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Two new crayfishes of the genus *Cambarus* (Decapoda: Cambaridae) from Northern Alabama and South Central Tennessee, U.S.A.

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Abstract

Multivariate and univariate statistical analyses of morphometric data and examination of morphological characters of the crayfish species *Cambarus* (*Hiaticambarus*) *longirostris* revealed the existence of two undescribed species from populations previously considered to be *C. longirostris* in tributaries of the Tennessee River in north Alabama and central south Tennessee. *Cambarus* (*Hiaticambarus*) *andersoni* and *Cambarus* (*Hiaticambarus*) *diupalma* differed from *C. longirostris* and from each other in aspects of chela morphometrics and in the presence or absence of qualitative characters. *Cambarus andersoni* has a corneous spine on the base of the ventral surface of the rostrum that is absent in the other two species; *C. diupalma* abdominal pleura are acute whereas they are subtruncate in *C. andersoni* and in *C. longirostris*. The known range of both of the new species is restricted to northern tributaries of the Tennessee River in south Tennessee and north Alabama. *Cambarus diupalma* is considered Endangered and *C. andersoni* is considered Vulnerable using American Fisheries Society conservation categorization.

Key words: imperiled crayfish, *Cambarus*, *Hiaticambarus*, species descriptions, *C. longirostris*

Introduction

The crayfish *Cambarus* (*Hiaticambarus*) *longirostris* Faxon, 1885, as presently understood is a wide-ranging species, occurring in the Tennessee River and Coosa River drainages from Virginia to Alabama (Fig. 1) (Hobbs 1969, 1981, 1989). The species has been known for ca. 130 years, was the subject of a number of taxonomic studies, and for much of that time was considered a subspecies of *Cambarus* (*H.*) *longulus* Girard, 1852. Hagen (1870) considered the holotype of *C. longulus* to be an aberrant specimen and synonymized *C. longulus* with *Cambarus* (*Cambarus*) *bartonii* (Fabricius, 1798). In a revision of the family Astacidae (Crustacea: Decapoda), Faxon (1885) recognized *C. longirostris* as a variety of *C. bartonii* and noted that it might be conspecific with *C. longulus*, but did not resurrect *C. longulus* as a species. Later, after examining a large series of *C. longulus* specimens, Faxon (1890) resurrected the species, but still considered *C. longirostris* a variety of *C. bartonii*. Hay (1899) first recognized *C. longirostris* as a subspecies of *C. longulus* and separated the two using differences in the spine of the postorbital ridge and of the shape of the suborbital angle. However, the two species were subsequently classified as subspecies of *C. bartonii*, first by Harris (1903) and then by Faxon (1914). Ortmann (1931) abandoned the designation of *C. longulus* and *C. longirostris* as subspecies of *C. bartonii*, and named *C. longulus longirostris* as a subspecies of *C. longulus*. James (1966) also classified *C. longirostris* as a subspecies of *C. longulus*. Hobbs (1969), in a revision of the genus *Cambarus*, elevated both *C. longulus* and *C. longirostris* to full species status and placed them in the subgenus *Hiaticambarus*. Bouchard (1976a, b) synonymized *C. longirostris* with *C. girardianus* Faxon, 1885; however, Hobbs (1981) disagreed.

Despite having been recognized as a distinct taxon for a long period of time, uncertainty has existed as to the identification of individuals and the status of populations of *C. longirostris*. While James (1966) conducted the most comprehensive distributional and systematic study of *C. longirostris*, he contributed to the confusion by