

# **Photographic Key to the Crayfishes of Maryland**



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This key was developed to aid in the identification of Maryland crayfishes to species

Authors take responsibility of any errors or misinterpretations associated with this document

This key was based on characters and couplets derived from the following sources:

**The Crayfishes of Pennsylvania**

Ortmann, A.E. 1906. The Crawfishes of the State of Pennsylvania. Memoirs of the Carnegie Museum, Vol. II, No. 10., Pittsburgh, PA.

**Maryland Crayfishes**

Meredith, W.G. and F.J. Schwartz. 1960. Maryland Crayfishes. Educational Series 46. Maryland Department of Natural Resources. MANTA-EA-05-6

**The Crayfishes of West Virginia**

Jezerinac, Raymond F., G. Whitney Stocker, and Donald C. Tarter. 1995. Crayfishes (Decapoda: Cambaridae) of West Virginia. Ohio Biol. Surv. Bull. New Series Vol. 10 No. 1. X + 19 3p.

**The Crayfishes of Kentucky**

Taylor, C.A., and G.A. Schuster. 2004. The Crayfishes of Kentucky. Illinois Natural History Survey Special Publication No. 28. Viii + 219pp.

**The Crayfishes of Missouri**

Pflieger, W.L. 1996. The Crayfishes of Missouri. Missouri Department of Conservation, Jefferson City, MO

**Checklist of North and Middle American Crayfishes**

Hobbs, H. H., Jr. 1974. A checklist of the Crayfishes (Decapoda: Astacidae, Cambaridae, and Parastacidae). Smithsonian Contr. Zool. 480:1-236

**Crayfishes of North and Middle America**

Hobbs, H. H., Jr. 1976. Crayfishes (Astacidae) of North and Middle America. U.S. EPA, Water Pollution Control Research Series, 18050 ELDO5/72. (Second Printing)

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Special thanks to Zach Loughman (West Liberty State College) for use of specimens and additional photographs included within this key

Photographs by Casey Swecker unless noted

Key development by Casey Swecker & Dr. Tom Jones --- Marshall University, Huntington, West Virginia

Web version of key will be available at: (<http://www.science.marshall.edu/jonest/>)

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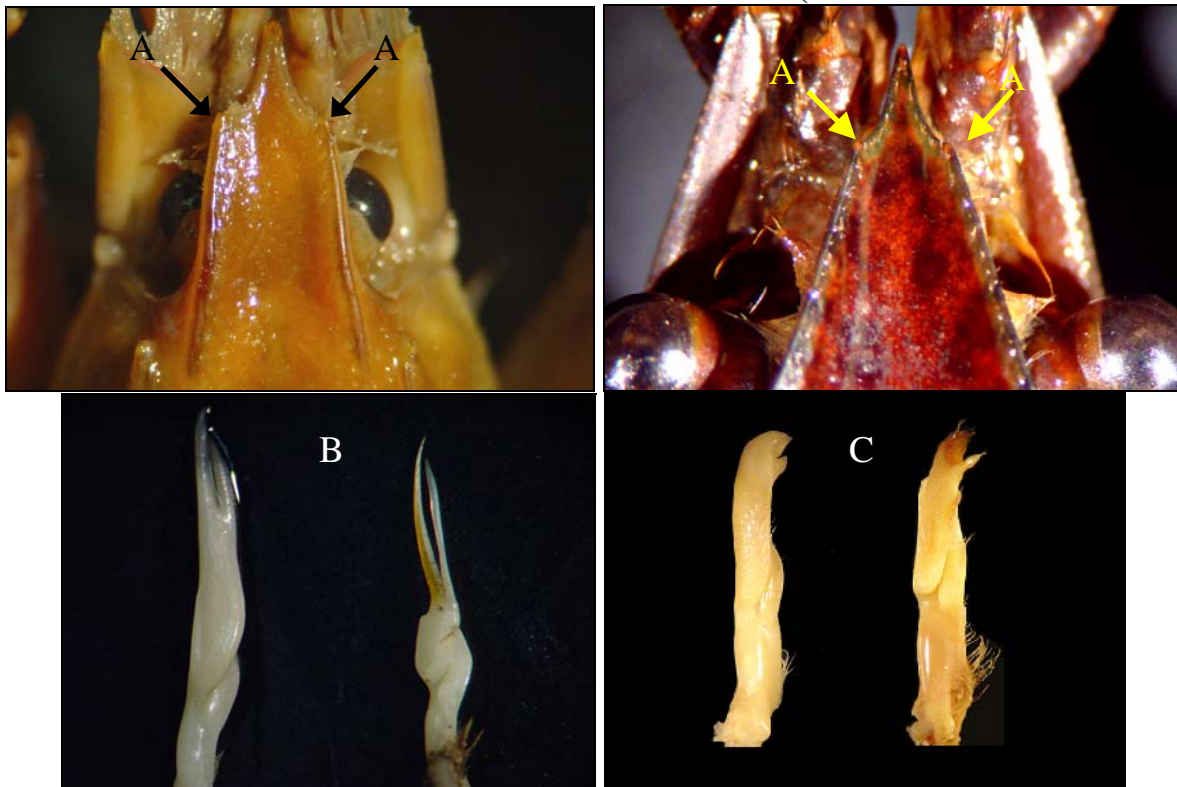
1a <sup>A</sup> Rostral margins without accessory spines; <sup>B</sup> male gonopods ending in two terminal elements that are bent at approximately 90 degrees to main shaft

