



# Fisheries Research Fact Sheet

## Sportfish Survey in the New River, Onslow County-2018

April 2019



The lower New River in coastal North Carolina is well known by anglers as an excellent destination to fish for Spotted Seatrout, Red Drum and flounder. Conversely, the freshwater sportfish populations upstream of Jacksonville, including Largemouth Bass and sunfishes, remain underutilized despite being highly sought after by anglers in other North Carolina coastal rivers. Originating in the coastal plain and flowing directly into the Atlantic Ocean, the New River is a unique coastal river that begins and ends in Onslow County. There is a well-defined estuarine zone from Jacksonville downstream to the mouth near New River Inlet. During wet periods, the estuarine zone moves further downstream away from Jacksonville as freshwater flows push the salt wedge farther downriver.

While most freshwater fish in coastal rivers can tolerate moderate changes in salinity, water temperature and dissolved oxygen, the harsh fluctuations in water conditions associated with hurricanes can result in fish kills. Most hurricane-related fish kills are associated with declines in dissolved oxygen. Hypoxic conditions, which can lead to fish stress, occur when dissolved oxygen is below 2 mg/L. While prolonged stress can lead to mortality, it is usually extended periods of anoxic conditions (dissolved oxygen at or near 0 mg/L) that result in fish kills.

Hurricanes are not uncommon in coastal North Carolina, the most recent being Hurricane Florence, which made landfall on Sept. 14, 2018. Hurricane Florence's impacts began before landfall and lasted over three weeks in southeastern North Carolina. Coastal rivers experienced widespread hypoxic conditions through the end of September and early October. Between Nov. 6-19, 2018, sportfish were surveyed in the New River to evaluate the status and size structure of the populations, as well as to document any hurricane-related impacts.

### Survey Objectives:

- Inventory sportfish populations in the New River and evaluate the need for population improvements.

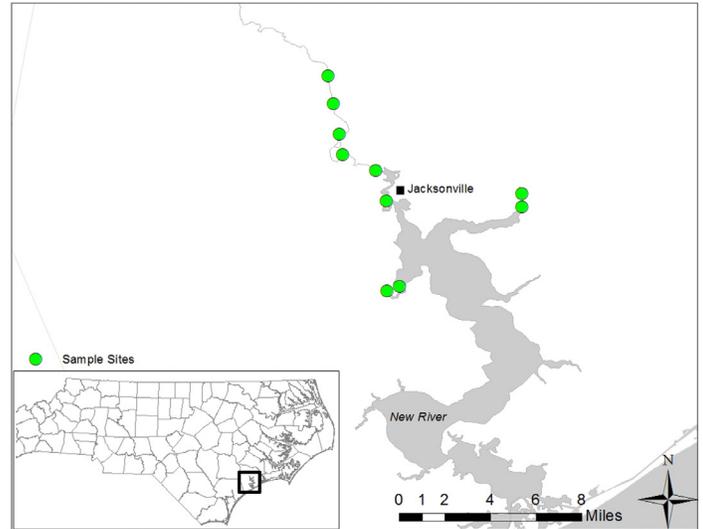


Figure 1. Distribution of sportfish sample sites in the New River, 2018.



Largemouth Bass (Duane Raver)



Redear Sunfish (Duane Raver)



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## Methods:

- 10 sites on the New River from Half Moon to near Jacksonville were sampled for sportfish using electrofishing methods (Figure 1).
- Once fish were collected and identified, length and weight were recorded.
- Fin clips were collected from Largemouth Bass and Striped Bass for genetic analysis.
- Catch per unit effort (CPUE) as defined as fish per hour (fish/h) was calculated.

