

***Orconectes (Gremicambarus) compressus* (Faxon) 1884**

Slender crayfish



Form I male. Photo by C. Lukhaup.



Form I male. Photo by S. B. Adams.

**Distribution, Habitat, and Behavior**

*Orconectes compressus* occurs in tributaries of the Barren River and of the middle and lower Tennessee and Cumberland rivers in Tennessee, southern Kentucky, northern Alabama, and extreme northeastern Mississippi (Hobbs 1949). In Mississippi, it occurs in Tennessee River tributaries in Tishomingo County (Goodnight 1940, Hobbs 1949, 1989, Fitzpatrick 2002). Although several records suggest the species also occurs in the

Tombigbee River drainage in Mississippi, more sampling is necessary to confirm its presence there. The Smithsonian National Museum of Natural History database includes a collection record for the species from a tributary of the upper Tombigbee River in Itawamba County. The collection included a form I male and was identified by J. Fitzpatrick; however, the record should be considered tentative because it is outside of the Tennessee River drainage and in a later paper, Fitzpatrick (2002) did not include Itawamba County in the species' range. Fitzpatrick (2002) did indicate that the species may occur in Monroe County, which is in the Tombigbee basin, but the location of a voucher specimen to support that is unknown. The Mississippi Museum of Natural Science database also includes an *O. compressus* record from the Tombigbee River drainage in Lee County, but the identification was based on two juveniles.

The species is usually found in small to large (2-10 m wide), clear, cool streams with substrates that contain rock or gravel and can occupy sites with very high velocities (Hobbs 1949, Bouchard 1972, Taylor and Schuster 2004). Hobbs (1949) collected the species from a Tennessee site where he had difficulty standing in water deeper than 0.6 m due to the swiftness of the current. The crayfish apparently occupied shallow burrows under rocks in the fast water. The species can also be found in "holes in the gravel" in quiet waters along pool edges (Hobbs 1949). Bouchard (1972) reported that the species digs shallow burrows in the stream substrate and can be found under rocks, leaf litter, or other cover in pools and riffles. In Mississippi, Goodnight (1940) found the species in a small, clear, cold, apparently spring fed stream with "pebble and sand" substrate. The preference for clear cool water and rocky substrates likely explains why the species' distribution in Mississippi is limited to the extreme northeast corner of the state. Taylor and Schuster (2004) note that although the species can be found in deeper runs and pools, it is most common and often occurs at high densities in shallow, gravelly riffles where it is the only species whose small adult size allows it to take refuge under the gravel.

Its small size, coloration, tendency to remain very still when first disturbed, as well as its ability to move extremely rapidly when further molested makes *O. compressus* difficult to locate and capture by hand (Goodnight 1940, Rhoades 1944, Hobbs 1949).

In the laboratory, *O. compressus* is a docile crayfish, rarely attacking its aquarium mates as is common in many *O. (Trisellescens)* species (unpublished observations).

### **Life Colors and Distinctive Characters**

*Orconectes compressus* is a small crayfish with very large chelae relative to body size, particularly in form I males. The following description is adapted from Faxon (1884) and Taylor and Schuster (2004). The carapace is strongly laterally compressed and is punctate on the dorsal and lateral surfaces. Cervical and branchiostegal spines are lacking. Areola is broad, 2.9 – 5.0 times longer than wide at narrowest point, with space for 7-10 punctations across the narrowest point. Rostrum is narrow, excavate, and curved downward and features a strong median carina. Marginal spines are present on small individuals, but often lacking on larger ones. Antennal scale is rounded, broadest at midlength, terminating in a very long spine reaching beyond the tip of the rostrum. Chela stout and smooth with punctations but not tubercles and with short, gaping fingers that

lack longitudinal ridges. Mesial margin of the palm has a row of 6 – 8 rounded tubercles. Form I males with a hook on the third pereopod (leg). Form I gonopod with two parallel terminal elements recurving caudodistally. The cornified central projection ends in a sharp point. Mesial process extends beyond the central projection, recurving to an angle of 90 degrees to the main axis of the gonopod and flaring to a trough distally. Female has smaller chela. Annulus ventralis is subrhomboidal with elevated lateral margins and a large, deep, sinuate fossa. The sinus originates in the caudal corner of the fossa and extends a short distance to the caudal margin of the annulus.