----- (*Cambarus* or *Fallicambarus*) 3



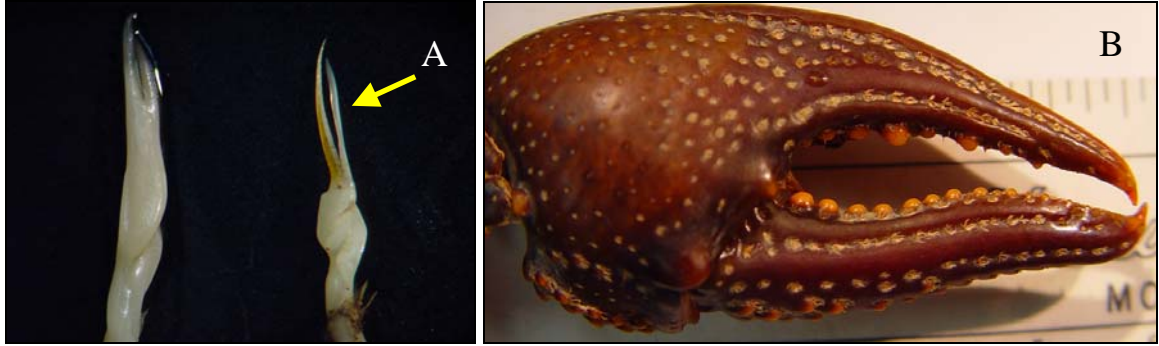
1b <sup>A</sup> Rostral margins with accessory spines, sometimes reduced; <sup>B</sup> male gonopods approximately straight ending in two terminal elements, or <sup>C</sup> stalk like ending in more than two terminal elements; (carapace red and covered in tubercles likely genus *procambarus*)

----- (*Orconectes* or *Procambarus*) 2



2a <sup>A</sup> Male gonopods approximately straight ending in two terminal elements; carapace smooth; <sup>B</sup> chela robust

----- (*Orconectes*) 11



2b <sup>A</sup> Male gonopods stalk like with more than two terminal elements; carapace covered in tubercles producing a rough feel; carapace usually red in color; <sup>B</sup> chela long and slender

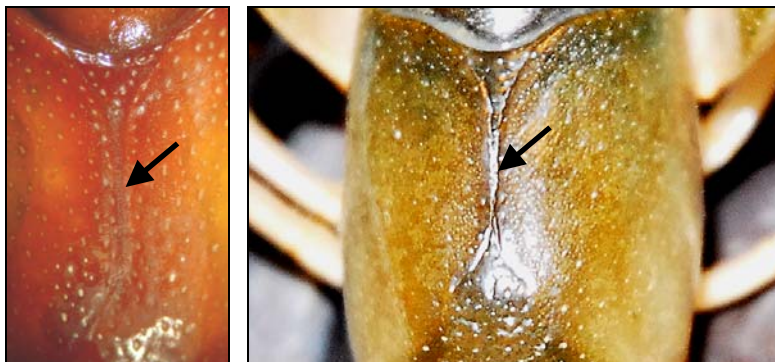
----- (*Procambarus*) 14



### Key to genus CAMBARUS

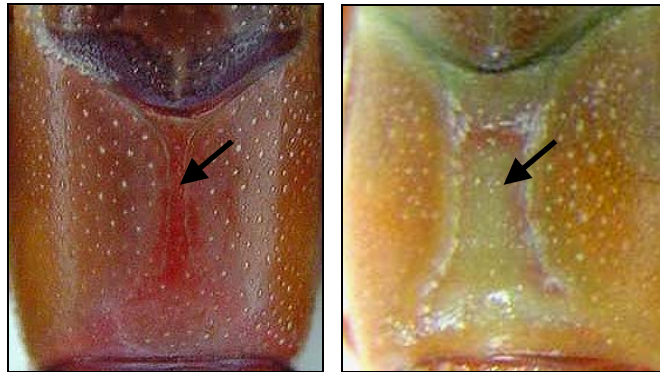
3a Areola linear or obliterated at its narrowest point

