



*Estuarine Ecosystem Series, 8*

# **Ichthyofauna and Decapod Crustacean Fauna of Nuanai Estuary, Odisha**

**D.V. RAO AND SHIBANANDA RATH**

**Zoological Survey of India**





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**Ichthyofauna and Decapod Crustacean  
Fauna of the Nuanai Estuary,  
Odisha**

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*Edited by the Director, Zoological Survey of India, Kolkata*

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## CITATION

Rao D.V. & Shibnanda Rath, 2013. Ichthyofauna and Decapod Crustacean Fauna of the Nuanai Estuary, Odisha, *Estuarine Ecosystem Series*,8: 1-64 (Published by the Director, Zool. Surv. India, Kolkata)

Published : March, 2013

ISBN : 978-81-8171-327-8

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Price

India ₹ 425/-

Foreign \$ 30/- £ 20/-

# Ichthyofauna and Decapod Crustacean fauna of the Nuanai Estuary Odisha

2013

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## INTRODUCTION

The Nuanai is one of the small river branches of the Mahanadi river system. The Mahanadi is the biggest river system covering over 14 districts of North Odisha (formerly known as Orissa) with its large number of tributaries formed an intricate network and ultimately joined the Bay of Bengal at several places of Odisha coast. The river bifurcated at Cuttack, the lower branch traversed through Bhubaneswar as a Kathjodi river system. The river Kathjodi flowing down and subdivided into river Kuakhai and Kushabhadra at Lat. 20°18'09.98" N-Long. 85°53' 05.00" E. The river Kushabhadra passing through Puri District and joining the sea at about 24 km from Puri. The river Kuakhai flowing down towards southeast of about 10.5 km and subdivided in to two branches as river Bhargavi and a small rivulet. The river Bhargavi traversed for about 30 km down and further subdivided at Lat. 20°12'23.46 "N-Long. 85° 51'43.93" E as Daya branch and joined the Chilika Lake, where as the other branch known as Nuanai river flows east and drains into Bay of Bengal at Lat. 19°49'13.42" N- Long. 85°54'42.38" E. A small river branch originated from river Kushabhadra also joined the Nuanai river at Lat. 19°50' 06.29" N-Long. 84° 54'08.00 E. The estuarine part of the Nuanai is located near Beldala village about 9 km from Puri District.

The studies on the estuarine ecosystem of Mahanadi by Upadhyay (1988), David (1953), Shetty (1963), Rao (1964), Shetty *et al.* (1965), Jayaram and Majumdar (1976), Thakur (1970), Venkaetswarlu *et al.* (1993a, 1993b, 1993c, 1993d, 1993e) and Deb, (1995 and 1998); Vekateswarlu *et al.* (1998); Rushikulya Estuary by Rao *et al.*, (1992) and on Bahuda Estuary by Rath and Dev Roy (2011b) are notable. The Chilika lake one of the biggest brackishwater lakes in India is located along the coast of Odisha and joined the Bay of Bengal by a narrow mouth near Arakhuda. Due to constant influx of sea water, the lake waters always remain brackish for most part of the year and supporting large number of fish species consists of marine, brackish and freshwater nature. The most important and pioneering studies on ichthyofauna of the lake made during early 19<sup>th</sup> century by Chaudhuri (1916a, b, c, 1917& 1923) Hora (1923), Koumans (1941), Menon (1961) and Rajan *et al.* (1968). Subsequently (Rama Rao, 1995) listed about 217 species from Chilika Lake. Later Rao (2009) updated the list with 259 species belongs to 76 families. So far no studies on the other estuaries of Odisha like Nuanai, Kushabhadra, Brahmani-Baitarani etc. is attempted. To fill the gape, faunal studies on the estuarine part of the minor Nuanai River has been taken up with special reference to fish and crustacean diversity as these groups are economically important.

### **Nuanai Estuary:**

The Nuanai is a small river of about 15 km long from origin to the confluence into the Bay of Bengal situated close to the temple town Puri, Odisha. The maximum width of the river is about 310 m towards up stream and gradually narrowed down to a width of 100 m near first Nuanai river bridge located at Lat. 19 °50'23.39" N- Long. 85° 53' 47.93" E. During high tide the sea water extends to about 3 km upstream, up to the road bridge point. To prevent the entry of saltwater further upstream during high tide, flood gates were constructed below the bridge across the river near Beldala village as agricultural fields on

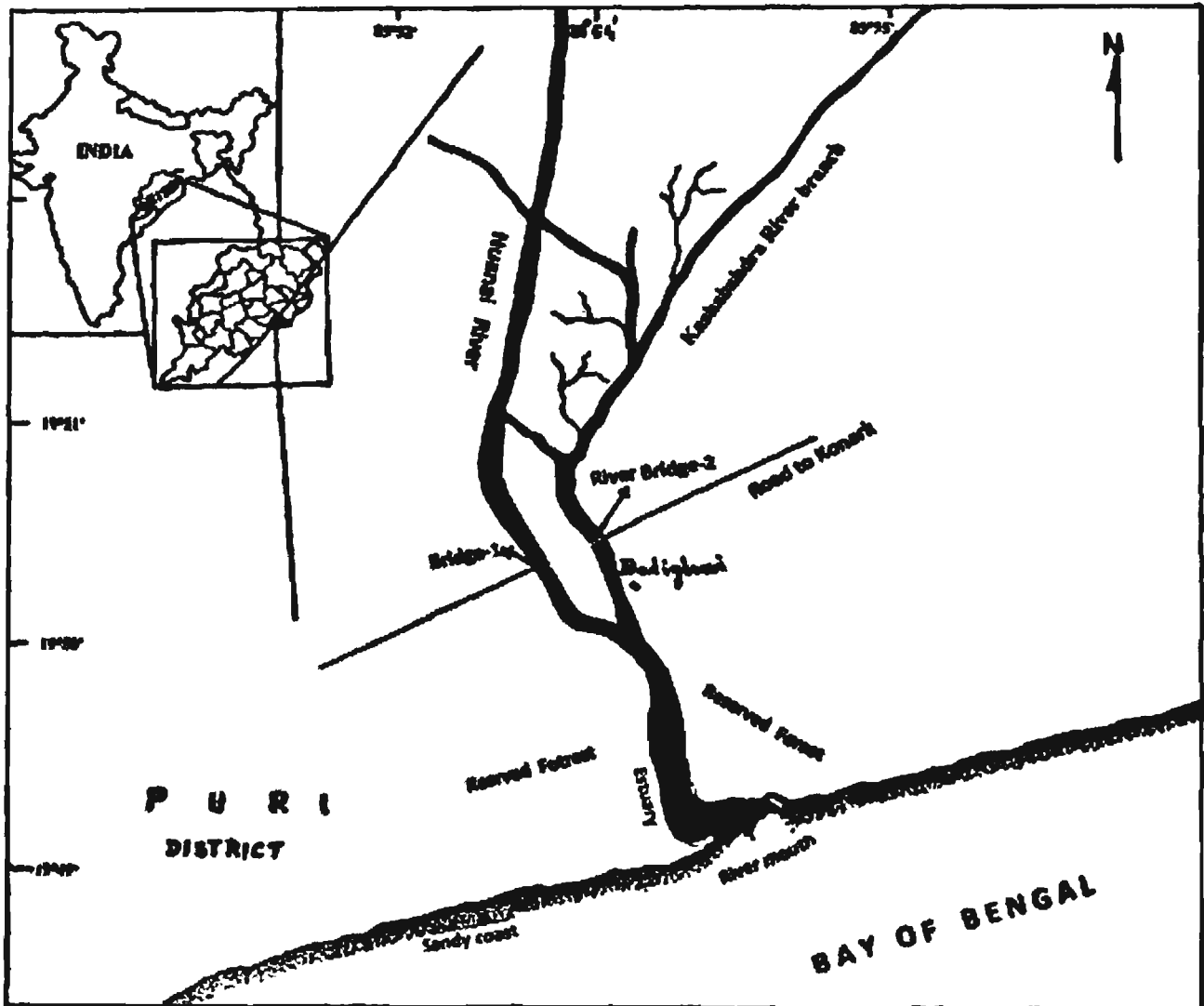


Fig. 1: Nuanai River system and estuary, Puri District, Odisha

either side of the river are dependant on this river water. Only during heavy rains and flood season, these gates are being lifted for downstream flow in to the sea through the estuary. The width of the estuary at this point is about 150 m and gradually widens towards mouth which is about 310 m. (Fig.1). The coast line of the estuary on either side is with huge sand dunes fringed with thick *Casuarina* plantations. Only the upper reaches of the shore is muddy. No mangrove belts except small scattered patches are found along the coast line. There are two major commercial activities in the estuary i.e regular collection of prawn seed by locals with the help of hand nets and occasional fishing activities by using hand nets and shore seines for local consumption. No large scale fishing activities are found in this estuary. There is no fishing village near the river. The faunal composition is restricted to crustaceans, molluscs and fishes. Occasionally jellyfishes, cephalopods and juvenile sea turtles are encountered. The present study on the Nuanai estuary revealed the occurrence of 73 species of fishes under 53 genera belonging to 33 families, 10 species of prawns under 4 genera belongs to 2 families and 20 species of crabs under 15 genera belongs to 8 families. Five species crabs namely *Nanosesarma batavicum*, *Ocypode cordimana*, *Ocypode platytarsis*, *Dotilla myctiroides* and *Scopimera globosa* are reported for the first time from Odisha in the

present work. For each species, the diagnostic features, material examined and distribution in India and elsewhere is given. Over 70 colour photographs of the faunal elements have been included for easy identification in the field.

## MATERIALS AND METHODS

Random faunal sampling was done at several points of the entire 3 km stretch of the estuary near Beladala village. The samples have been collected by using hand nets and shore seines and some crustacean samples by handpicking from burrows. The random sampling was carried out for two years from 2008 to 2009 and collected over 389 specimens of fish, 71 specimens of prawns and 87 specimens of crabs. All the collections were preserved in 4% formaldehyde solution, registered and deposited with the National Zoological Collections of the Estuarine Biology Regional Centre, Zoological Survey of India, Goplapur, Odisha. Photographs of the specimens were taken in the field as and when collected. The identification was done based on the various standard publications on fishes and crustaceans. All the material examined for the present study was collected by the authors.

The abbreviations used in the systematic account: 'L' and 'W' indicate length and width of crab carapace; 'ex./exs' denotes number of examples. The measurements given for fish and prawns are total length measured from tip of snout to tip of upper caudal fin lobe and tip of rostrum to tip of the telson respectively. The species marked with \* (Asterisk) are new to Odisha coast.

## SYSTEMATIC ACCOUNT

### A. PISCES

Phylum Chordata

Subphylum: VERTEBRATA

Class: ACTINOPTERYGII

Order: CLUPEIFORMES

Family: CLUPEIDAE

Subfamily: DOROSOMATINAE

#### 1. *Anodontostoma chacunda* (Hamilton, 1822)

(Fig. 2)

(Chacunda gizzard shad)

1822. *Clupanodon chacunda* Hamilton, *Fishes of Ganges*: 246.

1985. *Anodontostoma chacunda*: Whitehead, *FAO Fish. Synop.*, (125) 7: 253.

*Material examined*: 2 exs., 87 and 92 mm, 26.07.2008, F/5889; 1 ex., 110 mm, 19.12.2009, F/6856.

*Diagnostic features*: Body deep, belly scuted, mouth slightly inferior, second supra-maxilla splint-like, lower gill-rakers 54 to 95 and fine, *v*; last dorsal fin ray not filamentous, hind edges of scales toothed; a single median series of pre-dorsal scales; a large black spot behind gill opening present.

*Distribution*: India: East and west coasts and A & N Islands. Indo-West Pacific: Persian Gulf, Andaman Sea to Gulf of Thailand, Indonesia, Viet Nam, and the Philippines, south to northern Australia, the Caroline Islands and New Caledonia.

*Remarks*: Inhabits shallow inshore waters and estuaries. Commercially important fish.

#### 2. *Gonialosa manmina* (Hamilton, 1822)

(Ganges river gizzard shad)

1822. *Clupanodon manmina* Hamilton, *Fishes of Ganges*: 247.

1985. *Gonialosa manmina* Whitehead, *FAO Fish. Synop.*, (125) 7: 253.

*Material examined*: 3 exs., 110 to 122 mm, 21.12.2009, F/6845.

*Diagnostic features*: Body fairly deep; mouth inferior, second supra-maxilla very small; belly with 16 to 20 pre-pelvic and 11 to 14 post-pelvic scutes; anal fin rays 23 to 26; last dorsal fin ray not filamentous. A dusky blotch on shoulder.

*Distribution*: India: Ganges, and other rivers of Odisha, Uttar Pradesh, Bengal, Assam and Andaman Islands. Elsewhere: Bangladesh.

*Remarks*: Inhabits fresh and brackish waters. Commercially important in its range.

#### 3. *Nematalosa nasus* (Bloch, 1795)

(Fig. 3)

(Bloch's gizzard shad)

1795. *Clupea nasus* Bloch, *Nat. ausland. Fische*, 9: 116, pl. 429, fig.1.

1985. *Nematalosa nasus*: Whitehead, *FAO Fish. Synop.*, (125) 7: 248.

*Material examined*: 2 exs., 120 and 125 mm, 26.02.2009, F/6211; 4 exs., 125 to 135 mm, 27.02.2009, F/6212; 6 exs., 132 to 242 mm, 28.02.2009, F/6214; 9 exs., 118 to 173 mm, 01.03.2009, F/6216; 1 ex., 123 mm, 02.03.2009, F/6215; 1 ex., 15 mm, 19.12.2009, 6855; 1 ex., 130, 20.12.2009, F/6820; 1 ex., 148 mm, 21.12.2009, F/6844.

*Diagnostic features*: Body deep, depth 34 to 41% of standard length, belly with 17 to 20 pre-pelvic and 9 to 13 post-pelvic scutes; the 3<sup>rd</sup> infra-orbital bone immediately above it; mouth inferior; supra-orbital grooves absent; last dorsal fin ray filamentous; pectoral axillary scale present; pre-dorsal scales paired. A dark spot behind gill opening, dark longitudinal streaks along upper scale rows on the body.

*Distribution*: India: East and west coasts. Elsewhere: Indo-West Pacific: Gulf of Aden, Persian Gulf, Sri Lanka, Thailand, Philippines, China and Japan.

*Remarks*: Inhabits marine waters. Enters estuaries. Common in the commercial catches.

Family: PRESTIGASTERIDAE

4. *Ilisha kampeni* (Weber & de Beaufort, 1913)

(Fig. 4)

(Kampen's ilisha)

1913. *Pellona kampeni* Weber and de Beaufort, *Fishes Indo-Australian Archipelago*, 2: 87.

1985. *Ilisha kampeni*: Whitehead, *FAO Fish Synop.*, (125) 7: 268.

*Material examined*: 1ex., 148 mm, 22.07.2008, F/5861; 1 ex., 150 mm, 26.07.2008, F/5887.

*Diagnostic features*: Body slender, depth 24 to 32% in standard length, belly keeled with 17 to 21 pre-pelvic and 8 to 10 post-pelvic scutes; lower jaw projecting; lower gillrakers on the first arch 20 to 24; Dorsal fin origin at about midpoint of body; anal fin origin under hind part of dorsal fin base. Vertical striae on scales not continuous, but with a distinct gap across center of scale; anal fin with 38 to 46 rays, pelvic fin very small. Body silvery wite.

*Distribution*: India: Bay of Bengal. Records from Arabian Sea (Bombay) need confirmation. Elsewhere: Indonesia.

*Remarks*: Occurs in coastal waters, but also enters rivers and estuaries. Minor commercial value.

Family: ENGRAULIDAE

5. *Stolephorus commersonii* Lacepede, 1803

(Commerson's anchovy)

1803. *Stolephorus commersonii* Lacepede, *Hist. nat. Poiss.*, 5: 381, 382, pl.12, fig.1.

1984. *Stolephorus commersonii*: Talwar and Kacker, *Commercial Sea Fishes of India*: 188, fig.78.

*Material examined*: 2 exs., 125 mm, 01.03.2007, F/5895; 1 ex., 105 mm, 21.12.2009, F/6849.

**Diagnostic features:** Body fusiform, nearly cylindrical with 3 to 4 needle-like scutes between pectoral and pelvic fin bases; maxilla long, projecting to or beyond posterior border of pre-operculum. Bright silvery stripe along flanks, a double dark line on back before pre-dorsal fin.

**Distribution:** India: East and west coasts. Indo-West Pacific: East Africa, from Gulf of Aden to Zanzibar, northern Madagascar and Mauritius, eastward to Hong Kong and Papua New Guinea to Samoa.

**Remarks:** Found in coastal waters and estuaries. Minor commercial value.

#### 6. *Thryssa hamiltonii* Gray, 1835

(Fig. 5)

(Hamilton's thryssa)

1835. *Thryssa hamiltonii* Gray, *Illust. Ind. Zool., Hardwicke*, 2: pl. 92.

1984. *Thryssa hamiltonii*: Talwar and Kacker, *Commercial Sea Fishes of India*: 198, fig. 86.

**Material examined:** 1 ex., 183 mm, 26.07.2008, F/5872.

**Diagnostic features:** Body strongly compressed, snout prominent, bluntly rounded; belly keeled, with 15 to 20 pre-pelvic and 9 to 12 post-pelvic scutes; a sharp small spine before dorsal fin origin; maxilla reaching a little beyond gill opening, not to pectoral fin base; gillrakers on lower arm of first arch 11 to 15. A dark venulose area on shoulder.

