

A new species of the Asian catfish genus *Pseudolaguvia* from Myanmar (Teleostei: Ostariophysi: Siluriformes: Erethistidae)

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Abstract

A new species of the erethistid catfish genus *Pseudolaguvia* from Myanmar is described. *Pseudolaguvia tenebricosa*, **new species**, from Pathe Chaung, Lower Myanmar, differs from the only congener *P. tuberculata* (Prashad & Mukerji, 1929) in having an adipose fin not reaching dorsal fin, and a narrower head with a shorter snout.

Key words: siluriforms, Erethistidae, *Pseudolaguvia*, new species, *Laguvia*, Sisoridae, adhesive apparatus

Introduction

The Asian catfish family Erethistidae (sensu de Pinna 1996), previously considered part of the Sisoridae (see e.g. Nelson 1994; Jayaram 1999), consists of six genera with about 14 recognized species. Some erethistids, such as *Conta conta* (Hamilton), *Laguvia ribeiroi* Hora, *L. kapuri* Tilak and Husain, and *Pseudolaguvia tuberculata* (Prashad & Mukerji) possess a thoracic adhesive apparatus formed by longitudinal skin folds densely covered with unculi (sensu Roberts 1982), that closely resembles a similar apparatus in the sisorid genus *Glyptothorax*. In both groups, the thoracic adhesive disc appears to be an adaptation to life in fast flowing waters (Hora 1930; de Pinna 1996).

Pseudolaguvia tuberculata was originally described by Prashad and Mukerji (1929) in their monograph on the fishes of the Indawgyi area in Upper Myanmar, as a species of the genus *Glyptothorax*. This new species was said to differ from other *Glyptothorax* species in the presence of a humero-cubital and scapular process and thus resembled the genera *Erethistes* and *Laguvia* more closely. Because of its unusual features, Misra (1976) erected the new genus *Pseudolaguvia* to accommodate *G. tuberculatus*. *Pseudolaguvia* has since remained monotypic.

Recent collections of fishes obtained from Pathe Chaung, a little hill stream near Taungoo in southern Myanmar, revealed specimens of an undescribed species, which resembles *Pseudolaguvia tuberculata* and is described herein.

Specimen measurements were made point to point, to 0.1 mm. Proportional values for *Pseudolaguvia tuberculata* were calculated from measurements provided in the original description (Prashad & Mukerji, 1929) and reported along with the values for the new species in Table 1. Counts of paired fin-rays were taken from the left side of the specimens. Institutional abbreviations used herein follow Eschmeyer (1998). Other abbreviations used are: SL, Standard Length; HL, Head Length; m, mean; r^2 , standard deviation.

***Pseudolaguvia tenebricosa*, new species**

(Fig. 1a-e, Table 1)

Holotype: USNM 373293, 29.4 mm SL; Myanmar: Kayin Division: Pathe Chaung, hill stream, 13 miles east of Taungoo, 19°01'11"N, 96°35'33"E; 39 m above sea level; 18 March 2003, R. Britz, R. Roesler & Myo Nyunt.

Paratypes: USNM 374987, 14 specimens, 27.6–31.5 mm SL; same data as holotype; 9 May 2003, Tin Win, Ye Hein Htet, Aung Tun Zaw, and Tin Win Htwe.

Additional material: CAS 98614, 2 specimens, 28.7–30.4 mm SL; Myanmar: Kachin Division: Nan Kwe Chaung; 25°20.405' N 97°17.049'E; 138 m above sea level; 04 Nov. 1997, Carl J. Ferraris jr., U Tun Shwe & Mya Than Tun.

Diagnosis. *Pseudolaguvia tenebricosa* differs from *P. tuberculata* (fig. 2) (morphometric data calculated from Prashad & Mukerji's [1929] measurements) in having an adipose fin not reaching posterior insertion of dorsal fin (vs. adipose fin reaching dorsal fin), a narrower (23.8–25.1 vs. 26.7 % SL and 83.2–87.5 vs. 88.9 % HL) head, and a shorter snout (12.8–14.3 vs. 16.7 % SL and 44.7–50.6 vs. 55.6 % HL).

