Fisheries Research Fact Sheet

Movement of Triploid Grass Carp in the Pee Dee River

July 2017

A typical Grass Carp used to help control nuisance aquatic vegetation (Photo by Melissa McGaw/NCWRC).

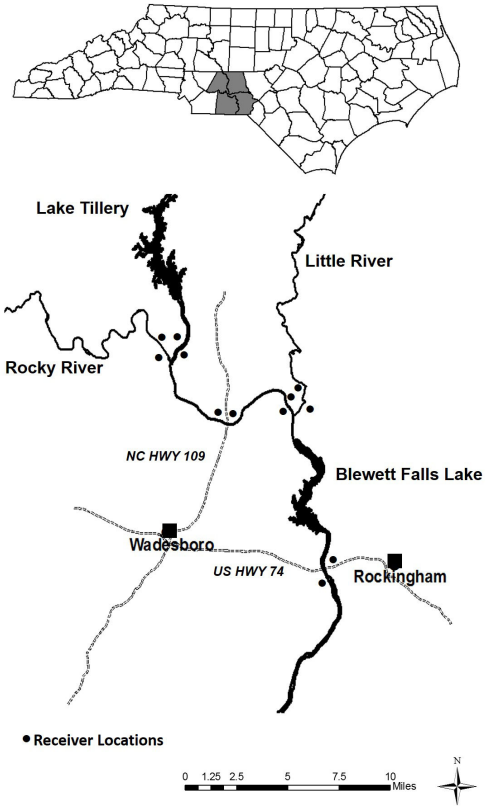
The N.C. Wildlife Resources Commission recently conducted a tracking study on the Pee Dee River to better understand the movements of Grass Carp stocked into a riverine system.

Grass Carp are efficient consumers of many types of aquatic vegetation and are often used to control nuisance or invasive aquatic plants such as hydrilla. However, Grass Carp are non-native and can negatively impact native plant, fish and bird species by directly removing desired aquatic vegetation within the waters stocked as well as adjacent waters if they escape. Because of this, all Grass Carp stocked into North Carolina waters must be certified as triploid (sterile) and a permit from the NCWRC is required to stock public waters, ponds greater than 10 acres, or more than 150 triploid Grass Carp.

In 2010, hydrilla was discovered in the Pee Dee River just downstream of Lake Tillery Dam, which is operated by Duke Energy (Duke). Hydrilla has been known to cause operational problems with hydropower plants and Duke has an aggressive aquatic vegetation control program for its reservoirs. In 2014, Duke submitted a permit request to stock triploid Grass Carp into the approximately 21-mile reach of river between Lake Tillery Dam and Blewett Falls Lake. Because the NCWRC had not previously permitted Grass Carp stockings in riverine systems due to movement concerns, Inland Fisheries staff partnered with Duke to try to address some of these concerns.

Project Objectives:

- Determine Grass Carp movement patterns in the Pee Dee River and its major tributaries (Rocky River and Little River) downstream of Lake Tillery Dam.
- Monitor for Grass Carp escapement through Blewett Falls Dam into the coastal Pee Dee River.



Approximate receiver location sites in the Pee Dee, Rocky, and Little rivers (map by Lawrence Dorsey)

Blewett Falls Dam, shown during a flood in April 2017. There were 68 days of spillover here during the study period (Photo by J. Dycus, Duke Energy)

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Methods:

- Twelve acoustic receivers were placed into the Pee Dee River: ten between Blewett Falls Lake and Lake Tillery Dam and two downstream of Blewett Falls Dam.
- Twenty-four triploid Grass Carp were implanted with individually coded sonic transmitter tags and released in June 2014 at the Red Hill Boating Access Area (NC 109) between Lake Tillery Dam and Blewett Falls Lake.
- The receivers created a digital record whenever a transmitter tag pinged within the receiver's range. Tagged Grass Carp movements were tracked by analyzing detection data collected by the receivers over a period of approximately one year.

District 6 Fisheries Biologist Lawrence Dorsey transferring detection data collected by a receiver to a field computer using a wireless connection in July 2014. Each receiver was mounted into a concrete base and secured to a shoreline tree to prevent loss during high flows. (Photo by Troy Thompson)

Results so Far:

- Although quite a bit of both upstream and downstream movement was detected initially, 17 fish were detected for 10 days or less after the stocking date. These fish may have died from post-stocking stress, shed the tag, or settled in an area away from the receivers. Another five fish were constantly detected by receivers at the release site. These fish likely died soon after release.
- Six fish presumably moved out of the Pee Dee River, although four of these were detected for less than five days after stocking. Of the six, five were last detected moving downstream towards Blewett Falls Lake and one was last detected moving upstream into the Rocky River.
- No fish were detected in the coastal portion of the Pee Dee River downstream of Blewett Falls dam.

NCWRC staff and NCSU students implanted (24) 12-inch triploid Grass Carp with individually coded sonic transmitter tags on June 9, 2014. Each transmitter has a unique code that "pings" every 60 seconds. (Photo by Troy Thompson)

What's next?:

- This was a companion study along with other Grass Carp movement projects conducted by NCWRC staff on Tar River Reservoir and the Eno River. Knowledge gained will allow the NCWRC to provide better guidance when reviewing triploid Grass Carp stocking applications.
- Although this project was a first step, further research is needed to determine the escapement potential of Grass Carp, and ultimately, their potential impacts on the native vegetation and fish assemblages of coastal rivers.

For more information, contact:

Troy Thompson, District 6 Fisheries Biologist I
(704) 694-2907 troy.thompson@ncwildlife.org