

ON A NEW RECORD OF FRESHWATER FISH, *PSEUDOLAGUVIA SHAWI* (HORA) FROM ARUNACHAL PRADESH, INDIA (TELEOSTOMI: ERETHISTIDAE)

Lakpa Tamang¹, Shivaji Chaudhry¹ and Dhruvad Choudhury^{1,2}

¹G.B. Pant Institute of Himalayan Environment and Development, North East Unit, Arunachal Pradesh 791113, India
Email: ²dhrupadc@yahoo.co.in (corresponding author, presently at ICIMOD, Kathmandu, Nepal)

plus web supplement of 1 page

ABSTRACT

This paper deals with a description of a fish species encountered during monitoring *Pseudolaguvia shawi*. This species has been reported from north Bengal and Sikkim and not from the other states of the region. The present record thus is a first report for Arunachal Pradesh. The paper provides a brief description on the earlier reports on the genus and also provides a detailed description of the species.

KEYWORDS

Arunachal Pradesh, catfish, new record,
Pseudolaguvia shawi

Arunachal Pradesh is known for its rich biodiversity, a large part of the state still remains unexplored and the diversity of both floral as well as faunal elements remains largely undocumented. Even where reports exist, many groups remain unstudied. The state has many major rivers and numerous rivulets and streams dissecting the topography, offering diverse habitat to aquatic fauna. While some of the rivers of the state have been surveyed for their ichthyofauna, many remain unexplored even today. The authors selected one such unexplored, stream near Itanagar, the capital, for regular study of its fish diversity.

Members of the genus *Pseudolaguvia* are small erethistid catfishes that externally resemble members of the sisorid catfish genus *Glyptothorax* (Ng, 2005a). The species *tuberculata* was originally described by Prashad and Mukerji (1929) in their monograph on fishes of the Indawgyi area of upper Myanmar as a species of *Glyptothorax*. However, Misra (1976) erected the new genus *Pseudolaguvia* to accommodate *tuberculata*, which differs from *Glyptothorax* in the presence of a humero-cubital and scapular process as well as adhesive apparatus longer than broad with an elongated depression in the middle, and thus resembling the genera *Erethistes* and *Laguvia* more closely (Britz & Ferraris, 2003). However, Jayaram (1979) mentioned that the forked condition of the caudal fin, excludes it from *Laguvia*. The genus *Pseudolaguvia* remained monotypic until recently (Britz & Ferraris, 2003). Hora (1921) created *Laguvia* as a new genus to accommodate *Pimelodus asperus* McClelland and described *L. shawi* from Mahananda River, north Bengal. Menon (1955) synonymised *Laguvia* with *Glyptothorax* considering the diagnostic characters of the former genus as falling within the range of variation of the latter but failed to observe certain other characters such as shape of caudal fin etc. (Jayaram, 1972). In earlier studies (Britz & Ferraris, 2003) *P. kapuri*, *P. ribeiroi* and *P. shawi* were thought to lack adhesive apparatus; this was one of the characters used to distinguish between *Laguvia* (sensu Hora, 1921) and

Pseudolaguvia. Recently Ng and Kottelat (2005) pointed out that all these species have a median depression in the thoracic adhesive apparatus and are therefore congeneric. Three new species *P. foveolata* have since been described from the Tista River in West Bengal, India (Ng, 2005b) and *P. muricata* and *P. inornata* from Bangladesh (Ng 2005a). The genus is found in northern India, Nepal and Myanmar, with six species currently considered valid, namely, *P. ribeiroi* (Hora, 1921), *P. shawi* (Hora, 1921), *P. tuberculata* (Prashad & Mukerji, 1929), *P. kapuri* (Tilak & Hussain, 1975), *P. tenebricosa* (Britz & Ferraris, 2003), *P. muricata* (Ng, 2005a), *P. inornata* (Ng, 2005a) and *P. foveolata* (Ng, 2005b). The generic assignment of the species described in *Laguvia* and *Pseudolaguvia* have been discussed by Ng and Kottelat (2005). Hence, *Laguvia* is now no longer valid as it has been deemed an objective junior synonym of Hara (Ng & Kottelat, 2005). In this paper we report an addition to the occurrence of *Pseudolaguvia* from the northeastern region, and also first report of *P. shawi* from Arunachal Pradesh.