**Distribution:** India: East and west coasts, Andaman Islands. Elsewhere: Pakistan, Sri Lanka, through the East Indies to North Queensland and Hong Kong.

**Remarks:** Inhabits shallow coastal waters and enters estuaries. Commercially important species.

Order: ELOPIFORMES

Family: MEGALOPIDAE

#### 7. *Megalops cyprinoides* (Broussonet, 1782)

(Fig. 6)

(Oxeye tarpon)

1782. *Clupea cyprinoides* Broussonet, *Ichthyol.*: pl.9.

1984. *Megalops cyprinoides*: Talwar and Kacker, *Commercial Sea Fishes of India*: 211, fig. 96.

**Material examined:** 1ex., 280 mm, 26.07.2008, F/6821a.

**Diagnostic features:** Body oblong and compressed; mouth superior, lower jaw prominent; eyes large; maxilla not extending behind eye; dorsal fin inserted at midpoint of body, last dorsal fin ray filamentous; 37 to 42 scales along lateral line. Body blue-green above, flanks and belly silvery.

**Distribution:** India East and west coasts. Elsewhere: Widespread in Indo-west Pacific.

**Remarks:** Inhabits estuaries, lagoons and freshwaters. Good food fish. Commercially important fish.

Order: ANGUILLIFORMES  
 Family: MURAENESOCIDAE  
 8. *Muraenesox bagio* (Hamilton, 1822)

1822. *Muraena bagio* Hamilton, *Fishes of Ganges*: 364.

1984. *Muraenesox bagio*: Talwar and Kacker, *Commercial Sea Fishes of India*: 238, fig. 100.

*Material examined*: 1 ex., 412 mm, 01.03.2009, F/6252.

*Diagnostic features*: Body elongate and compressed, abdomen rounded; head long, snout pointed, cleft extending to beyond posterior margin of eye; eyes small, covered with skin; lips thick; dorsal and anal fins confluent with caudal; dorsal fin inserted above gill openings, much elevated; 47 to 59 dorsal rays before a vertical through anus; 33 to 39 lateral line pores before anus.

*Distribution*: India: Throughout. Elsewhere: East Africa to the Philippines and Japan, south to New Guinea, the Arafura Sea, Australia, New Caledonia and Fiji.

*Remarks*: Inhabits coastal waters and estuaries.

Order: SILURIFORMES  
 Family: ARIIDAE  
 9. *Arius arius* (Hamilton, 1822)

(Fig. 7)

(Hamilton's catfish or Threadfin sea catfish)

1822. *Pimelodus arius* Hamilton, *Fishes of Ganges*: 170, 376.

1984. *Arius arius*: Talwar and Kacker, *Commercial Sea Fishes of India*: 258, fig. 104a.

*Material examined*: 2exs., 157 and 160 mm, 24.07.2008, F/5850; 2 exs., 172 and 192 mm, 27.02.2009, F/6205; 1 ex., 278 mm, 28.02.2009, F/6203; 2 exs., 124 and 166 mm, 02.03.2009, F/6204; 1ex., 230 mm, 20.12.2009, F/6821; 1 ex., 150 mm, 21.12.2009, F/6858.

*Diagnostic features*: Body elongate and robust, snout blunt and rounded; median frontanelle groove on head shallow, not reaching base of supra-occipital process; three pairs of barbels around mouth; eyes large, 1.6 to 2.5 times in inter-orbital width; teeth on palate forming two elliptical patches on either side with horn like projection anteriorly; dorsal and pectoral fins with strong spines, tip of dorsal fin spine prolonged into a filament, adipose dorsal fin small. Body silvery-steel along back, adipose fin with a black spot.

*Distribution*: India: East and southwest coast of India. Elsewhere: Pakistan, Bangladesh and Myanmar to Singapore, South China Sea.

*Remarks*: Occur in estuaries, tidal rivers and brackish waters. Commercially important fish.

10. *Arius maculatus* (Thunberg, 1792)

(Fig. 8)

(Spotted catfish)

1792. *Silurus maculatus* Thunberg, *Kongl. Vet. Akad. Nya. Handl. Stockholm*, 13: 31, pl.1, fig. 2.

1984. *Arius arius*: Talwar and Kacker, *Commercial Sea Fishes of India*: 264, fig. 107.

*Material examined*: 2 exs., 156 and 195 mm, 01.03.2009, F/6206.

*Diagnostic features*: Body elongate, and pointed with three pairs of barbels; maxillary barbels reaching to pectoral fin base; eyes large, 1.6 to 2.5 times in inter-orbital width; head shield rugose; median frontanelle groove on head deep and long, running to before median keel of supra-occipital process; tip of dorsal fin prolonged as filament. Body bluish brown above, belly whitish with dusky spots; all fins black tipped, adipose fin blackish.

*Distribution*: India: East and west coasts. Elsewhere: Pakistan, Sri Lanka to Indo-Australian Archipelago.

*Remarks*: Inhabits marine coastal waters and estuaries. Commercially important fish.

### 11. *Osteogeniosus militaris* (Linnaeus, 1758) (Soldier catfish)

1758. *Silurus militaris* Linnaeus, *Systema Naturae*, ed.10, 1: 305.

1984. *Osteogeniosus militaris*: Talwar and Kacker, *Commercial Sea Fishes of India*: 275, fig. 113.

*Material examined*: 1 ex., 117 mm, 28.02.2010, F/7172.

*Diagnostic features*: Body elongate, head strongly compressed; only one pair of very stiff and bony maxillary barbels slightly longer than head are present; head shield smooth. Head and back dark blue with silvery reflections, fins minutely spotted with black; tips of dorsal and adipose fins dark blue.

*Distribution*: India: East and west coasts. Elsewhere: Bangladesh, Myanmar, Singapore, Malacca, Indonesia, and Malaysia. Recorded from Pakistan also.

*Remarks*: Inhabits coastal waters, estuaries and river mouths. Minor fishery value.

Family: BAGRIDAE

### 12. *Mystus bleekeri* (Day, 1877) (Day's mystus)

1877. *Macrones bleekeri* Day, *Fishes of India*: 451, pl.101, fig.1.

1991. *Mystus bleekeri*: Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, 2: 558, fig. 183.

*Material examined*: 1 ex., 55 mm, 20.12.2009, F/7168.

*Diagnostic features*: Body elongate and naked; snout obtuse; dorsal surface of head, opercle, occipital bone are granulated; median longitudinal groove shallow, reaches to base of occipital process; four pairs of barbels, the maxillary pair reaches to anal fin; adipose fin originated just behind rayed dorsal, its base twice the length of head; caudal fin forked, its upper lobe longer. Body brownish-grey with two light longitudinal bands above and below lateral line; a dark spot on shoulder.

*Distribution*: India: Punjab, West Bengal, Assam, Ganges system, Odisha and other southern states. Elsewhere: Pakistan, Bangladesh, Nepal, Myanmar and Indonesia.

**Remarks:** Found in lakes, tanks, rivers, and canals and enters estuaries. Commercially important fish.

Order: BELONIFORMES

Family: BELONIDAE

13. *Strongylura leiura* (Bleeker, 1850)  
(Squaretail needlefish)

1850. *Belone leiurus* Bleeker, *Nat. Tijdschr. Ned. Indie*, 1: 94.

1984. *Strongylura leiura*: Talwar and Kacker, *Commercial Sea Fishes of India*: 322.

*Material examined:* 1 ex, 360 mm, 21.12.2009, F/6835.

*Diagnostic features:* Body elongate; tongue smooth, no teeth on vomer; origin of dorsal fin above 7<sup>th</sup> to 10<sup>th</sup> ray of anal fin; dorsal fin with 17 to 21 rays and anal fin with 23 to 27 rays; caudal fin emarginate to truncate. Body greenish above with a silvery lateral stripe which becomes wide posteriorly where it is bordered by a dark stripe; fins yellow.

*Distribution:* India: East and west coasts. Elsewhere: Widespread in Indo-West Pacific.

*Remarks:* Inhabits marine waters, enters estuaries. Taken commercially in small quantities.

14. *Strongylura strongylura* (van Hasselt, 1823)  
(Fig. 9)  
(Roundtail or spotted needlefish)

1823. *Belone strongylura* van Hasselt, *Alg. Konst. en Letterbode*, 1: 130.

1984. *Strongylura strongylura*: Talwar and Kacker, *Commercial Sea Fishes of India*: 322, fig. 131.

*Material examined:* 1ex., 242 mm, 23.07.2008, F/5864.

*Diagnostic features:* Body elongate and the jaws greatly elongated; origin of dorsal fin above 4<sup>th</sup> ray of anal fin; dorsal fin with 12 to 14 rays and anal fin with 15 to 18 rays; caudal fin rounded. Body bluish-green above with a silvery lateral stripe which becomes wide posteriorly where it is bordered by a dark stripe; a prominent black spot at base of caudal fin.

*Distribution:* India: East and west coasts. Elsewhere: Widespread in tropical Indo-West Pacific.

*Remarks:* Inhabits marine waters, enters estuaries. Taken commercially in small quantities.

15. *Tylosurus crocodilus crocodilus* (Pron & Le Sueur, 1821)  
(Fig. 10)  
(Giant longtom)

1821. *Belone crocodila* Pron and Le Sueur, *J. Acad. nat. Sci. Philad.*, 2 (2): 129.

1984. *Tylosurus crocodilus*: Talwar and Kacker, *Commercial Sea Fishes of India*: 320, fig. 134.

*Material examined:* 1 ex., 290 mm, 24.07.2008, F/5842b; 1 ex., 270 mm, 27.02.2009, F/6208a.

*Diagnostic features:* Body elongate and rounded; head 3.0 to 3.6 in body length; jaws greatly elongated; gill rakers absent; dorsal fin with 22 or 23 rays, anal fin with 18 to 21 rays; lateral line forms a slight keel on caudal peduncle; caudal fin forked. Head and back dark bluish green, silvery below, fins yellow-green, dusky on pectoral and caudal fins.

*Distribution:* India: East and west coasts including A & N Islands. Elsewhere: Widely distributed in tropical and warm seas.

*Remarks:* Inhabits coastal waters, estuaries. Occasionally caught.

Order: SCORPAENIFORMES

Family: PLATYCEPHALIDAE

16. *Platycephalus indicus* (Linnaeus, 1758)

(Fig. 11)

(Indian flathead)

1758. *Callionymus indicus* Linnaeus, *Systema Naturae*, (ed.10), : 250.

1984. *platycephalus indicus*: Talwar and Kacker, *Commercial Sea Fishes of India*: 340.

*Material examined:* 1 ex., 246 mm, 23.07.2008, F/5863; 1 ex., 242 mm, 24.07.2008, F/5843; 1 ex., 215 mm, 26.07.2008, F/5871; 1 ex., 172 mm, 25.07.2008, F/5897; 1 ex., 170 mm, 27.02.2009, F/6208; 1 ex., 152 mm, 28.02.2009, F/6210; 1 ex., 73 mm, 02.03.2009, F/6250; 172 & 192 mm, F/6209; 1 ex., 190 mm, 01.03.2009, F/6207; 1 ex., 130 mm, 20.12.2009, F/6824; 3 exs., 148, 183 and 188 mm, 21.12.2009, F/6837; 2 exs., 180 and 185 mm, 22.12.2009, F/6832.

*Diagnostic features:* Body compressed; top of head with weak low ridges and low spines; lateral line scales 118 to 134 bearing no spines. Body brown above, spotted with reddish brown, dorsal fin with indistinct spots; pectoral and pelvic fins strongly spotted; caudal fin yellow with white-edged oblique bands across upper and lower lobes.

*Distribution:* India: East and west coasts, Andaman and Nicobar Islands and Lakshadweep. Elsewhere: Red Sea and East Africa to the Philippines, north to southern Japan and Korea, south to northern Australia. Introduced into the eastern Mediterranean Sea.

*Remarks:* Inhabits bottom of coastal waters. Frequently found in estuaries, juveniles in freshwater. A good food fish. Having less commercial value.

Order: MUGILIFORMES

Family: MUGILIDAE

17. *Mugil cephalus* Linnaeus, 1758

(Fig. 12)

(Flathead grey mullet)

1758. *Mugil cephalus* *Systema Naturae*, (ed.10), 1: 316.

1984. *Mugil cephalus*: Talwar and Kacker, *Commercial Sea Fishes of India*: 726, fig. 294.

*Material examined:* 1 ex., 70 mm, 22.07.2008, F/5847; exs., 128 to 164 mm, 24.07.2008, F/5845; 1 ex., 195mm, 26.07.2008, F/5884; 16 exs., 103 to 175 mm, 26.02.2009, F/6143; 3 exs., 124 to 168 mm, 27.02.2009, F/6144; 7 exs., 125 to 180 mm, 28.02.2009, F/6141; 3 exs., 163 to 174 mm, 02.03.2009, F/6142.

*Diagnostic features:* Body robust, head broad and flattened on top, its length 27 to 29% in standard length; adipose eye lid well developed, covering most part of the eye; pre-orbital slender, filling only half the space between the lip and eye; pectoral fins with long axillary scale; scales in lateral series 38 to 42. Body olive-green above, silvery on sides and fading to white ventrally; 6-7 indistinct longitudinal brown bars along flanks; a dark purple blotch at base of pectoral fin.

*Distribution:* India: East and west coasts. Elsewhere: Widespread in tropical, subtropical and temperate zones of all seas.

*Remarks:* Inhabits shallow coastal waters. Most common species of estuaries enter into freshwater. Commercially important species.

**18. *Liza macrolepis* (Smith, 1849)**  
(Borneo-mullet)

1849. *Mugil macrolepis* Smith, *Illust. Zool. S. Africa*, 4: pl. 28, fig. 2.

1984. *Liza macrolepis*: Talwar and Kacker, *Commercial Sea Fishes of India*: 720.

*Material examined:* 2 exs., 133 and 176 mm, 27.02.2009, F/6148; 1 ex., 83 mm, 28.02.2009, F/6147.

*Diagnostic features:* Body robust, head 26 to 28% in standard length; adipose eye lid a rim around eye; pectoral fin without axillary scale; ventral fins reaching vertical behind base of 4<sup>th</sup> spine of dorsal fin; lateral scale series 28 to 33, transverse scale rows 13. Body dark greenish, silvery on sides and belly.

*Distribution:* India: East and west coasts. Elsewhere: Wide spread in tropical Indo-West Pacific.

*Remarks:* Inhabits marine, brackish and freshwaters. Most important commercial mugil.

**19. *Liza parsia* (Hamilton, 1982)**  
(Fig. 13)  
(Gold-spot mullet)

1982. *Mugil parsia* Hamilton, *Fishes of Ganges*: 215, pl.17, fig. 71.

1984. *Liza parsia*: Talwar and Kacker, *Commercial Sea Fishes of India*: 721.

*Material examined:* 4 exs., 82 to 100 mm, 23.07.2008, F/5867; 1 ex., 178 mm, 22.07. 2008, F/5848; 3 exs., 163 to 174 mm, 02.03.2009, F/6145; 2 exs., 180 and 200, 21.12.2009, F/6847.

*Diagnostic features:* Body slender, head moderately wide, its length 23 to 26% in standard length; adipose eyelid covers most of posterior part of iris; back not keeled in front of first dorsal fin; pre-orbital fills space between lip and eye; pectoral fins with no axillary scales;

scales in lateral series 31 to 36. Body greenish above with a golden spot on upper portion of operculum.

*Distribution:* India: East and west coasts and A & N Islands. Elsewhere: Pakistan and Sri Lanka.

*Remarks:* Common mullet of estuaries, enters freshwater. Commercial species.

20. *Liza subviridis* (Valenciennes, 1836)  
(Green back grey mullet)

1836. *Mugil subviridis* Valenciennes, *Hist. nat. Poiss.*, 11: 115.

1984. *Liza subviridis*: Talwar and Kacker, *Commercial Sea Fishes of India*: 722, fig. 291.

*Material examined:* 1 ex., 226 mm, 01.03.2009, F/6146.

*Diagnostic features:* Body robust, head 23 to 25% in standard length; adipose eyelid covering iris; pectoral axillary scales rudimentary or absent; lateral scales series 27 to 32, 11 in transverse series. Body dark green, silvery white flaks and belly, edge of caudal fin black.

*Distribution:* India: East and west coasts. Elsewhere: Persian Gulf, Pakistan to East Indies and northern coasts of Australia.

*Remarks:* Inhabits shallow coastal waters, estuaries and lagoons, enters freshwater.

21. *Chelon Planiceps* (Valenciennes, 1836)  
(Tade grey mullet)

1836. *Mugil planiceps* Valenciennes, *Hist. nat. Poiss.*, 5(11): 122.

1984. *Liza tade*: Talwar and Kacker, *Commercial Sea Fishes of India*: 723, fig. 292.

2011. *Chelon planiceps*: Fricke, Kulbicki and Wantiez, *Stuttgarter Beiträge zur Naturkunde A, Neue Serie*, 4: 369

*Material examined:* 1 ex., 168 mm, 24.07.2008, F/5844; 7 exs., 14.2 to 16.4, 24.07.2008, F/5847.

*Diagnostic features:* Body slender, head much depressed, its length 19 to 25% in standard length; adipose eye lid covers most of iris; pectoral fin with no axillary scale; scales in lateral series 31 to 33, transverse scale rows 11. Body pale olive above, silvery below; 5 to 7 indistinct longitudinal lines on sides.

