



SURVEY SUMMARY
NCWRC – Inland Fisheries Division – Coastal Region



Town Creek Sport Fish Survey, 2023

NEED

The Town Creek watershed experienced hypoxia following Tropical Storm Idalia in late August 2023. Though monitored annually for Blueback Herring and other anadromous fish and stocked with White Catfish in 2021, Town and Rice’s Creeks have not been frequently monitored for sport fish. A survey was needed to determine if mitigative actions for hypoxia are necessary and to inform management strategies that maintain or enhance angling opportunities.

OBJECTIVES

Evaluate relative abundance and size-structure of Largemouth Bass, sunfish, and other species of angling importance in Town Creek and tributary waters.

METHODS

Personnel: April Boggs Pope and Kyle Rachels – District 4 Fisheries Biologists

Waterbody: Town and Rice’s Creeks – 10 sampling sites.

Fish Sampling Gear: Boat-Mounted Electrofishing (Smith-Root Apex, 120 PPS, 4.5–6 kW)

Other Gear Utilized: YSI meter to measure water temperature (°C), conductivity ($\mu\text{S}/\text{cm}$), dissolved oxygen (mg/L), % saturation, salinity (ppt).

Species of Primary Interest: Largemouth Bass; Sunfish

Sample Date(s): October 2023

Funding Source: Federal Aid in Sport Fish Restoration and agency license receipts.

Project Name in BIODIE Fish: D4 Rivers

Citation:

Boggs Pope, A., and K. Rachels. 2024. Town Creek Sport Fish Survey, 2023. North Carolina Wildlife Resources Commission, Federal Aid in Sport Fish Restoration, survey summary, Raleigh.

