

IMPACT REPORT

2024



Ron Goellner Center for Hellbender Conservation

Background

The Ron and Karen Goellner Center for Hellbender Conservation is a Saint Louis Zoo-based effort aimed at conserving native hellbender populations in Missouri. The hellbender is the largest species of salamander native to North America. They are perfectly adapted to their stream habitats, with their flattened head and body, short, stout legs, long rudder-like tail, and very small, beady eyes. There are two subspecies of hellbender: the Ozark hellbender (*Cryptobranchus alleganiensis bishopi*), and the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*). Missouri is the only place in the world where both subspecies can be found.

Both Ozark and Eastern hellbender populations in Missouri have declined more than 70% over the past 40 years. A population assessment carried out in 2004 indicated that all hellbender populations have a high risk of extinction (above 96%) over the next 75 years, unless populations are bolstered. Based upon these results, zoo propagation and head-starting were deemed essential to the long-term recovery of hellbenders in Missouri. Furthermore, studies aimed at addressing the reasons for population declines were also prioritized.

The Ron and Karen Goellner Center for Hellbender Conservation was developed in 2004, specifically to address this critical need. This Center collaborates with the Missouri Department of Conservation and the United States Fish and Wildlife Service. The Zoo has established two outdoor artificial streams, one indoor artificial stream and four rooms of aquatic systems in the Charles H. Hoessle Herpetarium for the conservation of hellbenders. In 2006, “founder animals” from four different river systems, representing both subspecies, were collected to populate our Herpetarium’s hellbender Center. The first successful zoo-breeding of Ozark hellbenders occurred at the Saint Louis Zoo in 2011. In addition to this reproduction at the Zoo, eggs are collected from the wild and head-started at the Zoo for both the eastern and Ozark hellbenders. The hellbenders raised at the Zoo are released back into the rivers from which they or their parents originated. Without such intervention, both subspecies would likely go extinct in



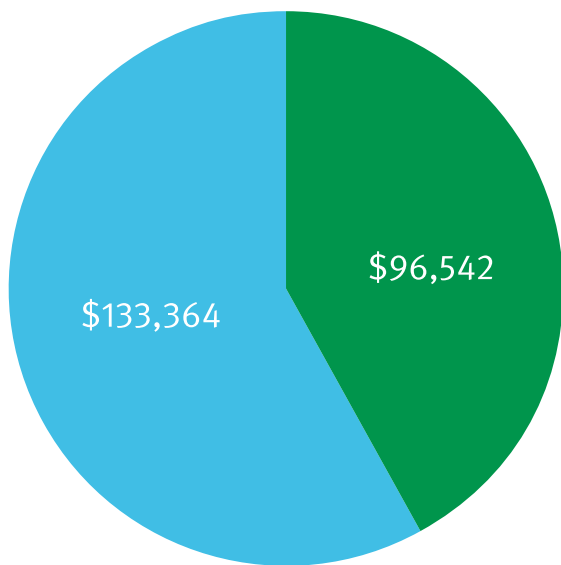
Missouri.

Center Achievements

- » August 2022: Our 10,000th hellbender was released in an Ozark river.
- » Summer 2023: 695 hellbenders were released into four different rivers, bringing the total number of releases to more than 11,500.
- » The Center hatched 982 hellbender eggs in 2023 (683 Ozark; 299 Eastern).
- » Fall 2023: A Zoo-raised male Ozark hellbender was found on a nest in the wild.
- » Fall 2024: A Zoo-raised, male Eastern hellbender was found on nest in the wild.
- » February 2024: Systems in Hellbender Room 2 were modernized, and several water chillers were moved to the outside of the building in order to avoid excessive heat. This is an important move for the sustainability of the Center’s equipment.

Center Budget Contributions

The Ron and Karen Goellner Center for Hellbender Conservation receives funding from the Saint Louis Zoo operating budget, the Missouri Department of Conservation, the Saint Louis Zoo WildCare Institute and donations. As a local conservation initiative, this Center is unique in that the release animals are housed at the Zoo. Because of this, both the Zoo and the WildCare Institute contribute funds to operate both the animal care and the field components of the Center. Furthermore, this Center has received generous donations to help sustain this important work.



Hellbender keeper salaries with benefits

Restricted donation Funding

Primary Donors in 2023:

The Love Foundation and Stonehill winery.

Center expenditures by Category:

The Ron and Karen Goellner Center for Hellbender Conservation is based at the Herpetarium at the Saint Louis Zoo. Primary expenses are associated with the care and maintenance of both Eastern and Ozark hellbender assurance populations. The Center is staffed by four, full-time keepers and is managed by the Zoological Manager of the Herpetarium and the Curator of Herpetology. Managing around 1,500 *(June 2024) fully aquatic salamanders takes meticulous care. From providing the ideal water quality parameters to maintaining detailed records, this Center's dedicated team performs an incredible amount of work.

