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Procambarus (Girardiella) holifieldi*, a new species of crayfish (Decapoda: Cambaridae) from Alabama with a revision of the Hagenianus Group in the subgenus *Girardiella

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Abstract

Procambarus (Girardiella) holifieldi, new species, is a primary burrowing crayfish from a low-lying field in Perry County, Alabama. It belongs to the Hagenianus Group in the subgenus *Girardiella*. The new species is morphologically most similar to *Procambarus (Girardiella) barbiger*. They differ in the size and shape of the caudal processes. *Procambarus barbiger* has a beard along the mesial margin of the palm of the chela, while the new species lacks the beard. In addition to the description of the new species, the Hagenianus Group is reviewed and new synonymies are provided. We demonstrate that a cephalic process is indeed present in the Hagenianus Group.

Key words: *Procambarus*, *Girardiella*, Hagenianus Group, Gracilis Group, new species, crayfish

Introduction

This study describes a new species of crayfish from Alabama belonging to the Hagenianus Group in the crayfish subgenus *Girardiella* in the genus *Procambarus* and provides a review and discussion of all of the species in the group. All known species within the subgenus are primary burrowers, which means that they never use permanent water such as a stream or lake and spend most of their life underground in excavated complex burrows. Individuals may sometimes leave their burrows in search of a mate or food, which is most common during and after periods of heavy rains.

Procambarus gracilis (Bundy, 1876) from Illinois was the first species described belonging to the now-recognized subgenus *Girardiella*. It is now the nominal species for the Gracilis Group in the subgenus. Faxon (1884) described *Procambarus hagenianus* based on a specimen mislabeled as being from Charleston, South Carolina, and it now is the nominal species for the Hagenianus Group in the subgenus. In the same paper Faxon also described another Gracilis Group species, *P. simulans*, from Texas. Faxon (1914) was the first to correctly illustrate *P. hagenianus* and provided additional taxonomic data, including observations on variation and color (pages 366–367, plate1), and correct locations for the above species in Mississippi and Alabama. The first comprehensive study on the Hagenianus Group was by Lyle (1938), which was presented as an abstract of his dissertation (Lyle, 1937). In the abstract, Lyle provided names for 4 subspecies of *P. hagenianus*, all of which were later designated as *nomina nuda* by Hobbs (1972a), because the names were published without an accompanying description for the taxa. Lyle also proposed the name *Girardiella* as a subgenus for these taxa. Hobbs (1942) put the *Girardiella* group into the genus *Procambarus* when he elevated most of the subgenera of *Cambarus* to generic rank. Penn (1953) described *P. tulanei*, a Gracilis Group species, from Louisiana.

In a study of species in the Hagenianus Group, Reimer (1969) described *P. hagenianus* as having “chelae....with or without a beard.” He also indicated that it had a “cephalic process greatly reduced to flattened, plate-like structure in close connection with mesial surface of central projection.” Hobbs (1972a) accepted Lyle’s