

The Ozark Hellbender: No longer found under the rocks

By: Justine M. Dover



Picture courtesy of Clint Hale – Missouri Department of Conservation

The Missourian Ozark Hellbender is a disappearing two foot long salamander living under the rocks of the Ozarks. There are not too many left in the world; you can only find them in the southern part of Missouri and the eastern parts of the United States. They live for nearly 30 years and feed mainly on crawfish at night⁴. These amazing animals are aquatic and breathe through their skin to get oxygen. They can only live in bodies of clear water, whose bottoms are rocky, have good ecosystems and minimal silt. They eat many types of small aquatic insects and bugs. The main reason for the loss of these amphibians is loss of habitat. Many do not know this species is endangered. My dad works with the Missouri Department of Conservation and recently got a tour of the Project - Ozark Hellbenders at the Shepherd of the Hills Hatchery, where they are working with the St. Louis Zoo to bring this species back. This will take nearly 8 years to produce a fully active male and female according to Clint Hale.

Since the salamanders breathe through their skin, the slit in the water would stick inside their body clogging their pores which limit their lifespan due to stress from not being able to breathe. According to Jeff Humphries, “These salamanders need cool, clear

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streams and rivers with many large rocks. They feed almost entirely on crayfish, but will also eat small fish, invertebrates, and other hellbenders.”¹ It is interesting to research such a creature that I did not even know existed until my Dad spoke of the Ozark Hellbender from his trip. After hearing about how impressive they are and seeing pictures of the salamander, I felt they need to be heard. After all no one ever sees them, no one ever hears them at night, they don't cross the road in front of you...they simply will slip away unnoticed. Help me ... help them ... to be seen.

Hellbenders are state endangered and federally protected. Hellbender expert Jeff Briggler² states research has been conducted that proves “Between 1971 and 1973, researchers observed more than 1,000 hellbenders in the Niangua River. By the 1990s, however, the population had declined by 80 percent. Hellbender numbers in the Big Piney, Gasconade, Eleven Point and North Fork rivers showed similar decreases. Overall, hellbender populations declined by an average of 77 percent.” What is even more disturbing is hellbenders are being born with deformities including missing or malformed legs. Researchers feel that the deformation, declination of numbers and absence of juveniles in populations are a direct result of *Batrachochytrium Dendrobatidis* (chytrid).

This fungus chytrid invades the skin of other amphibians and produces a spore like offspring. These continue to propagate further infiltrating the skin of the amphibian and essential taking the skin over. The Ozark Hellbender breathes through its skin, so even if all the other conditions were right and it got this “infection” it would not be able to survive as its skin has been taken over by the fungus. If silt in the stream plugs the

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skin of the Hellbender which it then is stressed. This could be the opening the fungus needs to colonize. After reading an article on this invasive fungus ⁵, this article reviews the lifecycle that allows it to continually invade the Ozark Hellbender and other amphibians. There is a hypothesis that some types of frogs and salamanders secrete a type of antimicrobial peptide that protects those ⁶. So why is the Hellbender not able to secrete this or was it not something it could do? I am afraid genetic evolution will not happen fast enough to allow the Hellbender to survive. So what is being done?

Many agencies are working to figure out why hellbender populations are declining in Missouri. The St. Louis Zoo is working on captive breeding. They want to preserve genetic stock of the hellbender in case it is depleted from Missouri's waters. The Missouri Department of Conservation (MDC) has these salamanders in large tanks with free flowing water and large rocky bottoms. They are feed on a daily basis small aquatic shrimp. I have attached some pictures provided to me from Clint Hale of MDC. According to Clint Hale³, hatchery manager of the Shepherd of the Hills Fish Hatchery Conservation Center in Branson, MO from an email I received, the following is a list of preventive actions the fish hatchery is doing:

- Two years ago, egg clutches were retrieved from the wild and brought here to the hatchery
- The eggs were fertilized and Shepherd of the Hills Fish Hatchery Conservation Center now has several juvenile hellbenders averaging around 100 grams per animal
- Juveniles are weighed and measured monthly to determine growth rates

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- The Shepherd of the Hills Fish Hatchery Conservation Center now has some adults at the facility that were retrieved from the Gasconade River in Missouri. Most of the adults will be kept at the hatchery until a bridge project is completed and there is no longer construction in their home environment.
- A few adults may be kept for future propagation purposes

What can we do? It is disappointing to see boaters litter and distribute waste along the sides of lakes and streams. A simple riparian zone (100ft wide strip of trees) along a stream bank can stabilize it and help stop erosion. Many times I see local farms with farm animals that are allowed to graze or directly enter streams with protected endangered animals; these mammals will defecate in the lakes and streams causing an increase in pollution if there numbers are great. Admittedly, a cow in a stream is not causing the main issue; it is man and the expansion of our habit that are squeezing out the Hellbenders from under the rocks. The silt in the streams is not the affect of cows but of urbanization. We are tearing up water sheds that allow dirt to flow into streams which clog the skin of the salamander or add fertilizers in abundance that allow the fungus to grow without bound. Without fresh, clean water, the hellbenders won't be able to live much longer in the great state of Missouri. According to my different sources for research, no one knows exactly why the current hellbender's generation is decreasing so quickly. They only have assumptions and theories, but no solid proof. One of the problems with diagnosing the plight of the hellbenders is they are even declining in streams that have stable habitat like the Current and Jack Forks rivers. However, many have been found to have an invasive fungus.

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In National Honor Society, we have four different days planned throughout the entire year to pick up trash along highways in Sedalia, MO. I never understood how much trash there was until I participated in this exercise. If we moved our school's National Honor Society trash pick up to the Lake of the Ozarks, we could make a difference for the aquatic life and a better environment for people to enjoy as well. The MDC has stream teams. These groups select a stream like we selected a highway segment. They float the stream and remove all trash they can find. After all the flooding that has happened in our area, a lot of once "clean" streams are cluttered with pesticide jugs, bottles and other debris. Cleaning the areas that feed our streams and being aware of it is the first step.

Our population has set a day, Earth Day, to clean up our planet. If we had Earth Day every day of the year, our communities, parks, ponds, rivers, and lakes would be better. A cleaner environment means a better environment for animals and people. We need to understand that we can help hellbenders by keeping our environment clean and free from disturbance.

Other ways we can help include reporting hellbender sightings to Jeff Briggler at (573) 522-4115, ext. 3201, or e-mail jeff.briggler@mdc.mo.gov. Mr. Briggler wants to keep track of the sightings for his research. If I ever catch a hellbender while I am fishing, I'm going to remove the hook and cut the line to release it plus make a call to Jeff Briggler. I now know that they are an endangered species and what causes them to become endangered. Additionally, I will report illegal taking of hellbenders from Missouri's rivers and streams. I am going to join a Stream Team to get involved in habitat protection and water quality monitoring. Because my Dad works with the

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Missouri Conservation Department, he has many connections and resources I can use to join a Stream Team and become effective. I think I will start with the streams near my house. Who knows maybe I will have Hellbenders living under rocks in my stream. If I don't then I will try to see if I can get them started.

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All pictures courtesy of Missouri Department of Conservation

Clint Hale – Hatchery manager

Shepherd of the Hills

Ozark Hellbender protection project

Thank you Mr. Hale



Hellbender Eggs



Hellbender Sac Fry

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Juveniles



Adult Hellbender in shallow water