Journal of Threatened Taxa | www.threatenedtaxa.org | 26 January 2014 | 6(1): 5357–5361

Oreichthys andrewi (Teleostei: Cyprinidae) a new species from Assam, northeastern India

J.D. Marcus Knight

Flat 'L', Sri Balaji Apartments, 7th Main Road, Dhandeeswaram, Velachery, Chennai, Tamil Nadu 600042, India
jdmarcusknight@yahoo.co.in

ISSN
Online 0974–7907
Print 0974–7893

OPEN ACCESS

Abstract: *Oreichthys cosuatis* (Hamilton, 1822) was believed to be a monotypic genus widely distributed throughout India, Myanmar and ranging up to Thailand. Though the genus *Oreichthys* was known to have an incomplete lateral line, certain studies showed that there are species possessing a complete lateral line, as well as a much higher lateral line scale count. One such species is described here as a new species, *Oreichthys andrewi*, which can be distinguished from its congeners by the possession of a complete lateral line; 30+1 scales in the longitudinal series; ½ 4 / 1 / 2 ½ scales in the transverse row; 9 predorsal scales and bright yellow pelvic fins.

Keywords: Aquarium hobby, barb, Dibru River, Eastern Himalaya, *O. cosuatis*, *O. crenuchoides*.

Cyprinus cosuatis Hamilton, 1822 was first described from the Kosi River, Uttar Pradesh, India. Hora (1937a,b) re-assigned *C. cosuatis* to the genus *Oreichthys* and synonymised *Oreichthys parvus* Smith, 1933 described from Thailand with *O. cosuatis* considering it a monotypic genus. Based on this, *O. cosuatis* was considered to have a large range throughout India and South East Asia (Talwar & Jhingran 1991; Jayaram 1999; Menon 1999; Jayaram 2010). Schäfer (2009) described a new species, *Oreichthys crenuchoides* from River Jorai in West Bengal, and re-described *O. parvus*, and resurrected it from the synonymy with *O. cosuatis*, thus increasing the number of valid species under this genus to three.

Although the genus *Oreichthys* was believed to be characterized by an incomplete lateral line (Talwar & Jhingran 1991; Jayaram 1999, 2010), certain studies (Hora 1937a,b; Schäfer 2009) showed that there are species possessing a complete lateral line, as well as a much higher lateral line scale count. Schäfer (2009) in his description of *O. crenuchoides*, mentioned about a specimen of *Oreichthys* which he obtained from an aquarium fish dealer, purportedly sourced from Assam, India, with a complete lateral line and a much higher lateral line scale count. Even though he suggested that it may constitute a new species, he refrained from a formal description due to its dubious origin. Recently, an *Oreichthys* species was collected from the Guijan Ghat, River Dibru, Tinsukia, Assam, with a higher lateral line scale count, and a complete lateral line similar to the specimen discussed by Schäfer (2009), which is described herein as *Oreichthys andrewi.*

Materials and methods

The specimens examined in this study are registered in the collections of the Southern Regional Centre, Zoological Survey of India, Chennai, India (ZSI/SRC), University of Michigan Museum of Zoology (UMMZ) loaned to the Zoological Survey of India, Chennai and the personal collections of J.D. Marcus Knight (MKC). Methods for taking counts and measurements follow

DOI: http://dx.doi.org/10.11609/JoTT.o3705.5357-61| **ZooBank:** urn:lsid:zoobank.org:pub:C05E0A62-7239-43C4-A159-8C7657006F0D

Editor: Rajeev Raghavan, Conservation Research Group (CRG), St. Albert's College, Kochi, India. **Date of publication:** 26 January 2014 (online & print)

Manuscript details: Ms # o3705 | Received 11 July 2013 | Final received 15 January 2014 | Finally accepted 16 January 2014

Citation: Knight, J.D.M. (2014). *Oreichthys andrewi* (Teleostei: Cyprinidae) a new species from Assam, northeastern India. *Journal of Threatened Taxa* 6(1): 5357–5361; http://dx.doi.org/10.11609/JoTT.o3705.5357-61

Funding: Nil.

Competing Interest: The authors declare no competing interests.

Acknowledgements: I gratefully acknowledge the support provided by K. Venkataraman, Director, Zoological Survey of India, Kolkata; K. Ilango (Officer-in-Charge) and Jayasree Thilak (Scientist-C), of the Southern Regional Centre, Zoological Survey of India, Chennai. I also thank Andrew Rao for providing specimens which were used in this study.