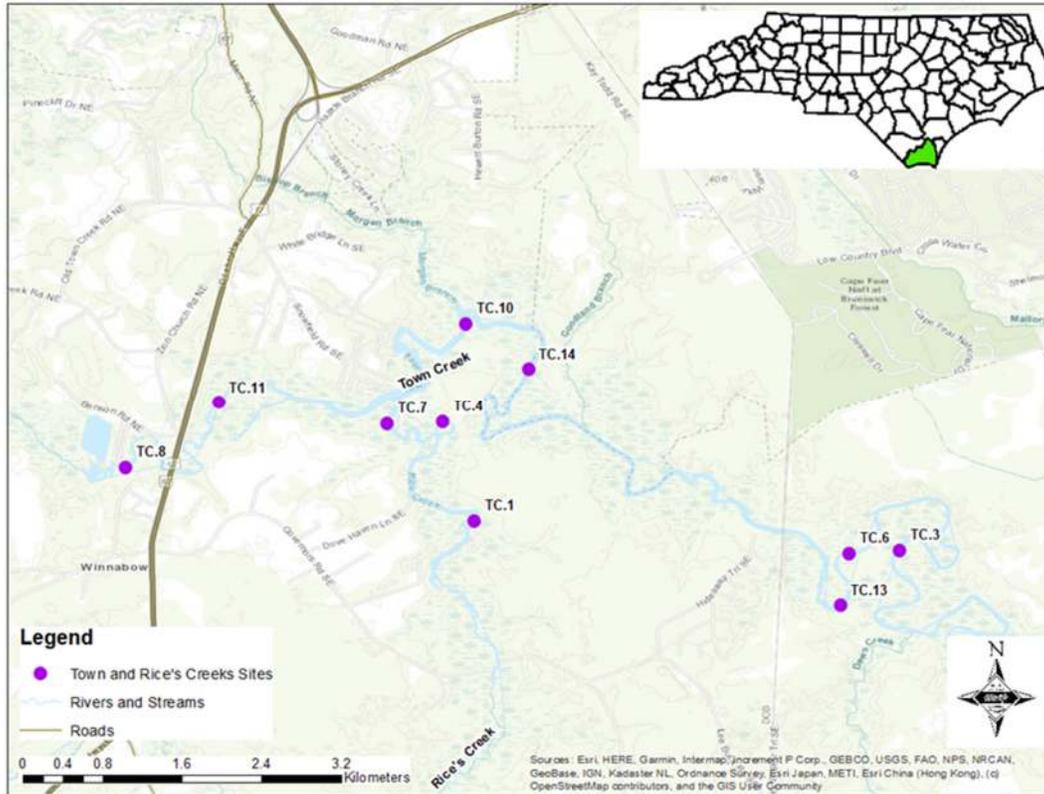


SURVEY SUMMARY

NCWRC – Inland Fisheries Division – Coastal Region



STUDY AREA



BIOLOGICAL OBSERVATIONS

Sampling at 10 sites for 1.7 h resulted in the collection of 315 fish from 14 species (Tables 1 and 2). The most abundant species observed was Redear Sunfish ($n = 132$). Sampling in the downstream portion of Town Creek was limited by salinity, as we were unable to effectively sample in areas where salinity was > 2.5 ppt, beginning just upstream of and including Dews Creek. Salinity was not recorded in areas where it impeded sampling.

Electrofishing at 10 sites for a total of 1.7 h yielded 42 Largemouth Bass. Overall mean catch per unit effort (CPUE) (SE) was 24.9 (4.8) fish/h (Figure 1). Total length was variable, ranging from 166mm to 514mm, with a mean of 299mm (Figure 2). Mean relative weight for the captured Largemouth Bass was 89 (Figure 3).

Five species of sunfish were captured, including Bluegill ($n = 53$), Bluespotted Sunfish ($n = 7$), Flier ($n = 2$), Redear Sunfish ($n = 132$), Spotted Sunfish ($n = 18$), and Warmouth ($n = 18$). Eight sunfish could not be identified to species due to their small size and two sunfish were identified as hybrids. Bluegill overall mean CPUE (SE) was 31.4 (7.4) fish/h. Bluegill mean relative weight was 80. Redear Sunfish overall mean CPUE (SE) was 78.3 (14.4) fish/h. Redear mean relative



SURVEY SUMMARY

NCWRC – Inland Fisheries Division – Coastal Region



weight was 78. Spotted Sunfish overall mean CPUE (SE) was 10.7 (6.0) fish/h. Spotted Sunfish mean relative weight was 112. Warmouth overall mean CPUE (SE) was 10.6 (3.0) fish/h. Warmouth mean relative weight was 86. The majority of Bluegill were smaller than 150 mm total length. The modal size classes for Redear Sunfish were 160–170mm and 170–180mm.

Other inland game fish captured included Chain Pickerel ($n = 3$) and Yellow Perch ($n = 1$). Five species of nongame fish were captured: Bowfin ($n = 16$), Golden Shiner ($n = 5$), Longnose Gar ($n = 1$), Pirate Perch ($n = 2$), and Striped Mullet ($n = 5$). No ictalurids were captured.

Minimal effects from Tropical Storm Idalia were observed on fish populations in the Town Creek watershed, indicating that no mitigative actions are necessary. Though dissolved oxygen levels remained low (< 5.0 mg/L), populations of inland game fish in the Town Creek watershed were resilient and mean relative weights indicated adequate body conditions.

MANAGEMENT RECOMMENDATIONS

1. No mitigative actions due to Tropical storm Idalia are necessary.
2. Conduct low frequency boat electrofishing within the next 3 years to monitor species of ictalurids.
3. Incorporate methods for sampling inland game fish when salinities exceed 2.5 ppt.



SURVEY SUMMARY
NCWRC – Inland Fisheries Division – Coastal Region



TABLE 1. Sample site information. All sites were accessed from the Rice's Creek Boating Access Area.