*Distribution:* India: East and west coasts. Elsewhere: Red Sea, Pakistan, Sri Lanka, Bangladesh to East Indies and to China and Marianus.

*Remarks:* Inhabits shallow coastal waters and enter estuaries. Commercially important fish.

22. *Liza vaiensis* (Quoy & Gaimard, 1824)  
(Fig. 14)  
(Diamond-scale grey mullet)

1824. *Mugil vaiensis* Quoy and Gaimard, *Voy. 'Uranie' et Physic., Zool.*: 337, pl.59, fig. 2.

1984. *Liza vaigiensis*: Talwar and Kacker, *Commercial Sea Fishes of India*: 724, fig. 293.

*Material examined*: 1 ex., 197mm, 26.07.2008, F/5886.

*Diagnostic features*: Body slightly robust; head broad and flat, its length 24 to 27 in standard length; adipose eye lid a rim around eye; pectoral fin without axillary scale; lateral scale series 26 to 28, 10 to 12 transverse scale. Body brown on back and silvery on side, belly pale yellow; dusky streaks along scale rows; fins yellowish, pectoral fins black in small fishes.

*Distribution*: India: East and west coasts. Elsewhere: Red Sea and East Africa to the Tuamotu Islands, north to southern Japan, south to southern Great Barrier Reef and New Caledonia.

*Remarks*: Inhabits lagoons, estuaries and coastal creeks. Commercially important fish.

### 23. *Valamugil buchanani* (Bleeker, 1853)

(Fig. 15)

(Buchnan's blue-tail mullet)

1853. *Mugil buchanani* Bleeker, *Verh. Bat. Gen.*, 25: 99.

1984. *Valamugil buchanani*: Talwar and Kacker, *Commercial Sea Fishes of India*: 729.

*Material examined*: 4 exs., 138 and 155 mm, 20.12.2009, F/7167.

*Diagnostic features*: Body robust, head flattened dorsally; adipose lid a rim around eye; scales in lateral series 32 to 35; pectoral fins with elongated axillary scales; pectoral fins just reaches vertical from origin of first dorsal fin; caudal fin forked. Body greenish, silvery on sides and belly; dark spot at base of pectoral fin; caudal fin bluish.

*Distribution*: India: East and west coasts. Elsewhere: Widespread in Indo-West Pacific.

*Remarks*: Inhabits coastal waters and estuaries. Commercially important fish.

### 24. *Valamugil cunnesius* Valenciennes, 1836

(Fig. 16)

(Long-fin mullet)

1836. *Mugil cunnesius* Valenciennes, *Hist. nat. Poiss.*, 11: 114.

1986. *Valamugil cunnesius*: Heemstra, In. Smith and Heemstra, *Smith's Sea Fishes*: 719, fig. 222.13.

*Material examined*: 2 exs., 156 and 160 mm, 24.07.2008, F/5846; 1 ex., 162 mm, 01.03.2009, F/6190; 1 ex., 162 mm, 01.03.2009, F/6180.

*Diagnostic features*: Body robust, head wide and flattened, its length 24 to 26% in standard length; adipose eye lid covering half of iris; pectoral fins long, equal to or slightly shorter than head length, pectoral axillary scale long; scales in lateral series 31 to 35, 11-12 transverse scales. Body dark grey above, flanks and belly silvery; dark spot on base of pectoral fin.

*Distribution:* India: East and west coasts. Elsewhere: Sri Lanka to East Indies and to the western Pacific.

*Remarks:* Inhabits coastal waters and enter estuaries. No significant contribution in fishery.

25. *Valamugil speigleri* (Bleeker, 1858-59)  
(Speigler's grey mullet)

1858-59. *Mugil speigleri* Bleeker, *Nat. Tijdscher. Ned. Indie.*, 16: 279.

1984. *Valamugil speigleri*: Talwar and Kacker, *Commercial Sea Fishes of India*: 733, fig. 297.

*Material examined:* 2 exs., 166 and 180 mm, 26.07.2008, F/5885; 1 ex., 100 mm, 19.12.2009, F/6857; 8 exs., 105 to 170 mm, 20.12.2009, F/6822; 2 exs., 98 and 136 mm, 21.12.2009, F/6848; 10 exs., 128 to 188mm, 22.12.2009, F/6831.

*Diagnostic features:* Body robust, head 23 to 24% in standard length; adipose eye lid covering most of the iris; pectoral axillary scale long; lateral scale series 37 to 40. Body dark green, belly silvery; axil of pectoral with black spot; margin of dorsal black.

*Distribution:* India: East and west coasts. Elsewhere: Pakistan through Southeast Asia to New Guinea and China coast.

*Remarks:* Inhabits shallow coastal waters, enters estuaries and freshwaters. Commercially important fish.

Order: PERCIFORMES

Family: AMBASSIDAE

26. *Ambassis ambassis* (Lacepede, 1802)

(Fig. 17)

(Glassy perchlet)

1802. *Centropomus ambassis* Lacepede, *Hist. nat. Poiss.*, 4: 276.

2003. *Ambassis ambassis*: Anderson and Heemstra, *Cybium*, 27 (3): 201, fig.2.

*Material examined:* 2 exs., 83 to 96 mm, 26.02.2009, F/6178; 2 exs., 830 and 960 mm, 26.02.2009, F/6195; 1 ex., 106 mm, 02.03.2009, F/6179.

*Diagnostic features:* Body oblong and compressed; supra-orbital ridge smooth, terminating posteriorly in a backwardly directed spine, inter-operculum smooth; 20 to 22 gillrakers on lower arm of first arch; one row of scales on cheek, lateral line continuous, or little interrupted. Body silvery with purplish reflections; a bright silvery lateral band present.

*Distribution:* India: East and west coasts and A & N Islands. Elsewhere: Indo-west Pacific.

*Remarks:* Inhabits shallow coastal waters and enters estuaries. Minor commercial value.

27. *Parambassis dayi* (Bleeker, 1874)  
(Day's glassy perchlet)

1874. *Ambassis dayi* Bleeker, *Natuurk. Verh. Holland. Maatsch. Wtensch Haarlem*, 2 (2): 95.

1991. *Parambassis dayi*: Talwar and Jhingran, *Inland Fishes of India and adjacent countrirs*, 2: 801.

*Material examined*: 1ex., 100 mm, 26.07.2008, F/5890.

*Diagnostic features*: Body slender and compressed; mouth large, tongue edentate; six transverse rows of scales on cheek; pre-dorsal scales 15; lateral line with 30 scales; interoperculum denticulate posteriorly; posterior margin of pre-operculum denticulate. Body silvery, glossed with purple; membrane between 2<sup>nd</sup> and 3<sup>rd</sup> dorsal spines dusky; dorsal, anal and caudal fin margins dusky.

*Distribution*: India: Endemic to India.

*Remarks*: Inhabits freshwater and estuaries. Minor fishery value. Aquarium pet.

Family: TERAPONIDAE  
28. *Terapon jarbua* (Forsskal, 1775)  
(Fig.18)  
(Jarbua terapon)

1775. *Sciaena jarbua* Forsskal, *Descript Animalium*: 50.

1984. *Terapon jarbua*: Talwar and Kacker, *Commercial Sea Fishes of India*: 406, fig. 156.

*Material examined*: 1ex., 90 mm, 24.07.2008, F/5842; 4 exs., 114 to 171 mm, 27.02.2009, F/6161; 1 ex., 142 mm, 28.02.2009, F/6160; 1 ex., 112 mm, 01.03.2009, F/6174; 1 ex., 104 mm, 19.12.2009, F/6851; 1 ex., 75 mm, 20.12.2009, F/6818.

*Diagnostic features*: Body moderately deep; 12 to 15 gillrakers on lower arm of first arch; lateral line with 75 to 100 scales; body with three or four longitudinal downwardly curved dark or blackish stripes; caudal fin with three oblique or horizontal dark stripes, the tips dark.

*Distribution*: India: East and west coasts, A & N Islands and Lakshadweep. Elsewhere: Red Sea and East Africa to Samoa, north to southern Japan, south to the Arafura Sea, Australia, and Lord Howe Island.

*Remarks*: Shallow coastal waters, frequently enters estuaries and upstream into freshwater. Minor commercial value. Good aquarium pet.

29. *Terapon puta* Cuvier, 1829  
(Fig.19)  
(Small- scaled banded grunter)

1829. *Terapon puta* Cuvier, *Hist. nat. Poiss.*, 3: 131.

1984. *Terapon puta*: Talwar and Kacker, *Commercial Sea Fishes of India*: 408.

*Material examined*: 1 ex., 75 mm, 26.07.2008, F/5881; 1 ex., 90 mm, 26.02.2009, F/6159.

**Diagnostic features:** Body elongate, moderately compressed; 18 to 24 gillrakers on lower arm of first arch; lateral line with 70 to 85 scales; body with three or four straight longitudinal dark or blackish stripes; dorsal fin with black blotch along upper edge between 3<sup>rd</sup> to 6<sup>th</sup> spines; middle caudal rays with a stripe; one or two oblique bars on lower caudal lobe and one bar in upper lobe; tips of lobes black.

**Distribution:** India: East and west coasts. Elsewhere: Northern Indian Ocean and the Indo-Australian Archipelago.

**Remarks:** Occurs in fresh, brackish and marine waters. Minor commercial value.

Family: SILLAGINIDAE  
30. *Sillago sihama* (Forsskal, 1775)  
(Fig.20)  
(Silver sillago)

1775. *Atherina sihama* Forsskal, *Descript Animal.* : 70.

1984. *Sillago sihama*: Talwar and Kacker, *Commercial Sea Fishes of India*: 425, fig. 164.

**Material examined:** 1 ex., 108 mm, 01.03.2007, F/5894; 1 ex., 223 mm, 23.07.2008, F/5865; 1 ex., 215 mm, 24.07.2008, F/5849; 1 ex., 93 mm, 27.02.2009, F/6187; F/6187; 7 exs., 93 to 195 mm, 20.12.2009, F/6819; 1 ex., 110 mm, 21.12.2009, F/6843.

**Diagnostic features:** Body elongate, mouth small, snout pointed; anal fin with 21 to 23 rays; lateral line with 62 to 72 scales. Body light brown, flanks and belly whitish; both dorsal and caudal fins dusky, other fins pale.

**Distribution:** India: East and west coasts and A & N Islands. Elsewhere: Red Sea, South Africa to Japan and south to Australia. Reported from New Caledonia. Mediterranean Sea: Turkey.

**Remarks:** Shallow marine coastal waters and estuaries, also enters fresh water. Commercially important fish.

31. *Sillago vincenti* Mc Kay, 1980  
(Fig. 21)  
(Vincent's sillago)

1980. *Sillago vincenti* Mc Kay, *J. mar. biol. Ass. India*, **18** (2): 378, fig. 1.

1991. *Sillago vincenti*: Talwar and Jhingran, *Inland Fishes of India and Adjacent countries*, **2**: 819.

**Material examined:** 1 ex., 192 mm, 02.03.2009, F/6188.

**Diagnostic features:** Body elongate, mouth small, snout pointed; anal fin with 22 to 24 rays; lateral line with 70 to 74 scales; Swim bladder with a single posterior extension, a short bulbous projection anteriorly with one to three anterolobate or recurved projections; no tubular extensions anteriorly. Body uniform pale tan, dorsal fins with black spots.

**Distribution:** India: East and west coasts. Elsewhere: Nil.

**Remarks:** Inhabits coastal waters and estuaries. Minor commercial value.

32. *Sillaginopsis panijus* (Hamilton, 1822)

(Fig. 22)

(Gangetic whitng)

1822. *Cheilodipterus panijus* Hamilton, *Fishes of Ganges*: 57, 367.1991. *Sillaginopsis panijus*: Talwar and Jhingran, *Inland Fishes of India and Adjacent countries*, 2: 816, fig. 213.*Material examined*: 2 exs. 198mm, 02.03.2009, F/6189a.*Diagnostic features*: Body elongate; snout and head depressed; eyes very small; 6 gill rakers on lower arm of first arch; the second dorsal spine very elongate. Body greenish-yellow, lower side whitish; fins pale brown.*Distribution*: India: East and west coasts. Elsewhere: Myanmar to Indonesia. Important component in fish catches.*Remarks*: Inhabits coastal watsr and estuaries.

Family: CARANGIDAE

33. *Alepes kleinii* (Bloch, 1793)

(Razor belly scad)

1793. *Alepes kleinii* Bloch, *Nat. ausland. Fische*, 7:86, pl. 347, fig. 2.1984. *Alepes para*: Talwar and Kacker, *Commercial Sea Fishes of India*: 440.1995. *Alepes kleinii*: Randall, *Coastal fishes of Oman*: 174, fig. 430.*Material examined*: 5 exs., 70 to 85 mm, 25.07.2008, F/5878.*Diagnostic features*: Body oblong and compressed; ventral profile distinctly more convex; adipose eye lid well developed on posterior part of eye only; 27 to 32 gillrakers on lower arm of first arch; lateral line strongly arched anteriorly to below 4<sup>th</sup> to 6<sup>th</sup> soft dorsal ray, straight part of lateral line with 35 to 46 scutes; pectoral fin falcate, much longer than head length. Body bluish-grey above, silvery below; large black spot on upper margin of opercle and adjacent area of shoulder; faint cross bars above lateral line present, more conspicuous in juveniles.*Distribution*: India: East coast. Elsewhere: Pakistan to Sri Lanka; Taiwan, Okinawa in Japan, the Philippines, Papua New Guinea and Australia.*Remarks*: Shallow coastal waters and occasionally enters estuaries. Commercially important.34. *Caranx sexfasciatus* Quoy & Gaimard, 1825

(Fig. 23)

(Bigeye trevally)

1825. *Caranx sexfasciatus* Quoy and Gaimard, *Voy. "Uranie", et. Physic., Zool.*: 358, pl.65, fig. 4.1984. *Caranx sexfasciatus*: Talwar and Kacker, *Commercial Sea Fishes of India*: 464, fig. 178.

*Material examined:* 1ex., 130 mm, 22.07.2008, F/5862; 1ex., 110 mm, 23.07.2008, F/5868; 12 exs., 120 and 130 mm, 26.07.2008, F/5891; 1 ex., 92 mm (Juvenile), 28.02.2009, F/6172.

*Diagnostic features:* Body oblong, upper and lower profiles almost equal; upper jaw reaches to posterior edge of pupil or eye; adipose eye lid well developed, especially posteriorly; breast completely scaled; lateral line with 27 to 36 strong scutes. Body iridescent blue-green above, silvery white below; small black spot near upper end of opercle; soft dorsal lobe with white tip.

*Distribution:* India: East and west coasts, and A & Islands. Elsewhere: Widespread in Indo-Pacific.

*Remarks:* Inhabit coastal and oceanic waters, young and juveniles enter estuaries and rivers also. Commercially important fish.

35. *Scomberoides lysan* (Forsskal, 1775)  
(Double-dotted queenfish)

1775. *Scomber lysan*, Forsskal, *Descript Animalium*: 54.

1984. *Scomberoides lysan*: Talwar and Kacker, *Commercial Sea Fishes of India*: 477.

*Material examined:* 1 ex., 157 mm, 27.02.2009, F/6186.

*Diagnostic features:* Body compressed and elongate; snout pointed; maxilla extends to or slightly beyond rear margin of eye; no scutes on body; posterior soft dorsal and anal are of semi-detached finlets. Body with double series of 6 to 8 dusky roundish blotches above and below lateral line; tip of second dorsal fin heavily pigmented.

*Distribution:* India: East and west coasts and A & Islands. Elsewhere: Red Sea and East Africa to Hawaii, the Marquesas and the Tuamoto Islands, north to southern Japan, south to New South Wales and Rapa.

*Remarks:* Inhabits marine waters, frequently enter estuaries. Commercially important fish.

Family: LEIOGNATHIDAE

36. *Leiognathus equulus* (Forsskal, 1775)  
(Fig.25)  
(Common ponyfish)

1775. *Scomber equulus* Forsskal, *Descript. Animalium*.: 75.

1984. *Leiognathus equulus*: Talwar and Kacker, *Commercial Sea Fishes of India*: 510, fig. 198.

*Material examined:* 2 exs., 60 and 77 mm, 22.07.2008, F/5852; 2exs., 65 and 80 mm, 24.07.2008, F/5851; 5 exs., 65 to 83mm and 99 mm, 26.07.2008, F/5888 & 5874; 1 ex., 143 mm, 02.03.2009, F/6181; 1 ex., 96 mm, 19.12.2009, F/6854; 2 exs., 100 mm, 21.12.2009, F/6838; 7 exs., 98 to 105 mm, 22.12.2009, F/6827; 2 exs., 88 and 86 mm, 23.12.2009, F/6864.

*Diagnostic features:* Body deep and compressed, back strongly arched; mouth pointing downwards when protracted, head naked; ventral fins reaching to anal fin origin. Body

silvery with faint narrow vertical lines on back; a small brown saddle on caudal peduncle; pectoral fin axil dusky; anal fin yellowish.

*Distribution:* India: East and west coasts. Elsewhere: Red Sea, Persian Gulf and East Africa to Fiji, north to the Ryukyu Islands, south to Australia.

*Remarks:* Inhabits brackish and marine waters. Juveniles are commonly found in mangroves, estuaries and tidal creeks, enter the lower reaches of freshwater streams also. Important food fish. Minor commercial value.

**37. *Leiognathus fasciatus* (Lacepede, 1803)**  
(Striped ponyfish)

1803. *Clupea fasciata* Lacepede, *Hist. nat. Poiss.*, 3:460, 463.

