



<http://dx.doi.org/10.11646/zootaxa.3641.1.7>

<http://zoobank.org/urn:lsid:zoobank.org:pub:A0BE6A8D-54D3-49D2-B798-1413E8693582>

## ***Cambarus (P.) theepiensis*, a new species of crayfish (Decapoda:Cambaridae) from the coalfields region of Eastern Kentucky and Southwestern West Virginia, USA**

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### **Abstract**

*Cambarus (Puncticambarus) theepiensis* is a stream-dwelling crayfish that appears to be endemic to the junction of the Cumberland Mountains with the Appalachian Plateau in West Virginia and Kentucky. Within this region, it is prevalent in the Guyandotte and Twelvepole basins of West Virginia, the Little Sandy River and Levisa Fork basins of Kentucky, and tributaries of the Big Sandy River shared by both states. The new species is morphologically most similar to *Cambarus robustus* and *Cambarus sciotensis*. It can be differentiated from *C. robustus* by its broad rostrum, with subparallel, thickened margins compared to the narrow, converging rostrum with reduced rostral margins of *C. robustus*.; larger areola width/length ratio (26 %) than *C. robustus* (22 %); and mottled color pattern compared to the monotypic color pattern of *C. robustus*. *Cambarus theepiensis* can be differentiated from *C. sciotensis* by the presence of a distinct lateral impression on the chelae compared to the absence of a lateral impression in *C. sciotensis*; constant thickness of the rostral margin compared to the gradation of rostral thickness in *C. sciotensis*; greater rostrum width/ length ratio in *C. theepiensis* (63.1 %) compared to *C. sciotensis* (57.2 %); and a central projection on the gonopod that is the same length as the mesial process, compared to a central projection that extends past the tip of the mesial process in *C. sciotensis*.

**Key words:** new species of *Cambarus*; *Decapoda*; Appalachian Mountains

### **Introduction**

In 2007, ZJL and SAW began a statewide census and conservation assessment of West Virginia's crayfishes. Privy to this effort was determination of the extent of crayfish diversity in West Virginia, and descriptions of undescribed taxa residing in the state. Special taxonomic attention was paid to West Virginia populations of crayfishes with broad distributions (e.g. *Cambarus dubius* Faxon, 1914, *Cambarus b. bartonii* (Fabricius 1798), and *Fallicambarus fodiens* (Cottle, 1863) to ensure undescribed species did not go unnoticed. During initial survey efforts it became apparent that populations of West Virginia's *Cambarus robustus* Girard, 1852, displayed noticeable morphologic dichotomies specific to particular river basins (ZJL and SAW, personal observation).

Previously, Jezerinac *et al.* (1995) recognized the range of *C. robustus* in West Virginia as the Appalachian Plateau in several small northern Ohio River direct drainages, Little Kanawha River and central Kanawha River, the northern Cumberland Mountains in several small basins in the southwestern portion of the state, the Big Sandy and Guyandotte River systems, and a single Ridge and Valley population in the Greenbrier River drainage. Recently, however, *Cambarus smilax* Loughman, Simon, and Welsh, 2011, was described from the Ridge and Valley population. During that effort, specimens from the Cumberland Mountains were used to delineate