Description. Small species with a maximum length of 31.5 mm SL. Morphometric information for holotype and paratypes are provided in Table 1.

Dorsal-fin rays II, 6; pectoral-fin rays I, 8; pelvic-fin rays i,5; anal-fin rays iii,7, with the first ray very small, splint-like. Principal caudal-fin rays i,7,7,i.

Head dorsoventrally depressed, with subterminal mouth and broad fleshy lips. Upper lip continuing into maxillary barbels, the bases of which are connected to the sides of the head through a broad roughly triangular skin flap. Four pairs of barbels: Maxillary barbels extending to the base of the pectorals, lateral mandibular barbels only slightly shorter, medial mandibular barbels half as long as outer mandibular barbels, nasal barbels, arising from the internarial septum, reaching only two thirds the distance from naris to eye. Eye very small. Side and top of head scattered with numerous small keratinized tubercles; keratinized areas on dorsal surface of head may form short or longer irregular longitudinal lines that extend onto supraoccipital process; well-developed superficially situated scapular and humeral processes. Numerous tubercles along body forming parallel irregular series, one of which forms a straight line of light colored tubercles and runs along level of horizontal septum. Fleshy bases of adipose and anal fin also with tubercles. Rayed portions of fins without tubercles.

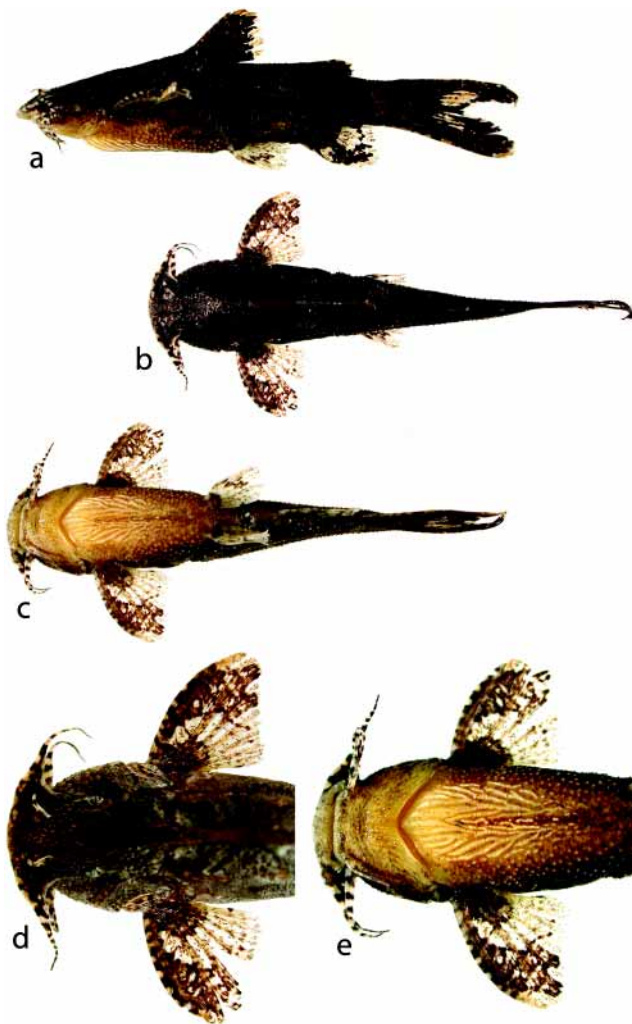


FIGURE 1. *Pseudolaguvia tuberculata*, reproduction of original figures from Prashad & Mukerji (1929), rotated 90° from original. a. lateral view; b dorsal view of anterior body; c ventral view of anterior body.

Pectoral fin with strong spine bearing five to seven serrae on the inner face; outer face also serrate. Dorsal spine strong with weak serrae on posterior face.

Thorax and anterior portion of abdomen flattened ventrally with large adhesive organ, consisting of 14-18 longitudinal, partly merging skin folds arranged in an elongate area, 6-7 mm long and 3-4 mm wide, with a deep median groove. Folds extend anteriorly to isthmus, so that anterior border of adhesive organ forms a V, with its tip pointing rostrally.