1984. *Leiognathus fasciatus*: Talwar and Kacker, *Commercial Sea Fishes of India*: 511, fig.199.

*Material examined:* 4 exs., 64 to 68 mm, 21.12.2009, F/6839.

*Diagnostic features:* Body compressed and rather deep, dorsal profile more convex than ventral; mouth pointing downward when protracted; head naked; scales on breast very thin; ventral fins not reaching to anal fin origin. Body silvery with dark irregular vertical stripes on back, some greenish-yellow and dark spots below lateral line, a small dark saddle on caudal peduncle; pectoral fin axil brown.

*Distribution:* India: East and west coasts and A & N Islands. Elsewhere: East coast of Africa to Australia.

*Remarks:* Inhabits coastal waters and enter estuaries. Common in commercial catches.

**38. *Leiognathus lineolatus* (Valenciennes, 1835)**  
(Ornate ponyfish)

1835. *Equula lineolatus* Valenciennes, *Hist. nat. Poiss.*, 10: 88.

1984. *Leiognathus lineolatus* Fischer and Bianchi, *FAO species Identification Sheets, Western Indian Ocean*, Vol. 2.

*Material examined:* 2 exs., 88 and 86 mm, 23.12.2009, F/6865.

*Diagnostic features:* Body elongate and compressed; dorsal and ventral profiles equally convex; body depth 2.38 to 3.0 in standard length; snout pointed, mouth pointing downward when protracted; head scale less, breast scaled. Body greenish to brown above, belly silvery; irregular vermiculations on back extending down to little below lateral line; snout and underside of pectoral fin dotted black.

*Distribution:* India: East and west coasts. Elsewhere: Widespread in Indo-West Pacific.

*Remarks:* Inhabits coastal waters and enter estuaries. Common in commercial catches.

39. *Eubleekeria splendens* (Cuvier, 1829)  
(Splendid ponyfish)

1829. *Equula splendens* Cuvier, *Regne Animal*, (ed.2): 2: 212.

1984. *Leiognathus splendens*: Talwar and Kacker, *Commercial Sea Fishes of India*: 516, fig. 203.

*Material examined*: 1 ex., 82 mm, 02.03.2009, F/6182.

*Diagnostic features*: Body compressed and rather deep, 1.7 to 2.0 times in standard length; dorsal profile more convex; mouth pointing downwards when protracted; ventral fins not reaching to anal fin origin; head naked. Body silvery with close-set brownish zig-zag stripes on back; tip of snout dusky; base of pectoral fin, margin of dorsal and anal fins bright yellow; a black spot on upper third of spinous dorsal fin.

*Distribution*: India: East and west coasts. Elsewhere: Andaman Sea to Papua New Guinea; north to Japan and south to Australia.

*Remarks*: Inhabits shallow coastal waters, frequently enters estuaries. Commercially important fish.

40. *Nuchequula blochii* (Valenciennes, 1835)  
(Bloch's ponyfish)

1835. *Equula blochii* Valenciennes in Cuvier & Valenciennes, *Hist. nat. Poiss.*, 10: 84.

2007. *Nuchequula blochii*: Chakrabarty and Sparks, *Am. Mus. Nov.*, 3588: 13; fig. 6A, 7.

*Material examined*: 1 ex., 60 mm, 02.03.2009, F/6183; 1 ex., 64 mm, 20.12.2009, F/6823; 1 ex., 90 mm, 22.12.2009, F/6828.

*Diagnostic features*: Body oval and compressed, dorsal and ventral profiles are equally convex; mouth pointing downwards when protracted; breast fully scaled, head naked; antero-ventral profile of lower jaw is almost straight. Body silvery with a distinct, jet-black blotch distally on the spinous dorsal fin, a saddle-shaped blotch on nape and zig-zag yellow stripes on back and sides.

*Distribution*: India: East and west coasts. Elsewhere: Pakistan to Philippines.

*Remarks*: Shallow coastal waters, enters estuaries. Minor commercial value.

41. *Nuchequula gerreoides* (Bleeker, 1851)  
(Fig. 24)  
(Shortnose ponyfish)

1851. *Equula gerreoides* Bleeker, *Nat. Tijdr. Ned. Indie.*: 1: 371.

1984. *Leiognathus brevirostris*: Talwar and Kacker, *Commercial Sea Fishes of India*: 506, fig. 196.

2008. *Nuchequula gerreoides*: Kimura et al., *Ichthyol. Res.* 55: 31, fig. 11.

*Material examined*: 1 ex., 50 to 62 mm, 28.02.2009, F/6180.

*Diagnostic features*: Body oval and compressed; head and breast naked; mouth pointing downwards when protracted. Body silvery with brownish vertical bands on back, a dark

saddle on nape, a narrow yellow stripe along lateral line, tip of dorsal fin black with yellow margin, pectoral axil with yellow spot.

*Distribution:* India: East and west coasts. Elsewhere: Sri Lanka to East Indies and China to Philippines.

*Remarks:* Inhabits shallow coastal waters and frequently enters estuaries. Important component of leiognathids catch.

#### 42. *Secutor insidiator* (Bloch, 1787)

(Fig. 26)

(Pugnose ponyfish)

1787. *Zeus insidiator* Bloch, *Nat. ausland. Fische*, 3: 41, pl.192, figs. 2 & 3.

1984. *Secutor insidiator*: Talwar and Kacker, *Commercial Sea Fishes of India*: 518, fig. 204.

*Material examined:* 5 exs., 45 to 50mm (Juvenile), 26.02.2009, F/6185; 7 exs., 46 to 52 mm (Juveniles), 02.03.2009, F/6186.

*Diagnostic features:* Body oval and compressed, more slender, its depth 2.0 to 2.3 times in standard length; mouth pointing upwards when protracted; maxilla tip reaching well below level of lower margin of eye; lateral line ending before end of dorsal fin. Body silvery with blue spots on back, forming vertical bands, lower flanks with small dark spots; tip of dorsal fin black with yellow band below; pectoral axil yellow with black dots.

*Distribution:* India: East and west coasts. Elsewhere: Red Sea, Persian Gulf and East Africa to Australia, New Caledonia and Tahiti.

*Remarks:* Shallow coastal waters, near the bottom. Enters brackish waters and estuaries. Common commercial fish.

#### 43. *Secutor ruconius* (Hamilton, 1822)

(Deep pugnose ponyfish)

1822. *Chanda ruconius* Hamilton, *Fishes of Ganges*: 106, 371, pl.12, fig. 35.

1984. *Secutor ruconius*: Talwar and Kacker, *Commercial Sea Fishes of India*: 519, fig. 205.

*Material examined:* 1 ex., 57 mm, 21.12.2009, F/6840.

*Diagnostic features:* Body deep, its depth 1.5 to 1.8 in standard length; mouth pointing upward when protracted; maxilla tip reaching to about level of lower margin of eye; lateral line ending below middle of soft dorsal fin. Body silvery with blue spots on upper half; tip of dorsal fin black, with a yellow band below; pectoral axil black, a dark line from angle of mouth to chin.

*Distribution:* India: East and west coasts. Elsewhere: Widespread in Indo-West Pacific.

*Remarks:* Inhabits shallow marine waters, enters brackish waters. Frequently caught by seine nets.

## Family: LUTJANIDAE

44. *Lutjanus johnii* (Bloch, 1792)

(Fig. 27)

(John's snapper)

1792. *Anthias johnii* Bloch, *Nat. ausland. Fische*, 6: 1113, 318.1984. *Lutjanus johnii*: Talwar and Kacker, *Commercial Sea Fishes of India*: 541, fig. 212.

*Material examined*: 1 ex., 101 mm, 22.07.2008, F/5853; 1 ex., 80 mm, 23.07.2008, F/5869; 1 ex., 83 mm, 26.07.2008, F/5870; 1 ex., 95 mm, 26.02.2009, F/6153; 3 exs., 103 to 120 mm, 28.02.2009, F/6151; 1 ex., 148 mm, 01.3.2009, F/6154; 5 exs., 102 to 128 mm, 02.03.2009, F/6152; 4 exs., 65 to 110 mm, 20.12.2009, F/6817; 1 ex., 140 mm, 21.12.2009, F/6833; 2 exs., 95 and 104, 22.12.2009, F/6826; 1 ex., 94 mm, 23.12.2009, F/6862.

*Diagnostic features*: Body moderately deep with head profile slightly concave; no interopercular knob; longitudinal scale rows above lateral line parallel to it, and those below are horizontal. Body bronze-red or silvery with distinct dark spots on each scale forming longitudinal lines; a large black blotch may present above lateral line at the level of spinous and soft dorsal fins.

*Distribution*: India: East and west coasts and A & N Islands. Elsewhere: East Africa to Fiji, north to the Ryukyu Islands, south to Australia.

*Remarks*: Shallow marine and brackish waters; juveniles found in mangroves and estuaries. Minor fishery value.

45. *Lutjanus russelli* (Bleeker, 1849)

(Fig. 28)

(Russell's snapper)

1849. *Mesoprion russelli* Bleeker, *Verh. Botav. Gen.*, 22. Percoiden: 41.1984. *Lutjanus russelli*: Talwar and Kacker, *Commercial Sea Fishes of India*: 549, fig. 215.

*Material examined*: 1 ex., 150 mm, 27.02.2009, F/6149; 2 exs., 108 to 121 mm, 02.03.2009, F/6150.

*Diagnostic features*: Body slightly deep with little concave head profile; longitudinal rows of scales above lateral line rise obliquely to dorsal profile, those below are horizontal. Body reddish brown with dark black blotch above lateral line below junction of spinous and soft dorsal fin; about 7 to 8 golden or brown lines on body, upper ones rising obliquely to dorsal profile.

*Distribution*: India: East and west coasts and A & N Islands. Elsewhere: East Africa to Fiji, north to southern Japan, south to Australia.

*Remarks*: Inhabit offshore and inshore rocky and coral reefs. Juveniles frequent mangroves, estuaries and freshwater streams. Commercially important fish.

## Family: GERREIDAE

46. *Gerres filamentosus* Cuvier, 1829  
(Whipfin mojarra)

1850. *Gerres filamentosus* Cuvier, *Regne Animal*, (ed.2) 2: 188.

1984. *Gerres filamentosus*: Talwar and Kacker, *Commercial Sea Fishes of India*: 579, fig. 227.

*Material examined*: 5 exs., 62 to 75 mm, 25.07.2008, F/5880; 1 ex., 102 mm, 26.02.2009, F/6164; 2 exs., 98 and 101 mm, 27.02.2009, F/6165; 4 exs., 88 to 94 mm, 28.02.2009, F/6170; 1 ex., 84 mm, 01.03.2009, F/6171; 3 exs., 86 to 91 mm, 02.03.2009, F/6169; 3 exs., 58 and 64, 20.12.2009, F/6815; 2 exs., 75 mm, 21.12.2009, F/6841.

*Diagnostic features*: Body deep, its depth 2 to 2.5 in standard length; mouth strongly protractile; pre-dorsal distance equal to or less than body depth; lateral line scales 44 to 47; 2<sup>nd</sup> dorsal fin spine elongate and filamentous. Body silvery with series of dark blotches forming vertical bars on back and sides.

*Distribution*: India: East and west coasts and A & N Islands. Elsewhere: East Africa and Madagascar to Japan and Australia. Reported from New Caledonia.

*Remarks*: Adults are coastal inhabitants. Juveniles found in brackish, mangroves, estuaries, sometimes enter fresh water and tidal creeks. Minor commercial value.

47. *Gerres limbatus* Cuvier, 1830  
(Fig. 30)  
(Black-tipped mojarra)

1830. *Gerres limbatus* Cuvier, *Hist. nat. Poiss.*, 6: 476.

1984. *Gerres limbatus*: Talwar and Kacker, *Commercial Sea Fishes of India*: 582.

*Material examined*: 1ex., 91 mm, 01.03.2007, F/5896; 2 exs., 93 and 108 mm, 24.07.2008, F/5840; 1 ex., 67 mm, 25.07.2008, F/5879; 3exs., 95 to 118 mm, 26.07.2008, F/5873; 1 ex., 80 mm, 26.02.2009, F/6166; 1 ex., 83 mm, 27.02.2009, F/6167.

*Diagnostic features*: Body oblong, its depth 2.3 to 2.7 in standard length; lateral line with 33 to 39 scales. Body silvery with 3 faint vertical bands below dorsal fin; dorsal fin margin dusky.

*Distribution*: India: East and west coasts. Elsewhere: Sri Lanka to southeast Asia and the South China Sea.

*Remarks*: Inhabits shallow coastal waters and estuaries. Minor commercial value.

48. *Gerres macracanthus* Bleeker, 1854  
(Long-rayed mojarra)

1854. *Gerres macracanthus* Bleeker, *Nat. Tijdschr. Ned-Indie.*, 6: 195.

1984. *Gerres macracanthus*: Talwar and Kacker, *Commercial Sea Fishes of India*: 582, fig. 229.

*Material examined*: 1ex., 78 mm, 22.07.2008, F/5841; 8 exs., 72 and 95, 20.12.2009, F/6816.

**Diagnostic features:** Body oblong and slightly deep, its depth 2.3 to 2.4 in standard length; mouth highly protrusile; pre-dorsal distance greater than body depth; second dorsal spine prolonged into a filament. Body silvery with 5 to 10 vertical diffuse bars on sides.

**Distribution:** India: East & West Coasts. Elsewhere: East Indies, New Guinea and Philippines.

**Remarks:** Shallow coastal waters, brackish and estuaries. Minor commercial value.

49. *Gerres oblongus* Cuvier, 1830

(Fig. 29)

(Oblong-mojarra)

1830. *Gerres oblongus* Cuvier, *Hist. nat. Poiss.*, 6: 479.

1984. *Gerres oblongus*: Talwar and Kacker, *Commercial Sea Fishes of India*: 584.

**Material examined:** 1 ex., 86mm, 02.03.2009, F/6168.

**Diagnostic features:** Body elongate and compressed, its depth 3 to 3.5 in standard length; mouth protrusive; dorsal profile from tip of snout to dorsal origin almost straight; second dorsal spine shorter than head; five and half scale rows between lateral line and 5<sup>th</sup> dorsal spine; lateral line with 44 to 48 scales. Body silvery with 6 indistinct dusky bars on upper half, dorsal fin with faint dark margin.

**Distribution:** India: East and west coasts. Elsewhere: Red Sea and East Africa to Samoa and Tonga, north to the Ryukyu Islands, south to New Caledonia.

**Remarks:** Inhabits marine waters, enter estuaries. Minor commercial value.

50. *Gerres oyena* (Forsskal, 1775)

(Common mojarra)

1775. *Labrus oyena* Forsskal, *Descript Animal*: 35.

1986. *Gerres oyena*: Woodland, In. *Smith's Sea Fishes*: 609, fig. 194. 4.

**Material examined:** 1 ex., 100 mm, 19.12.2009, F/6853; 11 exs., 75 to 195 mm, 21.12.2009, F/6834; 2 exs., 87 and 115, 23.12.2009, F/6863.

**Diagnostic features:** Body oblong, its depth 2.5 to 3.0 in standard length; spines in fins slender; scales on the body easily shed; three and half scale rows between lateral line and 5<sup>th</sup> dorsal spine; lateral line with 35 to 41 scales. Body greenish above, faint longitudinal lines along scale rows.

**Distribution:** India: East and west coasts. Elsewhere: Widespread in Indo-West Pacific.

**Remarks:** Inhabits marine waters, enters estuaries.

Family: HAEMULIDAE

51. *Pomadasys hasta* (Bloch, 1790)

(Silverlined grunt)

1790. *Lutjanus hasta* bloch, *Nat. ausland Fische*, 4 : 109, pl.246, fig.1

1984. *Pomadasys hasta*: Talwar and Kacker, *Commercial Sea Fishes of India*: 596, fig. 233.

2001. *Pomadasys argenteus*: McKay In. Carpenter and Niem, *FAO species identification guide for fishery purposes*. Vol.5, pt.3: 2983.

*Material examined*: 5 exs., 98 to 132 mm, 27.02.2009, F/6194; 6 exs., 85 to 114 mm, 28.02.2009, F/6193; 3 exs., 103 to 106 mm, 01.03.2009, F/6191; 2 exs., 86 to 100 mm, 02.03.2009, F/6192.

*Diagnostic features*: Body oblong, head blunt; lips moderately thick; second anal spine longer than third spine; caudal fin slightly emarginated. Body silvery-gray, white below; snout dark brown; dorsal fin with 2 or 3 rows of light brownish black spots.

*Distribution*: India: East and west coasts. Elsewhere: Oman, Pakistan, Sri Lanka, Taiwan, Philippines, Thailand, Vietnam, Malaysia and China.

*Remarks*: Inhabits marine, brackish and freshwaters. Only minor commercial value.

## 52. *Pomadasys kaakan* (Cuvier, 1830)

(Fig. 31)

(Javelin grunter)

1830. *Pristipoma kaakan* Cuvier, *Hist. nat. Poiss.*, 5: 244.

1986. *Pomadasys kaakan*: Smith and Mc Kay, In. *Smith's Sea Fishes*: 569, fig. 179.13.

*Material examined*: 1 ex., 105 mm, 19.12.2009, F/6852; 4 exs. 72 to 125, 20.12.2009, F/6814; 1 ex., 70 mm, 21.12.2009, F/6842; 7 exs., 8.0 to 100 mm, 22.12.2009, F/6825; 4 exs., 90 to 115, 23.12.2009, F/6861;

*Diagnostic features*: Body oblong, head 2.6 to 2.7 in standard length; dorsal and anal fin spines strong; caudal fin slightly emarginated. Body silvery with broken vertical bars, round spots on lower half of dorsal fin; black blotch on opercle.

