

## **GOBIOIDS OF ENNORE ESTUARY AND ITS VICINITY \***

**K. REMA DEVI**

*Zoological Survey of India, Southern Regional station, Madras-600 028*

### **INTRODUCTION**

The reason for taking up the present study is the lack of a comprehensive and illustrated systematic account of the available gobioid fishes of Ennore estuary. From 1975 to 1978 regular fortnightly collections of gobioids were carried out in the Ennore estuary, about 28 km. north of Madras, on the east coast of India. Most of the gobioids were collected by operating a special type of fishing net locally known as 'konda valai' which is primarily used for prawn fishing in the estuary. Collections were made from the estuary and its adjoining areas viz. South Buckingham canal, Koratalayar river, Zamendar canal, North Buckingham canal and a creek near the sea mouth.

Since the monumental work by Day (1878, 1889), Koumans (1941, 1953) as a result of his extensive studies on the gobioid fishes of India, compiled the bulk of information on these fishes. He divided the gobioid fishes into 3 families (Gobiidae, Tacniodidae and Eleotridae), seven subfamilies and 57 genera comprising 125 species. Of these 32 species have been described from the Madras coast and 16 species from Ennore estuary. Venkateswarlu et al. (1975) listed the fishes of Madras and its environs and has included 35 species under Gobiidae, 4 spp. under Periophthalmidae and 5 spp. under Taenioididae; Venkateswarlu and Rama Rao (1976) recorded *Eleotriodes wardii* Playfair from the Central Indian Ocean; Rama Rao and Venkateswarlu (1977) discussed the distributional range of *Waitea buchmanii* Visweswara Rao in Indian waters; Talwar (1985) critically studied the major estuarine systems in India and under Gobioidae he reported 9 spp. as belonging to the family Eleotridae, 63 species under Gobiidae, 6 species under Gobioididae and 4 species under Trypauchenidae.

The present collection made from Ennore estuary and its vicinity, is a valuable addition to our knowledge of the gobioid fauna. It contains 25 species, comprising 14 genera of which four species, viz. *Acentrogobius cyanomos* (Bleeker), *Boleophthalmus sculptus* Gunther, *Trypauchen vagina* (Bloch & Schneider), *Pseudapocryptes lanceolatus* (Bloch & Schneider) are recorded for the first time. *Acentrogobius ennorensis* Menon and Rema Devi and *Oxyurichthys nijsseni* Menon

---

\* Formed part of the Ph.D. thesis submitted to the Madras University.

and Govindan are two new species recently discovered in the Ennore estuary and are re-described here, and key to the 40 species so far reported from Madras Coast is provided. A detailed list of the gobioid fauna of Ennore is given. For the systematic account the details of the number of specimens, the size range, the date of collection and the geographical distribution and affinities, if distinct from other forms are given.

Counts and measurements were taken from the left side and follow methods given by Hubbs and Lagler (1958). Measurements were made with fine pointed dividers and recorded to the nearest one tenth of a millimetre. The morphometric characters which are considered important were studied. In most gobioids the last ray of the second dorsal and anal fins is branched at the base and is counted as a single element.

#### *Cephalic sensory and cutaneous papillae system :*

On the head of most gobioids is a series of sensory channels covered by transparent tissues with pores which open externally. Differences in the occurrence of these pores within approximate positions connote their systematic importance among genera and species and need to be carefully evaluated (Lachner and McKinney 1974). The arrangement of the cephalic pit organs is sometimes an important character in distinguishing gobioids. On the basis of this character Prince Akihito and Meguro (1975) described a new species of *Glossogobius* and compared it with other related species. Due to difficulties arising in identifying gobies with free upper pectoral fin rays, the arrangement of the cephalic sensory pore system and cutaneous papillae system were found very useful in separating the species (Winterbottom, 1976). Subsequently several gobioid workers have sought the aid of these characters in addition to the morphometric and meristic characters in separating gobioid species.

In the present study the general arrangement of the papillae and cephalic pores of the 25 species of Ennore estuary is illustrated in Figures 1-4. It is found to vary in the different sub-families and genera and in different species of the same genus. Within species the cutaneous papillae occur predominantly in horizontal or vertical rows. These papillae are small, circular structures, the height usually about equal to or shorter than the basal diameter. The system has been referred to as the cutaneous papillae system, exposed neuromast organs, or pit organs, and particular rows or lines have been variously numbered or named. Since it is impossible to determine specific rows among different genera, in this study only the general pattern of distribution in the various genera has been described. The different mucous canal patterns in gobioids of Ennore estuary are illustrated.

**KEY TO THE GOBIOID FAUNA OF ENNORE ESTUARY AND  
MADRAS COAST**

(Classification as in Koumans, 1953)

**KEY TO THE FAMILIES AND SUBFAMILIES OF GOBIOIDEA**

- |   |                  |
|---|------------------|
| 1. Ventral fins united  | 2                |
| — Ventral fins separate   | Eleatridae       |
| 2. Two dorsal fins  | Gobiidae 3       |
| — One dorsal fin  | Taenioididae 6   |
| 3. Teeth in lower jaw in several rows   | Gobiinae         |
| — Teeth in lower jaw in one row   | 4                |
| 4. Second dorsal fin elongate, teeth in lower jaw subhorizontal                   | Apocrypteinae    |
| — Second dorsal fin not elongate .  | 5                |
| 5. Eye prominent, free lower eye lid developed, base of ventral fin muscular      | Periophthalminae |
| — Eye not prominent, free eyelid wanting  | Sicydiaphinae    |
| 6. A pit in upper margin of opercle opening to a cavity separate from gill cavity | Trypaucheninae   |
| — No pit in upper margin of opercle   | Taenioinae       |

**KEY TO THE SPECIES OF THE SUBFAMILY GOBIINAE**

- |  |  |
|--|--|
| 1. Caudal fin long, pointed or lanceolate, longer than head                                | 2  |
| — Caudal fin short, obtuse, rounded or oblong, shorter than head                           | 16   |
| 2. Some fleshy palps on inner edge of shoulder girdle (Head and nape naked in median line) | <i>Stenogobius malabaricus</i> (Day)       |
| — No fleshy palps on inner edge of shoulder girdle   | 3  |
| 3. Barbels on head   | 4  |
| — No barbels on head   | 5  |
| 4. Barbels only along lower jaw; upper caudal base with a large oblong ocellus             | <i>Parachaeturichthys polynema</i> (Blkr.) |
| — Barbels along ramus of lower jaw and on cheek ; caudal obliquely pointed                 | <i>Obliquogobius comatus</i> (Alcock)      |
| 5. Teeth in upper jaw in one row   | 6  |
| — Teeth in upper jaw in several rows   | 7  |
| 6. A tentacle on the upper margin of eye   | <i>Oxyurichthys tentacularis</i> (C&V.)    |
| — No tentacle on upper margin of eye   | <i>O. microlepis</i> (Blk)                 |
| 7. Head scaled above behind eyes.  | 8  |
| — Head naked above behind eyes   | 14   |
| 8. 40-42 scales in L. 1  | <i>Acentrogobius griseus</i> (Day)         |
| — Less than 40 scales in L.1   | 9  |

9. About 30 predorsal scales *Acentrogobius viridipunctatus* (C.&V.)  
 — Less than 30 predorsal scales 10
10. More than 17 predorsal scales ; 5-8 narrow vertical black lines on body in females *Acentrogobius madraspatensis* (Day)  
 — Less than 17 predorsal scales 11
11. More than 14 predorsal scales ; D.2.1/10 ; A. 1/8-9; L.1.30  
*Acentrogobius cyanomos* (Blkr.)  
 — Less than 14 predorsal scales 12
12. More than 9 predorsal scales 13  
 — Less than 9 predorsal scales 4-5 vertical bands on sides of body; second dorsal and caudal with a white stripe *Acentrogobius globiceps* (Hora)
13. Head somewhat depressed ; D.2.1/8 ; A. 1/8  
*Favonigobius reichei* (Blkr.)  
 — Head somewhat compressed ; D.2.1/9; A.1/9  
*Acentrogobius ennoensis* Menon & Rema Devi
14. 85 or more scales in L.1. ; D.2. & A. with more than 14 rays  
*Cryptocentrus gymnocephalus* (Blkr.)  
 — Less than 85 scales in L.1. D.2. & A. with less than 14 rays 15
15. L.1. scales about 27-30; L.tr. 7-8; D.2.1/10-11; A.1/10-11  
*Oligolepis acutipennis* (C&V.)  
 — L.1. scales 25; L.tr. 5; D.2.1/9 ; A.1/9 *Oligolepis cylindriceps* (Hora)
16. Maxillary prolonged posteriorly (No barbels on head; upper rays of pectoral silk like) *Paragobiopsis ostreicola* (Chaudhuri)  
 — Maxillary not prolonged posteriorly 17
17. Tongue emarginate to bilobate 18  
 — Tongue rounded to truncate (opercle with large etenoid scales)  
*Brachygobius nunus* (Ham.)
18. Some fleshy palps in inner edge of shoulder girdle  
*Awaous stamineus* (Val.)  
 — No fleshy palps 19
19. Gill openings continued forward below, isthmus narrow 20  
 — Gill openings not continued forward below; isthmus broad 21
20. Gill membrane free and united across isthmus; 7-8 scales in L.tr.  
*Glossogobius biocellatus* (C.&V.)  
 — Gill membrane connected to isthmus : 9-14 scales in L.tr.  
*Glossogobius giuris* (Ham.)
21. Nape scaled, anterior scale of nape-enlarged  
*Stigmatogobius javanicus* (Blkr.)  
 — Nape naked *Yongeichthys criniger* (C.&V.)

## KEY TO THE SPECIES OF THE SUBFAMILY APOCRYPTEINAE

1. Free lower eye lid present 2  
 — Free lower eye lid absent 3

2. Dorsal fin with blue spots *Boleophthalmus boddarti* (Pallas)  
 — Dorsal fin without blue spots *Boleophthalmus sculptus* (Gunther)
3. Scales minute, more than 200  
*Pseudapocryptes lanceolatus* (Bloch & Schneider)  
 — Scales moderate, less than 150 in longitudinal line . . . . . 4
4. Teeth in lower jaw pointed . . . . . 5  
 — Teeth in lower jaw truncate, obtuse or bilobate . . . . . 6
5. Height of body 7-9 in T.1., D.2.1/26  
*Parapocryptes serperaster* (Richardson)  
 — Height of body 11-14 in T.1; D.2.1/23-26; L.1. 75; maxillary extends to beyond eye . . . . . *Parapocryptes rictuosus* (C&V.)
6. About 100 Scales in L.1; D.2.1/20 *Apocryptes bato* (Ham.)  
 — Less than 100 Scales in L.1; D.2.1/24-26 . . . . . *Apocryptichthys cantoris* (Day)

#### KEY TO THE SPECIES OF THE SUBFAMILY TAENIOININAE

1. Barbels on head; canines in both jaws . . . . . 2  
 — No barbels on head, no canines; scales only on caudal part of body; D. VI. 32; A.1/33 . . . . . *Brachyamblyopus urolepis* (Blkr.)
2. Height of body 13-15 in S.L.; on each side in upper jaw about 7 canines  
*Taenioides anguillaris* (Linne)  
 — Height of body less than 13 in S.L; on each side in upper jaw 4-5 canines; dorsal, anal and caudal black  
*Taenioides buchannani* (Day)

#### KEY TO THE SPECIES OF THE SUBFAMILY TRYPACHENINAE

1. Ventrals completely united forming a funnel shaped disc.; Height 9-10 in S.L.  
*Trypauchen vagina* (Bloch & Schneider)  
 — Ventrals united but emarginate at base; height 8 in S.L. . . . . *Ctenotrypauchen microcephalus* (Blkr.)

#### KEY TO THE SPECIES OF THE SUBFAMILY PERIOPHTHALMINAE AND SCICYDIAPHINAE

1. Eye prominent, free lower eye lid developed (*PERIOPHTHALMINAE*) 2  
 — Eye not prominent, free eye lid wanting; ventral fins not united to belly  
*Gobiopterus chuno* (Ham.)
2. Ventral fins totally united, basal membrane well developed . . . . .  
*Periophthalmus chrysospilos* Blkr.  
 — Two halves of ventrals united by a narrow membrane; L.1. 60-70  
*Periophthalmus variabilis* Eggert.

