NOTE ON THE VALIDITY OF THE IDENTIFYING CHARACTER OF A RARE LOACH *NEMACHEILUS MONILIS* HORA

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There are several instances where diagnostic characters of a particular species become irrelevant and inadequate when species descriptions are based on very few specimens. This is because the meristic characters would be in a very narrow range owing to the smaller number of specimens examined. It would be further complicated, if a dichotomous key is prepared based on that study. The characters would not help to discriminate it from other related species when more specimens belonging to both species are later available with wide range in the specific character than it was when the species was described. Here we address an example of the validity of the key characters used in distinguishing the species *Nemacheilus monilis* Hora.

Materials and Methods: Specimens examined were from the collections made under various projects in streams/rivers of Western Ghats that are kept in the Manonmaniam Sundaranar University Museum of Natural History (MSUMNH). Comparative type material was examined at Zoological Survey of India (ZSI), Calcutta. Meristic counts were made following Kottelat (1990).

The genus *Nemacheilus* (following Bleeker, 1863) has three valid Indian species *Nemacheilus anguilla*, *N. corica* and *N. monilis*. *N. corica* is found in northern India while the other two species are known to occur in peninsular India. The generic name available in different forms of spelling has created doubt among taxonomists. *Nemacheilus*, *Nemachilus*, and *Noemacheilus* are the three forms of name for the same genus as available in literature. Among them *Noemacheilus* has been used for long time till recently by various authors (eg. Menon, 1987; Indra *et al.* 1998; Menon, 1999; Zacharias & Minimol, 1999; Rema Devi & Indra, 2000), *Nemachilus* (Hora, 1921) and *Nemacheilus* (Kottelat, 1984; Sawada, 1982; Kottelat, 1990; Talwar & Jhingran, 1991; Banarescu & Nalbant, 1995; Jayaram, 1999).

Kottelat (1990) showed *Nemacheilus* as the valid genus name and other available names are erroneous. The generic name *Nemacheilus* has been also widely used for Nemacheilines of other closely related genera (Menon, 1999; Talwar & Jhingran, 1991). Banarescu & Nalbant (1995) classified the sub family Nemacheilinae into many genera of which *Schistura*, *Mesonemacheilus*, *Longischistura*, *Nemachlilichthys* and *Oreonectes* are from peninsular India, and this has been followed by Jayaram (1999). Zacharias & Minimol, 1999 while describing a new nemachiline species from Periyar Tiger Reserve of Kerala named it as *Noemacheilus menoni*. For comparison they used two species, *Noemacheilus triangularis* and *Noemacheilus guentheri* with the genus name as *Noemacheilus* however, this belongs to the genus *Mesonemacheilus*. But the two new recent additions, *Schistura nagodiensis* Sreekantha *et al.*, 2006 and *Schistura sharavathiensis* Sreekantha *et al.*, 2006, to the sub family Nemacheilinae are correctly placed in *Schistura*.

Nemacheilus monilis Hora, 1921 was described as *Nemachilus monilis* from Bhavani river at the base of Nilgiri hills with two specimens as types. This species has been shown to occur in various streams/rivers inside Nilgiri Biosphere Reserve (Shaji, 1998; Arunachalam & Manimekalan, 2000). It had been considered to be restricted to Nilgiri hills until it was reported by Indra *et al.* (1998) from Chinnar river showing its extension to Anamalai hills.

N. monilis is diagnosed by number of branched dorsal rays and the moniliform spots along the lateral line (Hora, 1921; Menon, 1987; Jayaram, 1999). Description and the key were based on two specimens. Rajan (1955) reported *N. monilis* to have eight branched dorsal rays, in the two specimens he collected from the type locality and Indra *et al.* (1998) too observed similarly. As per the description of Hora (1921) the specimens are said to have seven branched dorsal rays which distinguished it from the other species *N. anguilla*, which has eight branched dorsal rays. When we examined the specimens of *N. monilis* collected from the type locality and also the specimens from other streams of Nilgiri hills, we found all the specimens to have eight branched dorsal rays. The longest specimen in our collection was 72.8mm SL.

Since the meristic character, the number of branched dorsal rays, so far used to distinguish *N. monilis* from *N. anguilla* has been found to be similar in both the species, it could not be considered as a distinct character.

Diagnostic characters: *Nemacheilus monilis* has a relatively bigger body when compared to *N. anguilla*. The black moniliform blotches along the lateral line (Image 1[w]) about 20-22 in number in *N. monilis*, the first two blotches in the form of streaks, moniliform blotches sometimes interconnected by thin band (in some examples), posteriormost at the caudal base distinguishes it from *N. anguilla* which has a row of transverse spots that often is found to coalesce as a dark band along the lateral line (Image 2[w]). The lip over upper jaw of *N. monilis* is without any remarkable modifications which in *N. anguilla* has a pair of thick barbel like process interrupted by a median incision (Image 3[w]). The longer and pointed snout and longer barbels of *N. monilis* distinguishes it from *N. anguilla*. Yet another distinguishing character is the saddle-like dark brown vertical bands in the dorsal part of the body, though such bands are available in *N. monilis* but they are not as distinct and clear as in *N. anguilla*. There are 11-13 bands of varied thickness, mostly as wide as interspaces in *N. anguilla*.

