

# Big Sandy Crayfish and Guyandotte River Crayfish

*Cambarus callainus, C. veteranus*

## Crayfish: Important and Fascinating

Crayfishes, including the Guyandotte River and Big Sandy crayfishes, are interesting creatures that play an important role in stream environments by recycling animal and plant matter and serving as food for other wildlife, including sport fish.

Keeping streams healthy for crayfishes also benefits people by ensuring clean water for drinking, wading and fishing.

## Appalachian Natives In Decline

Researchers in the early 20th century found these crayfishes across two watersheds connecting Kentucky, Virginia and West Virginia. At that time, the upper Big Sandy River and Guyandotte River watersheds were just beginning to undergo chemical and physical changes linked to extensive mining, logging and population growth.

Today, the Big Sandy crayfish is found in four isolated populations across the three states, and the Guyandotte River crayfish is found at a single site in West Virginia.

Following a review of the best available scientific and commercial information on the species, the U.S. Fish and Wildlife Service proposed April 7, 2015, to list both crayfish species as endangered under the Endangered Species Act. Following a 60-day public comment and peer review period, we will make a final decision for each of these species to list as endangered or threatened, or to withdraw the proposal.

The Big Sandy crayfish is state-listed as endangered in Virginia. It has been a species of concern in Kentucky and is currently under review to determine if state listing as threatened or endangered is warranted. The Guyandotte River crayfish is considered critically imperiled in West Virginia.



*Big Sandy crayfish*

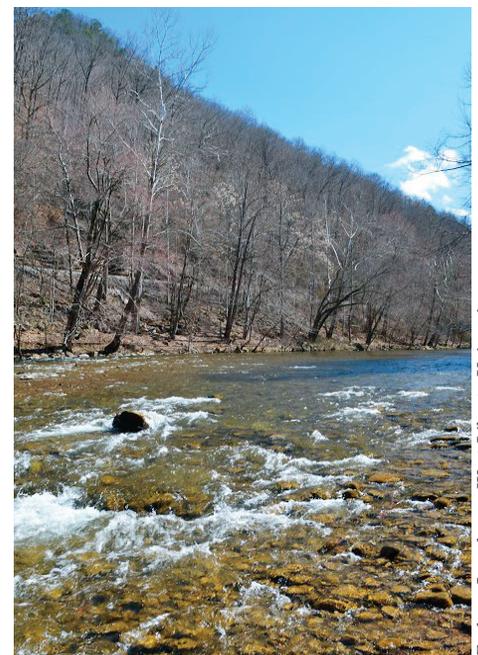
Historical and ongoing erosion and sedimentation have made many streams within their historical ranges unsuitable for the crayfishes.

Natural gas extraction, highway construction, and ORV use are expected to increase and have the potential to threaten the species' habitat. Additionally, the small, isolated populations of both species inhibits gene flow, making them even more vulnerable to extirpation. A single event like a contaminant spill could potentially eliminate an entire population.

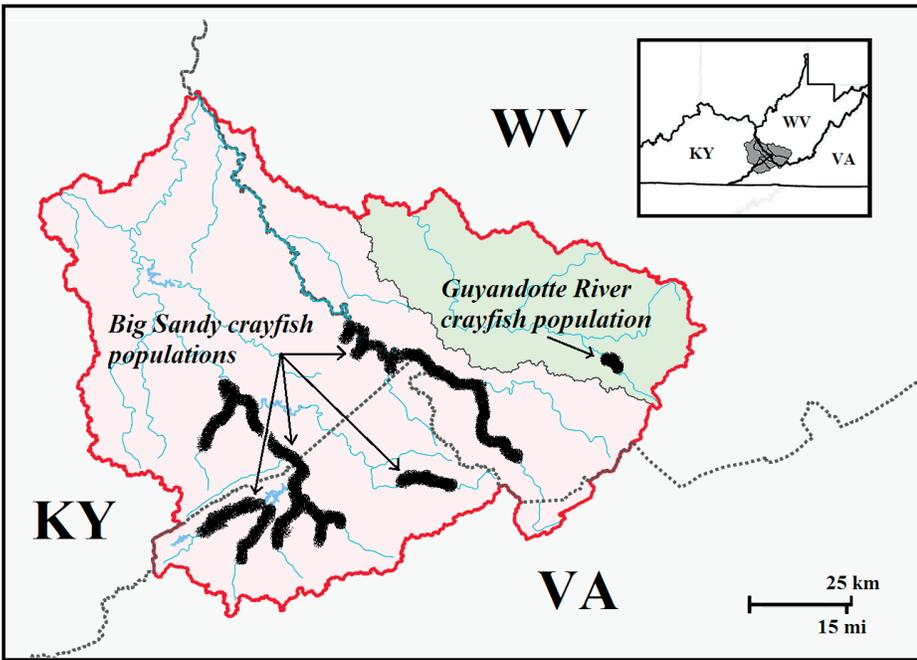
## Where Are They?