## KEY TO THE SPECIES OF THE FAMILY ELEOTRIDAE

1. A single downwards curved spine at angle of preopercle (Head scaled between the eyes, on cheek and opercle; L.1. 60-65; Ll.tr. 16-19).  
*Eleotris fusca* (Bloch & Schneider)
- Preopercle without spines 2
2. Bony crests on head in interorbital space; head short, obtuse, jaws subequal  
*Prionobutis koilomatodon* (Blkr.)
- No bony crests on head; scales small, more than 70 in L.1.; head naked  
*Eleotriodes wardii* Playfair

## DESCRIPTIONS OF THE GOBIES OF ENNORE ESTUARY

Family GOBIIDAE  
Subfamily GOBIINAE  
Genus *Acentrogobius* Bleeker

1874. *Acentrogobius* Bleeker, *Arch. neerl. Sc. ex. nat.* IX P. 321.

1. *Acentrogobius cyanomos* (Bleeker)  
(Plate I, Figure 1)

1849. *Gobius cyanomos* Bleeker, *Verth. Bat. Gen.* XIII, P.25.

1953. *Acentrogobius cyanomos*, Koumans, *The Fishes of the Indo-Australian Archipelago*, X, P. 64.

**Material** : 1 ex., 49.0 mm. S.L., 8th June 1976 and 1 ex., 56.0 mm. S.L., 30th June 1976.

**Description** : D.1.VI ; D.2.1/10 ; A.1/9 ; P.17 ; L.1. about 25 ; L.tr.9 ; predorsal scales 16.

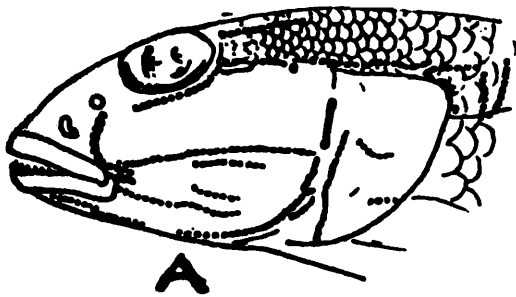
Body elongate, somewhat compressed ; height 4.30 in S.L. ; 5.38 in T.L. ; head compressed, obtuse, 3.70 in S.L., 4.60 in T.L. ; eye 4.43 in head ; interorbital 1.75 in eye diameter ; eye 1.30 in snout, snout being longer than eye ; anterior nostril a short tube ; jaws subequal ; mouth oblique ; maxilla extends to anterior margin of eye ; lips thickened ; teeth in both jaws with outer row enlarged, 2 canines on either side ; two rows of mucous canals on cheeks (Fig. 1.A) ; supraopercular groove with an open pore behind eye ; head scaled above behind the eyes, rest of head naked ; base of pectoral with two rows of large scales ; first and second dorsal fins and anal fin lower than body, pointed posteriorly ; pectoral obtuse, longer than head without snout ; ventral rounded, a little shorter than pectoral ; caudal a little shorter than head.

**Colour** : Four dusky blotches on sides of body ; dusky blotch between the upper base of pectoral fin and opercle ; dusky blotch at the upper base of caudal fin.

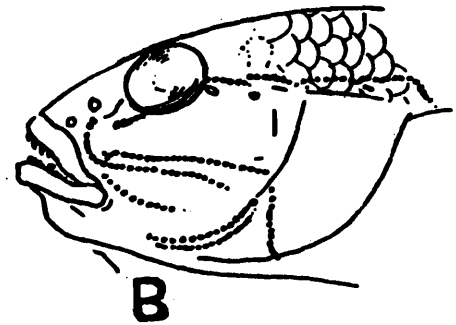
**Affinities** : These specimens have certain characters which are intermediate between that of *Acentrogobius cyanomos* (Bleeker) and *A. caninus* (C. & V.). The body colour resembles that of *A. caninus* (C. & V.) especially in the presence of a blotch at the caudal base but it deviates from it in the absence of scales on the upper part of the opercle.

**Distribution** : India, Thailand, Indo-Australian Archipelago.

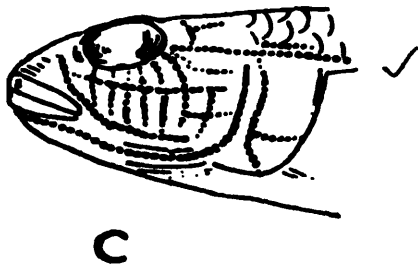
*Acentrogobius cyanomos* (Blkr.)



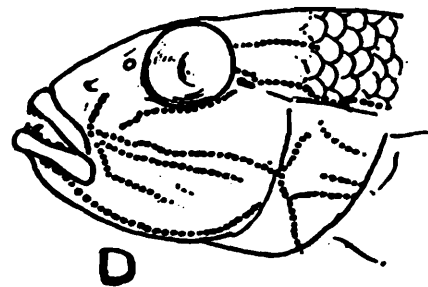
*A. ennorensis* Menon & Rema Devi



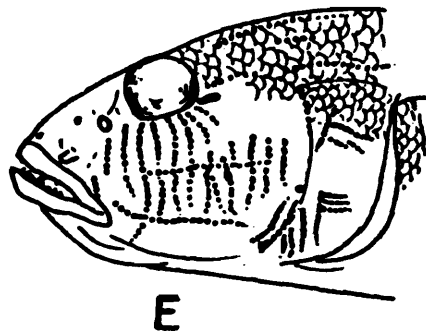
*A. globiceps* (Hora)



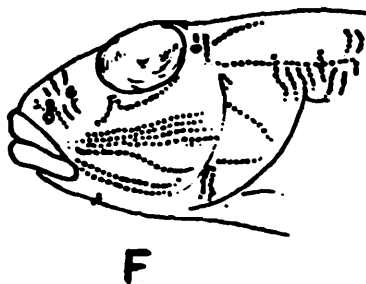
*A. madraspatensis* (Day)



*A. viridipunctatus* (C. & V.)



*Yongeichthys criniger* (C. & V.)



*Favonigobius reichei* (Blkr.)

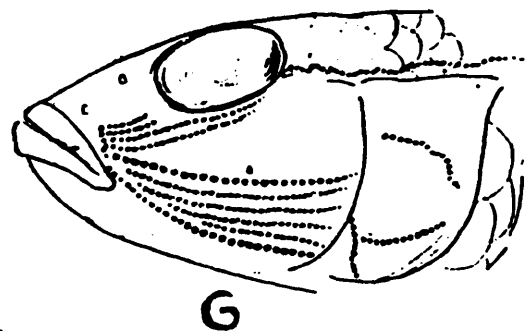


FIG-1

**2. *Acentrogobius ennorensis* Menon and Rema Devi  
(Plate I, Figure 2)**

1980. *Acentrogobius ennorensis* Menon and Rema Devi, *Matsys*, 6 : 57 (Type locality : Ennore estuary)

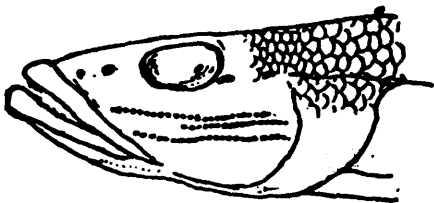
*Material* : Eight specimens including the holotype 39.0 mm. to 58.0 mm., 30th May 1978, Reg. No. F.555.

series being larger, in lower jaw outer row extends to half way, 2 canines on either side ; tongue rounded ; in first dorsal fin, 2nd, 3rd and 4th spines elongate, 3rd longest. Pectoral slightly longer than pelvic ; pelvic fin does not reach vent ; large ctenoid scales becoming smaller and cycloid on nape, cycloid on pectoral base and pre-pelvic ; pectoral base with 3 to 4 rows of scales ; cheek and opercle naked ; head scaled above from a little behind eyes.

*Description* : D.1.VI ; D.2.1/9 ; L.1.28 ; L.tr. 10-11 ; predorsal scales 8-11.

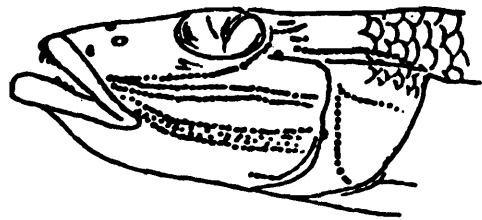
Body depth 4.18 (3.72-4.69), head 3.7 (3.46-3.9) ; pectoral 3.91 (3.59-4.50) and pelvic 4.49 (4.30-4.9) in S.L. ; eye 3.73 (3.50-4.0) in head, snout 1.11 (1.00-1.66), interorbital 2.71 (2.28-3.20) in eye ; head and body compressed ; a row of papillae

*Glossogobius biocellatus* (C. & V.)



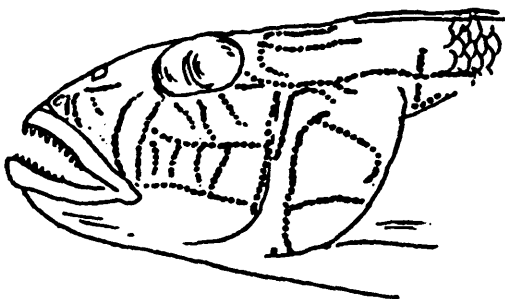
A

*Glossogobius giuris* (Hamilton)



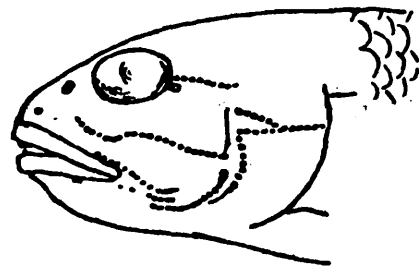
B

*Oxyurichthys microlepis* (Blkr.)



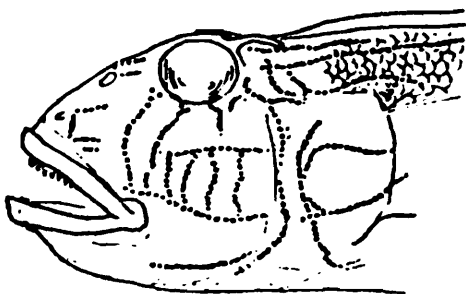
C

*Oligolepis acutipennis* (C. & V.)



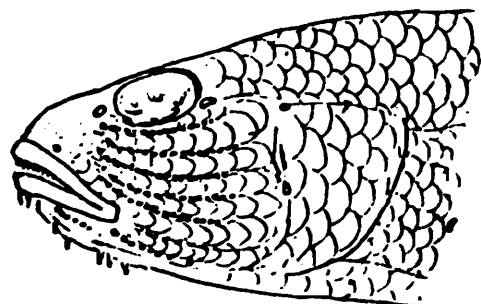
D

*Oxyurichthys tentacularis* (C. & V.)



E

*Parachaeturichthys polynema* (Blkr.)



F



below eye and two rows across middle of cheek (Fig. 1.B.) ; front nostril a short tube above and near the lip, hinder a pore before eye ; interorbital medially with an open pore ; another small pore is present behind this, an open pore behind eye at the beginning of the supra opercular groove, another pore a little behind this and one in the posterior margin of preopercle ; gill opening extends upto pectoral base ; mouth moderate ; maxilla extends to front of eye ; teeth in bands, outer series being larger, in lower jaw outer row extends to half way, 2 canines on either side ; tongue rounder ; in first dorsal fin, 2nd, 3rd and 4th spines elongate, 3rd longest. Pectoral slightly longer than pelvic ; pelvic fin does not reach vent ; large ctenoid scales becoming smaller and cycloid on nape, cycloid on pectoral base and pre-pelvic ; pectoral base with 3 to 4 rows of scales ; cheek and opercle naked ; head scaled above from a little behind eyes.

**Colouration** : 5 large blackish spots on the sides of body and irregular, ill-defined dots on the upper part of the body, lower half of the body without any blotches or dots ; first dorsal with a dark band towards the base of the fin becoming broader posteriorly ; second dorsal fin and caudal with 2 to 3 rows of dots ; pelvics black ; oblique bar on opercle, cheek and below eye ; the bars on opercle and below eye being prominent.