Materials examined

Nemacheilus anguilla

Holotype: No Date, Yenna river at Medha, Satara District, coll. Annandale, 45.4mm SL, ZSI Kolkatta F. 9692/1.

1ex., Krishna river, near Koyna Dam, Pune, M. Arunachalam, 1998 collection, 48.8mm SL, MSUMNH25.

Nemacheilus monilis

5ex. 24.iii.2000, Bhavani river at Chengal near Mettupalayam, Tamil Nadu, M. Arunachalam, 71.2-72.8mm SL,

[w] See Images 1-3 in the web supplement at www.zoosprint.org

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MSUMNH32.
4ex., 03.ii.2001, Bemmenmaduvu, Moyar river. coll. M. Arunachalam, 64.5-72.9mm SL, MSUMNH36.

References

Arunachalam, M. & A. Manimekalan (2000). Ornamental fish diversity of the Nilgiri Biosphere Reserve, 228-229pp. *In:* Ponniah, A.G. and A. Gopalakrishnan (eds.). *Endemic Fish Diversity of Western Ghats.* NBFGR - NATP Publication - 1. National Bureau of Fish Genetic Resources, Lucknow, U.P. India.

Banarescu. P. & T. Nalbant (1995). A general classification of Nemacheilinae with description of two new genera (Teleostei: Cypriniformes: Cobitidae). *Trav. Museum Historie Naturale "Grigore Antipa"*, 35: 429-496.

Hora, S.L. (1921). Notes on the fishes in Indian museum I. On a new species of *Nemachilus* form the Nilgiri Hills. *Records of Indian Museum* 2(1): 19-21.

Indra, T.J., K. Rema Devi & M.B. Raghunathan (1998). New record of a rare loach *Noemacheilus monilis* from Anamalai Hills, Western Ghats, Tamilnadu. *Journal of the Bombay Natural History Society* 95(3): 521-522.

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

Kottelat, M. (1984). Revision of the Indonesian and Malaysian loaches of the subfamily Noemachilinae. *Japan Journal of Ichthyology* 31: 368-375.

Kottelat, M. (1990). *Indochinese Nemacheilines. A Revision of Nemacheiline loaches (Pisces: Cypriniformes) of Thailand, Burma, Laos, Cambodia and Southern Vietnam.* Verlag. Dr. Friedrich Pfeil. Munchen, 262pp.

Menon, A.G.K. (1987). *Fauna of India and the Adjacent Countries.* Pisces, 4 (Part I), Homalopteridae, Calcutta, X+259pp.

Menon, A.G.K. (1999). *Checklist - Fresh Water Fishes of India.* Records of Zoological Survey of India, Occasional Paper No. 175, 366pp.

Rajan, S. (1955). Notes on a collection of fish from the headwaters of the Bhavani river South India. *Journal of the Bombay Natural History Society* 53(1): 44-48.

Rema Devi. K. & T.J. Indra (2000). Freshwater Ichthyological resources of Tamil Nadu, pp. 77-97. *In:* Ponniah, A.G. and A. Gopalakrishnan (eds.). *Endemic Fish Diversity of Western Ghats.* NBFGR - NATP publication - 1. National Bureau of Fish Genetic Resources, Lucknow, U.P. India.

Sawada, Y. (1982). Phylogeny and Zoogeography of the super family Cobitidae (Cyprinodei: Cypriniformes). *Memoirs Fac. Fish Hokkaido University* 28(2): 65-223.

Shaji, C.P. (1998). The distribution of habitat ecology of fishes with Nilgiri Biosphere Reserve, Kerala region. Ph.D. Thesis. Kerala Forest Research Institute, Peechi, Kerala., 235pp. (unpublished)

Sreekantha, K.V. Gururaja, K. Remadevi, T.J. Indra & T.V. Ramachandra (2006). Two new species of the genus *Schistura* McClelland (Cyprinidormes: Balitoridae) from Western Ghats, India. *Zoos' Print Journal* 21(4): 2211-2216.

Talwar, P.K. & A.G. Jhingran (1991). *Inland Fishes of India and Adjacent Countries.* Oxford and IBH Pub. Co. Pvt Ltd, New Delhi, 1158pp.

Zacharias, V.J. & K.C. Minimol (1999). A new species of fish from Malappara, Periyar Tiger Reserve, Kerala. *Journal of the Bombay Natural History Society* 96(2): 288-290.

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