

FISHES OF THE GENUS *OSTEOBRAMA* HECKEL OF NORTHEASTERN INDIA (TELEOSTEI: CYPRINIDAE)

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ABSTRACT

Osteobrama cunma, originally described from Moulmein, Myanmar, has so far been considered a subspecies of *Osteobrama cotio*. Based on examination of specimens from Brahmaputra and Chindwin basins, *O. cunma* has now been given species status. The species differs from its nearest congener, *O. cotio*, in having less numbers of branched anal fin rays (26 vs. 31); lateral line scales (48 vs. 66); predorsal scales (20 vs. 27); scale rows between dorsal fin base and lateral line (9 vs. 14); scale rows between pelvic fin base and lateral line (8 vs. 12) and circumpeduncular scales (20 vs. 28). *Osteobrama feae* Vinciguerra, originally known from upper Myanmar has been collected from the Maklang river of Manipur, and is reported as a new record for India. Brief descriptions of *O. belangeri*, *O. cotio*, *O. cunma* and *O. feae* are given in this paper.

KEYWORDS

Cyprinidae, comparative descriptions, fish, northeastern India, *Osteobrama belangeri*, *O. cotio*, *O. cunma*, *O. feae*, new record

Fishes of the cyprinid genus *Osteobrama* Heckel are characterized by having strongly compressed fairly deep body with abdominal edge sharp and trenchant entirely or from the pelvic fin base to vent; anal fin long with 14–36 rays, of which 11–13 are branched rays (Talwar & Jhingran, 1991).

Hora (1921) reported *Rohtee belangeri* (Valenciennes) and *R. alfrediana* (Valenciennes) (now *Osteobrama*) from Loktak lake, Manipur valley. Hora & Misra (1940) considered Hora's (1921) *R. alfrediana*, a junior synonym of *R. cotio cunma* Day (now *Osteobrama*) and Menon (1954) reported its occurrence in the state.

Tilak & Hussain (1989) described *O. brevipectoralis* from Manipur, which Menon (1999) treated as a junior synonym of *O. belangeri*. Vishwanath (2000) reported *O. cotio cunma*, *O. cotio* (Hamilton) and *O. belangeri* from Manipur.

Fish collections from the different parts of northeastern India included four species of *Osteobrama*. *O. feae* is recorded for the first time from India. Comparison of morphometry and osteology of *O. cotio cunma* from Chindwin basin of the state with *O. cotio* from Barak and Brahmaputra basins of Manipur and Assam revealed several differences between the two. *Osteobrama cotio cunma* has been elevated to species here. Thus, four species of *Osteobrama* are known from northeastern India: *O. belangeri*, *O. cotio*, *O. cunma* and *O. feae*. Brief descriptions of the fishes and a key to species of *Osteobrama* from northeastern India is also given.

MATERIALS AND METHODS

The specimens were preserved in 10% formalin. For counts and measurement the methods of Jayaram (1999) were followed. Measurements were made with a dial caliper to the nearest 0.1mm and expressed in percentages of standard length (SL) and head length (HL). Counts of branched anal fin rays, predorsal scales, lateral line scales, scale rows between the lateral line and base of

the pelvic fin, scale rows between the lateral line and the base of the dorsal fin and circumpeduncular scales are expressed in modal values. Clearing and staining of specimens for osteology were followed as per Hollister (1934). Predorsal neural spines are neural spines ahead of the dorsal fin. The specimens are deposited in the Manipur University Museum of Fishes (MUMF).

Osteobrama belangeri (Valenciennes)

(Image 1^w)

Lucciscus belangeri Valenciennes, *Hist. Nat. Poiss.* 17: 99, 1843 (type locality: Bengal)

Rohtee belangeri Hora, *Rec. Indian Mus.* 22(3): 165–214, 1921 (Manipur valley)

Osteobrama belangeri Menon, *J. Zool. Soc. India* 14(1): 1962 (Chindwin drainage)

Materials examined

12, 10–12.iv.2000, Maklang river, Ukhrul district, Manipur; 50.2–129.4 SL, coll. M. Shanta Kumar Sharma (MUMF 1052)

Distribution

India: Manipur (Chindwin Basin); Myanmar.

