

## *Procambarus (Ortmannicus) hybus* Hobbs and Walton 1957

Smoothnose crayfish



Photo by C. Lukhaup.

### **Distribution, Habitat, and Behavior**

*Procambarus hybus* occurs in Mississippi and Alabama in the upper Yazoo, Tombigbee, Black Warrior, and Cahaba drainages (Busack and Belk 1988, Hobbs 1989, Schuster et al. 2008). In Mississippi, the range extends from the Alabama border west to Calhoun and Lafayette counties and in the Tombigbee basin north to Lee County (Busack and Belk 1988). In the lower Mississippi River basin, it has been found in the Yalobusha and Yocona drainages of the lower Mississippi-Yazoo basin (Busack and Belk 1988). The species' distribution is poorly defined, and range reports lack consistency; therefore, I report counties possibly containing the species according to four categories of information.

1. Counties reported by Fitzpatrick (2002) or Busack and Belk (1988) and within the range described by the latter include Calhoun, Chickasaw, Clay, Itawamba, Kemper, Lafayette (Yocona watershed), Lee, Lowndes, Monroe, Noxubee, Oktibbeha, Pontotoc, Union (if collected from Town drainage, then consistent with Busack and Belk (1988), otherwise not), and Webster.
2. Counties reported by Fitzpatrick (2002) but not previous authors, and supported by records in MS Crayfish database (this website) include Grenada (Yalobusha watershed), Jasper (Upper Chickasawhay watershed, Pascagoula subbasin), and Union (Little Tallahatchie watershed, Yazoo sub-basin – note watershed not listed in record, but site is in this watershed).

3. One county reported by Fitzpatrick (2002) but not previous authors and lacking supporting records in MS crayfish database is Webster (if collected from Yalobusha watershed, then consistent with Busack and Belk (1988), otherwise not).

4. Counties with records in the MS crayfish database but not in other sources include Choctaw (Upper Pearl watershed, Pearl subbasin), Lauderdale (Chunky-Okatibbee watershed, Pascagoula subbasin), and Perry (Black watershed, Pascagoula subbasin), Union (Little Tallahatchie watershed, Yazoo subbasin – note watershed not listed in record, but site is in this watershed).

A secondary burrower, *P. hybus* occupies temporary ponds, pools, burrows, roadside ditches and very small, intermittent streams, burrowing as habitats dry (Hobbs and Walton 1957, Hobbs 1962, 1989; MS crayfish database, this website). The type locality was a roadside ditch with a clay/mud bottom and 10-15 cm of clear water flooding a “rich growth of grasses” (Hobbs and Walton 1957). I dug a form I male from a burrow in the clay bank of a small, sluggish, intermittent stream with a forested floodplain in Lee County, MS (MS crayfish database).

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

The following description is adapted from Hobbs and Walton (1957). *Procambarus hybus* has a subcylindrical, slightly laterally compressed body, a narrow areola (11.8 – 24.0 times longer than broad), a blunt rostrum with or without a median carina and with distinctly elevated margins lacking marginal spines and terminating in a small, upturned tubercle, small suborbital ridges lacking terminal spines, an obtuse or obsolete suborbital angle, and weak tubercles on the sides of the carapace. The mesial margin of the antennal scale is very rounded and widest distal to midlength. The palm of the chela has a row of 7 – 9 tubercles and is not bearded. Males have simple hooks on the 3<sup>rd</sup> and 4<sup>th</sup> pereopods (legs). The form I gonopod has a distinct shoulder on the cephalic margin just distad to midlength and the distal portion is directed caudally at an angle of 40 – 50 degrees to the main shaft, giving the gonopod a humped appearance. The mesial process is directed caudodistad and slightly mesiad and is usually toothed distally. The central projection and cephalic process are directed caudodistad and the caudal element is subtriangular in the caudal view. The annulus ventralis is moveable, set deeply in the sternum, and has the cephalic margin largely obscured by extensions of the sternum. The annulus has a caudally expanded median longitudinal furrow. A sinus originating at the cephalic margin of the annulus extends sinuously through the furrow, terminating on an elevated area near the mid-caudal margin. The post-annular sclerite is much narrower than the annulus.

