

# NORTH CAROLINA BIOLOGISTS HOPE TO RESTORE RARE FISH IN PEE DEE RIVER

(News Release from NC Wildlife Resources Commission 12/5/2014)

The Robust Redhorse (*Moxostoma robustum*), a rare fish that occurs in North Carolina only in the Pee Dee River, is getting a boost in population, thanks to a partnership between state wildlife agencies, universities, private industry, and the conservation community.

In October 2014, fisheries biologists with the N.C. Wildlife Resources Commission, S.C. Department of Natural Resources, and Duke Energy, released 13,000 Robust Redhorse, averaging four inches in length, into a stretch of the Pee Dee River, just downstream of Blewett Falls Dam in Richmond County.

The stocking effort was the latest step in a long-term conservation plan developed by the Robust Redhorse Conservation Committee (RRCC), which is leading restoration efforts for the imperiled fish.

Once commonly found in the Pee Dee River, Robust Redhorse are large, long-lived fish in the sucker family. They can reach up to 31 inches in length and weigh up to 18 pounds. Its thick, robust body with rose-colored fins and a fleshy lower lip give the fish its descriptive name. It is a priority species for the Wildlife Commission's Wildlife Action Plan as well as a good indicator of water quality in the Pee Dee River.

## We're Growing Fish

In early May 2014, a team of biologists met on the banks of the Pee Dee River at the Wildlife Commission's Diggs Tract boat ramp in Richmond County with two goals in mind: to collect enough Robust Redhorse for captive propagation and to continue the population census.

To start the augmentation process, biologists had to identify and access remote areas of the river where the fish were spawning. Robust Redhorse need clean, silt-free gravel with fast-moving water to spawn. Because the Pee Dee River is very shallow in spots, biologists trying to access redhorse spawning habitat had to request assistance from Duke Energy, which agreed to discharge additional water from Blewett Falls Dam, increasing the Pee Dee River's flow and allowing biologists to operate electrofishing boats to collect fish.

After they collected the redhorse and brought them to the bank, biologists measured, tagged, and took a tissue clip from a fin—a non-lethal method for genetic analysis—before extracting eggs from gravid females and sperm from males. The biologists spawned the redhorse and then returned the fish to the river.

"We're growing fish," said Rick Bradford, the fish hatchery supervisor at the Commission's McKinney Lake State Fish Hatchery, as he watched milt stream from a 23-inch male fish into a Tupperware container filled with bright yellow eggs. Bradford stirred the eggs and milt using a turkey feather and divided the resulting mixture of fertilized eggs into two containers (Figure 1). One container was sent to McKinney Lake Fish Hatchery in Hoffman, just a few miles down the road, while the second container went with fisheries biologists with South Carolina DNR for them to grow out.

The fertilized eggs hatched in a little over a week. At the McKinney Lake Hatchery, tiny, yellow redhorse larvae about the size of a pencil eraser lived in two 30-gallon tanks inside a hatchery building for a little more than a month (Figure 2) before Wildlife Commission staff transferred them to a 1/3-acre pond on the hatchery grounds. The young fish spent four months in the pond where they were fed a high-protein, pelleted diet twice a day (Figure 3). They grew to approximately four inches—a length that biologists felt would give the fish a better chance for survival in the wild.

## Long Time in the Making

The release of the hatchery-raised Robust Redhorse into the Pee Dee River required careful coordination between South Carolina DNR and Wildlife Commission biologists, as well as Duke Energy.

Early in the morning of Oct. 30, 2014, hatchery trucks filled with Robust Redhorse arrived at the Highway 74 boat ramp near Rockingham. Biologists transferred the fish to four waiting boats outfitted with live wells.

After bumping his boat through shallow, rocky shoals, Ryan Heise, a fisheries biologist with the Wildlife Commission, arrived at his destination—a side channel on the Pee Dee River with a variety of shallow water habitats. "This area is ideal for small Robust Redhorse," Heise said, "because it provides them with good places to hide from predators, such as Flathead Catfish, a non-native species that also is found in the river."

"This augmentation effort has been a long time in the making," Heise said, as he released a net full of young fish into the same murky waters where the adult fish were collected (Figure 4). "We've been working with partners to gather a lot of the information that we needed to make decisions about stocking and to have the best chances for success."