Sample date	Site name	Latitude	Longitude	Effort (s)	Dissolved Oxygen (mg/L)	Salinity (ppt)
10/17/2023	TC.1	34.152512	-78.064122	601	1.5	0.1
10/17/2023	TC.4	34.161126	-78.067195	611	1.9	0.1
10/17/2023	TC.7	34.161615	-78.072084	600	2.3	0.1
10/17/2023	TC.8	34.156978	-78.096563	612	2.6	0.1
10/17/2023	TC.11	34.162891	-78.087619	611	2.3	0.1
10/17/2023	TC.10	34.171106	-78.066063	610	2.4	0.1
10/18/2023	TC.6	34.149108	-78.030756	596	3.9	0.9
10/18/2023	TC.3	34.149715	-78.025807	610	4.2	1.7
10/18/2023	TC.13	34.140299	-78.026808	616	3.5	0.8
10/18/2023	TC.14	34.142028	-78.024888	613	2.8	0.1



SURVEY SUMMARY
NCWRC – Inland Fisheries Division – Coastal Region



TABLE 2. Summary statistics of fish collected with boat electrofishing in the Town Creek watershed in 2023.

Common name	Scientific name	Number collected	Minimum total length (mm)	Maximum total length (mm)	Mean total length (mm)	Mean Relative Weight
Inland game fish						
Bluegill	<i>Lepomis macrochirus</i>	53	34	210	120	80
Bluespotted Sunfish	<i>Enneacanthus gloriosus</i>	7	54	76	67	-
Chain Pickerel	<i>Esox niger</i>	3	332	444	383	90
Flier	<i>Centrarchus macropterus</i>	2	-	-	-	-
Hybrid Sunfish	<i>Lepomis sp.</i>	2	94	124	109	-
Largemouth Bass	<i>Micropterus salmoides</i>	42	166	514	299	89
Redear Sunfish	<i>Lepomis microlophus</i>	132	38	232	171	78
Spotted Sunfish	<i>Lepomis punctatus</i>	18	74	146	105	112
Sunfish	<i>Lepomis sp.</i>	8	28	50	37	-
Warmouth	<i>Lepomis gulosus</i>	18	78	192	133	86
Yellow Perch	<i>Perca flavescens</i>	1	284	284	284	67
Nongame fish						
Bowfin	<i>Amia calva</i>	16	430	540	501	-
Golden Shiner	<i>Notemigonus crysoleucas</i>	5	-	-	-	-
Longnose Gar	<i>Lepisosteus osseus</i>	1	366	366	366	-
Pirate Perch	<i>Aphredoderus sayanus</i>	2	72	72	72	-
Striped Mullet	<i>Mugil cephalus</i>	5	-	-	-	-
Total		315				



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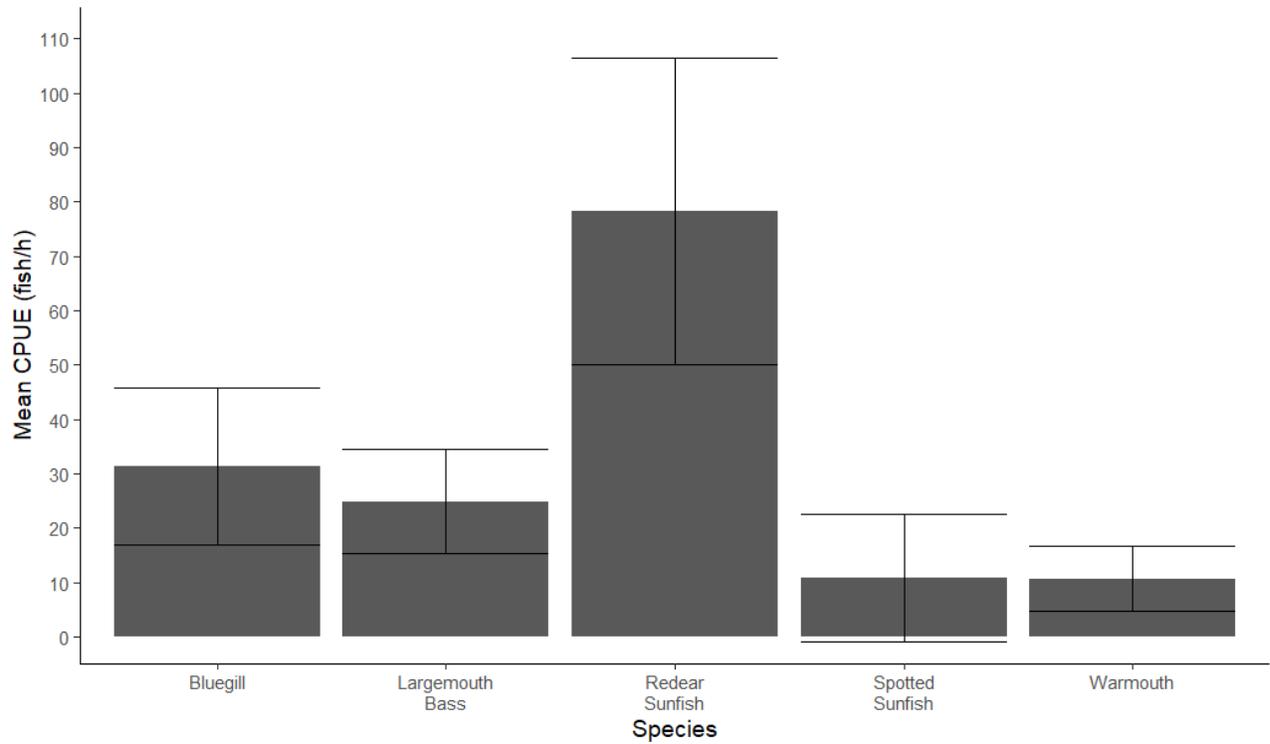