Kottelat (2001). Measurements were made with digital calipers and rounded to the nearest 0.1mm. Subunits of the head are expressed in proportions of head length (HL). Data from Schäfer (2009) and Jayaram (1982) for the species from Thailand and Western Ghats respectively, were used for comparison. Photographs were taken with an Olympus SP570 UZ digital camera using super-macro mode.

Oreichthys andrewi sp. nov.
(Images 1, 2A)

urn:lsid:zoobank.org:act:A4AA4175-72E2-47E6-A501-5AAC23F6A535

Holotype: ZSI/SRC F 8755, 38.7mm SL, 10.xii.2011, River Dibru at Guijan Ghat, Tinsukia District, Assam, India (27.579N & 95.329E), coll. Andrew Rao (Images 1 & 2A).

Diagnosis: *Oreichthys andrewi* sp. nov. can be distinguished from its congeners by a complete lateral line; 30+1 scales in the lateral line series; ½4/1/2½ scales in the transverse row; nine predorsal scales and bright yellow pelvic fins.

Description: See Table 1 for morphometric characters and meristics, and Images 1 & 2A for general appearance. Body slender, laterally compressed, its dorsal profile arched with a distinct hump at the nape, ventral profile convex. Body deepest at the dorsal-fin origin, its depth decreasing towards caudal-fin base. Dorsal fin with two simple and 8½ branched rays, its posterior margin concave, its height equal to body depth. Pelvic reaching anal fin origin with one unbranched and nine branched rays; anal fin immediately behind the anal opening with two unbranched and 5½ branched rays, not reaching the caudal fin base and pectoral fin reaching beyond pelvic fin origin with one simple and 13 branched rays. Caudal

Table 1. Morphometric characters and meristics of *Oreichthys andrewi* sp. nov. (Holotype) ZSI/SRC F 8755

Morphometrics	
Standard Length (SL) in mm	38.7
In percent SL	
Head length	29.1
Body depth	29.7
Pre-dorsal length	48.0
Dorsal-hypural length	56.0
Pre-anal length	67.7
Pre-pelvic length	48.0
Caudal peduncle length	20.1
Caudal peduncle depth	14.7
Dorsal fin height	29.9
Anal-fin depth	18.8
Pectoral-fin length	19.3
Pelvic fin length	21.7
In percent HL	
Head depth	68.1
Snout length	36.2
Eye diameter	35.3
Interorbital width	37.1
Internarial width	23.0
Meristics	
Lateral line scales	30+1
Lateral transverse	½ 4/1/2 ½
Dorsal fin	ii 8 ½
Pelvic fin	i 13
Pectoral fin	i 9
Anal fin	ii 5 ½
Caudal fin	1+9+8+1
Pre-dorsal scales	9

Image 1. *Oreichthys andrewi* sp. nov. Holotype, 38.7mm SL, ZSI / SRC F 8755.

Image 2. A - *Oreichthys andrewi* sp. nov. Holotype, 38.7mm SL, ZSI/SRC F 8755 prior to fixation; B - *O. cosuatis*, 26.8mm SL, MKC 400 prior to fixation; C - *O. crenuchoides*, 28.6mm SL, ZSI/SRC F 8754 prior to fixation.

fin deeply forked, its lobes subequal, with 19 (1+9+8+1) rays. Lateral line complete, with 30 pored scales on body plus 1 pored scale on the base of caudal fin. Predorsal scales nine; scales in transverse line on body ¼4/1/2½. Circumpeduncular scales 12. Gill rakers absent.

Head small, its length almost equal to body depth, its dorsal profile ascending with an indentation at the nape. Eyes large, placed forward, their diameter almost equal to snout length. Mouth small oblique, lips thin, lower jaw shorter than the upper jaw, angle of gape reaching behind the anterior margin of the eye orbit, barbels absent. Snout blunt, devoid of tubercles. Nostrils closer to eye than snout tip. Fourteen rows of papillae present on sub-orbital and extending onto the pre-opercle. Caudal peduncle slender, its length between 1 and 1½ times its depth.

Colouration: Formalin-fixed and alcohol-preserved specimen is brownish with a faint humeral spot covering half of the 5th and 6th lateral line scale. All fins hyaline with a black spot on the distal end of the dorsal and anal fin. Scales with dark outer edges and scattered melanophores along the fin bases. In life, body grey with caudal fin pink and the distal ends becoming red. Dorsal fin pale yellow with a black blotch on the distal

end; pelvic fin bright yellow; anal fin and pectoral fin hyaline (Image 2A).

Etymology: The species is named after Andrew Arunava Rao, not only because he collected this species, but also in appreciation of his enthusiasm and support to ichthyology around the world. The species name is formed as a noun in the masculine genitive singular.