Diagnosis

A species of *Osteobrama* with 72 lateral line scales; 17 branched anal fin rays; differs from other species of the genus in having sharp and keeled entire abdominal edge; length of caudal peduncle longer than its height.

Description

D. iv, 8; P. i, 15–16; V. i, 8; A. iii, 17; C, 19. Body deep, laterally compressed; dorsal profile arched from the tip of snout to base of dorsal fin origin, then gradually sloping towards the base of caudal fin; ventral profile strongly curved from the tip of the snout to the posterior edge of the anal fin; eye diameter is greater than snout length; 33 predorsal scales; dorsal fin placed about the middle between the tip of the snout and base of the caudal fin, dorsal spine stout, serrated; height of dorsal spine roughly equal to head length; 19 scale rows between the dorsal fin base and the lateral line; 17 scale rows between the lateral line and the pelvic fin base; anal fin with seven basal bones; 33–35 circumpeduncular scales; and caudal fin deeply forked; body depth 42.7(41.1–44.4)% of the SL and dorsal head length 18.0 (17.1–19.3). Colour: Silvery white, metallic, with dark grayish-black on the back.

^w See Images in the web supplement at www.zoosprint.org

***Osteobrama cotio* (Hamilton)**(Image 2^w)

Cyprinus cotio, Hamilton, 1822, *Fish. Ganges*: 339, 393, pl. 39, fig. 93, (Type-locality: ponds and ditches of Bengal).

Rohtee cotio: Day (*partim*), 1878, *Fish. India*: 587, pl. 151, fig. 1;

Rohtee cotio: Day (*partim*), 1889, *Faun. Br. India*, Fishes, 1: 340;

Rohtee cotio: Hora and Misra, 1940, *Rec. Indian Mus.*, 42(1): 166.

Materials examined

35, 28-29.ix.2004, Brahmaputra river, Ujan Bazaar, Bazar, Guwahati, 38.6-72.8 SL, coll. M. Shanta Kumar Sharma (MUMF 1026); 35 exs., uncategorized, 5 exs., Barak river, Silchar, KNS, 2000, Jiri R., Manipur (Barak basin).

Distribution

India: Assam (Brahmaputra drainage), Bihar, Manipur (Barak-Brahmaputra drainage), Madhya Pradesh, Punjab, Uttar Pradesh, West Bengal; Pakistan and Bangladesh.

Diagnosis

A species of *Osteobrama* with 66 lateral line scales; a distinct spot on the dorsal fin base; 14 scale rows between dorsal fin base and lateral line; 12 scale rows between the lateral line and pelvic fin base; scales small and irregularly arranged; caudal peduncle shorter than its height.

Description

D. iii, 8; P. i, 13; V. i, 9; A. iii, 31; C. 19. Body very deep, laterally compressed; dorsal profile steep with hump on the back; eyes very large visible ~om the ventral side of the head; snout blunt, smooth, deep; 27 predorsal scales; scales small, irregularly arranged, scales absent on the mid predorsal line if present very few, predorsal scales are counted on the adjacent rows; lamellar ossicles developed from the anterior border of predorsal neural spines are much enlarged that it almost touches the four well developed supraneurals above (Fig. 1a); pectoral fin tip touches the pelvic fin base and later almost touches anal fin base; anal fin very much elongated with 31 branched rays, inserted well behind the dorsal fin, 8-9 basal bone, first anal fin pterygiophore thin, long dagger shaped which gradually tapers towards the proximal tip (Fig. 2a); abdominal edge rounded in front of pelvic fin; caudal peduncle height higher than its length; 28 circumpeduncular scales; caudal fin deeply forked; body depth 42.9(39.3-44.9); prepelvic length 40.09(37.4-42.2); preanal length 55.2(52.3-58.2) and length of anal fin 37.7(36.4-38.6) of standard length. Colour: bright silvery darker on the mid dorsal line, a conspicuous black blotch at the dorsal fin base.

***Osteobrama cunma* (Day)**(Image 3^w)

Rohtee cunma Day, 1888, *Fish. India suppl.*: 807 (type locality: Moulmein, Myanmar). *Rohtee cunma* Day, 1888, *Fish. Br. India* Fishes, 1: 343.

