



## A NEW GENUS AND NEW SPECIES OF GOBIOID FISH (GOBIIIDAE: GOBIONELLINAE) FROM SUNDERBANS, INDIA

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### INTRODUCTION

Updated information on fish fauna of India resulted in summarising that the Indian waters are represented by 69 genera and 174 species of gobioid fishes (Perciformes, Gobiidae). The subfamily Gobionellinae comprises of 13 genera and 33 species in India. While working on the gobioid fishes of Indian Sunderbans (latitude 21°13' - 22°40' N. and longitude 88°03' - 89°06' E.), the first author came across few specimens of an interesting goby. After careful examination that turned out to be an undescribed species. However, no known genus could accommodate the new species and that warranted erecting a new taxon in generic level. The other gobies of Indian Sunderbans are dealt elsewhere (Chatterjee *et al.*, in press) reporting 44 species and 35 genera from the region. The new genus and the new species have been initially described by the first author (Chatterjee, 1978) in his doctoral thesis and the name is also appeared in Mandal & Nandi (1989) and Talwar *et al.* (1992), but it is not formally published to be treated as 'available' under the provisions of the International Code of Zoological Nomenclature. The new species is hereunder described as *Awaouichthys menoni* sp. nov. with the genus *Awaouichthys* gen. nov.



*Awaouichthys menoni* sp. nov. Holotype

The studied materials were collected from the Patibonia Island near Frasergunge (21°34' N, 88°16' E), from a tidal channel connected to Edward's creek, in the Gangetic delta, West Bengal. The materials were deposited with the National Zoological Collection, Zoological Survey of India, Kolkata.

### Genus *Awaouichthys* gen. nov.

Body covered with ctenoid scales. Head scaled above posterior to the eyes. Preoperculum and operculum naked. Tongue free, anterior margin notched. Anterior nostril tubular. Sensory canal-pores on head absent, except for two interorbital pores. Pit organs in longitudinal as well as transverse lines. Gill-opening extending ventrally, gill membranes united across isthmus forming a free fold. Mouth sub horizontal, lips thick. No teeth on prevomer or palatine bones. Jaw teeth multiserial, close-set, in 5 - 6 rows, outer row somewhat enlarged, no canine. Inner margin of shoulder girdle with some fleshy cirri. First dorsal fin with 6 weak spines. Ventral fins united, basal membrane present. Pectoral fin without free silky rays. Total elements in the second dorsal fin 10-11. Total anal fin elements 9 - 10, caudal fin rounded. Chin and snout without barbels.

Relationship : *Awaouichthys* shows close relationship with the genus *Awaous* Valenciennes in having fleshy cirri in the inner margin of shoulder girdle, very long snout, eyes situated high on head and head with no sensory canal-pore. However, union of gill-membranes across isthmus forming

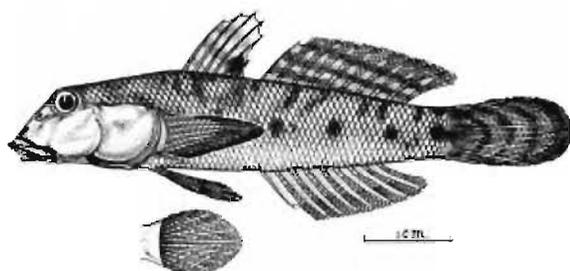


Fig. 1 : Schematic diagram of *Awaouichthys menoni* sp. nov.

a free fold in *Awaouichthys* easily distinguishes it from *Awaous*.

*Type species* : *Awaouichthys menoni* sp. nov.

*Etymology* : The genus is named for its close similarities with the genus *Awaous* Valenciennes.

*Awaouichthys menoni* sp. nov.

1978. *Awaouichthys menoni* Chatterjee, Ph. D. thesis, Calcutta Univ.: 286.

*Diagnosis* : A gobioid fish distinguished in having fleshy cirri in the inner margin of shoulder girdle; head without sensory canal-pore, except for two interorbital pores; gill membranes of both sides united across isthmus forming a free fold; very long snout, about 37.3% head length; 19 or 20 predorsal scales; 44-46 scales in longitudinal series; scales absent from operculum and preoperculum.

