Big Sandy Crayfish and Guyandotte River Crayfish

Cambarus callainus, C. veteranus

Crayfish: Important and Fascinating
Crayfishes, including the Guyandotte River and Big Sandy crayfishes, 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 crayfish also benefits people by ensuring clean water for drinking, swimming, wading, and fishing.

Appalachian Natives In Decline
Researchers have only known of these species since the early to mid 20th century. At that time, the upper Big Sandy River and Upper Guyandotte River watersheds were undergoing rapid and widespread changes caused by industrialscale forestry and coal mining. The erosion and sedimentation associated with these activities degraded the streams in the region and made most of them unsuitable for the crayfishes.

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Big Sandy crayfish

Scientific evidence indicates that the Big Sandy crayfish once occurred in streams throughout the upper Big Sandy River basin in Kentucky, Virginia and West Virginia. Likewise, the Guyandotte River crayfish occurred in streams throughout the Upper Guyandotte River basin in West Virginia.

Following an evaluation of the best available scientific and commercial information, peer review feedback and public comment, the U.S. Fish and Wildlife Service has protected both crayfishes under the Endangered Species Act. Effective in May 2016, the Guyandotte River crayfish's status is endangered, and the Big Sandy crayfish's status is threatened.

The Big Sandy crayfish is state-listed as endangered in Kentucky and Virginia and is considered critically imperiled by the State of West Virginia. The Guyandotte River crayfish is also considered critically imperiled in West Virginia.

Today, the Big Sandy crayfish is found in six isolated populations across Floyd and Pike counties, Kentucky; Buchanan, Dickenson, and Wise counties, Virginia; and McDowell and Mingo counties, West Virginia. The Guyandotte River crayfish is found in only two streams in Wyoming County, West Virginia.

While the intensity of coal mining and forestry has dropped from the historical highs of the 20th century, active coal mining and commercial timber harvesting are still ongoing in the region and contribute to sedimentation in the streams and rivers. Other activities, such as natural gas development, highway construction, and ORV use, are increasing and can further degrade stream habitat. Additionally, the small, isolated nature of the populations of both

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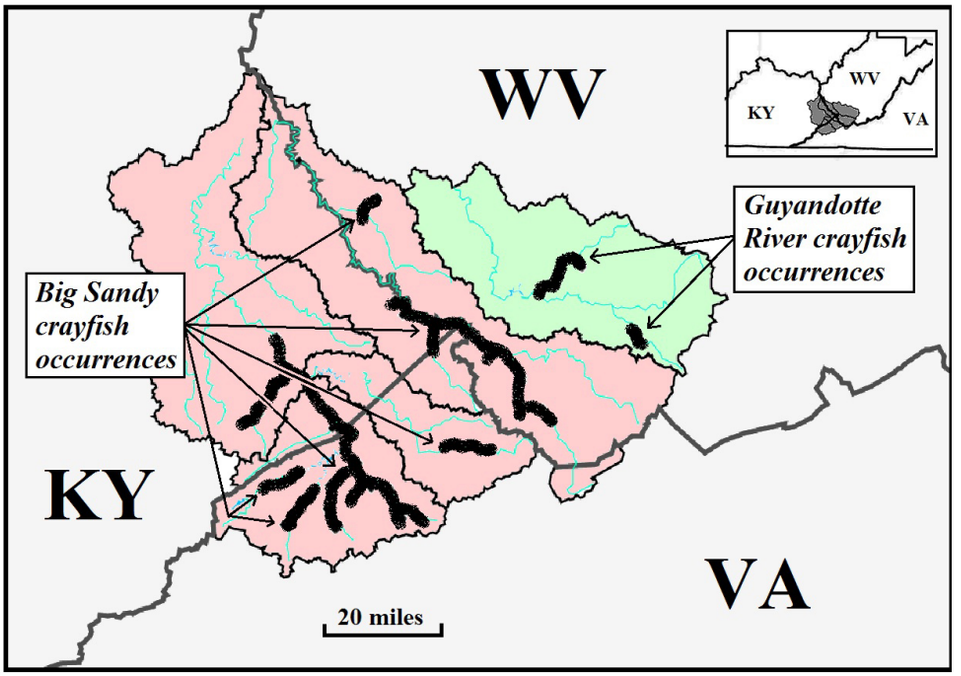
An example of ideal habitat for these crayfish. The Dry Fork stream in McDowell County, West Virginia, supports a Big Sandy crayfish population.



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 Upper Guyandotte River watershed (shaded in green). Surveys since 2006 found the Big Sandy crayfish restricted to six isolated populations in upper tributaries of the upper Big Sandy River watershed and the Guyandotte River crayfish in two streams in the Upper Guyandotte River watershed.

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, confirmed through genetic analysis, and can be easily distinguished by physical differences between their claws and legs. Read more in the peerreviewed article *Cambarus* (Puncticambarus) *callainus* in the December 2014 Zootaxa journal.

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species inhibits gene flow, making them even more vulnerable to extirpation. A single event like a contaminant spill could potentially eliminate an entire population.

Hidden in Cool, Clear Waters

At about 3 to 4 inches long, both crayfishes live beneath loose, large boulders in fastflowing streams and rivers. With their olivebrown to light green coloring, they blend in well with the stream bottom.

They live an average 5 to 7 years, and because they don't reproduce until 3 to 4 years of age, their populations can take a long time to rebound.

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 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 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 lowwater bridge crossings that are barriers to passage for fish and other aquatic species.

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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.

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