## Size

The maximum size reported is 51.0 mm total length, and the smallest ovigerous female reported was 29.3 mm total length (Taylor and Schuster 2004). Bouchard (1972) reported a specimen with a carapace length of 26.3 mm (post-orbital carapace length of 21.3 mm). Goodnight (1940) collected 10 form II males and 12 females in Mississippi in August 1939; the range of carapace lengths was 9 – 20 mm for males (16 – 36 mm body length) and 7 – 20 mm for females (12 – 36 mm body length).

## Most Like

*Orconectes compressus* is easily distinguished from all other Mississippi crayfishes by its laterally compressed carapace and large chela relative to its small adult body size. It is further distinguishable from other *Orconectes* with similar gonopods by its combination of a very wide areola, short fingers, and lack of both a distinct excision on the opposable margin of the moveable finger and setal tufts at the base of the fixed finger. *Orconectes alabamensis* is the most similar species but has a wider carapace and wider, less excavate, rostrum, a small but well developed cervical spine on each side (as opposed to none), and setal tufts on the opposable margin of the fixed finger of the chela (usually). Also, in live specimens, *O. alabamensis* is heavily mottled, whereas *O. compressus* has dark spots on the carapace with a pair of prominent dark saddles on the dorsolateral surface of the carapace immediately caudad of the cervical groove.

## Life History

The following life history information is based on Kentucky and Tennessee collections made year round (Taylor and Schuster 2004). Mating apparently occurs in fall or early spring, with egg laying in spring. Form I males have been collected in every month except January and June-August. Ovigerous females were collected only in March and April. Ovigerous females collected in March had total lengths of 43.1, 36.7, and 29.3 mm and carried 57, 45, and 38 eggs, respectively. Average egg diameter was 1.8 mm (Taylor and Schuster 2004), about in the middle of the size range for the genus (Adams In press). In Tennessee, ovigerous females were also collected in March and April (Bouchard 1972).

In the crayfishes of Mississippi database (this website), 87% of the 85 adult males captured in September-October were form I, whereas only 2 % (1 individual) of the 43 adult males captured in April-June were form I. On April 22, we collected a female with attached juveniles from the margin of Bear Creek, MS, which had high, very swift, turbid water at the time. The female had a total length of 30.0 mm (carapace and postorbital

carapace lengths of 14.5 and 11.7 mm, respectively) and was slightly deformed. Juveniles were collected in February, June, and October, but no size information is available for them.

### **Crayfish Associates**

I have collected the following species with *O. compressus* in Mississippi: *Cambarus girardianus*, *C. sp. cf. coosawattae*, *O. spinosus*, and an undescribed species of the *Orconectes* subgenus *Trisellescens*. In addition, others have collected the species with *C. striatus*, *O. alabamensis*, *O. validus*, and *Procambarus acutus acutus* (Bouchard 1972, Cooper and Hobbs 1980).

### **Conservation Status**

Although the species has a relatively large range, its distribution in Mississippi is restricted.

American Fisheries Society ranking: Currently Stable

Heritage global ranking: G5 (demonstrably widespread, abundant, and secure)

See (Taylor et al. 2007) for further explanation of these rankings.

### **Species Description**

Originally described as *Cambarus compressus*.

Faxon, W. 1884. Descriptions of new species of *Cambarus*; to which is added a synonymical list of the known species of *Cambarus* and *Astacus*. Proceedings of the American Academy of Arts and Sciences **20**:107-158.

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