Fisheries Research Fact Sheet

Assessment of Catfish Populations in the Pungo River, Newport River and Great Lake, 2019

October 2019

North Carolina is home to a diversity of catfish species, including several native catfish species popular with anglers such as White Catfish, Brown Bullhead, Flat Bullhead, and Yellow Bullhead. These species play vital ecological roles as predators, host fish, and prey in aquatic ecosystems. However, abundances of these species have decreased drastically as significant increases in the numbers of nonnative Flathead Catfish, Blue Catfish, and Channel Catfish have been observed in the larger river systems of North Carolina.

Fortunately, some smaller coastal river systems have not been subjected to introductions of nonnative, invasive catfish species. These rivers are unique because they are some of the few rivers within our state having catfish populations composed entirely of native catfish species. This is noteworthy, as invasive catfish species in coastal North Carolina are widespread and threaten the conservation of native and migratory fish populations through predation and competition. Conservation of native catfish and protection within the few systems where native catfish populations persist is important to the heritage of North Carolina and critical to maintaining aquatic biodiversity.

In North Carolina, catfish are not classified as game fish, and may be taken using hook and line, grabbling, trotlines, set-hooks, jug-hooks, and a variety of county-specific special devices. Additionally, in coastal North Carolina there are no length limits for catfish, and the daily creel limit is 200 in aggregate with other nongame fish. Conservation efforts are essential because native catfish are a rapidly dwindling resource in North Carolina that is not easily restored once compromised.

In 2019, NCWRC biologists sampled catfish in the Pungo River, Newport River, and Great Lake with electrofishing techniques to update population information on native and invasive catfish species.

Objectives:

- Document the status of catfish populations in the Pungo River, Newport River and Great Lake.
- Confirm the absence of invasive catfish species.
- Evaluate the need for regulation proposals.

Methods:

- 11 sites on the Pungo River, 5 sites on the Newport River and 8 sites in Great Lake were sampled for catfish in 2019. (Figure 1)
- High pulse (120 pulses per second, pps) and low pulse (15 pulses per second) electrofishing methods were employed.
- Once fish were collected and identified, length and weight were recorded.
- Catch per unit effort (CPUE) as defined as number of fish per hour (fish/h) was calculated.

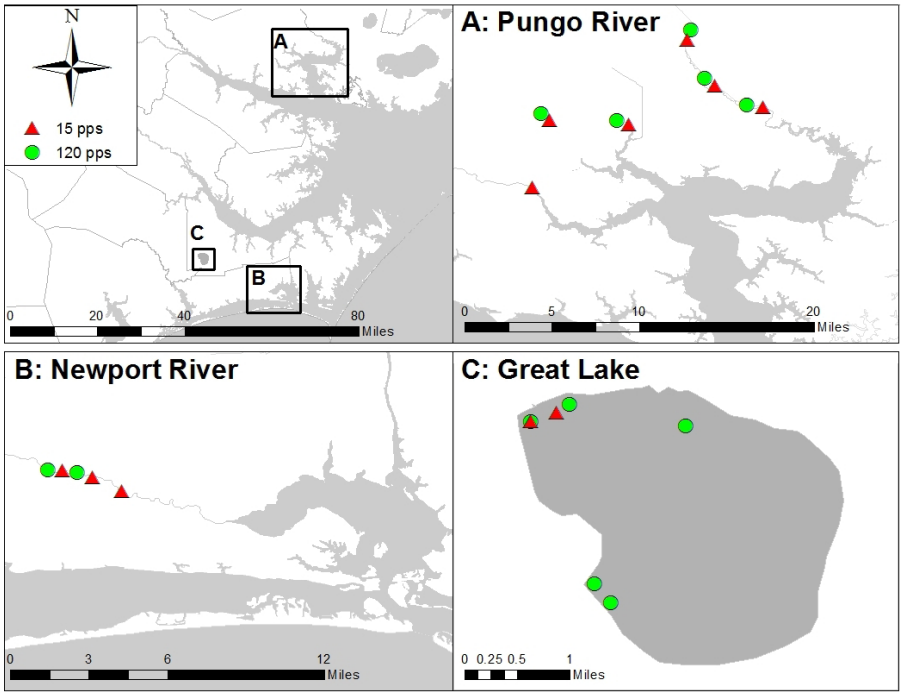

Figure 1.–Distribution of high and low pulse sample sites in the Pungo River, Newport River and Great Lake, NC in 2019.

