Distribution : Pakistan, India, Nepal, Sri Lanka, Bangladesh, Myanmar and Thailand.

73. ***Puntius vittatus*** Day

1865. *Puntius vittatus* Day, *Proc. zool. Soc. Lond.* : 303 (Cochin).

Material examined : Not examined by us.

Diagnostic features : D ii, 8; A ii, 5; P i, 11; V i, 8; LS 20-22; LL 3-6, incomplete; pre D. 6-7. Depth 2.5-2.8 in SL. No barbels. D inserted nearer to C base than to tip of snouth; its last unbranched ray non-osseous, weak, entire and articulated. Back yellowish-green, flanks greenish, belly silvery-white; a round golden-bordered, dark blotch at C base; D base golden yellow, above it an oblique black orange-edged band; D and A dotted black.

Distribution : Sri Lanka, Pakistan, India : Goa, Karnataka, Kerala, Tamilnadu, Kutch, Bihar and Rajasthan.

74. ***Salmostoma bacaila*** (Hamilton)

1822. *Cypinus bacaila* Hamiltaon, *Fishes of Ganges* : 265, 384, pl. 8, fig. 76 (Freshwater rivers of Gangetic provinces).

1991. *Salmostoma bacaila* : Talwar and Jhingran, *Inland Fishes*, 1 : 321.

Material examined : Not examined by us.

Diagnostic features : D ii-iii, 7; A iii, 10-13; P i, 11-12; V i, 8; GR 17-21; LL 86-110; Ltr. 17-19/4-6. Back gray-green, often silvery; a broad, gleaming white-green band along flank.

Distribution : Pakistan—Indus drainage; Northern India (Godavari river in South); Bangladesh and Nepal.

75. ***Lepidocephalus guntea*** (Hamilton)

1822. *Cobitis guntea* Hamilton, *Fishes of Ganges* : 353, 394 (Bengal).

1991. *Lepidocephalus guntea* : Talwar and Jhingran, *Inland Fishes*, 1 : 525.

Material examined : 1 ex., 52 mm, TV, 10.12.92, Antervedi, F-1050; 1 ex., 63 mm, TV, 09.12.92, Antervedi, F-1629.

Diagnostic features : D ii-iii, 6-7; A ii-iii, 5; P i, 6-7; V i, 6-7; 25-30 scale rows between mid-dorsal line to A base. Depth 5.8-6.8 in SL. C convex or cut square, with rounded corners. D inserted slightly behind V origin. Head naked on dorsal side; a patch of scales extends from below eye to upper part of operculum. Colouration highly variable, differing with age and sex; C with rows of dark spots; a dark spot on upper part of C base.

Distribution : Pakistan, northern India, Bangladesh, Nepal, Myanmar and Thailand.

Remarks : Recorded for the first time from Godavari estuary.

76. *Aorichthys seenghala* (Sykes)

1841. *Platystoma seenghala* Sykes, *Trans. Zool. Soc. Lond.*, 2 : 371, pl. 65, fig. 2 (Mulla Motha river at Poona).

1991. *Aorichthys seenghala* : Talwar and Jhingran, *Inland Fishes*, 2 : 548.

Material examined : Not examined by us.

Diagnostic features : D I, 7; A iii, 8-9; P I, 9; V i, 5; C 19-21. Depth 5-7 in SL; width of mouth about 3.0 in head. Snout broad and spatulate; barbels four pairs, extend posteriorly to V or beyond to A base. D spine weakly serrated on posterior edge; adipose fin base short, as long as rayed D base. Brownish-gray on back, silvery below; a dark well-defined spot on adipose fin.

Distribution : Afghanistan, Pakistan, India, Nepal, Bangladesh.

77. *Mystus gulio* (Hamilton)

1822. *Pimelodus gulio* Hamilton, *Fishes of Ganges* : 201, 379, pl. 23, fig. 66 (Higher parts of Gangetic estuaries).

1991. *Mystus gulio* : Talwar and Jhingran, *Inland Fishes*, 2 : 260.

Material examined : 2 ex., 66-91 mm, CANR, 20.10.92, Cholangi Channel mouth, F-965; 1 ex., 68 mm, CANR, 19.10.92, Cholangi Channel mouth, F-973; 3 ex., 50-88 mm, CANR, 21.10.92, B. V. Palem, F-985; 6 ex., 43-56 mm, CANR, 18.10.92, F-1009; 4 ex., 62-90 mm, TV, 10.12.92, Antervedi, F-1021; 3 ex., 53-90 mm, TV, 10.12.92, Antervedi, F-1048; 24 ex., 45-75 mm, TV, 21.11.92, B. V. Palem, F-1069; 1 ex., 65 mm, CANR, 22.10.92, Kakinada backwater, F-1083; 3 ex., 52-91 mm, TV, 07.12.92, Antervedi, F-1104; 16 ex., 39-62 mm, TV, 29.11.92, B. V. Palem, F-1026; 2 ex., 85-155 mm, TV, 25.11.93, Biyyaputippa, F-1250; 1 ex., 75 mm, TV, 24.04.95, Antervedi, F-1661.

Diagnostic features : D I, 7; A ii-iv, 9-11; P I, 8-9; V i, 5. Depth 3.8-4.1 in SL; eye 5-6 in head. Occipital process triangular, about 1.5 times longer than broad at its base, extends to basal bone of D; median longitudinal groove on head short, not reaching base of occipital process. Barbels 4 pairs. D spine strong, serrated on its inner edge; adipose fin small, inserted considerably behind D. Least height of caudal peduncle equals its length. Branchiostegal rays 9. Bluish-brown on head and back, dull white bellow; maxillary barbels black.

Distribution : Pakistan, India, Bangladesh, Myanmar.

78. *Mystus vittatus* (Bloch)

1797. *Silurus vittatus* Bloch, *Ichthyol. Hist. Nat.*, 11 : 40, pl. 371, fig. 2 (Tranquebar, Tamil Nadu).

1991. *Mystus vittatus* : Talwar and Jhingran, *Inland Fishes*, 2 : 573.

Material examined : 8 ex., 46-75 mm, TV, 24.11.92, Coringa, F-1039; 6 ex., 52-70 mm, TV, 23.11.92, Mundigattu, F-1055; 1 ex., 60 mm, TV, 21.11.92, B. V. Palem. F-1070.

Diagnostic features : D I, 7; A ii-iii, 7-9; P I, 9; V i, 5. Depth 3.8-4.2 in SL; eyes 4.5-6.0 in head, 1.5-2.0 in interorbital width. Occipital process about 3 times as long as broad at its base, reaching basal bone of D; median longitudinal groove on head short, not extending to base of occipital process. Barbels 4 pairs. D spine weak, finely serrated on its inner edge; adipose fin small, inserted much behind D. Least height of caudal peduncle 1.2 in its length. Branchiostegal rays 10. Colour variable with age; generally gray-silvery to shining golden, with about 5 pale blue or dark brown to deep black longitudinal bands on flank; a narrow dusky shoulder spot often present.

Distribution : Pakistan, India, Bangladesh, Nepal, Sri Lanka, Myanmar and Thailand.

79. *Rita pavimentatus* (Valenciennes)

1832. *Arius pavimentatus* Valenciennes, *in* Jacquemont, *Voy. Ind. Orient. Atlas*, 2, Poiss. : pl. 17, fig. 2 (India).

1991. *Rita pavimentatus* : Talwar and Jhingran, *Inland Fishes*, 2 : 577.

Material examined : 1 ex., 56 mm, TV, 10.12.92, Antervedi, F-1049.

Diagnostic features : D I, 6; A iii, 8-9; P I, 10, V i, 6-7. Premaxillary tooth-band 3.5-4.0

times as long as broad; teeth on palate mixed, with molariform and villiform, in a single semioval patch. Slightly golden to bright yellow; eyes bright violet; barbels black; fins tinged black.

Distribution : Rivers of Deccan upto the Krishna river system in India.

Remarks : Recorded for the first time from Godavari estuary. The other distributionally coexisting species of genus *Rita* Bleeker are *R. kuturnee* (Sykes) and *R. rita* (Hamilton) have 10-11 branched A rays; teeth on palate in two distinct patches and premaxillary tooth-band 5-6 times as long as broad.

80. *Wallago attu* (Schneider)

1801. *Silurus attu* Schneider, *Syst. Ichth.* : 378, pl. 75 (Malabar).

1991. *Wallago attu* : Talwar and Jhingran, *Inland Fishes*, 2 : 590.

Material examined : Not examined by us.

Diagnostic features : D 5; A iii, 74-93; P I, 13-15; V i, 7-9. Body elongate, compressed. Eyes small. Mouth wide, its gape extends posterior to beyond eyes. Barbels two pairs. D in advance of V. Spine of P weak. Upper lobe of C longer. Silvery, with a faint orange-yellow band along LL.

Distribution : Pakistan, India, Nepal, Bangladesh, Myanmar, Thailand, Vietnam, Kampuchea, the Malay Peninsula, Sumatra and Java.

81. *Pseudeutropius atherinoides* (Bloch)

1794. *Silurus atherinoides* Bloch, *Naturges. ausland. Fische*, 8 : 48, pl. 371, fig. 1 (Tranquebar, Tamil Nadu).

1991. *Pseudeutropius atherinoides* : Talwar and Jhingran, *Inland Fishes*, 2 : 606.

Material examined : Not examined by us.

Diagnostic features : D I, 5-6, A iii, 30-43; P I, 7; V i, 5. Head 4.1-4.8 in SL; eyes 2.5-3.0 in head. Cleft of mouth extending only to anterior margin of orbit or even shorter; teeth on jaws villiform; vomero-palatine teeth in two distinct patches, widely separated. Barbels four paris, maxillary pair extend to A. A placed about half eye-diameter behind D. Branchiostegal rays 6. Silvery-greenish on back; 3-4 longitudinal bands on flank; a pale golden stripe along LL ending in a dusky spot at base of C; a black spot at nape and before D; area above P transluscent.

Distribution : India, Bangladesh, Nepal, Myanmar.

82. *Silonia childreni* (Sykes)

1838. *Ageniosus childreni* Sykes, *Proc. zool. Soc. Lond.*, (6) : 165 (Mula Mutha river, near Poona).

1991. *Silonia childreni* : Talwar and Jhingran, *Inland Fishes*, 2 : 611.

Material examined : 1 ex., 120 mm, TV, 22.11.92, B. V. Palem, F-1680.

Diagnostic features : D I, 7; A ii-iii, 44-50; P I, 12; V i, 5. Depth 4.5-5.0 in SL. Teeth on jaws caniniform. Barbels two pairs; maxillary barbels extend to operculum; mandibular barbels equal to eye-diameter. Air bladder large. Bluish on back, white below.

Distribution : Western Ghats, and the Krishna, Godavari and Cauvery river systems.

Remarks : Recorded for the first time from Godavari estuary.

83. *Pangasius pangasius* (Hamilton)

1822. *Pimelodus pangasius* Hamilton, *Fishes of Ganges* : 163, 376, pl. 33, fig. 52 (Estuaries of Bengal).

1991. *Pangasius pangasius* : Talwar and Jhingran, *Inland Fishes*, 2 : 613.

Material examined : 66 ex., 53-100 mm, CANR, 14.09.93, Chakkalitippa, F-1527.

Diagnostic features : D I, 6-7; A iv-v, 26-29; P I, 12-13; V i, 5. Eyes large, 3.5 in head. Barbels two pairs, maxillary and mental (on chin); no nasal barbels. Dusky yellowish-green on back, glossed with silvery-purple on flanks.

Distribution : Pakistan, India, Bangaldesh, Myanmar, Thailand, the Malay Peninsula, and Java.

84. ***Bagarius bagarius*** (Hamilton)

1822. *Pimelodus bagarius* Hamilton, *Fishes of Ganges* : 186, 378, pl. 7, fig. 62 (Ganga river and its tributaries).

1991. *Bagarius bagarius* : Talwar and Jhingran, *Inland Fishes*, 2 : 622.

Material examined : Not examined by us.

Diagnostic features : D I, 7; A iii, 9-12; P I, 9-12; V i, 5; GR 6-9. Depth 5.6-7.2, head 2.9-3.3 in SL. V inserted anterior to last fin ray of D; adipose fin origin slightly to markedly posterior to A origin. Body greenish, or olivaceous to brown; with dark pigmented bands or blotches, first between D and V, second between adipose fin and A; and a third on caudal peduncle.

Distribution : River Ganges and its tributaries in India; Chao Phrya and Mekong basins (Laos), and the Pattani river in the Malay Peninsula.

Remarks : Till the recent revision of this genus (Roberts, 1983), due to very similar external characters it was considered as the single species available in India. But he recognised the second species *B. yarrelli* Sykes, 1841 which differs from *B. bagarius* on account of P I, 11-14; GR 8-11; V inserted posterior to last ray of D; and adipose fin origin anterior to, on, or but slightly posterior to A origin. Further, *B. bagarius* has restricted distribution in India, while *B. yarrelli* has a much wider range in this subcontinent. Therefore, the specimens of Rao (1976) from the Godavari estuary and of Barman (1993) from Krishna river need re-examination.

85. ***Clarias batrachus*** (Linnaeus)

1758. *Silurus batrachus* Linnaeus, *Syst. Nat.*, 1 (ed. 10) : 305 (Asia and Africa).

1991. *Clarias batrachus* : Talwar and Jhingran, *Inland Fishes*, 2 : 684.

Material examined : 2 ex., 112-118 mm, TV, 09.12.92, Antervedi, F-1627.

Diagnostic features : D 70-76; A 45-58; P I, 11-18; V i, 5. Occipital process angular and narrow, its distance from D base 4.5-6.0 in head. Barbels 4 pairs. D inserted slightly anterior to tip of P. Spine of P strong, finely serrated on both edges, often rough externally. Brownish to green-blue, back dark, pale brown to delicate reddish below, often with numerous white spots on flanks; D and A with red margins.

Distribution : India, Sri Lanka, Bangladesh, Myanmer, Indonesia, Singapore, Borneo and the Philippines.

Remarks : Recorded for the first time from Godavari estuary.

86. ***Heteropneustes fossilis*** (Bloch)

1794. *Silurus fossilis* Bloch, *Naturges. ausland. Fische*, **8** : 46, pl. 370, fig. 2 (Tranquebar, Tamil Nadu).

1991. *Heteropneustes fossilis* : Talwar and Jhingran, *Inland Fishes*, **2** : 689.

Material examined : Not examined by us.

Diagnostic features : D 6-7; A 60-70; P I, 7; V i, 5. Occipital process not extending to D base. Barbels 4 pairs. A long-based, separated from C by a deep notch.

Distribution : Indus basin of Pakistan, India including the Andaman Is., Bangladesh, Sri Lanka, Myanmar, Thailand and Laos.

87. ***Ariodes dussumieri*** (Valenciennes)

1840. *Arius dussumieri* Valenciennes, *Hist. nat. Poiss.*, **15** : 84 (Malabar, India).

1986. *Ariodes dussumieri* : Taylor, *in* Smith and Heemstra, *Smith's Sea Fishes* : 59.

Material examined : 1 ex., 180 mm, TV, 24.11.93, Antervedi, F-1241; 1 ex., 180 mm, TV, 21.11.93, Antervedi, F-1604.

Diagnostic features : D I, 7; A vi-v, 10-11; P I, 12; V i, 5; GR 14-16. A prominent protuberance of the supraethmoid bone on either side of eye. Supra occipital process more or less evident, subtriangular, rugose, striated. Teeth on palate in two patches on each side, arranged in a longitudinal series, anterior patch small and posterior patch large, eliptical and diverging posteriorly. Bluish above, lighter below; adipose fin with a black spot.

Distribution : Western Indian Ocean, Sri Lanka to Bangladesh.

Remarks : Recorded for the first time from Godavari estuary.

88. *Arius arius* (Hamilton)

1822. *Pimelodus arius* Hamilton, *Fishes of Ganges* : 170, 376 (Estuaries of Bengal).

1991. *Arius arius* : Talwar and Jhingran, *Inland Fishes*, 2 : 700.

Material examined : 13 ex., 60-85 mm, TV, 10.12.92, Antervedi, F-1020.

Diagnostic features : D I, 7; A v-vi, 14-16; P I, 10, V i, 5. Median fontanelle groove on top of head shallow, not reaching to base of supra-occipital process. Eyes 1.6-2.5 in interobital width. Teeth on palate globular, in a single large ovate patch on each side with a horn-like conical projection anteriorly. Tip of D spine prolonged into a filament. Back dark bluish to silvery, lighter below; adipose fin with a black spot.

Distribution : Pakistan, India, Bangladesh and Myanmar.

Remarks : Recorded for the first time from Godavari estuary.

89. *Arius jella* Day

1877. *Arius jella* Day, *Fishes of India;* (3) : 467, pl. 106, fig. 3 (Madras).

Material examined : 6 ex., 47-70 mm, TV, 21.11.92, B. V. Palem, F-1071; 2 ex., 60-100 mm, TV, 25.11.93, Biyyaputippa, F-1248; 3 ex., 93-100 mm, CANR, 16.10.92, Bhairavapalem, F-1516; 2 ex., 115-130 mm, SCN, 18.03.95, Upapara, F-1551.

Diagnostic features : D I, 7; A iv-v, 12-14; P I, 10; V i, 5. Eye 6-7 in head. Median fontanelle on top of head broad and flat, reaching to base of supra-occipital process. Palatine teeth globular, in a single large ovate patch, with lossely packed teeth, inner margins of patches not straight. D and P spine strongly serrated. Bluish-black above, whitish below; adipose fin with a black blotch.

Distribution : Coasts of India, Sri Lanka, Myanmar.

90. *Plotosus canius* Hamilton

1822. *Plotosus canius* Hamilton, *Fishes of Ganges* : 142, 374, pl. 15, fig. 44 (Rivers of lower Bengal).

Material examined : 1 ex., 40 mm, CANR, 15.09.93, Antervedi, F-1296; 4 ex., 98-115 mm, TV, 16.11.93, Chintawarapetta, F-1619.

Diagnostic features : D I, 4; D procurrent C 69-115; A 58-82; P I, 11-14; V i, 11-15; C 9-11; GR 22-26. Eye 8.3-14.3 in head. Barbels 4 pairs; nasal barbels long, reaching well behind eyes, usually to nape; maxillary barbels extending to P base. Dark olive-green above, below soiled creamy buff.

Distribution : Pakistan, India, through Indonesia to Papua New Guinea, the Philippines.

91. *Saurida micropectoralis* Shindo & Yamada

1972. *Saurida micropectoralis* Shindo and Yamada, *UO Jap. Soc. Ichthyol.*, **11** : 1-13; **12** : 1-14 (Gulf of Thailand).

Material examined : 3 ex., 83-132 mm, SCN, 18.03.95, Upapara, F-1559.

Diagnostic features : D 11-13; A 9-11; P i, 13-14; V i, 8; LL 55-58; Ltr. $3^1/_2/5$. Tip of P not reaching to the level of V origin. Brown, lighter below, flanks with blotches; bars on upper edge of C and anterior rays of D; inner surface of operculum gray; stomach and pyloric caecae unpigmented.

Distribution : East coast of India, Andaman Sea to South China Sea, the Philippines.

Remarks : Recorded for the first time from Godavari estuary.

92. *Saurida tumbil* (Bloch)

1795. *Salmo tumbil* Bloch, *Naturges. ausland. Fische*, 9 : 112, pl. 430 (Malabar).

1984. *Saurida tumbil* : Talwar and Kacker, *Commercial Sea Fishes of India* : 284.

Material examined : Not examined by us.

Diagnostic features : D 11-13; A 10-11; P i, 13-14; V i, 8; LL 55-58. P tip reaching beyond level of V origin, but short of D origin. Outer palatine teeth in 3-4 rows anteriorly. Pectoral axillary scale long and pointed. No blotches on flanks; no dots/bars on D or C; stomach and pyloric caecae unpigmented.

Distribution : Indo-west Pacific.

93. *Synodus indicus* (Day)

1873. *Saurus indicus* Day, *J. Linn. Soc. Lond.* (zool.), 11 : 526 (India).

1986. *Synodus indicus* : Cressey, *in* Smith and Heemstra, *Smith's Sea Fishes* : 79, pl. 11, fig. 79. 7.

Material examined : Not examined by us.

Diagnostic features : D 11-13; A 9-11; P 13 : V i, 7; LL 52-59; Ltr. $3^1/_2/5$. P not reaching line from D origin to V origin. Anterior nostril flap long and triangular. Anterior palatine teeth not longer than posterior teeth. A base shorter than V base. Nine dark blotches along LL; 2 small black streaks at upper edge of operculum.

Distribution : Indian Ocean.

94. *Trachinocephalus myops* (Forster)

1801. *Salmo myops* Forster, *in* Bloch and Schneider, *Syst. Ichth.* : 421 (St. Helena).

1984. *Trachinocephalus myops* : Talwar and Kacker, *Commercial Sea Fishes of India* : 289.

Material examined : Not examined by us.

Diagnostic features : D 11-14; A 13-18; P 11-13; V i, 7; LL 51-60; Ltr. $3^1/_2/5^1/_2$. Snout shorter than eye-daimeter. P reaches the line from D origin to V origin; inner rays of V 3 times longer than outer rays; A base longer than D base. Back greenish brown, flanks with faint blue green and yellow irregular longitudinal stripes; silvery below; a black shoulder spot.

Distribution : Worldwide in tropical and temperate waters.

95. *Harpadon nehereus* (Hamilton)

1822. *Osmerus nehereus* Hamilton, *Fishes of Ganges* : 209 (Mouth of Ganges river).

1991. *Harpadon nehereus* : Talwar and Jhingran, *Inland Fishes*, 2 : 724.

Material examined : 10 ex., 160-240 mm, TV, 24.11.93, Antervedi, F-1240; 5 ex., 190-220 mm, 21.11.93, Antervedi, F-1610.

Diagnostic features : D 12-14; A 13-15; P i, 10-11; V i, 8; D (adipose) present. Eyes small, covered by adipose membrane; snout very short. Mouth very wide, armed with slender, recurved and depressible teeth of unequal size; palatine teeth large, depressible; lower jaw longer then upper. P long, its tip reaching beyond V origin; V tip extending beyond A origin. Uniform light gray, speckled with black.

Distribution : Indo-west Pacific.

96. *Bregmaceros macclellandii* Thompson

1840. *Bregmaceros macclellandii* Thompson, *Mag. Nat. Hist. Charlesworth*, 4 : 184, fig. (Gangetic Delta).

Material examined : Not examined by us.

Diagnostic features : D I + 56-65; A 58-69; P 17-24; V 5-7; LS 70-90; Ltr. 13-15. V jugular, outer 3 rays very long and unbranched. Depth 6.5-9.2 in SL. D origin opposite A origin. Brown above with speckling, silvery below.

Distribution : Circum-tropical, except from eastern Pacific.

97. *Brotula multibarbata* Temminck & Schlegel

1846. *Brotula multibarbata* Temminck and Schlegel, *Fauna Japonica, Pisces* : 251, pl. 111, fig. 2 (Simabara Bay, Japan).

Material examined : Not examined by us.

Diagnostic features : D 117-123; A 88-100, P 22-26; V 2. Barbels present on snout and chin. Dusky in adults; vertical fins pale, with black submarginal band; juveniles lighter.

Distribution : Indo-west Pacific.

98. ***Batrichthys grunniens*** (Linnaeus)

1758. *Cottus grunniens* Linnaeus, *Syst. Nat.*, (ed. 10) 1 : 1209 (? East Indies).

1991. *Batrichthys grunniens* : Talwar and Jhingran, *Inland Fishes*, 2 : 727.

Material examined : Not examined by us.

Diagnostic features : D III, 20; A 16-18; P 21; V I, 2. Body rather elongate; head and anterior part of body depressed. Eyes about equal to inter-orbital width. Mouth large; teeth small, conical. No pectoral axillary pore. Light reddish-brown, marbled darker.

Distribution : The Ganges river in India, Myanmar, Singapore and the Philippines.

Remarks : Report of occurrence form Godavari estuary (Rao, 1976) need confirmation.

99. ***Hyporhamphus limbatus*** (Valenciennes)

1846. *Hemiramphus limbatus* Valenciennes, *Hist. nat. Poiss.*, 19 : 44 (Malabar, Bombay and Pondicherry).

1991. *Hyporhamphus limbatus* : Talwar and Jhingran, *Inland Fishes*, 2 : 734.

Material examined : 1 ex., 96 mm, CANR, 20.10.92, Cholangi Channel mouth, F-998; 1 ex., 68 mm, TV, 26.11.92, Bhairavapalem, F-1113; 8 ex., 69-129 mm, CANR, 29.09.95, Coringa Channel, F-1259; 1 ex., 84 mm, TV, 03.12.92, Antervedi, F-1519; 2 ex., 72-106 mm, TV, 27.11.92, Bhairavapalem, F-1524; 1 ex., 60 mm, SCN, 18.03.95, Upapara, F-1558.

Diagnostic features : D 12-16; A 13-16; P i, 10-11; V i, 5; GR 23-37. Head 3.5-3.7 in trunk. Upper jaw triangular, short and scaly; its width 0.6-0.8 in length. Lower jaw equal to or longer than head length. Teeth minute, tricuspid. Preorbital canal simple, without posterior branch. C emarginate. Greenish above, flank with silvery stripe, white below; fleshy tip of beak reddish; fins hyaline.

Distribution : Persian Gulf, through India, to Thailand and China.

100. ***Hyporhamphus xanthopterus*** (Valenciennes)

1846. *Hemiramphus xanthopterus* Valenciennes, *Hist. nat. Poiss.*, 19 : 47 (Alepey, Kerala).

1991. *Hyporhamphus xanthopterus* : Talwar and Jhingran, *Inland Fishes*, 2 : 735.

Material examined : Not examined by us.

Diagnostic features : D 14-16; A 14-17; P i, 10; V i, 5; GR 41-53. Upper jaw triangular, short and scaly, its width 0.8-1.0 in length; lower jaw shorter than head length. Preorbital canal simple, without posterior branch. C emarginate. Greenish above, with silvery lateral stripe, white below; fleshy tip of beak reddish; fins yellowish.

Distribution : Kerala-Vembanad lake.

Remarks : Report of occurrence (Rao, 1976) from Godavari estuary is doubtful.

101. ***Euleptorhamphus viridis*** (van Hasselt)

1823. *Hemiramphus viridis* van Hasselt, *Algem. Konst. Letterbode*, 2 : 131 (Vizigapatam).

1986. *Euleptorhamphus viridis* : Collette, *in* Smith and Heemstra, *Smith's Sea Fishes* : 389.

Material examined : Not examined by us.

Diagnostic features : D 20-25; A 20-25; P 8-9; Gr (6-9) + (18-23) = 25-32 on first arch; (3-5) + (13-19) = 16-24 on second arch; pre D. 48-72. Depth 16.1-23.5, head 6.3-7.4, P 3.6-4.0, lower jaw 2.2-2.7 in SL. Body highly compressed, ribbon-shaped; teeth present on vomer and tongue. Fins unpigmented.

Distribution : Indo-Pacific.

Remarks : Report of occurrence as *E. longirostris* (Cuvier, 1829) by Rao (1976).