*Distribution*: India: East and west coast and A & Islands. Elsewhere: East coast of Africa to Sri Lanka and to Queensland.

*Remarks*: Inhabits coastal waters and enter estuaries.

Family: SPARIDAE

## 53. *Acanthopagrus berda* (Forsskal, 1775)

(Picnic seabream)

1775. *Sparus berda* Forsskal, *Descript Animal*: 32.

1984. *Acanthopagrus berda*: Talwar and Kacker, *Commercial Sea Fishes of India*: 626, fig. 245.

*Material examined*: 1ex., 81 mm, 26.07.2008, F/5875; 2 exs., 60 and 98 mm, 02.03.2009, F/6196.

**Diagnostic features:** Body deep and compressed, its depth less than 2.4 in standard length; 4 to 6 canine teeth in front of either jaw; six rows of scales on pre-operculum. Body dusky grey, silvery white below; pectoral fins yellow, soft dorsal, anal and ventral fins blackish.

**Distribution:** India: East and west coasts. Elsewhere: Wide spread in Indo-Pacific.

**Remarks:** Inhabits marine and estuarine waters. Minor commercial value.

#### 54. *Rhabdosargus sarba* (Forsskal, 1775)

(Fig. 32)

(Gold-lined seabream)

1775. *Sparus sarba* Forsskal, *Descript Animal*: 31.

1984. *Rhabdosargus sarab*: Talwar and Kacker, *Commercial Sea Fishes of India*: 631, fig. 248.

**Material examined:** 2 exs., 165 and 210 mm, 25.07.2008, F/5854; 1 ex., 79 mm, 26.07.2008, F/5882; 1 ex., 130 mm, 28.02.2009, F/6197.

**Diagnostic features:** Body deep; head large, its length 4 times in standard length; pectoral fins 1.2 to 1.3 in head length. Body silvery grey; each scale with golden centre form yellow longitudinal lines along body; belly with yellow band.

**Distribution:** India: East and west coasts. Elsewhere: Red Sea and East Africa to Japan, China, and Australia.

**Remarks:** Inhabits coastal waters, often enters estuaries. Commercial and aquaculture value.

Family: SCIAENIDAE

#### 55. *Chrysochir aureus* (Richardson, 1846)

(Reeve's croacker)

1846. *Otolithus aureus* Richardson, *Rep. Br.Ass.Advmt., Sci.*, 15: 224.

1995. *Chrysochir aureus*: Talwar, *Fauna of India and Adjacent Countries-Pisces: Sciaenidae*: 54, fig.15.

**Material examined:** 1 ex., 115 mm, 28.02.2009, F/6176.

**Diagnostic features:** Body slender, mouth horizontal and sub-terminal; maxilla extend to below hind margin of eye; two pairs of canines in the outer series of upper jaw; lateral line scales 48 to 51; gas-bladder carrot-shaped with 24 to 28 pairs or arborescent appendages; caudal fin rhomboid with pointed tip. Body metallic blue, silvery below, pectoral fins yellow.

**Distribution:** India: Bay of Bengal. Elsewhere: Malay Peninsula, Borneo and South China.

**Remarks:** Inhabits coastal waters and enter estuaries. Fairly common in catches.

#### 56. *Dendrophysa russelli* (Cuvier, 1830)

(Fig. 33)

(Goatee croacker)

1830. *Umbrina russelli* Cuvier, *Hist. nat. Poiss.*, 5: 178.

1995. *Dendrophysa russelli* : Talwar, *Fauna of India and Adjacent Countries-Pisces: Sciaenidae*:72, fig. 20.

*Material examined:* 1 ex., 152 mm, 02.03.2009, F/6177; 1 ex., 154 mm, 19.12.2009, F/6850; 1 ex., 115 mm, 22.12.2009, F/6830; 1 ex., 135, 23.12.2009, F/6866.

*Diagnostic features:* Body oblong, snout rounded and projecting slightly beyond tip of upper jaw; mouth ventral; a single tapering barbel on chin; no canine teeth in jaws; gas-bladder carrot shaped, with 15 to 17 pairs of arborescent appendages; caudal fin rhomboid. Body grey, shading to silvery white ventrally, a dark brown band on nape; opercle with a deep blue blotch; upper two-thirds of dorsal fin dusky.

*Distribution:* India: East and south-west coasts. Elsewhere: Sri Lanka to East Indies.

*Remarks:* Inhabits coastal marine waters and estuaries. Minor commercial value.

Family: MULLIDAE

57. *Upeneus sulphuerus* Cuvier, 1829

(Fig. 34)

(Yellow-goatfish)

1829. *Upeneus sulphuerus* Cuvier, *Hist. nat. Poiss.*, 3: 450.

1986. *Upeneus sulphuerus*: Ben-Tuvia, In. Smith and Heemstra, *Smith's Sea Fishes*: 612, pl.70.

*Material examined:* 4exs., 77 to 83mm, 25.07.2008, F/5898; 1ex., 90 mm, 26.07.2008, F/5892; 3 exs., 65 to 68 mm, 28.02.2009, F/6155; 3 exs., 73 to 78 mm, 01.03.2009, F/6157; 1ex., 79 mm, 02.03.2009, F/6165; 1 ex., 79 mm, 26.02.2009, F/6195; 4 exs., 70 to 95 mm, 26.02.2009, F/6156.

*Diagnostic features:* Body elongate with two thin barbels; 5 rows of scales between two dorsal fins; 12 vertical scale rows along upper part of caudal peduncle. Body and head reddish, back greenish and bellow yellow; 2 lemon yellow longitudinal bands along sides; dorsal fin with three horizontal stripes; no marks on anal and caudal fins.

*Distribution:* India: East and west coasts and A & N Islands. Elsewhere: East Africa to Southeast Asia, north to China, south to northern Australia and Fiji.

*Remarks:* Inhabits marine and brackish waters. Common in estuaries. Only minor commercial value.

Family: MONODACTYLIDAE

58. *Monodactylus argenteus* Linnaeus, 1758

(Fig. 35)

(Silver batfish)

1758. *Chaetodon argenteus* Linnaeus, *Systema Naturae*, (ed.10), 1: 272.

1986. *Monodactylus argenteus*: Heemstra, In. Smith and Heemstra, *Smith's Sea Fishes*: 607, fig. 193.1.

*Material examined:* 1 ex., 84 mm, 26.02.2009, F/6163; 1 ex., 90 mm, 28.02.2009, F/6162.

*Diagnostic features:* Body compressed, its depth 1.2 to 1.5 in standard length; mouth small and terminal; dorsal fin with 7 to 8 spines, almost hidden in scaly sheath; pectoral fin short and rounded; pelvic fins reduced to a short spine, rays rudimentary.

**Distribution:** India: East and west coasts and A & N Islands. Elsewhere: Widespread in Indo-Pacific.

**Remarks:** Inhabits shallow coastal waters and estuaries. Good aquarium pet. Commercial species.

Family: SCATOPHAGIDAE

59. *Scatophagus argus* (Linnaeus, 1766)

(Fig. 36)

(Spotted butterflyfish)

1766. *Chaetodon argus* Linnaeus, *Systema Naturae*, ed. 12, 1: 464.

1984. *Scatophagus argus*: Talwar and Kacker, *Commercial Sea Fishes of India*: 704, fig. 286.

**Material examined:** 2 exs., 70 mm, 26.02.2009, F/6158; 1 ex., 92mm, 02.03.2009, F/6189; 1 ex., 55 mm, 23.12.2009, F/6860.

**Diagnostic features:** Body squarish in outline, with bluntly pointed and triangular head. Body greenish to dusky brown above, silvery below; numerous irregular huge round spots present on body except breast and belly.

**Distribution:** India: East and west coasts and A & N Islands. Elsewhere: Kuwait to Fiji, southern Japan to New Caledonia. Reported from Samoa, Tonga, and the Society Islands.

**Remarks:** Inhabits fresh, brackish and marine waters. Ornamental fish.

Family: SPHYRAENIDAE

60. *Sphyraena jello* Cuvier, 1829

(Banded barracuda)

1829. *Sphyraena jello* Cuvier, *Hist. nat. Poiss.*, 3: 258.

1986. *Sphyraena jello* : de Sylva and Williams, *In. Smith and Heemstra, Smith's Sea Fishes*: 724, fig. 224.7.

**Material examined:** 1 ex., 300 mm, 01.03.2009, F/6198; 1 ex., 380 mm, 02.03.2009, F/6199; 1 ex., 212 mm, 21.12.2009, F/6836.

**Diagnostic features:** Body fusiform, head long with pointed snout; edge of pre-operculum smoothly rounded; single canine at symphysis of lower jaw; no gillrakers on first arch; origin of 1<sup>st</sup> dorsal behind the ventral fins; lateral line scale pores 130 to 140. Sides of body with 20 vertical dusky cross bars which extend only a short distance below lateral line and form a serpentine pattern.

**Distribution:** India: East and west coasts and A & N Islands. Elsewhere: Red Sea, south to the southeastern coast of South Africa and east to New Caledonia and Vanuatu. Recently reported from Tonga.

**Remarks:** Inhabits coastal waters and enter estuaries. Important commercial fish.

## Family: POLYNEMIDAE

61. *Eleutheronema tetradactylum* (Shaw, 1804)  
(Four-finger threadfin)

1804. *Polynema tertadactylus* Shaw, *General Zoology*, 5 : 155.

1984. *Eleutheronema tetradactylum*: Talwar and Kacker, *Commercial Sea Fishes of India*: 745, fig. 304.

*Material examined*: 1 ex., 278 mm, 01.03.2009, F/6175.

*Diagnostic features*: Body elongate, snout projecting beyond mouth; pectoral fin with 4 free filamentous rays; caudal fin forked. Body silvery green above, yellowish white on sides; dorsal and caudal fins yellowish; anal and ventral fins orange.

*Distribution*: India: East and west coasts and A & Islands. Elsewhere: Pakistan, Sri Lanka, Bangladesh to East Indies and China to Philippines and Queensland.

*Remarks*: Inhabits marine, brackish and estuarine waters. Commercially important fish.

## Family: SIGANIDAE

62. *Siganus javus* (Linnaeus, 1776)  
(Fig. 37)  
(Streaky-rabbitfish)

1776. *Teuthis javus* Linnaeus, *Systema Naturae*, (ed.10), 1: 507.

1984. *Siganus javus*: Talwar and Kacker, *Commercial Sea Fishes of India*: 776, fig. 315.

*Material examined*: 4 ex., 112 to 134 mm, 25.07.2008, F/5883.

*Diagnostic features*: Body oval and compressed; greatest body depth 15 to 2.3 times in standard length; body scales minute and thin. Body greenish brown above, belly silvery; numerous small grey spots on head and upper part of body, becoming pale undulating lines on flanks and belly; dorsal and anal fins yellowish orange.

*Distribution*: India: East and west coast and A & N Islands. Elsewhere: Arabian Gulf, Pakistan, Sri Lanka to East Indies and Philippines to New Hebrides.

*Remarks*: Inhabit coastal waters, brackish and estuaries. Also enters freshwater. Less commercial value.

## Family: GOBIIDAE

63. *Glossogobius giuris* (Hamilton, 1822)  
(Fig. 38)  
(Tank goby)

1822. *Gobius giuris* Hamilton, *Fishes of Ganges*: 51, pl.33, fig. 15.

1986. *Glossogobius giuris*: Hoese, In. Smith and Heemstra, *Smith's Sea Fishes*: 790, fig. 240.44.

*Material examined*: 1ex., 156 mm, 23.07.2008, F/5866; 2 ex., 134 mm, 26.02.2009, F/6201; 1 ex., 86 mm, 02.03.2009, F/6200; 2 exs., 134 mm, 26.02.2009, F/6001; 1ex., 154 mm, 01.03.2009, F/6202;

**Diagnostic features:** Snout elongate, head depressed, gill opening from below rear of pre-opercle to below eye; ventral fins form a disc; pre-dorsal scales 15 to 19 reaching to eye; lateral scale series 29 to 33; dorsal with small spots forming longitudinal stripes. Body with 5 or 6 large dark blotches.

**Distribution:** India: East and west coasts and A & N Islands. Elsewhere: Red Sea, east coast of Africa to south China.

**Remarks:** Primarily freshwater inhabitant, enter coastal waters and estuaries. Minor fishery value. Aquarium pet.

Family: CHANIDAE

64. *Channa punctata* (Bloch, 1793)

(Fig. 39)

(Spotted snakehead)

1793. *Ophiocephalus punctatus* Bloch, in Bloch and Schneider, *Syst. Ichth.*: 296, pl.90, fig.2.

1991. *Channa punctatus*: Talwar and Jhingran, *Inland Fishes of India and Adjacent countries*, 2: 1020.

**Material examined:** 1ex., 225 mm, 20.12.2009, F/7169.

**Diagnostic features:** Body elongate, sub-cylindrical anteriorly; head large, depressed with plate like scales; 4 or 5 scales between orbit and angle of pre-opercle; 12 or 13 pre-dorsal scales; dorsal fin long, inserted above pectorals; caudal fin rounded; ventral fins more than half length of pectoral fins. Upper side of body and flanks dark green, ventral side pale yellow; several dark blotches on sides; pectoral fins plain, no spots or bands.

**Distribution:** India: Throughout including A & N Islands. Elsewhere: Afghanistan, Pakistan, Sri Lanka, Nepal, Bangladesh, Myanmar, China and Polynesia.

**Remarks:** Inhabits fresh water and also enters estuaries of low salinity areas.

Order: PLEURONECTIFORMES

Family: SOLEIDA

65. *Solea ovata* Richardson, 1846

(Ovate sole)

1846. *Solea leva* Richardson, *Rep. Br. Assoc. Adv. Sci.*: 279.

1984. *Solea leva*: Talwar and Kacker, *Commercial Sea Fishes of India*: 864, fig. 356.

**Material examined:** 1 ex., 55 mm, 26.07.2008, F/5893.

**Diagnostic features:** Body ovate and flat, depth 2.0 to 2.3 in total length; both eyes on right side; snout obtusely pointed with short cutaneous sensory processes on blind side; dorsal fin with 58 to 67 rays and anal fin with 41 to 51 rays; pectoral fins present on both sides; both ventral fins present; scales ctenoid on both sides; caudal fin slightly rounded. Ocular side of body and fins olive-brown, with spots and black blotches; deep black blotches on outer third of pectoral fins.

**Distribution:** India: East and west coasts. Elsewhere: China Sea, Gulf of Thailand, the Philippines and southward to Indonesia.

**Remarks:** Inhabits shallow sand and mud bottoms in coastal waters and estuaries. Minor commercial value.

Family: PARALICHTHYIDAE  
66. *Pseudorhombus arsius* (Hamilton, 1982)  
(Largetooth flounder)

1982. *Pleuronectes arsius* Hamilton, *Fishes of Ganges*: 128.

1986. *Pseudorhombus arsius*: Hensley, In. Smith and Heemstra, *Smith's Sea Fishes*: 861, fig. 259.17.

**Material examined:** 1 ex., 155 mm, 24.07.2008, F/5876.

**Diagnostic features:** Body flat, oval and leaf-like; both the eyes on left side, separated by a narrow bony ridge; gillrakers lanceolate, 9 to 13 on lower arm of 1<sup>st</sup> arch; scales on ocular side ctenoid and blind side cycloid; large dark spot at junction of straight and curved parts of lateral line and two smaller ones on posterior part of lateral line; median fins with scattered dark spots.

**Distribution:** India: East and west coasts and A & N Islands. Elsewhere: Indo-West Pacific.

**Remarks:** Inhabits shallow marine bottom waters, enters estuaries. Minor commercial value.

67. *Pseudorhombus elevatus* Ogilby, 1912  
(Fig. 40)  
(Deep flounder)

1912. *Pseudorhombus elevates* Ogilby, *Mem. Queensland Mus.*, 1: 45.

1986. *Pseudorhombus elevates*: Hensley, In. Smith and Heemstra, *Smith's Sea Fishes*: 862, fig. 259.18.

**Material examined:** 1 ex., 167 mm, 27.02.2009, F/6251.

**Diagnostic features:** Body flat and oval; dorsal profile of head slightly notched in front of eyes; both eyes on left side; gillrakers lanceolate, 11 to 15 on lower arm of 1<sup>st</sup> arch; scales ctenoid on ocular side and cycloid on blind side. Ocular side pale brown with numerous faint blotches arranged in five irregular rows along body, 3 large distinct blotches along straight part of lateral line; median fins with brown spots.

**Distribution:** India: East and west coasts and A & N Islands. Elsewhere: Red Sea, Persian Gulf, Pakistan to Australia.

**Remarks:** Inhabits shallow coastal waters and enters estuaries. Of minor fishery value.

Family: CYNOGLOSSIDAE  
68. *Cynoglossus puncticeps* (Richardson, 1846)  
(Speckled tongue-sole)

1846. *Plagusia puncticeps* Richardson, *Rep. Br. Assoc. Adv. Sci.*: 280.

1984. *Cynoglossus puncticeps*: Talwar and Kacker, *Commercial Sea Fishes of India*: 882, fig. 367.

*Material examined:* 1 ex., 155 mm, 25.07.2008, F/5877.

