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Character evidence for the monophyly of the Microdesminae, with comments on relationships to *Schindleria* (Teleostei: Gobioidei: Gobiidae)

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Abstract

The composition of the Microdesminae has been inconsistently reported in recent molecular studies. A monophyletic Microdesminae consisting of both Indo-Pacific and New World/Atlantic genera is diagnosed here by the following synapomorphies: maxilla with elongate projection extending anteriorly over ascending processes of premaxilla; palatine medial process absent; single dorsal process on cleithrum; supracleithrum oriented vertically and closely applied to cleithrum; posttemporal with elongate posteroventral process; body slender and elongate, with associated increase in number of vertebrae and median fin rays (total vertebrae 42–66 with 19 or more precaudal vertebrae, total dorsal-fin rays 42–78, anal-fin rays 27–43), slender pelvis with anterior extensions of the pelvic intercleithral cartilage, and decrease in number of pelvic-fin rays (with a spine and 2–4 segmented rays); single dorsal fin; dorsal-fin spines usually 12 or more; predominantly 1:1 relationship between interneural spaces and anterior dorsal-fin pterygiophores; and first (supernumerary) ray on first anal pterygiophore a bilaterally paired, segmented ray. Several of these characters (particularly single dorsal process on cleithrum, posttemporal with elongate posteroventral process) support a possible relationship between microdesmines and *Schindleria*, as does dorsal gill-arch morphology.

Key words: Osteology, Indo-Pacific, Atlantic, New World, systematics, elongation

Introduction

The familial and subfamilial classification of the acanthomorph fish suborder Gobioidei is in a state of flux, with anywhere between six (Thacker 2009) and nine (Thacker 2000) families recognised in recent classifications. One suprageneric taxon, however, has been relatively stable, consisting of the Indo-Pacific genera *Gunnellichthys* Bleeker and *Paragunnellichthys* Dawson, and the New World and east Atlantic genera *Microdesmus* Günther, *Cerdale* Jordan & Gilbert and *Clarkichthys* Smith. The taxon has been ranked, however, as either the subfamily Microdesminae (e.g., Hoese, 1984, who classified it along with the Ptereleotrinae as the only two subfamilies of the Microdesmidae) or the family Microdesmidae (e.g., by Thacker, 2000, who noted that character evidence for a relationship with the Ptereleotrinae was lacking). Given that there is growing evidence for placement of the group within the Gobiidae (= Gobiidae + Gobionellidae of Thacker, 2009), for the purpose of the current paper we will refer to it as a subfamily (Microdesminae).

Thacker (2000) diagnosed the clade on the basis of seven morphological synapomorphies (character numbers follow Thacker, 2000): “presence of an anterior maxillary projection (7), loss of the inner palatine process that articulates with the lateral ethmoid (16), widely spaced nares (32), a slender pelvis with anterior extensions of the pelvic intercleithral cartilage (41), a single dorsal fin (44), an elevated vertebral number (49; reversed in *Cerdale* and *Clarkichthys*), and a body depth of less than 10% of standard length (52; reversed in *Cerdale*).”

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