----- 4



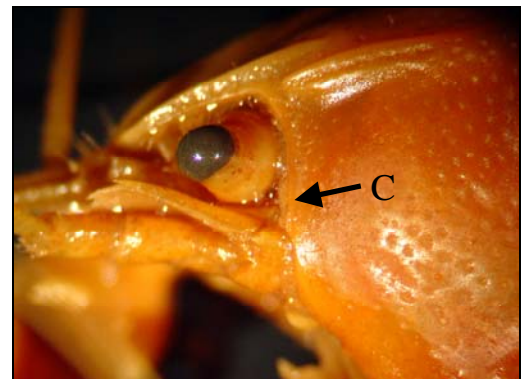
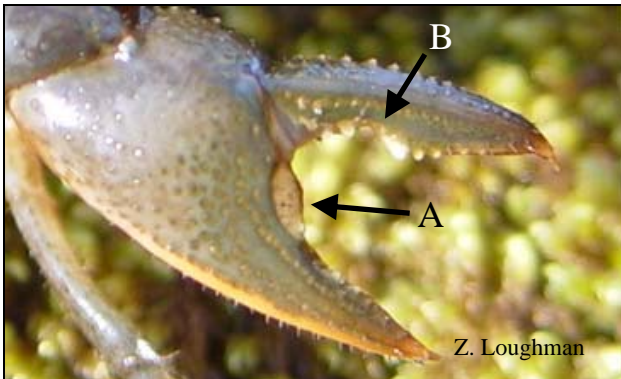
3b Areola open, space narrow to wide

6



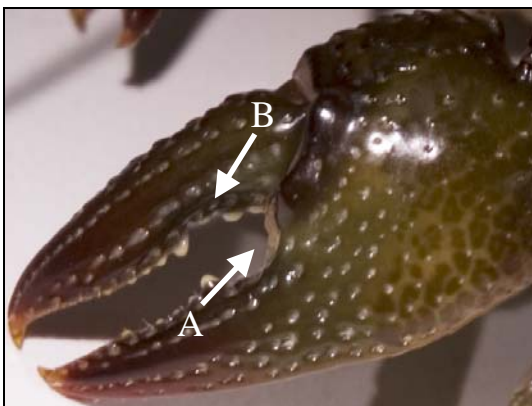
4a <sup>A</sup> Obvious tuft of setae (hair) at base of immovable finger of chelae; <sup>B</sup> base of dactyl deeply incised/notched; <sup>C</sup> suborbital angle obsolete/absent

*Fallicambarus (C.) fodiens*

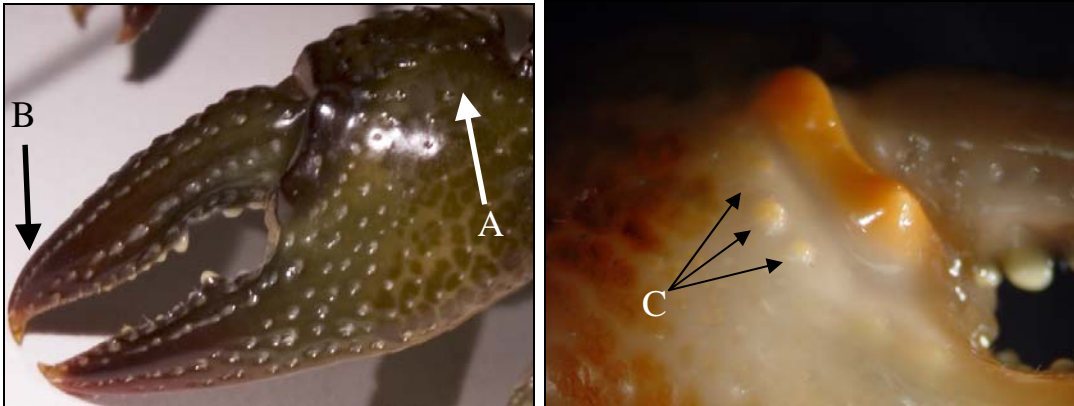


4b <sup>A</sup> Tuft of setae (hair) at base of immovable finger absent or greatly reduced; <sup>B</sup> base of dactyl either not incised or weakly incised/notched; <sup>C</sup> suborbital angle acute/present