*Diagnostic features:* Body flat and elongate; both the eyes on left side; snout obtusely pointed; rostral hook short; angle of mouth not reaching beyond lower eye; two lateral lines on ocular side, 15 to 19 scales between them; no lateral line on blind side; scales ctenoid on both sides of body. Body yellowish-brown with distinct irregular dark brown blotches, often forming cross bars.

*Distribution:* India: East and west coasts. Elsewhere: East Indies to Philippines, Taiwan and south to Australia.

*Remarks:* Inhabits shallow coastal waters and estuaries. No commercial value.

Order: TETRAODONTIFORMES

Family: TRIACANTHIDAE

69. *Triacanthus biaculeatus* (Bloch, 1786)

(Fig. 41)

(Short-nosed tripodfish)

1786. *Balistes biaculeatus* Bloch, *Nat. ausland. Fische*, (2): 19.

1980. *Triacanthus biaculeatus*: Jones and Kumaran, *Fishes of Laccadive Archipelago*: 660, fig. 562.

*Material examined:* 1 ex., 192 mm, 01.03.2009, F/6217; 1 ex., 130 mm, 23.12.2009, F/6859.

*Diagnostic features:* Body oblong and compressed; snout concave; second dorsal spine much smaller than half the length of first spine; narrow pelvis between ventrals. Body silvery-brown above, white below; membrane between 1<sup>st</sup> and 2<sup>nd</sup> dorsal spines black; dorsal, anal and pectoral fins light yellow.

*Distribution:* East and west coasts, A & N Islands and Lakshadweep. Elsewhere: Persian Gulf, eastward to eastern Australia, northward to southern Japan and China.

*Remarks:* Inhabits shallow coastal waters and enters estuaries. No commercial value. Trash fish.

Family: TETRAODONTIDAE

70. *Arothron immaculatus* (Bloch & Schneider, 1801)

(Fig. 42)

(Blackedged blaasop)

1801. *Tetradon immaculatus* Bloch and Schneider, *Syst. Ichth.*, : 507.

1986. *Arothron immaculatus*: Smith and Hemstra, In : *Smith's Sea Fishes*: 896, pl. 142.

*Material examined:* 1 ex., 55 mm, 02.03.2009, F/6219.

*Diagnostic features:* Body robust with spines except on lips and caudal peduncle. Body dark brown above, lighter below; upper and lower edge and margin of caudal fin black; black blotch at pectoral fin base.

*Distribution:* India: East and west coasts and A & N Islands. Elsewhere: Red Sea and East and South Africa to Indonesia, north to southern Japan.

**Remarks:** Inhabits marine waters and estuaries. Trash fish.

**71. *Tetraodon fluviatilis* Hamilton, 1822**  
(Green pufferfish)

1822. *Tetraodon fluviatilis* Hamilton, *Fishes of Ganges*: 6, 302, pl.30, fig. 1.

1991. *Chelonodon fluviatilis*: Talwar and Jhingran, *Inland Fishes of India and Adjacent countries*, 2: 1055.

**Material examined:** 1 ex., 155 mm, 28.02.2010, F/7171.

**Diagnostic features:** Body robust, tail compressed laterally at its base; inter-orbital space convex; ventral fins absent; fleshy bifid barbel one on each nostril present; spines on body extended from middle of eyes to base of dorsal fin, and over cheeks and abdomen up to vent; lateral line absent. Head dark grey with one or more transverse bars across snout; a black patch above pectoral and a large one halfway between pectoral and dorsal present; an ocellus anterior to anal fin; caudal fin with four dark vertical bands.

**Distribution:** India: Throughout. Elsewhere: Sri Lanka, Bangladesh, Myanmar and Borneo.

**Remarks:** Inhabits freshwater and estuaries.

**72. *Lagocephalus lunaris* (Bloch & Schneider, 1801)**  
(Fig. 43)  
(Moontail blaasop)

1801. *Tetrodon lunaris* Bloch and Schneider, *Syst. Ichth.*: 505.

1991. *Lagocephalus lunaris*: Talwar and Jhingran, *Inland Fishes of India and Adjacent countries*, 2: 1058.

**Material examined:** 1 ex., 144 mm, 27.02.2009, F/6218.

**Diagnostic features:** Body elongate, depth 2.9 to 3.4 in standard length; inter-orbital space shorter than snout; nasal organ covered by a small sac with two nostrils; dorsal and anal fins pointed; snout, sides and caudal peduncle smooth; spinules on dorsal surface of body extend from nostrils to dorsal origin; caudal fin emarginated. Dorsal surface of head and body greenish, sides silvery white.

**Distribution:** India: East and west coasts and A & N Islands. Elsewhere: Red Sea and Persian Gulf to South Africa, Sri Lanka to Japan and Australia.

**Remarks:** Inhabits shallow coastal waters and estuaries. Aquarium pet. Recently harvesting for commercial purpose.

**73. *Takifugu oblongus* (Bloch, 1786)**  
(Lattice blaasop)

1786. *Tetrodon oblongus* Bloch, *Nat. ausland. Fische*, (2): 6, pl.146, fig. 1.

1991. *Takifugu oblongus*: Talwar and Jhingran, *Inland Fishes of India and Adjacent countries*, 2: 1059.

**Material examined:** 2 exs., 100 and 136 mm, 01.03.2009, F/6249.

**Diagnostic features:** Inter-orbital space longer than snout; nasal organ covered by a small sac with two nostrils; two lateral lines, lower along the ventro-lateral part of peduncle on

a low skin ridge; belly, top of head and anterior part of back with spinules; caudal fin truncate. Body brownish above with pale spots, yellowish below; narrow dark bars on sides.

*Distribution:* India: East and west coasts. Elsewhere: South Africa to Indonesia, north to Japan, south to Australia.

*Remarks:* Inhabits shallow coastal waters and estuaries. Trash fish.

Phylum: ARTHROPODA

Class: MALACOSTRACA

Order : DECAPODA

Suborder: DENDROBRANCHIATA

Family: PENAEIDAE

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

(Fig. 44)

(Giant tiger prawn, black tiger prawn)

1798. *Penaeus monodon* Fabricius, *Srpp. Ent. Sqst. Hafniae Copenhagen.*: 408

1991. *Penaeus (Penaeus) monodon*: Paulpandian and Ramasamy, *Guide to the Prawns of Portonovo* : 36, pl. 29, fig. 4.

*Material examined:* 1 ex., 22. 07. 2008, CR/5978; 1 ex., 24. 07. 2008, CR/6322; 1 ex., 23. 07. 2008, CR/6323; 1 ex., 02. 08. 2009, CR/380; 1 ex., 20. 12. 2009, CR/6452; 1 ex., 21. 12. 2009, CR/6454; 1 ex., 22. 07. 2008, CR/5978; 1 ex., 26. 02. 2009, CR/7248.

*Measurements:* L- 45.0 to 195.0 mm

*Diagnosis:* Carapace smooth. Rostrum very strong and armed with 7-8 dorsal and 3-4 ventral teeth. Hepatic carina straight. Adrostral crina and groove extending beyond epigastric tooth. Antennal crest prominent. Petasma with distomedian projection reaching distal margin of costae. Thelycum with large lateral plates forming a lip like structure, anterior plate small subcircular (concave) and sub triangular, posterior plate inserted in between lateral plates.

*Distribution:* India: East and West coasts, Andaman and Nicobar Island and Lakshadweep. Elsewhere: East Africa, Gulf of Aden, Red Sea, West coast of Madagascar, Mauritius, Pakistan, Sri Lanka, Philippines, China, Japan, New Guinea and Australia.

*Remarks:* This species is found in all estuaries of Odisha. It is most important commercial and dominant species of prawn.

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

(Fig. 45)

(Green tiger prawn)

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

1991. *Penaeus (Penaeus) semisulcatus*: Paulpandian and Ramasamy, *Guide to the Prawns of Portonovo*: 36 pl.29, fig. 4

*Material examined:* 1 ex., 20. 12. 2009, CR/6453.

*Measurements:* L- 125mm.

*Diagnosis:* Carapace smooth. Rostrum long strong and straight dorsally armed with 5-8 teeth and ventrally with 2-4 teeth. Adrostral crest and groove extended beyond epigastric tooth. Gastrofrontal crest absent. Antennal crest prominent. Fifth pereopod with small but distinct exopod. Hepatic carina straight. Petasma with distomedian projections reaching as far as costae. Thelycum with large flap-like lateral plates joining at midpoint and forming a lip-like structure; anterior process semi-circular and concave, posterior process convex and partly inserted between lateral plates.

*Distribution:* India: East and West coasts. Elsewhere: East Africa, Red Sea, Western Madagascar, Mauritius, Sri Lanka, Philippines, Japan, Korea, New Guinea, Northern Australia and Eastern Mediterranean.

*Remarks:* This species closely resembles *Penaeus (Penaeus) monodon* in its shape and size. However, it is not found in large number as the later and its catch is very less in all estuaries of Odisha. It is of little commercial importance.

3. *Penaeus (Fenneropenaeus) indicus* (H.Milne Edwards, 1837)  
(Fig. 46)  
(Indian white prawn)

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

1991. *Penacus (Fenneropenaeus) indicu:* Paulpandian and Ramasamy, *Guide to the Prawns of Portonovo:* 35, pt.28, fig. 2.

*Material examined:* 2 exs., 25. 07. 2008, CR/5979; 4 exs., 23. 07. 2008, CR/6324; 30 exs., 02. 08. 2009, CR/6381; 5 exs., 20. 12. 2009, CR-6451; 1 ex., 26. 02. 2009, CR/7249.

*Measurements:* L- 47.0 to 120.0 mm

*Diagnosis:* Carapace smooth. Rostrum very large and slender having 7-9 teeth dorsally and 4-6 teeth ventrally. Adrostral crest and groove extending to epigastric tooth. Gastrofrontal and hepatic crest absent. Gastro orbital carina occupying the posterior 2/3<sup>rd</sup> distance between hepatic spine and orbital angle. Petasma with distomedian projections over reaching the distal margin of costae, and ventral costae unarmed. Thelycum with large lateral plates joined to form a lip-like structure; anterior process rounded and posterior process vestigial type.

*Distribution:* India: East and West coasts, Andaman and Nicobar Island, Lakshwadweep. Elsewhere: Sri Lanka, China, East African coast, Madagascar, Red Sea, Philippines and Northern Australia.

*Remarks:* Very common species found in all estuaries of Odisha. Commercially important.

4. *Metapenaeus monoceros* (Fabricius, 1798)  
(Fig. 47)  
(Speckled shrimp)

1798. *Penaeus monoceros* Fabricius, *Entom. Syst. Suppl.:* 409.

1998. *Metapenaeus monoceros*: Deb, *Estuarine Ecosystem Series 3:Mahanadi Estuary Crust* : 137.

*Material examined*: 2 exs., 23. 07. 2008, CR/6325.

*Measurements*: L-45.0 mm

*Diagnosis*: Body pubescent, often small patch / stripe present in larger specimen. Dorsal part of the rostrum armed with 9-12 evenly placed teeth. Adrostral crest extended beyond second rostral tooth, adrostral groove reaching behind epigastric tooth. Telson without spinules. Ischial spine of first walking leg distinct. Distomedian projections of petasma convoluted, swollen and bulbiform hiding the distolateral projection. Anterior plate of thelycum long and deeply grooved having small ball like structure at both end; lateral plates very small, egg shaped surrounded by large raised lateral margins.

*Distribution*: India: East and West coasts. Elsewhere: Sri Lanka, South Africa, Malay Peninsula, Red Sea, Madagascar, Mauritius and Mediterranean.

*Remarks*: Surprisingly this species is found rarely in Nuanai estuary but is very common in all other estuaries of Odisha. Commercially important species.

#### 5. *Metapenaeus dobsoni* (Miers, 1878)

(Fig. 48)

(Kadal shrimp)

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

1995. *Metapenaeus dobsoni*: Reddy, *Estuarine Ecosystem series Part 2:Hugli, Matla Estuary*: 294.

*Material examined*: 10 exs., 02. 08. 2009, CR-6378.

*Measurements*: L- 45.0 to 48.0 mm

*Diagnosis*: Body pubescent with small patches. Rostrum long, extended beyond antennular peduncle and armed with 7-9 dorsal teeth, almost half of its distal half toothless. Adrostral crest reaching as far as epigastric tooth. Telson armed with spinules. Petasma with each distomedian projections form short filament or tubular structure culminating in a pair of simple distomedian spouts. Distolateral projections directed forward. Thelycum having long tongue shaped anterior plate bearing a groove, lateral plates horse shoe-shaped.

*Distribution*: India: South-West coast. Elsewhere: Sri Lanka, Gulf of Thailand, Philippines and Indonesia.

*Remarks*: Common species found in all estuaries of Odisha but found rarely in Nuanai.

#### 6. *Metapenaeus lysianassa* (de Man, 1888).

(Fig. 49)

(Bird shrimp, Small white prawn)

1888. *Penaeus lysianassa* de Man, *J.linn.Soc.Lond (Zool.)* 22 (140):290

2009. *Metapenaeus lysianassa*: Rath and Dev Roy, *Estuarine Ecosystem Series 5: Fauna of Krishna Estuary, Prawns (Crustacea: Decapoda)* : 92.

*Material examined*: 4 exs., 02. 08. 2009, CR/6379.

*Mesurements*: L- 34-37 mm

*Diagnosis* : Body pubescent. Rostrum very wide high and short reaching almost first antennular article and dorsally armed with 6-7 teeth. Adrostral crest and groove reaching as far as third rostral tooth. Telson armed with spinules. Distolateral projections of petasma bifurcate distally. Small apical filament like structure present at median margin of distomedian projection. Anterior and lateral plates of thelycum sub-equal, middle one small and tongue like.

*Distribution*: India: East coast. Elsewhere: Sri Lanka, Gulf of Tonkin, Indonesia, Archipelago and Borneo.

*Remarks*: This species represents only in small numbers in all estuaries of Odisha. It is of little commercial importance because of its small size.

Family: PALAEMONIDAE

7. *Macrobrachium malcolmsonii* (H.Milne Edwards, 1844)

(Fig. 50)

(Monsoon river-prawn)

1844. *Palaemon malcolmsonii* H.Milne Edwards, *Voy inde Jacquemont* 4 (2):8

1995. *Macrobrachium malcolmsonii*: Reddy, *Wetland Ecosystem Series 1: Fauna of Chilika Lake*: 380.

*Material examined*: 1 ex., 27. 02. 2009, CR/6382 A.

*Measurements*: L-85.0 mm

*Diagnosis*: Body symmetrical. Rostrum strong and long reaching end of antennal scale; dorsally armed with 7-11 teeth, of which 3 placed behind orbital margin, 1-2 sub-distal and rest evenly placed teeth. Hepatic spine situated at a lower level than antennal spine. Telson tip sharp, over-reaching the postero lateral spines.

*Distribution*: India: Southern India. Elsewhere: Pakistan, Sri Lanka and Bangladesh.

*Remarks*: Generally a fresh water species but occur almost in all estuaries in large numbers during low tide.

8. *Macrobrachium equidens* (Dana, 1852)

(Fig. 51)

(Rough river-prawn)

1852. *Palaemon equidens* Dana, *Proc.Acad.Nat.Sci.Philad.*, 6:26

1995. *Macrobrachium equidens*: Reddy, *Estuarine Ecosystem series, Part 2 Hugli Matla Estuary*: 310.

*Material examined*: 1 ex., 25. 11. 2010, CR/7251.

*Measurements*: L-43.0 mm

**Diagnosis:** Body robust. Rostrum strong and long reaching at end of antennal scale; dorsal margin armed with 10-11 teeth placed at a regular interval; ventral margin armed with 4-7 teeth. Ridge of antennal spine extending in the direction of hepatic spine. Out of 2 postero-lateral spines of telson, lower one over-reaching the telson tip.

**Distribution:** India: South-West coast, Kerala. Elsewhere: Pakistan, Sri Lanka, China, East coast of Africa, Madagascar, Philippines and New Caledonia.

**Remarks:** Common species of estuaries, but its catch is very less in Nuanai.

### 9. *Macrobrachium dayanum* (Hederson, 1893)

(Fig. 52)

(Freshwater prawn)

1893. *Palaemon dayanum* Henderson, *Trans Linnean Soc. London.*, (2),5:443.

2001. *Macrobrachium dayanum*: Jayachandran, *Palaemonid Prawns: Biodiversity, Taxonomy, Biology and Management*: 89.

**Material examined:** 1 ex., 25. 11. 2010, CR-7252.

**Measurements:** L-57.0 mm

**Diagnosis:** Carapace smooth, with hepatic and antennal spine. Rostrum strong long extending to tip of antennal scale, rostrum tip slightly up-turned. Upper margin with 9 and lower margin with 6 teeth, on the upper margin 2 teeth situated behind orbit and one just above the orbit. Abdomen glabrous. Telson conical, ending with acute spine. Dorsal surface with 2 pairs of spines. Distal end also 2 pairs of spines outer pair smaller and immovable.

**Distribution:** India: East and west coasts. Elsewhere: Bangladesh.

**Remarks:** First record from the estuaries of Odisha.

### 10. *Nematopalaemon tenuipes* (Henderson, 1893).

(Spider prawn)

1891. *Leander tenuipes*, Henderson, *Trans.Linn.Soc.Lond.,(Zool.)*,(2)5:440.

2001. *Nematopalaemon tenuipes*: Jayachandran, *Palaemonid Prawns Biodiversity, Taxonomy, Biology and Management*: 194.