At about 3 to 4 inches long, both crayfishes live beneath loose, large boulders in streams and rivers, blending in with their olive-brown to light green exoskeleton.

Their presence typically indicates good water quality and relatively silt-free, rocky stream bottoms. They live an average 5 to 7 years, and because they



*An example of ideal habitat for these crayfish. The Dry Fork stream in McDowell County, West Virginia, supports a Big Sandy crayfish population.*



Historical records and current analysis suggest these two species were likely once found in suitable creeks throughout their entire watersheds: the Big Sandy crayfish in the upper Big Sandy River watershed (shaded in red) and the Guyandotte River crayfish in the Guyandotte River watershed (shaded in green). Surveys since 2001 found the Big Sandy crayfish restricted to four isolated populations in upper portions of the upper Big Sandy River watershed and the Guyandotte crayfish in a single site in the Guyandotte River watershed.

don't reproduce until 3 to 4 years of age, their populations can take a long time to rebound.

Occurrence data, historical habitat characteristics and information from species experts indicate that the Big Sandy crayfish's historical range may have included streams throughout the upper Big Sandy River watershed, which covers 10 counties in Kentucky, Virginia and West Virginia. The species' current range appears to be restricted to a total of four isolated subpopulations in Floyd and Pike counties, Kentucky; Buchanan, Dickenson, and Wise counties, Virginia; and McDowell County, West Virginia.

The Guyandotte crayfish's historical range included the Upper Guyandotte River basin in Wyoming, Logan and Mingo counties in West Virginia. The best available information indicates it now exists at one site in Pinnacle Creek, Wyoming County.

### You Can Help Our Native Crayfish

We are committed to working collaboratively with agencies, industry, and conservation and recreation organizations to conserve these two rare crayfishes. Here are some ways you can help:

- Drive ORVs and vehicles on



*It might be hard to see, but the shell of this Big Sandy crayfish shows deposits of manganese and iron, which indicate it has been exposed to coal mining runoff.*

designated trails and not through or in streams.

- Don't dump chemicals into streams, and report chemical spills to state environmental protection agencies.
- During timber harvest, construction, or other projects, implement best management practices for sediment and erosion control.
- Start a watershed group or assist in

*Did you know?* Eons ago, these species were possibly one. When landscape changes forced them apart, the separated populations evolved into different species. Until close examination of their genetics, appearance and occupied habitats in 2014, scientists thought both species were the Big Sandy crayfish. We now know that the Guyandotte River and Big Sandy crayfishes are two species and can be easily distinguished by physical differences between their claws and legs. Read more in the peer-reviewed article *Cambarus (Puncticambarus) callainus* in the December 2014 Zootaxa journal.

**U.S. Fish & Wildlife Service**  
**1 800/344 WILD**  
<http://www.fws.gov>

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Zachary Loughman, West Liberty University

stream and water quality monitoring efforts.

- Plant trees and other native woody vegetation along stream banks to help restore and preserve water quality.
- Replace or remove culverts and low-water bridge crossings that are barriers to fish passage.

<http://www.fws.gov/northeast/crayfish>