Distribution: *Oreichthys andrewi* sp. nov. is at present known only from the River Dibru at Guijan Ghat, Tinsukia District, Assam, northeastern India. This species appears to be rare as subsequent surveys in that area did not yield additional specimens. The type locality is a commercial fish landing centre. The habitat is predominantly open water with silt as the substrate, and with little or no aquatic vegetation.

Discussion

Till date, the species within the genus *Oreichthys* were known to have 17–21 +2 scales in longitudinal series and an incomplete lateral line piercing only 3–5 scales. *Oreichthys andrewi* sp. nov. can be distinguished from all the three other nominal *Oreichthys* by having 30+1 scales in the longitudinal series which is much higher than the other three species, in addition to a complete lateral line piercing all 31 scales in the longitudinal series. *Oreichthys andrewi* sp. nov. can further be distinguished by having nine predorsal scales (vs. 7–8 in the other three species); ½4/1/2½ scales in the transverse row (vs. ½3/1/2½ scales in *O. cosuatis* and *O. parvus*).

In addition to the meristics, live *O. andrewi* sp. nov. can be distinguished from the three nominal species by having bright yellow ventral fins (vs. red in *O. cosuatis* and *O. parvus*, and colourless in *O. crenuchoides*); absence of blotch on the caudal fin base (vs. presence of large clear blotch in *O. crenuchoides* and a small blotch in *O. parvus*); presence of black spot on the distal end of the anal fin (vs. absence in *O. crenuchoides*) and red caudal fin (vs. colourless caudal fin in *O. crenuchoides*).

Puntius coorgensis Jayaram, 1982 and *Puntius roloffi* Wolf, 1961, currently synonyms of *O. cosuatis*, Menon 1999 and *O. parvus*, Kottelat 2001 respectively, can be distinguished from *O. andrewi* sp. nov. by an incomplete lateral line (vs. complete in *O. andrewi* sp. nov.); 20–23 scales on the longitudinal series (vs. 31 scales in *O. andrewi* sp. nov.) and 3/1/2½ scales in the transverse row (vs. ¼4/1/2½ in *O. andrewi* sp. nov.).

Systomus malacopterus M'Clelland, 1839 is a redundant replacement name for *Cyprinus cosuatis* as the description was based on Hamilton's drawing of *C. cosuatis.* Names such as *Rohtee pangut* and *Cyclocheilichthys apogon* currently under the synonymy of *O. cosuatis* (Menon, 1999) are clearly misapplied names as both *Rohtee* and *Cyclocheilichthys* are characterized by the last unbranched dorsal ray being osseous and strongly serrated (vs. non osseous and smooth in *Oreichthys*). Schäfer (2009) provides a detailed treatment of these synonymies.

Hora (1937a,b) documented an *Oreichthys* sp. from Mysore having a complete lateral line. Although Hora (1937a,b) cataloged these specimen as *O. cosuatis*, they clearly represent an undescribed species. This undescribed *Oreichthys* species from Mysore can be distinguished from *O. andrewi* sp. nov. by having a blotch at the caudal fin base and lesser number of scales on the longitudinal series (about 20) (Hora 1937a,b). As specimens of *O. cosuatis* from the Western Ghats were not examined in the present study, the identity of the material from Mysore remains to be elucidated. It is relevant to note that Schäfer (2009) draws attention to the drawing of *O. cosuatis* in Day (1878b: pl. 144 fig. 1) and speculates it to be yet another undescribed species. However, the specimen illustrated in Day (1878b), collected from Jabalpur, Madhya Pradesh, has an incomplete lateral line and about 21 scales in the longitudinal series which distinguishes it from *O. andrewi* sp. nov., which has a complete lateral line and 30+1 scales in the longitudinal series. As specimens of *Oreichthys* from Madhya Pradesh, central India were not examined in the present study, it is not possible to shed more light on Schäfer's observation.

The name 'Oreichthys umangii' (Tekriwal & Rao, 1999) is a nomen nudum, as it had only been applied to an image of a fish in the book 'Ornamental Aquarium Fish of India' without any accompanying description. The fish depicted as 'Oreichthys umangii' (Tekriwal & Rao, 1999) could possibly be what was subsequently described as *O. crenuchoides*, as it has about 20 scales in the longitudinal series and a prominent blotch at the base of the caudal fin.

