



Grotto Sculpin

Cottus sp. nov.

The grotto sculpin has been proposed to be federally listed as an endangered species.

Endangered species are animals and plants that are in danger of becoming extinct. Threatened species are animals and plants that are likely to become endangered in the foreseeable future. Identifying, protecting, and restoring endangered and threatened species and their habitats are primary objectives of the U.S. Fish and Wildlife Service's endangered species program.

What is the Grotto Sculpin?

Appearance: The grotto sculpin is a small, cave-dwelling fish that has characteristics similar to many animals that live in total darkness, such as reduced (sometimes absent) eyes and pale skin color.

Range: The grotto sculpin is found in an area of Missouri characterized by thousands of sinkholes and over 700 caves (collectively called a "karst system"). It is restricted to five cave systems and two surface streams in Perry County, Missouri.

Habitat: Grotto sculpin live in cave streams, springs, and surface streams. Individuals migrate between underground and aboveground habitats, with adults found more often in the cave portions and juveniles in surface springs and streams. Grotto sculpin use stream pools as well as areas under rocks that offer more protection. Both pool and riffle



The grotto sculpin, a cave dwelling fish found only in Perry County, Missouri, may be added to the list of endangered species.

areas with a variety of substrates are used, including silt, gravel, cobble, and bedrock.

Reproduction: Our knowledge of grotto sculpin life history is limited, but young-of-the-year have been seen in spring and early summer, indicating that adults spawn in late winter to early spring. Females lay eggs that adhere to the underside of rocks in flowing water. Nests contain approximately 200 eggs each and are guarded by adult males.

Feeding Habits: Grotto sculpin are carnivores that eat invertebrates, including isopods and amphipods.

Why is the Grotto Sculpin in Danger of Extinction?

Water quality in natural karst systems is vulnerable to pollution

because contaminated water can flow rapidly from the surface to below-ground aquifers and cave streams. Sinkholes that have been modified to drain adjacent land further increase the potential for contamination because runoff enters underground streams without the benefit of being filtered through natural substrates. The absence of adequate vegetated buffers around sinkholes is problematic because such buffers filter contaminants and sediment before water reaches the sinkhole.

The grotto sculpin occurs in small populations and lives in a specific habitat that is found only in five cave systems in Perry County. Like most other aquatic animals, it requires good water quality to survive. Because of its low numbers and limited range, the

loss of one or more populations can be harmful to the entire species. Two mass mortalities of grotto sculpin have occurred since the early 2000s. Evidence indicates that both events were caused by point-source pollution of aboveground waters that drained to underground aquatic habitats. Water pollution not only harms grotto sculpin directly but also the cave stream ecosystems and aquifer underlying the Perry County karst system.

What is being done to prevent extinction of the Grotto Sculpin?

Listing: We are proposing to add the grotto sculpin to the U.S. List of Endangered and Threatened Wildlife and Plants as an endangered species so that it receives protections provided by the Endangered Species Act. Listing a species also increases the priority of the species for funds, grants, and recovery opportunities. The proposed listing will highlight the importance of good water

quality for the grotto sculpin and for human use.

Critical Habitat Designation: We are also proposing to designate critical habitat for the grotto sculpin. Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat.

Sinkhole Cleanup: Debris and trash have been removed from multiple sinkholes within the recharge zones of cave streams occupied by grotto sculpin.

Implementation of Best Management Practices (BMPs): Following BMPs around sinkholes, such as installing and maintaining adequate vegetated buffers, reduces contamination of cave streams.

Research: Researchers are continuing to study the grotto

sculpin's life history as well as threats to water quality.

What can I do to help prevent the extinction of species?

Protect water quality by minimizing use of lawn chemicals (i.e., fertilizers, herbicides, and insecticides), recycling used car oil, and properly disposing of paint and other toxic household products.

Encourage and Implement the use of agricultural practices that minimize the erosion of topsoil and runoff of pesticides and fertilizers into sinkholes, rivers, and streams.

Join a conservation group to support programs that advocate for good water quality or **volunteer** at a local nature center, zoo, or national wildlife refuge.

U.S. Fish & Wildlife Service
<http://www.fws.gov/midwest/endangered>

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Photo by Brad Pobst, Missouri Department of Conservation

This grotto sculpin was captured during a survey. Researchers cannot survey much of its habitat because it lives in inaccessible underground streams.