

# Key to the Crayfish of Maryland



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# Key to the Crayfish of Maryland

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# Acknowledgments

This key to the crayfishes of Maryland was developed for the MDNR Maryland Biological Stream Survey to support field identification of crayfishes occurring in Maryland waters. This work is currently in draft and will be modified as new data are made available.

This key was developed using the sources listed below:

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

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).

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.

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

North Carolina Wildlife Resources Commission Web site: [http://www.wildlife.state.nc.us/pg07\\_Wildlife-SpeciesCon/nccrayfishes/cf\\_glossary.html](http://www.wildlife.state.nc.us/pg07_Wildlife-SpeciesCon/nccrayfishes/cf_glossary.html). Crayfish Glossary. Retrieved April 15, 2009.

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

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

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

Historical crayfish data presented on each species distribution map were taken from Meredith and Schwartz (1960). Current distribution data include records generated since 2006. These data were provided by the Maryland Biological Stream Survey, Dr. Thomas Jones, Casey Swecker, and Zachary Loughman.

All common names are based on information from:

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* 32:372-388.

## **Special Thanks:**

Zach Loughman (West Liberty State College) for use of specimens and additional photographs in this key.

## **Photographs/Illustrations:**

Casey Swecker, Matt Sell, Zach Loughman, and Luke Roberson

## **Key development:**

Casey Swecker, Dr. Tom Jones - Marshall University, Huntington, West Virginia, Jay Kilian, MD DNR

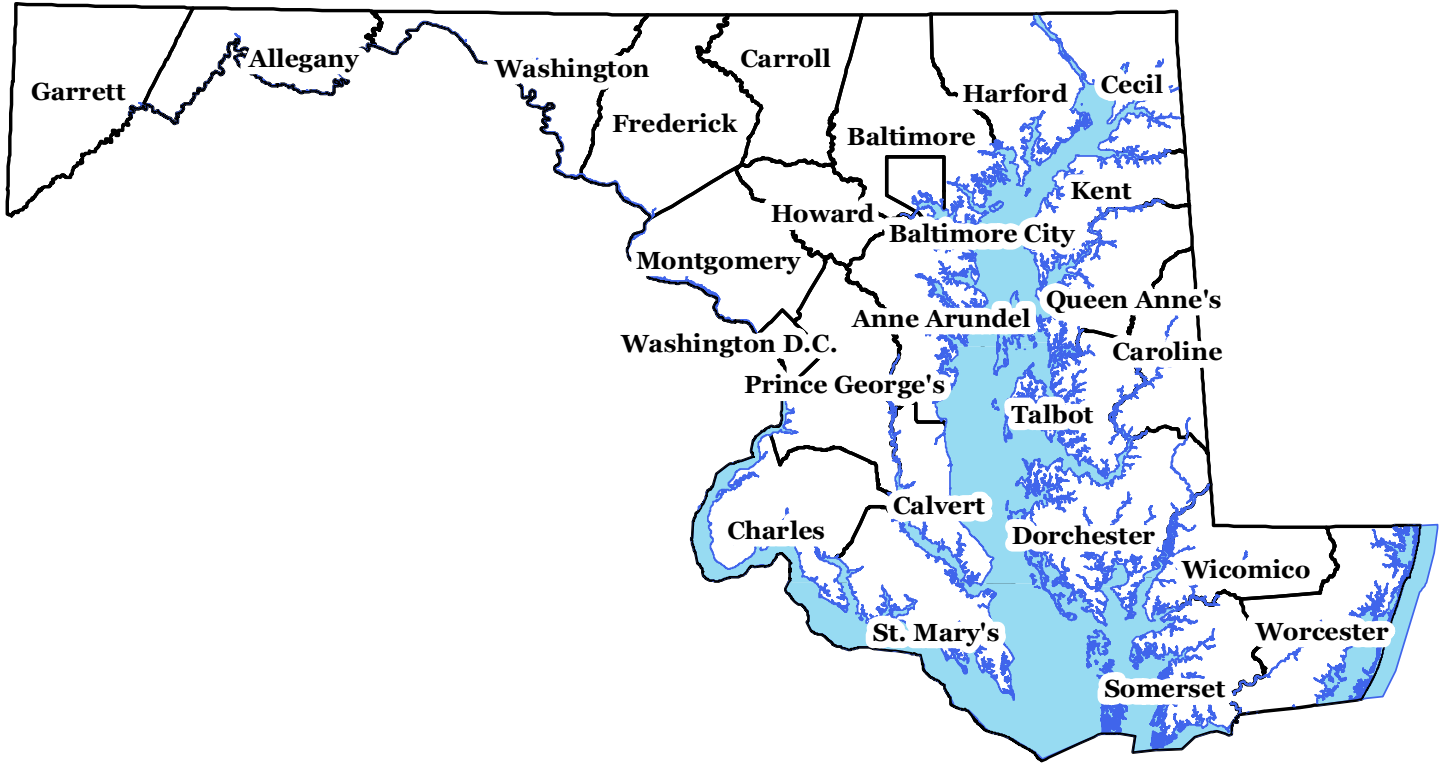
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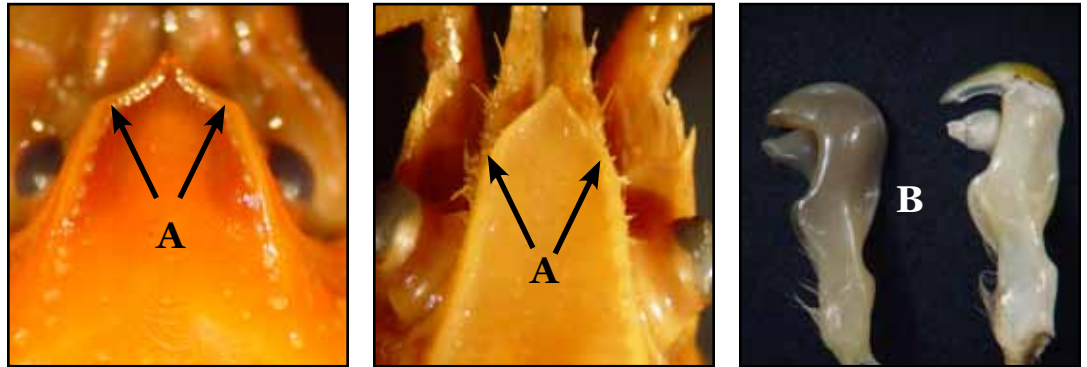
# Maryland's Counties



# Dichotomous Key

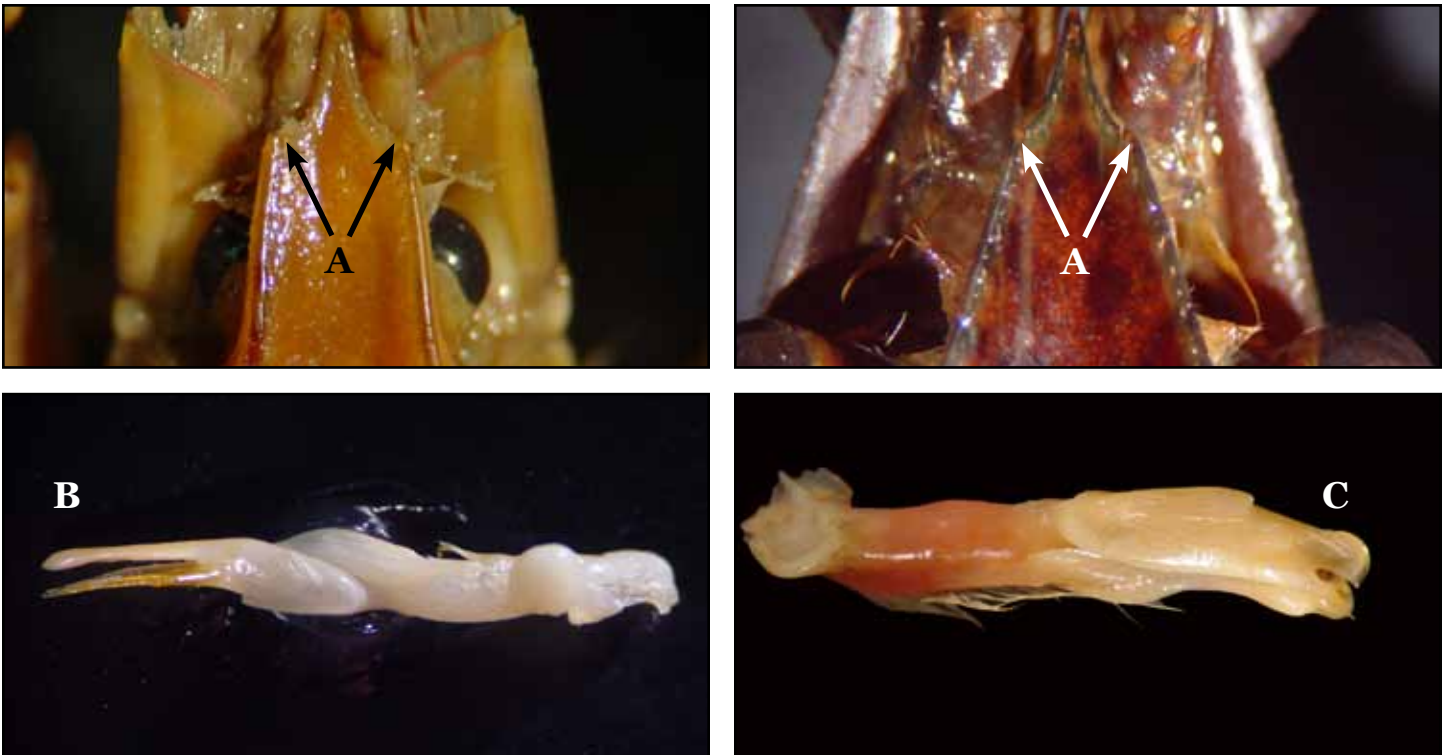
- 1a. <sup>A</sup>Rostral margins without accessory spines; <sup>B</sup>Male gonopods ending in two terminal elements that are bent at approximately 90 degrees to main shaft.

**Cambarus or Fallicambarus - 3**



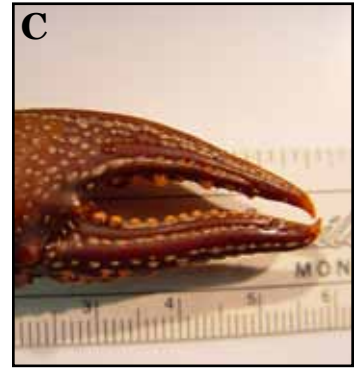
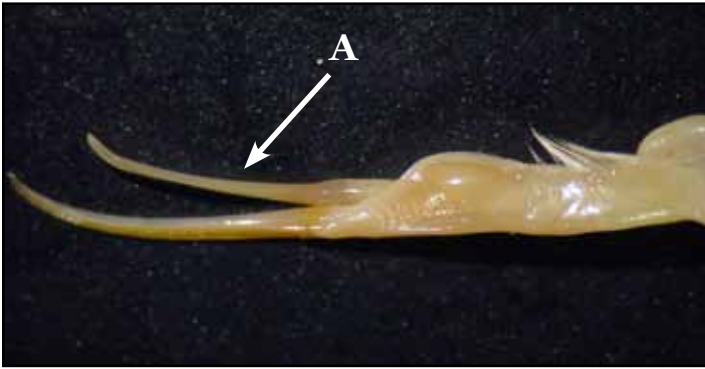
- 1b. <sup>A</sup>Rostral margins with accessory spines, sometimes reduced; <sup>B</sup>Male gonopods approximately straight ending in two terminal elements, or <sup>C</sup>stalk-like ending in more than two terminal elements.