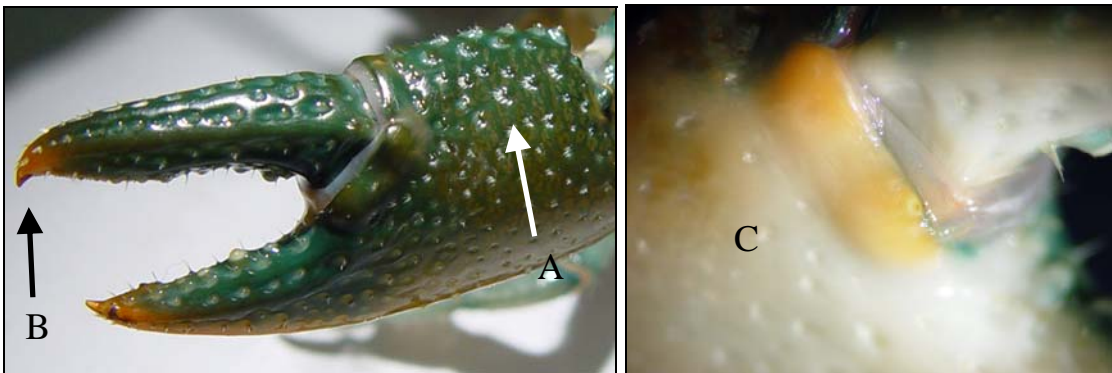
5



5a <sup>A</sup> 1/3 palm of chela smooth; <sup>B</sup> Tips of chela red; <sup>C</sup> 1 – 3 subpalmer tubercles present  
----- *Cambarus (L.) diogenes*



5b <sup>A</sup> 1/3 palm of chela with tubercles; <sup>B</sup> Tips of chela orange; <sup>C</sup> subpalmer tubercles 1 or absent  
----- *Cambarus (T.) thomai*



6a body color red, orange, or blue; body laterally compressed (burrowing form- crayfishes build underground burrows with surface chimneys) -----7

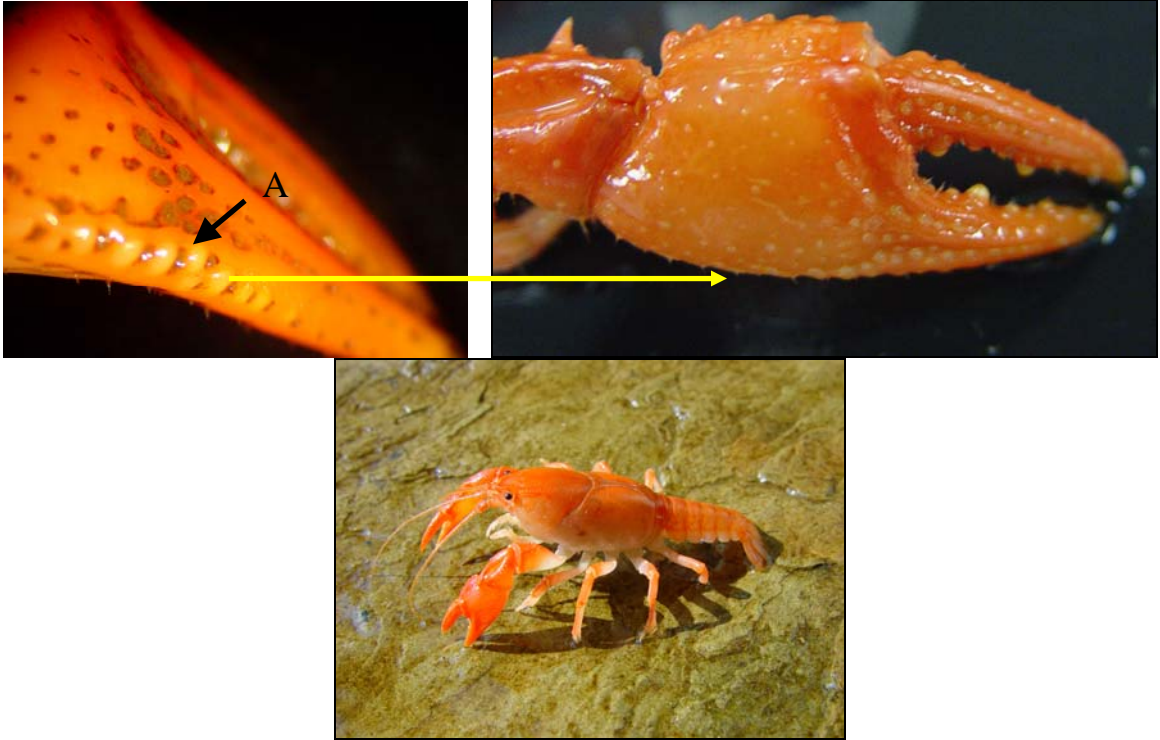


6b body color brown or green; body dorsally compressed (stream form- crayfishes living in streams under rocks, among plants, or under debris) -----8



7a <sup>A</sup> Lateral margin of fixed finger of chela costate/ribbed; body color red, orange, or black and orange; (note this species also has a blue color form, however its range does not appear in Maryland)