FIGURE 1. Overall catch per unit effort (CPUE \pm SE) for inland game fish with ≥ 15 captures during boat electrofishing of Town Creek and tributary waters, 2023.



SURVEY SUMMARY
NCWRC – Inland Fisheries Division – Coastal Region

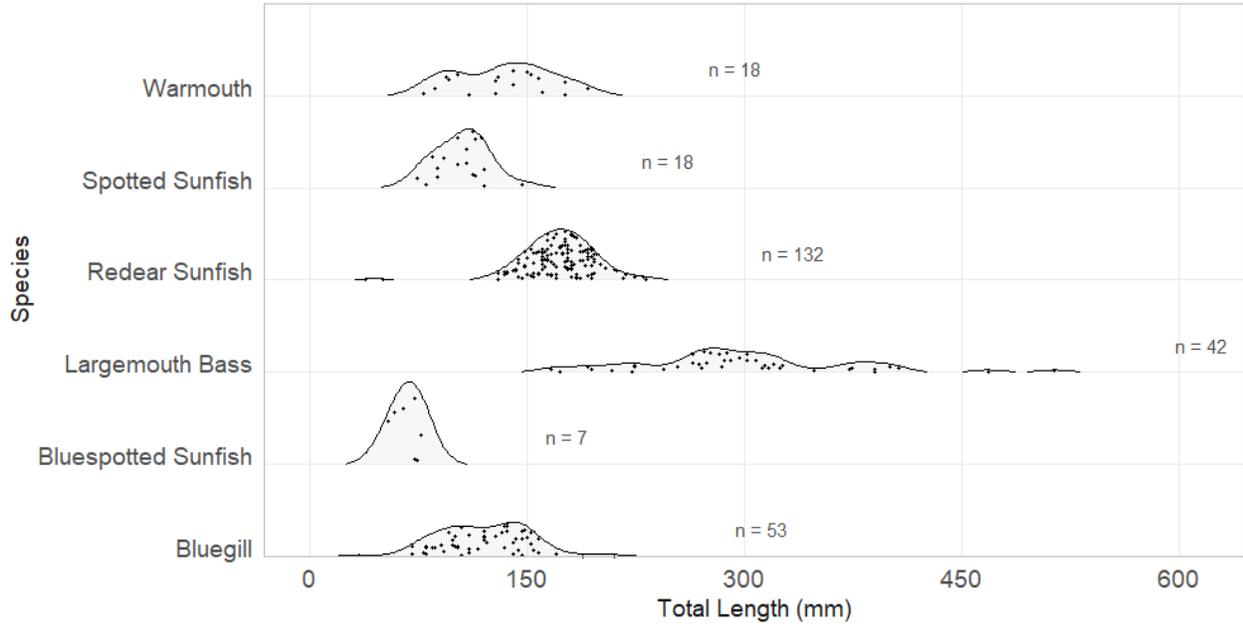


FIGURE 2. Length frequency distribution for inland game fish with ≥ 5 captures during boat electrofishing of Town Creek and tributary waters, 2023.