**Orconectes or Procambarus - 2**



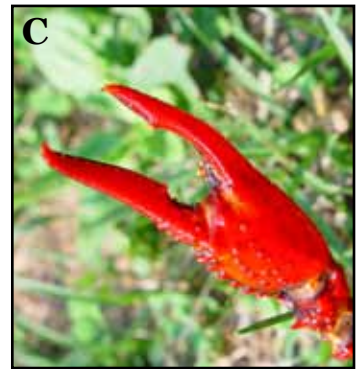
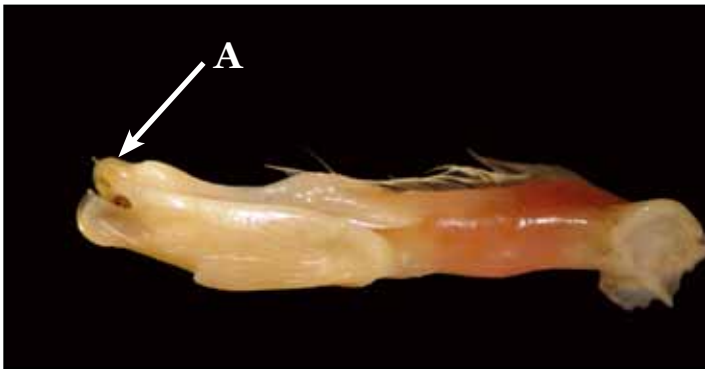
- 2a. <sup>A</sup>Male gonopods approximately straight ending in two terminal elements; <sup>B</sup>Carapace smooth; <sup>C</sup>Chela robust.

**Orconectes - 10**



- 2a. <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.

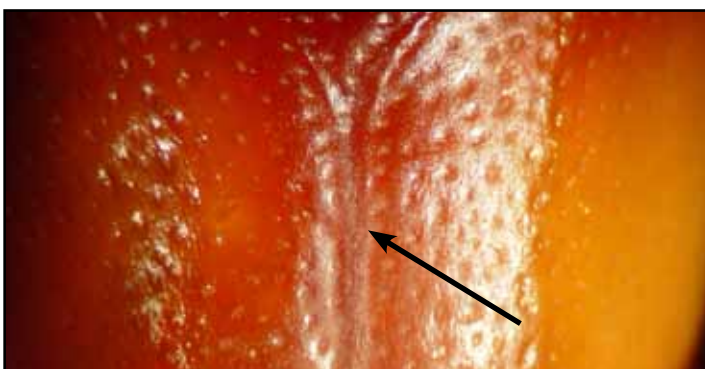
**Procambarus - 13**



## Key to genus *CAMBARUS*

- 3a. Areola linear or obliterated at its narrowest point.

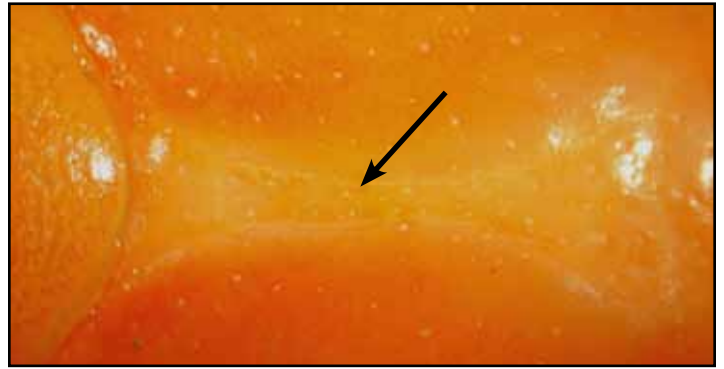
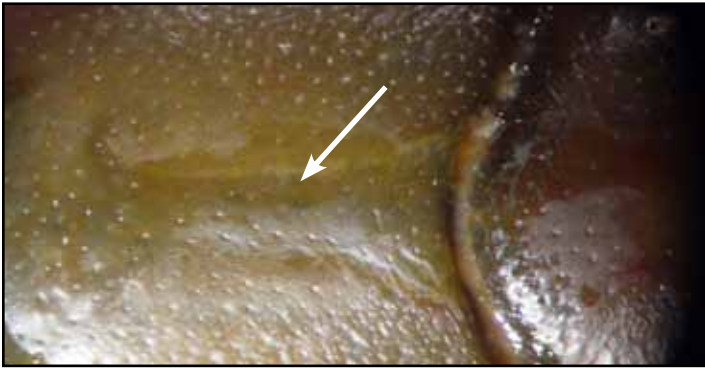
**Go to 4**





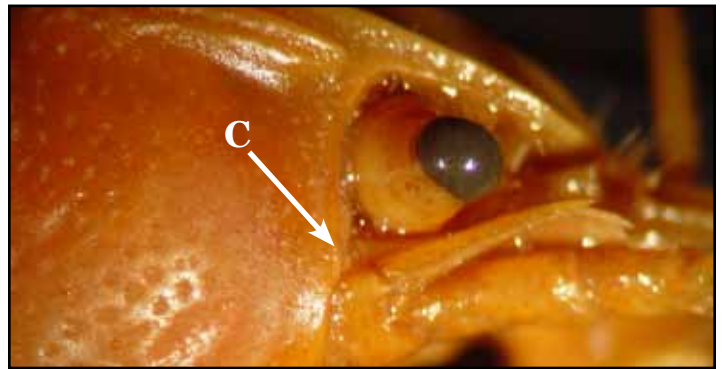
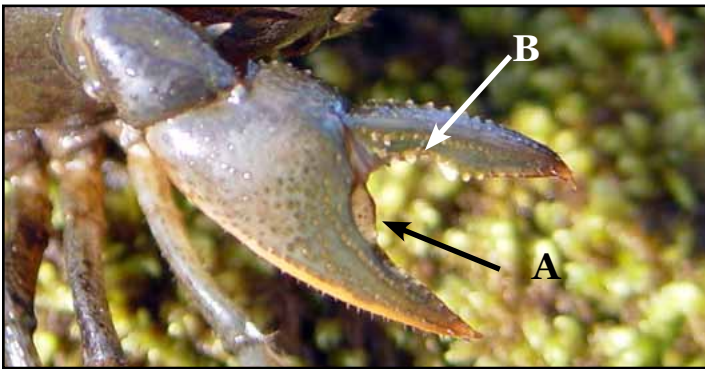
3b. Areola open, space narrow to wide

Go to 6



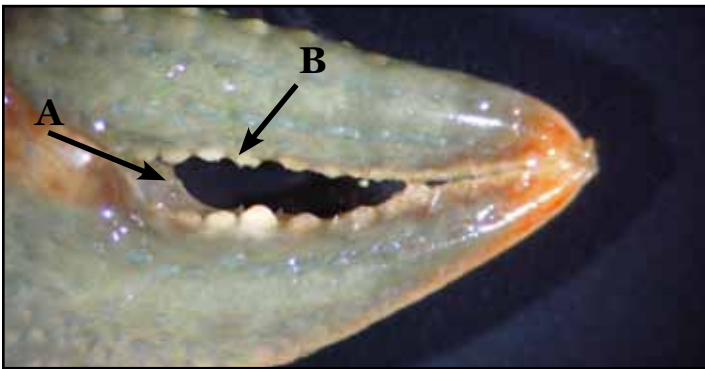
4a. <sup>A</sup>Obvious tuft of setae (hair) at base of immovable finger of chelae; <sup>B</sup>Base of dactyl deeply incised/notched; <sup>C</sup>Suborbital angle obsolete/absent.

*Fallicambarus (C.) fodiens*

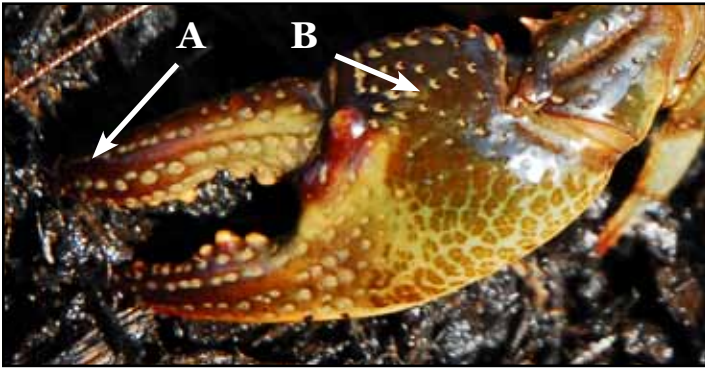


4b. <sup>A</sup>Tuft of setae (hair) at base of immovable finger absent or greatly reduced; <sup>B</sup>Base of dactyl either not incised or weakly incised/notched; <sup>C</sup>Suborbital angle acute/present.

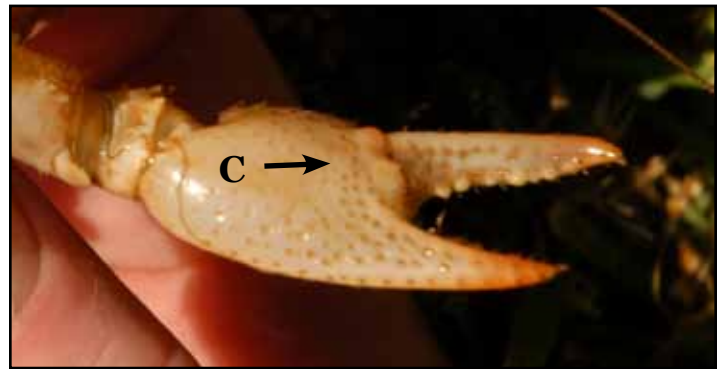
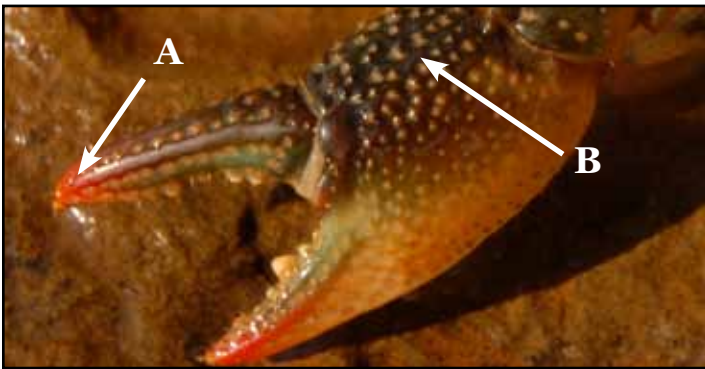
Go to 5



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

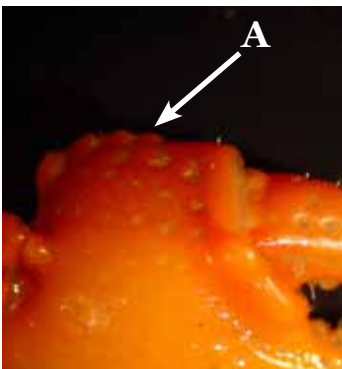


5b. <sup>A</sup> Tips of chela orange; <sup>B</sup> 1/3 palm of chela with tubercles; <sup>C</sup> Subpalmar tubercles 1 or absent.  
*Cambarus (T.) thomai*



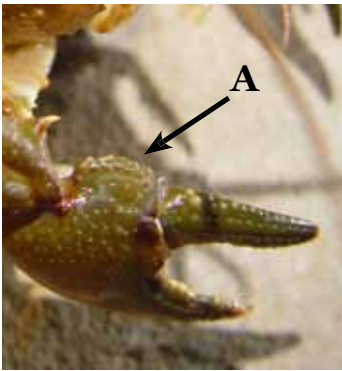
6a. <sup>A</sup> Tubercles on mesial margin of palm serrated (cristiform); <sup>B</sup> Body laterally compressed (burrowing form crayfishes - build underground burrows with surface chimneys); <sup>C</sup> Body color red, orange, or blue.

