



## Summary of the Rule to List the Ozark Hellbender as Endangered

The Ozark hellbender is in danger of extinction due to population declines over the last 15 years and the threats that caused those declines. The U.S. Fish and Wildlife Service has listed this subspecies as endangered under the Endangered Species Act of 1973. “Endangered” is defined by the Act as “in danger of extinction throughout all or a significant portion of its range.”

To better control and monitor the international trade of hellbenders, the Service has included both the Ozark and eastern hellbender in Appendix III of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. CITES is an international agreement between governments designed to prevent species from becoming endangered or extinct as a result of international trade. Collection within the United States and international trade of hellbenders is of growing concern, particularly as they become rarer and, consequently, more valuable. Listing hellbenders in Appendix III of CITES will aid in curbing unauthorized international trade, not only by controlling exports from the United States but by enlisting the assistance of 174 other countries that are CITES Parties in controlling trade in the species.

Hellbenders (*Cryptobranchus alleganiensis*) are large salamanders (up to 2 feet long) found in rocky, fast-flowing streams and rivers of the eastern United States. Unlike most amphibians, they are strictly aquatic and spend no part of their life cycle on land. Adults live under large rocks, coming out only to feed and mate. Hellbenders are long-lived animals, surviving up to 30 years in the wild. The species includes two subspecies: the Ozark hellbender (*C. a. bishopi*) and the eastern hellbender (*C. a. alleganiensis*). Ozark hellbenders are found only in the streams of the Ozark Plateau in southern Missouri and northern Arkansas.

### Population Status

Ozark hellbenders were historically found in eight rivers. By the early 1970s they were extirpated or at extremely low numbers in four of those rivers due to habitat alterations. The remaining four rivers all had healthy populations from the early 1970s through the 1980s. During the 1990s, however, populations in three of those rivers declined dramatically and essentially no hellbenders are left in the fourth.

The North Fork of the White River was considered the stronghold of the Ozark hellbender in Missouri, supporting a large and stable population. For example, in 1973 biologists captured 1,150 hellbenders within a 1.7-mile stretch of the river. Throughout the 1990s, surveyors also found high numbers. However, by 2006, numbers of Ozark hellbenders had dropped dramatically, and the population for the entire river was estimated to be only 200. In addition, the collection of young individuals in the North Fork, as throughout the Ozark hellbender’s range, has now become rare, indicating that little successful recruitment is occurring.

Ozark hellbender populations have declined throughout their range, and no populations are now stable. Only about 590 individuals remain in the wild and those are spread out among three rivers in isolated populations. One information source (Briggler et al. 2007, pp. 88–90 and p.

97) estimates that the subspecies may be functionally extinct by 2026 (within 20 years), provided actions are not taken to slow or reverse the downward trajectory.

### **Threats**

Hellbenders are habitat specialists that depend on constant levels of dissolved oxygen, temperature and water flow. Even minor alterations to stream habitat can harm them or affect their ability to reproduce. Impoundments, ore and gravel mining, sedimentation, and nutrient runoff have degraded the habitat and caused some populations to disappear and others to become isolated from each other. The remaining smaller, isolated populations are now vulnerable to threats from recreational activities, disease and collection.

Residential and commercial development, agricultural runoff, mine waste, and timber harvest all increase siltation and degrade water quality. Increased siltation harms hellbenders by suffocating eggs, eliminating suitable habitat for all life stages, reducing dissolved oxygen levels, increasing contaminants (that bind to sediments), and reducing prey. Run-off from farm fields, residences, and urban areas carry nitrates, fecal coliform, and a variety of other contaminants.

Impoundments alter habitat directly by changing water temperatures and flows above and below reservoirs. They are also barriers that prevent movement between populations, so that one population cannot replenish another. The remaining smaller, isolated populations are now vulnerable to threats that larger, contiguous populations are more capable of withstanding. Those threats include recreational activities, over collection, and disease.