**Distribution** : Ennore estuary, Madras, Tamil Nadu, India.

**Affinities** : *A. ennorensis* has affinities with *A. audax* found in East Africa. It can however, be easily distinguished by its smaller pectoral and pelvic fins ; in *A. audax* pelvic extend to vent while in *A. ennorensis* it does not extend to vent. Also in *A. Audax* the gill opening extends forward almost below the pre-opercular margin whereas in *A. ennorensis* it extends only upto the pectoral base.

### 3. *Acentrogobius globiceps* (Hora) (Plate I, Figure 3)

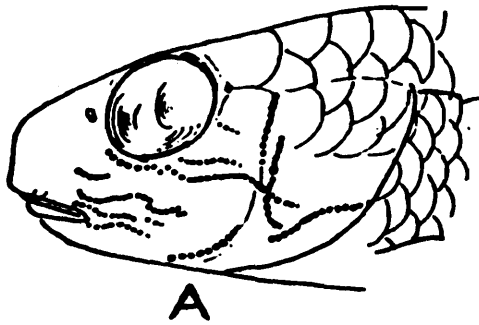
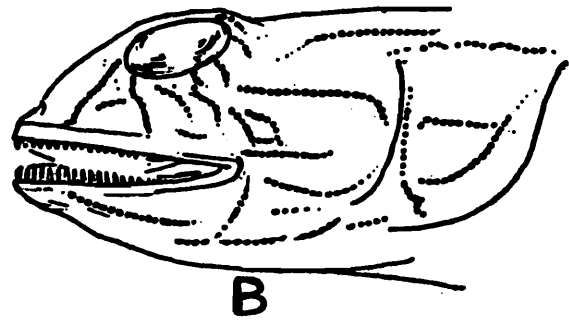
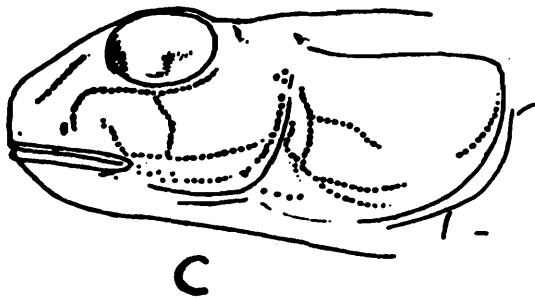
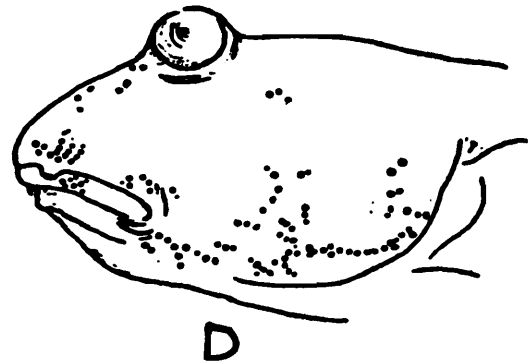
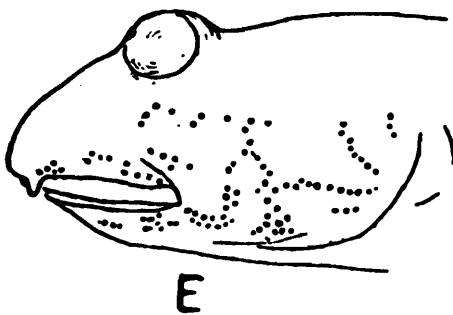
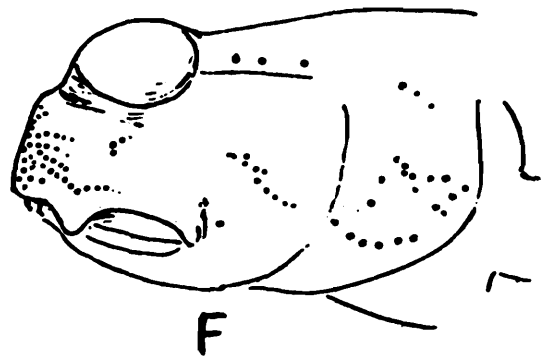
1923. *Stenogobius globiceps* Hora, *Mem. Ind. Mus.* V, P. 744, pp. 24, 25.

1941. *Acentrogobius globiceps*, Koumans, *The Fishes of the Indo-Australian Archipelago*, X, pp. 7576.

**Material** : 19 exs., 21.0 mm.-26.0 mm., 27th October 1977 ; 5 exs., 23.0 mm.-25.0 mm., 30th November 1977 ; 61 exs., 20.0 mm.-28.0 mm., 8th December 1977 and 3 exs., 24.0 mm.-28.0 mm., 26th April 1978.

**Description** : D.1.VI ; D.2.1/10 ; A.1/9 ; P. 16-17 ; L.1.26-27 ; L.tr. 6 ; Predorsal scales 7-8.

A small-sized species, body a little compressed, height 4.90 (4.74-5.31) in S.L., 6.64 (6.31-7.19) in T.L. ; head cylindrical, 3.48 (3.31-3.68) in S.L., 4.72 (4.42-4.88) in T.L. ; eye 3.34 (3.0-3.72) in head ; interorbital 4.82 (3.54-5.86) in eye diameter ; snout short, rounded, less than eye diameter, 0.81 (0.72-0.93) in eye diameter, tip before lower margin of eye ; maxillary extends to anterior one fourth of the pupil ; teeth in several rows, outer enlarged, distant ; in lower jaw outer row extends to halfway of the jaw ; tongue emarginate ; two longitudinal rows of mucous canals on cheek, the lower extending from before eye to opercle, traversed by about 7 vertical rows (Fig. 1.c.) ; three short mucous canals extend from eye behind, a long canal extends from tip of mandible to the upper part of the opercle, another canal runs parallel to this on the opercle ; sensory pores paired in interorbital and a row of three pores in the supraopercular groove and three along the posterior margin of opercle ; first dorsal fin lower than body, second along the

*Stigmatogobius javanicus* (Blkr.)*Parapocryptes rictuosus* (C. & V.)*Pseudopocryptes lanceolatus* (Bl. & Sch.)*Boleophthalmus boddarti* (Pallas)*Boleophthalmus sculptus* Günther*Periophthalmus variabilis* Eggert**FIG-3**

ray the longest, second dorsal and anal fins posteriorly higher than body ; caudal fin pointed 1.24 (1.10-1.43) in head length ; scales on body large, ctenoid in the posterior half, predorsal scaled to tip, a small portion behind eye scaleless, pelvic base scaled upto and between the branchiostegals.

**Colouration** : Body on sides with four vertical bands; three below the second dorsal and the fourth at the base of the caudal, body with spots above the lateral line, a streak from eye to the snout and another streak behind eye, second dorsal with a white band in the upper half which is found to continue obliquely from the upper half of caudal down to its tip, pelvic dark in some, anal edge darkened sometimes a white edge below the dark band.

**Distribution** : From the east coast of India to Java, Indonesia ; Singapore and Borneo.

4. *Acentrogobius madraspatensis* (Day)

(Plate I, Figure 4)

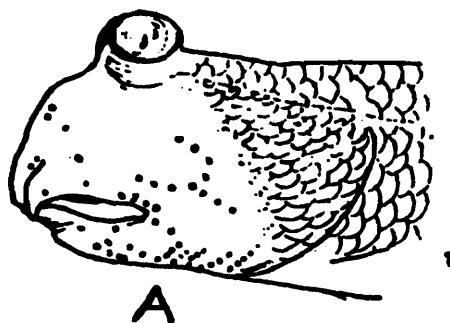
1888. *Gobius madraspatensis* Day, *proc. Zool. Soc. London*, p. 152.

1941 *acentrogobius madraspatensis*, Koumans, *Mem. Indian Mus.* XIII, p. 229.

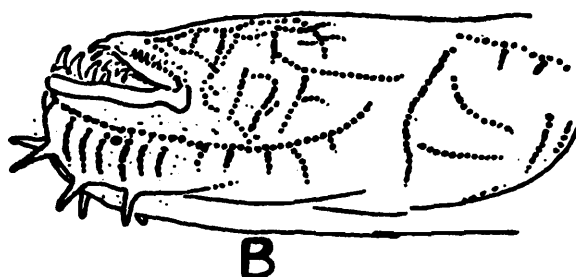
**Material** : 6 exs., 38.0 mm.—50.0 mm., 23rd December 1976.

**Description** : D.1.VI ; D.2.1/9 ; A. 1/9 ; P. 16-17 ; L.I. 27-28 ; L. tr. 7-8 ; Predorsal scales 10-11. Body elongate, compressed, height 3.85 (3.57-4.0) in S.L., 5.16 (4.7-5.43) in T.L. ; head compressed, profile convex, 3.48 (3.43-3.50) in S.L., 4.67 (4.6-4.75) in T.L. ; 363 4.0 (3.92-4.08) in head ; interorbital 1.88 (1.50-2.0) in eye diameter ; snout obtuse, as long as eye, tip before lower margin of eye, 3.56 (3.43-

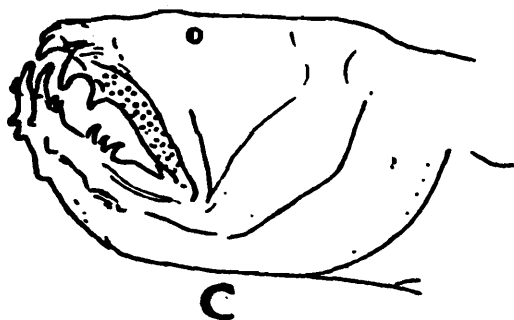
*Periophthalmus chrysospilus* (Blkr.)



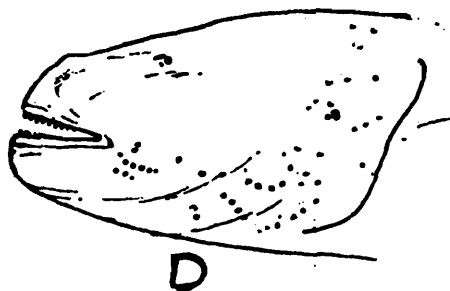
*Taenioides anguillaris* (Linn.)



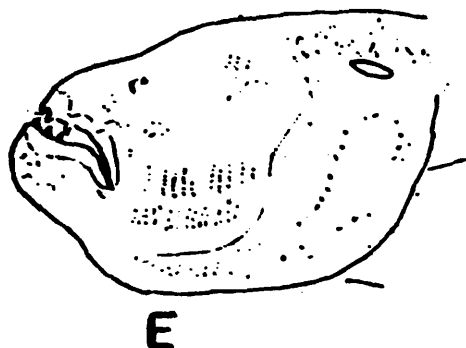
*Taenioides buchannani* (Day)



*Brachyamblyopus urolepis* (Blkr.)



*Trypauchen vagina* (Bl. & Sch.)



*Ctenotrypauchen microcephalus* (Blkr.)

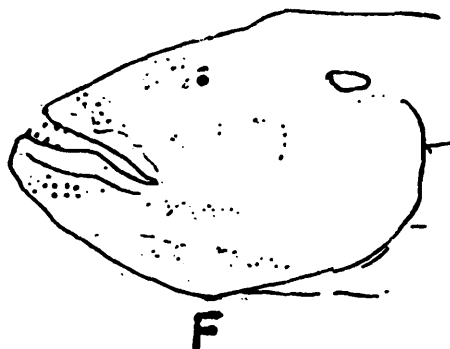


FIG - 4

3.69) in head length ; anterior nostril in a short tube ; mouth oblique, lower jaw prominent ; maxillary extends to below anterior margin of eye ; teeth in several rows, in upper jaw outer row enlarged ; in lower jaw outer row extends to half way the jaw, last tooth a recurved canine ; tongue rounded ; two longitudinal mucous canals over cheek (Fig. 1.D.), another row below eye and on the supraopercular groove ; scales of body ectenoid, of nape and breast cycloid ; head scaled above from behind the eyes ; cheek and opercle naked ; first dorsal fin a little lower than body, middle rays are the longest ; predorsal distance twice in post-dorsal distance ; height of caudal peduncle 1.25 in length of caudal peduncle ; pectoral slightly lower than ventral and longer than head without snout.