Figure 1. Rick Bradford stirring eggs and milt using a turkey feather.



Figure 2. Robust Redhorse fry in aquaria at McKinney Lake Fish Hatchery.



Figure 3. Stocking Robust Redhorse fry to grow out at McKinney Lake pond.



Figure 4. Ryan Heise stocking Robust Redhorse fingerlings into the Pee Dee River.

Saving the Robust Redhorse from extirpation in the Pee Dee River is a career goal for Heise, who began sampling the river in 2004 when hopes for a larger population were kindled. He and other biologists have sampled the river many times since that effort and have collected only 76 individual Robust Redhorse.

"Because Robust Redhorse are so rare, it has been a challenge to better understand the species' life history and the status of its population in the Pee Dee River," Heise said. "Through collaborative efforts, we documented spawning areas, learned about their migration patterns, estimated population size, and determined the genetic health of the population."

In a study with North Carolina State University (NCSU), biologists quantified the amount of suitable habitat during different flows from Blewett Falls Dam, which is a hydro-power facility upriver from where the Robust Redhorse population is found.

"Duke Energy has voluntarily provided higher flows from Blewett Falls Dam during times when they are not gen-

erating power," Heise said. "The higher flow ensures that the eggs and newly hatched larvae on the gravel bars do not lack water during non-generation or low-flow periods."

Using the habitat information from the NCSU study, and with the additional conservation of land along the banks of the Pee Dee River, biologists decided that an augmentation program was appropriate.

They will return to the same area next spring, sampling the river during spawning season to collect more adults to produce more young redhorse.

"Because we're only able to collect a few ripe females each year, we need to cross different individuals for many years to come in order to maintain the genetic diversity that exists in the wild," Heise said.

Robust Redhorse are fast growers so biologists expect to see the fish they stocked in October to show up on the shoals as spawning adults in about four to five years. They will be able to identify the fish they collect through genetic analysis of a tissue fin clip—similar to human parental testing.

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### **Working with other States and Agencies to Accomplish a Common Goal**

The Wildlife Commission is a member of the RRCC, which was formed in 1995 to improve the status of the fish throughout its former range. The RRCC comprises 12 private and public entities including power companies, conservation groups, and state and federal agencies from North Carolina to Georgia. Members of the committee are tasked with determining the biological reasons behind the fish's decline and restoring the species to a sustainable level.

Input from the RRCC helped guide these initial propagation and augmentation efforts. Collaboration among RRCC members has been important to the project. For example, biologists with the South Carolina Department of Natural Resources (SCDNR) assisted in spawning and rearing of Robust Redhorse fingerlings for the Pee Dee River project in North Carolina.

"The opportunity to assist in this project comes at a great time," said Forrest Sessions, project leader at SCDNR's Dennis Wildlife Center in Bonneau, S.C. "We just completed a successful 10-year Robust Redhorse stocking program here in South Carolina and hopefully have learned a few things along the way. It's always good to collaborate and work with other states' agencies to accomplish a common goal."

Duke Energy's partnership and support of the Commission's work to protect and conserve Robust Redhorse also have been instrumental in the project's success.

"Duke Energy is committed to environmental stewardship, conservation, and sustainable practices in the management of our hydroelectric projects," said Alan Stuart, senior environmental resource manager with Duke Energy. "As part of this responsibility, we have worked collaboratively with FERC-relicensing stakeholders to develop and implement measures to preserve aquatic and terrestrial resources within the Pee Dee region. The partnership between Duke Energy and the N.C. Wildlife Resources Commission represents a collective effort to better understand and enhance the Robust Redhorse population in the Pee Dee River."

Research and management for the Robust Redhorse in North Carolina are part of the N.C. Wildlife Action Plan. The project is funded through the Nongame and Endangered Wildlife Fund and the State Wildlife Grants Program, which are the primary sources of state funds for the Commission's Wildlife Diversity Program. The Commission uses these funds to support non-game species research and management.

For further information about the Robust Redhorse and restoration efforts, as well as photos, maps, videos, educational resources and more, visit the RRCC's site, [www.robustredhorse.com](http://www.robustredhorse.com).