Rohtee alfrediana: Hora, 1921, *Rec. Indian Mus.*, 22: 188 (Manipur).

Rohtee cotio var. *cunma*: Hora and Misra, 1940, *Rec. Indian Mus.*, 2(1): 168, pl. 4, fig. 1 (Myanmar and Manipur valley).

Materials examined

17, 15.iv.2002, Maklang river, Manipur, 51.6-55.2 SL, coll. M. Shanta Kumar Sharma (MUMF 1040); 9, 5.viii.2000, Iril river, Manipur, 61.0-96.0 SL, coll. I. Linthoingambi (MUMF

6048); 10, 12.viii.2000, Khuga river, Manipur, 48.3-77.7 SL, coll. K. Shanta Devi (MUMF 1060)

Diagnosis

A species of *Osteobrama* with 48 lateral line scale; nine scale rows between the dorsal fin base and lateral line and eight scale rows between the lateral line and the pelvic fin base; 20 predorsal scale; 26 branched anal fin rays and 20 circumpeduncular scales; caudal peduncle shorter than its height.

Description

D. iv, 8; P. i, 15; V. i, 9; A. iii, 26; C. 19. Body deep, laterally compressed; dorsal profile steep with a distinct rise from occiput; abdominal edge keeled from behind the pelvic fin base to the anal fin but rounded in front of the pelvic fin; head short; mouth small; eyes large, visible from the ventral side of the head; barbels absent; snout rounded, deep, smooth; scales large, more regularly arranged; dorsal fin inserted nearer to the tip of snout than to the base of caudal fin, dorsal fin spine osseous, serrated; lamellar ossicles on the anterior border of predorsal neural spines moderately developed (Fig. 2a), there is much space between the lamellar ossicles and supraneurals above; presence of four small supraneurals; 20 circumpeduncular scales; anal fin very elongated with 26, 9-11 basal bones, base of the first anal fin pterygiophore very broad, short which suddenly tapers towards the proximal tip (Fig. 2b); caudal fin deeply forked; caudal peduncle length longer than its height; depth of the body 36.8 (37.0-39.0); prepelvic fin 43.5 (41.2-53.0); preanal length 59.1 (58.4-61.2) and anal fin length 33.3 (31.9-35.5) of standard length. Colour: bright silvery, tinged with olive dorsally.

Distribution

India: Manipur river and its tributaries (Chindwin drainage system); Myanmar.

***Osteobrama feae* Vinciguerra**(Image 4^w)

Osteobrama feae Vinciguerra, 1890, *Annali Mus. Civ. Stor. Nat. Giacoma Doria, Genova* (2)9: 311, (type locality: Bhamo, Mandalay and Kokarait, Upper Burma).

Rohtee feae: Hora and Misra, 1940, *Rec. Indian Mus.* 42(1): 156.

Materials examined

10, 4.ix.2002, Maklang river, Manipur, 185.5-310.0mm SL, coll. M. Shanta Kumar Sharma (MUMF 1053).

Distribution

India: Manipur, Maklang river; Myanmar: Myitkyina district Bhamo, Mandalay and Kakarait, Kalewa, upper Chindwin drainage.

Diagnosis

A species of *Osteobrama* with 65 lateral line scales; 38 predorsal scales; 15 scale rows between dorsal fin base and lateral line, 12 scale rows between lateral line and pelvic fin base; 28 branched anal fin rays and two pairs of barbels; caudal peduncle shorter than its height.

Description

D. iv, 8; P. i, 15-16; V. i, 9; A. iii, 28; C. 10+9. Body trapezoid, very deep, laterally compressed; dorsal profile steep with a distinct rise from the occiput upto the dorsal fin base then gently sloping

Key to species of *Osteobrama* of Manipur

1. Barbel present *Osteobrama feae*
 Barbel absent 2
2. Anal fin with less than 20 branched rays *Osteobrama belangeri*
 Anal fin with 20 or more branched rays 3
3. Circumpeduncular scales 28, scales between lateral line and pelvic fin base 12 *Osteobrama cotio*
 Circumpeduncular scales 20, scales between lateral line and pelvic fin base 8 *Osteobrama cunma*

