Endangered Species

Ecological Services

Rare Cave Beetles Protected in Kentucky

by Elsie Davis and Michael A. Floyd

Kentucky is famous for horseracing and bluegrass music. The state is also known for its extensive cave systems, which are home to four unique beetle species found nowhere else in the world. Once uncertain, the long-term prospects for these cave beetles are a lot brighter as a result of conservation efforts the U. S. Fish and Wildlife Service (Service) and our partners. Their stories demonstrate the vital role that partnerships play in preventing species from becoming at risk of extinction.

Fencing around Beaver Cave in 2004.

Photo Credit: USFWS

Greater and Lesser Adams Cave Beetles

About the size of pencil erasers, the cave-dependent greater (*Pseudanophthalmus pholeter*) and lesser (*Pseudanophthalmus cataryctos*) Adams Cave beetles are reddish-brown eyeless predators of spiders, mites, and millipedes. In 2005, the Service and Southern Conservation Corp, a non-profit land trust, signed a Candidate Conservation Agreement with Assurances that prevented illegal and excessive human disturbance to Adams Cave in Madison County.

“We see this agreement as a simple way to help conserve the species,” says Charles H. Fox, then-Executive Director of Southern Conservation Corp at the time. “The Service helped us develop a Candidate Conservation Agreement with Assurances and showed us how it would protect us from liability under the Endangered Species Act. All we had to do was implement several conservation measures on the property, which we were going to do anyway.”

The agreement specified the need to restore native vegetation surrounding the cave entrance, and re-establish natural airflow and inputs of organic debris that form the basis of the cave’s food chain. The Wildlife Society’s Eastern Kentucky University Student Chapter also removed trash from Adams Cave and replaced a damaged cinder block wall – with a bat-friendly steel gate – at its only entrance to minimize disturbance, and the Kentucky Department of Fish and Wildlife Resources helped restore the woodland savannah area surrounding the cave. These efforts resulted in the removal of both species from the federal candidate list in December 2005.

Beaver Cave Beetle

The Beaver Cave beetle (*Pseudanophthalmus major*) only lives in one cave on a 60-acre (24-hectare) dairy farm. Working closely with the landowner, Mark McCauley, and other state and federal agencies, the Service’s Partners for Fish and Wildlife Program in Kentucky undertook a number of projects to improve the beetle’s habitat. The other agencies involved in these projects included the Natural Resource Conservation Service, Farm Service Agency, Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission and Kentucky Division of Forestry.

To reduce sediment and animal waste within the cave’s watershed, partners installed a fence and established a forested buffer around the stream and cave to alleviate livestock effects.

“We never liked the situation with manure surrounding our dairy operation and the cave, but we didn’t have the funds to deal with it,” says McCauley. “The help we got from the Service really helped our operation. And we were glad to be able to help preserve the cave and cave beetle.”

The team also removed trash from a sinkhole draining into Beaver Cave, and installed a metal gate at the cave’s entrance to prevent vandalism in the cave. Together, these efforts helped secure the Beaver Cave beetle and its habitat. The species was removed from the federal candidate list in October 2006.

Surprising Cave Beetle

The surprising cave beetle (*Pseudanophthalmus inexpectatus*) measures just over one-eighth of an inch long, or about the thickness of two quarters stacked on top of each other.

Greater Adams cave beetle.

Photo credit: M. McGregor, Kentucky Department of Fish and Wildlife Resources

In 2001, the Service and the National Park Service signed a 15-year Candidate Conservation Agreement to protect this tiny critter and manage its cave habitats in Mammoth Cave National Park. Through the agreement the two agencies cooperatively removed a concrete platform and stairs that restricted natural air flow in the historic section of Mammoth Cave, and suspended or modified cave tour routes to minimize habitat disturbance.

From 2002 to 2006, the Park Service surveyed other caves in the park and discovered new populations of the Surprising Cave beetle in three additional caves. One of these caves was located on the north side of the Green River—a significant range extension for the species. Ten Surprising Cave beetles were found during these surveys, which was a significant accomplishment considering the surveys were focused on other cave species, and the tiny species is usually difficult to find. Based on these results, the species was found to be more abundant and widespread than previously thought. It was also better protected, thanks to the conservation agreement. The species was removed from the federal candidate list in December of 2007.

The dedication of Service biologists and partners is to be credited for these happy ending to each story.

Conservation measures implemented by the Service and partners has, with support from federal and state agencies and private landowners, secured a future for these creatures while preventing the need to list them as endangered or threatened under the Endangered Species Act.

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Last updated: May 28, 2013