**Material Examined:** 1 ex., 25. 11. 2010, CR/7250.

**Mesurements:** L-65.0 mm

**Diagnosis :** Rostrum elongated, slender extended beyond apex of antennal scale, dorsally armed with 5-8 teeth, of which, 5-7 teeth present in the highly elevated crest, tip of rostrum bearing a single tooth strongly bent up-ward; ventral margin armed with 4-6 teeth. Antennal and branchiostegal spine present on carapace, branchiostegal groove lacking. Abdomen little compressed laterally.

**Distribution:** India: East and West coasts. Elsewhere: Pakistan, Africa, Somalia, Arabian Sea, Viet Nam, Philippines and New Guinea.

*Remarks:* Its population is not abundant in Odisha. Attains a medium size and hence got good commercial value.

## B. BRACHYURAN CRABS

Infraorder: BRYCHYURA

Family: DORIPPIDAE

### 11. *Neodorippe callida* Fabricius, 1798

(Fig. 53)

(Leaf-porter crab)

1798. *Dorippe callida* Fabricius, *Ent.Syst.Suppl.* : 361.

2005. *Neodorippe callida*: Dev Roy and Bhadra, *Zool. Surv. India State Fauna Series 5: Fauna of Andhra Pradesh (Part 5)*: 376.

*Material Examined:* 1 ex., 19.12.2009, CR/6450.

*Mesurements:* L-14.0 mm, W-12.0 mm

*Diagnosis:* Body and appendages pubescent. Carapace smooth, flat slightly longer than broad. The spine at the inner canthus of the orbit rudimentary. Last pair of legs exceeding half the length of second. The anterior male appendage tip is tin-opener shaped with one crescentic tip. Lateral margins of carapace smooth.

*Distribution:* India: Odisha, Andhra Pradesh, Tamil Nadu and Maharashtra. Elsewhere: Red Sea, Pakistan, Myanmar, Thailand, Philippines, China and Indonesia.

*Remarks:* This species found in all major estuaries of Odisha, mainly near the confluence area.

Family: CALAPPIDAE

### 12. *Matuta victor* (Fabricius, 1798)

(Fig. 54)

(Common moon crab)

1798. *Cancer victor* Fabricius, *Species Insectorum Exhibents*, 2: 502.

2005. *Matuta victor*: Dev Roy and Bhadra, *Zool. Surv. India State Fauna Series 5: Fauna of Andhra Pradesh (Part 5)*: 385.

*Material examined:* 1 ex., 25. 08. 2010, CR/6540.

*Mesurements:* L-10.0 mm, W-11.0 mm

*Diagnosis:* Carapace with reddish colored spots or minute dots, out of 6 tubercles anterior two are very faintly indicated. Front straight rostrum emarginated medially. Two prominent tubercles present on the mid palm of the chelipeds.

*Distribution:* India: Andhra Pradesh, Odisha, Tamil Nadu, West Bengal, and Maharashtra. Elsewhere: Mozambique, Madagascar, Comoros, Tanzania, Somalia, Red Sea, Gulf of Aden, Gulf of Oman, Pakistan, Sri Lanka, Myanmar, Thailand, Peninsular Malaysia, Singapore, Philippines, Hong Kong, China, Japan, Indonesia, Timor, Ausralia, New Caledonia, New Herides, NorFolk, Ovolan and Fedjee.

*Remarks:* Occasionally found in this estuary.

## Family: PORTUNIDAE

13. *Scylla serrata* (Forskål, 1775)

(Fig. 55)

(Serrated swimming crab or mudcrab)

1775. *Cancer serratus* Forskål. *Desc. Anim.*: 902005. *Scylla serrata*: Dev Roy and Bhadra, *Zool. Surv. India State Fauna Series 5: Fauna of Andhra Pradesh* (Part 5): 420.

*Material examined*: 2 exs., 24. 07. 2008, CR/6316; 1 ex., 23. 07. 2008, CR/6326; 1 ex., 22. 07. 2008, CR/6372; 2 exs., 27. 02. 2009, CR-6385; 2 exs., 23. 12. 2009, CR/6442; 3 exs., 20. 12. 2009, CR/6444; 1 ex., 02. 03. 2009, CR/6537; 3 exs., 01. 03. 2009, CR/6694.

*Mesurements*: L- 22.0-53.0 mm, W- 33.0 to 74.0 mm

*Diagnosis*: Front broad and cut into four blunt subequal teeth. Antero- lateral border of carapace cut into 9 sharp teeth of almost equal size (including the outer orbital angle). Carapace oval, smooth, regions almost indistinct. Anterior male abdominal appendages elegantly bent bearing hairs along one border and spines on other, tip sharp. Arm of cheliped adorned with 3 spines on anterior border and 2 on posterior border. Abdomen of male is broadly triangular.

*Distribution*: India: Andhra Pradesh, Odisha, Tamil Nadu, West Bengal, Goa, Maharastra, Karnataka, Gujarat and Andaman and Nicobar Islands. Elsewhere: Africa, Red Sea, Pakistan, Mergui, Mynmar, Formosa, Japan, Australia, Tahiti, Auckland.

*Remarks*: This is a very common and commercially important edible crab found in all estuaries of Odisha, particularly in the mangrove area where their population is very high.

14. *Portunus pelagius* (Linnaeus, 1758)

(Fig. 56)

(Shore Swimming crab)

1758. *Cancer pelagicus* Linnaeus, *Syst. Nat.* 10<sup>th</sup> ed. , 1 :626.2000. *Portunus pelagicus*: Dev Roy and Das, *Rec. Zool. Surv. India, Occ. Paper No.* 185: 41.

*Material examined*: 1 ex., 27.02.2009, CR/6386; 2 exs., 20.12.2009, CR/6445; 4 exs., 27.02.2009, CR/6529; 1 ex., 02.03.2009, CR/6536; 2 exs., 01.03.2009, CR-6695.

*Mesurements*: L-12.0 to 51.0 mm, W-20.0 to 98.0 mm

*Diagnosis*: Carapace broad, little convex, surface covered with miliary granules. Front cut into four teeth (excluding inner angle of the orbit), of which, middle two small and prominent. Antero-lateral border cut in to 9 teeth, last one remarkably long and spiniform, tip white. Chelipeds strong and massive but unequal; arm with three large acute spines on the anterior and one on the posterior border.

*Distribution*: India: Andhra Pradesh, Odisha, Tamil Nadu, West Bengal, Gujarat, Karnataka, Kerala, Maharashtra, Andamans. Elsewhere: East and South coasts of Africa, Red Sea, Persian Gulf, Karachi, Mergui Archipelago, Singapore, Philippines, Hong Kong, China, Japan, Australia, New Zealand and Tahiti as far as Hawaiian Islands.

*Remarks:* Very common along the Odisha coast and has good commercial value as it grows to a large size.

15. *Portunus sanguinolentus* (Herbst, 1796)

(Fig. 57)

(Three spot swimming crab)

1796. *Cancer sanguinolentus* Herbst, *Krabben und Krebse* 1 (2):161. pl. 8 figs. 56.57.

2000. *Portunus sanguinolentus*: Dev Roy and Das, *Rec. Zool Surv. India*. Occ. Paper No. 185 : 33, pl. 2, fig. 2.

*Material examined:* 1 ex., 21.12.2009, CR/6449; 1 ex., 27.02.2009, CR/6530.

*Mesurements:* L-40.0 to 41. mm, W-75.0 to 77.0 mm

*Diagnosis:* Carapace very broad and little convex, posterior part of carapace marked with three blood-red spots. Antero lateral teeth 9, their tips whitish. No spine on posterior border of arm of chelipeds.

*Distribution:* India: Andhra Pradesh, Odisha, Tamil Nadu, West Bengal, Karnataka, Kerala, Nicobars. Elsewhere: East coast of Africa, Red Sea, Persian Gulf, Pakistan, Sri Lanka, Hongkong, Phillipine, Taiwan, Japan, Australia, New Zealand and Hawaii.

*Remarks:* A common edible crab, its catch is very less in Nuanai estuary. Commercially important crab.

16. *Charybdis (Charybdis) helleri* (A. Milne Edwards, 1867)

(Spiny hands)

1867. *Goniosoma helleri* A.Milne Edwards, *Annl. soc. Ent. Fr. ser. 4, 7: 282*.

2005. *Charybdis (Charybdis) helleri*: Dev Roy and Bhadra, *Zool. Surv. India State Fauna Series 5: Fauna of Andhra Pradesh (Part 5):433*, pl. 2, fig. 5.

*Material examined:* 2 exs., 01.03.2009, CR/6696.

*Mesurements:* L-27.0 to 32.0 mm, W-38.0 to 45.0 mm

*Diagnosis:* Carapace broad and convex, surface covered with minute hairs, transverse granular ridges prominent at anterior half. Front cut into 6 acute teeth, middle two rounded, laterals triangular. Antero-lateral border cut into 6 teeth - first 5 teeth directed anteriorly and the 6<sup>th</sup> antero-laterally. Chelipeds unequal; arm bearing 2 large and 1 small tooth; inner surface of wrist armed with a large spine at its inner angle, palm armed with 5 spines.

*Distribution:* India: Andhra Pradesh, Odisha, Tamil Nadu, West Bengal, Kerala and Andaman Islands. Elsewhere: Red Sea, Persian Gulf, Mediteranean, Sri Lanka, Mergui Archipelago, Malaya Peninsula, Singapore, Indonesia, Thailand, Hong Kong, Australia, China and Hawaii.

*Remarks:* A common crab of estuaries. No commercial value.

## Family: GERYONIDAE

17. *Charybdis (Charybdis) callianassa* (Herbst, 1790)

1790. *Cancer callianassa* Herbst, *Versuch. Naturgesch. Krabben Krebse*, 3 (2) : 45, pl. 54, fig. 7.

2005. *Charybdis (Charybdis) callianassa*: Dev Roy and Bhadra, *Zool. Surv. India State Fauna Series 5: Fauna of Andhra Pradesh (Part 5)*: 431.

*Material examined*: 1 ex., 23.12.2009, CR/6443.

*Measurements*: L-15.0mm, W-20.0 mm

*Diagnosis*: Carapace nearly convex especially in its posterior half, its length about 2/3<sup>rd</sup> of the extreme breadth. Front cut into six teeth, of which, middle two very prominent, third tooth narrow and acute. Antero-lateral borders cut into six teeth (including the outer-orbital angles) - first tooth notched anteriorly, last one spiniform.

*Distribution*: India: Andhra Pradesh, Odisha, Tamil Nadu, West Bengal, Maharashtra, Gujarat. Elsewhere: South Africa, Pakistan, Gulf of Thailand, Malaya Archipelago, Singapore, Indonesia, Phillipines, Hongkong, China, Japan and Australia.

*Remarks*: Very small in size, no commercial value.

18. *Charybdis (Charybdis) feriatus* (Linnaeus, 1758)

(Fig. 58)

(Crucifix crab)

1758. *Cancer feriatus* Linnaeus, *Syst. Nat.* (10<sup>th</sup> ed.), 1 : 627.

2005. *Charybdis (Charybdis) feriatus*: Dev Roy and Bhadra, *Zool. Surv. India State Fauna Series 5: Fauna of Andhra Pradesh (Part 5)*: 432.

*Material examined*: 1 ex., 28.02.2009, CR/6387; 1 ex., 20.12.2009, CR/6446.

*Measurements*: L-30.0 to 38.0 mm, W-41.0 to 54.0 mm

*Diagnosis*: First spine of the antero-lateral sides of carapace truncated and notched anteriorly, last one spine-like, other four broad anteriorly – acuminate lobes. Dorsal surface of carapace with six longitudinal bands arranged in the form of a cross, extending over three quarters of its length. Lobule at antero-external angle of basal antenna joint has a ridge but not a tooth.

*Distribution*: India: Andhra Pradesh, Odisha, Tamil Nadu, West Bengal, Gujarat, Kerala, Maharashtra and Andaman and Nicobar Islands. Elsewhere: East coast of Africa, Madagascar, Pakistan, Singapore, Hongkong, Formosa, Nagasaki and Australia.

*Remarks*: Occasionally encountered.

## Family: GRAPSIDAE

19. *Metopograpsus messor* (Forskål, 1775)

(Fig. 59)

(Mangrove crab)

1775. *Cancer messor* Forskål, *Desc. Anim.*: 88.

2005. *Metopograpsus messor*: Dev Roy and Bhadra, *Zool. Surv. India State Fauna Series 5: Fauna of Andhra Pradesh (Part 5)*:477, pl. 3, fig. 3.

*Material examined*: 1 ex., 22.07.2008, CR/6369.

*Measurements*: L-27.0 to 32.0 mm, W-38.0 to 45.0 mm

*Diagnosis*: Carapace broad and convex, surface covered with minute hairs, transverse granular ridges prominent at anterior half. Front cut into 6 acute teeth, middle two rounded, laterals triangular. Antero-lateral border cut into 6 teeth - first 5 teeth directed anteriorly and the 6<sup>th</sup> antero-laterally. Chelipeds unequal; arm bearing 2 large and 1 small tooth; inner surface of wrist armed with a large spine at its inner angle, palm armed with 5 spines.

*Distribution*: India: Andhra Pradesh, Odisha, Tamil Nadu, West Bengal, Kerala and Andaman Islands. Elsewhere: Red Sea, Persian Gulf, Mediteranean, Sri Lanka, Mergui Archipelago, Malaya Peninsula, Singapore, Indonesia, Thailand, Hong Kong, Australia, China and Hawaii.

*Remarks*: Common estuarine species but occasionally encountered in Nuanai.

Family: SESARMIDAE

20. *Parasesarma plicatum* (Latreille, 1803)

(Fig. 60)

1803. *Ocypoda plicata* Latreille, *Hist.Nat.Crust.* : 47.

2005. *Parasesarma plicatum*: Dev Roy and Bhadra, *State Fauna Series 5: Fauna of Andhra Pradesh (Part 5)*: 483.

*Material examined*: 1 ex., 24.07.2008, CR/6317; 2 exs., 27.02.2009, CR/6533.

*Diagnosis*: Carapace deep, convex, surface very rough. Front exceeding more than half the greatest breadth of carapace, frontal lobes 4, middle two are broad. No tooth behind the outer orbital angle. Cheliped strong, unequal. Anterior border of cheliped of dactylus elegantly milled with 10-20 lamellae. Outer surface of arm, wrist and palm granular.

*Measurements*: L-8.0 to 10.0, W-10.0 to 13.0 mm

*Distribution*: India: Andhra Pradesh, Odisha, Pondicherry, Tamil Nadu, West Bengal, Gujarat, Maharastra, Karnataka, Kerala and Andaman and Nicobar Islands. Elsewhere: East Coast of Africa, Pakistan, Sri Lanka, Myamnar, China, Korea and Japan.

*Remarks*: This species inhabits both in brackish and fresh water areas of this estuary. It prefers muddy bottom of mangroves.

21. *Perisesarma bidens* (De Haan, 1835)

(Fig. 61)

(Red-clawed crab)

1835. *Grapsus (Pachysoma) bidens* De Haan, *Fauna Japon. (Crust.)* : 60.

2009. *Perisesarma bidens*: Dev Roy, *Rec. Zool. Surv.India. Occ. Paper No 289*: 129

*Material examined*: 1 ex., 24. 07. 2008, CR/6317.

*Measurements:* L-13.0 to 14.5mm, W-17.0 to 20.0 mm

*Diagnosis:* Carapace little convex, regions well outlined. Front deflexed. Lateral border almost parallel and cut in to a sharp tooth. Cheliped massive upper border of the arm crest like. Upper surface of the palm in male with 2 oblique pectinated crest, comb like and upper border of the dactylus of the male with 15-20 coarse, transverse lamellae.

*Distribution:* India: Odisha, West Bengal, Tamil Nadu and Goa. Elsewhere: East coast of Africa, Madagascar, Sri Lanka, Mergui Archipelago, Malay Peninsula, Hong Kong, Indonesia, Philippines, Korea, New Guinea and Australia.

*Remarks:* Found in muddy areas of mangroves, its occurrence is rare.

**\*22. *Nanosesarma batavicum* (Moreira, 1903)**

1903. *Sesarma batavica* Moreira, *Arch. Mus. Rio de Janeiro*, **12**: 117.

2009. *Nanosesarma batavicum*: Dev Roy, *Rec. Zool. Surv. India. Occ. Paper No 289*: 126

*Material examined:* 3 exs., 24.07.2008, CR-6319.

*Measurements:* L-12.0 to 14.0 mm, W-15.0 to 19.0 mm

*Diagnosis:* Carapace smooth light green colour, depressed . Antero-lateral borders arched and cut into 2 tooth including the outer orbital angle. Outer surface of the palm of cheliped smooth or with limited patch of hair, merus of pereopod 4 with 2-4 acute spines posterodistally; male abdomen not elongated.

*Distribution:* India: Odisha, Tamil Nadu. Elsewhere: East and West coast of Malay Peninsula, Singapore and Indonesia.

*Remarks:* This is mainly found in the ineter tidal region of the Nuanai estuary.

Family: VARUNIDAE

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

(Fig. 62)

(Varuna crab)

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

2005. *Varuna litterata*: Dev Roy and Bhadra, *Zool. Surv. India State Fauna Series 5: Fauna of Andhra Pradesh (Part 5)*: 480.

*Material Examined:* 2 exs., 28.02.2009, CR/6388; 1 ex., 27. 02. 2009, CR-6531; 2 exs., 26. 02. 2009, CR-6697.