*Colouration* : Body with irregular, ill defined brownish blotches which extend as bands on either side ; about 6 dark and 3 faint black lines from side to abdomen extending from base of ventral and middle of anal in the females, this colouration is absent in the males. On the other hand ventrals are tipped with black in the males which in the females are of a uniform brown shade ; first dorsal with a dark broad band in middle of the fin, base and tip colourless, another band is seen above this ; second dorsal in males with a dark blotch extending between 2nd and 3rd rays at the base ; D.2 and caudal minutely dotted in rows.

*Distribution* : Madras, Ennore backwaters.

#### 5. *Acentrogobius viridipunctatus* (Cuv. & Val.) (Plate I, Figure 5)

1837. *Gobius viridipunctatus* Cuvier & Valenciennes, *Hist. Nat. Poiss.* XII, p. 62.

1953. *Acentrogobius viridipunctatus*, Koumans, *The Fishes of the Indo-Australian Archipelago*, X, p. 56.

*Material* : 3 exs., 81.0 mm., - 99.0 mm. S.L., 12th March 1976 and 1 ex., 80.0 mm. S.L., 30th November 1977.

*Description* : D.VI; D. .1/10; A. 1/9; P. 18-20; C. 13-15; L.I. 34-40; L. tr. 11; Predorsal scales 33-46.

Body elongate, posteriorly compressed, height 4.36 (4.17 - 4.76) in S.L., 5.82 (5.42-6.35) in T.L. ; head a little compressed, 3.30 (3.24-3.41) in S.L., 4.41 (4.4-4.65) in T.L. ; eye 5.39 (4.9 - 5.9) in head ; interorbital 1.18 (1.1 - 1.33) in eye ; snout 3.45 (3.26 - 3.62) in head length, longer than eye, tip before or below lower margin of eye ; nostrils tubular ; mouth oblique ; lower jaw prominent ; maxillary extends to anterior border of eye ; teeth in many rows, outer row enlarged, in lower jaw on each side 3 canines ; mucous canal (Fig. 1.E) from nostril to edge of mouth, longitudinal canal over cheek, crossed by transversal ones radiating under eye and many vertical short canals ; an open pore medially in interorbital ; open pores in supraopercular groove ; head scaled above behind eye and on upper part of preopercle and opercle with cycloid scales ; scales of nape, breast and belly cycloid, other scales ctenoid ; first dorsal fin much lower than body, middle rays are the longest ; second dorsal fin and anal fin pointed posteriorly, a little higher than first dorsal ; in male, rays of the second dorsal fins and anal fin reach the caudal ; ventral slightly shorter than pectoral ; caudal shorter than head in female.

*Colouration* : Body laterally spotted with dark spots in females from behind pectoral to caudal peduncle, a longitudinal row of large dark spots in both

sexes ; scales with shiny spots ; base of first and second dorsal with blackish longitudinal stripes ; second dorsal with another longitudinal stripe ; base of anal blackish ; caudal with spots ; ventral darker in males.

*Distribution* : Zanzibar ; India, Andamans ; Philippines ; China ; Indo-Australian Archipelago.

### 6. *Favonigobius reichei* (Bleeker) (Plate I, Figure 6)

1853. *Gobius reichei* Bleeker, *Nat. tijds. Ind.* v. p. 509.

1953. *Acentrogobius reichei*, Koumans, *The Fishes of the Indo-Australian Archipelago*, X, p. 77.

1979. *Favonigobius reichei*, Hoese & Winterbottom, *Life Sciences Occasional papers*, 31, p. 13.

*Material* : 20 exs. 16.0 mm. - 55.0 mm. S.L. 20th December 1975.

*Description* : D.1.VI ; D.2.1/8 ; A.1/8 ; P. 16 ; L.1.27-29 ; L.tr. 7-8 ; Predorsal scales 12.

Body elongate, somewhat compressed, height 5.07 (4.71 - 5.63) in S.L., 6.49 (6.1 - 7.0) in T.L. ; head a little depressed, 3.49(3.3 - 3.77) in S.L., 4.61(4.3 - 5.0) in T.L. ; profile a little convex ; eye 4.12 (3.6 - 4.83) in head ; interorbital 2.07 (1.5 - 2.75) in eye diameter ; snout obtuse, 3.53 (3.25 - 4.0) in head, tip before middle of eye, anterior nostril in a rim ; mouth oblique, lower jaw prominent, maxillary extends to below anterior part of eye ; teeth in several rows, outer row enlarged, in lower jaw on each side a canine, below eye an oblique narrow band of mucous canals running to maxillary (Fig. 1.G.), a broad band bordered by two stronger developed canals runs longitudinally over cheek, 3 rows of longitudinal mucous canals on the opercle and a vertical row along margin of pre-opercle, an open pore on each side medially of nostrills, a pore behind eye, a large one close behind eye at the beginning of supraopercular groove ; head scaled from a little behind the eyes ; cheek and opercle naked ; in first dorsal fin, second and third rays are the longest ; second dorsal fin and anal fin lower than first dorsal, pointed posteriorly ; caudal rounded, shorter than head.

*Colouration* : Cheek and opercle with dark streaks, a stripe from eye over lips to chin which meet the stripe of the other side ; laterally on back many small spots, in middle of sides 5 larger spots in a longitudinal line ; in D.1. the second ray is prolonged ; in males it extends beyond the base of the second dorsal ; base of D. 1. with a row of bright big spots ; D.2 with 4 or more rows of spots ; anal tip dark ; pelvic with minute spots ; caudal spotted.

*Distribution* : S.E. Africa ; India ; Andamans ; Philippines ; Indo-Australian Archipelago.

### Genus *Yongeichthys* Whitley

1932. *Yongeithus* Whitley, *Rep. Brit. Mus.* (N.H.) No. 9 : p. 302.

### 7. *Yongeichthys criniger* (Cuvier & Valenciennes) (Plate II, Figure 1)

1775. *Gobius nebulosus* Forskal, *Decr. Anim.* p. 24.

1837. *Gobius Criniger* Cuvier and Valenciennes, *Hist. Nat. Poiss.* XII, p. 82.

1953. *Ctenogobius criniger*, Koumans, *The Fishes of the Indo-Australian Archipelago*, X, p. 178.

1979. *Yongeichthys criniger*, Hoese and Winterbottom, *Life Sciences Occasional Papers*, 31, p. 1-13.

**Material** : 26 exs., 26.0 mm. - 86.0 mm. 22nd August 1978 ; 5 exs., 55.0 - 78.0 mm, S.L., 9th October 1978.

**Description** : D.1.VI ; D.2.1/9 ; A.1/9 ; P.19 · L.1.30 ; L.tr. 11 ; C. 13.

Body elongate, compressed 4.0-4.5 in S.L., 5.25 - 5.5 in T.L. ; head compressed, 3.33 in S.L. ; 4.25 in T.L. ; eye 3.5 in head ; interorbital half eye diameter, anterior nostril in a short tube ; snout obtuse, equal to eye, tip before lower margin of eye ; mouth oblique ; maxillary extends to before pupil ; teeth in lower jaw on each side a curved canine, mucous canals in 4 to 5 longitudinal rows over cheek, (Fig. 1.F.), one row below eye and two more rows bordering the lower half of cheek ; in terorbital medially in front and behind with an open pore ; scales on nape cycloid, scales of back, sides and belly ctenoid ; dorsal fins close together ; in first dorsal, 2nd ray is the longest, filiform, second dorsal fin lower than body, pointed posteriorly ; anal fin much ; eower and shorter than second dorsal ; pectoral shorter than head.

**Colouration** : Head and dorsal part of body and sides with irregular blackish spots ; no spots on the ventral side, three large blackish spots, 1st below first dorsal, 2nd below second dorsal, 3rd at middle of base of caudal ; first dorsal with 3 rows of spots, the 2nd ray much filiform in males ; second dorsal with 4 rows of spots ; dorsal portion of caudal fin with 4 to 5 rows of spots ; caudal, dorsal and anal with blackish border.

**Distribution** : Red Sea, Mozambique to the Pacific.

### Genus *Glossogobius* Gill

1862. *Glossogobius* Gill. *Ann. Lyn. Nat. Hist. New York* VII, p. 46.

#### 8. *Glossogobius biocellatus* (Cuvier & Valenciennes) (Plate II, Figure 2)

1837. *Gobius biocellatus*, Cuvier & Valenciennes, *Hist. Nat. Poiss.* XII, P. 73.

1953. *Glossogobius biocellatus*, Koumans, *The Fishes of the Indo-Australian Archipelago.* X, p. 163.

**Material** : Total 32 exs., 27.0 - 104.0 mm. S.L.) 3 exs., 49.0 mm. - 71.0 mm., 17th November 1975 ; 1 ex., 32.5 mm. 11th December 1975 ; 4 exs., 60.0 mm. - 73.0 mm. 23rd January 1976, 5 exs., 47.0 mm. - 72.0 mm., 4th February 1976 ; 1 ex., 71.0 mm., 12th March 1976 ; 9 exs., 27.0 mm. - 74.0 mm., 25th March 1976 ; 2 exs., 55.0 mm. - 61.0 mm., 27th April 1976 ; 1 ex., 68.0 mm., 4th August 1976 ; 1 ex., 78.0 mm, 30th October, 1976 ; 1 ex., 59.0 mm., 22nd January 1977 ; 1 ex., 64.0 mm., 25th February 1977 ; 2 exs., 74.0 mm. and 79.0 mm., 28th April 1977 and 1 ex., 104.0 mm., 29th October 1977.

**Description** : D.1.VI ; D.2.1/9 ; A.1/8 ; P. 17-19 ; L.1.27-30 ; L.tr. 8-9 ; predorsal scales 14-17 ; C. 13.

Body elongate, posteriorly compressed ; head pointed, depressed ; height 6.19 (5.33 - 7.0) in S.L., 7.53 (6.33-8.7) in T.L., head 3.10 (3.0 - 3.5) in S.L., 3.77 (3.63 - 4.25) in T.L., frontal line straight, on snout a little convex ; eye 5.86 (4.0 - 6.33) in head, 0.57 (0.42 - 0.75) in interorbital width ; a circular process from upper part of iris into pupil of eye ; a crest from temporal region is distinct in interorbital ; snout pointed, longer than eye, 3.23 (2.92 - 3.55) in head length, tip before middle of eye ; lower jaw

prominent ; maxilla extends to below posterior margin of eye ; teeth in many rows, in maxilla, some rows caninoid ; in lower jaw outer and inner row can be flattened inwards ; about 3 longitudinal mucous canals on cheek, (Fig. 2.A) ; one pore in the interorbital, supra opercular groove begins with an open pore behind eye ; head scaled above behind eye and on upper part of opercle ; opercle free from isthmus ; first dorsal fin pointed, 2nd, 3rd and 4th rays are the longest ; second dorsal fin about as high as high as body ; pectoral rounded, about as long as head without snout ; ventral as long as pectoral ; anal equal to second dorsal ; caudal rounded, shorter than head.

**Colouration** : Dark with blackish spots on upper part, on body 5-6 larger blotches in a longitudinal row on upper part ; first dorsal with 2 large blotches ; second dorsal, pectoral and caudal fins with rows of spots.

**Distribution** : India, Andamans ; Philippines ; Indo-Australian Archipelago. Samoa.

### 9. *Glossogobius giuris* (Hamilton)

(Plate II, Figure 3)

**Material** : 5 exs., 35.0 mm.-51.0 mm. S.L.; 23.8.1975.

1822. *Gobius gutum*, Hamilton, *Fish. Ganges*. p. 50, 366.

1822. *Gobius giuris* Hamilton, *op.cit.* p. 51, 366.

1953. *Glossogobius giuris*, Koumans, *The Fishes of the Indo-Australian Archipelago*. X, p. 165.