Go to 7



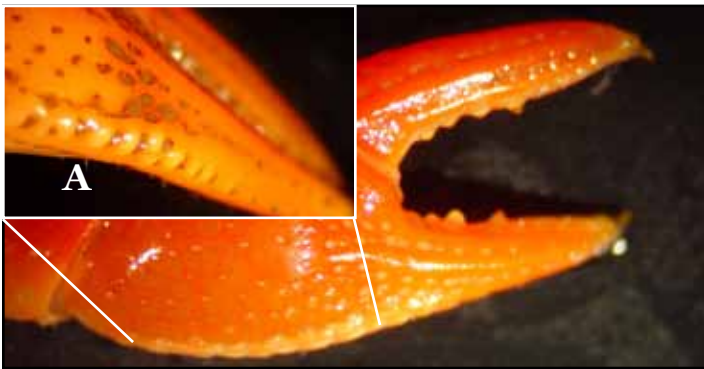
- 6b. <sup>A</sup> Tubercles on mesial margin of palm not serrated; <sup>B</sup> Body dorsally compressed (stream form crayfishes - live in streams under rocks, among plants, or under debris); <sup>C</sup> Body color brown or green.

**Go to 8**



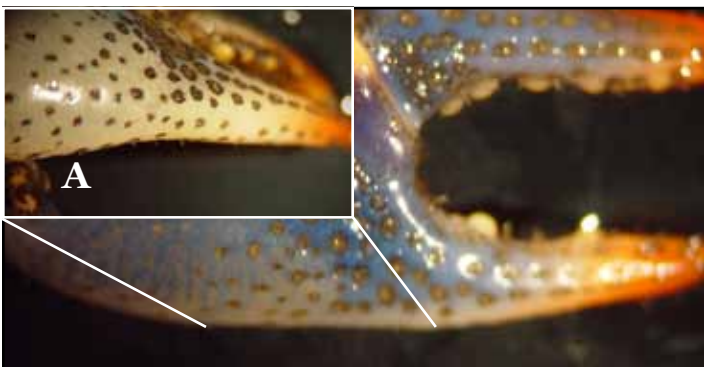
- 7a. <sup>A</sup> Lateral margin of fixed finger (propodus) of chela costate (ribbed); body color red, orange, or black and orange; (Note this species also has a blue color form, however its range does not appear in Maryland).

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



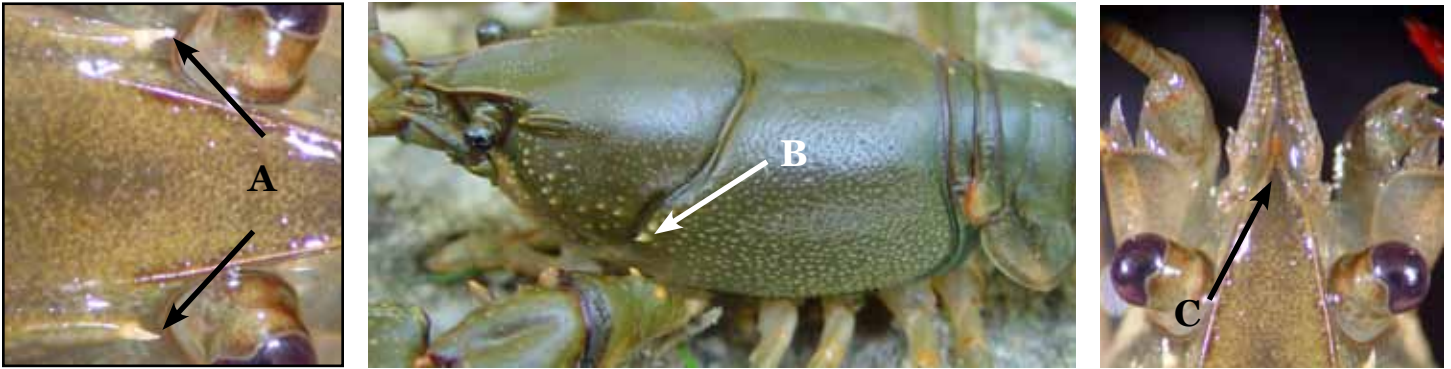
- 7b. <sup>A</sup> Lateral margin of fixed finger (propodus) of chela smooth; body color blue.

***Cambarus (J.) monogalensis***



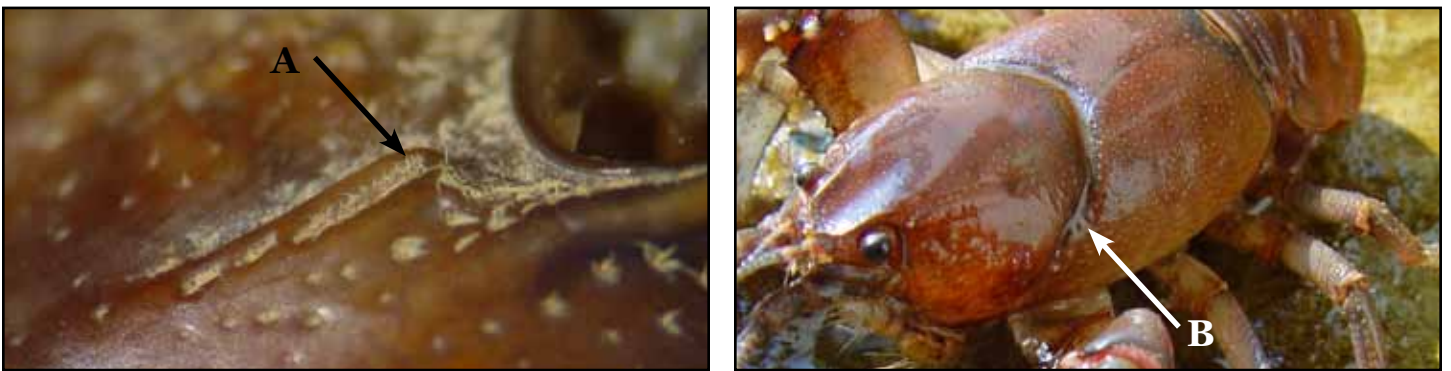
- 8a. <sup>A</sup> Postorbital ridge ending in spine or tubercle; <sup>B</sup> Cervical spines present; <sup>C</sup> Rostral margins convergent, forming into a sharp point, especially in juveniles.

*Cambarus (P.) acuminatus*



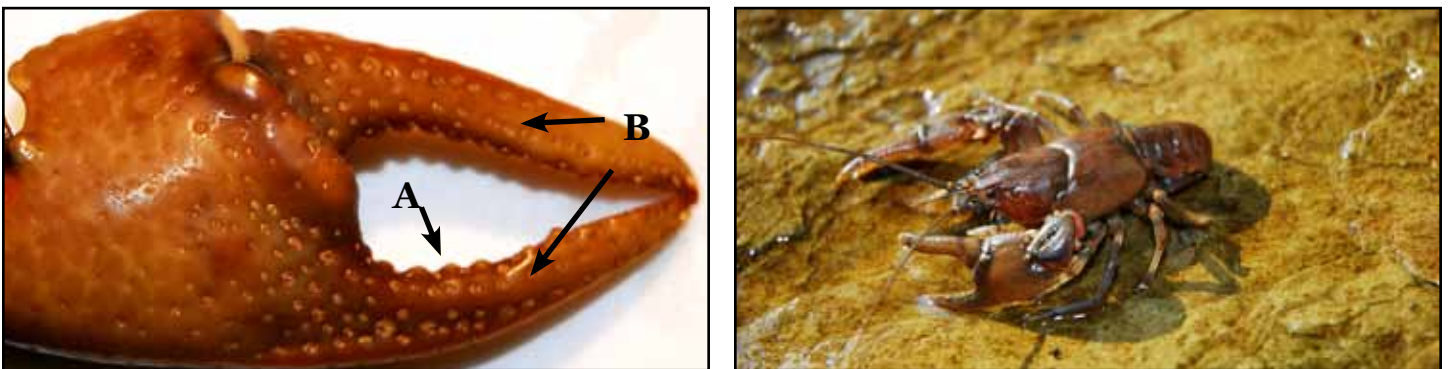
- 8b. <sup>A</sup> Postorbital ridge lacks sharp spine; <sup>B</sup> Cervical spines absent.

Go to 9



- 9a. <sup>A</sup> Third or fourth tubercle on mesial margin of fixed finger not enlarged; <sup>B</sup> Chela lacking strong dorsolongitudinal ridges; Atlantic Slope drainages only.

*Cambarus (C.) b. bartonii*



9b. <sup>A</sup> Third or fourth tubercle on mesial margin of fixed finger enlarged; <sup>B</sup> Chela with dorsolongitudinal ridges; Youghiogheny drainage only.

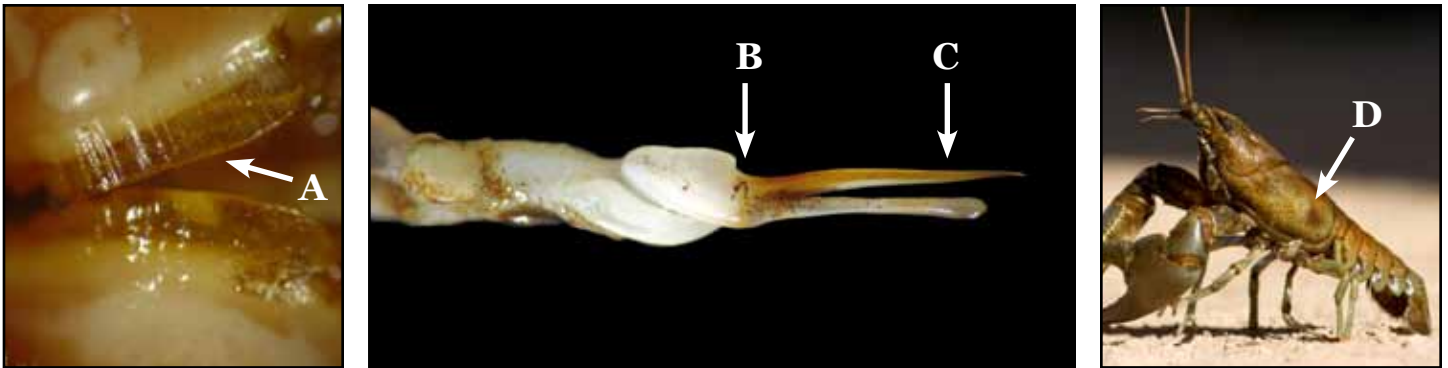
*Cambarus carinirostris*



## Key to genus *ORCONNECTES*

10a. <sup>A</sup> Anterior cusp of mandible entire (smooth); <sup>B</sup> First form male gonopods with prominent right angle shoulder; <sup>C</sup> Terminal elements straight; <sup>D</sup> Reddish to brown spot usually on posterior sides of carapace.