----- *Cambarus (J.) dubius*

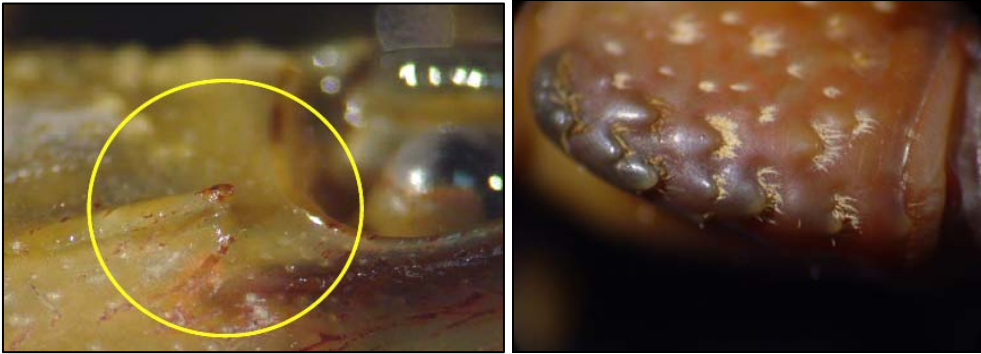


7b <sup>A</sup> Lateral margin of propodus of cheliped smooth; body color blue

----- *Cambarus (J.) monongalensis*



8a Postorbital ridge ending in spine or tubercle; two rows of tubercles on palm of chela -----9

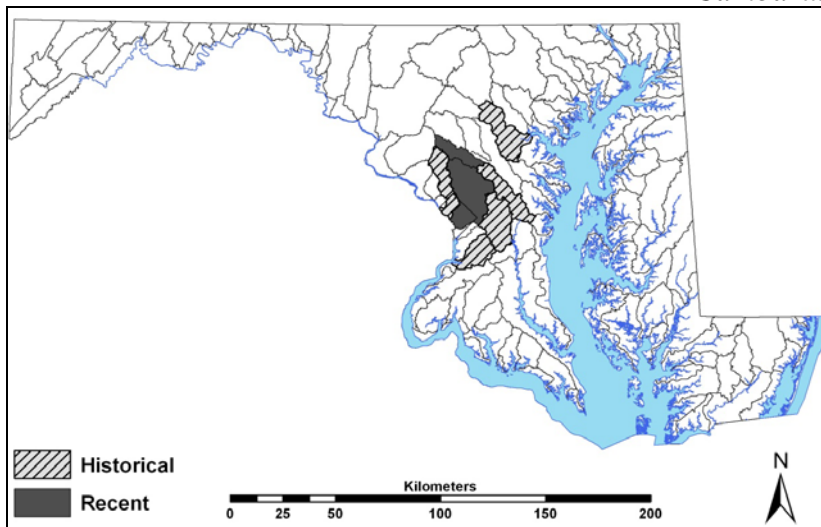


8b Postorbital ridge lacks sharp spine; one row of tubercles on palm of chela ----- 10



9a Rostral margins convergent and uniform in thickness (Currently not known in Maryland)  
-----*Cambarus (P.) robustus*

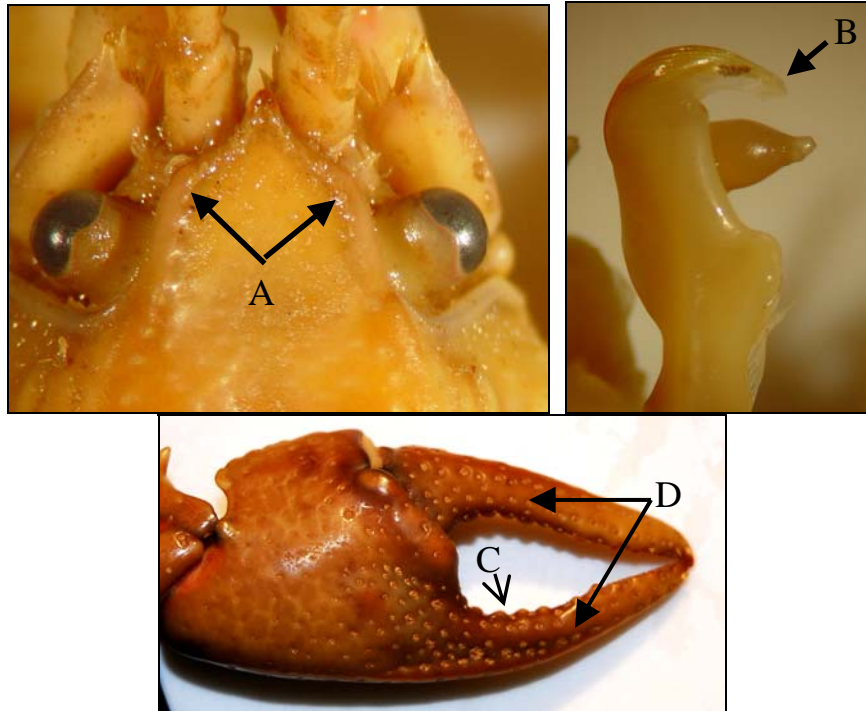
9b Rostrum margins convergent, forms into a sharp point, especially in juveniles (see distribution)  
-----*Cambarus (P.) acuminatus*