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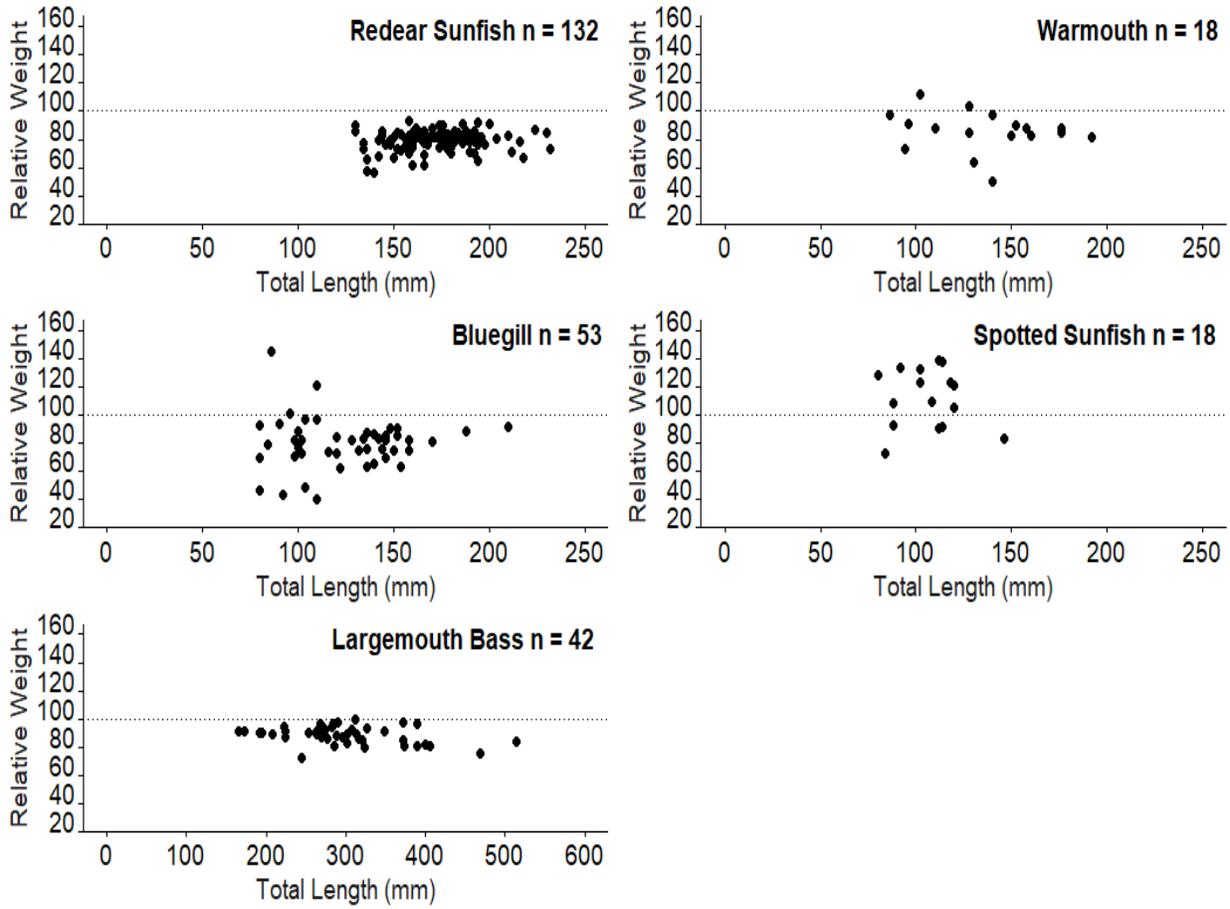


FIGURE 3. Total length versus relative weight for inland game fish with ≥ 15 captures during boat electrofishing of Town Creek and tributary waters, 2023.