*Orconectes (P.) rusticus*



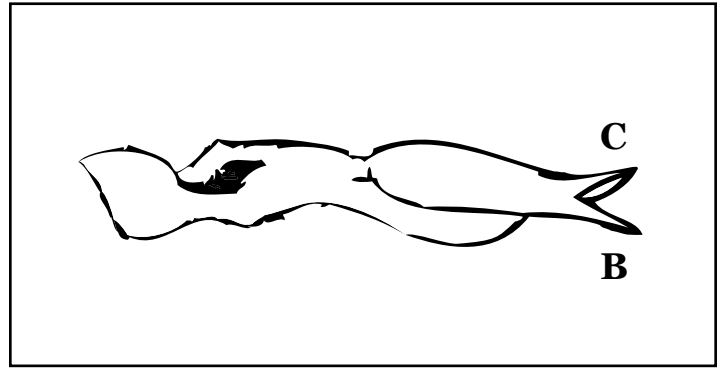
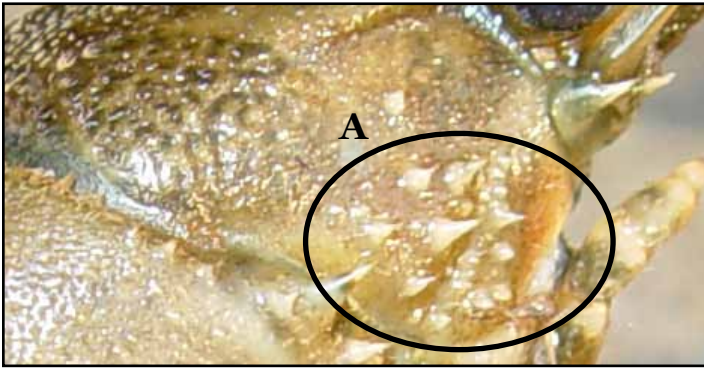
10b. <sup>A</sup> Anterior cusp of mandible toothed;

**Go to 11**



- 11a. <sup>A</sup> Hepatic region (cheek) of carapace with multiple spines; <sup>B</sup> Central projection of first gonopod straight; <sup>C</sup> Mesial process inflated and divergent from central projection.

*Orconectes (F.) limosus*



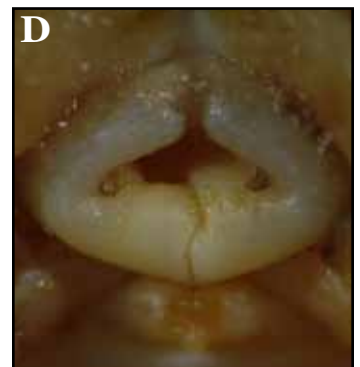
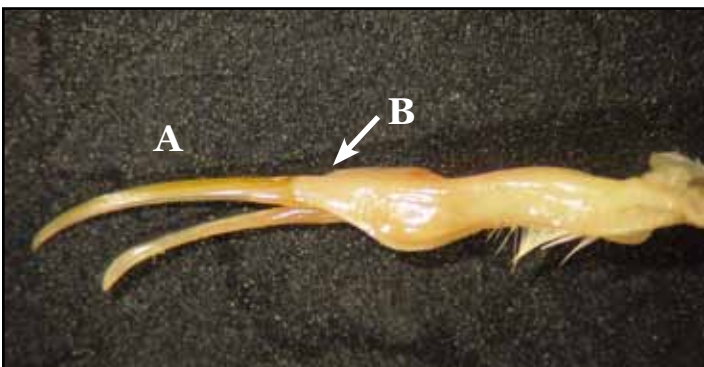
- 11b. Hepatic region (cheek) of carapace without spines; gonopods' central projections straight; mesial process not inflated and sub-parallel to central projection.

**Go to 12**



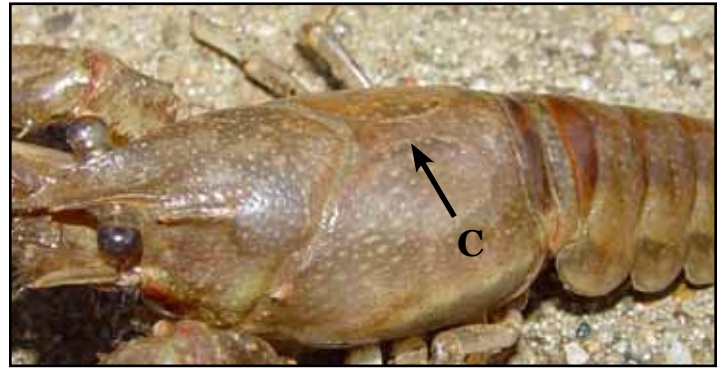
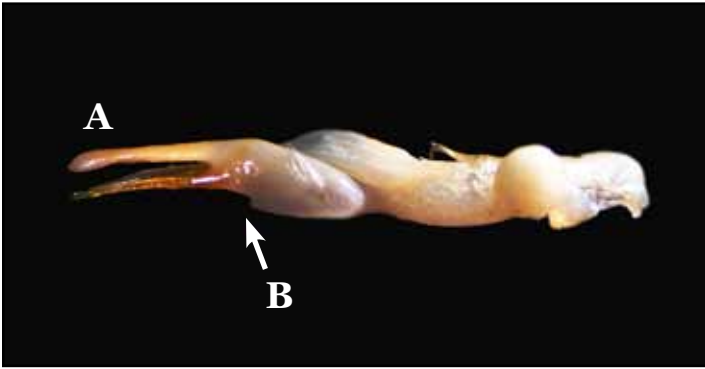
- 12a. <sup>A</sup> First form male gonopod terminal elements gently bent at an angle of approximately 30 degrees and extremely long; <sup>B</sup> Cephalic base of central projection without a right angle shoulder; <sup>C</sup> Areola width narrow; <sup>D</sup> Female annulus ventralis possesses a distinct deep cavity shape; greenish color head and chela, chestnut brown carapace, and large yellow tubercles on chela.

*Orconectes (G.) virilis*



- 12b. <sup>A</sup> First form male gonopod terminal elements straight and narrow; <sup>B</sup> Cephalic base of central projection with right angle shoulder; <sup>C</sup> Areola width wide; Annulus ventralis is less deep, more flattened and sculptured.

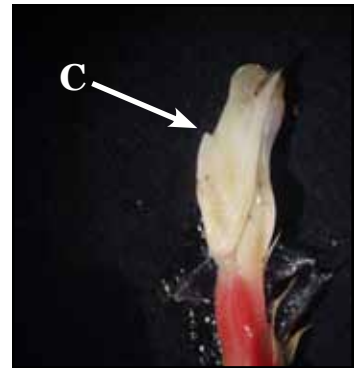
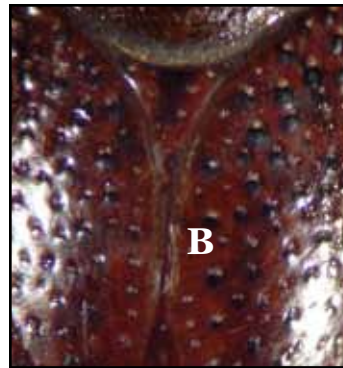
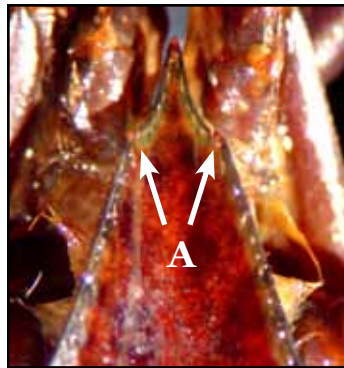
*Orconectes (C.) obscurus*



## Key to genus PROCAMBARUS

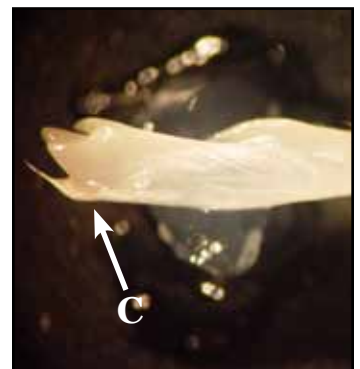
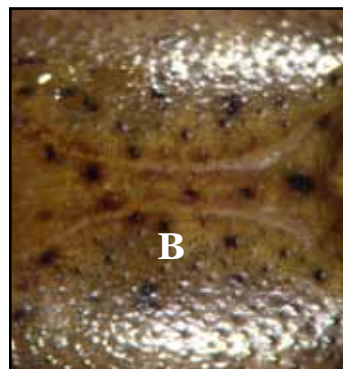
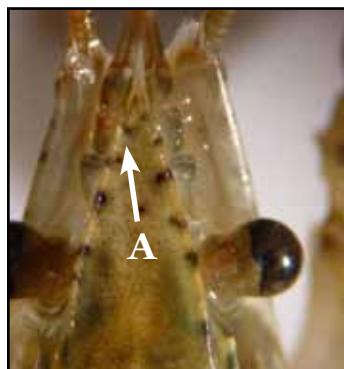
- 13a. <sup>A</sup> Rostrum with well developed marginal/accessory spines; <sup>B</sup> Areola obliterated or linear; <sup>C</sup> Male first form gonopod with prominent right angle shoulder.

*Procambarus (S.) clarkii*



- 13b. <sup>A</sup> Rostrum with reduced marginal/accessory spines; <sup>B</sup> Areola nonlinear/not obliterated; <sup>C</sup> Male first form gonopod with sloping shoulder.

**Go to 14**



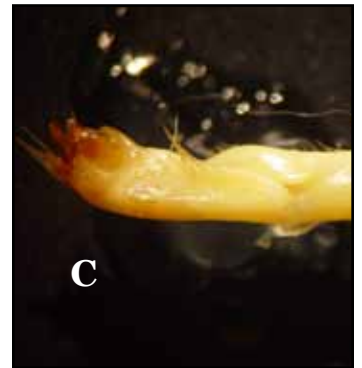
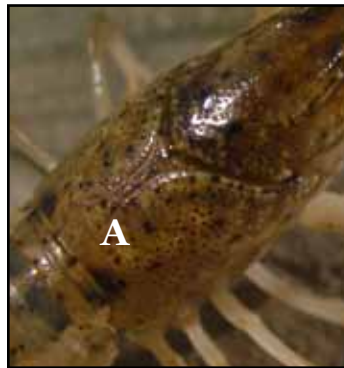
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**Special Note:**

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 definitive characteristic distinguishable in the field. Slight variable differences can be seen, but considerable experience is needed to tell the difference.

- 
- 14a. <sup>A</sup> Areola width separated; <sup>B</sup> Distinctive dark stripe along tail, juveniles yellowish to brown; <sup>C</sup> First form male gonopods very similar to *P. zonangulus* terminating in 4 elements with setae present.

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



- 
- 14b. <sup>A</sup> Areola narrow (intermediate to *P. clarkii* and *P. a. acutus*); coloration very similar to *P. acutus*; <sup>B</sup> First form male gonopods terminating in 4 elements with setae present.