Pseudolaguvia shawi (Hora)

Laguvia shawi Hora, 1921. *Rec. Indian Mus.*, 22: 740, pl. xxix, fig. 2 (type locality, Mahananda River, Darjeeling Himalaya)

Pseudolaguvia shawi: Ng, H.H. & M. Kottelat. 2005. *Ichthyol. Explor. Freshwaters*, 16: 13-22.

Material examined: 7 specimens, SL from 27.2 to 28.8mm, Senkhi stream, near Police colony, Itanagar, coll. Lakpa Tamang on 14.ix.2006.

METHODOLOGY

Weekly samplings of fish fauna were initiated from three stations near the police colony (27°04.697'N & 93°35.809'E) Itanagar, Papum Pare district, Arunachal Pradesh, from September 2004 onwards. Sampling was done using a cast net of 2.01m diameter and mesh size of 7mm². Seven specimens of almost same size class were examined. The sampling was conducted to study population and diversity of fish fauna of the stream.

Morphometric measurements were taken using digital vernier calliper and data recorded to tenth of a millimeter. Counts and measures were made from the left side of the specimens following Ng and Kottelat (1998). Sub units of the head are presented as proportions of head length (HL). Measurements of body parts are given as proportions of standard length (SL).

Taxonomic characters were matched with the holotype specimen (F. 10085/1) at ZSI, Kolkata, which was found to be fragmented (fragmented at posterior portion) and hence requires replacement. The necessary morphometric data could not be

Table 1. Morphometric comparison of *Pseudolaguvia shawi* and *Pseudolaguvia ribeiroi* with that of present collection

	<i>P. shawi</i> (Ng, 2005a)	<i>P. ribeiroi</i> (Ng, 2005a)	<i>P. shawi</i> (F. 10085/1) (Holotype)	Present collection (n = 7) (Mean ± SE)
SL	23.1	24.6		28.25±0.23
In % SL				
Predorsal length	45.0	45.5	-	11.76 ± 0.22 (41.6)
Preanal length	69.7	70.3	-	19.50 ± 0.10 (69.0)
Prepelvic length	51.9	51.2	-	13.96 ± 0.14 (49.4)
Prepectoral length	25.5	23.6	-	6.77 ± 0.25 (24.0)
Length of dorsal fin base	13.4	16.7	-	3.59 ± 0.09 (12.7)
Dorsal fin spine length	14.3	15.0	-	3.92 ± 0.16 (13.9)
Length of anal fin base	13.9	15.9	-	3.79 ± 0.07 (13.4)
Pelvic fin length	16.0	15.4	-	1.42 ± 0.09 (14.9)
Pectoral fin length	24.2	22.4	-	6.65 ± 0.13 (23.5)
Pectoral fin spine length	18.6	18.3	-	4.95 ± 0.17 (17.5)
Caudal fin length	19.5	26.0	-	5.19 ± 0.28 (18.4)
Length of adipose fin base	17.7	13.0	-	4.35 ± 0.05 (15.4)
Caudal peduncle length	16.0	17.9	-	4.81 ± 0.17 (17.0)
Caudal peduncle depth	7.4	6.9	-	2.45 ± 0.07 (8.7)
Body depth at anus	14.3	14.6	-	4.78 ± 0.16 (16.9)
Head Length	6.8	7.2	6.6	7.98 ± 0.17
In % HL				
Head width	77.9	77.8	71.2	6.05 ± 0.15 (75.8)
Head depth	60.3	62.5	58.9	5.13 ± 0.08 (60.3)
Snout length	51.5	55.6	48.4	3.88 ± 0.09 (48.6)
Interorbital distance	32.4	34.7	34.7	2.51 ± 0.05 (31.5)
Eye diameter	13.2	9.7	12.5	1.08 ± 0.04 (13.5)

* Values in parenthesis represent percentage

collected, only sub units of head could be taken (Table 1). The proper taxonomic validation was done using morphometric data taken by H.H. Ng from University of Michigan.

All specimens were preserved in 10% formalin and deposited in GBPIHED, N.E. Unit, Itanagar (Collection No. GBP-NE/FF/21 dated 14/09/04).

