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Recognizing diversity in blennioid fish nomenclature (Teleostei: Blennioidei)

"Rigorous updated taxonomic lists should be the most important documents on which conservation policies and macroecology rely."

Padial & De La Riva, 2006, p. 865

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Abstract

Species inventories for macroecology, biogeography and conservation biology rely upon accurate lists of valid species. In order to provide a more uniform taxonomic treatment for blennioid fishes, we evaluated the taxonomic status of 21 species with currently recognized subspecies. In six cases we found no compelling evidence for recognizing these nominal forms as distinct species. However, in 15 cases, evidence exists for elevating 17 subspecies to full species status based on currently used criteria for delimiting fish species. This evidence includes the existence of significant phenotypic and/or genetic differences supporting the hypothesis that they are on distinct evolutionary pathways in accordance with a phylogenetic species concept. Known distributions of affected species are modified accordingly. Most of these elevated species are separated from their closest relatives by well-known biogeographic barriers.

Key words: subspecies; phylogenetic species; Blenniidae; Chaenopsidae; Dactyloscopidae; Labrisomidae; Tripterygiidae

Introduction

Formal recognition (naming) of subspecies was widely advocated a few decades ago (e.g., Hubbs, 1943; Mayr, 1963), and more recently by some (e.g., Randall, 1998), for allopatric populations that differ somewhat in morphology. Use of the subspecific category has fallen out of favor among many systematic biologists (Isaac et al., 2004; Padial & de la Riva, 2006), a change that parallels to some extent changes in prevailing species concepts (Mayden, 1997; Cracraft, 1997; Knowlton & Weight, 1997; Wheeler & Platnick, 2000; Agapow & Sluys, 2005). Biological species concepts tend to emphasize continuity, favoring recognition of geographic variation at the subspecific level, while more recent phylogenetic species concepts emphasize divergence, favoring recognition of geographic variants as full species. Accordingly, current practice among many taxonomists is to recognize allopatric forms with consistent morphological differences as full species under the assumption that distinctive morphology is indicative of different evolutionary pathways (Sites & Marshall, 2004; de Queiroz, 2007). This view has been advocated for broadly distributed shore fishes that exhibit consistent geographic variation in morphology (e.g., Gill, 1997) and largely has been supported by recent genetic studies (Rocha et al., 2007).

The taxonomic history of most groups is highly varied. Some lineages have received intensive study in recent years, while others have not been reviewed for decades. As a consequence, modern classifications sometimes reflect a mixture of taxonomic approaches that confound estimates of biological diversity. There

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