102. ***Strongylura leiura*** (Bleeker)

1851. *Belone leiurus* Bleeker, *Nat. Tijdschr. Ned.-Indie*, 1 : 94 (Java).

1991. *Strongylura leiura* : Talwar and Jhingran, *Inland Fishes*, 2 : 741.

Material examined : Not examined by us.

Diagnostic features : D 17-21; A 23-25; P 10-11; V 6. Body rectangular in cross-section. C emarginate. D origin over 7-10th ray of A. P with a distal spot.

Distribution : Indo-west Pacific.

103. ***Strongylura strongylura*** (van Hasselt)

1823. *Belone strongylura* van Haselt, *Algem. Konst. Letterbode*, **2** : 130 (Vizagapatnam).

1991. *Strongylura strongylura* : Talwar and Jhingran, *Inland Fishes*, **2** : 742.

Material examined : 1 ex., 174 mm, CANR, 20.10.92, Cholangi Channel mouth, F-964; 1 ex., 195 mm, TV, 22.11.92, Yanam, F-1126; 4 ex., 130-200 mm, CANR, 29.01.95, Coringa Channel, F-1224; 1 ex., 230 mm, TV, 25.11.93, Biyyaputippa, F-1249.

Diagnostic features : D 12-15; A 15-18; P 10-12; V 6. Body rounded in cross-section; C rounded or truncate; D inserted behind A origin. A prominent rounded black spot on upper part of C base.

Distribution : Indo-west Pacific.

104. ***Xenentodon cancila*** (Hamilton)

1822. *Esox cancila* Hamilton, *Fishes of Ganges* : 213, 380, pl. 27, fig. 70 (Gangetic provinces).

1991. *Xenentodon cancila* : Talwar and Jhingran; *Inland Fishes*, **2** : 743.

Material examined : Not examined by us.

Diagnostic features : D 15-18; A 16-18; P 11; V 6; pre D. more than 200. D origin anterior to vertical through A origin. One pair of dentigerous upper pharyngeals. A series of 4 to 5 blotches on flanks between P and A.

Distribution : Pakistan, India, to Thailand.

105. ***Oryzias melastigma*** (McClelland)

1839. *Aplocheilus melastigmus* McClelland, *Asiatic Res.*, **19 (2)** : 301, 427, pl. 42, fig. 3 and pl. 35, fig. 4 (? Calcutta).

1991. *Oryzias melastigma* : Talwar and Jhingran, *Inland Fishes*, **2** : 745.

Material examined : 1 ex., 30 mm, CANR, 15.09.93, Antervedi, F-1300.

Diagnostic features : D 6-7; A 20-24; P 15; V 6; LS 27; Ltr. 9-11. Mouth upturned; eyes large. D inserted above posterior 1/3rd of A. Several dark blotches on flanks; a thin dark line along middle of sides of body ending as a caudal spot.

Distribution : India, Bangladesh and Myanmar.

106. ***Aplocheilus blocki*** (Arnold)

1911. *Haplochilus panchax* var. *blockii* Arnold, *Wochenschr. Aquarien und Terrarienkunde*, **8** : 672 (Ceylon).

1991. *Aplocheilus blocki* : Talwar and Jhingran, *Inland Fishes*, **2** : 750.

Material examined : Not examined by us.

Diagnostic features : D ii, 6; A iii, 11; P 14; V 6; LS 26-29. Eye 3.5 in head, 2.0 in interorbital width. C rounded. A pearly white spot on occiput and a black spot at D base.

Distribution : India-Tamil Nadu, Kerala and Kutch (Gujrat) and Sri Lanka.

107. ***Atherinomorus duodecimalis*** (Valenciennes)

1835. *Atherina duodecimalis* Valenciennes, *Hist. nat. Poiss.*, **10** : 458 (Ceylon).

1986. *Atherinomorus duodecimalis* : Ivantsoff, *in* Smith and Heemstra, *Smith's Sea Fishes* : 382.

Material examined : 1 ex., 65 mm, CANR, 29.01.95, Coringa Channel, F-1278.

Diagnostic features : D IV-VI + I, 9-10; A I, 12-13; P 14-17; GR 7 + (21-25); LS 33-37. Dentary with small tubercle at posterior end. Anus at mid-length of V. Silvery; a metallic silvery band along 3rd row of scales and a green band above it; mid lateral band less than one scale width.

Distribution : Indo-Pacific. Enters harbours and estuaries.

Remarks : Ivantsoff (1984) observes that this species has been known only from central Pacific

to New Guinea, Indonesia and Thailand, while confirming its occurrence in Madagascar. Further, he observes that "unpublished records" indicate its presence in Sri Lanka; where as published records are available from India [Day, 1876 (1975-78); Talwar and Kacker, 1984] and from Sri Lanka (Weber and de Beaufort, 1922; Munro, 1955). We reaffirm the presence of *A. duodecimalis* in the Indian coast with the sample analysed which completely conforms to the descriptions of Ivantsoff (1984 & 1986).

108. ***Halicampus koilomatodon*** (Bleeker)

1858. *Syngnathus koilomatodon* Bleeker, *Act. Soc. Sci. Indo-Neerl.*, **5** : 10. (Japan).

1955. *Halicampus koilomatodon* : Munro, *Marine and Freshwater Fishes of Ceylon* : **83**, pl. 14, fig. 227.

Material examined : Not examined by us.

Diagnostic features : D 19-22; A 3-5; P 16-19; C 10. Rings (17-18) + (33-36), total subdorsal rings (2-3) + (1-3). Shields transversely striated, edges prominent and serrated. Superior trunk and tail ridges discontinuous near rear of D base; inferior trunk and tail ridges discontinuous near anal ring; lateral trunk ridge confluent with inferior tail ridge. Brownish with white marblings; operculum with or without white stripes.

Distribution : Sri Lanka, to west-Pacific.

109. ***Hippichthys cyanospilos*** (Bleeker)

1854. *Syngnathus cyanospilos* Bleeker, *Natuurk, Tijdschr. Ned.-Indie*, **6** : 114 (Indonesia).

1986. *Hippichthys cyanospilos* : Dawson, *in* Smith and Heemstra, *Smith's Sea Fishes* : 452, pl. 23, fig. 145. 13.

Material examined : Not examined by us.

Diagnostic features : D 20-28; A 2-3; P 13-16. Rings (12-14) + (32-35) = 45-48; total subdorsal rings 4.25-6.0. D origin on last or penultimate trunk ring. Superior trunk and tail ridges discontinuous; inferior trunk and tail ridges continuous. Venter and side of trunk without dark bars; D typically with 3-4 prominent brown spots on each ray.

Distribution : Indo-west Pacific.

110. ***Hippichthys spicifer*** (Ruppell)

1838. *Syngnathus spicifer* Ruppell, *Neue Wirbelthieve Zu der Fauna von Abyssien gehorig*, Fische : 143, pl. 33, fig. 4 (Red Sea).

1991. *Hippichthys spicifer* : Talwar and Jhingran, *Inland Fishes*, **2** : 766.

Material examined : Not examined us.

Diagnostic features : D 25-30; A 2-3; P 15-18; Rings (14-16) + (36-41); total subdorsal rings 5-6. Lateral snout ridge vestigial or obsolete; scutula with distinct longitudinal keel. Head 6.9-10.3 (average 8.0) in SL. D origin on 2nd or 3rd tail ring. Variably brownish, mottled or with prominent dark bars crossing lower half of side and venter of trunk; bars obscured or obscured by dark ground colour in some adults.

Distribution : Indo-west Pacific.

111. ***Microphis brachyurus*** (Bleeker)

1853. *Syngnathus brachyurus* Bleeker, *Verh. batav. Genoot. Kunst. Wet.*, 25 (6) : 16 (Indonesia).

1991. *Microphis brachyurus* : Talwar and Jhingran, *Inland Fishes*, **2** : 770.

Material examined : Not examined by us.

Diagnostic features : D 37-54; A 4; P 17-23; C 9. Rings (17-22) + (20-26); subdorsal ring (2.0-0.25) + (6.5-8.75), total 7.0-10.75. Tail without caudal, shorter than trunk. Longitudinal opercular-ridge distinct, with one to several supplemental ridges. Head 4.2-5.3, snout 1.6-1.7 in SL. Snout relatively longer, its depth 7.2-11.3 in length. Operculum and anterior part of trunk with black spots; dark diffuse lateral band.

Distribution : Central and eastern Indian Ocean.

112. ***Ophisternon bengalense*** McClelland

1845. *Ophisternon bengalensis* McClelland, *Calcutta J. nat. Hist.*, **5 (18)** : 197, 220, pl. 11; fig. 1 (Hooghly river).

1991. *Ophisternon bengalense* : Talwar and Jhingran, *Inland Fishes*, **2** : 780.

Material examined : 1 ex., 255 mm, TV, 21.11.92, B. V. Valem, F-1287; 1 ex., 295 mm, TV, 22.11.92, B. V. Palem, F-1681.

Diagnostic features : Body eel-like and robust. Eyes minute. Mouth large; lips fleshy; teeth on jaws small and pointed, not continuous at symphysis; palatines in a band. Gill-opening a simple crecentic transverse fold free from isthmus. Branchiostegal rays 6. LL conspicuous. Brownish red.

Distribution : Indo-Malaysian region and the Philippines.

113. *Minous monodactylus* (Bloch & Schneider)

1801. *Scorpaena monodactyla* Bloch and Schneider, *Syst. Ichth.* : 195 (not known).

1984. *Minous monodactylus* : Poss and Rama Rao, *in* Fischer and Bianchi, *FAO species identification sheets for fishery purposes. W. Indian Ocean (Fishing Area 51)*, **4** : Scorpaenidae : no pagination.

Material examined : 1 ex., 44 mm, SCN, 18.03.95, Upapara, F-1548.

Diagnostic features : D IX-XI, 10-12 (total elements 19-21); A II, 7-10 (total elements 9-12); P 10 + 1 (lower most ray separate). Depth 4.0-4.2 in SL. Lacrimal bone movable, with 2 pre-obital spines that extend over maxilla, the first points antero-ventrally and the second postero-ventrally. First spine of D equal to or longer than the second, well separated from second. Body scaleless. Branchiostegal membrane broadly fused to isthmus. Anterior part of soft D with a large black area; inner side of P pale, without distinctive markings; C with 2 broad ventical bars.

Distribution : The Red Sea, through India, Indonesia to China.

114. *Trachicephalus uranoscopus* (Bloch & Schneider)

1801. *Synanceia uranoscopa* Bloch and Schneider, *Syst. Ichth.* : 195 (not known).

1984. *Trachicephalus uranoscopus* : Poss and Rama Rao, *in* Fischer and Bianchi, *FAO species identification sheets for fishery purposes. W. Indian Ocean (Fishing Area 51).*, **4** : Scorpaenidae : 13 (name only).

Material examined : Not examined by us.

Diagnostic features : D XII, 11-14; A II, 11-14; P 13-14. V I, 5; Branchiostegal membranes broadly fused to isthmus. Depth 4.2-4.6 in SL. Head with bony ridges having numerous blunt points; a blunt preorbital spine; preopercle edge with 5 blunt spines; opercle with two blunt spines. D and A covered by thick skin; V inserted below P. Brownish, with or without white spots; C with white edge.

Distribution : Coasts of India, eastwards to west-Pacific.

115. *Grammoplites scaber* (Linnaeus)

1758. *Cottus scaber* Linnaeus, *Systema Naturae*, (ed. 10) **1** : 264 (not known).

1991. *Grammoplites scaber* : Talwar and Jhingran, *Inland Fishes*, **2** : 782.

Material examined : 1 ex., 106 mm, CANR, 29.01.95, Coringa Channel, F-1261.

Diagnostic features : D I/VIII + 12; A 12; P 20-21; V I, 5; GR 1 + (5-6); LL 52-54, all or most of the pored scales bearing backwardly directed spines. Preopercular spine short, not extending to gill-opening; sub-orbital ridge with large spines. Teeth on vomer in 2 patches. Regular black dots along LL; spiny D dark; soft D & A with rows of black dots.

Distribution : Indo-west Pacific.

116. *Platycephalus indicus* (Linnaeus)

1758. *Callionymus indicus* Linnaeus, *Systema Naturae*, (ed. 10), **1** : 250 (Asia).

1991. *Platycephalus indicus* : Talwar and Jhingran, *Inland Fishes*, **2** : 782.

Material examined : 1 ex., 62 mm, TV, 20.11.92, Yanam, F-1533; 3 ex., 86-97 mm, TV, 12.11.93, Darbharevu, F-1645.

Diagnostic features : D I/VIII + 13; A 13; P 18; V I, 5; GR (2-3) + (7-8); LL 68-82. Head bearing smooth bony ridges; a small preocular spine and two preoperacular spines. Teeth on

vomer in one transverse patch. Brownish above, whitish below; C with 2-3 horizontal black stripes.

Distribution : Indo-west Pacific.

117. *Lates calcarifer* (Bloch)

1790. *Holocentrus calcarifer* Bloch, *Naturges. ausland, Fische,* (4) : 100, pl. 244 (? Indonesia).

1991. *Lates calcarifer* : Talwar and Jhingran, *Inland Fishes,* **2** : 789.

Material examined : 1 ex., 155 mm, CANR, 18.10.92, Dariyaltippa. F-1006; 1 ex., 145 mm, TV, 26.11.92, Bhairavapalem, F-1115; 1 ex., 135 mm, TV, 09.12.92, Antervedi, F-1626.

Diagnostic features : D VII-IX + I, 10-11; A III, 7-8; P 17; V I, 5; lower GR 16-17; LL 52-61. Upper jaw reaching to behind the eyes; nostrils close together; lower edge of preopercle serrated; tongue smooth. Olive-brown above, silvery below.

Distribution : Indo-west Pacific.

118. *Ambassis commersoni* Cuvier.

1828. *Ambassis commersoni* Cuvier *(partim), Hist. nat. Poiss,* **2** : 176, pl. 25, fig. 29 (Pondicherry).

Material examined : 3 ex., 40-42 mm, CANR. 18.10.92, Dariyaltippa, F-989; 1 ex., 53 mm, CANR, 20.10.92, Cholangi Channel mouth, F-1002; 1 ex., 70 mm, TV, 10.12.92, Antervedi, F-1028; 1 ex., 60 mm, TV, 23.11.92, Mundigattu, F-1057; 1 ex., 56 mm, TV, 21.11.92, B. V. Palem, F-1091; 1 ex., 56 mm, TV, 23.04.95, Darbharevu, F-1648.

Diagnostic features : D VII + I, 8-9; A III, 8-9; P i, 12-14; V I, 5; LL 27-30, complete; preD. 16-21; cheek with 2 scale rows. Supra-orbital ridge smooth, ending posteriorly in a spine; preorbital ridge entire. Bright silvery with mid lateral stripe.

Distribution : Indo-west Pacific.

119. *Ambassis gymnocephalus* (Lacepede)

1802. *Lutjanus gymnocephalus* Lacepede, *Hist. nat. Poiss.,* **3** : 181, 216, pl. 23, fig. 3 (Indo-Pacific).

1991. *Ambassis gymnocephalus* : Talwar and Jhingran, *Inland Fishes,* **2** : 796.

Material examined : 4 ex., 26-28 mm, TV, 23.11.92, Mundigattu, F-1058; 1 ex., 66 mm, CANR, 18.10.92, Dariyaltippa, F-1072; 1 ex., 45 mm, TV, 21.11.92, B. V. Palem, F-1092; 2 ex., 34-37 mm, TV, 29.11.92, B. V. Palem, F-1208; 1 ex., 45 mm, TV, 25.11.93, Biyyaputippa, F-1256; 2 ex., 39-44 mm, CANR, 15.09.93, Antervedi, F-1295; 6 ex., 42-48 mm, TV, 23.04.95, Darbharevu, F-1650.

Diagnostic features : D VII + I, 8-10; A III, 9-10; P ii, 12-14; V I, 5; LL interrupted; LS 24-28; preD. 12-15; cheek with 2 scale rows. Supra-orbital ridge dentate, with 2-4 spines posteriorly; preorbital ridge dentate; preopercular ridge serrated. Silvery with mid lateral stripe.

Distribution : Indo-west Pacific.

120. *Ambassis kopsii* Bleeker

1858. *Ambasis kopsii* Bleeker, *Natuurk, Tijdschr. Ned.-Indie,* **15** : 258 (Singapore).

Material examined : 3 ex., 42-49 mm, TV, 23.04.95, Darbharevu, F-1649.

Diagnostic features : D VII + I, 8-10; A III, 9; P ii, 12; V I, 5; LL 27-28, complete; preD. 8-12; cheek with 2 scale rows. Supra-orbital ridge with 2-3 small spines; sub-orbital entire; pre-orbital edge and ridge serrated; inter-operculum serrated posteriorly. Yellowish white with silvery band on flanks.

Distribution : Hooghly estuary in India; Thailand, Indonesia and the Philippines.

Remarks : This is the first record of occurrence from the Godavari estuary.

121. *Ambassis miops* Gunther

1871. *Ambassis miops* Gunther, *Proc. zool. Soc. Lond.* : 655 (Rarotonga, Cooks Is. Pacific ocean).

Material examined : 8 ex., 31-40 mm, TV, 10.12.92, Antervedi, F-1027; 2 ex., 32-44 mm, TV, 24.11.92, Coringa, F-1044.

Diagnostic features : D VII + I, 8; A III, 9; P i, 14; V I, 5; LL about 28, complete; pre D. 13-14; cheek with 2 scale rows. Supra-orbital ridge smooth; pre-orbital edge serrated; but ridge smooth; pre-operculum denticulate on ridge and edge; but hind margin entire. Yellowish-white with pepper-like pigmentation on scale margins of upper side; a think black stripe along flank.

Distribution : Indo-west Pacific.

Remarks : This is the first record of occurrence from the Godavari estuary.

122. *Pseudambassis ranga* (Hamilton)

1822. *Chanda ranga* Hamilton, *Fishes of Ganges* : 113, 371, pl. 16, fig. 38 (Fresh waters of all part of Gangetic provinces).

1991. *Pseudambasis ranga* : Talwar and Jhingran, *Inland Fishes*, 2 : 805.

Material examined : Not examined by us.

Diagnostic features : D VII + I, 11-14; A III, 13-15; P i, 11-12; V I, 5; LL 47-63; cheek with 7 rows of scale. Pre-opercular hind edge smooth, atmost with one or two serrations at angle. Body transparent with greenish-yellow tinge and silvery gloss.

Distribution : Pakistan, India, Bangladesh, Myanmar, Thailand and Malaysia.

123. *Epinephelus coioides* (Hamilton)

1822. *Bola coioides* Hamilton, *Fishes of Ganges* : 82 (Ganges estuaries).

1993. *Epinephelus coioides* : Heemstra and Randall, *FAO Fish. Synap.*, (125) 16 : 130.

Material examined : 2 ex., 60-94 mm, TV, 04.12.92, Chinchunada, F-798; 1 ex., 54 mm, TV, 13.11.93, Biyyaputippa, F-1635.

Diagnostic features : D XI, 14-16; A III, 8; P 18-20; V I, 5; GR (8-10) + (14-17), total 23-26; LL pored 58-65; LS 100-118. Depth 2.9-3.7, head 2.3-2.6 in SL; interorbital width 5.0-6.2 in head; snout 1.8-1.9 in upper jaw. Bony platelets on lateral side of first gill arch present. Preopercle angular. Mid-lateral body scales ctenoid. Orange or reddish brown dorsally, fading to white ventrally; numerous small dark spots on head, body and median fins, largest spots about 4 or 5 times that of rear nostrils. Five faint, irregular oblique, dark bars which bifurcate ventrally.

Distribution : Indo-west Pacific.

Remarks : Mohapatra and Venkateswarlu (1995) mistakenly reported *E. tauvina* (Forsskal) from Godavari estuary. On re-examination by us their sample turned out to be *E. coioides*. *E. tauvina* (Forsskal) has head 2.1-2.4 in SL; interorbital width 6.8-8.1 in head; snout 2.0-2.4 in upper jaw; lower GR 17-20; LL pored 63-74; LS 95-112; bony platelets on lateral side of first gill arch absent; preopercle broadly rounded; mid-lateral body scales smooth; body greenish gray to brown, covered with roundish dark spots, as large as eye in young and about pupil size in large fish; a large black blotch at the base of last 4 spines of D; median fins also covered with dark spots, which are so close-set in juveniles that the pale interspaces form a white reticulum.

124. *Epinephelus malabaricus* (Schneider)

1801. *Holocentrus malabaricus* Schneider, *Syst. Ichthyol.* : 319, pl. 63 (Tranquebar, Tamil Nadu).

1991. *Epinephelus malabaricus* : Talwar and Jhingran, *Inland Fishes*, 2 : 807.

Material examined : Not examined by us.

Diagnostic features : D XI, 14-16; A III, 8; P 18-20; V I, 5; GR (8-11) + (14-18), total 23-27; LL pored 54-64; LS 101-117. Depth 3.0-3.7, head 2.3-2.6 in SL; interorbital width 4.5-6.5 in head, snout 1.7-2.0 in upper jaw. Bony platelets on lateral side of first gill arch present. Preopercle angular. Mid-lateral body scales ctenoid. Dark brown, with small, well-separated, blackish brown spots, (largest spots about twice the size of rear nostrils) and also with scattered white spots and blotches; 5 irregular dark bars which tend to bifurcate ventrally.

Distribution : Indo-west Pacific.

Remarks : Often identification of *E. coioides*, *E. malabaricus* and *E. tauvina* is confused in

Indian waters. As discussed earlier *E. tauvina* can easily be distinguished from other two. Apparently *E. coioides* and *E. malabaricus* are similar in most of the accounts excepting for colour, where largest spots an body are longer in *E. coioides* and without white spots (Heemstra and Randall, 1993). Hence earlier identifications need confirmation.

125. ***Promicrops lanceolatus*** (Bloch)

1790. *Holocentrus lanceolatus* Bloch, *Naturges. ausland Fische,* (4) : 92, pl. 242, fig. 1 (East Indies).

1991. *Promicrops lanceolatus* : Talwar and Jhingran, *Inland Fishes,* **2** : 808.

Material examined : Not examined by us.

Diagnostic features : D XI, 14-16; A III, 8; P i, 17; V I, 5; LL 53-67, tubes branched, with 4-6 radiating ridges. Depth 3.0-3.4 in SL. Preopercle rounded, finely serrated. Scale cycloid. Juveniles variegated brown and yellow; fins with dark spots and blotches. Adults dark gray to brown with pale mottlings.

Distribution : Indo-west Pacific.

126. ***Terapon jarbua*** (Forsskal)

1775. *Sciaena jarbua* Forsskal, *Descript. Anim.* : 50, (Djedda, Red Sea).

1991. *Terapon jarbua* : Talwar and Jhingran, *Inland Fishes,* **2** : 811.

Material examined : 1 ex., 70 mm, CANR, 19.10.92, Cholangi Channel mouth, F-974; 2 ex., 80 mm, CANR, 21.10.92, B. V. Palem, F-982; 2 ex., 48-53 mm, TV, 21.11.92, B. V. Palem, F-1066; 1 ex., 67 mm, CANR, 22.10.92, Kakinada backwater, F-1081; 6 ex., 33-51 mm, TV, 26.11.92, Bhairavapalem, F-1110; 29 ex., 35-55 mm, TV, 29.11.92, B. V. Palem, F-1212; 1 ex., 49 mm, CANR, 29.01.95, Coringa Channel, F-1229; 1 ex., 70 mm, SCN, 18.03.95, Upapara, F-1543; 1 ex., 50 mm, CANR, 13.09.93, Sunkurevu, F-1578; 1 ex., 80 mm, TV, 24.04.95, Antervedi, F-1660.

Diagnostic features : D XI-XII, 9-11; A III, 7-10; P 13-14; V I, 5; lower GR 12-15; LL 75-100 (pored); Ltr. 13-17/19-24. Back with 3-4 longitudinally downwardly curved black stripes; D with a large black spot. C with three horizontal oblique stripes.

Distribution : Indo-west Pacific.

127. ***Terapon theraps*** (Cuvier)

1829. *Therapon theraps* Cuvier, *Hist. nat. Poiss.,* **3** : 129, pl. 53 (Java; Mahe).

1991. *Terapon theraps* : Talwar and Jhingran, *Inland Fishes,* **2** : 812.

Material examined : Not examined by us.

Diagnostic features : D XI-XII, 9-11; A III, 7-9; P 14-15; V I, 5; lower GR 14-17; LL pored 46-56; Ltr. 6-8/14-16. Body with 2-4 horizontal stripes; spinous D with a black blotch between 3rd and 7th spine; C striped.

Distribution : Indo-west Pacific.

128. ***Archamia lineolata*** (Ehrenberg)

1828. *Apogon lineolata* Ehrenberg, *in* Cuvier and Valenciennes, *Hist. nat. Poiss.,* **2** : 119 (Red Sea).

1986. *Archamia lineolata* : Gon, *in* Smith and Heemstra, *Smith's Sea Fishes* : 554; pl. 51, fig. 175. 31.

Material examined : 2 ex., 41-56 mm, SCN, 18.03.95, Upapara, F-1560.

Diagnostic features : D VI + I, 9; A II, 13-16; P 14; V I, 5; LL 26-28; preD. 5-6; GR (5-6) + (14-16). About 13 narrow red vertical bars on body; a black caudal spot, 2.0-2.5 in least depth of peduncle.

Distribution : Indo-Pacific.

129. ***Sillaginopsis panijus*** (Hamilton)

1822. *Cheilodipterus panijus* Hamilton, *Fishes of Ganges* : 57, 367 (Ganges esturies).

1991. *Sillaginopsis panijus* : Talwar and Jhingran, *Inland Fishes,* **2** : 816.

Material examined : Not examined by us.

Diagnostic features : D X + I, 26-27; A II, 24-26; P 24; V I, 5; LL 84-88. Second spine of D filamentous. Head greatly depressed; eyes very small. Light brown, fading to white.

Distribution : From south-west coast of India to Malaysia.

Remarks : Reported as *Silago domina* (Hamilton) by Rao (1976).

130. *Silago sihama* (Forsskal)

1775. *Atherina sihama* Forsskal, *Descript. Anim.* : 70 (Lohaja, Red Sea).

1991. *Sillago sihama* : Talwar and Jhingran, *Inland Fishes*, 2 : 818.

Material examined : 5 ex., 80-125 mm, SCN, 18.03.95, Upapara, F-1556; 1 ex., 108 mm, TV, 18.04.95, Chinchunada, F-1641.

Diagnostic features : D XI + I, 20-23; A II, 21-24; P 17; V I, 5; lower GR 7-9; LL 67-72. Airbladder with two postcoelomic extensions. Light brown, fading to white.

Distribution : Indo-west Pacific.

131. *Sillago vincenti* McKay

1980. *Sillago vincenti* McKay, *J. mar. biol. Ass. India*, 18 (2) : 378, fig. 1 (Kavanad near Neendakara, Kerala).

Material examined : 1 ex., 101 mm, CANR, 14.09.93, Chakkalitippa, F-1131.

Diagnostic features : D XI + I, 21-23; A II, 22-24; P 17; V I, 5; LL 70-74. Airbladder with a single postcoelomic extension, with a bulbous anterior projection and without anterolateral extensions. Light brown, fading to white; soft D with 5-7 rows of black spots.