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





# Species Summary Sheets

## Genus *Cambarus*



***Cambarus acuminatus***  
Acuminate Crayfish

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***Cambarus bartonii bartonii***  
Common Crayfish

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***Cambarus carinirostris***  
Rock Crawfish

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***Cambarus diogenes***  
Devil Crawfish

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***Cambarus dubius***  
Upland Burrowing Crayfish

Page 22



***Cambarus monogalensis***  
Blue Crawfish  
Page 23



***Cambarus thomai***  
Little Brown Mudbug

Page 24

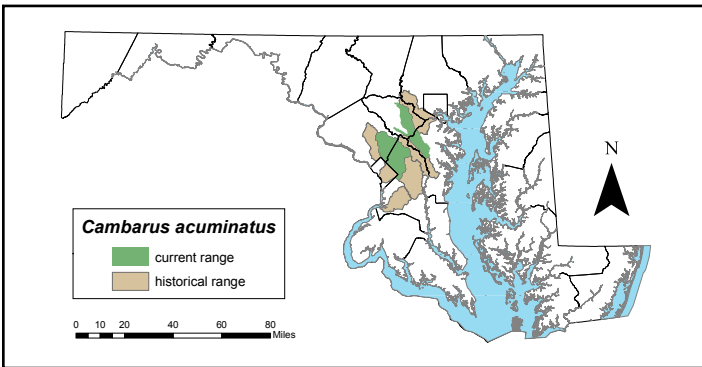
# *Cambarus acuminatus*

## Acuminate Crayfish



### Status

This species is on Maryland's Watch List



### Habitat

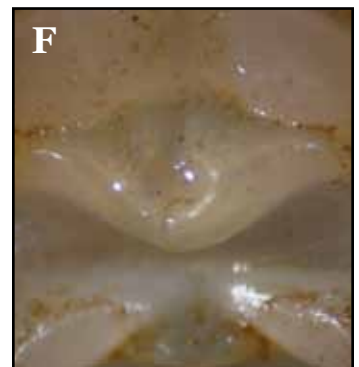
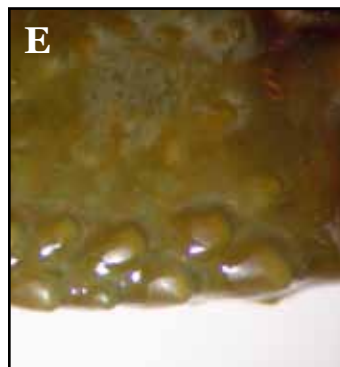
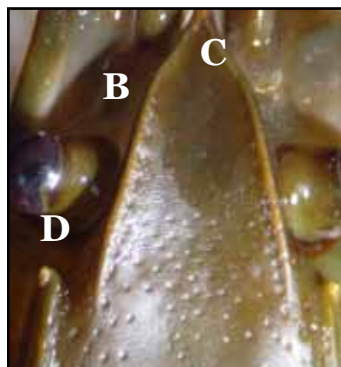
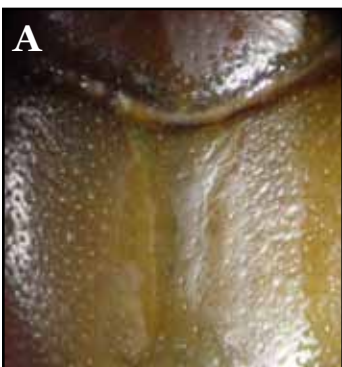
Typically found under flat rocks in riffles and pools in small streams with moderate current. In Maryland, this species is also associated with woody debris and detritus in pool and glide habitats.

### Identification

<sup>A</sup>. Open areola; <sup>B</sup>. Rostral margins without accessory spines; <sup>C</sup>. Rostrum ends in point; <sup>D</sup>. Postorbital ridges end in spikes or tubercles; <sup>E</sup>. Two rows of tubercles on palm of chela; <sup>F</sup>. Detail of annulus ventralis; Brown/green body, dorsally compressed; Gonopods bent at 90 degree angles.

### Similar Species

Distribution and habitat overlaps with that of *C. bartonii bartonii*. These species are most easily differentiated using the shape of the rostrum (ending in sharp point in *C. acuminatus*).



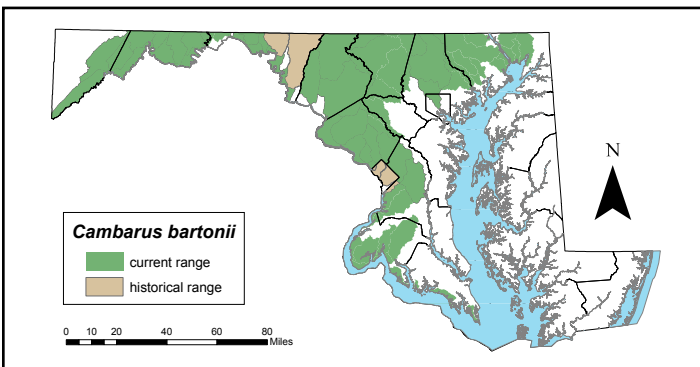
# *Cambarus bartonii bartonii*

## Common Crayfish



### Status

Native species listed as Stable in Maryland.



### Habitat

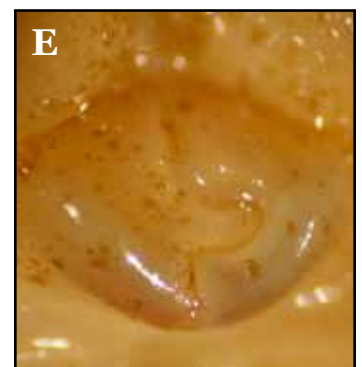
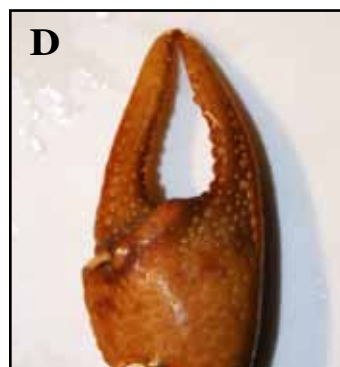
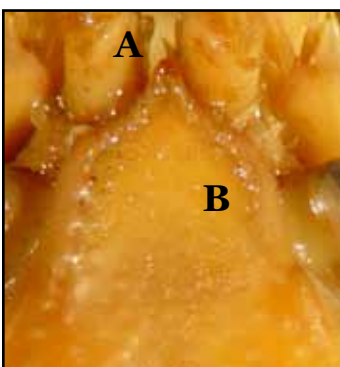
Typically found under large boulders in small streams and creeks. This species will dig burrows along stream banks in muddy or silty substrate. In the absence of other non-native crayfish it can be found in larger streams.

### Identification

<sup>A</sup>. Short rostrum ends in point, with margins uniform in thickness; <sup>B</sup>. Rostral margins without spines; <sup>C</sup>. First form male gonopods bent at 90 degree angles, sickle-shaped, NOT ending in downward position; <sup>D</sup>. Third/fourth tubercle on mesial margin of fixed finger NOT enlarged on chela, lacking dorsolongitudinal ridges; <sup>E</sup>. Detail of annulus ventralis; Postorbital ridges lack sharp spine; One row of tubercles on palm of chela; Open areola; Brown/green body, dorsally compressed.

### Similar Species

Most similar in appearance to *C. carinorostris*. Unlike *C. carinorostris*, tubercles on mesial margin of fixed finger are uniform in size. Also note the allopatric distribution of these two species in Maryland, with *C. bartonii bartonii* distributed only in Atlantic Slope drainages.



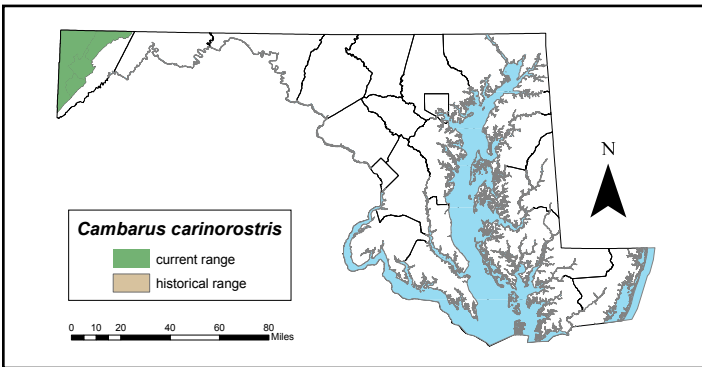
# *Cambarus carinirostris*

## Rock Crayfish



### Status

Native species listed as Stable in Maryland.



### Habitat

Predominantly found in smaller streams that are clean and clear. Often found in shallow burrows under rocks or boulders within a stream.

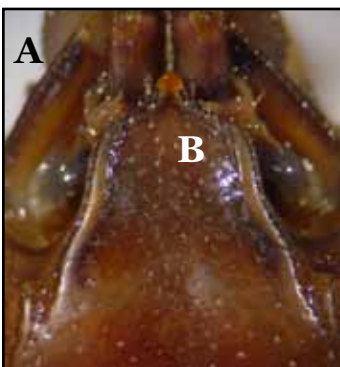


### Identification

<sup>A</sup>. Elongated rostrum; <sup>B</sup>. Rostral margins without spines, margins thickened; <sup>C</sup>. Postorbital ridge lacks spine; <sup>D</sup>. Gonopods bent at 90 degree angles, sickle-shaped; <sup>E</sup>. One row of tubercles on palm of chela; <sup>F</sup>. Third/fourth tubercle on mesial margin of fixed finger enlarged on chela, with dorsolongitudinal ridges; <sup>G</sup>. Detail of annulus ventralis; Open areola; Brown/green body, dorsally compressed.

### Similar Species

Most similar in appearance to *C. bartonii bartonii*. Unlike *C. bartonii*, tubercles on mesial margin of fixed finger are not uniform in size. Also note the allopatric distribution of these two species in Maryland, with *C. carinirostris* confined to the Youghiogheny River drainage.



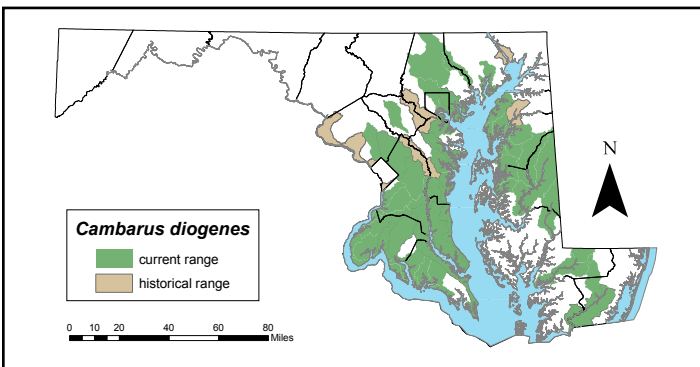
# *Cambarus diogenes*

## Devil Crawfish



### Status

Native species listed as Stable in Maryland.



### Habitat

Burrowing species, found in stream bank ditches, seepages and floodplains. Also encountered in woody debris and submerged vegetation in streams. Juveniles commonly inhabit small headwater streams.

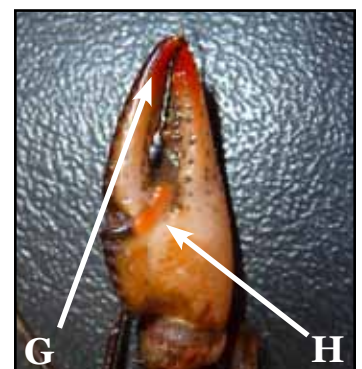
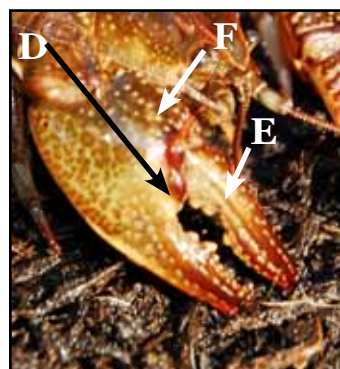
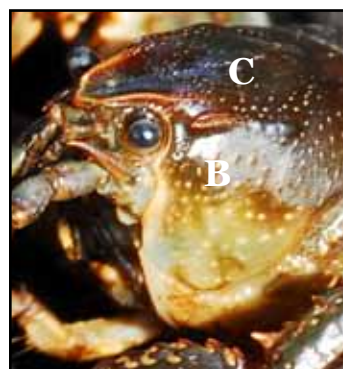
### Identification

<sup>A</sup>. Areola linear or obliterated at its narrowest point; <sup>B</sup>. Suborbital angle acute/present; <sup>C</sup>. Postorbital ridge lacks spine; <sup>D</sup>. Tuft of setae (hair) at base of immovable finger absent or greatly reduced; <sup>E</sup>. Base of dactyl either not incised or weakly incised/notched; <sup>F</sup>. 1/3 palm of chela smooth; <sup>G</sup>. Tips of chela red; <sup>H</sup>. 1-3 subpalmar tubercles present; Male gonopods ending in two terminal elements that are bent at approximately 90 degrees to main shaft.