**Material** : (39 exs., 39.0 mm. - 136.0 mm. S.L.) 1 ex., 136.0 mm., 20th December 1975 ; 3 exs., 39.0 mm. - 77.0 mm., 23rd January 1976 ; 1 ex., 78.0 mm., 4th February 1976 ; 15 exs., 56.0 mm. - 115.0 mm., 12th March 1976 ; 1 ex., 81.0 mm., 25th May 1976 ; 1 ex., 81.0 mm., 28th May 1976 ; 2 exs., 68.0 mm. - 80.0 mm., 3rd November 1976 ; 1 ex., 77.0 mm., 20th November 1976 ; 3 exs., 95.0 mm. - 105.0 mm., 22nd January 1977 ; 1 ex., 53.0 mm., 31st March 1977 ; 2 exs., 66.0 mm. and 84.0 mm., 25th May 1977 ; 1 ex., 61.0 mm., 8th June 1977 ; 1 ex., 78.0 mm., 25th June 1977 ; 1 ex., 58.0 mm., 6th July 1977 ; 1 ex., 53.0 mm., 6th August 1977 ; 3 exs., 71.0 mm. - 84.0 mm., 18th August 1977 and 1 ex., 70.0 mm., 8th December 1977.

**Description** : D.1.VI ; D.2.1/9 ; A.1/8 ; P.18-20 ; C. 13-14 ; L.1. 31-35 ; L.tr. 11-13 ; predorsal scales 16-20.

Body elongate, anteriorly cylindrical, posteriorly compressed, height 6.06 (5.25 - 7.8) in S.L., 7.63 (6.28 - 8.58) in T.L., head pointed 2.96(2.71 - 3.19) in S.L., 3.73 (3.5 - 3.94) in T.L. ; eye 5.79 (4.16 - 7.2) in head, 0.67 (0.50 - 0.91) in interorbital ; snout pointed, convex, slightly longer than eye, 3.23 (2.85-3.66) in head length, tip of snout before lower part of eye ; lower jaw prominent ; maxillary extends to below anterior border of eye ; lips thick ; teeth of outer and inner row enlarged, in front caninoid ; tongue bilobate ; about 3-5 longitudinal mucous canals over cheek, (Figure 2.B), a broad band bordered by stronger developed canals on cheek and along the suproopercular groove, and on opercle a vertical and a horizontal row ; head scaled above behind the eyes and on upper part of opercle ; opercle attached to isthmus ; dorsal fins close together ; first dorsal fin lower than body, 2nd, 3rd and 4th rays are the longest ; second dorsal and anal fins pointed posteriorly ; pectoral as long as or longer than head without snout ; ventral obtuse, a little shorter than pectoral ; caudal shorter than head.

**Colouration** : Head laterally with irregular dark to violet spots ; laterally on body two alternating longitudinal rows, each of 4-6 dark blotches ; the rays of dorsal, caudal and pectoral fins spotted with 3-4 rows of spots ; anal fins with dark margin.

**Distribution** : From the East Coast of Africa to Australia ; Philippines ; China ; Japan ; New Caledonia.

**Genus *Oxyurichthys* Bleeker**  
**Sp. Typ. *Oxyurichthys belosso* Blkr.**

1860, *Oxyurichthys* Bleeker, *Act. Soc. Sci. Indo. Neerl.* VIII, p. 44

**10. *Oxyurichthys microlepis* (Bleeker)**  
**(Plate II, Figure 4)**

1849. *Gobius microlepis* Bleeker, *Verh. Bat. Gen.*, 22, p.35.

1857. *Oxyurichthys microlepis*. Bleeker, *Nat. tijdsche. Ned. India.*, 7, p. 436.

1953. *Oxyurichthys microlepis*. Koumans, *Fishes of the Indo-Australian Archipelago*, X, p. 42-44, fig. 9.

**Material** : (73 exs., 35.0 mm. - 84.0 mm. S.L.) 34 exs., 62.0 mm. - 75.0 mm., 25th June 1977 ; 15 exs., 60.0 mm. - 84.0 mm., 4th August 1976 ; 11 exs., 35.0 mm. - 83.0 mm., 23rd January 1976 and 13 exs., 42.0 mm. - 80.0 mm., 4th February 1976.

**Description** : D.1.VI ; D.2.1/12-13 ; A.1/13 ; P. 21-22 ; C. 15-16 ; L.I. 48-52 L.tr. 14-16 ; predorsal scales 13-20.

Body elongate, compressed, height 5.41 (4.60 - 6.56) mm. S.L., 7.92 (7.03-9.37) in T.L., head compressed 4.01 (3.5-4.44) in S.L., 5.83 (5.24-6.43) in T.L. ; eye 4.43 (3.83 - 5.29) in head, 0.58 (0.44 - 0.78) in interorbital ; no ocular tentacle ; snout convex, longer than eye ; eye 1.52 (1.07 - 2.33) in snout ; snout 2.97 (2.14 - 3.63) in head length, tip before lower margin of eye ; mouth a little oblique ; maxilla 2.07 (1.76 - 3.0) in head length, extends to below posterior half of eye ; teeth in upper jaw curved, on each side 16-20 ; in lower jaw 2-3 rows, inner row anteriorly enlarged ; tongue rounded ; longitudinal mucous canals over cheek, traversed by 3-4 vertical rows (Fig. 2.C.), 2-3 oblique rows below eye, two vertical canals from below eye to posterior end of maxilla, three horizontal rows from behind eye on either side of the dermal crest and along the suproopercular groove, 2 horizontal and two vertical rows on opercle ; head scaled above behind eye, median line of head and nape naked ; nape in median line with a low dermal crest ; scales of head and anterior part of body cycloid, on posterior part of body very weakly ctenoid ; first dorsal fin lower or higher than body, 1.05 (0.71 - 1.75) in body depth ; second dorsal fin 1.0 (0.80 - 1.37) in body depth, pointed posteriorly ; pectoral fin longer than head 0.98 (0.81 - 1.22) in head length, 0.29 (3.26 - 4.71) in S.L. ; pelvic fin 1.08 (0.88 - 1.3) in head length, 4.35 (3.88 - 5.33) in S.L. ; predorsal distance 2.17 (1.88 - 2.41) in postdorsal distance ; caudal lanceolate, height of caudal peduncle 0.84 (0.63 - 1.36) in its length.

**Colouration** : On back and sides large blotches ; each scale of back and sides above with a black spot ; below eye and on scapula spots at the upper margin ; first dorsal fin with three to four black bars only on the upper half and the lowermost row ends in a dark ocellus ; second dorsal fin with several rows of spots upto the base ; caudal with numerous black spots on the upper half ; a black triangular spot in iris at the upper part.



*Distribution* : India through the Malay Archipelago to Thailand ; China ; Japan and Philippines.

**11. *Oxyurichthys tentacularis* (Cuv. & Val.)**  
(Plate II, Figure 5)

1837. *Gobius tentacularis* Cuvier & Valenciennes, *Hist. Nat. Poissons* 12, p. 128.

1856-1857. *Gobius ophthalmonema* Bleeker, *Nat. Tijdschr. Ned. India*, 12, p. 208.

1953. *Oxyurichthys tentacularis*. Koumans, *The Fishes of the Indo-Australian Archipelago*, X *Gobioidae*, p. 44-46, fig. 11.

*Material* : (70 exs., 56.0 mm. - 99.0 mm. S.L.) 1 ex., 91.0 mm. S.L., 21.5.1975 ; 1 ex., 94.0 mm., 18.10.1975 ; 3 exs., 85.0 mm. - 96.0 mm., 8.6.1976 ; 20 exs., 58.0 mm. - 99.0 mm., 20.11.1976 ; 7 exs., 81.0 mm. - 90.0 mm., 5.2.1977 ; 6 exs., 56.0 mm. - 88.0 mm., 31.3.1977 ; 26 exs., 57.0 mm. - 87.0 mm., 25.6.1977 ; and 6 exs., 58.0 mm. - 81.0 mm., 11.8.1978.

*Description* : D.1.VI ; D.2.1/12-13 ; A.1/13-14 ; P. 22-23 ; C. 14-15 ; L.I. 50-56 ; L.tr. 14-16 ; Predorsal scales 14-24.

Body very elongate, compressed, height 5.14 (4.62 - 5.81) in S.L., 7.66 (6.66 - 8.58) in T.L. ; head obtuse, compressed, profile convex, 3.77 (3.59 - 4.04) in S.L., 5.59 (5.13 - 5.96) in T.L., slightly less broad than high ; eye nearer snout, 4.66 (4.0 - 5.33) in head length, 0.54 (0.35 - 0.75) in interorbital ; tentacle on upper margin of eye, 1.91 (1.29 - 2.53) in eye diameter ; snout obtuse, longer than eye, 2.99 (2.27 - 3.75) in head length, tip before lower margin of eye ; anterior nostril in a short tube ; mouth oblique, lower jaw prominent ; maxillary extends to below middle or posterior part of eye, 1.97 (1.82 - 2.29) in head length ; on each side 20-24 curved teeth in upper jaw ; in lower jaw 2-3 rows, inner enlarged ; two longitudinal mucous canals over cheek and one along its lower edge ; an open pore on each side anteriorly in interorbital space, an open pore behind eye at the beginning of the supraopercular groove ; longitudinal sensory papillae over cheek traversed by 4-5 vertical rows, two of which extend from the lower border of eye to the posterior end of maxilla ; (Fig. 2.E.) about 4 oblique short rows from below eye behind this ; three longitudinal rows from behind eye on either side of the dermal crest and along the supraopercular groove ; two horizontal and two long vertical rows on opercle ; head scaled above behind eye, median line of head and nape naked ; on nape a low dermal crest to insertion of first dorsal ; scales on head and posterior part of body cycloid ; posteriorly ctenoid ; pectoral base and opercle naked ; pelvic base scaled with weak scales ; first dorsal fin higher or lower than body, 1.08 (0.88 - 1.42) in body depth ; second dorsal fin 1.14 (0.87 - 1.48) in body depth, posteriorly pointed ; pectoral fin 0.89 (0.81 - 1.05) in head length ; 3.37 (3.03 - 4.22) in S.L. ; pelvic fin 1.07 (0.94 - 1.24) in head length, 4.04 (3.46 - 4.9) in S.L., basal membrane fringed ; predorsal 1.97 (1.85 - 2.21) in postdorsal distance ; 2.97 (2.77 - 3.25) in S.L. ; height of caudal peduncle 0.73 (0.50 - 0.98) in length of caudal peduncle ; caudal lanceolate, longer than head.

*Colouration* : Each scale on back and sides above with a spot at the margin ; below eye an oblong dark spot ; body with blotches on sides which appear as alternating rows of thin and broad bands ; first dorsal fin spotted with three longitudinal rows of spots ; second dorsal fin with 5-6 alternating longitudinal rows of spots ; pectoral fin spotted in rows more on the lower half ; anal fin dark,

base of anal fin with a row of spots and with streaks along the border ; caudal with oblique streaks above.

**Distribution :** India ; Indo-Australian Archipelago ; Philippines ; Hongkong  
Polynesia ; North Australia.

**Affinities :** The study of *O. tentacularis* (C. & V.) from Ennore estuary reveals its close affinity to the Philippine counterpart i.e. *O. ophthalmonema* (Blkr.) ; the upper and the lower rims of the upper lip are almost parallel ; the premaxillary is like those of *O. ophthalmonema* (Blkr.) ; the head is long being 5.59 (5.13 – 5.96) in T.L. ; in typical *O. tentacularis* (C. & V.) it is 6 times and in typical *O. ophthalmonema* it is 5 1/2 ; the ocular tentacle is half to 1/3 eye diameter. Prince Akihito (1972) distinguishes *O. ophthalmonema* (Blkr.) from *O. tentacularis* on the basis of the shape of the upper lip, the height of the dorsal spine, head length and in the structure of the premaxillary. The height of first dorsal fin is found to be longer in *O. ophthalmonema* (3.9 – 5.3) and shorter in *O. tentacularis* which is 7.1 – 9.7 in S.L. The number of pectoral fin rays were also observed to be fewer in *O. tentacularis* being 20 – 21 whereas 22 rays are invariably observed in *O. ophthalmonema*. In the Ennore specimens also the number of rays are either 22 or 23. The lateral line scales are never more than 56 ranging between 50-56. Günther (1861) observed 55 scales in *O. ophthalmonema* and 60 – 70 in *O. tentacularis*. The present study also reveals another difference in squamation. In *O. tentacularis*, figured in Koumans, 1953 (after M. Weber) the pectoral base is scaled. In Günther (1861) the head and pectoral base of *O. ophthalmonema* is observed to be naked. In the Ennore specimens with resemble *O. ophthalmonema*, the pectoral base is scaleless.

