Eastern Hellbender

NORTH CAROLINA WILDLIFE RESOURCES COMMISSION *fact sheet, 2012*

Photo by: Lori Williams

The hellbender is one of only three giant salamanders found in the world. North Carolina is home to more than 65 species of salamanders, with 50 species in our mountain region alone. The Eastern hellbender (*Cryptobranchus a. alleganiensis*) is one of the largest salamanders found in North Carolina and the United States. Only the amphiuma, a salamander shaped like an eel, is longer.

DESCRIPTION

Hellbenders are 16 to 17 inches long on average, but they can grow to be more than 2 feet long and weigh more than 2 pounds. The hellbender's skin on its back ranges in color from grayish brown to reddish brown. Darker spots or mottled patches may also be present on the back. The belly is usually one color and generally lighter than the back.

The hellbender's head and body are flattened with a rounded snout and a pair of small, reduced eyes. Hellbenders are mostly nocturnal and rely heavily on touch and smell to catch food. The hellbender absorbs dissolved oxygen found in fast-running waters into its lungs through its skin. A loose fold of skin called a "frill" runs from the base of the neck down to the tail. The frill increases the surface area of the skin, helping the hellbender get oxygen.

Hatchling hellbenders have external gills. Gill slits located at the base of the throat replace external gills when the young reach 1½ years. The young hellbender is then able to absorb oxygen through its skin. The hellbender is mature at about 6 to 8 years of age, at which time it is about 1 foot long. It will continue to grow for many years to come.

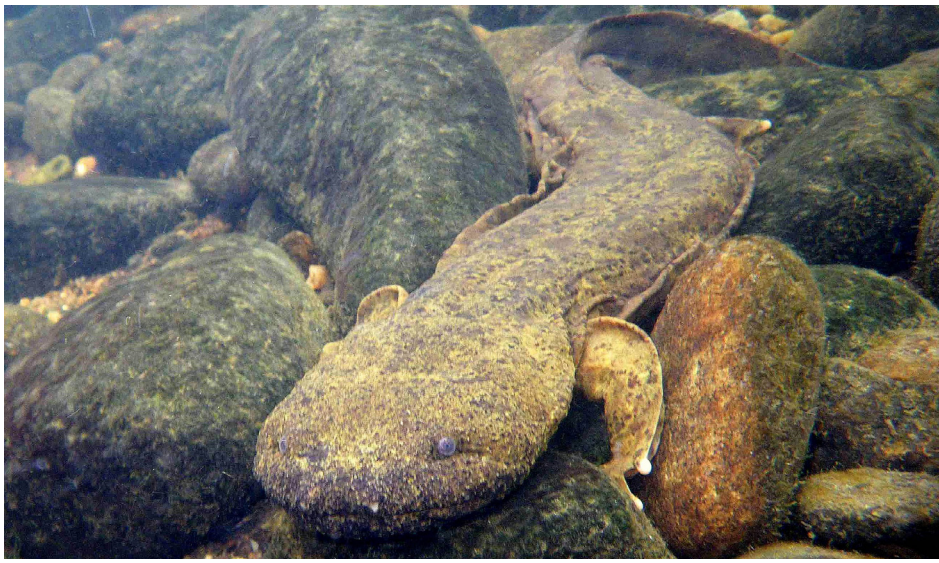

Photo by: TR Russ

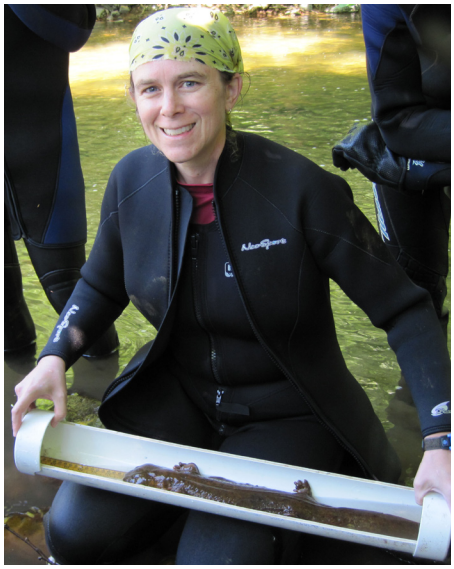

Photo by: Dottie Brown

Photo courtesy of NCWRC

HABITATS AND HABITS

Hellbenders breed from September to early November. The males defend territories before the breeding season begins. They dig out a large saucer-shaped nest into which females lay from 200 to 500 eggs in strands held together by a sticky substance that hardens when it meets water. This keeps the eggs close together in the nest. The male fertilizes the

eggs by spraying them with a milky fluid. The male hellbender guards the nest from predators and other hellbenders, although sometimes they may eat the eggs themselves.

The eggs are about 6 millimeters — or a quarter of an inch — in diameter. They are larger than those of any North American salamander. Mortality is high, however. A nest with 400 eggs may produce only about 90 or fewer young hellbenders. The eggs hatch into larvae in 10 or 12 weeks. Young hellbenders grow rapidly, approximately 3 inches in length each year.

Hellbenders live in rivers and large streams with clean, clear water. Fast-moving water creates more dissolved oxygen when it mixes with the air. Hellbenders need large, flat rocks and submerged trees to make nest sites and provide safety from predators. Where rocks are lacking, they sometimes live in holes in stream banks. While hellbenders are present in North Carolina's mountain counties, they usually live below 3,000 feet in elevation.

