



Redescription of *Pethia melanomaculata* (Teleostei: Cyprinidae) from Sri Lanka

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Abstract

The name *Pethia melanomaculata* (Deraniyagala) is available for the Sri Lankan fish previously referred to *P. ticto*, being distinguished from its Indian congeners by the combination of the following characters; having $\frac{1}{2}4/1\frac{1}{2}$ scales in transverse line on body; body depth 32.4–41.5% of standard length (SL); head length (HL) 26.1–29.2% of SL; snout length 25.3–35.6% of HL; eye diameter 24.4–31.9% of HL; a small black humeral spot on lateral-line scales 3 or 4; a black spot on caudal peduncle, on scales 16–18 of the lateral line series; 3 unbranched dorsal-fin rays, the last one strongly serrated, with 8–11 serrae.

Key words: *Pethia ticto*, *Pethia punctata*, *Puntius*, India, taxonomy

Introduction

Pethia ticto was described from southern Bengal (now in Bangladesh and West Bengal, India) by Hamilton (1822). This species, commonly identified from its small, black humeral spot and the larger black spot or blotch on the caudal peduncle, has been reported from India, Myanmar and Sri Lanka (Hora *et al.* 1939; Jayaram 1991, 1999; Talwar & Jhingran 1991). Several studies have shown, however, that the fishes until recently identified as *P. ticto* in many parts of South Asia in fact represent distinct species (Linthoingambi & Vishwanath 2007; Mercy & Jacob 2007; Knight *et al.* 2012; Dishma & Vishwanath 2013; Katwate *et al.* 2014a,b; Lalramliana *et al.* 2014).

Deraniyagala (1956, 1958) proposed the subspecies name *Puntius ticto melanomaculatus* (type locality Kantalai Reservoir, Eastern Province, Sri Lanka) for Sri Lanka's 'Ticto barb', since uncritically synonymized with *P. t. ticto* by most authors (e.g., Mendis & Fernando 1962; Senanayake 1980; Pethiyagoda 1991, 2006; Jayaram 1999), possibly because of the very brief description provided by Deraniyagala (1956), who did not have access to comparative material from India. Molecular data presented in Meegaskumbura *et al.* (2008) and Pethiyagoda *et al.* (2012), however, suggest that the Sri Lankan fish may be distinct from *P. ticto*. Here we redescribe *Pethia melanomaculata* based on the examination of fresh material from Sri Lanka and distinguish it from its Sri Lankan and peninsular-Indian congeners.

Material and methods

Specimens referred to in this work are deposited in the National Museum of Sri Lanka, Colombo (NMSL); the collection of the Wildlife Heritage Trust of Sri Lanka (WHT) now at NMSL; the Southern Regional Station of the Zoological Survey of India, at Chennai (ZSI-SRS); and Department of Zoology, University of Peradeniya, Sri Lanka (DZ).

Measurements were made with digital Vernier callipers to the nearest 0.1 mm. Drawings were made using a Motic dissecting stereomicroscope with camera lucida. Methods for taking counts and measurements follow