Distribution : Southern coasts of India.

Remarks : Recorded for the first time from Godavari estuary.

132. *Lactarius lactarius* (Schneider)

1801. *Scomber lactarius* Schneider, *Syst. Ichth.* : 31 (Tranquebar).

1984. *Lactarius lactarius* : Talwar and Kacker, *Commercial Sea Fishes of India* : 427.

Material examined : Not examined by us.

Diagnostic features : D VII-VIII + I, 20-22; A III, 25-28. Body oblong and strongly compressed. Depth more than head length; head 2.5 in SL. Mouth large, oblique; lower jaw prominent; teeth on jaws small; a pair of canine at symphysis. V placed below P base. Scales cyloid, easily shed. A dusky spot on upper part of operculum.

Distribution : Indo-west Pacific.

133. *Rachycentron canadus* (Linnaeus)

1766. *Gasterosteus canadus* Linnaeus, *Syst. Nat.*, 1 (ed. 12) : 213 (Carolina).

1984. *Rachycentron canadus* : Talwar and Kacker, *Commercial Sea Fishes of India* : 429.

Material examined : 1 ex., 240 mm, TV, 06.12.92, Darbharevu, F-1521.

Diagnostic features : D VI-IX + I-III, 26-33; A II-III, 22-28; P 21-22; V I, 5; LL over 300; GR 2 + (9-10). D spines small, separate; C rounded in young; lunate in adults. Dark brown fading to white below; young with one or two silvery lateral bands.

Distribution : Circum-global in tropical and subtropical seas.

134. *Alectis indicus* (Ruppell)

1830. *Scyris indicus* Ruppell, *Atlas. nordle. Afrika, Fische Rothen Meers* : 128, pl. 33. Fig. 1 (Red Sea).

1984. *Alectis indicus* : Talwar and Kacker, *Commercial Sea Fishes of India* : 435.

Material examined : Not examined by us.

Diagnostic features : D VI + I, 18-20; A II + I, 16-18; GR (8-11) + (21-26); LL scutes 5-12. D spines embedded and not apparent in adults. Anterior rays of D and A extended into filaments in juveniles. Eye diameter 1.4-1.7 in suborbital depth; subortbital depth 0.8-1.0 in upper jaw length. Body superficially naked, scales minute and embedded. Silvery, with a small, dark opercular spot.

Distribution : Indo-west Pacific.

135. *Atropus atropos* (Bloch)

1801. *Brama atropos* Bloch, *Syst. Ichth.*, : 98 (Tranquebar).

1984. *Atropus atropos* : Smith-Vaniz, *in* Fischer and Bianchi, *FAO species identification sheets for fishery purposes. W. Indian Ocean (Fishing Area 51)*, Carangidae, 1 : no pagination.

Material examined : 2 ex., 40-51 mm, SCN, 18.03.95, Upapara, F-1547.

Diagnostic features : D I/VIII + I, 22-23; A II + I, 18; LL scutes 30-35. Abdomen with a deep longitudinal groove between A and V, accomodating V. Body deeply ovate; strongly compressed. V length equal to head. Bluish-green above, silvery below; V deep black; juveniles with vertical bands.

Distribution : Indo-Pacific.

136. *Carangoides oblongus* (Cuvier)

1833. *Caranx oblongus* Cuvier, *Hist. nat. Poiss.*, 9 : 128, (Vanicolo).

1984. *Carangoides oblongus* : Talwar and Kacker, *Commercial Sea Fishes of India* : 455.

Material examined : Not examined by us.

Diagnostic features : D I/VIII + I, 20-22; A II + I, 18-20; lower GR 17-19; LL scutes 37-45. Naked area of breast separated from naked base of P by a broad band of scales. Silvery-blue; young with cross bars; no blotch on soft D.

Distribution : Indo-west Pacific.

Remarks : Report of occurrence in Godavari estuary (Rao, 1976) needs confirmation.

137. *Caranx carangus* (Bloch)

1793. *Scomber carangus* Bloch, *Naturges. ausland. Fische*, (7) : 69 (Antiles, Atlantic Ocean).

1991. *Carnax carangus* : Talwar and Jhingran, *Inland Fishes*, 2 : 823.

Material examined : Not examined by us.

Diagnostic features : D I/VIII + I, 20-22; A II + I, 15-18; LL scutes 33-37. Breast naked ventrally, often with a small patch of prepelvic scale. Eye 3.5-4.0 in head; cleft of mouth opposite lower 1/3rd of eye. Silvery; darker above with golden hue; young with 4-5 dark cross bars; a small opercular spot.

Distribution : India, through Indonesia, the Philippines, to Japan, and tropical Atlantic.

138. *Caranx ignobilis* (Frosskal)

1775. *Scomber ignobilis* Forsskal, *Descript. Anim.* : 55 (Red Sea).

1991. *Caranx ignobilis* : Talwar and Jhingran, *Inland Fishes*, 2 : 823.

Material examined : 1 ex., 61 mm, CANR, 24.07.95, Chinchunada, F-1614; 2 ex, 43-53 mm, TV, 18.04.95, Chinchunada, F-1643; 1 ex, 49 mm, TV, 22.11.92, B. V. Palem, F-1684.

Diagnostic features : D I/VIII + I, 19-20; A II + I, 15-17; lower GR 16-17; LL scutes 28-30. Breast naked ventrally, typically with a small patch of prepelvic scales. Silvery-gray.

Distribution : Indo-west Pacific.

Remarks : Recorded for the first time from Godavari estuary.

139. *Carnax para* Cuvier

1833. *Caranx para* Cuvier, *Hist. nat. Poiss*, 9 : 58 (Malabar).

Material examined : 14 ex., 63-75 mm, CANR, 29.01.95, Coringa Channel, F-1231; 2 ex., 110-125 mm, TV, 24.11.93, Antervedi, F-1243; 3 ex., 98-128 mm, SCN, 18.03.95, Upapara, F-1544; 7 ex., 110-115, TV, 21.11.93, Antervedi, F-1611.

Diagnostic features : D I/VIII + I, 23-24; A II + I, 18-22; GR (10-12) + (27-32), total 38-44; LL scutes 40-46. Ventral profile distinctly more convex than dorsal; adipose eye lid well developed on posterior part of eye. Upper jaw anteriorly with 2 irregular rows of sort conical teeth, posteriorly inner surface of jaw paved with blunt teeth; lower jaw with a single row of short, conical teeth except 2 rows anteriorly. A large black spot on upper margin of opercle and adjacent areas of shoulder.

Distribution : Indo-west Pacific (not from African coast).

140. ***Caranx sexfasciatus*** Quoy & Gaimard

1825. *Caranx sexfasciatus* Quoy and Gaimard, *Voy. 'Uranie' et. Physic., Zool.* : 358, pl. 65, fig. 4. (Waigeo, Indonesia).

Material examined : 2 ex., 57-62 mm, CANR, 16.11.93, Chintawarapetta, F-1622.

Diagnostic features : D I/VIII + I, 18-22; A II + I, 14-17; GR (6-8) + (15-19); LL scutes 24-36. Breast fully scaled. Dark gray above, silvery below; a small black spot on upper edge of operculum. Soft D lobe with white tip. Juveniles with cross-bars.

Distribution : Indo-west Pacific.

Remarks : Recorded for the first time from Godavari estuary.

141. ***Megalaspis cordyla*** (Linnaeus)

1758. *Scomber cordyla* Linnaeus, *Syst. Nat.*, (ed. 10) **1** : 298 (no locality).

1986. *Megalaspis cordyla* : Smith-Vaniz, *in* Smith and Heemstra, *Smith's Sea Fishes* : 653. Fig. 210.34.

Material examined : Not examined by us.

Diagnostic features : D VIII + I, 10 + 8-9 finlets; A II + I, 10 + 6-8 finlets; GR (8-11) + (18-22); LL scutes 51-59, well developed, broad. Breast naked. Bluish-green above, silvery below; prominent black spot on posterior edge of operculum.

Distribution : Indo-west Pacific.

142. ***Parastromateus niger*** (Bloch)

1795. *Stromateus niger* Bloch, *Naturges. ausland. Fische*, (9) : 93, pl. 422 (Malaya).

1986. *Parastromateus niger* : Smith-Vaniz, *in* Smith and Heemstra, *Smith's Sea Fishes* : 654. pl. 81, fig. 210.36.

Material examined : Not examined by us.

Diagnostic features : D IV-V (embedded, not apparent in all but young) + I, 41-44; A II + I, 35-39; D and A with broadly rounded lobes; detached spine of A degenerate in adults; minute V present in young, absent in adult. LL with 8-19 weak scutes, forming a slight keel on caudal peduncle. Dark grey-brown fading to light grey; fins with dark margin; in juveniles D and A black.

Distribution : Indo-west Pacific.

Remarks : The occurrence of *P. niger* in Godavari estuary viewed by Talwar & Jhingran (1991) as "accidental intrusion"

143. ***Scomberoides lysan*** (Forsskal)

1775. *Scomber lysan* Forsskal, *Descript. Anim.* : 54 (Red Sea).

1991. *Scomberoides lysan* : Talwar and Jhingran, *Inland Fishes*, **2** : 825.

Material examined : 1 ex., 28 mm, SCN, 18.03.95, Upapara, F-1574.

Diagnostic features : D I/VI-VII + I, 19-21; A II + I, 17-19; GR 21-27. Upper jaw extends to posterior margin of eye in adults. Scales on mid body below LL lanceolate. Double series of 6-8 dusky round or oval blotches above and below LL; distal half of D dark.

Distribution : Indo-west Pacific.

144. ***Scomberoides tala*** (Cuvier)

1832. *Chorinemus tala* Cuvier, *Hist. nat. Poiss.*, **8** : 377 (Malabar).

1984. *Scomberoides tala* : Talwar and Kacker, *Commercial Sea Fishes of India* : 478.

Material examined : Not examined by us.

Diagnostic features : D I/VI-VII + I, 19-21; A II + I, 17-19; GR 11-15. Upper jaw extending to beyond posterior margin of eye; snout 3.3-3.8 in head. Scale on mid body below LL lanceolate. Silvery, with 4-8 vertically elongate blotches many of them intercepting LL.

Distribution : Indo-west Pacific.

145. ***Scomberoides tol*** (Cuvier)

1832. *Chorinemus tol* Cuvier, *Hist. nat. Poiss.* **8** : 385 (Malabar).

1986. *Scomberoides tol* : Smith-Vaniz, *in* Smith and Heemstra, *Smith's Sea Fishes* : 655, fig. 210.40.

Material examined : Not examined by us.

Diagnostic features : D I/VI-VII + I, 19-21; A II + I, 18-20; GR 21-27. Upper jaw extends to rear margin of pupil in adults. Scales on mid-body needle-like. Silvery, with 5-8 oval or vertically oblong dark blotches, the first 4-5 intersect LL; distal half of D lobe heavily pigmented.

Distribution : Indo-west Pacific.

146. ***Trachinotus blochii*** (Lacepede)

1801. *Caesiomorus blochii* Lacepede, *Hist. nat. Poiss.*, **3** : 92, 95, pl. 3, fig. 2 (Madagascar).

1984. *Trachinotus blochii* : Talwar and Kacker, *Commercial Sea Fishes of India* : 487.

Material examined : Not examined by us.

Diagnostic features : D VI + I, 18-20; A II + I, 16-18; GR (5-8) + (8-10). First predorsal bone oval-shaped or inverted tear-drop-shaped. Tongue toothless. Silvery, paler below; A dusky to dirty organge, lobe with a brownish anterior margin.

Distribution : Indo-west Pacific.

Remarks : Talwar and Jhingran (1991) consider occurrence of this species in Godavari estuary as 'doubtful' due to misidentification by Rao (1976).

147. ***Trachinotus mookalee*** Cuvier

1832. *Trachinotus mookalee* Cuvier, *Hist. nat. Poiss.*, **8** : 423.

Material examined : 1 ex., 102 mm, CANR, 19.10.92, Cholangi Channel mouth, F-972; 1 ex., 70 mm, SCN, 18.03.95, Upapara, F-1549.

Diagnostic features : D VI + I, 18-20; A II + I, 16-18; GR (5-8) + (8-10). First pre-dorsal bone inverted "L"-shaped with arm projecting anteriorly. Tongue with a narow band of teeth in young. Silvery; A bright to dirty yellow, lobe without a brownish anterior margin.

Distribution : Gulf of Oman, to India, Sri Lanka, Singapore, Gulf of Thailand and Hong Kong.

Remarks : Recorded for the first time from Godavari estuary.

148. ***Leiognathus blochii*** (Valenciennes)

1835. *Equula blochii* Valenciennes, *Hist. nat. Poiss.*, **10** : 84 (Malabar).

1991. *Leiognathus blochii* : Talwar and Jhingran, *Inland Fishes*, **2** : 830.

Material examined : 2 ex., 40-50 mm, TV, 18.04.95, Chinchunada, F-1642.

Diagnostic features : D VIII, 16; A III, 14; P i, 17; V I, 5. Depth 2.3-2.7 in SL. Cleft of mouth opposite lower-third of eye; narrow band of villiform teeth on each jaw. Breast scaly. Silvery, upper half with irregular lines; a dark saddle-shaped blotch on nape; a jet black blotch on upper half of D between 3rd and 6th spine.

Distribution : India, Gulf of Thailand, to the Philippines and northern Australia.

Remarks : Recorded for the first time from Godavari estuary.

149. ***Leiognathus brevirostris*** (Valenciennes)

1835. *Equula brevirostris* Valenciennes, *Hist. nat. Poiss.*, **10** : 83 (Malabar).

1984. *Leiognathus brevirostris* : Talwar and Kacker, *Commercial Sea Fishes of India* : 506.

Material examined : Not examined by us.

Diagnostic features : D VIII, 16; A III, 14; P i, 17; V I, 5. Depth 2.0-2.2 in SL. Cleft of mouth opposite lower edge of eye. Snout not truncate. Dorsal profile subequal in convexity to ventral. LL continued to the base of caudal. Breast naked. Silvery, with irregular markings on back; a dark brown saddle on nape; a yellow stripe along LL; a yellow oblique blotch on abdomen below P.

Distribution : India, Sri Lanka, through Indonesia, the Philippines.

150. ***Leiognathus dussumieri*** (Valenciennes)

1835. *Equula dussumieri* Valenciennes, *Hist.nat. Poiss.*, 10 : 77, pl. 283 (Coromandel).

1984. *Leiognathus dussumieri* : Talwar and Kacker, *Commercial Sea Fishes of India* : 509.

Material examined : Not examined by us.

Diagnostic features : D VIII, 16; A III, 14; P i, 17; V I, 5. Depth 2.0-2.3 in SL. Cleft of mouth opposite lower edge of eye. Breast scaly. Second D spine not elongated. V reaching A origin. Mandibuler profile straight or slightly concave. Silvery, with wavy vertical lines on back.

Distribution : Indo-west Pacific.

151. ***Leiognathus equulus*** (Forsskal)

1775. *Scomber equula* Forsskal, *Descript. Anim.* : 75 (Red Sea).

1991. *Leiognathus equulus* : Talwar and Jhingran, *Inland Fishes*, **2** : 831.

Material examined : 3 ex, 28-30 mm, TV, 10.12.92, Antervedi, F-1026; 2 ex, 28-35 mm, TV, 29.11.92, B. V. Palem, F-1210; 1 ex, 52 mm, SCN, 18.03.95, Upapara, F-1541; 13 ex, 42-47 mm, CANR, 24.07.95, Chinchunada, F-1613.

Diagnostic features : D VIII, 16; A III, 14; P i, 19; V I, 5. Depth 1.7-1.9 in SL. Dorsal profile strongly arched, cleft of mouth opposite lower edge of eye. Breast naked. Silvery, with faint narrow vertical lines on back; P axil dusky; a small brown saddle shaped blotch on caudal peduncle.

Distribution : Indo-west Pacific.

152. ***Leiognathus fasciatus*** (Lacepede)

1803. *Clupea fasciata* Lacepede, *Hist. nat. Poiss.*, 5 : 460, 463 (Mauritius).

1984. *Leiognathus fasciatus* : Talwar and Kacker, *Commercial Sea Fishes of India* : 511.

Material examined : Not examined by us.

Diagnostic features : D VIII, 16; A III, 14; P i, 19; V I, 5. Depth 1.7-2.0 in SL. Dorsal profile more convex. Mandibular profile strongly concave. Second spine of D elongated into a filament and that of A slighty produced. Silvery, with dark vertical lines on back; dark blotch on caudal peduncle; P axil yellowish.

Distribution : Indo-west Pacific.

153. ***Leiognathus splendens*** (Cuvier)

1829. *Equula splendens* Cuvier, *Regne Animal.* (2nd ed) 2 : 212, (Coromandel coast).

1991. *Leiognathus splendens* : Talwar and Jhingran, *Inland Fishes*, **2** : 832.

Material examined : 4 ex, 18-61 mm, SCN, 18.03.95, Upapara, F-1540.

Diagnostic features : D VIII, 16; A III, 14; P i, 19; V I, 5. Depth 1.7-2.0 in SL. Breast fully scaled. Ridge on lower arm of preopercle denticulated. D spines strong. Silvery, with wavy, close-set downwardly descending lines on back; spinous D with a jet black blotch.

Distribution : Indo-west Pacific.

154. ***Secutor insidiator*** (Bloch)

1787. *Zeus insidiator* Bloch, *Naturges. ausland. Fische*, (8) : 41, pl. 192; fig. 2 & 3 ("Suratte" India).

1991. *Secutor insidiator* : Talwar and Jhingran, *Inland Fishes*, **2** : 833.

Material examined : 8 ex, 22-68 mm, SCN, 18.03.95, Upapara, F-1542.

Diagnostic features : D VIII, 16; A III, 14; P i, 17; V I, 5. Depth 2.0-2.6 in SL. Maxilla tip reaching well below lower margin of eye. Sub-orbital region naked. Silvery, with blue spots forming vertical bands.

Distribution : Indo-west Pacific.

155. ***Secutor ruconius*** (Hamilton)

1822. *Chanda ruconius* Hamilton, *Fishes of Ganges* : 106, 371, pl. 12, fig. 35 (Estuaries of Ganges).

1991. *Secutor ruconius* : Talwar and Jhingran, *Inland Fishes*, **2** : 833.

Material examined : 1 ex, 45 mm, CANR, 29.01.95, Coringa Channel, F-1225.

Diagnostic features : D VIII, 16; A III, 14; P i, 17; V I, 5. Depth 1.4-1.7 in SL. Maxilla tip

reaching to lower margin of eye. Sub-orbital region scaled. Silvery, with blue spots on back.

Distribution : Indo-west Pacific.

156. ***Lutjanus argentimaculatus*** (Forsskal)

1775. *Sciaena argentimaculata* Forsskal, *Descript. Anim.* : 47 (Arabia).

1991. *Lutjanus argentimaculatus* : Talwar and Jhingran, *Inland Fishes;* **2** : 835.

Material examined : 1 ex, 36 mm, TV, 25.11.93, Biyyaputippa, F-1258.

Diagnostic features : D X, 13-14; A III, 8-9; P i, 15-16; V I, 5; GR (6-7) + (10-11); LL 44-48. Depth 2.5-2.9, head 2.3-2.7 in SL. Preopercle notch shallow. Longitudinal scale rows above LL parallel to dorsal profile anteriorly, but appearing to rise obliquely under soft part of D; scale-rows below LL horizontal; scale on head beginning behind eyes; temporal region mostly naked with a few scales; 7-8 scale-rows on preoperculum. Red-brown, pale on belly; often silvery spots in center of each scale.

Distribution : Indo-west Pacific.

157. ***Lutjanus fulviflammus*** (Forsskal)

1775. *Sciaena fulviflamma* Forsskal, *Descript. Anim.* : 45 (Arabia).

1984. *Lutjanus fulviflammus* : Talwar and Kacker, *Commercial Sea Fishes of India* : 538.

Material examined : 1 ex, 41 mm, CANR, 21.10.92, B. V. Palem, F-984; 1 ex, 55 mm, SCN, 18.03.95, Upapara, F-1561.

Diagnostic features : D X (rarely XI), 12-14; A III, 7-8; P i, 14-16; V I, 5; GR (6-7) + (7-11); LL 46-50. Depth 2.6-2.9, head 2.4-2.7 in SL. Preopercular notch shallow, interopercular knob indistinct. Vomerine teeth in arrow-head shape. Scale rows above LL rising obliquely to dorsal profile; below LL parallel to axis; scales on head beginning behind eyes. Silvery, with yellow lines along scale rows; a black blotch below anterior part of soft D on LL, major part of which below LL.

Distribution : Tropical Indo-west Pacific.

Remarks : Recorded for the first time from Godavari estuary.

158. ***Lutjanus johni*** (Bloch)

1792. *Anthias johni* Bloch, *Naturges. ausland. Fische.*, **(6)** : 113, 318 (Surat, India).

1991. *Lutjanus johni* : Talwar and Jhingran, *Inland Fishes,* **2** : 835.

Material examined : 1 ex, 45 mm, CANR, 23.10.92, Girijampetta, F-1078; 1 ex, 35 mm, TV, 21.11.92, B. V. Palem, F-1086; 8 ex, 34-71 mm, TV, 26.11.92, Bhairavapalem, F-1121; 2 ex, 51-56 mm, CANR, 29.01.95, Coringa Channel, F-1263; 1 ex, 45 mm, TV, 12.11.93, Darbharevu, F-1646.

Diagnostic features : D X, 13-14; A III, 8; P i, 16; V I, 5; LL 48-50. Preopercular notch shallow; no interopercular knob. Teeth on vomer inverted 'V' or triangular-shaped. Scale rows above LL parallel to dorsal profile; scales on head beginning above middle of eyes. Ground colour yellowish, with each scale spotted brown in center; a large black blotch below soft part of D, major part of which above LL.

Distribution : Indo-west Pacific.

159. ***Lutjanus kasmira*** (Forsskal)

1775. *Sciaena kasmira* Forsskal, *Descript. Anim.* : 46 (Arabia).

1984. *Lutjanus kasmira* : Talwar and Kacker, *Commercial Sea Fishes of India* : 542.

Material examined : Not examined by us.

Diagnostic features : D X, 14-15; A III, 7-8; P i, 14-15; V I, 5; GR 7 + (13-14); LL 50-58. Deep notch in preopercle; interopercular knob well-developed. Teeth on vomer in an inverted 'V'-shaped patch. Scale rows above LL obliquely ascending to dorsal profile, below LL parallel to axis. Bright yellow, darker above, with 4-5 blue longitudinal stripes bordered with brown; a large dark blotch on LL below anterior soft D.

Distribution : Topical Indo-west Pacific.

160. *Lutjanus russelli* (Bleeker)

1849. *Mesoprion ruselli* Bleeker, *Verh. batav. Genoot. Kunst. Wet.*, 22 : 41 (India).

1985. *Lutjanus russelli* : Allen, *in* Smith and Heemstra, *Smith's Sea Fishes* : 577, pl. 56, fig. 181.17.

Material examined : 1 ex, 65 mm, TV, 20.11.92, Yanam, F-1535; 1 ex, 45 mm, TV, 13.11.93, Biyyaputippa, F-1636.

Diagnostic features : D X, 14-15; A III, 8-9; P i, 15; V I, 5; GR (5-6) + (10-13); LL 48-52. Preopercular notch shallow. Teeth on vomer in a triangular patch. Scale rows above LL rising obliquely to dorsal profile. Reddish-brown, a dark brown blotch above LL below junction of spinous and soft D; about 8 brown lines, lower ones horizontal, upper rising obliquely to dorsal profile.

Distribution : Indo-west Pacific.

161. *Lobtes surinamensis* (Bloch)

1790. *Holocentrus surinamenis* Bloch, *Naturges. ausland. Fische*, (4) : 98, pl. 243 (Surinam).

1991. *Lobotes surinamensis* : Talwar and Jhingran, *Inland Fishes*, 2 : 838.

Material examined : Not examined by us.

Diagnostic features : D XI-XII, 15-16; A III, 11-12; P i, 16; V I, 5; LL 42-45; GR (6-7) + (13-15). Depth 2.0-2.5, head 2.6-3.0 in SL; eye 1.0-2.5 in interorbital width. Second A spine shorter than third. Preoperculum margin strongly denticulate. Soft D, A and C covered with scale. Olive brown, fading to silvery-gray below; juveniles with dark spots.

Distribution : Circumglobal, in tropical and subtropical waters.

162. *Gerres acinaces* Bleeker

1854. *Gerres acinaces* Bleeker, *Natuurk. Tijdschr. Ned.-Indie*, 6 : 194 (Jakarta, Java).

Material examined : 2 ex, 34-49 mm, TV, 24.11.92, Coringa, F-1040; 7 ex, 30-39 mm, TV, 21.11.92, B. V. Palem, F-1094; 14 ex, 28-57 mm, TV, 23.11.92, Mundigattu, F-1053; 1 ex, 36 mm, TV, 26.11.92, Bhairavapalem, F-1116; 46 ex, 29-44 mm, TV, 29.11.92, B. V. Palem, F-1211; 1 ex, 28 mm, CANR, 29.01.95, Coringa Channel, F-1277; 1 ex, 54 mm, TV, 13.11.93, Biyyaputippa, F-1637.

Diagnostic features : D IX-X, 9-11; A III, 7; LL 42-44; 4½-5½ scale rows between LL and base of 5th D spine. Depth 2.5-2.9 in SL. Tip of P reaching to or beyond A origin. Olive above to silvery below; in young 7 or 8 dusky bars on sides of body; in older specimens, several vertical series of ovoid spots below LL and rows of dark spots on following scale rows above LL; trailing edge of C black.

Distribution : Tropical Indo-west Pacific.

Remarks : It is observed by Talwar and Jhingran (1991) that *G. acinaces* does not enter brackish waters, lagoons and estuaries in Indian region. But we have collected sub-adults from Godavari estuary. Quite often it is misidentified as *G. oyena* ignoring LL scale count.

163. *Gerres filamentosus* Cuvier

1829. *Gerres filamentosus* Cuvier, *Regne Animal.* (2nd ed.) 2 : 188 (Vizagapatam).

Material examined : 1 ex, 132 mm, CANR, 13.01.95, Vimuladeevi, F-1593; 2 ex, 73-75 mm, TV, 18.04.95, Chinchunada, F-1639.

Diagnostic features : D IX, 10-11; A III, 7; P i, 14; V I, 5; LL 44-47; 4½-5 scale rows between LL and base of 5th spine of D. Depth 2.0-2.5 in SL. Predorsal distance equal to or less than body depth. Second spine of D filamentous. Silvery, with 7-10 vertical series of ovoid spots on upper sides.

Distribution : Indo-west Pacific.

164. *Gerres lucidus* Cuvier

1830. *Gerres lucidus* Cuvier, *Hist. nat. Poiss.*, 6 : 477.

Material examined : 2 ex, 65-73 mm, CANR, 18.10.92, Dariyaltippa, F-1007; 2 ex, 84-92 mm, TV, 23.11.92, Mundigattu, F-1051; 1 ex, 50 mm,

CANR, 24.07.95, Chinchunada, F-1615; 2 ex, 55-58 mm, TV, 18.04.95, Chinchunada, F-1640.