However, Koumans (1953) studying the species from several localities obviously felt the need to place the different geographical variants under *O. tentacularis*. Since *O. tentacularis* has priority over *O. ophthalmonema* the first name is retained. In Koumans (1953) the proportion of head to T.L. is given as 6.7, the lateral line between 52-65 and the number of pectoral rays 19-22. A study of the Indian specimens and the other synonyms necessitates the need to extend the range of head to T.L. from 5.1-7, the height of ocular tentacle 1/3 to as long as eye diameter, the lateral line scales 50-65 and the number of pectoral rays 19-23.

### Genus *Oligolepis* Bleeker

1874. *Oligolepis* Bleeker, *Arch. Neerl. sc. ex. nat.* 9, p. 318.

#### 12. *Oligolepis acutipennis* (Cuvier and Valenciennes)

(Plate II, Figure 6)

1837. *Gobius acutipennis* Cuvier and Valenciennes, *Hist. Poissons*, 12, p. 80.

1878. *Gobius acutipennis*, Day, *Fishes India*, P. 291, pl. 61, Fig. 1.

1916. *Gobius (Acentrogobius) acutipennis*, Sundara Raj, *Rec. Indian Mus.*, 12, pl. 6, p. 287.

1953. *Oligolepis acutipennis*, Koumans, *Fish. Indo-Aust. Arch.* 10, p. 92, Fig. 18.

1967. *Oxyurichthys jaarmanü* Talwar, *J. Bombay Nat. Hist. Soc.*, 65(3), p. 794.

1976. *Oxyurichthys nijsseni* Menon and Govindan, *Marsys*, 2, p. 13, Fig. 1.

1985. *Oxyurichthys formosanus*, Talwar, *proc. Workshop on Estuarine Biology, Berhampur (Orissa)* 18-22 Feb., Paper No. 23, p. 66.

**Description :** D. 1.VI ; D.2.1/10 ; P. 20-21 ; A. 1/11-12 ; C. 22-24 (15-16 branched) ; L.1.26-28; L.tr.7.

**Material :** (27 exs., 34.0 mm. - 76.0 mm. S.L.) 1 ex., 76.0 mm., 30.9 1975 ; 16 exs., 34.0 mm. — 69.0 mm., 23.1. 1976 ; 1 ex., 59.0 mm., 3.7.1977 and 1 ex., 59.0 mm., 22.7.1978.

Body elongate, compressed, height 4.6 (4.0 — 5.2) in S.L., 6.51 (5.8 — 7.3) in T.L. ; head obtuse, a little compressed, 3.8 (3.6 — 4.2) in S.L., 5.4 (5.1 — 6.1) in T.L. ; profile convex, eye 4.2 (3.5 — 5.4) in head length, 0.6 (0.4 — 0.8) in interorbital width ; snout about as long as eye ; eye 1.6 (1.2 — 2.0) in snout, tip before lower margin of eye ; anterior nostril in a short tube ; jaws subequal ; maxillary extends rarely to below posterior part of eye, 2.2 (1.9 — 2.6) in head length ; teeth in upper jaw in two to several rows, in lower jaw in 3 rows ; sensory canal pores paired in interorbital anteriorly, posteriorly an open pore in median line, an open pore behind eye at the beginning of the supraopercular groove ; 2 rows of mucous canals run longitudinally over cheek (Fig. 2. D.) no vertical rows of papillae as in *O. tentacularis* and *O. microlepis* ; head, nape and breast before pelvic naked, body scales ctenoid anteriorly ; first dorsal fin about as high or higher than body 1.24 (0.9 — 2.0) in body depth ; second dorsal fin middle rays are longest and prolonged 0.9 (0.8 — 1.1) in head length, 3.5 (3.1 — 4.1) in S.L., pelvic 1.0 (0.9 — 1.2) in head length, 3.9 (3.5 — 4.5) in S.L. ; caudal lanceolate, longer than head, height of caudal peduncle 1.0 (0.7 — 1.4) in length of caudal peduncle. The species is observed to exhibit marked sexual dimorphism, In the males the rays of the first dorsal fin are filamentous and sometimes reach the middle of the caudal fin.

**Colouration :** Brownish with a conspicuous dark vertical streak below eye to behind maxillary ; black dots along back and sides ; membrane of dorsal fins and caudal with rows of dark spots ; about 5-8 longitudinal streaks in first dorsal ; about 3-4 in second dorsal ; anal papilla pigmented.

**Distribution :** From coast of Natal, S. Africa, through India, Sri Lanka, Malay Peninsula and the Archipelago to Philippines and Riu-Kiu Islands and New Herbrides in the Pacific.

**Notes on the genus and the junior synonyms.**

Pezold and Larson, 1986 after a critical study of the genus concluded : “the species in this genus are characterized by a single fleshy epibranchial lobe, incomplete neural arches over the caudal vertebrae, a distinctly expanded fourth neural spine, a disjunct lateral occipital canal, a preopercular canal with two pores, a reduction of transverse papillae on the cheek and a loss of suborbital rows. The genus as delimited here includes *O. acutipennis*, *O. jaarmanii* (= *Oxyurichthys jaarmanii*), *O. nijssenii* (= *O. nijssenii*, perhaps a synonym of *O. acutipennis*) and *O. stomias* (= *Waitea stomias*).

In the papillae disposition *O. jaarmanii* and *O. nijssenii* are very closely similar to *Oligolepis acutipennis*.

The papillae on the cheek of *O. jaarmani* and *O. nijseni* are characterized by longitudinal rows only (Fig. 2.D). The other *Oxyurichthys* spp. studied viz. *O. tentacularis* and *O. microlepis* show characteristic vertical rows between the longitudinal rows in addition to the suborbital rows (Fig. 2.E and Fig. 2.C). Also

the genus *Oxyurichthys* is characterized by a single row of teeth in the upper jaw ; it was observed that in both *O. jaarmani* and *nijsseni* the number of rows of teeth in the upper jaw is more than one.

### Genus *Parachaeturichthys* Bleeker.

1874. *Parachaeturichthys* Bleeker, *Arch. neerl. Sc. ex. nat.* IX, p. 325.

#### 13. *Parachaeturichthys polynema* (Bleeker)

(Plate III, Figure 1)

1853. *Chaeturichthys polynema* Bleeker, *Verh. Bat. Gen.* XXV. P. 44, text fig. 4.

1953. *Parachaeturichthys polynema*. Koumans, *The fishes of the Indo-Australian Archipelago*, X, p. 37.

**Material :** (18 exs., 42.0 mm.—97.0 mm. S.L.) 4 exs., 43.0 mm—89.0 mm., 8.6.1976 and 14 exs., 42.0 mm—97.0 mm. 18.12.1976.

**Description :** D.I.VI ; D.2. 1/10 ; A.1/8-9 ; P. 21-22 ; L.I. 26-28 ; L.tr. 8-9 ; Predorsal scales 11-16.

Body elongate, anteriorly cylindrical, posteriorly compressed, height 4.91 (4.42 — 5.52) in S.L., 6.75 (5.87 — 7.41) in T.L. ; head 3.62 (3.57 — 3.74) in S.L., 4.97 (4.85 — 5.82) in T.L. profile convex ; eye 5.14 (4.7 — 5.62) in head length ; interorbital 1.12 (0.94 — 1.50) in eye ; snout obtuse, slightly longer, eye 1.22 (1.11 — 1.37) in snout, snout 4.18 (3.8 — 4.64) in head, tip before or a little below lower margin of eye ; anterior nostril in a short tube, mouth oblique, lower jaw prominent ; maxillary extends to anterior border of eye 2.69 (2.42 — 3.06) in head length ; width of head 1.42 (1.32 — 1.62) in head length ; lower jaw with some short barbels under chin and on the ventral side of head ; in upper jaw on each side 4-5 caninoid teeth, in lower jaw outer row of teeth enlarged, last tooth a canine ; five rows of mucous canals on cheek, the first row single the other two being paired and in between these mucous canals, scales are arranged in a row, (Fig. 2.F) lower border of cheek towards the ventral side with another row of mucous canal ; some open pores along supraopercular groove, and posterior margin of preopercle ; head scaled above between and behind the eyes ; cheek and opercle totally scaled ; scales of head, nape, breast and belly cycloid, other scales ctenoid ; bases of dorsal fins subcontinuous, first dorsal fin lower than body 1.43 (1.34 — 1.65) in body depth ; second dorsal fin 1.28 (1.14 — 1.40) in body depth ; anal fin similar to second dorsal 1.21 (1.1 — 1.37) in body depth ; second dorsal and anal fins posteriorly higher and pointed ; pectoral pointed, equal to or slightly longer than head 0.99 (0.93 — 1.08), pelvic 1.33 (1.19 — 1.58) in head ; predorsal distance 1.72 (1.50 — 1.92) in post dorsal distance ; caudal lanceolate, much longer than head ; height of caudal peduncle 1.65 (1.50 — 1.80) in length of caudal peduncle.

**Colouration :** Fish darker above, lighter below ; dorsal, and ventral tip and lower half of caudal tinged with black ; a large ocellus above at the base of the caudal, lower half and base of pectorals darker.

**Distribution :** India ; Japan ; China ; Ambon ; North Queensland.

### Genus *Stigmatogobius* Bleeker

1874. *Stigmatogobius*. Bleeker, *Arch. neerl. Sc. ex. nat.* IX, p. 323.

**14. *Stigmatogobius javanicus* (Bleeker)**  
(Plate III, Figure 2)

1856. *Gobius javanicus* Bleeker, *nat. Tijds. Ned. Ind.* XI, p. 88.

1953. *Stigmatogobius javanicus*, Koumans, *The Fishes of the Indo-Australian Archipelago*, X, p. 122.

**Material** : (48 exs., 12.0 mm. — 31.5 mm. S.L.) 46 exs., 12.0 mm. — 31.5 mm., 11.2.1975 and 2 exs., 24.0 mm. and 25.5 mm., 12.9.1976.

**Description** : D.I.VI ; D.2.1/7-8 ; A. 1/7-8 ; P. 13-15 ; L.I. 25-28 ; L.tr. 7-7½ ; Predorsal scales 6-8.

Body elongate, anteriorly cylindrical, posteriorly compressed, height 4.46 (3.9—5.6) in S.L., head subcylindrical, 3.49 (3.23—4.14) in S.L., ; profile convex ; eye 3.65 (2.5 — 4.66) in head, 0.76 (0.5 — 1.0) in interorbital ; snout obtuse 3.51 (2.5 — 4.4) in head length, slightly longer than eye being 1.6 (1.0 — 1.33) in snout ; mouth a little oblique, upper jaw prominent, maxillary extends to anterior one third of eye, the snout forming a fold and a deep rostral groove, overhanging the upper lip ; external nostrils short tubes at the end of the snout ; teeth in front in several rows, outer row a little enlarged ; two to three-longitudinal mucous canals over cheek, where some are curved and discontinuous the lower one being very short, a canal runs along preopercle border, another vertical canal and an oblique canal on opercle, (Fig. 3.A) ; an unpaired interorbital pore ; one on the upper edge of the supra opercular groove and one between this and the interorbital ; head scaled above behind eye and on opercle with large scales ; cheek naked ; base of pectoral and pelvic scaled ; scales of head, breast and belly cycloid, laterally on body ctenoid ; first dorsal fin 1.36 (0.82—1.83) in body depth, second dorsal fin 1.22 (0.88—1.50) in body depth and anal fin 1.32 (1.0—1.62) in body depth ; middle rays of first dorsal the longest in males ; 2nd and 3rd rays are the longest reaching the base of the third branched ray of second dorsal ; pectoral as long as head 1.06 (0.86 — 1.23) in head length ; caudal obtuse, height of caudal peduncle 1.8 (1.14 — 2.20) in its length.

**Colouration** : Body with a reticulated pattern of dusky blotches, with 5 blotches dorsolaterally, and scattered among these are spotted scales forming a reticulate pattern ; head with a dark stripe from eye to maxilla ; dark oblique spots on cheek ; snout and lips with dark spots ; spots on cheek on close examination reveal dark circles closely opposed to one another and each with a dark central spot ; dorsal and caudal spotted with black, anal faintly spotted ; first dorsal with dark and another lighter streak extending from first ray and broadening and extending from 3rd to the 6th ray ; another streak from the first to the 4th, above the first streak ; second dorsal with about 5 rows of dusky spots caudal with about 5-8 rows of spots ; two spots in a vertical line at the base of caudal.