HISTORY AND STATUS

Local names for hellbenders include water dog, mud puppy, devil dog, snot otter, grampus and Alleghany alligator. Although they are large and slimy, hellbenders are harmless and not poisonous, toxic, or venomous, contrary to popular belief. Many people are frightened at the sight of a hellbender and consequently often kill them out of fear or ignorance.

A common misconception is that hellbenders negatively impact trout or other fish populations. While a hellbender may occasionally munch on a fish or a baited hook, their main source of food is crayfish. In fact, fish can be bigger predators on young or larval hellbenders than hellbenders are on fish. The N.C. Wildlife Resources Commission has designated the hellbender as a species of Special Concern, and because of this listing, it is illegal to kill, harm, harass, collect or sell them.

Biologists search for hellbenders in shallow rivers using snorkeling equipment. They measure and weigh them before releasing them back into the water. (Left photo by TR Russ; right photo by Lori Williams)

Once common throughout the mid-eastern United States, this giant salamander has disappeared from many streams because of declining water quality, over-collecting and persecution. Because hellbenders are sensitive to silt, sediment and other pollution in their aquatic habitat, they are considered to be a biological indicator of water quality. So, if you have a healthy population of hellbenders in your stream, you have relatively clean water.

North Carolina is fortunate that national forests protect many of the hellbender's mountain watersheds, but development, road construction and poor land use practices on steep slopes and in riparian zones threaten its habitat. Stream sediment and pollution have caused a persistent decline in water quality in the hellbender's habitat that could negatively impact hellbender populations. Increased dam construction and stream impoundment are other factors that could harm hellbenders. Dams slow down running water and cause dissolved oxygen levels to drop, thus making habitat unsuitable for hellbenders.

Contrary to popular belief, hellbenders are harmless and are not poisonous or toxic. The N.C. Wildlife Resources Commission has designated the hellbender as a species of Special Concern. Because of this listing, it is illegal to kill, harm, harass, collect or sell hellbenders.

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RANGE AND DISTRIBUTION

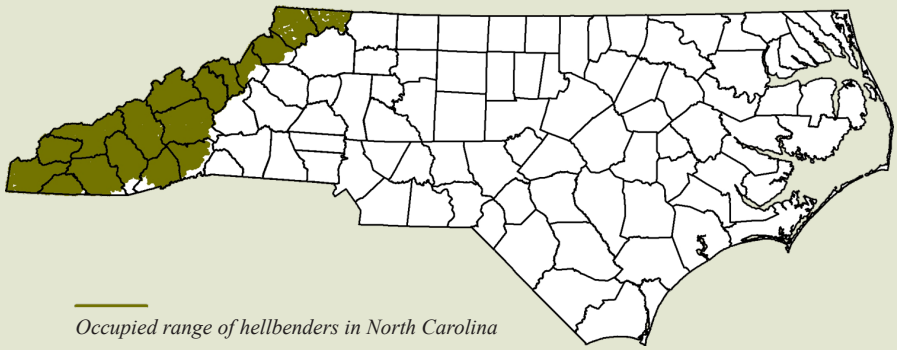
Hellbenders were once common to the Great Lake tributaries, but pollution and poor water conditions have made this habitat unsuitable. The current distribution extends from southwestern New York, westward to southern Indiana and Illinois, to a disjunct population in Missouri, and southward through the mid-Atlantic states to northern Alabama and northeastern Mississippi. A subspecies of hellbender, called the Ozark hellbender, is found in a separate population in Missouri and Arkansas.

In North Carolina, the hellbender occurs in fast-moving, clean mountain streams in the drainages of the Ohio and Tennessee rivers. These drainages include five North Carolina river basins: New, Watauga, French Broad, Little Tennessee and Hiwassee.

N.C. WILDLIFE RESOURCES COMMISSION INTERACTIONS

Since 2007, the N.C. Wildlife Resources Commission mountain region Wildlife Diversity Program, along with project partners from the N.C. Zoo, collaborators from the N.C. Division of Parks and Recreation, and other agencies, volunteers, universities, etc., began a long-term project to inventory, monitor and assess species status in North Carolina. The goals are to study hellbender populations in the state, revisit historical locations, discover new locations, monitor populations and increasing threats to habitats, conduct applied research and educate the public on hellbender conservation.

This gravid female is the largest and heaviest hellbender North Carolina biologists have found so far, measuring 23 inches and weighing 2½ pounds. (Photo by Lori Williams)



Occupied range of hellbenders in North Carolina

HOW YOU CAN HELP

- Anglers catching a hellbender should carefully remove the hook or cut the line as close as possible and release the animal back into the water.
- Share your hellbender observations by contacting Lori Williams at lori.williams@ncwildlife.org.

ADDITIONAL REFERENCES

Books

Beane, J. C., A. L. Braswell, J. C. Mitchell, W. M. Palmer, and J. R. Harrison, III. 2010. Amphibians and Reptiles of the Carolinas and Virginia, 2nd ed. The University of North Carolina Press. Chapel Hill, North Carolina. 274pp.

Mitchell, J. C. and J. W. Gibbons. 2010. Salamanders of the Southeast. University of Georgia Press, Athens, Georgia. 324pp.

Petranka, J. W. 1998. Salamanders of the United States and Canada. Smithsonian Institution Press. Washington, D.C. 587pp.

Websites

www.hellbenders.org

www.ncherps.org

North Carolina Wildlife Resources Commission

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