Diagnostic features : D IX, 10; A III, 7; LL 33-35; 3 scale rows between base of 5th D spine and LL. Depth 2.3-2.7 in SL. P tip reaching to level of anus, but not to level of A origin. Silvery, with four diffuse, dark saddles along back, extending down sides to midline; upper part of spinous D dark above a line between middle of 2nd spine and tip of 6th spine.

Distribution : West coast of India, east ward to South China Sea.

Remarks : Recorded for the first time from Godavari estuary. Earlier some authors considered it as synonym of *G. limbatus* Cuvier, 1830 which is a valid species till now.

165. *Gerres macracanthus* Bleeker

1854. *Gerres macracanthus* Bleeker, *Natuurk. Tijdschr. Ned.-Indie*, 6 : 195 (Batavia, Java).

Material examined : 1 ex, 61 mm, TV, 23.11.92, Mundigattu, F-1052; 1 ex, 68 mm, TV, 21.11.92, B. V. Palem, F-1090; 1 ex, 59 mm, TV, 24.04.95, Antervedi, F-1657.

Diagnostic features : D IX, 10; A III, 7; LL 42-44. Depth 2.3-2.4 in SL. Predorsal distance distinctly greater than body depth. Second D spine prolonged. Silvery, with 5-10 brown diffuse vertical bars on upper side.

Distribution : India, through Indonesia, to the Philippines, New Guinea.

Remarks : Recorded for the first time from Godavari estuary.

166. *Gerres oyena* (Forsskal)

1775. *Labrus oyena* Forsskal, *Descript. Anim.* : 35 (Red Sea).

1991. *Gerres oyena* : Talwar and Jhingran, *Inland Fishes*, 2 : 842.

Material examined : Not examined by us.

Diagnostic features : D IX, 10; A III, 7; P i, 14; V I, 5; LL 35-39; 3½ scale rows between LL and base of 5th D spine. Depth 3.0-3.3 in SL. P tip reaching to just above anus, not to A origin. Olive above to silvery below; 7-8 dusky bars on sides; C uniformly dusky.

Distribution : Tropical Indo-Pacific.

167. *Pomadasys argyreus* (Valenciennes)

1833. *Pristipoma argyreum* Valenciennes, *Hist. nat. Poiss.*, 9 : 385 (Coromandel Coast of India).

1991. *Pomadasys argyreus* : Talwar and Jhingran : *Inland Fishes*, 2 : 844.

Material examined : 1 ex, 155 mm, CANR, 15.09.93, Antervedi, F-1297; 1 ex, 33 mm, SCN, 18.03.95, Upapara, F-1575.

Diagnostic features : D XII, 13-14; A III, 7-8; P i, 16; V I, 5; LL 44-50. Depth 2.4-2.9 in SL. Head blunt, upper profile convex. Maxilla reaching atmost to below anterior margin of pupil. Silvery; gillcover with a large blue-black blotch in juveniles; D devoid of spots or stripes.

Distribution : Pakistan, India, east-ward to the Philippines.

168. *Pomadasys kaakan* (Cuvier)

1830. *Pristipoma kaakan* Cuvier, *Hist. nat. Poiss.*, 5 : 244 (India).

1984. *Pomadasys kaakan* : McKay, *in* Fischer and Bianchi, *FAO species identification sheets for fishery purposes. W. Indian Ocean (Fishing Area 51)*, Haemulidae., 2 : no pagination.

Material examined : 2 ex, 33-39 mm, CANR, 18.10.92, Dariyaltippa, F-992; 4 ex, 53-56 mm, CANR, 20.10.92, Cholangi Channel mouth, F-997; 22 ex, 27-55 mm, CANR, 18.10.92, Dariyaltippa, F-1004; 3 ex, 54-58 mm, TV, 10.12.92, Antervedi, F-1016; 4 ex, 31-57 mm, TV, 23.11.92, Mundigattu, F-1054; 3 ex, 39-73 mm, TV, 21.11.92, B. V. Palem, F-1088; 3 ex, 55-70 mm, TV, 07.12.92, Antervedi, F-1102; 21 ex, 35-55 mm, TV, 26.11.92, Bhairavapalem, F-1112; 7 ex, 46-74 mm, CANR, 29.01.95, Coringa Channel, F-1262.

Diagnostic features : D XII-XIII, 13-15; A III, 7-8; P 17-18; V I, 5; GR (5-6) + (13-14); LL 43-52. Depth 2.5-2.8 in SL. Upper jaw reaching

to the level of anterior margin of eye. Second spine of A longer and stronger than third spine. Silvery gray; with 7-11 interrupted double brown spots forming transverse bars in juveniles; D with 2 or 3 rows of brown spots.

Distribution : Indo-west Pacific.

169. ***Pomadays maculatum*** (Bloch)

1797. *Anthias maculatus* Bloch, *Naturges. ausland. Fische,* (7) : 9, pl. 326, fig. 2 (East Indies).

1986. *Pomadasys maculatum* : Smith and McKay, *in* Smith and Heemstra, *Smith's Sea Fishes* : 570, fig. 179.15.

Material examined : 3 ex, 43-47 mm, SCN, 18.03.95, Upapara, F-1565

Diagnostic features : D XII, 13-15; A III, 7-8; P i, 16; V I, 5; LL 48-54; GR 6 + (14-16). Depth 2.7-2.9 in SL. Second A spine longer and stronger than third. A large oblique saddle-like blotch on nape; back with a series of incomplete cross bars; spinous D with a large black blotch.

Distribution : Tropical Indo-west Pacific.

170. ***Pomadasys olivaceum*** (Day)

1875. *Pristipoma olivaceum* Day, *Fishes of India,* (1) : 73, pl. 19, fig. 1 (Sind).

1986. *Pomadasys olivaceum* : Smith and McKay, *in* Smith and Heemstra, *Smith's Sea Fishes* : 570, pl. 52, fig. 179.17.

Material examined : No examined by us.

Diagnostic features : D XII, 15-17; A III, 11-13; P i, 15-16; V I, 5; GR (5-7) + (13-15); LL 51-54. Depth about 2.0 in SL. Pre-operculum edge serrate. Second A spine as long as third. Uniform silvery to greenish, darker above; a large black blotch bordered anteriorly with yellow on upper angle of operculum; no spots on D.

Distribution : Indian Ocean.

171. ***Acanthopagrus berda*** (Forsskal)

1775. *Sparus berda* Forsskal, Descript. Anim : 32 (Arabia).

1991. *Acanthopagrus berda* : Talwar and Jhingran, *Inland Fishes,* 2 : 847.

Material examined : Not examined by us.

Diagnostic features : D XI, 11-12; A III, 8-9; P i, 13; V I, 5; LL 44-47. Depth 2.0-2.4 in SL. Four to six incisors at front of upper jaw; 6-8 on lower jaw, followed by 3-5 rows of molars. Pre-operculum with 6 rows of scales. Grayish-silvery to black; A and C grayish-black.

Distribution : Indo-west Pacific. Inhabits seas, estuaries, entering fresh waters.

172. ***Acanthopagrus latus*** (Houttuyn)

1782. *Sparus latus* Houttuyn, *Verh. Holland. Maatsch. Wet. Haarlem,* 20 : 322 (Japan).

1991. *Acanthopagrus latus* : Talwar and Jhingran, *Inland Fishes,* 2 : 847.

Material examined : Not examined by us.

Diagnostic features : D XI (XII), 10-12; A III, 8-9; P i, 14; V I, 5; LL 46-48; 4-5 rows of scales on operculum. Depth 2.6-2.8 in SL. Four to six incisors at front of upper and lower jaw, followed by 3-5 rows of molars. Dusky gray, darker above, yellowish below; scales with dark bases and silvery edges; often a dark band between eyes and a dark spot at origin of LL; A and lower lobe of C yellow.

Distribution : Indo-west Pacific. Inhabits shallow coastal waters; enters estuaries.

173. ***Chrysochir aureus*** (Richardson)

1846. *Otolithus aureus* Richardson, *Rep. Br., Ass. Advmt. Sci.,* **15** : 224 (Canton).

1995. *Chrysochir aureus* : Talwar, *Fauna of India-Sciaenidae* : 54.

Material examined : 1 ex, 220 mm, TV, 02.12.92, Antervedi, F-1128; 1 ex, 102 mm, TV, 21.11.93, Antervedi, F-1601.

Diagnostic features : D X + I, 25-28; A II, 6-7; P i, 16-18; V I, 5; GR (4-6) + (7-10); LL 48-51. Depth 3.6-4.3, head 2.8-3.6 in SL; second spine of A 4.0-4.2 in head. Mouth inferior; one or two pairs of canine teeth in upper jaw only; anterior pair of pores on front of chin separated by symphysis. Gas bladder carrot-shaped with

24-28 pairs of arborescent appendages, anterior pair with swollen bases and branching over posterior surface of transverse septum, not entering head. Metallic blue above, shading to silvery below.

Distribution : East coast of India to west-Pacific.

Remarks : Recorded for the first time from Godavari estuary.

174. ***Daysciaena albida*** (Cuvier)

1830. *Corvina albida* Cuvier, *Hist. nat. Poiss.*, 5 : 93 (Pondicherry and Malabar).

1995. *Daysciaena albida* : Talwar, *Fauna of India-Sciaenidae* : 79.

Material examined : 1 ex, 70 mm, TV, 21.11.92, B. V. Palem, F-1096.

Diagnostic features : D IX-X + I, 23-26; A II, 7; P i, 17; V I, 5; GR (5-7) + (7-10); LL 48-51. Depth 3.0-4.0, head 3.0-3.5 in SL; 2nd spine of A 2.0-2.1 in head. A pair of small tapering barbel on chin; no canines, teeth differentiated in lower jaw. Gas bladder carrot-shaped with 17-19 pairs of arborescent appendages, anterior pair cephalic, entering into head and branching between skull and upper gillarches. Back gray, shading to silvery below; faint oblique lines along scale rows; a black blotch at P axil; outer margin of spinous D dark.

Distribution : India, Sri Lanka, and eastwards possibly to Borneo.

Remarks : Recorded for the first time from Godavari estuary.

175. ***Dendrophysa ruselli*** (Cuvier)

1830. *Umbrina russelli* Cuvier, *Hist. nat. Poiss.*, 5 : 178 (Vizagapatanam).

1995. *Dendrophysa russelli* : Talwar, *Fauna of India-Sciaenidae* : 72.

Material examined : 1 ex, 70 mm, CANR, 20.10.92, Cholangi Channel mouth, F-1000; 2 ex, 63-67 mm, CANR, 13.01.95, Veemuladeevi, F-1594; 1 ex, 69 mm, TV, 12.11.93, Darbharevu, F-1644.

Diagnostic features : D X + I, 25-28; A II, 7; P i, 16; V I, 5; GR (4-5) + (8-10); LL 46-49. Depth 3.0-3.4, head 3.0-3.5 in SL; 2nd spine of A 2.5-2.6 in head. Single mental barbel. No canines, teeth on lower jaw uniform. Gas bladder carrot-shaped with 14-17 pairs of arborescent appendages, anterior branch entering head, last diverticula simple or bifid. Back gray, shading to white below; a dark brown band on nape; opercle with a deep blue blotch; upper part of spinous D dark.

Distribution : India, east wards to west-Pacific.

176. ***Johnieops aneus*** (Bloch)

1793. *Johnius aneus* Bloch. *Naturges. ausland. Fische*, (7) : 135, pl. 357 (Malabar).

1995. *Johnieops aneus* : Talwar, *Fauna of India-Sciaenidae* : 122.

Material examined : Not examined by us.

Diagnostic features : D X + I, 25-29; A II, 7; P i, 15-16; V I, 5; GR (7-8) + (15-16), short and spinulose; LL 49-50. Depth 3.3-3.9, head 3.2-3.4 in SL; 2nd spine of A 3.3-3.4 in head. Snout rounded (rather obtuse), not inflated. Teeth slightly differentiated in size in both jaws, outer row of upper jaw teeth enlarged and spaced. Preopercular margin denticulate. Gas bladder hammer shaped with 13-14 pairs of arborescent appendages. Back dark gray, silvery below; upper half of spinous D dusky.

Distribution : From 'the Gulf' to south west coast of India, and Sri Lanka.

Remarks : Report of occurrence by Rao (1976) from Godavari estuary needs confirmation.

177. ***Johnieops dussumieri*** (Cuvier)

1830. *Corvina dussumieri* Cuvier, *Hist. nat. Poiss.*, 5 : 119 (Malabar).

1995. *Johnieops dussumieri* : Talwar, *Fauna of India-Sciaenidae* : 117.

Material examined : 1 ex, 135 mm, CANR, 22.09.93, Vodalarevu, F-1624.

Diagnostic features : D IX-X + I, 26-29; A II, 7-8; P i, 15-16; V I, 5; GR 5 + (13-16), short, stout, curved and coarsely toothed; LL 47-49. Depth 3.1-3.4, head 3.0-3.3 in SL; 2nd spine of A 3.8-4.0 in head. Snout prominent, swollen and inflated. Outer teeth of upper jaw enlarged, widely spaced; inner teeth of lower jaw enlarged. Gas bladder hammer-shaped with 14-15 pairs of arborescent appendages. Dusky-brown on back, silvery below; opercle with a steel-blue blotch; upper part of spinous D dark; a black spot at P base.

Distribution : Indian Ocean.

178. ***Johnieops sina*** (Cuvier)

1830. *Corvina sina* Cuvier, *Hist. nat. Poiss.*, 5 : 122 (Pondicherry and Malabar).

1995. *Johnieops sina* : Talwar, *Fauna of India-Scaienidae* : 120.

Material examined : 1 ex, 62 mm, CANR, 18.10.92, Dariyaltippa, F-988; 1 ex, 67 mm, TV, 21.11.92, B. V. Palem, F-1097; 1 ex, 88 mm, TV, 07.12.92, Antervedi, F-1103; 1 ex, 60 mm, TV, 26.11.92, Bhairavapalem, F-1123; 1 ex, 110 mm, TV, 02.12.92, Antervedi, F-1130; 2 ex, 67-73 mm, CANR, 29.01.95, Coringa Channel, F-1217; 2 ex, 45-61 mm, TV, 02.12.92, Antervedi, F-1530; 2 ex, 100-106 mm, TV, 21.11.93, Antervedi, F-1608; 1 ex, 110 mm, CANR, 22.09.93, Vodalarevu, F-1625.

Diagnostic features : D IX-X + I, 26-31; A II, 7; P i, 16-17; V I, 5; GR (6-9) + (13-15), long and slender; LL 48-50. Depth and head 3.0-3.4 in SL; 2nd spine of A 3.0-3.3 in head. Snout evenly decurved, not inflated. Preopercular margin finely serrated. Teeth well differentiated in size in both jaws, outer teeth of upper jaw enlarged and widely spaced; inner teeth of lower jaw enlarged. Gas bladder hammer shaped with 12-17 pairs of arborescent appendages. Dusky brown on back, silvery below; a steel-blue blotch on opercle; upper two-third of spinous D dark.

Distribution : Indo-west Pacific.

179. ***Johnius belangerii*** (Cuvier)

1830. *Corvina belangerii* Cuvier, *Hist. nat. Poiss.*, 5 : 120 (Pondicherry).

1995. *Johnius belangerii* : Talwar, *Fauna of India-Sciaenidae* : 103.

Material examined : 7 ex, 68-91 mm, CANR, 29.01.95, Coringa Channel, F-1218; 2 ex, 107-117 mm, CANR, 15.09.93, Antervedi, F-1302; 1 ex, 102 mm, TV, 21.11.93, Antervedi, F-1609.

Diagnostic features : D IX-X + I, 27-31; A II, 7-8; P i, 15-16; V I, 5; GR (5-6) + (7-9), very short, often club-shaped, spinulose; LL 48-52. Depth 3.2-3.9, head 3.1-3.7 in SL; 2nd spine of A 2.0-2.5 in head. Snout steeply rounded, not or but slightly projecting. Teeth differentiated in size in upper jaw only, outer row enlarged, close-set. Gas bladder hammer-shaped with 11-14 pairs of arborescent appendages. Spinous D black; gill-cover with a dark blotch.

Distribution : Pakistan, India, Sri Lanka, through Indonesia, to China, Japan, and eastern coast of Australia.

Remarks : Recorded for the first time from Godavari estuary.

180. ***Johnius coitor*** (Hamilton)

1822. *Bola coitor* Hamilton, *Fishes of Ganges* : 75, 368, pl. 27, fig. 24 (Ganga river).

1995. *Johnius coitor* : Talwar, *Fauna of India-Sciaenidae* : 99.

Material examined : 5 ex, 47-70 mm, CANR, 14.09.93, Chakkalitippa, F-1528.

Diagnostic features : D X + I, 26-29; A II, 7; P i, 15-16; V I, 5: GR (6-7) + (9-12); LL 48-51. Depth 3.2-3.8, head 3.2-3.5 in SL; 2nd spine of A 1.9-2.3 in head. Snout swollen and projecting, about 1.5 in eye. Teeth differenciated in size in upper jaw only, outer row slightly enlarged, close-set. Gas bladder hammer-shaped with 11-13 pairs of arborescent appendages. Light golden yellow with light purple or blue sheen; spinous D with dark margin.

Distribution : East coast of India, east wards to the eastern coast of Australia.

181. *Johnius dussumieri* (Valenciennes)

1833. *Umbrina dussumieri* Valenciennes, *Hist. nat. Poiss.*, 9 : 481 (Coromandel coast of India).

1995. *Johnius dussumieri* : Talwar, *Fauna of India-Sciaenidae* : 94.

Material examined : 1 ex, 100 mm, SCN, 18.03.95, Upapara, F-1566.

Diagnostic features : D X + I, 22-26; A II, 7; P i, 16; V I, 5; GR (4-5) + (5-9); LL 48-50. Depth 3.0-3.5, head 3.0-3.4 in SL; 2nd spine of A 3.3-3.6 in head. Snout rounded, projecting. Teeth in upper jaw differentiated; outer row enlarged, close-set. Scales on body cycloid. Gas bladder hammer-shaped with 14-15 pairs of arborescent appendages. Head and back black, silvery below; upper part of spinous D black.

Distribution : Indo-Pacific.

182. *Nibea maculata* (Schneider)

1801. *Johnius maculatus* Schneider, *Syst. Ichthyol.* : 75 (Tranquebar).

1995. *Nibea maculata* : Talwar, *Fauna of India-Sciaenidae* : 87.

Material examined : Not examined by us.

Diagnostic features : D X + I, 24-26; A II, 7; P i, 17; V I, 5; GR (3-5) + (5-10); LL 45-48. Depth 3.0-3.3, head 2.8-3.5 in SL; 2nd spine of A 3.6-3.8 in head. Snout acute, prominent, projecting. Teeth well differentiated in both jaws. Gas bladder carrot-shaped, with 18-21 pairs of arborescent appendages, anterior pair extending into head. A distinct colour pattern of 5 dark bars extending obliquely from back to lower part of flanks, and a sixth dark blotch on top of caudal peduncle; first bar broadest, from nape obliquely back ward; spinous D black except along base; soft D margin black.

Distribution : Pakistan, India, Sri Lanka, east ward to Malaysia.

183. *Nibea soldado* (Lacepede)

1802. *Holocentrus soldado* Lacepede, *Hist. nat. Poiss.*, 4 : 344, 389 (? East Indies).

1995. *Nibea soldado* : Talwar, *Fauna of India-Sciaenidae* : 83.

Material examined : 4 ex., 60-76 mm, CANR, 29.01.95, Coringa Channel, F-1216.

Diagnostic features : D X + I, 28-30; A II, 7; P i, 16; V I, 5; GR (4-7) + (6-9); LL 48-50. Depth 3.1-3.8, head 3.1-3.3 in SL; 2nd A spine 1.8-1.9 in head. Back arched; snout decurved, not projecting. Teeth well differentiated in size in both jaws. Gas bladder carrot-shaped with 20-22 pairs of arborescent appendages; anterior branch entering into head. Silvery, with faint series of oblique stripes along scale-rows; soft D margin dark.

Distribution : Pakistan, India, Sri Lanka, east wards to Indonesia and Australia.

184. *Otolithes ruber* (Schneider)

1801. *Johnius ruber* Schneider, *Syst. Ichthyol.* : 75, pl. 17 (Tranquebar).

1995. *Otolithes ruber* : Talwar, *Fauna of India-Sciaenidae* : 58

Material examined : 1 ex, 155 mm, TV, 02.12.92, Antervedi, F-1129; 1 ex, 150 mm, TV, 24.11.93, Antervedi, F-1242; 1 ex, 88 mm, CANR, 15.09.93, Antervedi, F-1303.

Diagnostic features : D IX-X + I, 27-30; A II, 7; P i, 15, V I, 5; GR 4 + (8-11), long, slender; LL 52-54. Depth 3.9-4.8, head 2.9-3.4 in SL; 2nd A spine 5.7-5.9 in head. Mouth large, terminal; lower jaw projecting. Teeth in upper jaw in two rows, with 1 or 2 pairs of strong canines near symphysis; lower jaw with a single or a pair of canine at the tip. Gas bladder carrot-shaped with 32-36 pairs of arborescent appendges, anterior pair branching on posterior surface of transverse septum and not entering head. Brownish above, silvery with a golden sheen on flanks and belly, often with oblique dark streaks dorsally.

Distribution : Indo-west Pacific.

Remarks : Recorded for the first time from Godavari estuary.

185. *Panna microdon* (Bleeker)

1849. *Otolithus microdon* Bleeker, *Verh. batav. Genoot. Kunst. Wet.*, **22** (4) : 10 (Madura, East Indies).

1995. *Panna microdon* : Talwar, *Fauna of India-Sciaenidae* : 31.

Material examined : 2 ex, 145-155 mm, CANR, 15.09.93, Antervedi, F-1304; 2 ex, 142-145 mm, TV, 21.11.93, Antervedi, F-1602.

Diagnostic features : D VIII-X + I, 31-37; A II, 6-7; P i, 17-18; V I, 5; GR (7-8) + (10-12), lanceolate; LL 92-95. Depth 3.8-5.0, head 2.8-3.9 in SL; 2nd spine of A 3.2-3.5 in head. Mouth large, terminal; snout pointed; maxilla extending beyond eye; teeth in both jaws differentiated; outer row in upper jaw enlarged and spaced with one or two canines at tip. Gas bladder carrot-shaped with one pair of tubular appendages arising at its anterior end, dividing into an cephalic branch entering head and a long posterior (abdominal) tubular branch lying beside the main bladder to its posterior end. Brown, lighter below.

Distribution : India, Sri Lanka, to Borneo, the South China Sea.

186. *Protonibea diacanthus* (Lacepede)

1802. *Lutjanus diacanthus* Lacepede, *Hist. nat. Poiss.*, **4** : 240 (no locality).

1995. *Protonibea diacanthus* : Talwar, *Fauna of India-Sciaenidae* : 69.

Material examined : Not examined by us.

Diagnostic features : D IX-X + I, 22-25; A II, 7; P i, 17-18; V I, 5; GR (5-7) + (5-8); LL 51-52. Depth 3.2-4.2, head 2.9-3.3 in SL; 2nd spine of A 3.0-3.2 in head. Snout acute; mouth large and terminal; teeth differentiated in size in both jaws, outer row in upper jaw enlarged and spaced. Gas bladder carrot-shaped bearing 16-20 pairs of appendages, anterior pair branching on posterior surface of transverse septum, but not entering head. Dark-gray; 5 dark blotches along back; many smaller black spots on head, upper half of body and D and C.

Distribution : Gulf of Oman, through India, Indonesia, to the Philippines, China and Japan.

187. *Upeneus sulphureus* (Cuvier)

1829. *Upeneus sulphureus* Cuvier, *Hist. nat. Poiss.*, **3** : 450 (Anjer straits of Sunda).

Material examined : Not examined by us.

Diagnostic features : D VIII + I, 8; A I, 7; P i, 15; V I, 5; LL 34-37; GR 8 + (20-21). Depth 3.2-3.6, head 3.1-3.3 in SL; 5-7 scale rows between both D; 12 scale rows along upper part of caudal peduncle. D with three horizontal stripes; no cross bars on caudal.

Distribution : Indo-west Pacific.

188. *Drepane longimanus* (Bloch & Schneider)

1801. *Chaetodon longimanus* Bloch and Schneider, *Syst. Ichth.*, : 229 (Tranquebar).

1986. *Drepane longimanus* : Smith, *in* Smith and Heemstra, *Smith's Sea Fishes* : 610.

Material examined : 2 ex, 40 mm, CANR, 20.10.92, Cholangi Channel mouth, F-999; 1 ex, 20 mm, CANR, 18.10.92, Dariyaltippa, F-1012; 1 ex, 32 mm, TV, 27.11.92, Bhairavapalem, F-1525.

Diagnostic features : D VIII, 21-22; A III, 17-19; P i, 15-17; V I, 5; LL 45-55. Third spine of D longest. Silvery with 4-9 gray vertical bars on upper half.

Distribution : Tropical Indo-west Pacific.

Remarks : Recorded for the first time from Godavari estuary.

189. *Drepane punctatus* (Linnaeus)

1758. *Chaetodon punctatus* Linnaeus, *Syst. Nat.*, 1 (ed. 10) : 273. (Asia).

1991. *Drepane punctatus* : Talwar and Jhingran, *Inland Fishes*, **2** : 874.

Material examined : Not examined by us.

Diagnostic features : D IX, 19-22; A III, 17-19; P i, 17; V I, 5. Fourth D spine longest. Silvery, with 4-11 vertical bars of small black spots on upper half.

Distribution : Indo-west Pacific.

190. ***Platax orbicularis*** (Forsskal)

1775. *Chaetodon orbicularis* Forsskal, *Descript. Anim.* : 59 (Djedda).

1955. *Platax orbicularis* : Munro, *Marine and Freshwater Fishes of Ceylon* : 168, pl. 33, fig. 498.

Material examined : Not examined by us.

Diagnostic features : D V, 34-38; A III, 26-28; LL 48-56; 25-30 scales from LL origin to 1st D spine. Middle cusp of teeth stronger and longer than lateral cusps. Soft D and A less produced. No vomerine teeth. Three broad cross bars, passing through eye, P and across soft D and A; the band through eye formed of vermiculations.

Distribution : Indo-west Pacific.

191. ***Platax teira*** (Forsskal)

1775. *Chaetodon teira* Forsskal, *Descript. Anim.* : 60 (Red Sea).

1955. *Platax teira* : Munro, *Marine and Freshwater Fishes of Ceylon* : 168, pl. 33, fig. 497.

Material examined : Not examined by us.

Diagnostic features : D V, 30-33; A III, 23-24; LL 60-65; 40-45 scales from LL origin to 1st D spine. All 3 cusps of teeth subequal. Soft D and A more produced and falcate. Few teeth on vomer. Three broad cross bars, passing through eye, P and across soft D and A; the one through eye uniformly dark.

Distribution : Indo-west Pacific.

192. ***Scatophagus argus*** (Linnaeus)

1766. *Chaetodon argus* Linnaeus, *Syst. Nat.*, (ed. 12), **1** : 464 (India).

1991. *Scatophagus argus* : Talwar and Jhingran, *Inland Fishes*, **2** : 875.