### Similar Species

Most similar in appearance to *C. thomai*. Note the distinct distributions of these two species in Maryland.

*C. diogenes* often occupies same habitats as *F. fodiens*; differentiated from latter species by lack of incision on dactyl and acute suborbital angle.

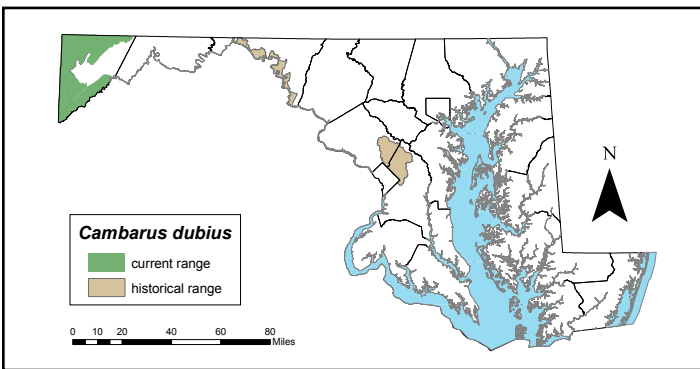


# *Cambarus dubius* Upland Burrowing Crayfish



## Status

Native species listed as Stable in Maryland.



## Habitat

This species lives in underground burrows. It can also be found in seepages, floodplains and bogs.

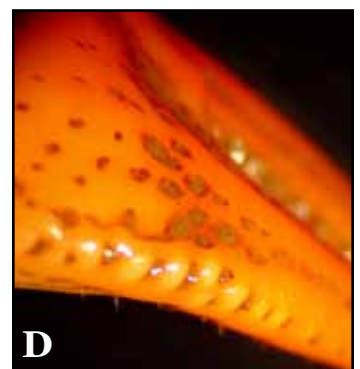
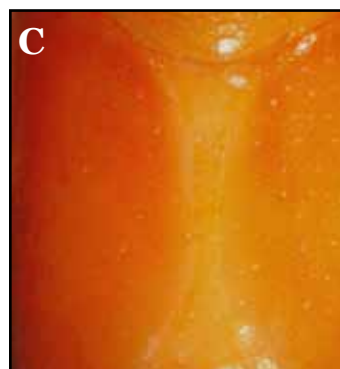


## Identification

A. Rostral margins without spines; B. Male gonopods bent at 90 degrees; C. Areola open; D. Lateral margin of fixed finger of chela costate/ribbed; Body color red, orange or blue (blue form does not occur in Maryland), laterally compressed; E. Red/black form; F. Blue form; G. Detail of annulus ventralis.

## Similar Species

May be confused with *C. monongalensis*. Note distinct color patterns and ribbed margin of fixed finger on chela in *C. dubius*.



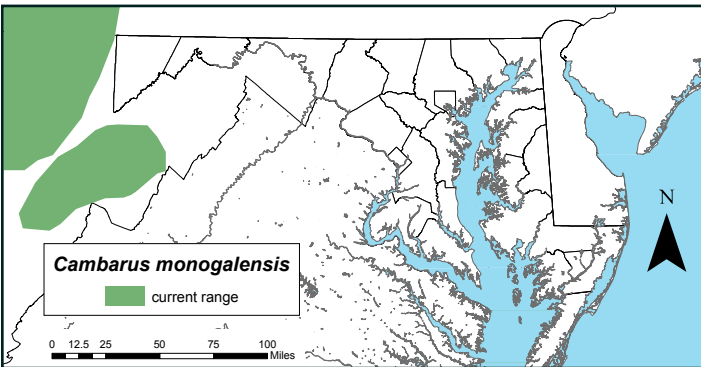
# *Cambarus monogalensis*

## Blue Crawfish



### Status

The distribution of this species includes portions of Pennsylvania and West Virginia adjacent to Garrett County, MD. Although this species has not been confirmed in Maryland, it is included in this key due to its proximity to the state's borders.



### Habitat

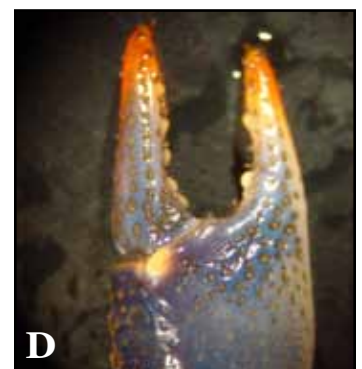
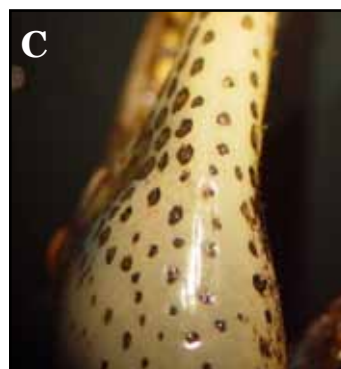
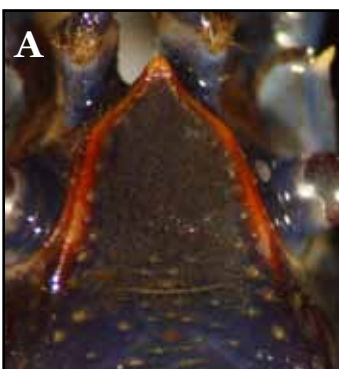
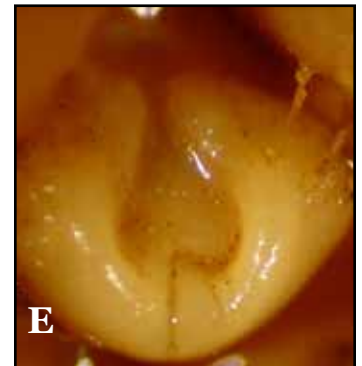
This species lives in underground burrows. It can also be found in seepages, floodplains and bogs.

### Identification

<sup>A</sup> Rostral margins without spines; <sup>B</sup> Areola open; <sup>C</sup> Lateral margin of fixed finger of chela smooth; <sup>D</sup> Detail of chela; <sup>E</sup> Detail of annulus ventralis; Male gonopods ending in two terminal elements that are bent at 90 degrees to main shaft; Body color blue, laterally compressed.

### Similar Species

May be confused with *C. dubius*. Note the distinct color patterns and smooth margin of fixed finger on chela.



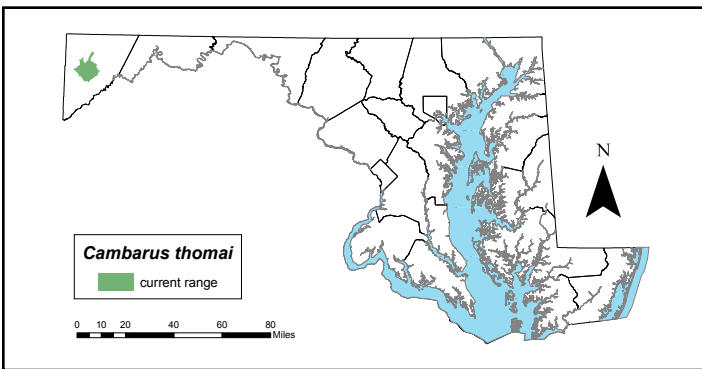
# *Cambarus thomai*

## Little Brown Mudbug



### Status

This crayfish is a non-native species in Maryland. It is currently found only in localities around Deep Creek Lake in the western part of the state.



### Habitat

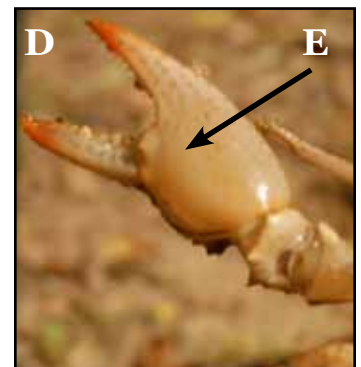
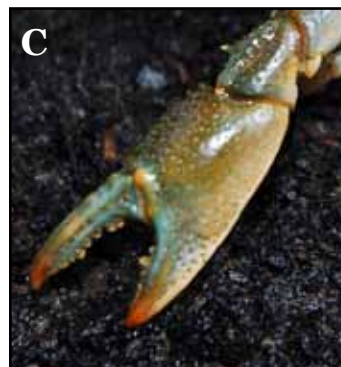
This species is a burrowing crayfish found along small streams, roadside ditches and seepage wetlands.

### Identification

<sup>A</sup>. Rostral margins without spines, suborbital angle acute/present; <sup>B</sup>. Areola linear or obliterated at narrowest point; <sup>C</sup>. 1/3 palm of chela with tubercles, tuft of setae (hair) at base of immovable finger absent or greatly reduced; <sup>D</sup>. Tips of chela orange; <sup>E</sup>. Subpalmar tubercles single or absent; Male gonopods ending in two terminal elements that are bent at 90 degrees to main shaft.

### Similar Species

Most similar in appearance to *C. diogenes*. Unlike *C. diogenes*, *C. thomai* has orange tips on the chelae and less than two subpalmer tubercles. Note the distinct distributions of these two species in Maryland.





# Species Summary Sheets

## Genus *Orconectes*



***Orconectes limosus***  
Spinycheek Crayfish

Page 26



***Orconectes obscurus***  
Allegheny Crayfish

Page 27



***Orconectes rusticus***  
Rusty Crayfish

Page 28



***Orconectes virilis***  
Virile Crayfish

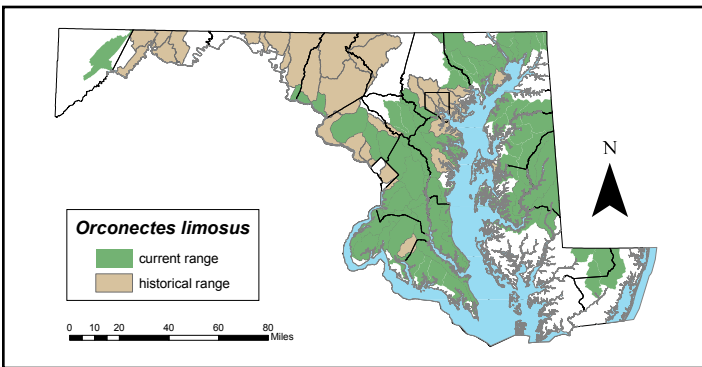
Page 29

# *Orconectes limosus* Spinycheek Crayfish



## Status

Native species listed as Stable in Maryland.