*Mesurements:* L-21.0 to 23.0 mm, W-22.0 to 24.0 mm

*Diagnosis:* Carapace smooth, depressed with a H- shaped groove at its middle. Antero-lateral borders arched and cut into 3 teeth including the outer orbital angle. Three terminal joints of legs compressed, adapted for swimming. Inner border of arm denticulate, inner corner of wrist with a large sharp spine.

*Distribution:* India: Andhra Pradesh, Odisha, Tamil Nadu, West Bengal, Kerala, Maharashtra. Elsewhere: Myanmar, Bangladesh, Phillipines, Hongkong, Japan, New Zealand, New Guinea, Singapore, Australia, East Africa.

*Remarks:* Most common species of Nuanai estuary.

Family: OCYPODIDAE

24. *Ocypode macrocera* H.Milne Edwards, 1837

(Fig. 63)

(Ghost crab)

1837. *Ocypode macrocera* H.Milne Edwards, *Hist.Nat.Crust.*, 2: 49.

2005. *Ocypode macrocera*: Dev Roy & Bhadra, *Zool. Surv. India State Fauna Series 5: Fauna of Andhra Pradesh (Part 5)*: 502.

*Material Examined:* 5 exs., 22. 07. 2008, CR/6370; 4 exs., 26. 07. 2008, CR/374; 5 exs., 21. 12. 2009, CR/6448; 2 exs., 27. 02. 2009, CR/6532; 4 exs., 25. 08. 2010, CR/6538.

*Mesurements:* L-7.0 to 23.0 mm, W-9.0 to 27.0 mm

*Diagnosis:* Carapace squarish, granular and convex. Carapace reddish in colour. Stridulatory ridge comprising of striations. Eyes large, style prolonged. Finger tip of smaller chela spatula shaped. Anterior surface of the propodus of first two pairs of legs fringed with hairs.

*Distribution:* India: Andhra Pradesh, Odisha, Tamil Nadu, West Bengal. Elsewhere: Myanmar, Gulf of Thailand.

*Remarks:* The bright red colouration of adult specimen is very characteristic of this species, however the colouration is very dull in juvenile stage.

\*25. *Ocypode cordimana* Desmarest, 1825

(Smooth-handed Ghost Crab)

1825. *Ocypode cordimana* Desmarest, *Consid. génér. Crust.* :121.

2005. *Ocypode cordimana*: Dev Roy & Bhadra, *Zool. Surv. India State Fauna Series 5: Fauna of Andhra Pradesh (Part 5)*: 501.

*Material Examined:* 3 exs., 24. 07. 2008, CR/6320.

*Mesurements:* L-11.0 to 13.0 mm, W-13.0 to 16.0 mm

*Diagnosis:* Carapace quadrilateral, convex. Surface granulated. Stridulatory ridge absent. Eyes large, Eye stalk without terminal style. Cutting edge dentate. Upper border of palm and dactylus serrated.

*Distribution:* India: Andhra Pradesh, Odisha, Tamil Nadu, Kerala, Maharashtra, Andaman and Nicobar Island, Lakshadweep. Elsewhere: East coast of Africa, South Africa, Red Sea, Mauritius, Maldives, Pakistan, Myanmar, Malaysia, Singapore, Japan, Australia and Tahiti.

*Remarks:* This is one of the smallest ocypodid crabs.

**\*26. *Ocypode platytarsis* H.Milne Edwards, 1852**  
 (Fig. 64)  
 (Ghost crab)

1852. *Ocypode platytarsis* H.Milne Edwards, *Annl. Sci. nat. (Zool.)*, ser. 3, 18:141.

2005. *Ocypode platytarsis*: Dev Roy and Bhadra, *Zool. Surv. India State Fauna Series 5: Fauna of Andhra Pradesh (Part 5)*: 504.

*Material Examined*: 2 exs., 22. 07. 2008, CR/6371; 2 exs., 28. 02. 2009, CR/6389.

*Mesurements*: L-10.0 mm, W-13.0 mm

*Diagnosis*: Carapace quadrilateral, deep and convex. Stridulatory ridge without hairs consisting of small tubercle. Dactyli of legs compressed. Palm of small cheliped pointed.

*Distribution*: India: Andhra Pradesh, Odisha, Tamil Nadu. Elsewhere: Sri Lanka.

*Remarks*: The granulation on carapace is very prominent in juvenile specimens also.

**27. *Uca lactea* (de Haan 1835)**  
 (Fidler crab)

1835. *Ocypode (Gelasiums) lacteus* de Haan, *Faun Japon. (Crust.)*: 54.

2005. *Uca lactea*: Dev Roy and Bhadra, *Zool. Surv. India State Fauna Series 5: Fauna of Andhra Pradesh (Part 5)*: 508.

*Material Examined*: 1 ex., 24. 07. 2008, CR/6321; 6 exs., 26. 07. 2008, CR/6373; 2 exs., 27. 02. 2009, CR/6391; 1 ex., 02. 03. 2009, CR/6539.

*Mesurements*: L-5.0 to 9.0 mm, W-9.0 to 13.0 mm

*Diagnosis*: Carapace more or less quadrilateral in outline and the outer orbital angle project outwardly in a diagonal manner. Tip of fixed finger of large male cheliped is notched or truncate due to the presence of an enlarged tooth; and a ridge also present inside the palm of large cheliped.

*Distribution*: India: Andhra Pradesh, Tamil Nadu, Odisha, Karnataka, Kerala, Maharashtra, Andaman & Nicobar Islands. Elsewhere: Japan, Africa, Madagascar, Mauritius, Red Sea, Persian Gulf, Pakistan, Singapore, Malaya Peninsula, Thailand, Indonesia, Phillipines, China, Australia, New Guinea.

*Remarks*: The porcelain white major chela of male is the most remarkable feature of this species. It occurs in sandy mud of Nuanai estuary.

Family: MACROPHALAMINAE

**28. *Macrophthalmus (Mareotis) depressus* Rüppel, 1830**

1830. *Macrophthalmus depressus* Rüppel, *Arch. Mus. Rio de Janeiro*, 12 : 117.

2009. *Macrophthalmus (Mareotis) depressus*: Dev Roy, *Rec. Zool. Surv. India. Occ. Paper No. 289*: 145

*Material Examined*: 2 exs., 27. 02. 2009, CR/6534.

*Mesurements*: L-8.0 mm, W-11.0 mm

**Diagnosis:** Carapace depressed quadrilateral, broader than long; regions well defined, cervical and branchial grooves markedly prominent both on dorsum and lateral margins. Lateral borders cut in to 2 distinct teeth. Orbit and eye stalks are very long. Chelipeds subequal.

**Distribution:** India: Andhra Pradesh, Tamil Nadu, Odisha, Karnataka, Kerala, Maharashtra, Andaman & Nicobar Islands. *Elsewhere:* Japan, Africa, Madagascar, Mauritius, Red Sea, Persian Gulf, Singapore, Malaya Peninsula, Thailand, Indonesia, Phillipines, China, Australia, New Guinea, Pakistan.

**Remarks:** It occurs in sandy mud substratum of Nuanai.

Family: DOTILLIDAE

\*29. *Dotilla myctiroides* (H. Milne Edwards, 1852)

(Fig. 65)

(Pea crab)

1852. *Doto myctiroides* H. Milne Edwards, *Annls Sci. nat. (Zool). ser. 3, 18: 152.*

2000. *Dotilla myctiroides*: Dev Roy and Das, *Rec. Zool. Surv. India. Occ. Paper No. 185: 128.*

**Material Examined:** 4 exs., 27. 02. 2009, CR/6535.

**Measurements:** L-5.0 to 7.0 mm, W-5.0 to 7.5 mm

**Diagnosis:** Carapace is beetel leaf shape with lateral groove. Chelipeds 3 times length of carapace, and carapace is little longer than broad. Antero-lateral border is granular. Front divided to two grooves each of which meaning with both side lateral margins in a parallel manner

**Distribution:** India: Andhra Pradesh, Odisha, Tamil Nadu, Goa, Karnataka, Maharashtra and Andamans. *Elsewhere:* Seychelles, Sri Lanka, Mergui, Archipelago, Malaya Peninsula, Singapore, Indonesia and Phillipines.

**Remarks:** Very small crab. No commercial value. It is the first record from Odisha coast.

\*30. *Scopimera globosa* de Haan, 1835

(Sand bubbler crab)

1835. *Scopimera globosa* de Haan, *In: Siebold, Fauna Japan (Crust.) : 53, pl.11, fig.3,3 a-b.*

1995. *Scopimera globosa*: Bairagi, *Zool. Surv. India, Estuarine Ecosystem Series Part-2, Hugli Matla Estuary: 276.*

**Material Examined:** 1 ex., 28. 02. 2009, CR/6390.

**Measurements:** L-6.0 mm, W-5.0 mm

**Diagnosis:** Carapace covered with tubercles and posteriorly divergent. Front narrow and pointed. Orbits with strong dorsal inclination, upper orbital margins end with an extra orbital tooth. Lateral borders of carapace crenulated. Chelipeds subequal and long. Fourth and fifth abdominal segment of male fused.

**Distribution:** India: Andhra Pradesh, West Bengal. Elsewhere: Malaysia, Hong Kong, Japan, Korea, North China, Formosa.

**Remarks:** This species is so far recorded from the east coast only. This is first record from the Odisha coast.

## DISCUSSION

The Nuanai is a small river opening into Bay of Bengal and formed a small estuary of about 3 km long. Usually the faunal diversity of the estuaries is very high due to its dynamic nature. But in the case of Nuanai estuary, the diversity and density of the faunal components is very meager. This is because of the construction of flood gates on the river to prevent the inflow of salt water during high tides. Few years ago, the original mouth of the estuary was very wide and influence of sea water inflow was high but in recent years the mouth area is being shifted towards north due to formation of huge sand dunes by the sea currents. These changes in the topography led to the insufficient in flow of saltwater during tides and lack of regular free flow and mixing of fresh and salt water, the estuarine habitat becomes narrow and led to the meager faunal diversity and migration of species.

All the fish species encountered in the estuary are of euryhaline in nature and usually inhabits shallow coastal waters. The most common species of fishes encountered are platycephalids, leiognathids, gerreids, mullets and clupeids. About 73 species of fishes belonging to 33 families have been recorded from the estuary. The mullets are the most dominant family represented by 9 species followed by leiognathids with 8 species, gerreids and tetradontids with 5 species each, clupeids, catfishes and belonids each with 3 species and rest of the families are with two to one species. About 60 species are considered to be the food fishes, of which 27 species are commercially important and rest of them are having minor commercial value. The species of *Liza*, *Valamugil*, *Mugil cephalus*, *Sphyraena jello*, *Channa punctatus*, *Monodactylus argenteus*, *Dendrophysa russelli*, *Rhabdosargus sarba*, *Lutjanus russelli*, *Scomberoides lysan*, *Caranx sexfasciatus*, *Sillago sihama*, *Mystus bleekeri*, *Arius maculatus*, *Arius arius*, *Megalops cyprinoides*, *Thryssa hamiltonii* and *Anadontostoma chacunda* are commercially important fishes.

The crustaceans comprises mud crab, *Scylla serrata*, *Portunus pelagicus*, *Portunus sanguinolentus*, *Metopograpsus messor*, *Uca lacteal* and *Ocypode macrocera* and the shrimps like *Penaeus monodon*, *Penaeus semisulactus*, *Penaeus indicus*, and *Macrobrachium malcolmsonii* are commercially important. Interestingly five species of crabs namely *Nanosesarma batavicum*, *Ocypode cordimana*, *Ocypode platytarsis*, *Dotilla myctiroides* and *Scopimera globosa* are proved new to the Odisha coast. The estuary supports no large scale fishery with mechanised or non-mechanised boats except artisanal fishery. A couple of local dinghies are being used in the estuary for regular fishing. The cast nets, small shore seines, hook and lines are the most common gear employed during fishing by the locals. The only intensive activity found in the estuary is the collection of mud crabs-*Scylla serrata*, Shore swimming crabs- *Portunus pelagicus* and prawn seed which is having high demand for aquaculture. Large number of local people used to collect prawn seed with hand nets.

They use simple and eco-friendly technique, a sort of aggregate device, for attracting the prawn seed. Small twigs of casuarina plants are being pegged temporarily along the coast so that the seed take shelter among the branches in the water during high tide and prawn seed can easily be collected by hand nets. The estuarine habitat is pristine due to non development of industries and release of domestic sewage into the near by areas of the river or estuary. Because of this reason, large numbers of wetland birds are encountered along the estuary.

### SUMMARY

The Nuanai is a small river opening into Bay of Bengal and formed a small estuary of about 3 km long situated close to the temple town Puri, Odisha. As the estuary is very small the faunal diversity is very poor. The fishes, crustaceans and molluscs are the common elements. The random collections made during the study period of 2008-09 revealed the occurrence of 73 species of fishes under 53 genera belonging to 33 families. The mullets are the most dominant family represented by 9 species followed by leiognathids with 8 species, gerreids and tetradontids with 5 species each and rest of the families with three to one species. About 60 species are considered to be the food fishes, of which 27 species are commercially important and rest of them are having minor commercial value.

About 10 species of prawns under 4 genera belonging to 2 families and 20 species of crabs under 15 genera belonging to 8 families are recorded. Five species of crabs namely *Nanosesarma batavicum*, *Ocypode cordimana*, *Ocypode platytarsis*, *Dotilla myctiroides* and *Scopimera globosa* are reported for the first time from the coast of Odisha. The mud crab, *Scylla serrata*, *Portunus pelagicus*, *Portunus sanguinolentus*, and the shrimps like *Penaeus monodon*, *Penaeus semisulactus*, *Penaeus indicus*, and *Macrobrachium malcolmsonii* are commercially important. The systematic account of all the species with diagnostic features and distribution is given. Over 70 colour photographs of the faunal elements are provided for easy identification.

### ACKNOWLEDGEMENTS

The authors wish to express their sincere thanks to the Director, Zoological Survey of India, Kolkata for facilities provided to undertake the present study and constant encouragement. We also wish to record the assistance rendered in the field and laboratory by Shri. B. Dalai, Lab Attendant and Shri P. Verma, Photographer.

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Fig. 2. *Anadonotostoma chacunda*



Fig. 6. *Megalops cyprinoides*



Fig. 3. *Nematalosa nasus*



Fig. 7. *Arius arius*



Fig. 4. *Ilisha kampeni*



Fig. 8. *Arius maculatus*



Fig. 5. *Thyssa hamiltoni*



Fig. 9. *Strongylura strongylura*



Fig. 10. *Tylosurus crocodilus*



Fig. 14. *Liza vaigiensis*



Fig. 11. *Platycephalus indicus*



Fig. 15. *Valamugil buchanani*



Fig. 12. *Mugil cephalus*



Fig. 16. *Valamugil cunnesius*



Fig. 13. *Liza parsia*



Fig. 17. *Ambassis ambassis*



Fig. 18. *Terapon jarbua*



Fig. 22. *Sillaginopsis panijus*



Fig. 19. *Terapon puta*



Fig. 23. *Caranx sexfasciatus*



Fig. 20. *Sillago sihama*



Fig. 24. *Nuclequula gerreoides*



Fig. 21. *Sillago vincenti*



Fig. 25. *Leiognathus equulus*



Fig. 26. *Secutor insidiator*



Fig. 30. *Gerres limbatus*



Fig. 27. *Lutjanus johnii*



Fig. 31. *Pomadasys kaakan*



Fig. 28. *Lutjanus russelli*



Fig. 32. *Rhabdosargus sarba*



Fig. 29. *Gerres oblongus*



Fig. 33. *Dendrophysa russelli*



Fig. 34. *Upeneus sulphureus*



Fig. 38. *Glossogobius giurus*



Fig. 35. *Monodactylus argenteus*



Fig. 39. *Channa punctata*



Fig. 36. *Scatophagus argus*-young



Fig. 40. *Pseudorhombus elevatus*



Fig. 37. *Siganus javus*



Fig. 41. *Triacanthus biaculeatus*



Fig. 42. *Arothron immaculatus*



Fig. 43. *Lagocephalus lunaris*



Fig. 44. *Penaeus monodon*



Fig. 45. *Penaeus semisulcatus*



Fig. 46. *Penaeus indicus*



Fig. 47. *Metapenaeus monoceros*



Fig. 48. *Metapenaeus dobsoni*



Fig. 49. *Metapenaeus lysianassa*



Fig. 50. *Macrobrachium malcolmsonii*



Fig. 54. *Matuta victor*



Fig. 51. *Macrobrachium equidens*



Fig. 55. *Scylla serrata*



Fig. 52. *Macrobrachium dayanum*



Fig. 53. *Neodorippe callida*



Fig. 56. *Portunus pelagicus*



Fig. 57. *Portunus sanguinolentus*



Fig. 58. *Charybdis feriatus*



Fig. 59. *Metopograpsus messor*



Fig. 60. *Parasarma plicatum*



Fig. 61. *Perisesarma bidens*



Fig. 62. *Varuna litterata*



Fig. 63. *Ocypode macrocera*



Fig. 64. *Ocypode platytarsis*



Fig. 65. *Dotilla myctiroides*



Fig. 69. View of Nuanai estuary during high tide



Fig. 66. Nuanai River bridge



Fig. 70. Huge sand dunes along the coast of estuary



Fig. 67. Nuanai river confluence



Fig. 71. View of Nuanai estuary



Fig. 68. Fishing activities near river mouth



Fig. 72. Exposed shoreline of estuary during low tide



Fig. 73. Crab harvesting along the estuary



Fig. 74. Mullet catch from estuary



Fig. 75. Collection of prawn seed in the estuary