Most hellbender rivers are popular with canoeists, kayakers, rafters, inner tube floaters and motorboat operators. Rocks have been removed to reduce damage to canoes and by gardeners for landscaping. Rock turning/flipping is also done by crayfish hunters and hobbyists/independent researchers. Areas under large rocks are important habitat for cover and nest sites; therefore, overturning or removing these rocks reduces available cover and nest sites for hellbenders and also disturbs the seal around the rock. These seemingly innocuous activities are a problem for hellbenders because the recreational traffic is high and there are so few hellbenders left.

Collecting hellbenders for research, museum collections, zoos, and the pet trade has contributed to hellbender declines. Although many of these actions are now illegal, unfortunately its rarity increases its price as a pet and thus increases the threat of collection.

Disease has also become a serious threat. Chytridiomycosis, a highly infectious amphibian disease caused by the pathogen *Batrachochytrium dendrobatidis*, is a recently recognized threat to Ozark hellbenders. Worldwide, researchers are finding that *B. dendrobatidis* infects and kills all life stages of an increasing number of amphibian species, including Ozark hellbenders. Although it is unclear if there is a connection to chytridiomycosis, physical abnormalities (*e.g.*, lesions, digit and appendage loss, epidermal sloughing) in Ozark hellbenders are becoming increasingly more severe.

### **Critical Habitat**

The Act requires the Service to designate critical habitat at the time of listing unless it is not prudent or not determinable. We have not designated critical habitat because the threat of illegal collection makes it not prudent. Collection for the pet trade is already a serious problem for the species. We believe that maps produced for a critical habitat designation would increase the threat of collection.

### **Conservation Measures**

Listing the Ozark hellbender as endangered will promote its conservation through several mechanisms. First, adding the hellbender to the Threatened and Endangered Species list raises awareness of the species' vulnerability. Agencies and groups use this list to help prioritize their funding and management. Secondly, for every listed species the Service must prepare a recovery plan that outlines and prioritizes actions necessary to restore the species. Recovery plans are also used by agencies and groups to help guide their funding and conservation activities. Third, grants are available specifically for listed species conservation. The Service would be able to grant funds to the states of Missouri and Arkansas for Ozark hellbender conservation. Lastly, listing the Ozark hellbender provides it with the strength of a federal law that prohibits its "taking" and prohibits federal agencies from jeopardizing its existence.

### **Activities Affected by Listing**

Activities that kill or harm Ozark hellbenders would be in violation of section 9 of the Act and thus illegal, unless a permit or incidental take statement is issued. We believe the following activities, unless authorized by a permit or incidental take statement, would result in section 9 violations. This list is not all inclusive.

- (1) Killing, collecting, handling, or harassing individual Ozark hellbenders at any life stage;
- (2) Selling or offering to sell Ozark hellbenders in addition to delivering, receiving, carrying, transporting, or shipping in interstate or foreign commerce any Ozark hellbender;
- (3) Destroying or altering the species habitat (e.g., instream dredging, channelization, impoundment, streambank clearing, removal and/or flipping over of large rocks from streams, discharge of fill material) in a way that kills or injures individual Ozark hellbenders;
- (4) Violating any discharge or water withdrawal permit within the species' occupied range in a way that kills or injures individual Ozark hellbenders; and
- (5) Discharging or dumping toxic chemicals or other pollutants into waters that support the species and that kills or injures individual Ozark hellbenders.

### **Additional Information**

If you have questions or would like more information, please see our website at <http://www.fws.gov/midwest/endangered> or contact Trisha Crabill at the U.S. Fish and Wildlife

Service, Ecological Services, 101 Park De Ville Dr., Suite A, Columbia, Missouri 65203, (telephone 573-234-2132).

**References**

Briggler, J., J. Utrup, C. Davidson, J. Humphries, J. Groves, T. Johnson, J. Ettlign, M. Wanner, K. Traylor–Holzer, D. Reed, V. Lindgren, and O. Byers (eds.). 2007. Hellbender Population and Habitat Viability Assessment: Final Report. IUCN/SSC Conservation Breeding Specialist Group, Apple Valley, MN. 118 pp.