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Diversity within the Redeye Bass, *Micropterus coosae* (Perciformes: Centrarchidae) species group, with descriptions of four new species

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Abstract

The Redeye Bass, *Micropterus coosae*, was described from the Mobile River basin, Chattahoochee, and Savannah rivers in Alabama and Georgia, USA, by Hubbs and Bailey (1940). At that time the authors recognized significant variation in the Black Warrior River population, and noted that with further study this form may be recognized as a separate taxon. An examination of variation in morphology and mitochondrial DNA supported this observation, and highlighted additional species-level variation, resulting in descriptions of a total of four new species: *Micropterus cahabae*, new sp., restricted to the Cahaba River system; *Micropterus tallapoosae*, new sp., restricted to the Tallapoosa River system; *Micropterus warriorensis*, new sp., from the Black Warrior River system; and *Micropterus chattahoochae*, new sp., from the Chattahoochee River system. *Micropterus coosae* is restricted to the Coosa River system. The new species differ from each other and from *M. coosae* by a combination of pigmentation and scale count characteristics, development of the tooth patch, and divergence within the ND2 gene. While two of these species are relatively common in upland streams within their ranges, *M. warriorensis*, *M. cahabae* and *M. chattahoochae* are uncommon and may warrant protection.

Key words: Alabama, Redeye Bass, Black Bass, Mobile Basin

Introduction

Micropterus coosae, described by Hubbs and Bailey (1940) from the Mobile Basin above the fall line, the upper Chattahoochee River, and the upper Savannah River, is an upland species of bass endemic to the southeastern United States (Koppelman & Garret, 2002). Hubbs and Bailey (1940) proposed that the species was a close relative of *Micropterus punctulatus henshalli* (now *M. henshalli*, Baker *et al.* 2008). Two recent studies supported this hypothesis, suggesting a sister species relationship between *M. henshalli* and *M. coosae* (Kassler *et al.* 2002; Hutts 2003). Based on nuclear and mitochondrial DNA, Oswald (unpubl. diss. 2007) recovered *M. coosae* from the Mobile Basin as sister to *M. henshalli* and eastern populations as sister to *M. cataractae*. Other recent work recovered *M. coosae* as basal to most other species of *Micropterus* (Near *et al.* 2003, 2004). However, these latter analyses did not include *M. henshalli*.

The physiographic restriction of *M. coosae* to upland habitats has potentially limited gene flow among populations separated by larger lowland rivers. Hubbs and Bailey (1940), in their original description of *M. coosae*, noted variation in the species and suggested that with further study the Black Warrior River population may be recognized as a distinct form. Although *M. coosae* has been included in several phylogenetic analyses of bass species, only one intraspecific study of *M. coosae* populations has been conducted (Oswald, unpubl. diss. 2007). The latter examined phylogeographic relationships across the range of the species using multiple nuclear and mitochondrial markers and demonstrated high levels of intraspecific divergence, particularly between Atlantic Slope and Mobile Basin populations. Separate taxonomic recognition for Atlantic Slope *M. coosae* was