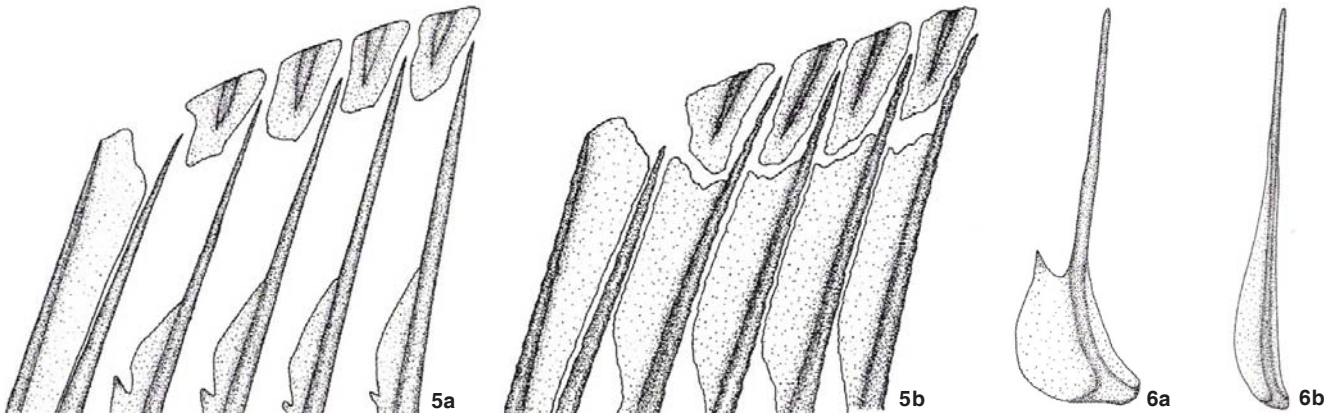


Figure 5. Lamellar ossicles of a - *Osteobrama cunma* and b. *Osteobrama cotio*
Figure 6. First anal fin pterygiophores of a - *Osteobrama cunma* and b - *Osteobrama cotio*

downwards up to the caudal peduncle; abdominal edge keeled from behind the pelvic fin base to the anal fin base but rounded in front of the pelvic fin base; head very short; eyes large visible from the ventral side, interorbital space slightly curve; mouth small, slightly sub-terminal; snout rounded, blunt, smooth; two pairs of well developed barbels, one pair each of maxilomandibular and mandibular barbels, dorsal fin inserted midway between the tip of the snout and the base of the caudal fin, its outer edge concave; dorsal fin spine weak, serrated; 38 predorsal scales; pectoral fin tip extends up to the base of the pelvic fin and the latter almost reaches anal opening; the pelvic fin well developed, situated well ahead of the vertical insertion of dorsal fin; anal fin very much elongated with 28, inserted well behind vertical insertion of the dorsal fin, first three branched rays elongated; length of the caudal peduncle length shorter than its height, 24 circumpeduncular scales; caudal fin deeply forked; depth of the body 48.59(48.06-49.3) and 16.3(16.1-16.4) % of the standard length. Colour: bright silvery, tinged with olive dorsally.

DISCUSSION

Day (1888) described *Rohtee cunma* from Moulmein, Myanmar. His description of the dorsal spine led to great confusions while giving taxonomic status to the species by future workers. Vinciguerra (1890) doubted the inclusion of the species under the genus *Osteobrama* by nature of its dorsal spine alone and thus treated it a synonym of *R. cotio*. Hora & Misra (1940) examined the specimens collected from Tavoy Division, Tavoy, Burma by Mr. D.E.B. Manning. They found finely serrated dorsal spine in the species and also differentiated it from *R. cotio* in having less numbers of lateral line scales, predorsal scales, scale rows between the lateral line and base of pelvic fin, branched anal fin rays, larger body, smaller and irregularly arranged scales and in their

distribution pattern. They also reported that *R. cotio* was distributed in northern India and *R. cunma*, in peninsular India and Myanmar.