*Description* : (Based on holotype and 3 paratypes, 34.0 - 49.8 mm SL)

Body elongate, somewhat compressed; depth 20.0-23.5% of standard length. Head sub cylindrical, 31.1-33.8% of standard length. Eye 17.7-21.9%, interorbital space 11.2-12.5%, snout much longer than eye, 34.6-39.2 (M = 37.3) per cent of head length. Mouth sub horizontal, posterior end of maxillary in front of anterior margin of eye, 31.2-35.7% of head length. Anterior margin of tongue notched. Gill-opening slightly extending below beyond the level of lowermost pectoral fin-ray, gill membranes fused together across isthmus forming a free fold. Least depth of caudal peduncle 11.1-12.5% of standard length. Predorsal distance 40.0-44.1% and preanal distance 53.3-58.3% of standard length.

*Teeth* : In the jaws, multiserial, in 5-6 rows, close-set; outer row somewhat enlarged, no canine.

*Pit organs* : Pair of head pores anteriorly in

interorbital region present, other cephalic pores absent. In infraocular region, there is about 5 transverse lines radiating from the lower margin of eye and 2 longitudinal lines, the upper longitudinal line originates from below the posterior half of the eye and lower line extends anterior to the lower jaw. A single transverse line present on operculum. One line originates in front of eye and curves down to reach anterior nostril. One short line vertically connects the posterior-most infraocular line to the opercular pit line (fig. 2).

*Fins* : D<sub>1</sub> VI, D<sub>2</sub> I, 9-10; V I, 5; A I, 8-9; P 15-17; C 15.

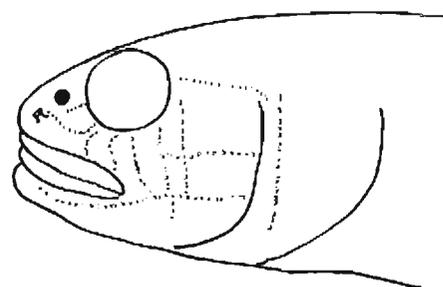


Fig. 2 : Arrangement of sensory papillae on head *Awaouichthys menoni* sp. nov.

First dorsal fin height shorter than body depth, third ray longest. Second dorsal fin lower than body, third ray longest. Second dorsal and anal fin lower than first dorsal fin and pointed posteriorly. Pectoral fin pointed, length of the rays 22.2 - 26.4% in standard length. Ventral fins united, basal membrane present, well developed. Caudal fin rounded, 29.8-31.4% in standard length.

*Scales* : Ctenoid. Head scaled above posterior to the eyes. Preoperculum and operculum naked. Scale rows in longitudinal series 44 - 46, in transverse series 14 - 16; predorsal scales 19 - 20.

*Colour in alcohol* : Light brown. Lateral and dorsal sides of body with darker blotches and irregular streaks. Dorsal side of head with indistinct blackish markings. First dorsal fin with 3 distinct horizontal bands, and a blackish blotch at its posterior extremity; second dorsal fin with about three horizontal bands; caudal fin barred; ventral, pectoral and anal fins yellowish brown.

*Locality* : Patibonia Island, Fraserganj in the Gangetic delta, West Bengal.

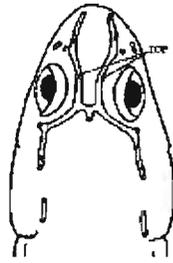


Fig. 3 : General structure of Head pores in Gobionellinae

*Type specimens* : Holotype: Z.S.I Regd. No. F.7377/2 (49.8 mm. SL), Patibonia Island in the Gangetic delta (West Bengal) near Frasergunge; Lat. 21°34' N., Long. 88°16' E. from a tidal channel connected to Edward's creek; 11.ix.1974; coll. T.K. Chatterjee.

*Paratypes* : Z.S.I. Regd. No. 7378/2 -7380/2 (3 ex., 34.0 - 45.0 mm SL); other data of all paratypes same as that of holotype.

*Etymology* : The species is named in the honour of the eminent Ichthyologist of the Zoological Survey of India, Late Dr. A.G.K. Menon, who confirmed the status of the specimens.