Material examined : 1 ex, 19 mm, CANR, 18.10.92, Dariyaltippa, F-1010; 2 ex, 17-22 mm, TV, 21.11.92, B. V. Palem, F-1064; 2 ex, 21-65 mm, TV, 26.11.92, Bhairavapalem, F-1111; 1 ex, 16 mm, TV, 29.11.92, B. V. Palem, F-1209; 7 ex, 36-55 mm, CANR, 29.01.95, Coringa Channel, F-1230.

Diagnostic features : D XI, 16-18; A VI, 14-15; P 16-17; V I, 5. Body quadrangular. Scales very small. Body with numerous dark spots.

Distribution : India, Sri Lanka, through Indonesia, to Australia, New Hebrides and Solomon Island.

193. ***Nandus nandus*** (Hamilton)

1822. *Coius nandus Hamilton, Fishes of Ganges* : 96, 370, pl. 30, fig. 32 (Ponds of Gangetic province).

1991. *Nandus nandus* : Talwar and Jhingran, *Inland Fishes*, **2** : 878.

Material examined : Not examined by us.

Diagnostic features : D XII-XIV, 11-13; A III, 7-9; P 15, V I, 5; LS 46-57; LL interrupted at about 36th scale; eyes 5-6 in head. Greenish-brown with brassy reflections; vertically marbled with 3 broad patchy blotches; a dusky blotch on C base; some narrow bands radiating from eye.

Distribution : Pakistan, India, Nepal, Bangladesh, Myanmar and Thailand.

194. ***Etroplus maculatus*** (Bloch)

1785. *Chaetodon maculatus* Bloch, *Syst. Ichth.* : Pl. 427, fig. 2 (India).

1991. *Etroplus maculatus* : Talwar and Jhingran, *Inland Fishes*, **2** : 885.

Material examined : 1 ex, 41 mm, TV, 23.11.92, Mundigattu, F-1063; 2 ex, 45-54 mm, CANR, 18.01.95, Parupalem, F-1654.

Diagnostic features : D XVII-XX, 8-10; A XII-XV, 8-9; P i, 15-16; V I, 5; LL interrupted; LS 35. Three large, round, black blotches on flanks.

Distribution : Peninsular India and Sri Lanka.

Remarks : Recorded for the first time from Godavari estuary.

195. ***Liza macrolepis*** (Smith)

1849. *Mugil macrolepis* Smith, *Illust. Zool. S. Africa*, **4** : pl. 28, fig. 2 (Rivers and lakes of S. Africa).

1991. *Liza macrolepis* : Talwar and Jhingran, *Inland Fishes*, **2** : 891.

Material examined : Not examined by us.

Diagnostic features : D IV + I, 8; A III, 9; P 15; V I, 5; LS 31-34; Ltr. 12. Head 3.5-4.3 in SL. P tip not reaching vertical through D origin; first D inserted nearer to C base than snout; second D origin above middle of A base. Greenish-gray above, silvery below.

Distribution : Indo-west Pacific.

196. ***Liza melinoptera*** (Valenciennes)

1836. *Mugil melinopterus* Valenciennes, *Hist. nat. Poiss.*, **11** : 146. Pl. 313 (Vanicola).

1991. *Liza melinoptera* : Talwar and Jhingran, *Inland Fishes*, **2** : 892.

Material examined : 2 ex, 82-85 mm, TV, 10.12.92, Antervedi, F-1018; 1 ex, 95 mm, CANR, 23.10.92, Girijampetta, F-1075; 2 ex, 93-108 mm, TV, 21.11.92, B. V. Palem, F-1098; 2 ex, 80-85 mm, TV, 07.12.92, Antervedi, F-1106; 1 ex, 55 mm, CANR, 24.01.95, Goganamaton, F-1513; 1 ex, 98 mm, SCN, 18.03.95, Upapara, F-1557.

Diagnostic features : D IV + I, 8; A III, 9; P 15; V I, 5; LS 26-31; Ltr. 9-10. Head 3.4-3.8 in SL. Preorbital filling the space between lip and eye. P tip not reaching vertical through D origin; D origin nearer to C base than snout tip; 2nd D origin above anterior half of A base. Greenish-brown fading to silvery white.

Distribution : Indo-west Pacific.

Remarks : Report of occurrence by Rao (1976) as *Mugil oligolepis* Bleeker.

197. ***Liza parsia*** (Hamilton)

1822. *Mugil parsia* Hamilton, *Fishes of Ganges* : 215. pl. 17, fig. 71 (Fresh water rivers of Bengal).

1991. *Liza parsia* : Talwar and Jhingran, *Inland Fishes*, **2** : 893.

Material examined : 1 ex, 58 mm, CANR, 20.10.92, Cholangi Channel mouth, F-968; 1 ex, 165 mm, TV, 24.11.92, Coringa, F-1037; 1 ex, 42 mm, TV, 29.11.92, B. V. Palem, F-1201; 7 ex, 41-115 mm, TV, 25.11.92, Biyyaputippa, F-1255; 7 ex, 52-84 mm, CANR, 29.01.95, Coringa Channel, F-1276; 1 ex, 58 mm, CANR, 15.09.93, Antervedi, F-1031; 3 ex, 100-185 mm, CANR, 24.01.95, Goganamaton, F-1512; 2 ex, 32-33 mm, CANR, 13.09.93, Sunkurevu, F-1592.

Diagnostic features : D IV + I, 8; A III, 9; P 14; V I, 5; LS 31-36; Ltr. 11. Head 4.0-4.3 in SL. Preorbital filling space between lip and eye. First D inserted nearer to snout tip than C base; 2nd D inserted over anterior half of A base. Greenish-brown above, silvery white below; a golden spot on upper part of operculum.

Distribution : Pakistan, India and Sri Lanka.

198. ***Liza subviridis*** (Valenciennes)

1836. *Mugil subviridis* Valenciennes, *Hist. nat. Poiss.*, **11** : 115 (Malabar).

1991. *Liza subviridis* : Talwar and Jhingran, *Inland Fishes*, **2** : 894.

Material examined : 3 ex, 35-39 mm, TV, 29.11.92, B. V. Palem, F-1200.

Diagnostic features : D IV + I, 8-9; A III, 9; P 16, V I, 5; LS 27-32; Ltr. 11. Head 3.7-4.3 in SL. Preorbital narrow, filling only 3/4th of space between lip and eye. First D inserted nearer to C base than snout tip or midway between them; 2nd D origin over anterior half of A base. Greenish above, silvery below.

Distribution : Persian Gulf, through India, Indonesia to Queensland and Polynesia.

Remarks : Recorded for the first time from Godavari estuary.

199. ***Liza tade*** (Forsskal)

1775. *Mugil crenilabis tade* Forsskal, *Descript. Anim.* : 74 (Arabia).

1991. *Liza tade* : Talwar and Jhingran, *Inland Fishes*, **2** : 894.

Material examined : 1 ex, 116 mm, CANR, 18.10.92, Dariyaltippa, F-1073; 4 ex, 95-105 mm, TV, 07.12.92, Antervedi, F-1107; 1 ex, 145 mm, CANR, 24.07.95, Chinchunada, F-1617.

Diagnostic features : D IV + I, 8; A III, 9; P 17; V I, 5; LS 30-35; Ltr. 11. Head 4.0-5.2 in SL. Preorbital filling space between lip and eye. First D inserted nearer to snout tip than C base; 2nd D origin over posterior half of A base. Greenish-brown above, silvery below.

Distribution : Indo-west Pacific.

200. ***Mugil cephalus*** Linnaeus

1758. *Mugil cephalus* Linnaeus, *Syst. Nat.* (ed. 10) 1 : 316, (European Seas).

Material examined : 1 ex, 102 mm, CANR, 21.10.92, B. V. Palem, F-978; 1 ex, 183 mm, CANR, 24.07.95, Chinchunada, F-1616.

Diagnostic features : D IV + I, 8; A III, 8; P 15; V I, 5; LS 38-42; Ltr. 14-15. Head 3.4-3.7 in SL. P axillary scale long. First D inserted nearer to snout-tip than C base. Preorbital slender, filling only half space between lip and eye. Olive green above, silvery below.

Distribution : Circumglobal-temperate and tropical waters.

201. ***Rhinomugil corsula*** (Hamilton)

1822. *Mugil corsula* Hamilton, *Fishes of Ganges* : 221, 381, pl. 9. Fig. 97 (Ganges River).

1991. *Rhinomugil corsula* : Talwar and Jhingran, *Inland Fishes*, **2** : 897.

Material examined : 1 ex, 88 mm, TV, 10.12.92, Antervedi, F-1015; 2 ex, 75-81 mm, TV, 29.11.92, B. V. Palem, F-1207; 2 ex, 46-52 mm, CANR, 13.09.93, Sunkurevu, F-1589.

Diagnostic features : D IV + I, 8; A III, 9; P 16; V I, 5; LS 48-52. Head concave between eyes; mouth ventral, protrusible. First D inserted nearer to C base then snout-tip. Dull brown above, silvery below.

Distribution : India, Bangladesh, Nepal, Myanmar.

202. ***Valamugil cunnesius*** (Valenciennes)

1836. *Mugil cunnesius* Valenciennes, *Hist. nat. Poiss.*, **11** : 114 (Malbar, Bombay; Moluccas).

1991. *Valamugil cunnesius* : Talwar and Jhingran, *Inland, Fishes*, **2** : 901.

Material examined : 1 ex, 62 mm, TV, 10.12.92, Antervedi, F-1019; 1 ex, 72 mm, TV, 07.12.92, Antervedi, F-1105; 1 ex, 56 mm, TV, 29.11.92, B. V. Palem, F-1202; 4 ex, 49-68 mm, TV, 25.11.93, Biyyaputippa, F-1257.

Diagnostic features : D IV + I, 8;; A III, 9; P 15-16; V I, 5; LS 30-35; Ltr. 11-12. Head 3.4-4.2 in SL. Adipose eye lid well developed, covering half or more of iris. First D inserted nearer to snout tip than C base; 2nd D origin on vertical through anterior third of A base. P axillary scale long. Scales with membranous digitated hind margin. Yellow-brown to dark gray on back; silvery below; a dark axillary spot on P base.

Distribution : Indo-west Pacific.

203. ***Valamugil seheli*** (Forsskal)

1775. *Mugil crenilabis seheli* Forsskal, *Descript. Anim.* : 73 (Red Sea).

1991. *Valamugil seheli* : Talwar and Jhingran, *Inland Fishes*, **2** : 902.

Material examined : Not examined by us.

Diagnostic features : D IV + I, 8; A III, 9; P 16-17; V I, 5; LS 37-40; Ltr. 12-14. Head 3.5-4.0 in SL. Adipose eye lid feeble, a rim around eye. First D nearer to snout tip than C base or equidistant; 2nd D origin on vertical from A origin; P axillary scale long, scales with membranous digitated hind margin. Greenish-brown on back, silvery below; P axil with blue spot.

Distribution : Indo-west Pacific.

204. ***Sphyraena jello*** Cuvier

1829. *Sphyraena jello* Cuvier, *Hist. nat. Poiss.*, **3** : 258 (Vizagapatnam).

Material examined : 1 ex, 92 mm, CANR, 20.10.92, Cholangi Channel mouth, F-1001; 1 ex, 58 mm, CANR, 18.10.92, Dariyaltippa, F-1005; 1 ex, 127 mm, TV, 21.11.92, B. V. Palem, F-1093.

Diagnostic features : D V + I, i, 8; A II, i, 7; P ii, 12-13, V I, 5; LL 130-140; no GR on 1st

arch. Depth 7.9-8.9, head 3.2-3.6 in SL. Preopercle smoothly rounded. Teeth erect. Last rays of D and A not longer than anterior rays. Bluish or brown above, sides silvery, with a series of dark serpentine bars on flank reaching a little bleow LL; D dusky green; A pale.

Distribution : Indo-west Pacific.

205. ***Sphyraena obtusata*** Cuvier

1829. *Sphyraena obtusata* Cuvier, *Hist. nat. Poiss.*, **3** : 350 pl. 10, fig. 2 (Pondicherry).

Material examined : 4 ex, 72-86 mm, SCN, 18.03.95, Upapara, F-1555.

Diagnostic features : D V + I, i, 8; A II, i, 8; P ii, 11-13; V I, 5; GR 2 (1st at angle and 2nd on lower arm); LL 80-96. Depth 6.0-7.5, head 2.8-3.0 in SL; height of first D equal to or greater than postorbital head length. Tip of P reaches past first D origin. Gray/brown with greenish tinge above, silvery white below; no bars or chevrons.

Distribution : Indo-west Pacific.

Remarks : Recorded for the first time from Godavari estuary.

206. ***Eleutheronema tetradactylum*** (Shaw)

1804. *Polynemus tetradactylus* Shaw, *General Zool.*, **5** : 155 (Vizagapatnam).

1991. *Eleutheronema tetradactylum* : Talwar and Jhingran, *Inland Fishes*, **2** : 907.

Material examined : 1 ex, 169 mm, CANR, 19.10.92, Cholangi Channel mouth, F-970; 4 ex, 40-60 mm, CANR, 18.10.92, Dariyaltippa, F-987; 5 ex, 51-69 mm, TV, 24.11.92, Coringa, F-1038; 2 ex, 63-66 mm, TV, 23.11.92, Mundigattu, F-1056; 3 ex, 56-70 mm, TV, 21.11.92, B. V. Palem, F-1065; 2 ex, 104-130 mm, TV, 07.12.92; Bhairavapalem, F-1114; 1 ex, 135 mm, CANR, 29.01.95, Coringa Channel, F-1260; 1 ex, 75 mm, CANR, 15.09.93, Antervedi, F-1294.

Diagnostic features : D VIII + I, 13-15; A II, 15-17; P 17 + iv; V I, 5. Lower lip absent except towards rictus; teeth extending on exterior part of jaws. Silvery-green above, yellowish-white below.

Distribution : Persian Gulf, through India, Indonesia to China, the Philippines, north and west Australia.

207. ***Polydactylus sexfilis*** (Valenciennes)

1831. *Polynemus sexfilis* Valenciennes, *Hist. nat. Poiss.*, **7** : 515.

1991. *Polydactylus sexfilis* : Talwar and Jhingran, *Inland Fishes*, **2** : 909 (name only, in key).

Material examined : Not examined by us.

Diagnostic features : D VIII + I, 12-13; A III, 11-12; P xv + vi, (upper P rays unbranched); V I, 5; LL 48-50. Eyes 4.0 in head. Golden-yellow; P black; A margin black.

Distribution : Coasts of India, Sri Lanka, Mauritius.

208. ***Polydactylus sextarius*** (Bloch)

1801. *Polynemus sextarius* Bloch, *Syst. Ichth.* : 18, pl. 4 (Tranquebar).

1991. *Polydactylus sextarius* : Talwar and Jhingran, *Inland Fishes*, **2** : 910.

Material examined : Not examined by us.

Diagnostic features : D VIII + I, 12-13; A II-III, 12-13; P 14 + vi (most of the upper P rays branched); V I, 5; LL 48-50. Eyes 3.0-3.8 in head. Golden-olive above, silvery below; a large black blotch at origin of LL.

Distribution : Indo-west Pacific.

209. ***Uranoscopus cognatus*** Cantor

1850. *Uranoscopus cognatus* Cantor., *Journ. Asiatic Soc. Bengal*, **18** (2) : 1003 (Sea of Pinang).

Material examined : 1 ex, 82 mm, TV, 24.04.95, Antervedi, F-1658.

Diagnostic features : D III, iii, 11; A 13; P i, 16; V I, 5; LL 60-67. Four spines along lower edge of preopercle. Depth 4.0-5.1, head 2.4-3.1 in TL. Humeral spine obliquely directed upwards

and backwards. Lower lip with a row of fleshy tentacles; upper lip with short filaments. Three pairs of short, forwardly directed spines under head. Vomer with transverse patch of teeth. Brown above, light below; anterior part of D black.

Distribution : India, eastward to Malaysia, Indonesia.

Remarks : Recorded for the first time from the Godavari estuary.

210. *Omobranchus ferox* (Herre)

1927. *Petroscirtes ferox* Herre, *Philippine J. Sci.*, **34** (3) : 277, pl. 3, Figs. 2 & 3 (Lake Taal, Philippines).

1991. *Omobranchus ferox* : Talwar and Jhingran, *Inland Fishes*, **2** : 913.

Material examined : Not examined by us.

Diagnostic features : D XII, 20-23; A II, 22-26; P 13; V I, 2. Gill opening extends well below dorsalmost ray of P. Bi-pored LL tubes 0-4, extending posteriorly to below level of 2-7th D spine. Body with faint dusky bands anteriorly; males with a dusky spot distally at rear end of D.

Distribution : South Africa, India, Sri Lanka to New Guinea and the Philippines.

Remarks : Rao (1974) reported the occurrence of *Cruantus dealmeida* (Smith) and *Cruantus smithi* Rao, from the Godavari estuary. These have been synonymised with *O. ferox* (Herre) by Talwar and Jhingran (1991).

211. *Omobranchus punctatus* (Valenciennes)

1836. *Blennechis punctatus* Valenciennes, *Hist. nat. Poiss.*, **11** : 286 (Bombay).

1991. *Omobranchus punctatus* : Talwar and Jhingran, *Inland Fishes*, **2** : 914.

Material examined : Not examined by us.

Diagnostic features : D XII, 19-22; A II, 21-24; P 13; V I, 2. Gill-opening restricted to area dorsal to level of dorsal most P ray. Bi-pored LL tubes 4-8, extending posteriorly to below level of 7-11th D spine. Dusky band in pre-dorsal area; faint bands posteriorly on body; short, slender, dusky stripes on body in region covered by P.

Distribution : Indo-west Pacific.

Remarks : This speices have been reported by Rao (1974) as *O. japonicus* (Bleeker).

212. *Omobranchus zebra* (Bleeker)

1868. *Petroscrirtes zebra* Bleeker, *Versl. Med. Kon. Akad. Wet. Letterkunde Sch. Kun. Amsterdam*, (2) **2** : 279, (Singapore).

1991. *Omobranchus zebra* : Talwar and Jhingran, *Inland Fishes*, **2** : 914.

Material examined : Not examined by us.

Diagnostic features : D XII, 18-20; A II, 20-22; P 14; V I, 2. Gill-opening restricted to area dorsal to level of dorsal most P ray. Bipored LL tubes 1-4, extending posteriorly to below level of 2-5th D spine. Four broad, dark bands on head; about eight broad dark band on body in male, which are either faint or absent in female.

Distribution : East coast of India to Singapore.

Remarks : Reported as *O. bhattacharyae* (Chaudhury) and *O. bipunctatus* (Day) by Rao (1974).

213. *Callionymus filamentosus* Valenciennes

1837. *Callionymus filamentosus* Valenciennes, *Hist. nat. Poiss.*, **12** : 303, pl. 359 (Celebes).

Material examined : 1 ex, 41 mm, TV, 24.04.95, Antervedi, F-1662.

Diagnostic features : D I + III + 9 (male) or IV + 9 (female); A 9; P 18-20. Head 3.1-4.0 in SL. Gill opening dorsal in position. A smooth area behind eyes, with a rugose area covered by skin on each side. Preopercular spine with a strong antrorse spine at its base and dorsal margin with 4-9 straight antrorse serrae. Light brown, with dark spots on sides; fins spotted brown; first D in males with black stripes or blotches, in females with a black blotch on 3rd membrane.

Distribution : Indo-west Pacific.

Remarks : Recorded for the first time from Godavari estuary.

214. *Callionymus fluviatilis* Day

1876. *Callionymus fluviatilis* Day, *Fishes of India.* : 322 (Hooghly river at Calcutta).

Material examined : 1 ex, 37 mm, TV, 23.04.95, Darbharevu, F-1651.

Diagnostic features : D IV + 10; A 9; P 17-20; V I, 5. Head 3.8 in SL. Occipital region with a low, rough bony plate. Branchial opening dorsal in position. Pre-opercular spine with a short, slightly upcurved main tip, and armed internally with 2-3 curved teeth. Grayish, ocellated with white on back; spotted brown along upper side of LL; first D black or spotted; 2nd D with 4-5 rows of spots; C spotted.

Distribution : East coast of India to Vietnam.

215. *Callionymus sagitta* Pallas

1770. *Callionymus sagitta* Pallas, *Specil. zool. Fasc.*, **8** : 29.

Material examined : Not examined by us.

Diagnostic features : D IV + 9-10; A 9-10; P 17-19; V I, 5. Depth 8.1-9.0, head 3.3-4.0 in SL. Pre-opercular spine feeble, upcurved and a posterior spine curved inwards and 4-5 short spines along the inner side. First D as high as body, its first spine shorter than eye. Brown above, freckled with darker and with milky spots; lighter brown below; a row of dark brown blotches along flank; first D black in males, but white basally in females; 2nd D and C spotted.

Distribution : Indo-west Pacific.

216. *Acentrogobius caninus* (Valenciennes)

1838. *Gobius caninus* Valenciennes, *Hist. nat. Poiss.*, **12** : 86.

1953. *Acentrogobius caninus* : Koumans, *Fishes of Indo-Aust. Archip.*, **10** : 61.

Material examined : Not examined by us.

Diagnostic features : D VI + I, 9; A I, 9; P 18-19; LS ± 30; Ltr. 9; preD. 17-20. Depth 4-5, head 4.7-5.0 in SL;; eyes 3.5-4.0 in head. Head scaled above behind eye and on upper part of opercle; cheek naked. Olive above, lighter below head with blue or pearly spots; body with alternating rows of large black spots; scapula with large blue spot; fins violet; soft D with 3 rows of dark spots bordered with blue; C spotted black.

Distribution : Indo-west Pacific.

217. *Acentrogobius cyanomos* (Bleeker)

1849. *Gobius cyanomos* Bleeker., *Verh. batav. Genoot. Kunst. Wet.*, **22** : 25 (Java).

1991. *Acentrogobius cyanomos* : Talwar and Jhingran, *Inland Fishes*, **2** : 924.

Material examined : 1 ex, 50 mm, TV, 07.12.92, Antervedi, F-1108; 1 ex, 52 mm, CANR, 29.01.95, Coringa Channel, F-1283; 1 ex, 67 mm, CANR, 24.01.95, Goganamaton, F-1515; 2 ex, 64-70 mm, TV, 13.11.93, Biyyaputippa, F-1638.

Diagnostic features : D VI + I, 10; A I, 8-10; P 18-19; LS ± 30; Ltr. 8-9; preD. 14. Depth 4.5-5.0, head 3.6-4.0 in SL; eyes 4-5 in head. Head scaled above behind eyes, rest naked; often with few scale on upper part of opercle. Blackish-green to olive above, lighter below; scales with shiny greenish spots. similar spots on opercle; a blue spot on shoulder; first D yellowish; membrane of second D and C with 3-5 rows of whitish spots between rays; a dark blotch at the upper part of C near base.

Distribution : India, Thailand, tropical west-Pacific.

218. *Acentrogobius madraspatensis* (Day)

1868. *Gobius madraspatensis* Day, *Proc. Zool. Soc. Lond.* : 152 (Madras backwaters).

1991. *Acentrogobius madraspatensis* : Talwar and Jhingran, *Inland Fishes*, **2** : 925.

Material examined : Not examined by us.

Diagnostic features : D VI + I, 9; A I, 9; P 17; LS 28-29; Ltr. 8; preD. ± 18. Depth 4.25, head 3.5 in SL; eyes 4 in head. Longitudinal

mucous canals over cheek. Head scaled above behind eyes; cheek and operculum naked. Olivaceous with irregular, ill-defined brownish blotches and dots; 5-8 very narrow vertical black lines from back to belly, between base of V and middle of A. First D with a broad dark band in middle; C minutely dotted in rows.

Distribution : India : Madras and Andhra Pradesh.

219. *Acentrogobius masoni* (Day)

1873. *Gobius masoni* Day, *Proc. Zool. Soc. Lond.* : 107 (Bombay).

1991. *Acentrogobius masoni* : Talwar and Jhingran, *Inland Fishes*, **2** : 926.

Material examined : 2 ex, 60-77 mm, CANR, 13.01.95, Sunkurevu, F-1598.

Diagnostic features : D VI + I, 10-11; A I, 9; P 19; LS ± 28; Ltr. 9; preD. 25. Depth 4.75, head 3.33 in SL; eyes 5.5-6.0 in head. A small broad papilla on each side of chin. Head scaled above behind eyes;; cheek naked; operculum scaled on upper part. Olive with blue spots on nape and behind P; some black spots on flank; D, A, V and C blackish; P yellowsih with dark margin.

Distribution : India : Bombay, Chilka Lake.

Remarks : Recorded for the first time from Godavari estuary.

220. *Acentrogobius viridipunctatus* (Valenciennes)

1837. *Gobius viridipunctatus* Valenciennes, *Hist. nat. Poiss.*, **12** : 62 (Bombay).

1991. *Acentrogobius viridipunctatus* : Talwar and Jhingran, *Inland Fishes*, **2** : 926.

Material examined : 1 ex, 95 mm, CANR, 21.10.92, B. V. Palem, F-980; 2 ex, 78-95 mm, CANR, 18.10.92, Dariyaltippa, F-993; 1 ex, 67 mm, TV, 07.12.92, Bhairavapalem, F-1119; 2 ex, 49-70 mm, CANR, 15.09.93, Antervedi, F-1306; 6 ex, 35-79 mm, CANR, 13.09.93, Sunkurevu, F-1582.

Diagnostic features : D VI + I, 10; A I, 9; P 18-20; LS 35-36; Ltr. 10; preD. ± 30. Depth 4.0-5.5, head 3.3-4.0 in SL; eyes 4-5 in head. Longitudinal rows of papillae on cheek. Head scaled above behind eye; upper part of preoperculum and operculum scaled. Blackish-green, laterally with dark spots, half way the flank a longitudinal row of larger dark spots. Base of first D with blackish longitudinal stripe; second D with 2 dark longitudinal bands; C membrane spotted black, upper part of base without spot.

Distribution : Indo-west Pacific.

221. *Apocryptes bato* (Hamilton)

1822. *Gobius bato* Hamilton, *Fishes of Ganges* : 40, 365, pl. 37, fig. 10 (Estuaries of Ganges).

1991. *Apocryptes bato* : Talwar and Jhingran, *Inland Fishes*, **2** : 951.

Material examined : Not examined by us.

Diagnostic features : D V + I, 20-21; A I, 21-22; P 23-25; LS ± 100. Head 4.5 in SL. Free lower eye lid absent; teeth uniserial, bilobed in both jaws, a pair of canines behind symphysis of lower jaw. Greenish-white with 10-12 indistinct narrow transverse bands; fins hyaline with minute greenish spots; a dark brown band at P base.

Distribution : India, Bangladesh, Myanmar.

222. *Apocryptodon madurensis* (Bleeker)

1849. *Apocryptes madurensis* : Bleeker, *Verh. batav. Genoot. Kunst. Wet.*, **22** : 35 (Strait of Madura).

1991. *Apocryptodon madurensis* : Talwar and Jhingran, *Inland Fishes*, **2** : 952.

Material examined : 1 ex, 53 mm, TV, 10.12.92, Antervedi, F-1022; 1 ex, 51 mm, CANR, 15.09.93, Antervedi, F-1307.