Caudal fin deeply bifurcate with upper lobe in most specimens slightly longer than lower lobe; uppermost principal caudal ray extending as a short filament.

Coloration. Body brown to almost black, but underside of head and belly posteriorly of insertion of pelvic fin light beige with melanophores in median groove of adhesive organ and close to anal fin insertion. Two narrow lighter bands on side of body, one extending from posterior insertion of dorsal fin in a curve down to posterior insertion of pelvic fin, another from posterior base of adipose fin to posterior insertion of anal fin. Barbels annulated black and white. Pectoral fin with dark anterior basal area, an annulated

anterior face of spine, and a distal band with hyaline tip. Dorsal fin dark brown except for light posterior seam. Pelvic fin mostly hyaline, with dark basal area and narrow dark streak subdistally. Adipose fin dark brown with lighter seam. Anal fin with dark base and narrow band that forms a half circle enclosing an almost round central hyaline area; distal parts of anal fin also hyaline. Caudal fin dark brown except for two central hyaline windows in dorsal and ventral lobes.

Etymology. From the Latin adjective *tenebricosus* alluding to the dark, gloomy coloration of this species.

TABLE 1. Summary of morphometric data of the two species of *Pseudolaguvia*. Data for *P. tuberculata* calculated from the measurements provided by Prashad & Mukerji (1929).

	<i>Pseudolaguvia tenebricosa</i> , Holotype	<i>Pseudolaguvia tenebricosa</i> , Paratypes (n= 14)	m	r ²	<i>Pseudolaguvia tuberculata</i>
SL	29.4	26.3-31.5	28.5	1.4	30.0
in % SL					
Head length	28.6	26.6-29.6	28.4	0.7	30.0
Head width	23.8	23.2-25.1	24.1	0.6	26.7
Head depth	13.6	12.5-14.6	13.6	0.6	15.0
Snout length	14.3	12.8-14.2	13.4	0.5	16.7
Predorsal length	43.5	41.4-44.8	43.0	0.9	
Prepectoral length SL	23.5	20.6-23.0	22.1	0.8	
Preanal length	71.4	67.3-70.7	69.3	1.4	
Body depth	23.8	17.1-23.7	20.1	2.5	23.3
Caudal ped depth	11.2	8.5-11.5	10.1	0.8	10.0
Caudal ped. length	16.0	15.4-17.5	16.3	0.5	18.3
Dorsal fin length	13.6	12.6-14.3	13.3	0.6	
Dorsal fin depth	19.5	13.7-19.7	16.9	1.8	20.0
Pelvic fin length	16.0	12.8-14.9	13.8	1.0	13.3
Pectoral fin depth	21.9	18.5-24.9	20.9	2.1	18.3
Anal fin length	15.2	12.5-14.6	13.7	0.7	
Caudal fin length	29.3	25.4-30.4	27.4	1.8	26.7
in % head length					
eye diameter	9.5	8.8-11.8	10.4	0.9	11.1
interorbital width	29.8	28.8-32.1	30.2	0.9	27.8
snout length	50.0	44.7-50.6	47.3	2.1	55.6
head depth	47.6	44.9-50.0	47.8	1.5	50.0
head width	83.2	82.5-87.5	84.7	1.8	88.9

