Fisheries Research Fact Sheet

An Overview of the Shearon Harris Reservoir Habitat Enhancement Project

November 2018

Shearon Harris Reservoir (Harris Lake) is a 4,151-acre impoundment in the upper Cape Fear River Basin, located approximately 20 miles southwest of Raleigh (Figure 1). The primary function of the reservoir is a cooling source for the Duke Energy Progress nuclear powered electric generating facility; however, its close proximity to a highly urbanized area also makes it a popular destination for anglers. Anglers can access the reservoir using two N.C. Wildlife Resources Commission (Commission) owned boat ramps. Harris Lake supports multiple sportfish populations, with an angler creel survey showing Largemouth Bass followed by crappie as the most popular species sought by anglers. It was ranked 4th in the nation for best bass lakes in America and has been in the top 10 in the Southeast since 2017.

Largemouth Bass catch rates during Commission sampling are normally above average for a Piedmont reservoir. It also has an excellent crappie fishery with catch rates above average during Commission sampling. The undeveloped shorelines provide a large amount of available fish habitat for anglers.

Harris Lake has diverse aquatic habitat, including rock outcroppings, flats, roadbeds and aquatic vegetation. Hydrilla, classified as a federal and state noxious weed, is present in the reservoir (Figure 2). Hydrilla was first reported in Harris Reservoir in 1988 and by the mid-1990s became the dominant submerged aquatic plant species in the reservoir covering just under 1,000 acres.

A recent survey (September 2018) by the N.C. Division of Water Resources found 232 acres of standing hydrilla in the lake. The sale of hydrilla is prohibited in the United States as well as North Carolina and possession is also prohibited without a permit. Hydrilla infestations lead to several undesirable events, including the loss of municipal and recreational use of waters and habitat alterations. Advanced infestations decrease the available volume of water, inhibit recreational activities, and have the potential to foul water withdrawal intakes, along with outcompeting native vegetation. Docks and boat slips can become unusable during the summer and fall months when surrounded with dense hydrilla growth.

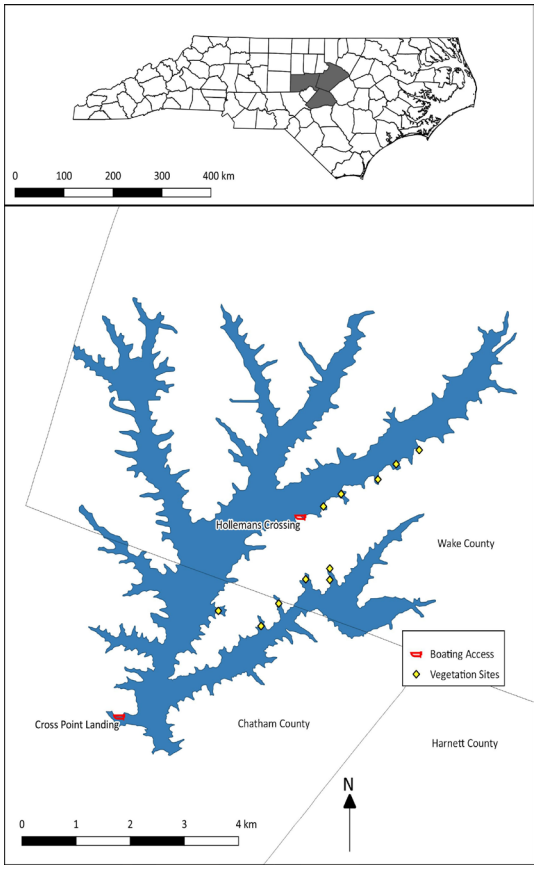

Figure 1. Map of Harris Lake showing the two boat ramps and native vegetation sites

Figure 2. Hydrilla underwater (Photo: David J Moorhead, University of Georgia Bugwood)

The N.C. Division of Water Resources (Aquatic Weed Program) and Duke Energy have initiated stocking Grass Carp in Harris Lake to control hydrilla. Hydrilla is not causing operational problems at Harris Lake; yet, due to the central location of Harris Lake and the close proximity to the Cape Fear River, the lake is deemed as a source of hydrilla and warrants high priority for hydrilla management and ultimate removal. In spite of the negative impacts, the spread of hydrilla throughout the lake has created a significant amount of habitat that is being utilized by fish and other aquatic animals.

Lyngbya, a benthic cyanobacteria, is also present in the reservoir and was estimated to cover approximately 150 acres in 2015 and 180 acres in 2018 (Figure 3). Lyngbya is aesthetically displeasing and forms dense benthic and surface mats. It also produces toxins that can cause skin irritation. Unfortunately, Lyngbya is not normally consumed by Grass Carp, yet slowly introducing Grass Carp into the reservoir while establishing native vegetation should help reduce the spread of Lyngbya. Some beneficial native vegetation, such as pickerelweed, are also not preferred by Grass Carp and have been shown to compete with Lyngbya.

Figure 3: Lyngbya (Photo: Mark A. Heilman)

Figure 4: Example of a fenced exclosure to protect beneficial vegetation from herbivores

Figure 4a: Close-up view of a fenced exclosure to protect beneficial vegetation from herbivores

Project Objective:

- To develop an aquatic habitat enhancement project in Harris Lake and replace exotic vegetation consumed by Grass Carp with beneficial native aquatic vegetation and artificial habitat, mitigating the loss of one type of habitat with another.

Methods:

- Gather input from the public and partners to enhance habitat throughout the lake through public meetings and outreach.
- Deploy approximately 30 acres of artificial and natural structure (400 to 700 fish attractors) at numerous sites throughout the lake.
- Establish founder colonies of native aquatic vegetation totaling approximately 1 acre. Some founder colonies of native vegetation will be enclosed with PVC fencing (Figures 4 and 4a) to protect them from herbivores, such as turtles and, in particular, Grass Carp.

Results:

Figure 5: Example of fish attractors being placed into Harris Lake

- Recently, 50 artificial fish attractors resembling tree habitat (Figure 5) were placed at various locations around the lake. They were marked with GPS coordinates. These fish attractors were added to some new sites and to some previously established sites throughout the lake and currently total 13 sites, all of which can be found at: https://www.ncpaws.org/wrcmaps/WRCFishAttractors.htm.
- Additionally, some of the attractors placed in shallower water are marked with buoys.
- Most of the fish attractor sites contain numerous fish attractors grouped together in a relatively close configuration, with plans to expand most of these sites into larger reef type areas in addition to establishing new sites.
- In addition to the artificial fish attractor sites, 11 sites have been planted with native aquatic vegetation such as water willow, maidencane, pickerelweed, arrowhead, soft-stem bulrush, white water lily, spatterdock, watershield, eelgrass and pondweed (Figure 1). Submersed plants needing protection from herbivores, such as eelgrass and pondweed, were planted within exclosures at many of the sites.
- Habitat enhancement work will intensify in the summer of 2019 with the addition of more fish attractors and native aquatic vegetation plantings.

In Summary:

- Research has shown that removal of hydrilla does not change overall population levels, abundance, or size structure of Largemouth Bass, yet changes their behavior and ultimately how they are fished for. This project is attempting to mitigate the loss of one type of habitat with another and provide beneficial habitat without the undesirable consequences of hydrilla.

What's Next:

- Continue expanding and intensifying habitat work over the next several years.
- Continue to gather input from the public to strategically place artificial habitat and optimize habitat enhancement work.
- Continue to evaluate relative abundance, size distribution, and age and growth data in the Largemouth Bass and crappie fisheries to monitor any trends that could indicate a change in what is now an outstanding fishery for both species.

For more information, contact:

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