## Habitat

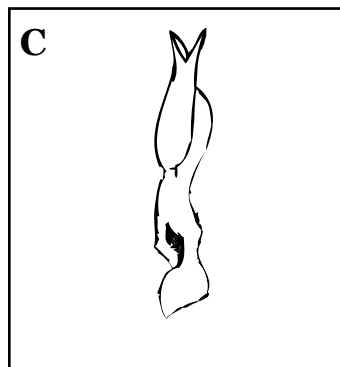
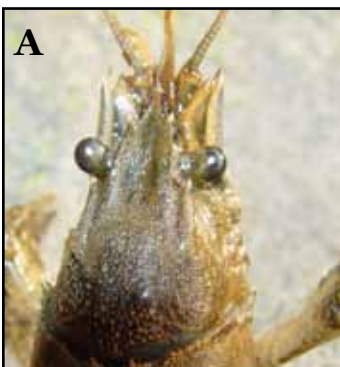
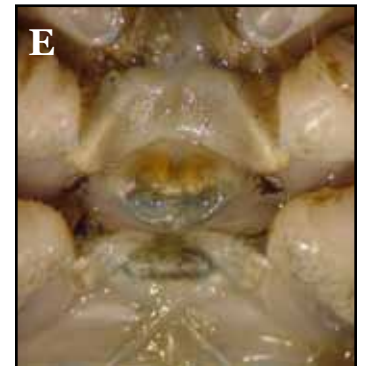
This species is found in clear streams with moderate current. It is typically encountered under large pieces of substrate in riffles, woody debris or undercut banks.

## Identification

<sup>A</sup>. Rostral margins with accessory spines; <sup>B</sup>. Robust, smooth chela; <sup>C</sup>. Male gonopods ending in two terminal elements that are approximately straight; Central projection of gonopod straight, mesial process inflated and divergent from central projection; <sup>D</sup>. Spines present on hepatic (cheek) region of carapace; <sup>E</sup>. Detail of annulus ventralis; Open areola; Anterior cusp of mandible toothed.

## Similar Species

Can occupy same habitats as *O. obscurus*, *O. rusticus*, and *O. virilis*. It is the only species with hepatic spines. Note: Hepatic spines in small juveniles may only be visible with the help of a field magnifying lens.



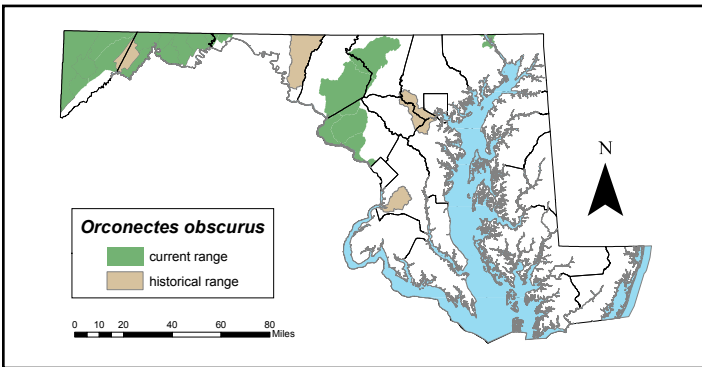
# *Orconectes obscurus*

## Allegheny Crayfish



### Status

Native species listed as Stable in Maryland.



### Habitat

This species is found exclusively in rocky streams with moderate to high gradients. It is commonly found in shallow burrows under cobble, boulders and large pieces of gravel in riffle and run habitats.

### Identification

<sup>A</sup>. Rostral margins with accessory spines; <sup>B</sup>. First form male gonopod elements short and straight, with cephalic base of central projection of gonopod with right angle shoulder; <sup>C</sup>. Smooth, robust chela; <sup>D</sup>. Wide, open areola; Anterior cusp of mandible toothed; Annulus ventralis less deep, more flattened and sculptured.

### Similar Species

Most similar in appearance to *O. rusticus*. Both have right-angle shoulder at base of central projection on gonopod, but length of gonopod shorter in *O. obscurus*; *O. obscurus* with toothed mandibles and bright orange tubercle at base of dactyl.



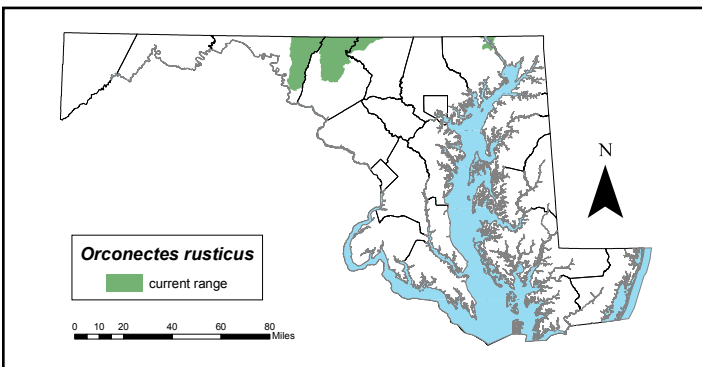
# *Orconectes rusticus*

## Rusty Crayfish



### Status

This crayfish is a non-native, invasive species in Maryland.



### Habitat

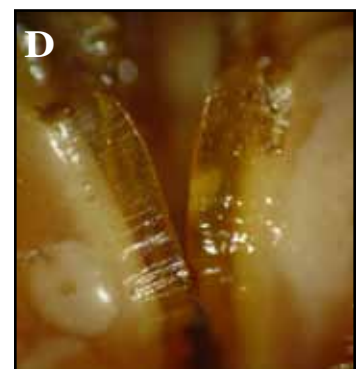
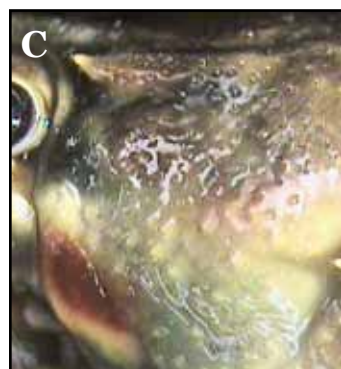
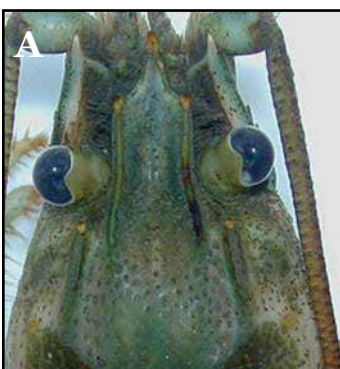
This species is abundant in warmwater streams and ponds. It can be found in riffles and pools, generally under large flat rocks, coarse woody debris, submerged aquatic vegetation, and detritus.

### Identification

<sup>A</sup>. Rostral margins with accessory spines; <sup>B</sup>. First form male gonopod elements with prominent right angle shoulder, terminal elements straight; <sup>C</sup>. Hepatic (cheek) region without spines <sup>D</sup>. Anterior cusp of mandible smooth; <sup>E</sup>. Reddish to brown spot on posterior sides of carapace; Smooth, robust chela; Smooth carapace.

### Similar Species

Smooth mandibles and reddish-brown spot on posterior sides of carapace should distinguish this species from all other *Orconectes* species in Maryland. Note: Please contact MDNR if you find this species in areas outside its current known range in Maryland.



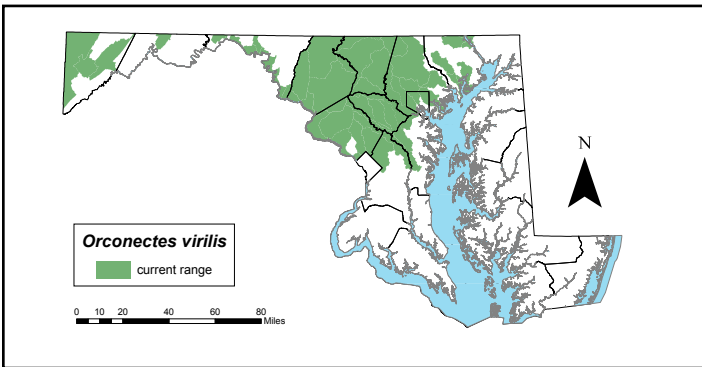
# *Orconectes virilis*

## Virile Crayfish



### Status

This crayfish is a non-native, invasive species in Maryland.



### Habitat

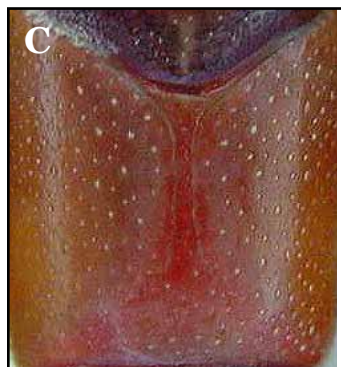
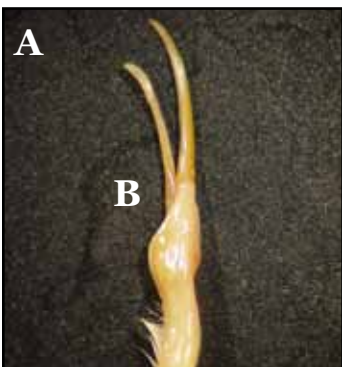
This species is abundant in warmwater streams and ponds. It can be found in riffles and pools, generally under large flat rocks, coarse woody debris, submerged aquatic vegetation, and detritus.

### Identification

<sup>A</sup>. First form male gonopod elements gently bent at a 30 degree angle, extremely long; <sup>B</sup>. Cephalic base of central projection without a right angle shoulder; <sup>C</sup>. Areola width narrow <sup>D</sup>. Anterior cusp of mandible toothed; <sup>E</sup>. Annulus ventralis possesses a distinct deep cavity shape; Greenish color head and chela with brown carapace; Large yellow tubercles on robust chela; Smooth carapace.

### Similar Species

May be confused with the native *O. limosus* or *O. obscurus*. Adults with bright yellow tubercles on large green chelae; only *Orconectes* species with gonopods bent at 30 degree angle and setae at base of fixed finger.



# Species Summary Sheets

## Other genera



***Procambarus acutus acutus***  
White River Crawfish

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***Procambarus clarkii***  
Red Swamp Crawfish

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***Procambarus zonangulus***  
Southern White River Crawfish

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***Fallicambarus fodiens***  
Digger Crayfish

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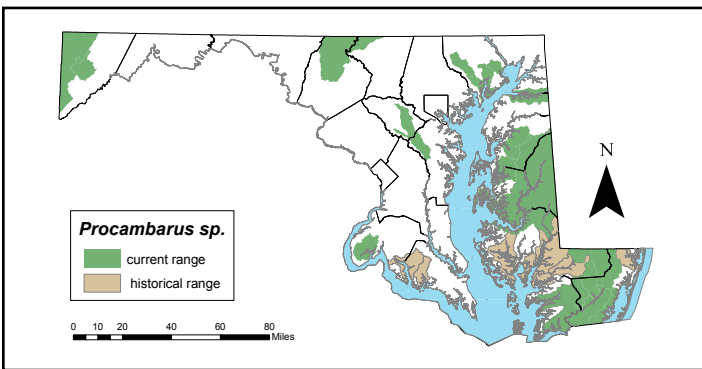
# *Procambarus acutus acutus*

## White River Crawfish



### Status

Native species listed as Stable in Maryland.