Focal Regions and Species

- » Ozark hellbenders are found in various rivers in extreme southern Missouri and northern Arkansas.
- » Eastern hellbenders are found in rivers of south-central Missouri.

Center Impact

Key results of Strategy 1: Develop sustainable zoo populations (*ex situ*):

In order to accomplish this strategy, the Zoo created three artificial streams (One indoor and two outdoor) and dedicated three, large rooms in the Herpetarium for the development of sustainable hellbender populations. Working with both subspecies, the Center team manages seven, genetically distinct populations. Both conservation breeding and head-starting are important techniques in the development of sustainable, genetically variable populations. Each year, we move closer to the goal of having sustainable, genetically sound assurance colonies at the Zoo. With a historic focus on Ozark hellbenders, the Center has focused on three different rivers in Missouri. To do this, eggs from the wild are collected and brought to the Herpetarium's hellbender center, contributing increasing genetic variability to

the populations. Moving closer toward our goal of sustainable, captive populations, the Center produced second-generation Ozark hellbenders for the past six years. This is a critical part of our strategy, and it indicates that we are successfully propagating this species to adulthood, which can take six years.

The Center also manages eastern hellbenders from four different rivers in Missouri. While these populations have not successfully reproduced at the Zoo yet, we are working toward developing sustainable populations through the collection of eggs from the wild. The eastern hellbender population in Missouri is genetically distinct from other eastern hellbender populations. This subspecies is covered under the Endangered Species Act. The Center plans to continue its efforts to reproduce this subspecies as well as head-start individuals for release.

Key results of Strategy 2: Population Augmentation (*in situ*):

Augmenting wild populations is a key strategy in combatting the decline of wild hellbender populations. Hellbenders are released from both wild-collected eggs that are reared at the Zoo and Zoo-bred animals. Releases take into consideration the animals' origin, age, genetics and the current status of the river. All of these are important considerations to ensure that the highest survival and recruitment rates are achieved. In 2023, 695 hellbenders were released into Missouri rivers.



Because animals from each river system are managed independently at the Zoo, the hellbenders are released back into the same river they originated from, making sure we are augmenting populations with the correct genetic lineages.

Stories of Impact in FY 2023

The Saint Louis Zoo has been dedicated to the conservation-breeding of these unique salamanders for over two decades. Recognizing the threats and creating a sustainable program for conserving wild, hellbender populations through assurance colonies, the Zoo has dedicated space, staff and other resources to their conservation. The Center has overcome many challenges over the years, including extreme weather events and a global pandemic. In 2023, we released close to 700 hellbenders in four different river systems in Missouri bringing our total number of repatriated animals to nearly 12,000. In 2023, we announced that a zoo-raised hellbender was found fathering a wild nest, signaling that these animals are not only surviving in the wild but flourishing and reproducing. This is a huge step towards their conservation and brings hope to the future of this species in Missouri. This news brought world-wide attention in the form of hundreds of stories and articles. In autumn 2023, we hatched 982 hellbenders at the Zoo, all of which will eventually be released to the wild. Lastly, as part of our goal to educate the public near and far about the plight of the hellbender, we assisted





with our MDC colleagues in the filming of an episode of Mutual of Omaha's Wild Kingdom. This episode featured Zoo staff caring for hellbenders at the zoo as well as preparing animals for release to the wild. It aired on NBC in early autumn.

Plan for the future

The Saint Louis Zoo's work with hellbenders began in the 1990s. Since then, the Center has achieved many milestones and accomplishments. The Missouri eastern hellbender was federally listed as an endangered species in 2021, elevating the conservation needs of this species. The populations of eastern hellbenders in Missouri are genetically unique from other populations within their range. Currently maintaining animals from four river systems, the Center has yet to successfully reproduce eastern hellbenders at the Zoo. Increased resources will be dedicated to the successful propagation of several genetic lineages of eastern hellbenders from Missouri rivers over the next three years. This is a critical step in developing sustainable assurance populations to

safeguard the unique populations of Missouri's eastern hellbenders.

Looking into 2025 we are optimistic about some substantial repatriation efforts, likely including our largest release of eastern hellbenders. Additionally, we have been invited to present at the National Cryptobranchid Symposium and will likely send multiple representatives from our program to serve as ambassadors for our work. In 2020, we received a USFWS recovery challenge grant and have begun implementing these for necessary supplies and salaries. As of 2023 we have proven that our model of recovery for this species is working via releases and wild reproduction occurring from these animals. We look forward to continuing these efforts with the goal of hellbenders recovering in our State's riverways.