The occurrence of *O. andrewi* sp. nov., a little known, diminutive cyprinid in the Himalaya biodiversity hotspot underlines the need for increased habitat conservation efforts. The type locality of *O. andrewi* sp. nov. falls in an area that has very high species richness in the eastern Himalaya (Vishwanath et al. 2010). However, about 27% of species that occur in the eastern Himalaya hotspot come under the Data Deficient category (Vishwanath et al. 2010), and several small-sized fish like *O. andrewi* sp. nov. are known from only one or two specimens, making it difficult to ascertain their true conservation status. Moreover, the habitat of *O. andrewi* sp. nov. in Guijan Ghat, Dibru River is threatened by rapid urbanization,

and associated habitat alteration and pollution. Subsequent surveys in the type locality did not yield any additional specimens of *O. andrewi* sp. nov., highlighting the fact that this species is not common. The role of the aquarium hobby in bringing species to the knowledge of science is yet again highlighted with the discovery of *O. andrewi* sp. nov. (Knight 2014). As the eastern Himalaya faces many threats such as habitat degradation, pollution, dams and invasive species (Vishwanath et al. 2010), urgent steps need to be taken to conserve the habitat of such little known species, before they disappear forever.

Comparative material

Oreichthys cosuatis: (MKC 400), 10.xii.2011, 2 exs., 28.7–29.9 mm SL, Toofanganj, Cooch Behar District, West Bengal, coll. Andrew Rao; (UMMZ 208973), 06.iv.1978, 25 exs., 15.0–32.1 mm SL, Dinajpur, Bangladesh, coll. W. Rainboth & A. Rahman.

Oreichthys crenuchoides: (ZSI/SRC F 8754), 27.vii.2010, 2 exs., 26.8–28.6 mm SL, River Jorai, near Barobisha, Jalpaiguri District, West Bengal, coll. Andrew Rao; (MKC 30), 27.vii.2010, 2 exs., 27.8–30.5 mm SL, River Jorai, near Barobisha, Jalpaiguri District, West Bengal, coll. Andrew Rao.

References

Hamilton, F. (1822). *An Account of the Fishes of River Ganges and its Branches*. George Ramsay and Co., London, vii+405pp+39pls.

Hora, S.L. (1937a). Notes on the fishes in the Indian Museum - XXVIII. - On three collections of fish from Mysore and Coorg, South India. *Records of the Indian Museum* 39: 5–28.

Hora, S.L. (1937b). Notes on the fishes in the Indian Museum - XXX. On the systematic position of *Cyprinus cosuatis* Hamilton. *Records of the Indian Museum* 39: 321–323.

Jayaram, K.C. (1982). On a new species of the genus *Puntius* (Pisces, Cyprinidae) from the Cauvery River, Karnataka State, South India. *Matsya* 7(1981 [1982]): 47–49.

Jayaram, K.C. (1999). *The Freshwater Fishes of the Indian Region*. Narendra Publishing, 551pp.

Jayaram, K.C. (2010). *The Freshwater Fishes of the Indian Region*. Second Edition. Narendra Publishing House, Delhi, 616pp.

Knight, J.D.M. (2014). Aquarium hobby bringing species to the attention of science. *MIN* 2: 16–20.

Kottelat, M. (2001). *Fishes of Laos*. WHT Publications Ltd., Colombo, Sri Lanka, 198pp.

M'Clelland, J. (1839). Indian Cyprinidae. *Asiatic Researches* 19: 217–471+37–61pls.

Menon, A.G.K. (1999). *Checklist - Fresh Water Fishes of India*. Records of the Zoological Survey of India, Miscellaneous Publications, Occasional Papers, 175: i-xxviii+1–366pp.

Schäfer, F. (2009). *Oreichthys crenuchoides*, a new cyprinid from west Bengal, India. *Ichthyological Exploration of Freshwaters* 20(3): 201–211.

Smith, H.M. (1933). Contributions to the ichthyology of Siam - II–VI. *Journal of the Siam Society*, Natural History Supplement 9: 53–87.

Talwar, P.K. & A.G. Jhingran (1991). *Inland fishes of India and Adjacent Countries - Volumes 1 & 2.* A.A. Balkema, Rotterdam, 541pp.

Tekriwal, K.L. & A.A. Rao (1999). *Ornamental and Aquarium Fish of India*. Kingdom Books, Waterloo ville, England, 144pp.

Vishwanath, W., H.H. Ng, R. Britz, L.K. Singh, S. Chaudhry & K.W. Conway (2010). The status and distribution of freshwater fishes of the eastern Himalaya region, pp. 22–41. In: Allen, D.J., S. Molur & B.A. Daniel (Compilers). *The Status and Distribution of Freshwater Biodiversity in the Eastern Himalaya.* Cambridge, UK and Gland, Switzerland: IUCN, and Coimbatore, India: Zoo Outreach Organisation, 88pp.

Wolf, K. (1961). *Puntius roloffi* (Roloffs Zwergbarbe). *Die Aquarien- und Terrarien-Zeitschrift* 14: 140–141.