### Habitat

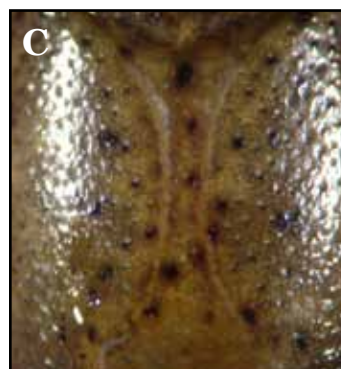
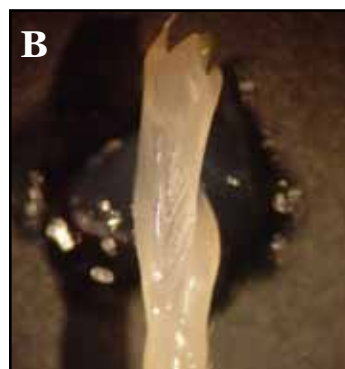
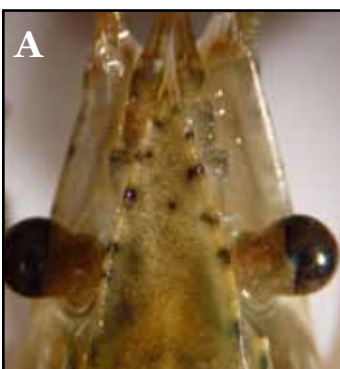
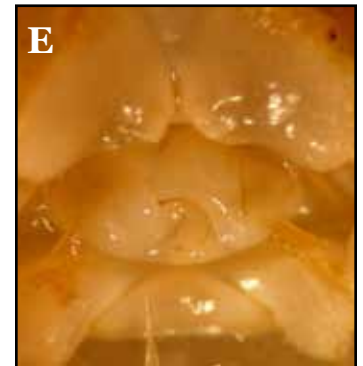
This species is found in swamps, ponds, seasonally flooded low-lying areas, ditches, creeks, and moderately-sized rivers. It is typically encountered in slow moving water over small substrates, such as silt or sand.

### Identification

<sup>A</sup>. Rostral margins with accessory spines reduced; <sup>B</sup>. First form male gonopod elements with sloping shoulder and 4 elements with setae present; <sup>C</sup>. Areola present and separated; <sup>D</sup>. Distinctive dark stripe along tail <sup>E</sup>. Detail of annulus ventralis; Carapace covered in tubercles producing a rough texture; Chela long and slender.

### Similar Species

This species can occupy the same habitats as non-native *P. zonangulus*. A first form male is necessary to differentiate this species from *P. zonangulus*.



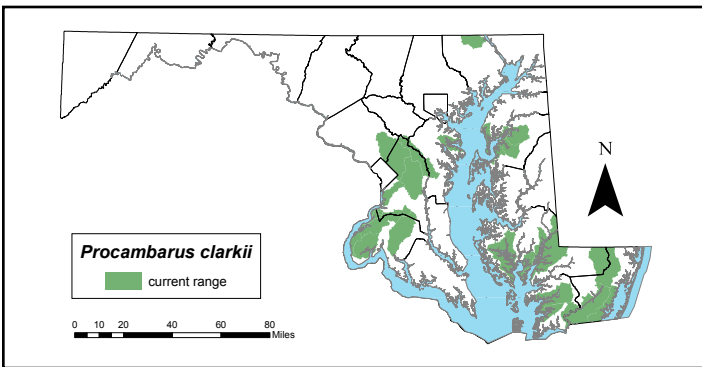
# *Procambarus clarkii*

## Red Swamp Crawfish



### Status

This crayfish is a non-native invasive species in Maryland.



### Habitat

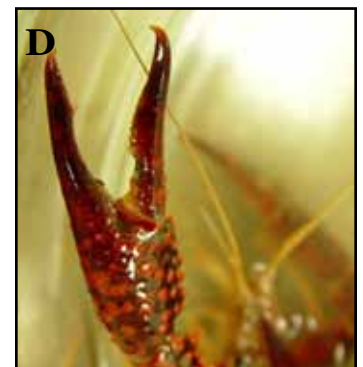
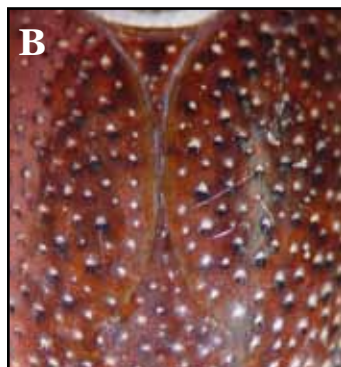
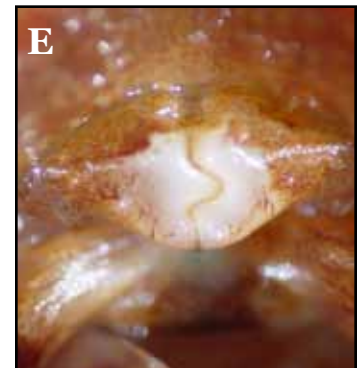
This species is found in creeks, swamps, ditches, lakes, and artificial ponds in muddy or sandy substrates. It is common among woody debris, aquatic vegetation, and detritus.

### Identification

A. Rostrum with well developed marginal/accessory spines; B. Areola obliterated or absent; C. Male first form gonopod with prominent right angle shoulder; D. Chela long and slender  
E. Detail of female annulus ventralis; Carapace covered in tubercles producing a rough texture.

### Similar Species

This is the only *Procambarus* species in Maryland with an obliterated areola. Adults are bright red with many tubercles on their carapace.





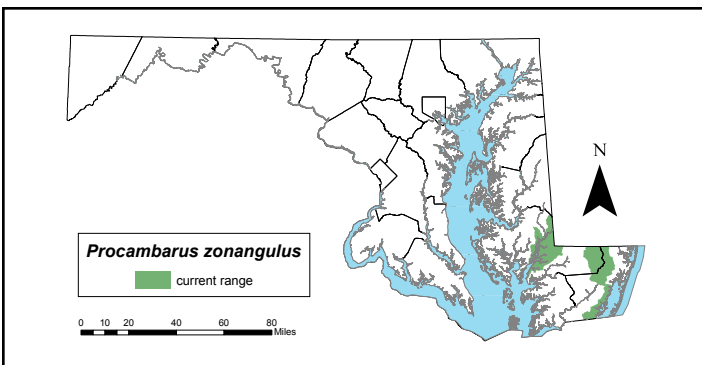
# *Procambarus zonangulus*

## Southern White River Crawfish



### Status

This crayfish is a non-native species in Maryland.



### Habitat

This species is found in swamps, ponds, seasonally flooded low-lying areas, ditches, creeks, and moderately-sized rivers. They are typically found in slow moving water over small substrates, such as silt or sand.

### Identification

<sup>A</sup> First form male gonopod elements with sloping shoulder and 4 elements with setae present; Rostral margins with accessory spines reduced; Areola present and separated; Distinctive dark stripe along tail; Carapace covered in tubercles producing a rough texture; Chela long and slender.

### Similar Species

This species can occupy the same habitats as native *P. acutus*. A first form male is necessary to differentiate this species from *P. acutus*.



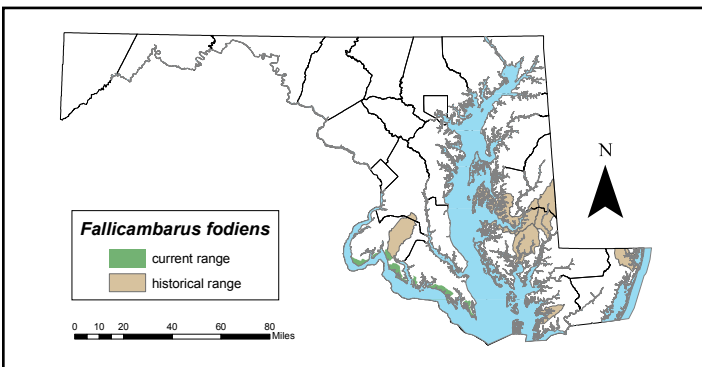
# *Fallicambarus fodiens*

## Digger Crayfish



### Status

Native species listed as Stable in Maryland.



### Habitat

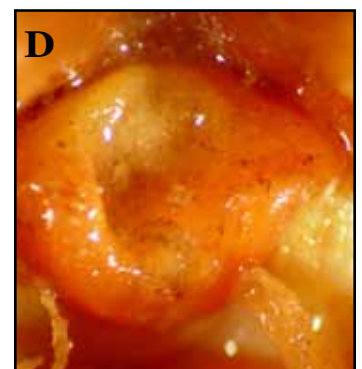
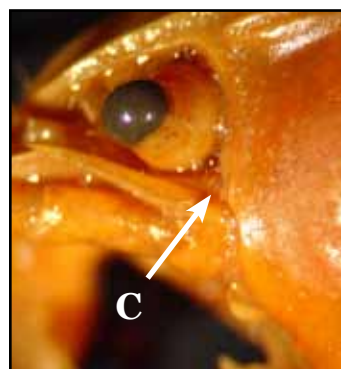
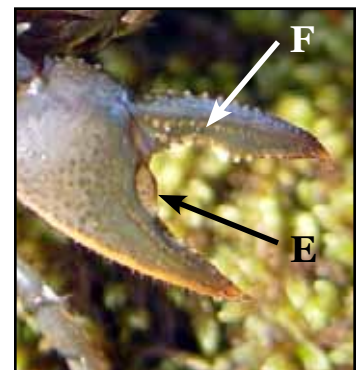
This species is a burrowing crayfish commonly found in seepage wetlands, floodplains, seasonally flooded wetlands, and low-lying fields.

### Identification

<sup>A</sup>. Rostral margins without accessory spines; <sup>B</sup>. Areola linear or obliterated at narrowest point; <sup>C</sup>. Suborbital angle obsolete/absent; <sup>D</sup>. Detail of annulus ventralis; <sup>E</sup>. Obvious tuft of setae (hair) at base of immovable finger of chelae; <sup>F</sup>. Base of dactyl deeply incised/notched.

### Similar Species

This species is most similar in appearance to *C. diogenes*, often occupying the same habitats. It is differentiated from the latter species by a sharp incision on the dactyl and the absence of a suborbital angle.



# Glossary

**Annulus Ventralis.** The seminal receptacle (where sperm are placed during copulation) of females; quasi-circular structure on ventral surface, midway between abdomen and cephalothorax, between 4th and 5th pereopods.

**Areola.** Space found on dorsal surface of the carapace between the two carapace plates; can be wide (on stream-dwellers) or narrow to linear (on burrowers).

**Central Projection.** The main terminal element of gonopod extending directly from the shaft; found in all species; C-shaped in *Cambarus* and *Fallicambarus*; long straight and slender in *Orconectes*; variable but short in *Procambarus*.

**Chela (plural - Chelae).** The “claw” or “pincer,” consisting of two fingers; the dactyl (moveable finger) and propodus (fixed finger); the entire first leg is called the cheliped.

**Cheliped.** Entire first leg on a crayfish, including the chela.

**Dactyl.** The moveable finger of a chela.

**Form I (First Form) Male.** A male crayfish that is sexually functional, with gonopods that have sharp and distinct terminal elements, and ischia on third or fourth walking legs with hooks.

**Form II (Second Form) Male.** Sexually nonfunctional male usually with rounded/blunt terminal element on gonopod, and ischia on third or fourth walking legs do not have hooks.

**Gonopod.** Pleopods on abdominal area of male crayfishes, modified for sperm transfer.

**Ischia.** The third segment from the base on legs.

**Mandible.** One, of a pair, of heavily calcified jaws, used for tearing food. “Teeth.”

**Propodus.** The immovable, or attached finger of a chela.

**Rostrum.** The “nose” of the crayfish; the portion of the carapace on the head region that is anterior to the eyes.

**Suborbital Angle.** The angle of the carapace around (behind) the eye; can vary from species to species.

**Terminal Elements.** Distal projections of gonopods.

**Tubercle.** Raised bumps on the surface of some part of a crayfish. Sometimes they may be sharp on young crayfishes, but are normally worn down on mature specimens. Blunt versions of spines.