Diagnosis

P. shawi differs from its congeners *P. ribeiroi* in having a smooth dorsal spine and pectoral fins with weak to no serration. This is opposed to the prominent serration of the pectoral fin in *P. ribeiroi* (Jayaram, 1979).

However, *P. shawi* differs from *P. kapuri* in having a shorter adipose-fin base (15.4% SL vs 17.1-20.6%SL) (Ng, 2005b); and from *P. tuberculata* in having the shorter adipose fin (vs. reaching) the base of the dorsal-fin-ray (Ng, 2005b). *P. foveolata* is unique among congeners as the shape of the thoracic adhesive apparatus being considerably shorter (extending to the middle of the pectoral fin base vs. extending to midway between the base of the last pectoral fin ray and the base of the pelvic fin) and also have considerably wider median depression in the thoracic adhesive apparatus (Ng, 2005b). *P. muricata* can be distinguished from congeners by its elongate dorsal and pectoral fin spines (Ng, 2005a). *P. inornata* can be distinguished from congeners in having a uniform colouration with a pale mid-dorsal stripe and brown sub marginal stripes on each lobe of the caudal fin (Ng, 2005a). From *P. tenebricosa* in having shorter head width (75.8% HL vs. 82.5-87.5% HL) and also shorter caudal fin length (18.4% SL vs. 25.4-30.4% SL) (Britz & Ferraris, 2003).

DESCRIPTION

D. I/5-6; P. I/6-7; V i/5; A i/8. Head depressed, body moderately compressed beyond pectoral base. Mouth subterminal with broad fleshy lips. Upper lip continuing into maxillary barbels. Four pairs of barbels; maxillary barbels extending to the anterior base of pectoral fin. Maxillary and outer mandibular barbels annulated with black and white colour while inner mandibular barbels are almost white (Fig. 1; Image 1^w). Nasal barbel triangular in shape and nearly reach orbit. Branchiostegal rays six and united at isthmus. Cubito-humeral process somewhat smooth and significantly less prominent than in *P. ribeiroi*. Three white bony tubercles near gill openings and two tubercles just below dorsal spine, but these tubercles appear to be fainter than those of *P. ribeiroi*. Minute dark spot scattered ventrally and laterally. Body almost smooth posteriorly and slightly rough on head. Skin weakly tuberculated.

Dorsal profile rising evenly from tip of snout to origin of dorsal fin and then sloping gently ventrally to end of caudal peduncle. Ventral profile flat to anal fin base, then sloping gently dorsally to end of caudal peduncle. Dorsal spine strong, smooth anteriorly and feebly serrated posteriorly at the tip. Pectoral fin with strong spine, bearing five to six serrae on the inner face; outer face serration is very minute and mostly covered with skin and are prominent when skin is removed. Pelvic fin origin almost behind vertical from last ray of dorsal fin, distinctly nearer caudal fin base than to tip of snout. Adipose fin short. Thorax and anterior portion of abdomen flattened ventrally with adhesive organ (Fig. 2) longer than broader, having longitudinal unculiferous ridges with central median depression and adhesive apparatus is feebly developed in small individual.

^w See Image 1 on the web at www.zoosprint.org

Caudal fin lunate or semicircular in mature individuals with upper lobe in most specimens slightly longer than lower lobe whereas deeply bifurcate in small individual.

Colouration

Colour of the species varies according to the microhabitat. Dark brown to light brown above, dirty white below, with two white bands, one below the dorsal fin base and another below the adipose fin base, former broader than latter. Dorsal fin dark brown except for light posterior seam. Pelvic fin mostly hyaline, with dark basal area and narrow dark streak sub distally. 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.

In 10% formalin the specimen becomes hard and the colour changes to light white dorsally and almost dirty white ventrally. Outer membrane of adhesive apparatus fades out. The colour of the specimen changes to dark dorsally and laterally when removed from formalin and dried.