Results:

- Field staff collected 111 White Catfish and 25 Brown Bullhead in the Pungo River, 71 White Catfish in the Newport River and 26 Yellow Bullhead in Great Lake. An additional sportfish survey was conducted in Great Lake to inventory the different species inhabiting that lake, which included Largemouth Bass (n=7), Bluegill (n=7), Warmouth (n=10), Yellow Perch (n=6), Bowfin (n=1), and Pirate Perch (n=1).
- Notably, no invasive catfish, specifically Flathead Catfish or Blue Catfish were observed in the Pungo River, Newport River, or Great Lake. This finding adds these systems to the short list of coastal rivers that have not been impacted by these invasive, nonnative species which includes the New River and White Oak River.
- In the Pungo River, CPUE for White Catfish using low frequency methods was 54.4 fish/h and 1.2 fish/h using high frequency methods. CPUE for Brown Bullhead in the Pungo River was 10.9 fish/h using low frequency methods and 0.8 fish/h using high frequency methods (Table 1).
- White Catfish CPUE in the Newport River was 76.3 fish/h using low frequency methods and 0 fish/h using high frequency methods.
- No White Catfish or Brown Bullhead were found in Great Lake. Instead, the catfish population that inhabits Great Lake was dominated by Yellow Bullhead. Yellow Bullhead CPUE in Great lake using low frequency methods was 6.5 fish/h and 2.2 fish/h using high frequency methods.
- In the Pungo River, the White Catfish length distribution ranged from 3–19 inches with 36% between 10-12 inches and the Brown Bullhead length distribution ranged from 10–16 inches with 80% between 13–15 inches (Figure 2). In the Newport River, the White Catfish length distribution ranged from 3–19 inches with 40% between 4–5 inches and 25% between 13–16 inches (Figure 3). The difference between the White Catfish length distributions in the Pungo and Newport rivers is most likely due to decreased catch efficiency due to the variable salinities that are characteristic of these coastal rivers, but could also be indicative of higher recruitment in the Newport River. In Great Lake, the Yellow Bullhead length distribution ranged 5–15 inches with 69% between 5–7 inches. (Figure 4, next page)

Species	Pungo River			Newport River			Great Lake		
		CPUE (SE)			CPUE (SE)			CPUE (SE)	
	Catch	15pps (n=5)	120pps (n=6)	Catch	15pps (n=3)	120pps (n=2)	Catch	15pps (n=2)	120pps (n=6)
White Catfish	111	54.4 (30.2)	1.2 (0.8)	71	76.3 (31.1)	0	0	0	0
Brown Bullhead	25	10.9 (4.3)	0.8 (0.8)	0	0	0	0	0	0
Yellow Bullhead	0	0	0	0	0	0	26	6.5 (2.5)	2.2 (0.8)

Table 1. Catch and catch per unit effort (CPUE) of catfish species sampled in the Pungo River, Newport River and Great Lake, NC.

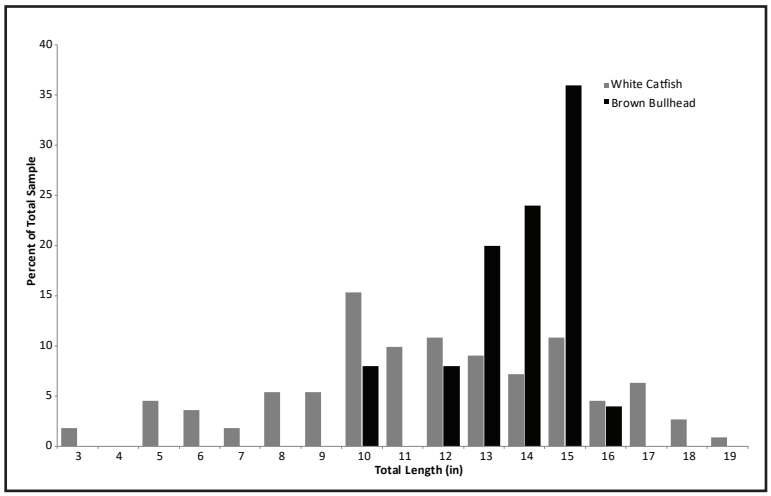

Figure 2.—Length-frequency distribution of White Catfish (n=111) and Brown Bullhead (n=25) collected in the Pungo River, 2019.