**Distribution** : India ; Philippines ; Indo-Australian Archipelago ; Queensland and Tasmania.

Subfamily APOCRYPTEINAE  
Genus/Parapocryptes Bleeker

15. **Parapocryptes rictuosus** (Cuvier and Valenciennes)  
(Plate III, Figure 3)

1837. *Apocryptes rictuosus*, Cuvier and Valenciennes, *Hist. Nat. Poiss.* XII, p. 151.

1941. *Parapocryptes rictuosus*, Koumans, *Mem. Indian Mus.* XIII, p. 275.

**Material** : 1 ex., 53.0 mm. S.L., 8.12.1977.

**Description** : D.1.VI ; D.2.1/26 ; A. 1/26 ; P. 20 ; L.I. about 75.

Height of body 8.5 in S.L., 11.5 in T.L. ; head 4.5 in S.L., 6.5 in T.L. ; Eye about 8 in head ; interorbital a little less than eye diameter ; snout longer than eye ; maxillary extends to one diameter behind eye ; teeth in upper jaw caninoid, about 13 on either side ; in lower jaw 17 on each side, a pair of canines behind symphysis ; several rows of vertical sensory canals radiating from below eye to maxilla (Fig. 3.B.) three longitudinal rows on cheek and opercle ; scales small, irregular anteriorly, posteriorly larger ; dorsal fins continuous at their bases ; caudal lanceolate ; some spots on the last rays of the second dorsal. Inner side of the mouth pigmented.

**Distribution** : India.

**Genus Pseudapocryptes Bleeker**

1874. *Pseudapocryptes* Bleeker, *Arch. Neerl. Sc. ex. nat.* IX. p. 328.

16. **Pseudapocryptes lanceolatus** (Bloch & Schneider)  
(Plate III, Figure 4)

1801. *Eleotris lanceolatus* Bloch and Schneider, *Syst. Ichth.*, P. 67, pl. xvi.

1941. *Pseudapocryptes lanceolatus*, Koumans, *Mem. Indian Mus.*, XIII, p. 272.

**Material** : 11 exs., 55.0 mm.-144.0 mm. S.L., 18.10.1975.

**Description** : D.1.VI ; D.2. 1/30 ; A.1/29 ; P.17.

Body very elongate, anteriorly cylindrical, posteriorly compressed, height 9.11 (6.93-12.01), head 5.96 (4.04-6.17) in S.L. ; eye 7.62 (6.57-10.50) in head ; interorbital less than eye diameter ; snout 4.78 (3.38-6.14) in head ; mouth nearly horizontal, upper jaw a little prominent ; mouth extends to below posterior margin of eye ; teeth in each jaw 24 or less, in lower jaw horizontal. behind symphysis a canine on each side ; two horizontal rows of mucous canals, one below eye (Fig. 3.C.) which curves round in front of eye to maxilla, a vertical canal between the two main horizontal canals, another horizontal canal borders the cheek and on opercle two vertical and three horizontal canals ; dorsal fins much lower than body ; caudal pointed, slightly longer than head.

**Colouration** : Brownish gray with brown markings on head and back ; six to seven vertical bands bent along the lateral line extends from back to three fourths the sides of the body ; between these dark bands a pair of faint streaks are present ; caudal with several rows of spots, base with an inclined streak at the lower half ; pectoral fin base with a curved streak, dorsal with spots.

**Distribution** : India ; Thailand ; China ; Indo-Australian Archipelago.

**Genus Boleophthalmus Cuvier and Valenciennes**

1837. *Boleophthalmus* Cuvier and Valenciennes, *Hist. Nat. Poiss.* XII, p. 198.

**17. *Boleophthalmus bodarti* (Pallas)**

(Plate III, Figure 5)

1770. *Gobius boddarti* Pallas, *Spicilegia*, VIII, p. 11. pl. ii, figs. 4, 5.1953. *Boleophthalmus boddarti*, Koumans, *The Fishes of the Indo-Australian Archipelago*, X, p. 259.

**Material** : (16 exs., 48.0 mm.-123.0 mm. S.L.) 7 exs., 49.0 mm.-76.0 mm., 10.3.1976 ; 3 exs., 48.0 mm.-93.0 mm., 25.8.1976 ; 1 ex., 110.0 mm., 4.9.1976 ; 3 exs., 115.0 mm.-123.0 mm., 5.2.1977 ; 1 ex., 79.0 mm., 29.10.1977 ; 1 ex., 119.0 mm. S.L., 8.12.1977.

**Description** : D.I.V ; D.2.1/23-24 ; A.1/24 ; P.18-19 ; L.1. about 75 ; L.tr. 20 or more.

Body elongate, sub-cylindrical anteriorly, compressed posteriorly, height 6.5-7.5 in T.L. ; head 4.5-4.75 in T.L. ; eye 6-7 in head ; interorbital less than half eye diameter ; snout longer than eye ; maxillary extends to behind eye ; teeth in upper jaw in front 4-6 canines ; in lower jaw about 30 teeth on each side ; cutaneous papillae on head low and poorly defined, scattered here and there on lower half of cheek and opercle and on snout (Fig. 3.D.) the various papillar tracts vary somewhat between specimens ; scales cycloid on head, and anterior part of body with tubercles, first dorsal fin higher than body, rays filiform, 3rd ray the longest, sometimes reaching to half way of the second dorsal.

**Colouration** : Dark with 6-7 oblique bands ; head with numerous spots, first dorsal fin with blue spots ; second dorsal fin with about 3 rows of oblong white spots ; pectoral tinged with black at the tip of the upper half ; caudal with three horizontal black streaks between the rays.

**Distribution** : India ; Malay Peninsula ; Indo-Australian Archipelago.

**18. *Boleophthalmus sculptus* Gunther**

(Plate III, Figure 6)

1861. *Boleophthalmus sculptus* Gunther, *Cat. Fish. Brit. Mus.* III, p. 104.1953. *Boleophthalmus sculptus*, Koumans, *the Fishes of the Indo-Australian Archipelago*, X, p. 258.

**Material** : 1 ex., 46.5 mm., S.L., 25.9.1976.

**Description** : D.I.V ; D.2. 1/24 ; A.1/23 ; P.15 ; L.1. less than 75.

Body very elongate, height at dorsal fin origin 6.5 in T.L. ; head 4 in T.L. ; snout about as long as eye ; 6 canines in front of upper jaw ; cutaneous canals as in the other *Boleophthalmus* sp. not in specified rows (Fig. 3.E), they are found scattered along the lower half of cheek and opercle and border of mouth ; eye 6.66, snout 3.75, in head length ; scales cycloid, on head and anterior part of body rudimentary, becoming normal at posterior half of body ; third ray of first dorsal filiform.

**Colouration** : Six rather indistinct darker bands descend obliquely from the back towards the belly ; first dorsal fin without spots ; second dorsal fin with five white blotches at the base along its length ; caudal with three horizontal streaks ; head dark ; the lower one-third white.

**Distribution** : India.

**Subfamily PERIOPHTHALMINAE**  
**Genus *Periophthalmus* Bloch & Schneider**

1801. *Periophthalmus* Bloch and Schneider, *Syst. Ichth.* p. 63.

**19. *Periophthalmus variabilis* Eggert**  
(Plate IV, Figure 1)

1935. *Periophthalmus variabilis* Eggert, *Zool. Jahrb. (Syst.)* LXVI, p. 63, pl. iii, Fig. 13, pl. iv. figs. 14, 15.

1953. *Periophthalmus variabilis*, Koumans, *The Fishes of the Indo-Australian Archipelago*, X, p. 205.

*Material* : 3 exs., 38.0 mm.-55.0 mm. S.L., 8.6.1976.

*Description* : D.1.IX-XI ; D.2. 1/13 ; A.1/12 ; P. 12 ; L.I. about 70 ; L.tr. about 17 ; Predorsal scales about 25-28.

Body elongate, anteriorly cylindrical, posteriorly compressed, height 6 in T.L. ; head truncate, 4.75 in T.L. ; cutaneous papillae system limited to a scattering of papillae in the middle portion of the snout (Fig. 3.F.), very few are present scattered on the cheek and opercle ; first dorsal fin concave, convex posteriorly ; second dorsal fin lower than first dorsal ; anal fin lower than second dorsal ; basal membrane of ventrai weak, the two halves of the fins are united by a narrow membrane along the inner rays ; caudal longer than head.

*Colouration* : Body dark gray above lighter below and with numerous large blotches ; first dorsal fin with a broad border edged with white with spots in the lower half ; second dorsal with a black streak in the middle, base with a row of light blotches ; pectoral with black concave streak at the base and darker lines along the rays ; caudal spotted and with a dark horizontal streak in the centre.

*Affinities & Distribution* : There are 3 subspecies according to Eggert (1935) based on the shape and colour pattern of D.1. viz. *P. variabilis* from Java (Tjilatop) ; *P. variabilis sumatranus* Eggert from Sumatra and Java and *P. variabilis tidemani* from Halmaheira, Kouman (1953) remarks that he has seen 3 specimens of *P. variabilis* from British India (Ennur, Vizagapatnam) which he could not bring into a subspecies.

The specimens studied from Ennore estuary again poses the same problem having a characteristic shape and colour pattern of its own in D.1.

**20. *Periophthalmus chrysospilos* Bleeker**  
(Plate IV, Figure 2)

1853. *Periophthalmus chrysospilos* Bleeker, *Nat. Tijdschr. Ned. India*, 3, p. 728.

1953. *Periophthalmus chrysospilos*, Koumans, *The Fishes of the Indo-Australian Archipelago*, X, p. 202.

*Material* : One example, 59.0 mm. S.L., 8.6.1976.

*Description* : D.1.IX ; D.2. 1/11 ; A.1/11 ; P. 15-16 ; C.14 L.1. about 62 ; L.tr. 16 ; Predorsal scales 32.

Body elongate, anteriorly cylindrical, posteriorly compressed, height 4.75 in S.L., almost 6 in T.L. ; head truncate, a little compressed, 3.5 in T.L. ; eye 4 in head ; teeth on each side in each jaw 8-9, anterior ones caninoid ; cutaneous papillae less numerous on snout and scattered more along the lower half of cheek and jaw (Fig. 4.A.) ; scales on caudal peduncle not larger than those of front ;



dorsal fins separate ; first dorsal fin triangular, slightly lower than body depth ; second dorsal fin lower than first dorsal ; anal fin lower than second dorsal ; ventral fins totally united but slightly emarginate at the tip, basal membrane well developed ; pectoral about as long as the head, base totally scaled ; caudal slightly shorter than head.

**Colouration** : Dark brown above lighter below ; first dorsal fin dark with darker edge bordered with white ; second dorsal fin with a row of blotches between the middle of the rays ; body with about twelve longitudinal streak from behind eyes to base of caudal ; caudal spotted.

**Affinities** : The specimen from India belong to a variety of *Periophthalmus chrysopilos* which have the first dorsal fin totally black, except the first ray and outer margin of the fin between the first and the fifth ray, behind this, the margin is very narrow. These parts are white probably red in life (Koumans, 1953). The specimen from Ennore estuary answers to the colour pattern of the variety of *P. chrysopilos*. However certain differences (in body depth, height of dorsal, scalation and in dentition) are observed between this and the *P. chrysopilos* described by Koumans (1953). Since there is only one specimen this has been tentatively identified as *P. chrysopilos* by Dr. Edward O. Murdy of the Smithsonian Institution.

**Distribution** : Singapore, Malaysia ; Indonesia ; India (Vizagapatnam), Ennore estuary.

Family	TAENIOIDIDAE
Subfamily	TAENIOININAE
Genus	Taenioides

1798. *Taenioides lacepede*, *Hist. Nat. Poiss.* II, p. 580.

### 21. *Taenioides anguillaris* (Linnaeus) (Plate IV, Figure 3)

1958. *Gobius anguillaris* Linnaeus, *Syst. Nat.* ed. 10, p. 264.

1941. *Taenioides anguillaris*, Koumans, *Mem. Indian Mus.* XIII, p. 302.