**DISCUSSIONS**

The sensory canal on head and presence of two head pores anteriorly in the interorbital region along with well-developed basal membrane of the pelvic fin prompted us to place it in the subfamily Gobionellinae (Perciformes, Gobiidae). As discussed in the relationship paragraph under the genus character, the new genus is very close to *Awaous* in shape, size and in having fleshy cirri in the inner margin of shoulder girdle, but distinctly differs by the presence of gill-membranes of both sidefused across isthmus forming a free fold, as in case of the genus *Psammogobius*. There is no pore on snout, whereas, the genus *Awaous* is supposed to have two pairs of pores on snout (Larson and Murdy, 2001). Further, presence of 15 segmented rays in the caudal fin distinguishes it from many closely related genera. Distinction of the genus itself makes the described species distinct from all species of Gobioid fishes known in the region and elsewhere.

The subfamily Gobionellinae is distinguished from all other gobies in having dorsal and anal fins separated from caudal fin; both dorsal fins typically separate; lower jaw typically possessing more than

one row of teeth; pelvic frenum simple, not folded forward, frenum without fleshy lobes around pelvic-fin spines; paired anterior interorbital pores present or head pores completely lacking; if head pores absent, then body fully scaly or mostly scaly. A key to the Indian genera (14) of the subfamily is presented here for easy identification of the new genus with *Chiramenu fluviatilis* Rao is treated as an *Awaous* species following Froece and Pauly (2012) and Eschmeyer (2012).

**Key to the genera of subfamily Gobionellinae found in India :**

- 1a. Shoulder girdle under gill cover with distinct 1 to 4 finger-like flaps .....2
- 1b. Shoulder girdle under gill cover smooth or with minute bumps ..... 4
- 2a. Gill membrane fused together forming a free fold across isthmus .....  
..... *Awaoichthys* gen. nov.
- 2b. Gill membrane not fused to form free fold, joined to isthmus ..... 3
- 3a. Head broader than deep; mouth inferior with fleshy lips; predorsal scale count 16 to 42; body with rows of blotches and spots .....  
..... *Awaous*
- 3b. Head compressed, narrower than deep; mouth terminal, lips not particularly fleshy; predorsal scale count 0 to 23; body with variably developed transverse bands ..... *Stenogobius*
- 4a. Head pores absent ..... 5
- 4b. Head pores present ..... 6
- 5a. Head papillae in transverse pattern; body without scales below dorsal fin; body transparent or yellowish translucent .....  
..... *Gobiopterus*
- 5b. Head papillae in longitudinal pattern; body fully scaled; body with dusky bands or spots .....  
..... *Brachygobius*
- 6a. Two pairs of pores present on snout .....  
..... 7
- 6b. None or 1 pair of pores present on snout .....  
..... 9
- 7a. Cheek with large scales; teeth at sides of upper jaw directed medially; anterior interorbital pore paired; mouth horizontal, inferior (coral reefs) ..... *Gnatholepis*

- 7b. Cheek naked; teeth at sides of jaws vertical or directed posteriorly ..... 8
- 8a. Teeth in upper jaw usually in a single row on sides; median membranous crest or ridge usually present on nape; eye with or without fleshy knob or tentacle; tongue rounded ..... *Oxyurichthys*
- 8b. Teeth in upper jaw in 2 or 3 rows; no crest or ridge on nape; typically eye always without fleshy knob or tentacle; tongue truncate .....  
.....*Oligolepis*
- 9a. Mucous canal on cheek with many transverse rows radiating from eye; body distinctly spotted ..... *Stigmatogobius*
- 9b. Mucous canal on cheek in longitudinal rows only; lateral canal over opercle present; body colour variable ..... 10
- 10a. Preopercular pore and posterior portion of oculoscapular canal present; segmented caudal fin rays 17 ..... 11
- 10b. Preopercular pore and posterior portion of oculoscapular canal always absent .....  
..... 12
- 11a. Head depressed; second dorsal fin with same number of rays as in anal fin .....  
..... *Pseudogobiopsis*
- 11b. Head compressed; second dorsal fin with one more ray than in anal fin ..... *Redigobius*
- 12a. Segmented caudal fin rays 17; mouth small, lower lip reduced, thin and folded forward .....  
..... *Hemigobius*
- 12a. Segmented caudal fin rays 16; jaws may be greatly enlarged in males, lips not reduced and thin ..... 13
- 13a. Mouth subterminal, upper jaw tip anteriormost, with round snout overhanging mouth; head pores present .....  
*Pseudogobius*
- 13b. Mouth terminal, lower jaw tip anteriormost; head pores absent .....*Eugnathogobius*

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