



## SURVEY SUMMARY

NCWRC – Inland Fisheries Division – Coastal Region



### Trent River Resident Sport Fish and Catfish Survey, 2022

#### NEED

A targeted catfish survey has never been completed for the Trent River, and the presence of invasive (Blue Catfish, Flathead Catfish) catfish species has not been documented. The most recent resident sport fish survey on the Trent River was completed in 2014. Both surveys were needed considering the rapid expansion of invasive catfish species in North Carolina's coastal river systems, the Trent River's proximity to robust populations of invasive catfish species in the Neuse River, and the subsequent impacts of the expansion these species to native fish populations. Due to lower than anticipated catch rates observed during the August 2022 catfish survey, the catfish survey data were analyzed and reported jointly with the resident sport fish survey completed in October and November 2022.

#### OBJECTIVES

1. Assess the status of resident sportfish and catfish populations in the Trent River.
2. Document the presence of invasive catfish species.
3. Describe population characteristics (PSD, Relative Frequency, Relative Weight) of resident sportfish species when  $\geq 40$  individuals are collected and describe population characteristics of Flathead Catfish and Blue Catfish as data allow.
4. Provide management recommendations.

#### METHODS

**Personnel:** Nick Shaver and Todd VanMiddlesworth – District 2 Fisheries Biologists

**Waterbody:** Trent River – 21 sampling sites (catfish), 37 sampling sites (resident sportfish); some overlap of sites occurred.

**Fish Sampling Gear:** Smith-Root Apex boat-mounted electrofishing unit (both surveys).

Long-handled dipnet with 3/4-in (19mm) mesh.

- Catfish Survey; High Frequency and Low Frequency DC at alternating sites moving downstream, 120 PPS, 10 – 20A, 100 – 350V (High) // 15 PPS, 11 – 55A, 75 – 400V (Low)
- Resident Sportfish Survey; High Frequency DC, 120 PPS, 15 – 70A, 75 – 375V

**Other Gear Utilized:** YSI water quality meter for temperature ( $^{\circ}$ C), dissolved oxygen (mg/L), % saturation, conductivity ( $\mu$ S/cm), salinity (ppt)

**Species of Primary Interest:** Catfish and Resident Sportfish

**Sample Date(s):**

- Catfish Survey: August 1, 2, 10, 17, 18 and 29, 2022
- Resident Sportfish: October 27, November 1, 2, 3, 8, and 16, 2022

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

**Project Name in BIODIE Fish:** Trent River Sportfish Community Survey



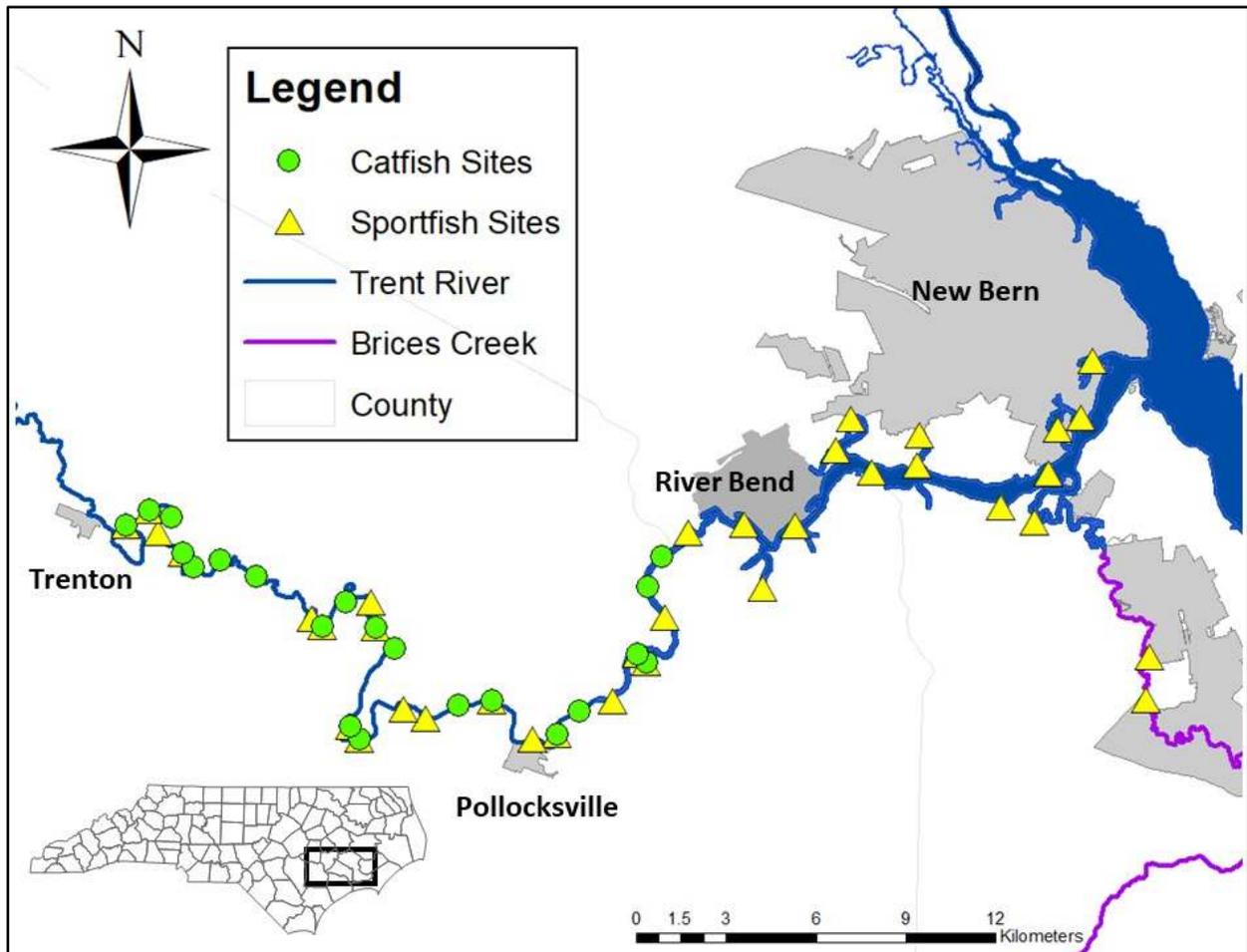
SURVEY SUMMARY  
NCWRC – Inland Fisheries Division – Coastal Region