Microhabitat

The fish was found in the streams of subtropical area at an altitude of 600m. The stream comprised of boulders, and sandy and pebbly bottom. The species is found more during floods because the microhabitat of the fish is under small pebbles and stones. It feeds on small insects, debris and algae. During heavy floods the fish moves toward the banks due to movement of boulders and pebbles and shooting of sand particles which compels them to migrate towards bank where the flow of water is slower and hence the force of the current low. The adhesive apparatus helps the individuals to obtain anchorage against the fast flow of water. Central median depression of adhesive apparatus seems to play an important role in attaching the fish with substratum forming a vacuum to control the water current. The pectoral fins of the species are serrated posteriorly with the tips curved backwards. This helps the individual to obtain leverage to move forward and also sideways while moving between the small stones and pebbles.

DISTRIBUTION

India - Tista river system Darjeeling Himalaya and Sikkim. The species also occurs in Mahananda River in north Bengal. The present study reveals its possible distribution into the north-east and possibly into the Brahmaputra river system.

DISCUSSION

The diagnostic character of our collected specimens matches in all respects to *P. shawi* in having dorsal spine smooth and most of the morphometric data of Ng (2005a).

Some erethistids, such as *Conta conta* (Hamilton), *P. ribeiroi* Hora, *P. kapuri* Tilak and Husain, and *P. tuberculata* (Prashad & Mukerji) possess a thoracic adhesive apparatus formed by longitudinal skin folds densely covered with unculi (Roberts, 1982), that closely resembles a similar apparatus in the sisorid



Figure 1. Lateral view of *Pseudolaguvia shawi*



Figure 2. Adhesive apparatus showing median depression

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) and probably ensures anchorage on rocks and boulders against the fast flowing water. In *Pseudolaguvia* with proportion to its body size, the adhesive apparatus looks feebly developed, whereas in *Glyptothorax* it is prominent as *Glyptothorax* is bigger in size.

Pseudolaguvia shawi, regularly appeared in the catches from September 2004 onwards until the end of January 2005. The fishes again reappeared from June 2005 onwards and have been regularly captured until January 2006 end. Thus, there seems to be a period between February to May when individuals of the species seem to disappear from the study site. Although *P. shawi* specimens were regularly captured in these months, their numbers were always found to be low, with two to three

individuals appearing in each catch except for those in mid September and first week of October when the numbers increased to four and five individuals per catch, respectively.

REFERENCES

- Britz, R. and J.C.J. Ferraris (2003).** A new species of Asian catfish genus *Pseudolaguvia* from Myanmar (Teleostei: Ostariophysi: Siluriformes: Erethistidae). *Zootaxa* 388: 1-8.
- Hora, S.L. (1921).** On some new or rare species of fish from the eastern Himalayas. *Records of the Indian Museum* 22: 731-744.
- Hora, S.L. (1930).** Ecology, bionomics and evolution of the torrential fauna, with special reference to the organs of attachment. *Philosophical Transactions of the royal Society of London Series B* 218: 171-282.
- Jayaram, K.C. (1979).** Aid to the identification of the siluroid fishes of India, Burma, Sri Lanka, Pakistan and Bangladesh. 3. Sisoridae. *Records of the Indian Museum, Miscellaneous Publications, Occasional Papers* 14: 1-62.
- Jayaram, K.C. (1972).** Siluroid fishes of India, Burma and Ceylon. 18. Systematic position of the genus *Laguvia* Hora and its relationships. *Records of Indian Museum* 67: 385-389.
- Menon, M.A.S. (1955)** Notes on fishes of the genus *Glyptothorax* Blyth. *Records of the Indian Museum* 52(for 1954): 27-54.
- Misra, K.S. (1976).** Teleostomi: Cypriniformes; Siluri. In: *The fauna of India and the adjacent countries, Pisces (2nd edition)* Vol. III. The Controller of Publications, Delhi, xxi+367pp.
- Ng, H.H. (2005a).** Two new species of *Pseudolaguvia* (Teleostei: Erethistidae) from Bangladesh. *Zootaxa* 1044: 35-47.
- Ng, H.H. (2005b).** *Pseudolaguvia foveolata*, a new catfish (Teleostei: Erethistidae) from northeast India. *Ichthyological Exploration of Freshwaters* 16(2): 173-178.
- Ng, H.H. and Kottelat (2005).** *Caelatoglanis zonatus*, a new genus and species of the Erethistidae (Teleostei: Siluriformes) from Myanmar, with comments on the nomenclature of *Laguvia* and *Hara* species. *Ichthyological Exploration of Freshwaters* 16: 13-22.
- Ng, H.H. and M. Kottelat (1998).** The catfish genus *Akysis* Bleeker (Teleostei: Akysidae) in Indochina, with descriptions of six new species. *Journal of Natural History* 32: 1057-1097.
- Pinna, M.C. de. (1996).** A phylogenetic analysis of the Asian catfish families Sisoridae, Akysidae, and Amblycipitidae, with a hypothesis on the relationships of the neotropical Aspredinidae (Teleostei, Ostariophysi). *Fieldiana: Zoology* 8: 1-83.
- Prasad, B. and D.D. Mukerji (1929).** The fish of the Indawgyi Lake and the streams of the Myitkyina district (Upper Burma). *Records of the Indian Museum* 31: 161-223.
- Roberts, T.R. (1982).** Unculi (horny projections arising from single cells), an adaptive feature of the epidermis of ostariophysan fishes. *Zoologica Scripta* 11: 55-76.
- Tilak, R. and A. Husain (1975).** A new sisorid catfish, *Laguvia ribeiri kapuri* (Sisoridae: Siluriformes) from Uttar Pradesh. *Journal of the International Fisheries Society* 6: 1-5.