1953. *Taenioides anguillaris*, Koumans, *The Fishes of the Indo-Australian Archipelago*, X, p. 273.

**Material** : 7 exs., 43.0 mm.-232.0 mm. S.L., 18.10.1975.

**Description** : Body sub-cylindrical anteriorly, compressed posteriorly, height 12.5 in S.L., 13.5 in T.L. ; head 6.5 in S.L., 7 in T.L., 1.3 in distance from base of ventral to vent ; teeth on each side about 7 canines in outer row in upper jaw, in lower jaw on each side 4-5 ; behind these outer rows a band of smaller teeth ; the sensory papillae are prominent and in raised rows as cirrhose ridges on the head, (Fig. 4.B.), a long horizontal line extends from chin to cheek and from this numerous vertical rows extend along the lower jaw ; above this horizontal row a net-work of mucous canals are seen ; a row of three short barbels on each side below head ; pectoral short, about three in head ; dorsal and caudal fins continuous ; caudal pointed ; colour bluish pink.

**Distribution** : India, Andamans ; China ; Penang.

22. **Taenioides buchannani** (Day)

(Plate IV, Figure 4)

1873. *Amblyopus buchannani* Day *Proc. Zool. Soc. London*, p. 1101953. *Taenioides buchannani*, Koumans, *The Fishes of the Indo-Australian Archipelago*, X, p. 272.*Material* : One example, 208.0 mm. S.L., 18.10.1975.

*Description* : Body sub-cylindrical anteriorly, compressed posteriorly, height about 11 in S.L., 12 in T.L. ; head about 6.5 in S.L., 7.15 in T.L. ; 1.75 in distance from base of ventral to vent ; teeth on each side 4-5 canines in outer row in upper jaw, in lower jaw on each side 5 ; behind these outer rows a band of small teeth ; a pair of canines at symphysis of lower jaw ; a row of 3 small barbels on each side below head, the first one close together at the base of the chin ; cutaneous papillae system limited to a scattering of papillae in the region of the upper lip Fig. 4.C. ; dorsal and anal fins continuous with caudal ; caudal pointed ; pectoral short, about 3 in head ; vertical fins black.

*Distribution* : India.Genus **Brachyamblyopus** Bleeker1874. *Brachyamblyopus*, Bleeker, *Arch. neerl. Sc. ex. nat.* IX, p. 329.23. **Brachyamblyopus urolepis** (Bleeker)

(Plate IV, Figure 5)

1852. *Amblyopus urolepis* Bleeker, *Nat. Tijds. Ned. Ind.* III, p. 581.1953. *Brachyamblyopus urolepis*, Koumans, *The Fishes of the Indo-Australian Archipelago*, X, p. 268.*Description* : D.VI.32 ; A.1/33 ; P.18.

Body compressed 7.5-7.75 in S.L., 8.0-9.0 in T.L. ; head subcylindrical, 5-6 in S.L., 7.0-7.5 in T.L. ; eyes rudimentary ; mouth oblique ; lower jaw prominent ; lips thin ; maxillary three in head ; teeth subequal ; a little curved ; cephalic pit organs scattered on the lower half of cheek behind junction of the jaws and on opercle (Fig. 4.D.) ; body scaleless, only small scales on caudal part of the body ; dorsal and anal fins lower than body ; pectoral short, rounded, half of length of head ; caudal longer than head, pointed.

*Distribution* : India, Andamans ; Thailand ; Phillippines ; Sumatra ; Indonesia.

## Subfamily TRYPACHENINAE

Genus **Trypauchen** Cuvier & Valenciennes1837. *Trypauchen* Cuvier & Valenciennes, *Hist. Nat. Poiss.* XII, p. 152.24. **Trypauchen vagina** (Bloch & Schneider)

(Plate IV, Figure 6)

1801. *Gabius vagina* Bloch and Schneider, *Syst. Ichth.* p. 73.1953. *Trypauchen vagina*, Kaumans, *The Fishes of the Indo-Australian Archipelago*, X, p. 277.*Material* : 3 exs., 99.0 mm.-190.0 mm. S.L., 18.10.1975.*Description* : D.VI.48 ; A.1/44-45 ; P. 16-17 ; L.I. about 78-80 ; L.tr. about 23-24.

Body compressed, about 9.5 in S.L., 10.5 in T.L. ; head obtuse, compressed,

5.75-6.0 in S.L., 6.6-7.0 in T.L. ; eyes very small, covered by skin ; numerous small cephalic pit organs in parallel vertical rows arranged close to one another on cheek and some scattered on the head and opercle (Fig. 4.E.) ; mouth very oblique ; lower jaw prominent ; chin very convex ; maxillary extends to front border of eye ; teeth in many rows, pointed, outer row enlarged, caninoid ; head with a patch of scales above opercle on either side of dorsal ; abdomen scaled ; scales of body cycloid ; dorsal fin continuous, not emarginate between the two parts ; pectoral 1/3rd in head, the lower rays much shorter ; ventral more than three, about 3.5 in head ; caudal shorter than head.

**Affinities :** This differs from the known *Trypauchen vagina* in the presence of scales in abdomen, the maxillary not extending behind eye and in the presence of shorter pectorals and ventral.

**Distribution :** From Persian Gulf to Indo-Australian Archipelago ; China.

### Genus *Ctenotrypauchen* Steindachner

1867. *Ctenotrypauchen* Steindachner, *Sitz. ber. Ak. Wiss. Wien* LV. p. 330.

#### 25. *Ctenotrypauchen microcephalus* (Bleeker) (Plate IV, Figure 7)

1860. *Trypauchen microcephalus* Bleeker, *Act. Soc. Indo-Neerl.* VIII, p. 62.

1922. *Ctenotrypauchen microcephalus*, Herre, *Monogr. 23 Bur. Sci. Manila*; p. 341.

1953. *Ctenotrypauchen microcephalus*, Koumans, *The Fishes of the Indo-Australian Archipelago*, X, p. 282.

**Material :** 9 exs., 49.0 mm.-85.0 mm. S.L., 18.10.1975.

**Description :** D.VI.47 ; A.1/43 ; P. 17-18 ; L.1. about 62 ; L.tr: 18-20.

Body compressed, height 7.50 in S.L., 9.0-9.25 in T.L. ; head obtuse, compressed, 5.25-5.50 in S.L., 6.25-6.60 in T.L. ; mouth very oblique, curved ; head, neck and abdomen naked ; on head an elevated crest ; a bony projection at the upper portion of the eye socket ; maxilla extends to before anterior border of eye ; some pores on head ; the mucous canals are more on the snout and chin, some faint vertical rows below eye ; on the lower half of cheek the canals from a cemicircular pattern of chain (Fig. 4.F.) ; dorsal fins continuous with caudal and anal fin ; lower rays of pectoral fin much shorter than the upper ; ventral fins separate, basal membrane very weak, caudal pointed.

**Distribution :** Ennore estuary.

### SUMMARY

A systematic account of 25 species belonging to 14 genera found in the estuary are described and illustrated and a key to the gobioid fauna of Madras coast is provided. Four species are reported for the first time and two recently described species from the estuary are redescribed. The cephalic sensory system of all the 25 species is mentioned in brief in addition to the other systematic characters, and are figured.

Family TAENIOIDIDAE  
Subfamily TAENIOININAE  
Genus *Taenioides* Lacepede

ACKNOWLEDGEMENT

I am most grateful to Dr. A.G.K. Menon, Emeritus Scientist and former Deputy Director, Southern Regional Station, Zoological Survey of India, Madras under whose guidance the present work was initiated and carried out. I wish to express my sincere thanks to Dr. R.S. Pillai, O.C., S.R.S., Z.S.I., Madras for providing all the necessary facilities. I am very much indebted to Shri N. Govindan, I.A.S. (previously working as Z.A. in this dept.) and to Shri S. Janakiraman, Field Collector, for collecting gobies from the estuary and Drs. M. Srinivasan and M.B. Raghunathan, A.Z.'s who also helped me in collections. I also wish to thank the dept. photographer Shri S. Vijayaraghavan and Shri C. Sankar, for the fish photographs.

REFERENCES

- Akihito, Prince, 1972. On a specimen of "Matsugahaze". *Oxyurichthys ophthalmonema*, collected in Kangawa Prefecture, Japan. *Jap. J. Ichthyol.*, **19**(2) : 103-110.
- Akihito, Prince, and Katsusuke Meguro, 1975. Description of a new Gobiid fish, *Glossogobius aureus* with notes on related species of the genus. *Jap. J. Ichthyol.*, **22**(3) : 127-142.
- Day, F. 1878. *The Fishes of India*. Williams and Norgate, London, 778 pp.
- Day, F. 1889. *The Fauna of British India (Fishes)* London 2.
- Eggert, B. 1935. Beitrag Zur systematik, biologie und geographischen verbreitung der Periophthalminae. *Zool. Jahrb, (Syst.)* 67(1-2), 29-116, 16 text - figs., 9 plates.
- Gunther, A. 1861. *Catalogue of the Acanthopterygian fishes in the collection of the British Museum* Vol. 3, XXV + 586 pp.
- Hoese, Douglass, F. and Richard Winterbottom, 1979. A new species of *Lioteres* (Pisces, Gobiidae) from Kwazulu, with a revised checklist of South African Gobies and comments on the generic relationships and endemism of Western Ocean Gobioids. *Life Science Occ. paper*, **31**, Royal Ontario Museum, pp. 113.
- Hubbs, Carl. L and K.F. Lagler, 1958. Fishes of the Great Lakes Region - *Bulletin of the Cranbrook Institute of Science*, **48**; 213 pp.
- Koumans, F.P. 1941. Gobioid fishes of India, *Mem. Indian Mus.*, **13**(3) : 205-330.
- Koumans, F.P. 1953. *The fishes of the Indo-Australian Archipelago*, E.J. Brill, Leiden, **3X**: pp. 1-394.
- Lachner, E.A. and J.F. McKinney. 1974. *Barbuligobius boehlkei*, a new Indo-pacific genus and species of Gobiidae (Pisces) with notes on the genera *Callogobius* and *Pipidonia*. *Copeia*, **64** : 869-879.

- Menon, A.G.K. and N. Govindan, 1976. *Oxyurichthys nijsseni* a new Gobioid fish from Ennore estuary, east coast of India, with a key to the identification of the Indo-West Pacific Species of the genus *Oxyurichthys*, *Matsya*, 2 : 13-15.
- Menon, A.G.K. and K. Rema Devi, 1980. *Acentrogobius ennorensis* a new Gobioid fish from Ennore estuary, Madras. *Matsya*, 6 : 54-57.
- Pezold, F. and Larson, H.K. 1986. Systematics of the gobioid genus *Oxyurichthys*. *Indo Pacific Fish Biology*. Proc. of the second International Conference on Indo-Pacific Fishes, Tokyo : 954 (Abst.)
- Ramarao, K.V and T Venkateswarlu. 1977. Distributional range Of *Waitea buchanani* Visweswara Rao :Pisces : Gobiidae) in Indian waters, *J. Bombay nat. Hist. Soc.* 74(1) : 185-186.
- Talwar, P.K. 1969. *Oxyurichthya jarmani* Weber (Gobiidae: Pisces) a rare Gobioid from Indian Waters *J. Bombay nat. Hist. Soc.*, 65(2) : 794-795.
- Talwar, P.K. 1985. Estuarine fishes. *Workshop on Estuarine Biology*, Berhampur (Orissa), 19-22 Feb., Paper No. 23. 76 pp.
- Venkateswarlu, T and K.V Rama Rao and T.S.N. Murthy, 1975. A list of fishes, amphibians and reptiles of Madras and its environs, *Ind. J. Zool.* 38(2) : 149-169.
- Venkateswarlu, T and K.V Rama Rao, 1976. First record of the Gobioid fish *Eleotrioides wardii* Playfair (Pisces : Eleotridae) from the Central Indian Ocena. *Ins. Revue ges. Hydrobiol, Hydrogr.* 61(4) : 551-554.
- Winterbottom, Richard, 1976. Notes on South African Gobies possessing free upper pectoral fin rays (Pisces : Gobiidae). *The J.L.B. Smith Institute of Ichthyology, Special Publication No.* 16 : 1-11.