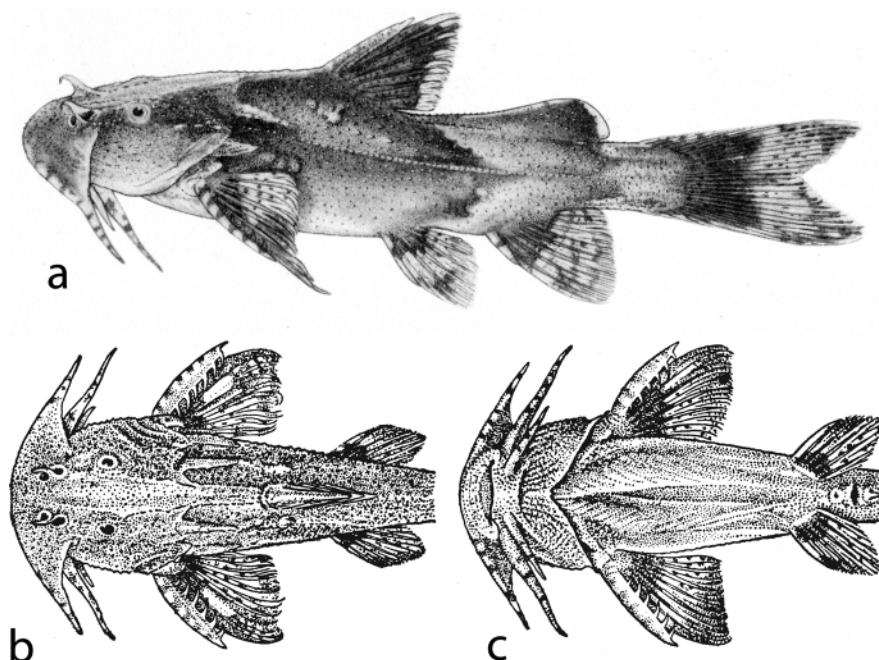


FIGURE 2. *Pseudolaguvia tuberculata*. a reproduction of original figure from Prashad & Mukerji (1929), rotated 90° from original, lateral view; b dorsalsview of anterior body; c ventral view of anterior body.

Habitat. Pathe Chaung (fig. 3), a left bank tributary of the Sittang River, is a small hill stream, with fast running, clear water, a sandy bottom and numerous rocks and boulders. Aquatic vegetation was absent. Water temperature was 24°C, with a pH of 8.5 and a conductivity of 70 μ S. All specimens were collected during the daytime. The holotype was caught with a seine among branches lying in the water, and the paratypes were collected with a battery operated electroshocker.

Discussion

Our new species closely resembles the erethistid *Pseudolaguvia tuberculata* and shares with that species a unique combination of two characters: (1) the presence of a distinct adhesive apparatus on the thorax possessing a median depression and consisting of longitudinal unculiferous ridges and intermittent smooth grooves and (2) well-developed scapular and cubito-humeral processes. *Pseudolaguvia tenebricosa* is therefore assigned to this genus.

Possession of longitudinal skin folds on the thorax that represent an adhesive apparatus facilitating life in fast flowing torrential waters, has been reported from representatives of the three erethistid genera *Conta*, *Laguvia*, and *Pseudolaguvia*, and the sisorid genus *Glyptothorax* (Hora 1922, 1930; Wu & Liu 1940; Bhatia 1950; Tilak & Husain 1975; Tilak 1976; de Pinna 1996).



FIGURE 3. Pathe Chaung, Myanmar. Type locality of *Pseudolaguvia tenebricosa*, new species.

When trying to resolve the generic identity of the new species described in this paper, we came to accept that the species of the genera *Laguvia* and *Pseudolaguvia* are only poorly known and the two genera are clearly in need of a revision. Hora's (1921: 739) diagnosis of the newly erected genus *Laguvia* mentions, among other characters, that "the skin covering the belly is corrugated, suggesting an adherent function." However, he (1921: 742) distinguished *L. shawi* from *L. ribeiroi* by the absence of a thoracic adhesive apparatus in the former and its presence in the latter. Hora (1921: 742) described this apparatus in *L. ribeiroi* as "oblique grooves and ridges which form a V-shaped adhesive apparatus similar to that found in the genus *Glyptothorax* but not so well-developed" and Hora (1922: fig. 7a) figured well developed skin folds on the thorax of *Laguvia* sp.

Subsequently, Shaw & Shebbeare (1937: 105) noted that in *L. shawi*, contra Hora (1921), there is "a rudimentary adhesive apparatus on the thorax of fresh specimens." [These authors (104: fig. 106) also figure a specimen of *L. ribeiroi* in lateral and ventral view with an adhesive apparatus clearly recognizable in the latter. This figure is cited as having been copied from "Rec. Ind. Mus.", but the original description of *L. ribeiroi* by Hora does not contain a ventral view of the species.]

Menon (1955) synonymized the genus *Laguvia* with *Glyptothorax*, because he found that the characters Hora (1921) used to distinguish *Laguvia* were also present in *Glyptothorax*, specifically mentioning *P. tuberculata* (as *G. tuberculatus*) in this context.