Diagnostic features : D VI + I, 22; A I, 20-22; P 21-22; LS 50-55; Ltr. 13. Depth 5.5, head 4.0 in SL. Free lower eyelid absent; teeth on both jaws uniserial, in upper jaw caninoid, in lower jaw horizontal and bilobate with symphysial canines. Grayish with 5 indistinct red blotches; lower part of head with numerous black spots; first D mostly

with a dark spot in its upper fourth between 3rd and 5th spine.

Distribution : India, Indonesia, the Philippines and Japan.

223. ***Bathygobius fuscus*** (Ruppell)

1828. *Gobius fuscus* Ruppell, *Atl. Reise N. Afr. Fische* : 137 (Red Sea).

1991. *Bathygobius fuscus* : Talwar and Jhingran, *Inland Fishes*, **2** : 929.

Material examined : Not examined by us.

Diagnostic features : D VI + I, 9-10; A I, 8-9; P 19-20; LS 35-40; Ltr. 11-13; preD. ± 20. Depth 4.7-5.0, head 3.2-3.6 in SL; eyes 3.0-4.5 in head. Tongue bilobate or emarginate. Longitudinal rows of mucous canals over cheek. Head scaled above behind eyes with rudimentary scales; some times upper part of opercle scaled; cheek naked. Upper 3 rays of P free from membrane, silk-like. Olivaceous-brown with irregular blotches on flank; sides of head with whitish spots; D dusky, often with broad stripe.

Distribution : Indo-west Pacific.

224. ***Bathygobius ostreicola*** (Chaudhuri)

1916. *Gobius ostreicola* Chaudhuri, *Rec. Indian Mus.*, **12** : 105 (Chilka Lake).

1991. *Bathygobius ostreicola* : Talwar and Jhingran, *Inland Fishes*, **2** : 929.

Material examined : Not examined by us.

Diagnostic features : D VI + I, 9-10; A I, 8-9; P 18-19; LS 38-40; Ltr. 15-16; preD. ± 20. Depth 5, head 3.5 in SL; eye 4 in head. Maxillary extends to below posterior margin of eye; mandible to beyond eye. Upper 3-4 rays of P free and silk-like. Cheek and opercle naked; longitudinal mucous canals over cheek. Grayish with dark spots; 2-3 faint irregular blotches, one below first D and one or two below 2nd D; D and C spotted.

Distribution : East coast of India.

225. ***Boleophthalmus boddarti*** (Pallas)

1770. *Gobius boddarti* Pallas, *Spicilegia (zool.)*, **8** : 11, pl. 1, figs. 4, 5 (Indian Ocean).

1991. *Boleophthalmus boddarti* : Talwar and Jhingran, *Inland Fishes*, **2** : 954.

Material examined : 1 ex, 98 mm, CANR, 19.10.92, Cholangi Channel mouth, F-975; 1 ex, 75 mm, TV, 29.11.92, B. V. Palem, F-1196; 12 ex, 54-85 mm, CANR, 13.09.93, Sunkurevu, F-1580; 1 ex, 61 mm, TV, 24.04.95, Antervedi, F-1663.

Diagnostic features : D V + I, 23-27; A I, 23-27; P 17-18; LS 75-100. Depth 4.7-5.8, head 3.3-4.0 in SL; eyes 4.8-6.2 in head. Greenish-blue with 6-8 dark spots or vertical bands; head with brownish spots; first D with bluish white spots; 2nd D with 4 irregular longitudinal rows of bluish spots.

Distribution : India, Myanmar, Thailand, Malaya and Indonesia.

226. ***Boleophthalmus dussumieri*** Valenciennes

1837. *Boleophthalmus dussumieri* Valenciennes, *Hist. nat. Poiss.*, **12** : 207, pl. 354 (Bombay).

Material examined : Not examined by us.

Diagnostic features : D V + I, 26-27; A I, 25; P 18-19; LS ± 125. Depth 6.8-7.2, head 3.5-4.0 in SL; eyes 6.2-7.1 in head. First and second D well separated, not connected by membrane. Scales on body distinct. Greenish-violet; first D purplish with small blackish spots; second D with two longitudinal rows of oblong white spots; C black.

Distribution : India, Pakistan, Iraq.

227. ***Callogobius melanoptera*** Rao

1971. *Callogobius melanoptera* Rao, *J. zool. Soc. India*, **23** (1) : 44, figs. 1a & 1d. (Godavari estuary).

Material examined : Not examined by us.

Diagnostic features : D VI + I, 10; A I, 9; P 20; LS ± 38; Ltr. ± 12; preD. ± 23. Depth 5.8, head 3.2 in SL; eye 3.7 in head. Sensory papillae on riased flaps on head. A prominent ridge around eye; anterior nostril a simple pore, not tubular; tongue emarginate. Body deep brown with irregular markings; all fins long and deep black.

Distribution : Godavari estuary, India.

Remarks : This is known from the holotype only.

228. *Chiramenu fluviatilis* Rao

1971. *Chiramenu fluviatilis* Rao, *J. mar. biol. Ass. India*, **12** (1/2) : 184 : figs. 1 & 2 (Godavari estuary).

Material examined : Not examined by us.

Diagnostic features : D VI + I, 10; A I, 10; P 16; LS 54-58. Depth 5.7-6.2 in SL. Mouth inferior; teeth on upper jaw in a single row, on lower jaw in 3 rows; tongue bilobate. C emarginate, shorter than head. Transluscent, with black spots on head and body; 5 narrow vertical bands on flank. First D spoted black before 4th spine; an orange blotch between 4th and 5th spines and an oval black blotch between 5th and 6th spines; 2nd D with 4 oblique bands.

Distribution : Godavari estuary.

229. *Favonigobius reichei* (Bleeker)

1853. *Gobius reichei* Bleeker, *Natuurk. Tijdschr. Ned.-Indie*, **5** : 509 (Padang, Indonesia).

1991. *Favonigobius reichei* : Talwar and Jhingran, *Inland Fishes*, **2** : 934.

Material examined : 1 ex, 46 mm, TV, 24.04.95, Antervedi, F-1665.

Diagnostic features : D VI + I, 8-9; A I, 8; P 16; LS 26-28; Ltr. 7-8; preD. 12, foremost 9-10 scales fallout readily. Depth 5, head 3.8 in SL; eyes 3-4 in head. Teeth in several rows. An oblique narrow band of mucous canals below eye running to maxillary, a broad band bordered by two strongly developed canals runs longitudinally over cheek. Cheek and opercle naked. Greenish above, pale below; with numerous small spots; midside with 4-5 slightly enlarged groups of black spots; a bar from eye to upper jaw; median fins spotted.

Distribution : Indo-west Pacific.

Remarks : *Ctenogobius godavariensis* Rao, 1971 described from the Godavari estuary is considered to be a synonym of this species by Talwar and Jhingran (1991).

230. *Glossogobius biocellatus* (Valenciennes)

1837. *Gobius biocellatus* Valenciennes, *Hist. nat. Poiss.*, **12** : 73 (Pondicherry).

1991. *Glossogobius biocellatus* : Talwar and Jhingran, *Inland Fishes*, **2** : 935.

Material examined : 1 ex, 82 mm, TV, 04.12.92, Chinchunada, F-805; 1 ex, 83 mm, TV, 05.12.92, Sakhinetipalli, F-813.

Diagnostic features : D VI + I, 9; A I, 8, P 17-19; LS 28-32; Ltr. 7-8. Depth 5.0-6.5, head 3.0-3.3 in SL. Branchiostegal membranes form a free fold across isthmus. Body dark with small black spots in longitudinal rows; 2-3 broad saddles on back and flanks. First D black; V with dark cross bands.

Distribution : Indo-west Pacific.

231. *Glossogobius giuris* (Hamilton)

1822. *Gobius giuris* Hamilton, *Fishes of Ganges* : 51, pl. 33, fig. 15 (Gangetic Provinces).

1991. *Glossogobius giuris* : Talwar and Jhingran, *Inland Fishes*, **2** : 936.

Material examined : 6 ex, 50-86 mm, TV, 10.12.92, Antervedi, F-1023; 3 ex, 55-70 mm, TV, 24.11.92, Coringa, F-1041; 2 ex, 50-51 mm, TV, 23.11.92, Mundigattu, F-1059; 1 ex, 84 mm, CANR, 23.10.92, Girijampetta, F-1079; 6 ex, 57-80 mm, TV, 21.11.92, B. V. Palem, F-1089; 1 ex, 86 mm, CANR, 14.09.93, Chakkalitippa, F-1127; 4 ex, 40-68 mm, TV, 29.11.92, B. V. Palem, F-1198; 1 ex, 83 mm, TV, 15.11.93, Biyyaputippa, F-1251.

Diagnostic features : D VI + I, 8-9; A I, 7-8; P 17-22; LS 28-36; Ltr. 8-14. Depth 5.0-6.2, head 3.7-4.3 in SL. Branchiostegal membrane attached to sides of isthmus. Yellowish-brown with 5 dark blotches on flank; sides of head with irregular violet spots; D, P and C mottled with dark spots.

Distribution : Indo-west Pacific.

232. *Gobiopsis macrostoma* Steindachner

1860. *Gobiopsis macrostomus* Steindachner, *Sber. Akad. Wiss. Wien.*, **42** (23) : 291, pl. 1, fig. 6 (Bombay).

1991. *Gobiopsis macrostoma* : Talwar and Jhingran, *Inland Fishes*, **2** : 937.

Material examined : Not examined by us.

Diagnostic features : D VI + I, 9-10; A I, 9-10; P 19-21; LS 36-42. Head 3.1-3.5 in SL; eyes 5.5-6.2 in head. Teeth in villiform band, outer row caninoid. Small barbels on lower surface and sides of head; horizontal fleshy fold on mid-cheek. Maxillary extends to beyond eye. Tongue rounded. Brownish; head darker; about 8 indistinct saddles on flank; fins yellow-brownish; 2nd D with faint spots.

Distribution : India and Thailand.

Remarks : Rao (1976) reported this species from the Godavari estuary as *Barbatogobius asanai* Koumans, 1941 (Talwar and Jhingran, 1991).

233. *Mahidolia mystacina* (Valenciennes)

1837. *Gobius mystacinus* Valenciennes, *Hist. nat. Poiss.*, **12** : 124 (Java).

1991. *Mahidolia mystacina* : Talwar and Jhingran, *Inland Fishes*, **2** : 938.

Material examined : Not examined by us.

Diagnostic features : D VI + I, 10; A I, 9; P 17; LS 37; Ltr. 13-15. Depth 4.2-4.3, head 3.0-3.5 in SL; eyes 3.0-3.5 in head. Maxillary extends to beyond eye; teeth in several rows. Scales posterior to 2nd D origin ctenoid, cycloid anteriorly. C longer than head. Light brown; head with small blue or brown spots; body with 5 or 6 dark irregular cross bands.

Distribution : Indo-west Pacific.

Remarks : Recorded from the Godavari estuary (Rao, 1972 & 1976) as *Waitea buchanani* Rao, 1972.

234. *Oligolepis acutipennis* (Velenciennes)

1837. *Gobius acutipennis* Valenciennes, *Hist. nat. Poiss.*, **12** : 80 (Malabar).

1991. *Oligolepis acutipennis* : Talwar and Jhingran, *Inland Fishes*, **2** : 939.

Material examined : 4 ex, 44-55 mm, TV, 10.12.92, Antervedi, F-1025; 1 ex, 53 mm, TV, 10.12.92, Antervedi, F-1047; 2 ex, 41-51 mm, TV, 23.11.92, Mundigattu, F-1060; 1 ex, 42 mm, TV, 02.12.92, Antervedi, F-1076; 6 ex, 34-44 mm, TV, 21.11.92, B. V. Palem, F-1095; 1 ex, 35 mm, TV, 26.11.92, B. V. Palem, F-1122; 12 ex, 32-49 mm, TV, 29.11.92, B. V. Palem, F-1199; 1 ex, 40 mm, CANR, 13.09.92, Sunkurevu, F-1583.

Diagnostic features : D VI + I, 10-11; A I, 10-11; P 20-22; LS 27-30; Ltr. 7-8. Depth 4.2-4.5, head 4 in SL. Tongue largely fused to floor of mouth, tip free. Teeth in several rows; in upper jaw outer row enlarged in front. Head and nape naked, with a few predorsal scales. Brownish with numerous dark blotches along back; a series of faint blotches on mid side, last on at C base, from eye to behind maxilla an oblique violet streak.

Distribution : Indo-west Pacific.

235. *Oxyurichthys formosanus* Nichols

1959. *Oxyurichthys formosanus* Nichols, *Amer. Mus. Novit.*, (1876) : 2 (Taiwan).

Material examined : 1 ex, 48 mm, CANR, 24.01.95, Goganamaton, F-1514.

Diagnostic features : D VI + I, 10; A I, 11-12; P 18-20: LS 26-28. Eye without a bump dorsally. Head, nape and breast naked. Tongue rounded; teeth in upper jaw uniserial. Brownish, with a conspicuous dark vertical band below eye; a dark blotch at C base; first elongated spine of D with 5 black blotches.

Distribution : India : Ennore and Mahanadi estuaries; Taiwan.

Remarks : *O. nijsseni* Menon and Govindan, 1976 reported from B. V. Palem by Venkateswarlu (1990) is considered to be a junior synonym of this species.

236. *Oxyurichthys microlepis* (Bleeker)

1849. *Gobius microlepis* Bleeker, *Verh. batav. Genoot. Kunst. Wet.*, **22** : 35 (Madura Straits).

1991. *Oxyurichthys microlepis* : Talwar and Jhingran, *Inland Fishes*, **2** : 941.

Material examined : 1 ex, 74 mm, CANR, 18.10.92, Dariyaltippa, F-994; 1 ex, 51 mm, TV, 26.11.92, Bhairavapalem, F-1120.

Diagnostic features : D VI + I, 12; A I, 13; P 20-22; LS ± 55, Ltr. ± 14. Depth 5.2-6.0, head 4.0-4.5 in SL. Eye without a bump dorsally. Head scaled above behind eyes; scales on body cycloid anteriorly, weakly ctenoid posteriorly. Tongue rounded; teeth uniserial in upper jaw. Violet; vertical fins pink, 1st D with 2 blue lines, 2nd D with blue spots; P orange with violet spots below; A pink with yellow and violet margin; C bordered below with violet, upper part with numerous black spots.

Distribution : Indo-west Pacific.

237. ***Oxyurichthys tentacularis*** (Valenciennes)

1837. *Gobius tentacularis* Valenciennes, *Hist. nat. Poiss.*, **12** : 128 (Java).

1991. *Oxyurichthys tentacularis* : Talwar and Jhingran, *Inland Fishes*, **2** : 942.

Material examined : 1 ex, 72 mm, TV, 22.11.92, B. V. Palem, F-1677.

Diagnostic features : D VI + I, 12; A I, 13-14; P 19-22; LS 52-65. Depth 5.0-5.6, head 4-5 in SL. Distinct elongate tentacle over eye. Teeth in upper jaw in a single row. Head scaled above, behind eyes; median line of head and nape naked. Scales cycloid anteriorly, ctenoid posteriorly. Reddish-green above, reddish-pearl-coloured below; each scale of back and sides with a round red spot at the margin; an oblong spot below eye; 1st D with 3 longitudinal rows of reddish-violet spots; 2nd D with 5 or 6 rows of spots.

Distribution : Indo-west Pacific.

238. ***Parachaeturichthys polynema*** (Bleeker)

1853. *Chaeturichthys polynema* Bleeker, *Nat. Tijdschr. Ned.-Indie*, **5** : 325 (Japan).

1991. *Parachaeturichthys polynema* : Talwar and Jhingran, *Inland Fishes*, **2** : 943.

Material examined : 2 ex, 57-62 mm, CANR, 20.10.92, Coringa Channel mouth, F-967.

Diagnostic features : D VI + I, 9-10; A I, 9; P 20-21; LS 28-30; Ltr. 7-8; preD. 12-13. Depth 5-6, head 4 in SL. Some short barbels along rami of lower jaw. Head scaled above, between and behind eyes. C longer than head. Greenish above, pale below; upper base of C with a large black blotch surrounded by yellow; fins dark.

Distribution : Indo-west Pacific.

239. ***Paragobiopsis orbicularis*** Rao

1971. *Paragobiopsis orbicularis* Rao, *J. zool. Soc. India*, **23** (1) : 45, fig. 1 b & c. (Kakinada).

Material examined : Not examined by us.

Diagnostic features : D VI + I, 9; A I, 9; P 19; LL 39; Ltr. 16; preD. 8. Depth 5.0, head 3.0 in SL. Eyes prominent above dorsal profile, 4.0 in head. Maxillary extends beyond eye to middle of preopercle. Tongue rounded. Upper 4 rays of P free, silk-like. Breast naked. Gray; an indistinct white edged ocellus above the extremity of maxilla; dark longitudinal lines on body along rows of scales; fins spotted; a black band on 1st D; lower half of A darker.

Distribution : Godavari estuary.

Remarks : Known by the holotype only. This is akin to *Bathygobius ostreicola* (Choudhury).

240. ***Parapocryptes macrolepis*** (Bleeker)

1851. *Apocryptes macrolepis* Bleeker, *Nat. Tijdschr. Ned.-Indie*, **2** : 66 (not known).

1941. *Parapocryptes macrolepis* : Koumans, *Mem. Indian Mus.*, **13** : 275.

Material examined : 1 ex, 115 mm, TV, 11.11.93, Sakhinetipalli, F-818.

Diagnostic features : D VI + I, 28; A I, 28; P 20; LS 70-75. Depth 10.10-12.5 in SL; eye 5.0 in head. Maxilla extends to hind margin of eye. Teeth on lower jaw pointed; anterior teeth on upper jaw coninoid. Greenish above, silvery to yellowish below; back and sides with smoky

reddish blotches; D violet with 4-6 oblique rows of oblong black blotches.

Distribution : Sri Lanka, east coast of India, Andamans, Singapore, Java, Borneo.

241. ***Parapocryptes rictuosus*** (Valenciennes)

1837. *Apocryptes rictuosus* Valenciennes, *Hist. nat. Poiss.*, **12** : 151 (India).

1991. *Parapocryptes rictuosus* : Talwar and Jhingran, *Inland Fishes*, **2** : 957.

Material examined : 9 ex, 72-101 mm, 30.11.92, B. V. Palem, F-1676.

Diagnostic features : D VI + I, 23-26; A I, 24-28; P 20; LS ± 75. Depth 10-12 in SL; eyes 6-7 in head. Maxilla extends well beyond eye; both D continuous at bases. Grayish, lighter below; dark ill-defined oblique bands from back to half way the flanks; inner side of mouth with dark spots.

Distribution : India-east coast.

242. ***Parapocryptes serperaster*** (Richardson)

1846. *Apocryptes serperaster* Richardson, *Rep. Br. Ass. Advmt. Sci.*, **15** : 206 (Macao, China).

1991. *Parapocryptes serperaster* : Talwar and Jhingran, *Inland Fishes*, **2** : 957.

Material examined : 1 ex, 82 mm, TV, 26.11.92, Bhairavapalem, F-1118; 1 ex, 106 mm, CANR, 13.01.95, Veemuladeevi, F-1597; 3 ex, 90-125 mm, CANR, 18.01.95, Parupalem, F-1652; 1 ex, 118 mm, TV, 30.11.92, F-1675.

Diagnostic features : D VI + I, 26-27; A I, 25-26; P 20-21; LS 65-76. Depth 6.0-8.5 in SL. First and second D not connected by membrane, separate; C lanceolate. Head, cheek and opercle scaled. Greenish above, whitish below; 5-6 irregular bands from back to half way on the sides.

Distribution : India, Myanmar, Thailand and China.

243. ***Periophthalmus koelreuteri*** (Pallas)

1770. *Gobius koelreuteri* Pallas, *Spicilegia (Zool)*, **8** : 8, pl. 2, figs. 1-3 (no locality).

1991. *Periophthalmus koelreuteri* : Talwar and Jhingran, *Inland fishes*; **2** : 965.

Material examined : 4 ex, 41-54 mm, CANR, 13.09.93, Sunkurevu, F-1581.

Diagnostic features : D X-XV + I, 11-12, A I, 11-12, P 14-15; LS 70-90. Head 3.3 in SL; eyes contiguous, 4 in head. Both D separate, not contiguous; inner rays of V united at base by a narrow membrane which is deeply emarginate; basal membrane of V moderate to weak. Brownish, lighter below, with white spots; first D with a dark brown submarginal band and below which short dark stripes, bordered with white; A white.

Distribution : Indo-west Pacific.

244. ***Pseudapocryptes lanceolatus*** (Bloch & Schneider)

1801. *Eleotris lanceolata* Bloch and Schneider, *Syst. Ichthyol.* : 67, pl. 15 (Tranquebar).

1991. *Pseudapocryptes lanceolatus* : Talwar and Jhingran, *Inland Fishes*, **2** : 958.

Material examined : 2 ex, 63-80 mm, CANR, 20.12.92, Cholangi Channel mouth, F-996; 9 ex, 58-270 mm, CANR, 18.10.92, Dariyaltippa, F-1011; 1 ex, 46 mm, TV, 29.11.92, B. V. Palem, F-1197; 1 ex, 125 mm, CANR, 29.01.95, Coringa Channel, F-1226; 2 ex, 95-104 mm, TV, 25.11.93, Biyyaputippa, F-1247; 1 ex, 85 mm, CANR, 15.09.93, Antervedi, F-1293; 1 ex, 61 mm, TV, 24.04.95, Antervedi, F-1664.

Diagnostic features : D V + I, 30-31; A I, 28-29; P 16-19; LS ± 200. Depth 7.0, head 5.5 in SL; eyes 6-7 in head. Teeth on jaws uniserial, pointed. C pointed, longer than head. Dull greenish or brownish-gray above, lighter below; with brown markings on back and cheek; second D spotted; C barred.

Distribution : India, Indonesia, to China, Japan.

245. ***Scartelaos histophorus*** (Valenciennes)

1837. *Boleophthalmus histophorus* Valenciennes, *Hist. nat. Poiss.*, **12** : 210 (Bombay; estuaries of Ganges).

1991. *Scartelaos histophorus* : Talwar and Jhingran, *Inland Fishes*, **2** : 960.

Material examined : Not examined by us.

Diagnostic features : D V + I, 25-26; A I, 23-26; P 20-21. Depth 6.5-9.0, head 3.5-4.5 in SL. Eyes small and contiguous; free eye lid present. Last ray of 2nd D connected by membrane to C. Slaty-blue above, lighter below. Head, back and D with black spots; upper part of C with black spots arranged in irregular transverse rows; lower half of body with 4-6 short, transverse, brown cross bars.

Distribution : India, through Indonesia to Pacific.

246. *Silhouettea indicus* Rao

1971. *Silhouettea indicus* Rao, *J. zool. Soc. India*, **23** (1) : 47, figs. 2a, 2c (Godavari estuary).

Material examined : Not examined by us.

Diagnostic features : D VI + I, 10; A I, 12, P 15; LS ± 28. Depth 5.2-5.8, head 3.1-3.5 in SL. Head depressed. Mouth slightly oblique; lower jaw prominent; teeth on jaws erect, caniniform, in 2-3 rows medially; tongue emarginate. Gill opening extending to below rear margin of preopercle. C rounded, about equal to head length. Scales ctenoid; breast naked. Light muddy brown with 6 oval blotches on flank; fins spotted; 1st D with a large round black spot on 6th spine; a dark blotch on upper P base; C with 3 brown vertical bands.

Distribution : Only known from Godavari estuary, India.

247. *Stigmatogobius javanicus* (Bleeker)

1856. *Gobius javanicus* Bleeker, *Nat. Tijdschr. Ned.-Indie*, **11** : 88 (Java).

1991. *Stigmatogobius javanicus* : Talwar and Jhingran, *Inland Fishes*, **2** : 947.

Material examined : 1 ex, 26 mm, CANR, 13.09.93, Sunkurevu, F-1585.

Diagnostic features : D VI + I, 6-7; A I, 6-7; P 15; LS 25-27; Ltr. 7; preD. 6-8. Depth 4, head 4.25 in SL. Head subcylindrical; upper jaw prominent; upper jaw teeth in several rows; lateral teeth of inner row of lower jaw not enlarged. Head scaled above, behind eyes, the foremost scale enlarged, unpaired. Greenish above, reddish-green below; dark stripe from eye to maxilla; dark oblong spots on cheeks; laterally 2-3 alternating longitudinal rows of 5 blotches; first D with a dark spot between 3rd and 5th spine; D and C rays spotted; P base with 2 dark spots.

Distribution : India, through Indonesia, to the Philippines and Australia.

248. *Stigmatogobius micrognathus* Rao

1971. *Stigmatogobius micrognathus* Rao, *J. zool. Soc. India*, **23** (1) : 50, fig. 3 a & c (Godavari estuary).

Material examined : Not examined by us.

Diagnostic features : D VI + I, 7; A I, 7; P 16; LS 29; Ltr. 9; preD. 8. Depth 4.0, head 3.8 in SL; eyes 3.4 in head. Mouth small, inferior; upper jaw prominent; tongue truncate; maxilla reaches to anterior fourth of eye. Pale yellow, upper half with irregular brown blotches; snout and sides of head spotted; two blotches in a vertical line on C base; first D gray with darker edge, a black blotch between 5th and 6th spine; second D, A and C dotted black.

Distribution : Godavari estuary.

Remarks : Known only by the holotype and is akin to *S. javanicus* (Bleeker).

249. *Stigmatogobius minima* (Hora)

1923. *Ctenogobius minima* Hora, *Mem Indian Mus.*, **5** : 749, fig. 30 (Chilka lake, Orissa).

1991. *Stigmatogobius minima* : Talwar and Jhingran, *Inland Fishes*, **2** : 948.

Material examined : Not examined by us.

Diagnostic features : D VI + I, 7; A I, 7-8; P 15; LS 25-26, Ltr. 6-7; preD. 8-9. Depth 5, head 3.7 in SL. Teeth very small, in several rows on both jaws, in lower jaw inner row not enlarged. C oblong, as long as head. Opercle scaled; the

foremost scale behind eye in the median line large. Pale yellow with 4-5 oval blotches on flank; 2nd D and A with a black band on outer half.

Distribution : India : Chilka lake and Godavari estuary.

250. *Stigmatogobius sadanundio* (Hamilton)

1822. *Gobius sadanundio* Hamilton, *Fishes of Ganges* :52, 366 (Ganges estuary near Calcutta).

1991. *Stigmatogobius sadanundio* : Talwar and Jhingran, *Inland Fishes*, **2** : 949.

Material examined : 3 ex, 50-68 mm, CANR, 29.01.95, Coringa Channel, F-1268; 1 ex, 35 mm, CANR, 13.09.93, Sunkurevu, F-1584.

Diagnostic features : D VI + I, 7; A I, 8; P 17-18; LS 27-30; Ltr. 8-9; preD. 8-9. Depth 3.7-4.0, head 4.3-5.0 in SL; eye 3-4 in head; interorbital 1.0-1.5 in eye. Lower jaw prominent; teeth in upper jaw in several rows, outer row little enlarged; in lower jaw inner row enlarged, forming a canine on each side of symphysis and caninoid teeth laterally. Foremost scale behind eye enlarged. Olive, with several black spots in one or two longitudinal rows on flanks; first D with a faint blotch between 3rd and 6th spines; 2nd D and A with a few dark spots; C with small black spots in 3 or 4 transverse rows.