Provided by: Jay Kilian, MD-DNR

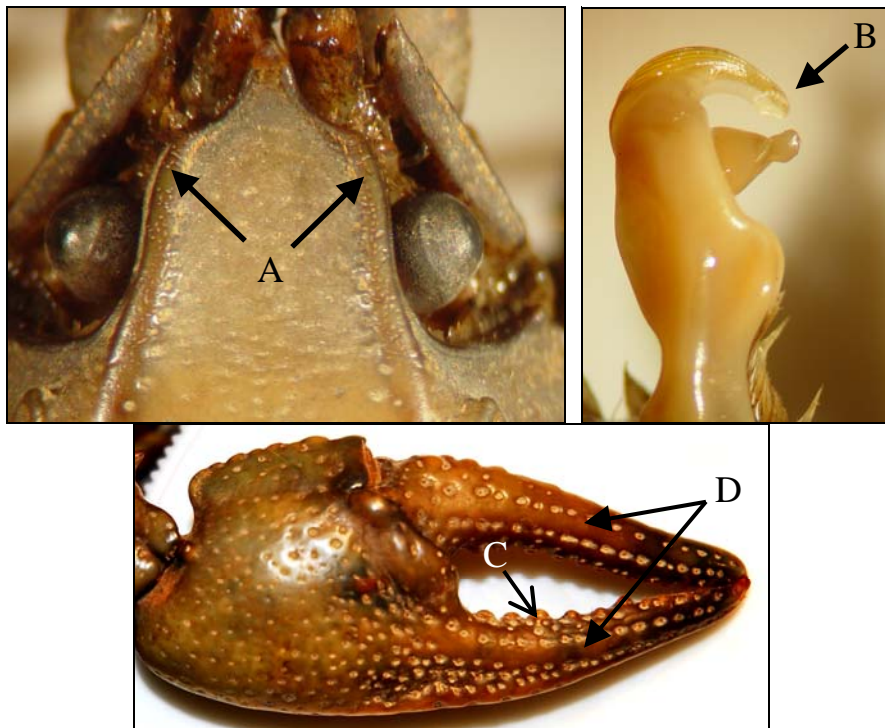


- 10a Rostrum short and <sup>A</sup> margins uniform in thickness; <sup>B</sup> first form male gonopod with dorsal element sickle shape and not protruding in a downward slope; <sup>C</sup> third or fourth tubercle on mesial margin of fixed finger not enlarged; <sup>D</sup> chela lacking strong dorsolongitudinal ridges  
----- *Cambarus (C.) b. bartonii*



- 10b Rostrum elongated and <sup>A</sup> margins thickened; <sup>B</sup> first form males with dorsal element hook shaped, ending in a downward position <sup>C</sup> third or fourth tubercle on mesial margin of fixed finger enlarged; <sup>D</sup> Chela with dorsolongitudinal ridges; (note this species is currently designated as *Cambarus carinirostris*, however it is currently under review to be elevated to a new species, it is currently under investigation by Zach Loughman, West Liberty State College)

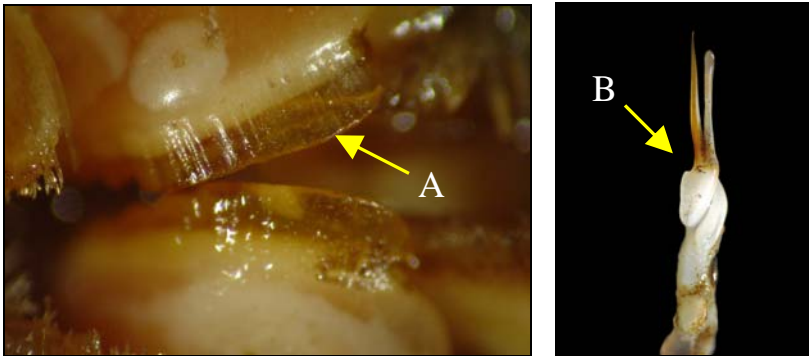
----- *Cambarus carinirostris*



**Key to genus ORCONNECTES**

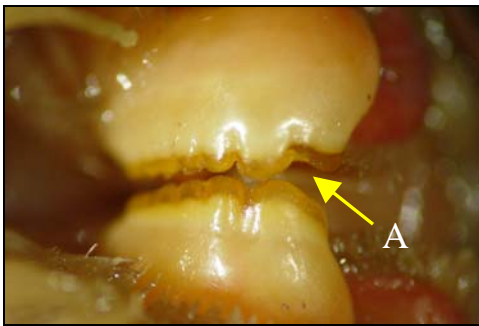
- 11a <sup>A</sup> Anterior cusp of mandible entire (smooth); <sup>B</sup> first form male gonopods with prominent right angle shoulder, terminal elements straight; reddish to brown spot usually on posterior sides of carapace.