Misra (1976: 247) listed *Laguvia* as a valid genus with 3 species and noted a "poorly developed adhesive apparatus composed of longitudinal plaits of skin" in its generic diagnosis and in the three species descriptions, implying that such an apparatus is present in all *Laguvia* species. Tilak and Hussain (1975) mention also an adhesive apparatus in *L. kapuri*. Arunkumar (2000) recently described a fifth species in the genus, *Laguvia manipurensis*, but did not mention the adhesive thoracic apparatus.

Misra (1976) created the new genus *Pseudolaguvia* to accommodate *Glyptothorax tuberculatus*. Misra's (1976) description of the genus contained mainly characters that are not diagnostic, but are instead widespread among erethistids and sisorids. However, he (p. 253) cited two characters in which the genus differed from other closely allied genera: "1. A well developed thoracic adhesive apparatus which is considerably longer than broad with an elongated depression in the middle", and "2. A contiguous adipose dorsal fin with the rayed dorsal fin." The genus *Pseudolaguvia* has remained monotypic, comprising only *P. tuberculata* from Sankha stream between Mogaung and Kamaing, Upper Myanmar.

Our new species, *Pseudolaguvia tenebricosa*, thus shares with *P. tuberculata* a well developed adhesive apparatus with a median depression, but lacks the second character of *P. tuberculata*, an adipose fin that is contiguous with the dorsal fin. We want to point out here that the difference between the "well developed adhesive apparatus" in *Pseudolaguvia* (Prasad & Mukerji 1929; Misra 1976; Jayaram 1979, 1999; Talwar & Jhingran 1991) and the "poorly developed adhesive apparatus" in some species of *Laguvia* (Hora 1921; Misra 1976; Jayaram 1979, 1999; Talwar & Jhingran 1991) may not be a clear-cut character, as the scanning-electron-micrographs of *L. ribeiroi* published by de Pinna (1996) show a distinct adhesive apparatus, however without the median depression typical of *Pseudolaguvia*. In spite of the vague generic diagnosis of *Pseudolaguvia*, the most reasonable approach to us right now is to assign the new species to this genus on the basis of its close resemblance to *P. tuberculata* and especially the shared presence of a conspicuous median depression in the well developed adhesive apparatus.

De Pinna (1996) listed erethistid specimens from Koilla Khal, Chittagong, Bangladesh (UMMZ 209010) as *Pseudolaguvia tuberculata*. However, he (personal communication, 2003) acknowledged that his identification may have been incorrect and Heok Hee Ng (personal communication, 2003), currently studying these specimens, concluded that they represent a new species whose generic assignment is not clear. Because the specimens are under study elsewhere, we cannot comment on them further, but only stress again that the group appears to be in need of a thorough revision.

According to de Pinna (1996), the adhesive apparatus of the erethistid genera *Laguvia*, *Pseudolaguvia*, and *Conta* has evolved independently from the remarkably similar apparatus of *Glyptothorax*. The latter genus was placed in the family Sisoridae by de Pinna (1996) and hypothesized to be the closest relative of a taxon consisting of the genus *Pseudecheneis* and the subtribe Glyptosternina. The adhesive apparatus of *Pseudecheneis* consists of transverse, not longitudinal, ridges and grooves and an adhesive apparatus is absent from members of the Glyptosternina, which is composed of the genera *Glyptosternon*, *Glaridoglanis*, *Oreoglanis*, *Exostoma*, *Myersglanis*, *Coraglanis*, *Euchiloglanis*, and *Pseudexostoma*. In de Pinna's (1996) scenario, the independent development of an adhesive apparatus of *Glyptothorax* similar in appearance to that in the erethistids was modified into the apparatus with transverse ridges in the lineage of *Pseudecheneis* and lost in the lineage leading to the Glyptosternina. This convoluted scenario and, especially, the apparent evolutionary loss of an adhesive apparatus seems surprising, as all species of Glyptosternina occur in fast flowing waters, in which such an adhesive apparatus would certainly appear to have an important biological role.

Acknowledgments

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