



## Four new species of the Indo-Burmese genus *Badis* from West Bengal, India (Actinopterygii: Perciformes: Badidae)

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### Abstract

Four new species of *Badis* are described from West Bengal, India. *Badis andrewraoi*, new species, is diagnosed by a combination of characters which include absence of a black caudal-fin margin, absence of a conspicuous dark blotch on pectoral-fin base, absence of cleithral and opercular blotches, absence of a blotch on the dorsolateral aspect of the caudal peduncle, absence of an ocellus on the caudal-fin base, presence of a conspicuous median black caudal peduncle blotch, a medially broader posterior-most bar, displaying as a partially absorbed second median caudal peduncle blotch, presence of an additional bar anteriorly, and vertical bars restricted to lower half of body and never forming large blocks. *Badis autumnum*, new species, is diagnosed by a combination of characters which include two autapomorphies: presence of a blotch above the base of the opercular spine, and of a conspicuous dark blotch on pectoral-fin base. Additionally, it presents a black caudal-fin margin, outlining entire fin, absence of a cleithral blotch, absence of a blotch on the dorsolateral aspect of the caudal peduncle, absence of an ocellus on the caudal-fin base, presence of a conspicuous median black caudal peduncle blotch, a medially broader posterior-most bar, displaying as a partially absorbed second median caudal peduncle blotch, and presence of an additional bar anteriorly. *Badis kyanos*, new species, is diagnosed by a combination of characters which include absence of a conspicuous dark blotch on pectoral-fin base, absence of cleithral and opercular blotches, absence of a blotch on the dorsolateral aspect of the caudal peduncle, absence of an ocellus on the caudal-fin base, presence of a conspicuous median black caudal peduncle blotch, a medially broader posterior-most bar, displaying as a partially absorbed second median caudal peduncle blotch, presence of an additional bar anteriorly, its vertical bars forming large, fragmented black blocks dorsolaterally and ventrolaterally, and a unique stress colouration consisting of a dark grey body, metallic dark blue operculum, flanks almost entirely devoid of bars, large, fragmented black blocks dorsolaterally, and absence of a black caudal-fin margin. Based on similarities in colour pattern and biometrics they are deduced to be closely related and form a new species group, which we herein define. The three species are divergent and diagnosable from each other and represent valid evolutionary species. The fourth species represents a cryptic unit that was heretofore unrecognised and considered as the most widespread species of the genus, *B. badis*. We describe this lineage as *Badis soraya*, new species, and find it belongs to the *B. badis* species group. It can be diagnosed by a combination of characters which include absence of opercular blotches, absence of a blotch on the dorsolateral aspect of the caudal peduncle, absence of an ocellus on the caudal-fin base, presence of a cleithral blotch, presence of a small oval black blotch medially on caudal peduncle, interorbital width 6.3–8.8 % SL, dorsal-fin spines XIV–XVI, scales in lateral row 25–27, and vertebrae number 27.

**Key words:** taxonomy, Percomorpha, Singimari River drainage, Tista River drainage, Mahananda River drainage

### Introduction

The genus *Badis* Bleeker, is diagnosed by the combination of a number of plesiomorphic characters and character states, namely the presence of a black stripe along the middle of the dorsal fin; the dark bars on the trunk modified in adults with each presenting as two narrow vertical lines, the dark pigment on the caudal-fin base discerned into a single basal blotch or three vertically aligned blotches, the presence of tubed lateral-line scales; 2–4 dentary foramina; hypobranchial 3-toothed and a vertebral count of 14–16+12–15=26–30 (Kullander & Britz 2002). Together with the genus *Badis*, the genus *Dario* Kullander & Britz is included in the family Badidae Barlow *et al.*,