Distribution : India, Bangladesh, Sri Lanka and the Indo-Australian Archipelago.

251. *Stigmatogobius yanamensis* Rao

1971. *Stigmatogobius yanamensis* Rao, *J. zool. Soc. India*, **23** (1) : 48, fig. 2, b, d, e & f. (Godavari estuary).

Material examined : Not examined by us.

Diagnostic features : D VI + I, 7; A I, 8; P 17; LS 27-29; Ltr. 8-9; preD. 8. Depth 4.3-5.5, head 3.3-3.8 in SL; eyes 3.0-3.3 in head, equal to snout. Mouth subterminal; upper jaw porminent; maxillary extends to 1st third of eye. In males, 2nd and 3rd spine of D filamentous. Light yellow with brownish tinge on back; head covered with black spots; 4-5 oval blotches on sides; an oblique band below first D in males and an oval blotch in female; C base with a dark blotch on upper and lower edge.

Distribution : Godavari estuary.

Remarks : Known by the type specimens, and is akin to *S. minima* (Hora).

252. *Yongeichthys criniger* (Valenciennes)

1837. *Gobius criniger* Valenciennes, *Hist. nat. Poiss.* **12** : 82 (not known).

1993. *Yongeichthys criniger* : Rema devi, *Rec. zool. surv. India*, **90** (1-4) : 173.

Material examined : 2 ex, 52-56 mm, TV, 10.12.92, Antervedi, F-1024; 1 ex, 65 mm, TV, 09.12.92, Antervedi, F-1633.

Diagnostic features : D VI + I, 9; A I, 9; P 17-19; LL 30-32; Ltr. 11-12. Depth 4-5, head 3.3-3.6 in SL; eyes 3.0-3.6 in head. Mucous canals in 4-5 longitudinal rows over cheek. In first D, 2nd and 3rd rays longest, filiform. C obtusely rounded, shorter than head. Head naked above behind eyes; scales cycloid on nape, ctenoid on body; cheek and opercle naked. Olivaceous to orange-green above; head and dorsal side of body with irregular blackish spots; 3 large blackish spots, one below first D, second below 2nd D and the third at middle of C base; first D with 3 rows and 2nd D with 4 rows of blackish spots; median fins with blackish border.

Distribution : Indo-Pacific.

253. *Odontamblyopus rubicundus* (Hamilton)

1822. *Gobioides rubicundus* Hamilton, *Fishes of Ganges* : **37**, 365, pl. 5, fig. 9 (Estuaries of Ganges).

1991. *Odontamblyopus rubicundus* : Talwar and Jhingran, *Inland Fishes*, **2** : 983.

Material examined : Not examined by us.

Diagnostic features : D VI, 34-40; A I, 31-38; P 29-31; V I, 5. Depth 8.0-13.5, head 5.3-6.8 in SL. Mouth oblique; teeth biserial on upper jaw with 4 canines on each side, triserial on lower jaw with 4-5 canines on each side and a pair of symphysial canines. A row of 3 short barbels on

each side below head. D, A and C continuous; C long and pointed; P long, about 70% of head. Greenish-oblive above, lighter below; C black, other fins reddish.

Distribution : India, Myanmar, Indonesia, to China and Japan.

254. *Pseudotrypauchen multiradiatus* Hardenberg

1931. *Pseudotrypauchen multiradiatus* Hardenberg, *Treubia,* **13** (3-4) : 146, 418, fig. 8.

Material examined : 2 ex, 61-63 mm, CANR, 29.01.95, Coringa Channel, F-1227.

Diagnostic features : D VI, 30-34; A I, 28-32; P 40; LS ± 50. Depth and head 5 in SL. Maxilla 1.5 in head; no canine teeth; no barbels on chin and lower jaw; chin devoid of pores. Head and body scaled. P longer than head; C pointed, very long, about 3 in TL. Colour pale rose.

Distribution : Sumatra, India-mouth of River Hooghly and Godavari estuary.

255. *Taenioides anguillaris* (Linnaeus)

1758. *Gobius anguillaris* Linnaeus, *Syst. Nat.* (ed. 10) **1** : 264 (China).

1991. *Taenioides anguillaris* : Talwar and Jhingran, *Inland Fishes,* **2** : 984.

Material examined : 1 ex, 128 mm, TV, 22.11.92, B. V. Palem, F-1682.

Diagnostic features : D VI, 41-46; A I, 39-44; P 15-16. Depth 13-15, head 6.5-7.5 in SL; preanal distance less than 40% of SL. Chin with 3 pairs of barbels. On each side of upper jaw 6-7 canines and on each side of lower jaw 4-5 canines. D, A and C confluent; C, pointed. Body scalesless. Yellowish; vertical fins yellowish, C pinkish.

Distribution : India, through Indonesia, to China.

256. *Taenioides buchanani* (Day)

1873. *Amblyopus buchanani* Day, *Proc. zool. Soc. Lond.* : 110 (Calcutta and Moulmein).

1991. *Taenioides buchanani* : Talwar and Jhingran, *Inland Fishes,* **2** : 985.

Material examined : 1 ex, 225 mm, CANR, 18.10.92, Dariyaltippa, F-1577; 1 ex, 160 mm, TV, 24.04.95, Antervedi, F-1659.

Diagnostic features : D VI, 42; A I, 35-36; P 18-19. Depth 10, head 6 in SL; preanal distance more than 40% of SL. Chin with 3 pairs of barbels. About 5 canines on each side of jaws. D, A and C confluent; C, pointed. Scales rudimentary. Brownish-olive above, pinkish below. Vertical fins black; P and V yellowish.

Distribution : East coast of India and Myanmar.

257. *Taenioides cirratus* (Blyth)

1861. *Amblyopus cirratus* Blyth, *J. Asiat. Soc. Beng.,* **29** : 147 (? Hooghly river near Calcutta).

1991. *Taenioides cirratus* : Talwar and Jhingran, *Inland Fishes,* **2** : 985.

Material examined : Not examined by us.

Diagnostic features : D VI, 43-47; A I, 42-45; P 13. Depth 11, head 6.5 in SL. Chin with 3 pairs of barbels. About 5 cannines on each side of jaws. D and A separated from C by a deep notch; C, rhomboid. Scales absent. Deep pink with a series of obscure small round yellowish-brown spots on flanks; C yellowish-brown with black tip.

Distribution : Indo-west Pacific.

258. *Amblyotrypauchen arctocephalus* (Alcock)

1890. *Amblyopus arctocephalus* Alcock, *Ann. Mag. nat. Hist.,* (6) **6** : 432.

1941. *Amblyotrypauchen arctocephalus* : Koumans, *Mem. Indian Mus.,* **13** : 308.

Material examined : Not examined by us.

Diagnostic features : D VI, 40-43; A I, 39-41; LS ± 60; Ltr. 18. Depth 6.6; head 5 in SL, maxilla 2.6 in head. Eye hidden; snout broad. In upper jaw on each side one large and one smaller

canine; in lower jaw on each side 2-4 canines and a median one. D and A continuous with C; V united, but emarginate posteriorly. Some scales on head behind eye and on cheek and opercle.

Distribution : India.

259. *Ctenotrypauchen microcephalus* (Bleeker)

1860. *Trypauchen microcephalus* Bleeker, *Acta Soc. Sci. Indo. Neerl.*, **8** : 62 (Sungi-Duri, Borneo, in freshwater).

1991. *Ctenotrypauchen microcephalus* : Talwar and Jhingran, *Inland Fishes*, **2** : 987.

Material examined : Not examined by us.

Diagnostic features : D VI, 48-51; A I, 44-49; P 16-17. Depth 8, head 7 in SL. Mouth oblique, lower jaw prominent; teeth in outer row enlarged; no canines. Head, nape, breast, belly naked. V united basally, emarginate (or free) posteriorly. Pink in colour.

Distribution : Indo-west Pacific.

260. *Trypauchen vagina* (Bloch & Schneider)

1801. *Gobius vagina* Bloch and Schneider, *Syst. Ichth.* : 73 (Tranquebar).

1991. *Trypauchen vagina* : Talwar and Jhingran, *Inland Fishes*, **2** : 988.

Material examined : 1 ex, 130 mm, CANR, 18.10.92, Dariyaltippa, F-977; 5 ex, 85-110 mm, TV, 10.12.92, Antervedi, F-1014; 5 ex, 55-113 mm, TV, 21.11.92, B. V. Palem, F-1067; 2 ex, 55-60 mm, TV, 29.11.92, B. V. Palem, F-1195; 6 ex, 67-111 mm, CANR, 29.01.95, Coringa Channel, F-1228.

Diagnostic features : D VI, 39-47; A I, 40-46; P 15-17; LS 80-100. Head naked, eyes minute. Teeth in jaws pointed, outer row enlarged and caninoid. D and A confluent with C. V completely united forming a funnel-like disc. Pinkish-white.

Distribution : Indo-west Pacific.

261. *Bunaka gyrinoides* (Bleeker)

1853. *Eleotris gyrinoides* Bleeker, *Natuurk. Tijdschr. Ned.-Indie*, **6** : 272.

1941. *Bunaka gyrinoides* : Koumans, *Mem. Indian Mus.*, **13** : 327.

Material examined : Not examined by us.

Diagnostic features : D VI + I, 8-9; A I, 8; P 18-19; LS 60; Ltr. 16-17; preD. 40. Depth 4-5, head 2.7-3.5 in SL. Maxilla extends to below posterior half of eye; teeth small, no canines. Cheek and opercle scaled, head scaled above behind eyes. Blackish-green above, orange-green below; each scale with a dark spot, often forming longitudinal stripes; fins orange, rays spotted dark, forming bands; P base with black spot.

Distribution : India, Sri Lanka, to tropical west-Pacific.

262. *Butis butis* (Hamilton)

1822. *Cheilodipterus butis* Hamilton, *Fishes of Ganges* : 57, 367 (Ganges river below Calcutta).

1991. *Butis butis* : Talwar and Jhingran, *Inland Fishes*, **2** : 973.

Material examined : 4 ex, 38-50 mm, TV, 21.11.92, B. V. Palem, F-1085; 1 ex, 70 mm, CANR, 29.01.95, Coringa Channel, F-1269; 3 ex, 38-57 mm, TV, 22.11.92, B. V. Palem, F-1687.

Diagnostic features : D VI + I, 8; A I, 8; P 18-20; V I, 5; LS 29-30; Ltr. 9-10; preD. ± 20. Depth 5-6, head 2.7-3.0 in SL. On each side 2 indistinct crests on snout; maxilla extends to below front edge of eye; outer row teeth in both jaws enlarged. Ctenoid scales between eye and the orbital crest; interopercle naked or only with a few scales. C obtuse, as long as head. Blackish, with several dark longitudinal lines and irregular cross bands; C black with a white margin dorsally; P base with one or two black spots.

Distribution : Indo-west Pacific.

263. *Butis melanostigma* (Bleeker)

1849. *Eleotric melanostigma* Bleeker, *Verh. batav. Genoot. Kunst. Wet.*, **22** : 23 (Indonesia).

1991. *Butis melanostigma* : Talwar and Jhingran, *Inland Fishes*, **2** : 974.

Material examined : 1 ex, 57 mm, TV, 10.12.92, Antervedi, F-1034; 3 ex, 70-100 mm,

CANR, 13.01.95, Veemuladeevi, F-1595; 1 ex, 62 mm, TV, 09.12.92, Antervedi, F-1631; 1 ex, 65 mm, CANR, 18.01.95, Parupalem, F-1653.

Diagnostic features : D VI + I, 8; A I, 8; P 18-19; V I, 5; LS 29-30; Ltr. 9-10; preD. ± 25. Depth 4.5-5.0, head 2.7-3.0 in SL. Three crests on snout; maxilla extends to below front to middle of eye; on jaws outer row teeth not enlarged. Ctenoid scales between eye and the orbital crest; interopercle scaled. C little shorter than head. Body dark with several thin longitudinal dark lines and often with irregular black spots; P base with large black spot; C black.

Distribution : Indo-west Pacific.

264. *Eleotris fusca* (Schneider)

1801. *Poecilia fusca* Schneider, *Syst. Ichth.* : 453 ("Oriadeae insulae rivulis"—Pacific Islands).

1991. *Eleotris fusca* : Talwar and Jhingran, *Inland Fishes*, **2** : 975.

Material examined : 2 ex, 46-48 mm, TV, 10.12.92, Antervedi, F-1033; 1 ex, 55 mm, TV, 09.12.92, Antervedi, F-1632; 1 ex, 42 mm, TV, 22.11.92, B. V. Palem, F-1688.

Diagnostic features : D VI + I, 8-9; A I, 8; P 15-18; V I, 5; LS 60-68; Ltr. 16-19; preD. ± 50. Depth 4.2-4.8, head 3.0-3.5 in SL; eyes 5-6 in head. Maxilla extends to below middle of eye. Anterior most and 3rd papillae row under eye extend below longitudinal row. Head scaled above, between and behind eyes, on cheeks and opercle. Middle of C peduncle with 12-14 transverse scale rows. Head, body and fins dark brown to black; numerous horizontal lines on body; fins spotted.

Distribution : Indo-west Pacific.

265. *Eleotris melanosoma* Bleeker

1852. *Eleotris melanosoma* Bleeker, *Natuurk. Tijdschr. Ned.-Indie*, **3** : 705 (Wahai, Celebes and West Sumatra).

Material examined : 6 ex, 45-62 mm, CANR, 13.09.93, Sunkurevu, F-1587.

Diagnostic features : D VI + I, 8; A I, 8; P 15-16; V I, 5; LS 45-55; Ltr. 14-15; preD. 40-45. Depth 4.5-5.5, head 2.7-3.5 in SL; eyes 4.5-5.5 in head. Maxilla reaches to below rear half of eye. Anterior 3 vertical papillae rows below eye extend below longitudinal row on mid-cheek. Preopercle scaled dorsally, scales not reaching to below eyes. Middle of caudal peduncle with 11-12 transverse scale rows. Dark brown to black, often with pale longitudinal lines; fins spotted in young.

Distribution : Tropical Indo-west Pacific.

Remarks : Recorded for the first time from Godavari estuary.

266. *Incara multisquamatus* Rao

1971. *Incara multisquamatus* Rao, *J. mar. biol. Ass. India*, **11** (1/2) : 329, figs. 1 & 2 (Godavari estuary).

Material examined : Not examined by us.

Diagnostic features : D VI + I, 9; A I, 8; P 16; V I, 5; LS ± 62. Head cylindrical, eye 5 in head; maxilla extends to below anterior-fourth of eye. Patches of ctenoid scales on lateral side surrounded by cycloid scales. Muddy brown; four bands radiate from eye.

Distribution : Known from the Godavari estuary only.

267. *Odonteleotris canina* (Bleeker)

1849. *Eleotris canina* Bleeker, *Verh. batav. Genoot. Kunst. Wet.*, **22** : 20.

1953. *Odonteleotris canina* : Koumans, *Fish. Indo-Aust. Archip.*, **10** : 331.

Material examined : Not examined by us.

Diagnostic features : D VI + I, 9; A I, 8; P 15; LS ± 70; Ltr. ± 20; preD. ± 40. Depth 6, head 4 in TL; eyes 4.5-5.0 in head. Green above, yellow below.

Distribution : Surabaja and Kammal in Strait Madurae, Singapore.

Remarks : Report of occurrence (Venkateswarlu, 1990) remains to be varified.

268. *Ophieleotris aporos* (Bleeker)

1854. *Eleotris aporos* Bleeker, *Nat. Tijdschr. Ned.-Indie*, **6** : 59 (Sindangole, Halmaheira).

1991. *Ophieleotris aporos* : Talwar and Jhingran, *Inland Fishes*, **2** : 979.

Material examined : 1 ex, 50 mm, TV, 10.12.92, Antervedi, F-1035.

Diagnostic features : D VI + I, 9; A I, 9; P 14-16; V I, 5; LS 30-32; Ltr. 10-11; preD. 13-18. Depth 4.0-4.8, head 3.2-3.5 in SL; eye 4.0-5.5 in head. Head fully scaled; sensory canal pores only on posterior margin of preoperculum; maxilla extends to below anterior margin of eye. Dark brown, shading to pale below; two dark lines from eye downwards to lower part of opercle; C pale with a dark elongated spot.

Distribution : India, eastward to west-Pacific.

Remarks : Recorded for the first time from Godavari estuary.

269. *Prionobutis koilomatodon* (Bleeker)

1849. *Eleotris koilomatodon* Bleeker, *Verh. batav. Genoot. Kunst. Wet.*, **22** : 21.

1941. *Prionobutis koilomatodon* : Koumans, *Mem. Indian Mus.*, **13** : 319.

Material examined : 1 ex, 62 mm, CANR, 29.01.95, Coringa Channel, F-1270; 1 ex, 29 mm, CANR, 13.09.95, Sunkurevu, F-1586; 1 ex, 51 mm, CANR, 13.01.95, Veemuladeevi, F-1596; 1 ex, 43 mm, TV, 12.11.93, Darbharevu, F-1647.

Diagnostic features : D VI + I, 8; A I, 8; P 19-21; LS 30; Ltr. 7-10; preD. 12-14. Depth 3.7-4.0, head 3.0-3.2 in SL, eye 4.0-4.5 in head. Orbital crest denticulated; snout with 2 denticulate crests on each side. Head short, obtuse; jaws subequal; snout rounded, subequal to eye. Head scaled above, behind eyes, on upper part of cheek and on opercle. Dusky-green to olivaceous, lighter below; P base with black spot bordered with red; 2nd D and A spotted; A and C bordered with red.

Distribution : India, eastwards to west-Pacific.

270. *Kurtus indicus* Bloch

1786. *Kurtus indicus* Bloch, *Naturges. ausland, Fische*, (2) : 122 (India).

Material examined : 4 ex, 75-88 mm, CANR, 15.09.93, Antervedi, F-1290; 1 ex, 90 mm, TV, 03.12.92, Antervedi, F-1523.

Diagnostic features : D V, 12-13; A II, 31-32; P 21; V I, 5. Body compressed, back elevated; operculum thin; preoperculum with 4 spines at angle. Scales small, cycloid. Males with a prominent hook on occiput comprising skin covering the supraoccipital crest. Silvery shot with blue or lilac, with fine dots on back and form a round black spot behind occiput.

Distribution : India, to Borneo, China.

271. *Acanthurus bleekeri* Gunther

1861. *Acanthurus bleekeri* Gunther, *Cat. Fishes Br. Mus.*, **3** : 335 (Java).

Material examined : Not examined by us.

Diagnostic features : D IX, 24-26; A III, 23-24. Depth 2.1-2.5 in SL. Snout short, 6.6-6.9 in SL. Teeth small, 14-18 in upper and 16-24 in lower jaw. C lunate. Lancet-shaped spine on caudal penduncle which folds into deep horizontal groove. Dark brown with length wise blue lines on head and body, a yellow area behind eye, and two yellow bands extending anterior from upper and lower edge of eye.

Distribution : Indo-west Pacific.

272. *Acanthurus xanthopterus* Valenciennes

1835. *Acanthurus xanthopterus* Valenciennes, *Hist. nat. Poiss.*, **10** : 215 (Seychelles).

Material examined : Not examined by us.

Diagnostic features : D (VIII) IX, 25-27; A III, 23-25. Depth 1.9-2.3, snout 3.9-5.3 in SL. Teeth 12-18 in upper jaw, 14-21 in lower jaw. C lunate; caudal spine 5.5 in head and with a definite sheath. Uniform purplish gray to a colour phase in which extremely irregular dark gray lines alternate with blue gray lines; posterior part of

caudal peduncle and C base dull white; D and A yellowish-gray at base, shading to dull yellow distally with 4 longitudinal broad blue bands.

Distribution : Indo-west Pacific.

Remarks : Rao (1976) reported this species as *A. matoides* Valenciennes, 1835.

273. ***Siganus canaliculatus*** (Park)

1797. *Chaetodon canaliculatus* Park, *Trans. Linn. Soc. Lond.*, **3** : 33 (Sumatra).

1984. *Siganus canaliculatus* : Talwar and Kacker, *Commercial Sea Fishes of India* : 775.

Material examined : 3 ex, 45-57 mm, CANR, 29.01.95, Coringa Channel, F-1264; 1 ex, 90 mm, SCN, 18.03.95, Upapara, F-1546.

Diagnostic features : D I, XIII, 10; A VII, 9. Depth 2.4-2.8 in SL. Head profile slightly concave above eye; anterior nostril with a small dark flap. A sharp, forward-projecting spine before D; last spine of D shortest; C truncate in young, forked in adult. Scale rows between base of 4th or 5th D spine and LL 21-27. 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 : Recorded for the first time from Godavari estuary.

274. ***Eupleurogrammus muticus*** (Gray)

1831. *Trichiurus muticus* Gray, *Zool. Misc.*, **1** : 10 (India).

1984. *Eupleurogrammus muticus* : Talwar and Kacker, *Commercial Sea Fishes of India* : 784.

Material examined : Not examined by us.

Diagnostic features : D III, 139-147; A reduced to separate spines, buried in flesh in larger specimens; A origin below 38th-43rd soft D ray; V reduced to wing like structures; P as long as snout; C absent. Steely blue, with metallic reflections.

Distribution : Persian Gulf, through India, Indonesia, to China.

275. ***Lepturacanthus savala*** (Cuvier)

1829. *Trichiurus savala* Cuvier, *Regne Animal.*, (2nd ed.) 2 : 219 ("Merdes Indies" = Bombay and Malabar).

1984. *Lepturacanthus savala* : Talwar and Kacker, *Commercial Sea Fishes of India* : 786.

Material examined : 1 ex, 450 mm, TV, 24.11.93, Antervedi, F-1234; 4 ex, 355-440 mm, TV, 03.12.92, Antervedi, F-1522.

Diagnostic features : D III, 110-120; A 70-75, reduced to separate spines; P I, 10, spine unserrated; lower GR 4-9. V and C absent. Eyes 7-9 in head. Steely blue, with metallic reflections.

Distribution : India, eastward to west-Pacific.

276. ***Trichiurus lepturus*** Linnaeus

1758. *Trichiurus lepturus* Linnaeus *(Partim) (ex* Artedi*), Syst. Nat.*, (ed. 10) : 246 (South Carolina).

Material examined : 3 ex, 220-285 mm, CANR, 29.01.95, Coringa Channel, F-1219.

Diagnostic features : D III, 130-135; A 100-105, reduced to minute spinules; P I, 11-13, spine unserrated; V and C absent. Eyes 5-7 in head; fangs on jaws with barbs. Steely blue, with metallic reflections.

Distribution : Circumglobal in tropical and warm temperate waters.

277. ***Rastrelliger kanagurta*** (Cuvier)

1817. *Scomber kanagurta* Cuvier, *Regne. Animal*, **2** : 313 (Vizagapatnam).

1984. *Rastrelliger kanagurta* : Talwar and Kacker, *Commercial Sea Fishes of India* : 807.

Material examined : 3 ex, 60-65 mm, SCN, 18.03.95, Upapara, F-1552.

Diagnostic features : D IX-XI + I, 11 + 5 finlets; A I, 11 + 5 finlets; P 19-20; GR (15-22) + (30-46). Depth at margin of gill cover 4.0-4.8 in SL; head longer than greatest body depth. Back blue/green, flanks silvery with a golden tint; 2 rows of small, dark spots on sides of D base; narrow dark longitudinal bands on upper part of body and a black spot on body near lower margin of P.

Distribution : Indo-Pacific.

278. *Scomberomorus commerson* (Lacepede)

1800. *Scomber commerson* Lacepede, *Hist. nat. Poiss.*, **2** : 598, pl. 20 (1) (Mauritius).

1984. *Scomberomorus commerson* : Talwar and Kacker, *Commercial Sea Fishes of India* : 812.

Material examined : 2 ex, 72-93 mm, SCN, 18.03.95, Upapara, F-1553.

Diagnostic features : D XV-XVIII + 15-20 + 8-10 finlets; A 16-20 + 7-12 finlets; P 21-23; GR (0-1) + (3-5). Depth 5.0-6.3, head 4.3-5.1 in SL. LL abruptly bent downward below end of second D. Back blue or gray; sides silvery with bluish reflection, marked with numerous thin, wavy vertical bands.

Distribution : Indo-west Pacific; entered eastern Mediterranean Sea.

279. *Scomberomorus guttatus* (Bloch & Schneider)

1801. *Scomber guttatus* Bloch and Schneider, *Syst. Ichth.* : 23, pl. 5 (Tranquebar).

1984. *Scomberomorus guttatus* : Talwar and Kacker, *Commercial Sea Fishes of India* : 813.

Material examined : 3 ex, 75-88 mm, SCN, 18.03.95, Upapara, F-1554.

Diagnostic features : D XV-XVIII + 18-24 + 7-10 finlets; A 19-23 + 7-10 finlets; GR (1-2) + (7-12); LL with many fine branches anteriorly, almost straight to below middle of 2nd D, and gently bent down ward to middle of caudal peduncle. Blue on back, silvery on sides; about 3 irregular rows of dark round spots, smaller than eye, along flank; spinous D dark upto 8th spine.

Distribution : Persian Gulf, through India, Indonesia, to Japan.

280. *Pampus argenteus* (Euphrasen)

1788. *Stromateus argenteus* Euphrasen, *Kongl. Vetensk. Acad. Handl. Stockholm*, **9** : 49 ("Castellum Chinese Bocca Tigris dictum").

1984. *Pampus argenteus* : Talwar and Kacker, *Commercial Sea Fishes of India* : 837.

Material examined : 1 ex, 100 mm, CANR, 15.09.93, Antervedi, F-1291.

Diagnostic features : D 38-43; A 34-43; D and A preceded by 5-10 very low blade-like spines; both the fins falcate; C deeply forked, lower lobe longer. Gray on back, shading to silvery white below.

Distribution : Persian Gulf, through India, Indonesia to Japan.

281. *Pampus chinensis* (Euphrasen)

1788. *Stromateus chinensis* Euphrasen, *Kongl. Vetensk. Acad. Handl. Stockholm*, **9** : 53, fig. 9 ("Castellum Chinese Bocca Tigris dictum").

1984. *Pampus chinensis* : Talwar and Kacker, *Commercial Sea Fishes of India* : 838.

Material examined : Not examined by us.

Diagnostic features : D 43-50; A 39-42; no spines ahead of fins; fins never falcate, posterior border almost vertical; C emarginate in young, slightly forked in adults. Gray-brown on back, shading to silvery-white below.

Distribution : Pakistan, India, through Indonesia, to China.

282. *Anabas cobojius* (Hamilton)

1822. *Coius cobojius* Hamilton, *Fishes of Ganges* : 98, 370, pl. 13, fig. 33 (Gangetic provinces).

1991. *Anabas cobojius* : Talwar and Jhingran, *Inland Fishes*, **2** : 996.

Material examined : 3 ex, 70-80 mm, TV, 16.11.93, Chintawarupetta, F-1620.