----- *Orconectes (P.) rusticus*



- 11b <sup>A</sup> Anterior cusp of mandible toothed; first form male gonopods with or without right angle shoulder

----- 12



- 12a Hepatic region (cheek) of carapace with multiple spines; central projection of first gonopod straight; mesial process inflated and divergent from central projection

----- *Orconectes (F.) limosus*



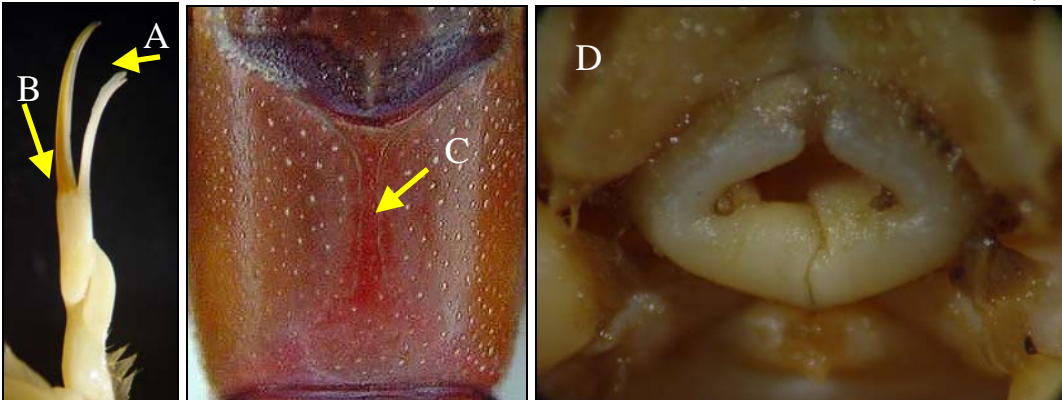
12b Hepatic region (cheek) of carapace without spines; central projection straight; mesial process not inflated and sub-parallel to central projection

13



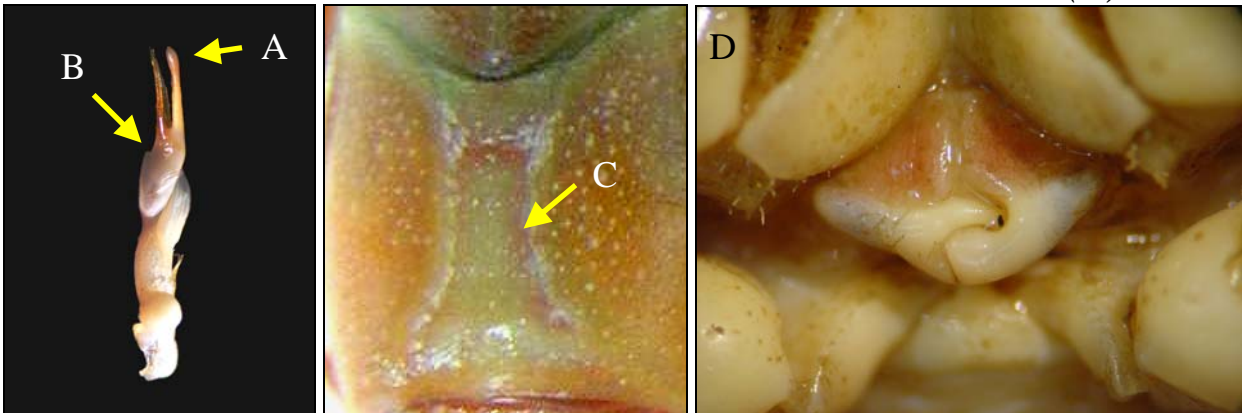
13a <sup>A</sup> First form male gonopod terminal elements gently bent at an angle of approximately 30 degrees, and extremely long; <sup>B</sup> cephalic base of central projection without a right angle shoulder; <sup>C</sup> areola width narrow; <sup>D</sup> female annulus ventralis possesses a distinct deep cavity shape; greenish color head and chela, chestnut brown color carapace, with large yellow tubercles on chela

*Orconectes (G.) virilis*



13b <sup>A</sup> First form male gonopod terminal elements straight, <sup>B</sup> cephalic base of central projection of gonopod with right angle shoulder, gonopods short; <sup>C</sup> areola width wide; <sup>D</sup> female annulus ventralis less deep, more flattened and sculptured

