



Discontinued: Red Drum Fishery in Hyco Lake

April 2019

The N.C. Wildlife Resources Commission (Commission) is discontinuing efforts to create a Red Drum fishery in Hyco Lake after studies revealed poor survival after several tests. Although Red Drum are typically a salt water species, fry have been successfully reared and acclimated to living in freshwater warmwater effluent reservoirs in Texas. However, Red Drum have certain requirements for survival in freshwater. Specifically, they need a minimum level of water hardness (a measure of the concentration of minerals in the water, including calcium and/or magnesium). Hyco Lake was selected for this experiment because it was believed the heated effluent from utility operations would create a suitable environment for Red Drum. Heated effluent from utility operations typically cause water to evaporate at a higher rate resulting in an increase in water hardness and warmer water temperatures year-round. Recently, the Commission monitored water hardness and performed several survival studies of juvenile and adult Red Drum in Hyco Lake water to determine whether a stocking program was feasible.

Objectives:

- To determine if Hyco Lake is suitable for Red Drum by monitoring water quality throughout the year.
- To determine survival of Red Drum at various life stages in water collected from Hyco Lake.

Methods:

- Water samples were collected and analyzed in October and November 2017 and in August and October 2018.
- Red Drum fingerlings(1–2 inch fish) collected from the North Carolina Aquarium at Pine Knoll Shores were placed into tanks containing water collected from Hyco Lake and tanks containing water with elevated levels of water hardness. Water quality and fish survival in each tank were recorded daily.
- Fingerlings were also placed in a mesh cage moored near the marina at Hyco Lake. Water quality and fish survival were recorded daily.
- Adult Red Drum were collected from coastal North Carolina, transitioned to freshwater at the Edenton National Fish Hatchery, and transported to Hyco Lake (Picture 2). Fish were acclimated and then placed into large cages suspended in Hyco Lake (Picture 3, next page). Water quality and fish survival were recorded daily.



Picture 1. A Red Drum collected from the coast



Picture 2. Hatchery staff Barry Midgette carefully, but quickly, transfers Red Drum from the hatchery truck to the live well on the pontoon boat.



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Results:

- Water hardness was below the target range throughout the study period.
- Results from the tank study revealed that only 24% of fish placed in Hyco Lake water had survived after four days, whereas 76% of fish placed in water with elevated levels of water hardness survived after four days.
- Only 1% of fingerlings placed into the mesh cage in Hyco Lake survived after 48 hours.
- None of the adult fish placed in cages in Hyco Lake survived after 48 hours during the first replication and 56% of fish survived after 72 hours during the second replication.
- The high mortality observed during all survival tests, in addition to the water quality results, leads biologists to conclude that Hyco Lake will not support a Red Drum fishery.

What's next?:

- While the Commission is disappointed that a Red Drum fishery is not feasible in Lake Hyco, biologists have already focused their efforts on providing other fishing opportunities. The Commission will begin stocking Bodie Bass (a cross between Striped Bass and White Bass) in Hyco Lake (Picture 4).
- Once this fishery has become established, Commission biologists will closely monitor the native sportfish populations as well as the new Bodie Bass population.
- Biologists also plan to enhance existing artificial structure sites as well as add new ones to the lake. In addition, the Commission will focus on establishing native vegetation in certain areas of the lake to improve nursery habitat for young fish.

For more information:

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Picture 3. The giant cages used for the adult Red Drum survival test can be seen easily when the pontoon boat is on land. These cages are carefully flipped and lowered into the water and allow biologists to test survival without releasing fish into the lake.



Picture 4. Commission biologist Kelsey Lincoln holds up two hybrid Striped Bass (Bodie Bass) caught out of a Piedmont lake in February 2019.