### **Size**

The three type specimens ranged in carapace length from 21.2 to 33.1 mm (Hobbs and Walton 1957). Three form I males in the Forest Service collection had carapace lengths of 25.5, 27.5, and 28.4 mm (post-orbital carapace lengths 22.0, 22.7, and 23.0 and body lengths 54.2, 58.2, and 57.6, respectively)(S.B. Adams, unpublished data).

### **Most Like**

*Procambarus hybus* belongs to the Planirostris Group within the subgenus *Ortmannicus*; other members of the group in Mississippi include *P. evermanni*, *P. jaculus*, *P. mancus*, and *P. planirostris* (Hobbs 1972). *Procambarus hybus* is most closely related to *P. planirostris*, from which it differs in the following aspects (as described by Penn 1953, Hobbs and Walton 1957). In *P. hybus*, the central projection is directed caudodistad as opposed to caudad in *P. planirostris*, and the mesial process is somewhat thick and blunt and usually toothed distally as opposed to spiniform. The annuli ventrales of the two species differ in many respects. In *P. hybus*, the annulus is moveable; lateral grooves form an oval wider than long and the sinus originates very near the mid-cephalic margin and extends sinuously through a furrow, ending in an elevated area near the mid-caudal margin. In *P. planirostris*, the annulus is immovable; lateral grooves delineate a “cone-shaped protuberance” that is longer than wide and through which the sinus zig-zags slightly, originating posterior to the mid-cephalic margin and ending at the apex of the cone-shaped protuberance.

*Procambarus hybus* is distinguishable from *P. mancus* by the well-developed cephalic process of the former compared to the vestigial one of the latter (Hobbs and Walton 1957). In female *P. mancus*, the annulus ventralis has “a pair of caudally diverging elevations flanking a swollen caudomedian prominence” and a fossa is not evident (Hobbs and Walton 1957)). In *P. hybus*, a fossa is present near the center of the annulus. In *P. jaculus*, the mesial process at a 30 degree angle to the main shaft, extends well beyond the other elements, and terminates in a “compressed, acute, spear-like tip” (Hobbs and Walton 1957). Female *P. jaculus* have a sub-circular annulus ventralis, a sinus extending from the mid-cephalic margin nearly to the caudal margin, and the caudal margins of the antecedent sternite barely overhang the cephalolateral margins of the annulus. Compared to *P. hybus*, *P. evermanni* has a more triangular rostrum, larger eyes, and a wider areola. The mesial process is caudal to the other terminal elements. The sinus of the annulus ventralis originates well posterior of the cephalic margin and extends to the caudal margin of the annulus.

## **Life History**

Form I males have been collected monthly from March to July, and one ovigerous female was collected on 1 April 1967 (MS crayfish database, this website). Juveniles have been collected from January to May, and four juveniles were caught in one August collection; size information for the juveniles is not available (MS crayfish database).

Hobbs (1962) noted that the life history of *P. hybus* seems to be in accord with the little life history data for related species. Penn (1956) reported the following life history information for *P. planirostris* from Louisiana. Form I males were collected in February, March, and July, and the smallest juveniles (7-10 mm carapace length) were found in January and February, suggesting an early winter egg deposition period.

## **Crayfish Associates**

We have collected *P. hybus* with *Cambarus striatus*, *Hobbseus yalobushensis*, *Orconectes chickasawae*, *P. hayi*, and *P. lecontei*, and Cooper and Hobbs (1980) also collected it with *O. chickasawae*.

## Conservation Status

IUCN Red List (2011): Least Concern

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

Hobbs, H.H., Jr., and M. Walton. 1957. Three new crayfishes from Alabama and Mississippi (Decapoda: Astacidae). *Tulane Studies in Zoology* 5:39-52.

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**Revision date and version**

3 May 2012, Version 1.2

**Recommended citation**

Adams, S. B. 2012. *Procambarus (Ortmannicus) hybus*. Version 1.2. USDA Forest Service, Crayfishes of Mississippi website, Oxford, MS. (URL).