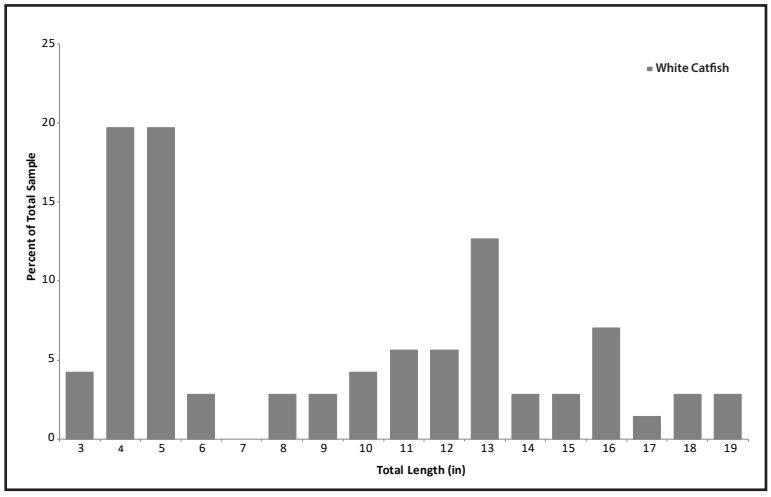

Figure 3.—Length-frequency distribution of White Catfish (n=71) collected in the Newport River, 2019.

What's next?:

- Since native catfish populations are declining throughout the state, assigning gamefish status to native catfish species and/or proposing creel limits that would protect native species is being be considered.
- Despite the differences in catfish species diversity between these systems, they are some of the few systems in the central coast of North Carolina that support native populations of catfish. Additional protective status of rivers that remain undisturbed by invasive catfish should be considered, including measures prohibiting stocking nonnative species within these drainages.
- Continue to monitor catfish populations every 3–5 years to document changes in fish assemblages and water quality of the dynamic tidewater areas characteristic of the coastal plain.

For more information:

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A Brown Bullhead sampled in the Pungo River, 2019

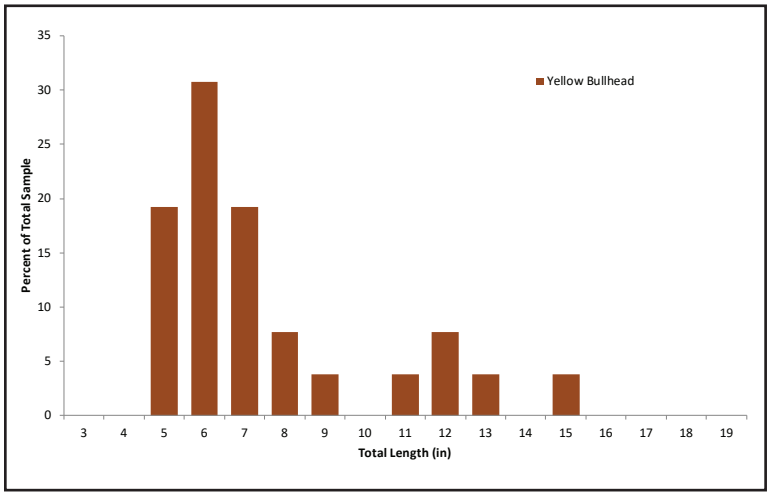

Figure 4.—Length-frequency distribution of Yellow Bullhead (n=26) collected in Great Lake, 2019.

NCWRC Fisheries Biologist Courtney Buckley with a White Catfish sampled in the Newport River, 2019.