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References

- Conway, K.W. (2011) Osteology of the South Asian genus *Psilorhynchus* McClelland, 1839 (Teleostei: Ostariophysi: Psilorhynchidae), with investigation of its phylogenetic relationships within the order Cypriniformes. *Zoological Journal of the Linnean Society*, 163, 150–154.
- Day, F. (1865) *Fishes of Malabar*. Quaritch, London, xxii + 293 + 1 pp., 20 pls.
- Day, F. (1871) Monograph of Indian Cyprinidae. Part 2. *Journal and Proceedings of the Asiatic Society of Bengal*, 40, 277–336.
- Day, F. (1878) *Fishes of India. Part 4*. Quaritch, London, pp. i–xx, 553–778, pls. 134–195.
- Deraniyagala, P.E.P. (1952) *A coloured atlas of some vertebrates from Ceylon. Vol. 1. Fishes*. National Museums of Ceylon, Colombo, 149 pp., 34 pls.
- Deraniyagala, P.E.P. (1956) Two new subspecies and one new species of cyprinoid fishes from Ceylon. *Proceedings of the 12th Annual Sessions of the Ceylon Association for the Advancement of Science*, 1, 34–35.
- Deraniyagala, P.E.P. (1958) Three new cyprinoids, a new catfish and variation among some cyprinoids and an anabantoid of Ceylon. *Spoila Zeylanica*, 28 (2), 129–138.
- Dishma, M. & Vishwanath, W. (2013) A new species of the genus *Pethia* from Mizoram, northeastern India (Teleostei: Cyprinidae). *Zootaxa*, 3736 (1), 82–88.
<http://dx.doi.org/10.11646/zootaxa.3736.1.4>
- Günther, A. (1868) *Catalogue of the fishes in the British Museum. Vol. 7. Catalogue of the Physostomi containing the families Heteropygii, Cyprinidae, Gonorrhynchidae, Hyodontidae, Osteoglossidae, Clupeidae, Chirocentridae, Alepocephalidae, Notopteridae, Halosauridae, in the collection of the British Museum*. British Museum, London, 512 pp.
- Hamilton, F. (1822) *An Account of the Fishes of River Ganges and its Branches*. George Ramsay and Co., London, vii + 405 pp., 39 pls.
- Hora, S.L., Misra, K.S. & Malik, G.M. (1939) A study of variations in *Barbus (Puntius) ticto* (Hamilton). *Records of the Indian Museum*, 41, 263–279.
- Jayaram, K.C. (1991) Revision of the genus *Puntius* (Hamilton) from the Indian Region (Pisces: Cypriniformes, Cyprinidae, Cyprininae). *Records of the Zoological Survey of India, Occasional Paper*, 135, 1–178.
- Jayaram, K.C. (1999) *The freshwater fishes of the Indian region*. Narendra Publishing House, Delhi, 551 pp.
- Katwate, U., Katwate, C., Raghavan, R., Paingankar, M.S. & Dahanukar, N. (2014a) *Pethia lutea*, a new species of barb (Teleostei: Cyprinidae) and new records of *P. punctata* from northern Western Ghats of India. *Journal of Threatened Taxa*, 6 (6), 5797–5818. <http://dx.doi.org/10.11609/JoTT.o3929.5797-818>
- Katwate, U., Paingankar, M.S., Raghavan, R. & Dahanukar, N. (2014b) *Pethia longicauda*, a new species of barb (Teleostei: Cyprinidae) from the northern Western Ghats, India. *Zootaxa*, 3846 (2), 235–248.
<http://dx.doi.org/10.11646/zootaxa.3846.2.4>
- Katwate, U., Baby, F., Raghavan, R. & Dahanukar, N. (2014c) The identity of *Pethia punctata*, a senior synonym of *P. muvattupuzhaensis* (Teleostei: Cyprinidae). *Zootaxa*, 3884 (3), 201–221.
<http://dx.doi.org/10.11646/zootaxa.3884.3.1>
- Knight, J.D.M., Devi, K.R., Indra, T.J. & Arunachalam, M. (2012) A new species of barb *Puntius nigripinnis* (Teleostei: Cyprinidae) from southern Western Ghats, India. *Journal of Threatened Taxa*, 4, 2409–2416.
<http://dx.doi.org/10.11609/JoTT.o3014.2409-16>
- Kottelat, M. & Pethiyagoda, R. (1991) Descriptions of three new species of cyprinid fishes from Sri Lanka. In: Pethiyagoda, R. (Ed.), *Freshwater fishes of Sri Lanka*. Wildlife Heritage Trust of Sri Lanka, Colombo, pp. 298–313
- Kottelat, M. (2001) *Fishes of Laos*. WHT Publications, Colombo, 198pp.
- Lalramliana, Knight, J.D.M. & Laltilanhlua, Z. (2014) *Pethia rutila* (Teleostei: Cyprinidae), a new species from Mizoram, northeast India. *Zootaxa*, 3827, 366–374.
- Linthoingambi, I. & Vishwanath, W. (2007) Two new fish species of the genus *Puntius* Hamilton (Cyprinidae) from Manipur, India, with notes on *P. ticto* (Hamilton) and *P. stoliczkanus* (Day). *Zootaxa*, 1450, 45–56.
- Meegaskumbura, M., Silva, A., Maduwage, K. & Pethiyagoda, R. (2008) *Puntius reval*, a new barb from Sri Lanka (Teleostei: Cyprinidae). *Ichthyological Exploration of Freshwaters*, 19, 141–152.
- Mendis, A.S. & Fernando, C.H. (1962) A guide to the freshwater fauna of Ceylon. *Bulletin of the Fisheries Research Station, Ceylon*, 12, 1–160.

- Menon, A.G.K., Rema, Devi, K. & Vishwanath, W. (2000) A new species of *Puntius* (Cyprinidae: Cyprininae) from Manipur, India. *Journal of the Bombay Natural History Society*, 97, 263–268.
- Mercy, T.V.A. & Jacob, E. (2007) A new species of Teleostei: *Puntius pookodensis* (Cyprinidae) from Wayanad, Kerala, India. *Journal of the Bombay Natural History Society*, 104, 76–78.
- Munro, I.S.R. (1955) *The Marine and Freshwater Fishes of Ceylon*. Department of External Affairs, Canberra, 349 pp.
- Pethiyagoda, R. (1991) *Freshwater fishes of Sri Lanka*. The Wildlife Heritage Trust of Sri Lanka, Colombo, xiii + 362 pp.
- Pethiyagoda, R. & Kottelat, M. (2005) A review of the barbs of the *Puntius filamentosus* group (Teleostei: Cyprinidae) of southern India and Sri Lanka. *Raffles Bulletin of Zoology*, 12 (Supplement), 127–144.
- Pethiyagoda, R. (2006) Conservation of Sri Lankan freshwater fishes. In: Bambaradeniya, C.N.B. (Ed.), *The fauna of Sri Lanka: status of taxonomy, research and conservation*. The World Conservation Union, Colombo, pp. 103–112. [total page number: viii + 308 pp.]
- Pethiyagoda, R., Meegaskumbura, M. & Maduwage, K. (2012) A synopsis of the South Asian fishes referred to *Puntius* (Pisces: Cyprinidae). *Ichthyological Exploration of Freshwaters*, 23, 69–95.
- Senanayake, F.R. (1980) *The biogeography and ecology of the inland fishes of Sri Lanka*. Unpublished Ph.D. dissertation, Department of Wildlife and Fisheries Biology, University of California, Davis. [unknown total page number]
- Talwar, P.K. & Jhingran, A.G. (1991) *Inland Fishes of India and Adjacent Countries*. Oxford-IBH Publishing Co. Pvt. Ltd., New Delhi, 1158 pp.
- Taylor, W.R. & Van Dyke, G.C. (1985) Revised procedures for staining and clearing small fishes and other vertebrates for bone and cartilage study. *Cybium*, 9, 107–119.