## Results:

- Field staff collected 33 Largemouth Bass, 39 Redear Sunfish, 10 Pumpkinseed, 2 Bluegill, 1 Chain Pickerel and 1 Striped Bass.
- Largemouth Bass CPUE was 6.2 fish/h, Redear Sunfish CPUE was 8.3 fish/h and Pumpkinseed CPUE was 2.1 fish/h (Table 1).
- While no large fish kills were reported in the New River after Hurricane Florence, hypoxic conditions were observed in some locations by the NC Division of Environmental Quality on Sept. 27, 2018 (0.7-4.4 mg/L). These low oxygen conditions most likely resulted in isolated fish kills in the New River. Of Largemouth Bass collected, 24% were less than 8 inches (200 mm), while 58% of Largemouth Bass were between 11-15 inches (275-375 mm). Approximately 21% were of harvestable size based on the existing regulations (>14 inches or 350 mm; Figure 2).
- Largemouth Bass collected had an average weight of 1 pound (445 g) and ranged from 0.02-3 pounds (96-1380 g).
- The Redear Sunfish ranged from 4-10 inches (100-250 mm) with 77% of Redear Sunfish between 5-9 inches, or 125-225 mm (Figure 3).

## What's next?:

- It is likely that isolated fish kills occurred as a result of post Hurricane Florence induced hypoxia in the New River. Sportfish populations in these areas are expected to rebound through natural recruitment over the next few years.
- Monitoring of sportfish populations in the New River will be conducted at least every three years to document changes in fish assemblages and size structure.

## For more information, please contact:

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| Species         | Effort (h) | Catch | CPUE |
|-----------------|------------|-------|------|
| Largemouth Bass | 5.3        | 33    | 6.2  |
| Redear Sunfish  | 4.7        | 39    | 8.3  |
| Pumpkinseed     | 4.7        | 10    | 2.1  |
| Bluegill        | 4.7        | 2     | 0.4  |
| Chain Pickerel  | 4.7        | 1     | 0.2  |
| Striped Bass    | 4.7        | 1     | 0.2  |

Table 1. Catch and catch per unit effort (CPUE) of sportfish species sampled in the New River, NC.

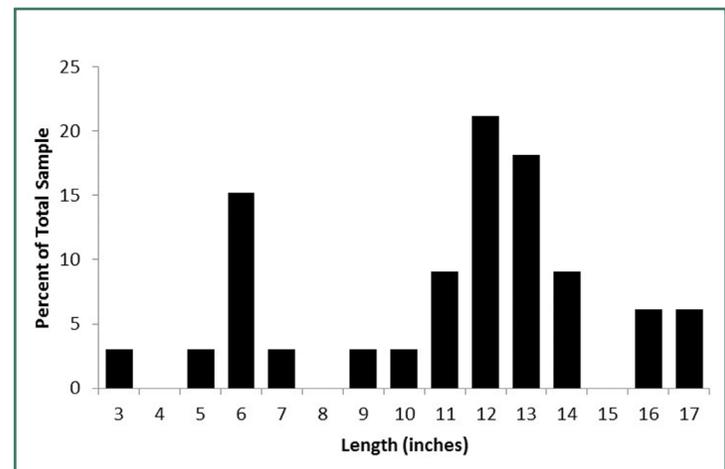


Figure 2. Length-frequency distribution (N = 33) of Largemouth Bass collected in the New River, 2018.

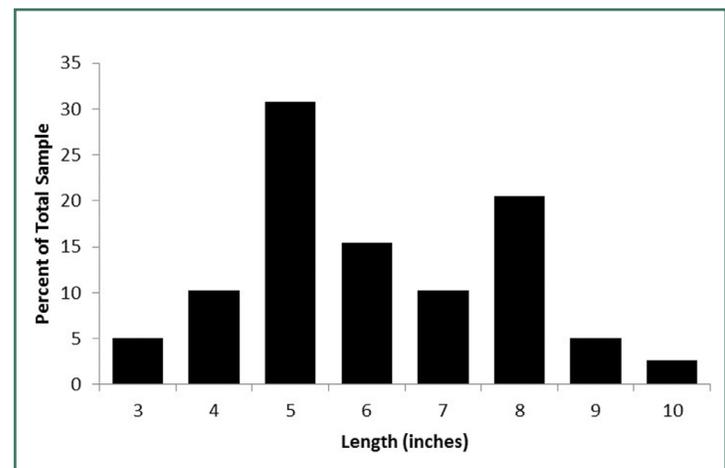


Figure 3. Length-frequency distribution (N=39) of Redear Sunfish collected in the New River, 2018.