ACKNOWLEDGEMENTS

The authors would like to express their gratitude to the Director, GBPIHED for facilities provided. The authors would also like to put on record their appreciation for the help and cooperation provided by the Zoological Survey of India, particularly Dr. N. Sen, ZSI Shillong and the Director ZSI Kolkata. Thanks are also due to Mr. H.H. Ng and anonymous reviewers for providing valuable comments.



BRAIN INJURY IN A COMMON LANGUR *SEMNOPTHECUS ENTELLUS*

I. Nath¹, N. Sahoo², T.K. Pattanaik³, V.S.C. Bose⁴ and S.K. Panda⁵

^{1,3} Associate Professor; ² Associate Professor, Department of Medicine; ⁴ Professor, Department of Surgery; ⁵ Assistant Professor, Department of Pathology
Orissa Veterinary College, Bhubaneswar, Orissa 751003, India
Email: ¹ indravel@yahoo.co.in

plus web supplement of 1 page

A Common Langur (*Semnopithecus entellus*) was presented in the Surgery Department of Orissa Veterinary College by Peoples for animal (PFA), a non-government organization working for animal welfare. PFA workers rescued the monkey in a semiconscious state from the Khandagiri caves area near Bhubaneswar city. The animal was aggressive and was restrained using a snare.

After general inspection, the animal was sedated within five minutes of the intramuscular administration of a mixture of 0.60mg of atropine sulphate and 100mg of ketamine hydrochloride. On physical examination, a blood stained area was detected in the frontal sinus area just above the right eye. On exploration of the site, it was found that one end of an iron nail tightly embedded in the skull was detected. The nail was removed with the help of pliers. The retrieved iron nail was broken at its base (Image 1^w). Five hundred ml of dextrose normal saline was administered along with 8mg of dexamethasone (Dexona: M/S Cadila Health Care Ltd., Ahmedabad) and 500mg of cefotaxime sodium (Taxim: M/S Alkem Lab. Ltd., Mumbai) intravenously. In spite of all possible efforts, the animal died after three hours of operation. Post-mortem examination showed extensive subdural hematoma covering the entire right hemisphere. Protruded brain tissue could be marked in the path of the penetrating wound caused by the nail. The death of the langur was attributed to intracranial haematoma and by the damage to the brain tissues by the broken iron nail. A similar pattern of death was recorded by Indrieri and Simpson (1985) in a dog.

Khandagiri is a historic place with ancient rock-cut caves where several monkeys reside. Sometimes the monkeys visit nearby localities in search of food and cause damage to the fruit bearing trees and houses. House owners normally fix inverted nails on the compound wall to prevent trespassers, which in this case had affected the langur.

REFERENCE

- Indrieri, R.J. and S.J. Simpson (1985).** Intracranial surgery. pp.1415-1429. In: Slatter, D. (Ed.). *Text Book of Small Animal Surgery*. 1st edn. W.B. Saunders Company, Philadelphia.

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