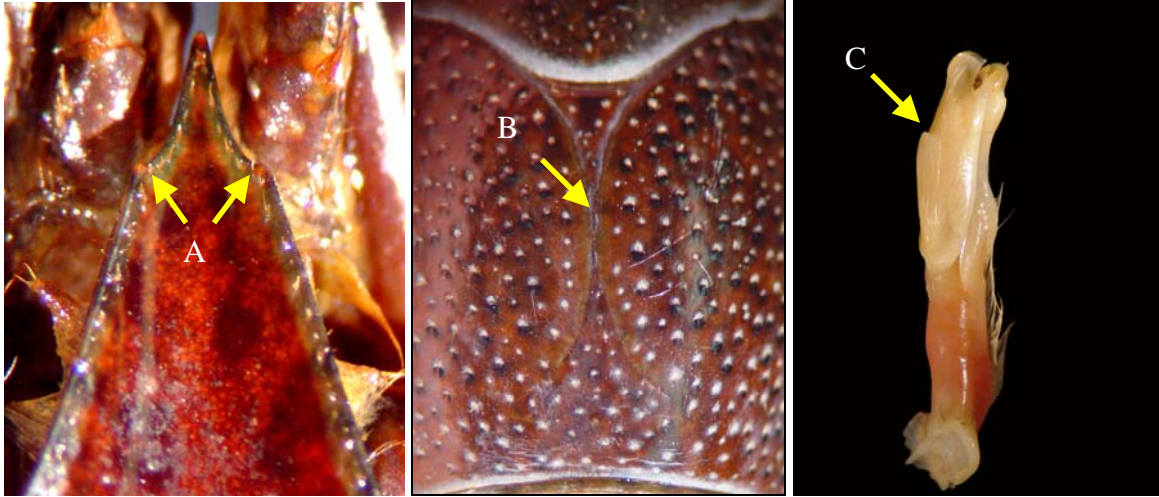
*Orconectes (C.) obscurus*



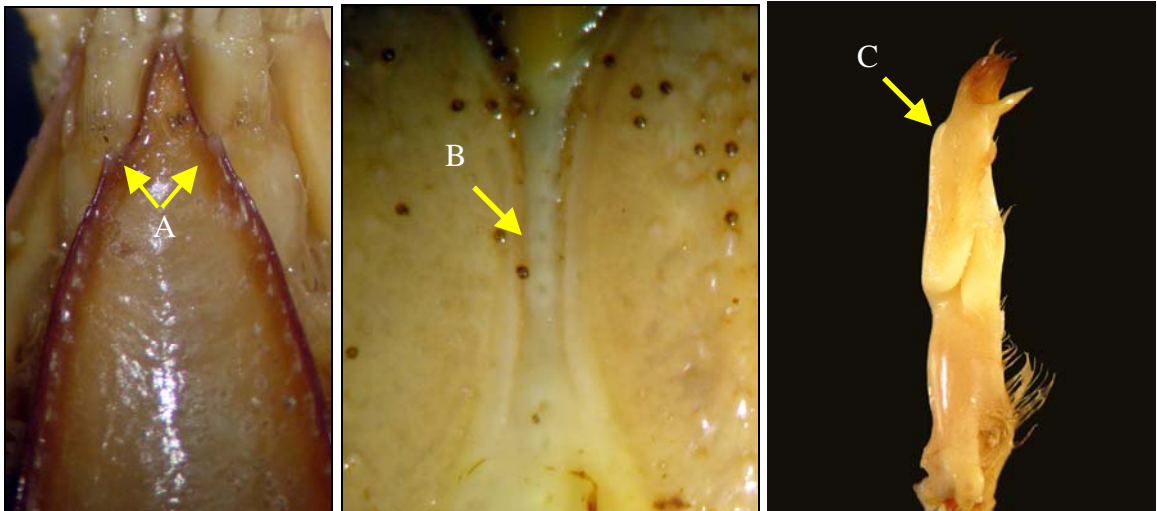
Note: use annulus ventralis pictures carefully, variations are present

Key to genus PROCAMBARUS

- 14a <sup>A</sup> Rostrum with well developed marginal/accessory spines <sup>B</sup> Areola obliterated or absent;  
<sup>C</sup> male first form gonopod with prominent right angle shoulder;  
----- *Procambarus (S) clarkii*



- 14b <sup>A</sup> Rostrum with reduced marginal/accessory spines; <sup>B</sup> Areola present and separated; <sup>C</sup> male  
first form gonopod with sloping shoulder;  
----- 15



The White River Crayfish *P. a. acutus* and Southern White River Crayfish *P. zonangulus* are described within a species complex. Both species are very similar and lack a key definitive field character. Slight differences can be seen however this varies among specimens and many times experience is needed to tell the difference.

Authors have very little experience with *P. zonangulus* any new information will be updated

- 15a Areola width separated; distinctive dark stripe along tail, juveniles yellowish to brown, adults red in color, first form male gonopods very similar to (*P. zonangulus*) terminating in 4 elements with setae present; Native to Maryland

-----*Procambarus (O.) acutus acutus*



- 15b Areola narrow (intermediate to *P. clarkii* and *P.a. acutus*); coloration very similar to *P. a. acutus*; first form male gonopods terminating in 4 elements with setae present; introduced species for aquaculture purposes, native range Texas and the gulf coastal plane region

-----*Procambarus (O.) zonangulus*