Comparison of *O. cunma* from Barak drainage in Manipur and Brahmaputra basin in Assam and *O. cotio* from Chindwin basin in Manipur in the present study reveals several differences between the two. *O. cunma* differs from *O. cotio* in having less numbers of lateral line scales (48 vs. 66); branched anal fin rays (26-27 vs. 31); predorsal scales (20 vs. 27); circumpeduncular scales (20 vs. 28); scale rows between dorsal fin base and lateral line (9 vs. 14); scale rows between lateral line and pelvic fin base; shallower body (36.8 (34.1-39.0) vs. 42.9 (39.3-44.9)); longer prepelvic region (43.5 (41.2-53.0) vs. 40.0 (37.4-42.2)); longer preanal region (59.1 (58.4-61.2) vs. 55.2 (52.3-58.2)); longer anal fin (33.3 (31.9-35.5) vs. 37.7 (36.4-38.6)). *O. cotio* is also distinct in having a conspicuous black blotch at the base of dorsal fin and another behind the opercle on the lateral line. *O. cunma* differs from *O. cotio* in having an first anal fin pterygiophore with broader base (vs. thin and slender base) and lamellar ossicles on the anterior border of predorsal neural spines moderately developed (vs. dagger shaped which gradually tapers towards the proximal tip). In view of the differences, *O. cunma* is treated here as a valid species. Occurrence of *O. cunma* in peninsular India is doubtful as it was originally described from Burma (Myanmar) which does not share its drainage with the former.

Osteobrama feae collected from Manipur agrees with the description of the Vinciguerra (1890), Hora & Misra (1940) from the Bhamo, Kokarait and Mandalay upper Myanmar. As the Maklang, Iiril and Khuga rivers belongs to the Chindwin-Irrawady drainage system of Myanmar, it is obvious that the fish is distributed in this area from its original distribution in the upper Myanmar to upper Chindwin drainage in Manipur, India.

Table 1. Morphometry of four species of *Osteobrama* (in % of SL except SL)