Diagnostic features : D XVI-XVIII, 9-10; A IX-XI, 9-11; P 14-16, V I, 5; LS 25-28. Depth 2.2-2.8, Snout 10.5-12.5 in SL. Greenish on back and flanks, pale yellow on belly; usually more than four vertical bands on flanks; a distinct dark spot on C base.

Distribution : Andhra Pradesh, Orissa and West Bengal states of India; Bangladesh and Borneo. Inhabits ponds, ditches and paddy fields.

Remarks : Recorded for the first time from Godavari estuary.

283. *Colisa fasciatus* (Schneider)

1801. *Trichogaster fasciatus* Schneider, *Syst. Ichth.* : 164, pl. 36 (Tranquebar).

1991. *Colisa fasciatus* : Talwar and Jhingran, *Inland Fishes*, **2** : 1006.

Material examined : Not examined by us.

Diagnostic features : D XV-XVII, 9-14; A XV-XVIII, 14-19; P 9-10; LS 29-31. Preorbital serrate in young. A scaly at base only. Greenish with orange or bluish bars descending obliquely. Vertical fins with alternate dark and pale spots or bars; A often with red margin.

Distribution : Pakistan, India, Nepal, Bangladesh, Myanmar. Inhabits ponds, rivers, and estuaries.

284. *Channa punctatus* (Bloch)

1793. *Ophiocephalus punctatus* Bloch, *Naturges. ausland. Fische*, (7) : 139, pl. 358 (Rivers and lakes of Coromandel coast).

1991. *Channa punctatus* : Talwar and Jhingran, *Inland Fishes*, **2** : 1020.

Material examined : 1 ex, 60 mm, TV, 16.11.93, Chintawarapetta, F-1621; 1 ex, 112 mm, TV, 22.11.92, B. V. Palem, F-1685.

Diagnostic features : D 28-33; A 20-23; P 15-18; V 6; LS 37-40; preD. 12; 5 scale rows between preopercular angle and posterior border of orbit. Eyes 7.0-8.5 in head. V about 75% of P length. Black to light green on back and flanks. Ventrally white to pale yellow, sometimes with reddish tinge; several dark blotches on flanks.

Distribution : Afghanistan, Pakistan, India, Sri Lanka, Nepal, Bangladesh, Myanmar, Yunan (China). Inhabits freshwater ponds and tanks.

285. *Macrognathus aral* (Bloch & Schneider)

1801. *Rhynchobdella aral* Bloch and Schneider, *Syst. Ichth.* : 479, pl. 89 (Tranquebar, Tamilnadu).

1991. *Macrognathus aral* : Talwar and Jhingran, *Inland Fishes*; **2** : 1026.

Material examined : 2 ex, 122-168 mm, TV, 09.12.92, Antervedi, F-1628.

Diagnostic features : D XVI-XXIII, 44-45; A III, 44-52; P 19-24; C 15. Rostrum relatively large, with concave ventral surface lined with 14-28 paired tooth plates. Brownish or greenish, marbled superiorly, yellowish along abdomen; two broad pale longitudinal bands above and below LL; D pale or orange, 3-11 ocelli at its base; D and C with fine streaks.

Distribution : Pakistan, India, Sri Lanka, Bangladesh, Nepal and Myanmar. Inhabits fresh and brackish waters, both running and stagnant waters.

Remarks : Rao (1976) recorded this species from Godavari estuary as *M. aculeatus* (Bloch).

286. *Macrognathus pancalus* Hamilton

1822. *Macrognathus pancalus* Hamilton, *Fishes of Ganges* : 30, 364, pl. 22, fig. 7 (Tanks of Gangetic provinces).

Material examined : 1 ex, 127 mm, TV, 22.11.92, B. V. Palem, F-1683.

Diagnostic features : D XXIV-XXVI, 30-42; A III, 31-46; P 17-19; C 12. Rostrum rounded in cross-section, devoid of tooth plates. Preopercle with 2-5 spines; preorbital spine strong. Greenish-olive along back, yellowish on belly, with many yellowish-white spots on flanks, often with dark brown vertical stripes mostly confined to posterior half of body; fins yellowish with minute black spots.

Distribution : Pakistan, India, Bangladesh.

Remarks : Recorded for the first time from Godavari estuary.

287. *Pseudorhombus arsius* (Hamilton)

1822. *Pleuronectes arsius* Hamilton, *Fishes of Ganges* : 128 (Ganges estuary below Calcutta).

1984. *Pseudorhombus arsius* : Talwar and Kacker, *Commercial Sea Fishes of India* : 851.

Material examined : 1 ex, 65 mm, CANR, 18.10.92, Dariyaltippa, F-991; 1 ex, 35 mm, TV, 24.11.92, Coringa, F-1043.

Diagnostic features : D 72-80; A 56-61; P 11-12; lower GR 9-13, lanceolate. Teeth strong,

widely set canines; 6-13 teeth on blind side of lower jaw. Scales cycloid on blind side. Brownish on occular side; with dusky spots and blotches; a distinct larger blotch on anterior end of straight part of LL and a smaller one half way to C base; median fins with scattered dark spots.

Distribution : Indo-west Pacific.

288. ***Pseudorhombus elevatus*** Ogilby

1912. *Pseudorhombus elevatus* Ogilby, *Mem. Queensland Mus.*, **1** : 45 (Queensland, Australia).

Material examined : 1 ex, 89 mm, TV, 06.12.92, Darbharevu, F-1520; 1 ex, 45 mm, TV, 22.11.92, B. V. Palem, F-1686.

Diagnostic features : D 69-70; A 52-53; lower GR 11-15, lanceolate. Depth 1.8-2.0 in SL. Teeth small, 23-32 teeth on blind side of lower jaw. D origin above anterior nostril of blind side. Scales ctenoid on eyed-side and cycloid on blind side. Ocular side pale brown, with numerous faint blotches arranged in 5 irregular rows; 3 large distinct blotches along straight part of LL.

Distribution : The Red Sea, through India, to north-eastern coast of Australia.

289. ***Pseudorhombus triocellatus*** (Bloch)

1801. *Pleuronectes triocellatus* Bloch, *Syst. Ichth.* : 145 (East Indian Seas).

1984. *Pseudorhombus triocellatus* : Talwar and Kacker, *Commercial Sea Fishes of India* : 857.

Material examined : 1 ex, 55 mm, SCN, 18.03.95, Upapara, F-1545.

Diagnostic features : D 66-69; A 48-51; lower Gr ± 23, long and slender. Depth 1.5-1.8 in TL. Teeth minute on both jaws. D origin above anterior nostril of blind side; anterior rays of D longer than the rest. Scales ctenoid on ocular side and cycloid on blind side, but ctenoid near fin bases. Eyed-side dark brownish with three black ocellus.

Distribution : East coast of India, Sri Lanka, to Malaya.

Remarks : Recorded for the first time from Godavari estuary.

290. ***Euryglossa orientalis*** (Bloch & Schneider)

1801. *Pleuronectes orientalis* Bloch and Schneider, Syst. Ichth, : 157 (Tranquebar).

1991. *Euryglossa orientalis* : Talwar and Jhingran, *Inland Fishes*, **2** : 1047.

Material examined : Not examined by us.

Diagnostic features : D 62-67; A 47-57; P 7, V 5; C 18-20. Scales on head and nape of same size as other parts; head scales on blind side modified into cutaneous sensory process. Ocular side brownish with cloudy indistinct patches, tinged yellow on blind side; vertical fins darker; outer half of P black.

Distribution : The Red Sea, through India, Indonesia, to China and Australia.

291. ***Euryglossa pan*** (Hamilton)

1822. *Pleuronectes pan* Hamilton, *Fishes of Ganges*, : 130, 373, pl. 24, fig. 42 (Estuaries of Ganges).

1991. *Euryglossa pan* : Talwar and Jhingran, *Inland Fishes*, **2** : 1046.

Material examined : Not examined by us.

Diagnostic features : D 57-61; A 43-46; P 7; V 6; C 16-17. Scales on upper part of head and nape distinctly enlarged. Ocular side brownish with irregular darker spots and blotches; a few dark vertical streaks crossing LL; margin of right P dusky.

Distribution : East coast of India, Myanmar, Malaya.

292. ***Solea ovata*** Richardson

1846. *Solea ovata* Richardson, *Rep. Br. Assoc. Adv. Sci.* : 279 (China).

Material examined : Not examined by us.

Diagnostic features : D 58-67; A 41-51. Depth 2.0-2.2 in TL. Olive-brown with spots and

black blotches on ocular side of body and fins; deep black blotches on outer two-thirds of P.

Distribution : India, through Indonesia, to China.

293. *Synaptura albomaculata* Kaup

1858. *Synaptura albomaculata* Kaup, *Arch. Naturgesch.*, **24** (1) : 96 (Coromandel coast).

Material examined : 1 ex, 152 mm, CANR, 18.10.92, Dariyaltippa F-986.

Diagnostic features : D 72-80; A 57-63; P (right) 8-10; P (left) 7-8; V 4. On ocular side a short tentacle between nostrils present. Scale on head and body of eyed-side equal in size. P length 2.5-3.0 in head. Brownish with 2-3 rows of white spots on ocular side; D and A black towards edges, with a narrow white margin.

Distribution : East Coast of India, Bangladesh, Myanmar. Inhabits shallow coastal waters; enters estuaries.

Remarks : Recorded for the first time from Godavari estuary.

294. *Cynoglossus arel* (Schneider)

1801. *Pleuronectes arel* Schneider, *Syst. Ichth. Bloch* : 159 (Tranquebar).

1984. *Cynoglossus arel* : Talwar and Kacker, *Commercial Sea Fishes of India* : 873.

Material examined : 1 ex, 230 mm, CANR, 15.09.93, Antervedi, F-1305.

Diagnostic features : D 116-130; A 85-98; C 10; two LL on ocular side, median LL 56-70; 7-9 scale rows in between; no LL on blind side. Scales ctenoid on ocular side and cycloid on blind side. Ocular side uniform brown, with a dark patch on gill-cover.

Distribution : Persian Gulf, through India, Indonesia, to the Philippines, Taiwan.

Remarks : Recorded for the first time from Godavari estuary.

295. *Cynoglossus bilineatus* (Lacepede)

1802. *Achirus bilineatus* Lacepede, *Hist. nat. Poiss.*, **4** : 659, 663 (China, East Indies).

1984. *Cynoglossus bilineatus* : Talwar and Kacker, *Commercial Sea Fishes of India* : 874.

Material examined : 1 ex, 245 mm, TV, 24.11.93, Antervedi, F-1237.

Diagnostic features : D 107-113; A 80-88; C 12; two LL on ocular side, 13-16 scale rows in between; median LL 80-96; two LL on blind side. Scales ctenoid on ocular side and cycloid on blind side. Ocular side brown, with irregular dark blotch on operculum, blind side white.

Distribution : Pakistan, India, eastward to west-Pacific.

Remarks : Recorded for the first time from Godavari estuary.

296. *Cynoglossus cynoglossus* (Hamilton)

1822. *Achirus cynoglossus* Hamilton, *Fishes of Ganges* : 132 (Ganges river mouth).

1991. *Cynoglossus cynoglossus* : Talwar and Jhingran, *Inland Fishes*, **2** : 1041.

Material examined : 4 ex, 85-98 mm, CANR, 29.01.95, Coringa Channel, F-1267.

Diagnostic features : D 95-102; A 72-78, C 10. Two LL on ocular side, 12-14 scale rows in between; median LL 70-90; no LL on blind side. Scales ctenoid on both side. Snout obtusely pointed, about 32% of head; angle of mouth not reaching beyond lower eye, nearer to tip of snout than to gill-opening; interorbital space 2.0-9.7% of head length. Ocular side uniformly brownish with vague marbling.

Distribution : Coasts of India, Bangladesh, Indonesia, to the Philippines.

Remarks : Recorded for the first time from Godavari estuary.

297. *Cynoglossus lida* (Bleeker)

1851. *Plagusia lida* Bleeker, *Nat. Tijdschr. Ned.-Indie*, **1** : 413 (Batavia).

1984. *Cynoglossus lida* : Talwar and Kacker, *Commercial Sea Fishes of India* : 879.

Material examined : 1 ex, 81 mm, TV, 26.11.92, Bhairavapalem, F-1117.

Diagnostic features : D 99-108; A 77-85; C 10. Two LL on ocular side, 12-15 scale rows in between; median LL 72-90; no LL on blind side. Scales ctenoid on both side. Snout broadly rounded; angle of mouth extending to below posterior half of lower eye; distinctly nearer to gill-opening than to tip of snout. Ocular side light brownish.

Distribution : Indo-west Pacific.

Remarks : Recorded for the first time from Godavari estuary.

298. *Cynoglossus lingua* Hamilton

1822. *Cynoglossus lingua* Hamilton, *Fishes of Ganges* : 32 (Gangetic estuary).

Material examined : 2 ex, 90-92 mm, CANR, Dariyaltippa, F-990; 1 ex, 140 mm, TV, 21.11.92, B. V. Palem, F-1084; 1 ex, 101 mm, TV, 07.12.92, Antervedi, F-1109; 1 ex, 162 mm, CANR, 29.01.95, Coringa Channel, F-1265; 2 ex, 60-69 mm, SCN, 18.03.95, Upapara, F-1563.

Diagnostic features : D 126-138; A 97-114; C 10. Two LL on ocular side, 11-12 scale rows in between; median LL 90-100; no LL on blind side. Snout obtusely pointed; angle of mouth reaching well beyond lower eye, much nearer to gill-opening than to tip of snout. Scales ctenoid on ocular side and cycloid on blind side. Ocular side reddish-brown, often with irregular brown-black patches.

Distribution : Coasts of India, to Indonesia, and the Philippines.

299. *Cynoglossus macrostomus* Norman

1928. *Cynoglossus macrostomus* Norman, *Rec. Indian Mus.*, **30** (2) : 204, fig. 20 (Hooghly estuary near Calcutta).

Material examined : 1 ex, 87 mm, TV, 24.04.95, Antervedi, F-1668.

Diagnostic features : D 100-106; A 78-84; C 10. Two LL on ocular side, 14-16 scales in between; median LL 80-92; no LL on blind side. Snout obtusely pointed; angle of mouth reaching well beyond lower eye, nearer to tip of snout than to gill-opening. Scales ctenoid on both sides. Ocular side light brown with dark brown mottling forming diffuse, irregular cross bands; D and A gray-black.

Distribution : Coasts of India.

Remarks : Recorded for the first time from Godavari estuary.

300. *Cynoglossus punticeps* (Richardson)

1846. *Plagussia punticeps* Richardson, *Rep. Br. Ass. Advmt. Sci.*, **15** : 280 (China).

1991. *Cynoglossus puntıcpes* : Talwar and Jhingran, *Inland Fishes*, **2** : 1043.

Material examined : 1 ex, 63 mm, TV, 29.11.92, B. V. Palem, F-1024; 3 ex, 89-97 mm, CANR, 29.01.95, Coringa Channel, F-1266; 1 ex, 78 mm, SCN, 18.03.95, Upapara, F-1564; 1 ex, 114 mm, TV, 30.11.92, B. V. Palem, F-1670.

Diagnostic features : D 90-100; A 72-78; C 10. Ocular side with two LL, 16-19 scales in between; median LL 78-99; no LL on blind side. Snout rounded or obtusely pointed; angle of mouth not reaching beyond lower eye, slightly nearer to tip of snout than to gill-opening; eyes not contiguous. Scales ctenoid on both sides. Ocular side yellow-brown with very distinct irregular dark brown blotches, often forming irregular cross bars; some rays of D and A dashed with dark brown.

Distribution : Pakistan, India, through Indonesia, the Philippines, Taiwan and Australia.

Remarks : Recorded for the first time from Godavari estuary.

301. *Cynoglossus semifasciatus* Day

1876. *Cynoglossus semifasciatus* Day, *Fishes of India*, (2) : 346, pl. 97, fig. 5 (Madras).

Material examined : Not examined by us.

Diagnostic features : D 99-107; A 75-83; C 10. Ocular side with two LL, 11-14 scales in between; median LL 70-78; no LL on blind side. Snout rounded or obtusely pointed, about 27% of head length; angle of mouth extending little beyond vertical from fixed eye, nearer to tip of snout than to gill opening; interorbital space 1.8-2.5% of head length. Scales ctenoid on both sides. Ocular side light brownish, with a number of irregular vertical dark bands.

Distribution : East coast of India, Sri Lanka.

302. ***Paraplagusia bilineata*** (Bloch)

1784. *Pleuronectes bilineata Bloch, Naturges. ausland. Fische,* (3) : 29, pl. 188 (China).

1984. *Paraplagusia bilineata* : Talwar and Kacker, *Commercial Sea Fishes of India* : 885.

Material examined : 1 ex, 99 mm, SCN, 18.03.95, Upapara, F-1562; 1 ex, 165 mm, TV, 09.12.92, Antervedi, F-1630.

Diagnostic features : D 100-114; A 72-89; C 10; two LL on ocular side separated by 16-19 scale rows. Rostral hook long, reaching beyond lower eye; lips with a row of fringed tentacles. Ocular side brownish, often spotted or marbled with darker patches.

Distribution : Tropical Indo-west Pacific.

303. ***Paraplagusia blochii*** (Bleeker)

1851. *Plagusia blochii* Bleeker, *Nat. Tijdschr. Ned.-Indie,* **1** : 411 (Malay Archipelago).

1984. *Paraplagusia blochii* : Talwar and Kacker, *Commercial Sea Fishes of India* : 886.

Material examined : 1 ex, 181 mm, TV, 24.11.93, Antervedi, F-1232.

Diagnostic features : D 77-94; A 76-82. Two LL on ocular side separated by 13-15 scale rows. Rostral hook shorter, not reaching below posterior part of lower eye; lips with a row of fringed tentacles. Ocular side uniformly brownish.

Distribution : Pakistan, India, to Malaya, Australia.

Remarks : Recorded for the first time from Godavari estuary.

304. ***Triacanthus brevirostris*** Schlegel

1850. *Triacanthus brevirostris* Schlegel, *Fauna Japonica, Pisces,* (6) : 294 (Japan).

Material examined : Not examined by us.

Diagnostic features : D V + 22-24; A 18-19, P 13-14; V I. Depth 2.5-2.6, head 3.3-3.6 in SL; eyes 2.9-3.3 in head, 1.8-2.3 in snout. Upper profile of snout straight. Caudal peduncle 4.6-5.3 in SL. Silvery, back and snout light brownish; basal part of first spine of D and membrane of first D dark.

Distribution : Seas of India, through Indonesia to Japan.

305. ***Ostracion tuberculatus*** Linnaeus

1758. *Ostracion tuberculatus* Linnaeus, *Syst. Nat.* (ed. 10) : 331.

Material examined : Not examined by us.

Diagnostic features : D 9; A 9, P 19. Depth 2.6-2.8, head 3.5-3.8 in SL. Dorsal and ventral ridge absent; lateral and pelvic ridges sharp, without spine. Anterior opening of carapace longer than broad; its length equal to eye or less. Most bony plates of body with a black spot, or with two black spots connected by a milky white spot; in adults black encircles white, forming ocelli.

Distribution : Indo-Pacific.

Remarks : Some authors consider this species as *Ostracion cubicus* Linnaeus, 1758.

306. ***Arothron reticularis*** (Bloch & Schneider)

1801. *Tetrodon reticularis* Bloch and Schneider, *Syst. Ichth.* : 506 (Malabar).

1991. *Arothron reticularis* : Talwar and Jhingran, *Inland Fishes,* **2** : 1054.

Material examined : Not examined by us.

Diagnostic features : D 10-11; A 10-11; P 19. Small spinules on head and body except on caudal

peduncle and anterior part of snout; caudal peduncle depth more than its length. Deep gray or brown above, white below; small whitish spots on back; belly with longitudinal brown stripes, curving upward on sides of head.

Distribution : Indo-west Pacific.

307. ***Arothron stellatus*** (Bloch & Schneider)

1801. *Tetrodon lagocephalus* var. *stellatus* Bloch and Schneider, *Syst. Ichth.* : 503 (Hawaii).

1991. *Arothron stellatus* : Talwar and Jhingran, *Inland Fishes*, **2** : 1054.

Material examined : Not examined by us.

Diagnostic features : D 10-11; A 10-12; P 17-19. Head and body covered with spinules; lips and posterior part of tail naked. Brownish-yellow on back and sides, with white spots; considerable changes in colour patterns occur in this species. Juveniles have the belly with dark stripes which become spots in adults, but spots on fins of adults often absent.

Distribution : Indo-west Pacific.

308. ***Chelonodon fluviatilis*** (Hamilton)

1822. *Tetrodon fluviatilis* Hamilton, *Fishes of Ganges* : 6, 362, pl. 30, fig. 1 (Ganges river).

1991. *Chelonodon fluviatilis* : Talwar and Jhingran, *Inland Fishes*, **2** : 1055.

Material examined : 3 ex, 25-31 mm, TV, 21.11.92, B. V. Palem, F-1068; 1 ex, 26 mm, TV, 26.11.92, Bhairavapalem, F-1124; 1 ex, 85 mm, TV, 02.12.92, Antervedi, F-1132; 1 ex, 25 mm, TV, 29.11.92, B. V. Palem, F-1205; 2 ex, 65-66 mm, TV, 06.12.92, Darbharevu, F-1537; 1 ex, 78 mm, CANR, 14.09.93, Chakkalitippa, F-1538; 1 ex, 63 mm, CANR, 13.09.93, Sunkurevu, F-1579.

Diagnostic features : D 14-16; A 12-15; P 22. Interorbital space broad and convex. Nasal organ cup-like, with two rounded lobes at its tip. Head and body thickly set with dermal spinules. Olive-green above, white or yellow below; 3-4 dark patches on back; anterior half of head variably coloured; sides with 5-28 rounded, mostly ocellated, dark spots; C with dark cross bands.

Distribution : India, Sri Lanka, eastward to Borneo. Inhabits fresh and slightly brackish waters.

309. ***Chelonodon patoca*** (Hamilton)

1822. *Tetrodon patoca* Hamilton, *Fishes of Ganges* : 7, 362, pl. 18, fig. 2 (Estuaries of Ganges).

1991. *Chelonodon patoca* : Talwar and Jhingran, *Inland Fishes*, **2** : 1057.

Material examined : 1 ex, 25 mm, CANR, 29.01.95, Coringa Channel, F-1221; 2 ex, 51-54 mm, SCN, 18.03.95, Upapara, F-1550.

Diagnostic features : D 9-10; A 8-10; P 15-16. Interorbital space flat and broad. Nostril a round depression, surrounded by a low rim produced into a posterior and anterior flap. Body with a spiny patch on back, throat and belly; sides naked. Blackish above with numerous small round yellowish spots, flanks and belly silvery; juveniles often with 3-4 dark cross bands on back.

Distribution : Tropical Indo-west Pacific.

Remarks : Recorded for the first time from Godavari estuary.

310. ***Lagocephalus lunaris*** (Bloch & Schneider)

1801. *Tetrodon lunaris* Bloch and Schneider, *Syst. Ichth.* : 505 (Malabar).

1991. *Lagocephalus lunaris* : Talwar and Jhingran, *Inland Fishes*, **2** : 1058.

Material examined : 10 ex, 28-72 mm, CANR, Coringa Channel, F-1223; 4 ex, 60-70 mm, CANR, 24.07.95, Chinchunada, F-1618.

Diagnostic features : D 11-12; A 10-11; P 16-17. Spinules on back from nostrils to D; snout, sides and caudal peduncle smooth. Greenish-olive on back, sides and belly creamy white; a yellowish streak from eye to C.

Distribution : Indo-west Pacific.

311. ***Lagocephalus spadiceus*** (Richardson)

1845. *Tetrodon spadiceus* Richardson, *Voy. Sulphur. Ichth.* : 123, pl. 58, figs. 4, 5 (Canton, China).

1991. *Lagocephalus spadiceus* : Talwar and Jhingran. *Inland Fishes*, **2** : 1059.

Material examined : 1 ex, 46 mm, CANR, 29.01.95, Coringa Channel, F-1222.

Diagnostic features : D 11-12; A 11-12; P 17. Spinules on dorsal surface of body extend only about half way from interorbital region to D. Greenish olive above, flanks and belly whitish; posterior margin of C entirely white.

Distribution : Indo-west Pacific.

Remarks : Recorded for the first time from Godavari estuary.

312. ***Takifugu oblongus*** (Bloch)

1786. *Tetrodon oblongus* Bloch, *Naturges. ausland. Fische*, (2) : 6, pl. 146, fig. 1 (Surate, East Indies).

1991. *Takifugu oblongus* : Talwar and Jhingran, *Inland Fishes*, **2** : 1059.

Material examined : 1 ex, 45 mm, CANR, 29.01.95, Coringa Channel, F-1220.

Diagnostic features : D 12-13; A 10-11; P 16. Nasal organ covered by a small sac with two nostrils. A inserted below front half of D. Anterior part of back including top of head and belly with spinules. Brownish above with pale spots. yellowish-white below; narrow dark bars on sides.

Distribution : Indo-west Pacific.

DISCUSSION

Till now, the tally is 240 species of clupeioids and nonclupeioids including gobioids for the Godavari estuarine system (Babu Rao, 1962, 1973, 1976; Rao, 1971, 1972, 1974, 1976; Whitehead *et al.*, 1988; Venkateswarlu, 1990; Mohapatra and Venkateswarlu, 1995). We have enhanced it to 314 species.

As (i) the sampling methods have been varied and the survey parties have been concentrating on certain families of their own interest; (ii) the seasonal distribution of fishes in the estuary is influenced and decided partially by the monsoon oriented floods, a large number of fishes reported to occur in the estuary could not be relocated. The reasons for dominant distribution of marine, freshwater and euryhaline fishes in different seasons have already been discussed by Rao (1976).

We refrain from commenting on the occurrence of *Cottogobius kapuri* Rao due to non-availability of samples and information. We consider the occurrence of *Argyrosomus argentatus* (Houttuyn) doubtful or possibly mis-identification.

Talwar and Jhingran (1991) have concluded that estuarine existence for *Cynoglossus arel* (Schneider), *C. bilineatus* (Lacepede). *C. lida* (Bleeker) and *C. semifasciatus* Day is not possible. We tend to disagree since all these four species have an estuarine habitat in the Godavari estuary.

The most vulnerable species *Tenualosa ilisha* (Hamilton), *Silonia childreni* Sykes, *Ariodes dussumieri* (Valenciennes) and *Arius arius* (Hamilton) require conservation efforts. Seven species, *viz. Callogobius melanoptera* Rao, *Chiramenu fluviatilis* Rao, *Paragobiopsis orbicularis* Rao, *Silhouettea indicus* Rao, *Stigmatogobius micrognathus* Rao, *Stigmatogobius yanamensis* Rao and *Incara multisquamatus* Rao appear to be narrow endemics restricted to Godavari estuarine system.

Inventorisation process will have to be continued as the coastal marine and estuarine system exhibit continuous changes thereby providing scope for the occurrence of more species than known at present.

SUMMARY

Information on the distribution of 314 species of fishes is presented in this paper based on collection of samples and integrating existing literature. The ichthyofaunal diversity known is reported as a minimum of 312 species brought under 189 genera and 88 families for the Godavari estuarine system. New locality records for 74 species are reported.

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