

Orconectes (Hespericambarus) hartfieldi Fitzpatrick and
Suttkus 1992

Yazoo crayfish



Photo by C. Lukhaup.

Distribution, Habitat, and Behavior

Orconectes hartfieldi is endemic to the Yazoo River basin in northern Mississippi. Its known range lies between, but does not overlap with, the ranges of its closest relatives, *O. perfectus* (Tombigbee River basin) and *O. hathawayi* (south-central Louisiana) (Fitzpatrick and Suttkus 1992). In 2007, I collected a female *O. hartfieldi* from the Yocona River drainage, the first record for Lafayette County, MS. The Mississippi Museum of Natural Science database indicates a female collected in 1997 from the extreme headwaters of the Yockanookany River in the Pearl River basin in Choctaw County, MS, which, if valid, is a considerable range extension. No species in the subgenus *Hespericambarus* have been previously reported from the Pearl River basin, so further collections, including form I males, from the site are necessary to confirm the record. The species is now known from Calhoun, Carroll, Lafayette, Panola, Tallahatchie, and Yalobusha counties, as well as possibly Choctaw County (Fitzpatrick and Suttkus 1992; MS crayfish database, this website).

Orconectes hartfieldi has been collected from streams with sand/silt or compacted clay substrates in channels up to 15 m wide. Streams were shallow (several cm) to deep (>1 m) with wetted widths of 2 - 10 m at low flows and “slow” to “moderate” velocities (Fitzpatrick and Suttkus 1992). At least two stream sites where the species lived were used by cattle, with water temperatures at one site as high as 28 °C, suggesting the species can tolerate somewhat degraded conditions (Fitzpatrick and Suttkus 1992; personal observations). Some individuals were collected under ledges in plunge pools formed on the downstream side of road bridges (Fitzpatrick and Suttkus 1992).

Life Colors and Distinctive Characters

Orconectes hartfieldi has a background color of light to olive tan, becoming darker dorsally on the carapace. The most striking color features are the bright red to red-brown coloration of the post-orbital ridges, lateral edges of the rostrum, joints on legs, and posterior edges of each abdominal section and tail fan. The fingers of the chelae have a blue coloration, sometimes faint, visible at least on recently molted individuals. A dark lobe on each side of the carapace begins near the lower, anterior edge of the thorax, behind the cervical groove, and curves up to nearly the areola. The palms of the chelae have prominent blue-black tubercles, and a blue-black color lines the posterior edge of the carapace. Red spots on the chelae occur at the tips of the fingers, the base of the moveable finger, and on the palm just posterior to the moveable finger. The ventral side of the body is creamy to white. Overall coloration is very similar to that of *O. perfectus*.

The carapace is flattened dorsally and has an obliterated areola for most of its length. Cervical spines are prominent and a suborbital angle is lacking. The rostrum has a distinct, moderately long acumen. Antennal scales are somewhat rounded, with the widest point forming an angle just distal to the midpoint. Males have hooks only on the third pereopods (legs). Gonopods end in two terminal elements, both inclined caudally. The central projection is longer than the mesial process and has a notch or shallow depression near the end. The mesial process, which does not become cornified in the form I male, curves slightly, and is directed caudomesially at about a 45 degree angle. Females have a first pleopod (Fitzpatrick and Suttkus 1992).

Size

Carapace lengths of individuals in the species description range from 18.5-35.8 mm (Fitzpatrick and Suttkus 1992), equivalent to estimated ranges of 13.3-26.4 mm and 35.8-76.3 mm for post-orbital carapace length and body length, respectively.

Most Like

Orconectes hartfieldi is most closely related to and most similar in appearance to *O. (Hespericambarus) perfectus*, but also superficially resembles species in the *Buannulifictus* subgenus of *Orconectes*, including *O. palmeri* and *O. hobbsi*.

Orconectes hartfieldi males differ most notably from *O. perfectus* males in having an apical notch or depression at the end of the central projection that is obvious in form I males and subtle in form II males. The annulus ventralis of *O. hartfieldi* females has a deeper sulcus and longer sinus that extends to the anterior edge of the annulus ventralis compared to *O. perfectus* in which the sinus covers only the caudal portion of the annulus ventralis.

In *O. hartfieldi*, the gonopods of both form I and form II males differ strikingly from those belonging to species in the subgenus *Buannulifictus*. In *O. hartfieldi*, the terminal elements of the gonopods are very short and minimally recurved; in *O. palmeri* and *O. hobbsi*, the terminal elements are long, slender and curve caudally at least near the ends of the elements.

Life History

Form I males have been collected from 10 August through 24 October and juveniles from 5 March through 13 April (Fitzpatrick and Suttkus 1992; unpublished data). The species' life history is presumably very similar to that of *Orconectes perfectus* and *Orconectes hathawayi*.

Crayfish Associates

Species reported occurring with *O. hartfieldi* include *Procambarus ouachitae*, *Cambarus sp. cf. ludovicianus*, and "undescribed member of the genus *Orconectes* assignable to the subgenus *Gremicambarus*" (Fitzpatrick and Suttkus 1992); however, in light of the revision of *Gremicambarus* (Bouchard and Bouchard 1995), the latter species is likely assignable to the subgenus *Trisellecens*. In addition, I have collected *O. hartfieldi* with *Cambarus striatus* and *Procambarus hayi*.

Conservation Status

American Fisheries Society ranking: Threatened

Heritage global ranking: G2 (imperiled)

State of Mississippi: Tier 1 (in need of immediate conservation action and/or research)(MDWFP 2005).

See (Taylor et al. 2007) for further explanation of American Fisheries Society and Heritage rankings.

Species Description

Fitzpatrick, J.F., Jr., and R.D. Suttkus. 1992. A new crawfish of the genus *Orconectes* from the Yazoo River system of Mississippi (Decapoda: Cambaridae). *Proceedings of the Biological Society of Washington* 105:70-76.

Literature Cited

Bouchard, R. W. and J. W. Bouchard. 1995. Two new species and subgenera (*Cambarus* and *Orconectes*) of crayfishes (Decapoda: Cambaridae) from the eastern United States. *Notulae Naturae of the Academy of Natural Sciences of Philadelphia* 471:1-21.

Fitzpatrick, J. F., Jr. and R. D. Suttkus. 1992. A new crawfish of the genus *Orconectes* from the Yazoo River system of Mississippi (Decapoda: Cambaridae). *Proceedings of the Biological Society of Washington* 105:70-76.

MDWFP, Mississippi Department of Wildlife, Fisheries, and Parks. 2005. Appendix VIII: Mississippi's species of greatest conservation need by ecoregion. Pages 375-380 *Mississippi's Comprehensive Wildlife Conservation Strategy 2005-2015*, version 1.1, Jackson, MS (<http://home.mdwfp.com/more.aspx>).

Taylor, C. A., G. A. Schuster, J. E. Cooper, R. J. DiStefano, A. G. Eversole, P. Hamr, H. H. Hobbs, III, H. W. Robison, C. E. Skelton, and R. F. Thoma. 2007. A reassessment of the conservation status of crayfishes of the United States and Canada after 10+ years of increased awareness. *Fisheries* 32:372-389.

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