	<i>Osteobrama feae</i>	<i>Osteobrama cunma</i>	<i>Osteobrama cotio</i>	<i>Osteobrama belangeri</i>
SL	185.0-310.0	51.6-96.6	52.3-74.9	50.2-129.4
Body depth	48.5 (48.0-49.3) ± 0.63	36.8 (37.0-39.0) ± 1.60	42.9 (39.3-44.9) ± 2.03	42.7 (41.1-44.4) ± 1.64
Head length (Lateral)	21.2 (20.9-21.5) ± 0.29	24.6 (23.2-25.2) ± 0.67	24.8 (23.8-26.3) ± 0.68	26.2 (24.5-28.6) ± 1.82
Head depth (Occiput)	17.8 (17.2-18.2) ± 0.55	20.3 (19.6-21.1) ± 0.59	21.6 (20.6-24.2) ± 1.03	21.4 (20.2-22.1) ± 0.87
Snout length	6.1 (5.6-6.4) ± 0.46	6.5 (5.7-7.6) ± 0.66	-	6.3 (5.9-6.6) ± 0.36
Eye diameter	4.8 (4.8-5.0) ± 0.11	7.8 (6.8-8.7) ± 0.77	-	6.5 (6.5-6.5) ± 0.02
Interorbital space	10.5 (10.2-10.9) ± 0.35	9.5 (9.2-10.0) ± 0.27	-	11.5 (11.3-12.0) ± 0.36
Max. head width	13.8 (12.9-14.7) ± 0.90	13.7 (13.1-14.0) ± 0.29	14.1 (13.4-15.3) ± 0.53	14.9 (14.2-15.9) ± 0.77
Gape width	6.0 (5.0-6.5) ± 0.84	6.1 (5.7-6.6) ± 0.28	-	6.6 (6.3-7.0) ± 0.36
Internarial space	6.4 (6.3-6.6) ± 0.13	6.3 (5.9-6.9) ± 0.38	-	6.9 (6.7-7.2) ± 0.25
Body width (D fin Origin)	16.21 (6.1-16.5) ± 0.26	12.1 (10.8-14.2) ± 1.27	12.5 (11.7-15.3) ± 1.04	12.6 (11.9-13.7) ± 0.74
Caudal ped. length	16.6 (16.0-17.0) ± 0.56	10.5 (9.1-11.4) ± 0.75	9.9 (9.0-10.6) ± 0.54	11.7 (11.2-12.4) ± 0.58
Caudal ped. height	12.8 (12.2-13.2) ± 0.54	11.4 (10.8-12.2) ± 0.47	11.2 (10.3-11.5) ± 0.49	12.9 (12.8-13.1) ± 0.13
Predorsal length	54.8 (53.5-56.1) ± 1.30	49.8 (48.8-50.3) ± 0.68	48.6 (47.2-50.7) ± 1.17	51-.5 (49.6-52.7) ± 1.34
Prepelvic length	39.3 (35.4-43.8) ± 4.22	43.5 (41.2-53.0) ± 3.91	40.0 (37.4-42.2) ± 1.50	43.6 (43.3-43.8) ± 0.34
Preanal length	61.0 (59.6-62.9) ± 1.67	59.1 (58.4-61.2) ± 1.34	55.2 (52.3-58.2) ± 2.06	67.8 (67.5-68.1) ± 0.32
Preanus length	55.9 (54.0-68.0) ± 2.01	55.6 (53.4-57.4) ± 1.58	52.7 (50.3-54.8) ± 1.48	64.3 (62.7-65.6) ± 1.48
Dorsal fin height	28.6 (28.0-29.2) ± 0.60	27.4 (23.6-29.7) ± 2.53	27.7 (25.9-28.7) ± 0.98	26.4 (25.2-27.2) ± 0.91
Dorsal fin base length	13.6 (13.2-14.1) ± 0.46	11.6 (10.9-12.2) ± 0.43	12.0 (11.3-12.60) ± 0.39	14.1 (12.8-15.9) ± 1.47
Length of pectoral	18.4 (17.8-19.0) ± 0.60	19.1 (18.1-21.1) ± 0.95	19.6 (18.3-20.4) ± 0.66	19.5 (19.1-19.7) ± 0.32
Length of pelvic	18.8 (18.3-19.6) ± 0.71	16.2 (13.8-17.6) ± 1.29	17.4 (14.0-16.5) ± 0.71	17.9 (17.6-18.0) ± 0.23
Length anal fin	31.6 (30.9-32.1) ± 0.89	33.3 (31.9-35.5) ± 1.39	37.7 (36.4-38.6) ± 0.85	20.6 (20.0-20.8) ± 0.55
Height of anal fin	15.9 (15.1-16.8) ± 0.82	15.8 (14.6-16.6) ± 0.78	15.4 (14.0-16.5) ± 0.71	12.5 (11.3-13.7) ± 1.21
Caudal fin length	30.9 (29.8-32.1) ± 1.14	33.4 (29.3-37.6) ± 3.06	32.6 (31.6-35.2) ± 1.13	30.5 (29.1-32.2) ± 1.53
Length median caudal fin ray	9.9 (9.2-10.3) ± 0.57	12.7 (11.0-14.1) ± 0.89	13.5 (12.0-14.8) ± 0.93	11.6 (11.2-12.1) ± 0.46

Table 2. Table showing differences between *Osteobrama cunma* and *Osteobrama cotio*

	<i>Osteobrama cunma</i>	<i>Osteobrama cotio</i>
1 Anal branched rays	26	31
2 Predorsal scales	20	27
3 Lateral scales	48	66
4 Circum peduncular scales	20	30
5 Scales rows between dorsal fin base and lateral line	9	14
6 Scale rows between lateral line and pelvic fin base	8	12
7 Anal basal bone	9-11	8-9
8 Predorsal scales in the mid dorsal line	present	Absent if present very few
9 Scales	larger and regularly arranged	smaller and irregularly arranged
10 First anal fin pterygiophore	Distal tip broad, which suddenly tapers towards the proximal end	slender dagger shaped which gradually tapers towards the proximal end
11 Lamellar ossicles	developed from the anterior border of the predorsal neural spines moderately developed leaving a large gap with the supraneurals above	from the anterior border of the predorsal neural spines enlarged that it almost touches the supraneurals above and there is little gap between them
12 Body depth	36.8 (34.1-39.0)	42.9 (39.3-44.9)
13 Prepelvic length	43.5 (41.2-53.0)	40.0 (37.4-42.2)
14 Preanal length	59.1 (58.4-61.2)	55.2 (52.3-58.2)
15 Anal fin length	33.3 (31.9-35.5)	37.7 (36.4-38.6)

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