**Citation:**

Shaver, N., and T. VanMiddlesworth. 2023. Trent River Resident Sport Fish and Catfish Survey, 2022. North Carolina Wildlife Resources Commission. Federal Aid in Sport Fish Restoration, survey summary, Raleigh.

**STUDY AREA**





## SURVEY SUMMARY

NCWRC – Inland Fisheries Division – Coastal Region



### BIOLOGICAL OBSERVATIONS

Water quality parameters were measured prior to each electrofishing site. Salinity exceeded acceptable thresholds for sampling equipment ( $\geq 4.0$  ppt) at 15 of 58 sites (26%). Of the 43 sampling sites where salinity was within the threshold of equipment, 18 sites (42%) had dissolved oxygen levels  $\leq 3.0$ mg/L (Tables 1a and 1b).

The most abundant game fish species collected was Bluegill ( $n = 141$ ) comprising 29% of total fish collected, followed by Redear Sunfish ( $n = 87$ ), and Largemouth Bass ( $n = 70$ ; Table 2). Additional sportfish species collected, but not in sufficient abundance to warrant analysis included Redbreast Sunfish, Pumpkinseed, Chain Pickerel, Warmouth, Yellow Perch, and Black Crappie. Relative abundance (CPUE, fish/h) for Bluegill collected during this survey was 23 fish/h followed by Redear Sunfish (14 fish/h) and Largemouth Bass (12 fish/h; Table 3).

Bluegill total length (TL) ranged 69–212mm with 42 individuals (30%) quality length and 4 individuals (3%) preferred length (Figure 1). Largemouth Bass TL ranged 65–608mm with 35 individuals (64%) quality length, 7 individuals (13%) preferred length, and 2 individuals (4%) memorable length (Figure 2). Redear Sunfish TL ranged 53–300mm with 39 individuals (51%) quality length and 13 individuals (14%) preferred length (Figure 3). Mean relative weights for Bluegill, Largemouth Bass, Redear Sunfish suggest adequate body conditions (Table 3; Figures 4, 5, and 6).

The most abundant catfish species collected during the Trent River catfish survey was Flathead Catfish ( $n = 31$ ) followed by Blue Catfish ( $n = 11$ ) and Channel Catfish ( $n = 5$ ). Multiple year classes of Flathead Catfish were observed and represented the largest size range as well as the largest individuals collected (TL ranged 119–1147mm) followed by Blue Catfish (TL ranged 295–809mm) and Channel Catfish (TL ranged 313–504mm). CPUE of catfish species varied slightly in low pulse (15 Hz) and high pulse (120 Hz) settings (Table 4). No native catfish species were collected or observed during either survey.

### MANAGEMENT RECOMMENDATIONS

1. Survey Trent River resident sport fish and catfish populations every 5 years to document changes in population characteristics.
2. Compare Trent River angler data collected during the 2023 Neuse River Creel Survey to evaluate if environmental conditions may have reduced electrofishing efficiency during this survey.
3. Avoid surveying the Trent River during drought conditions.
4. Maintain current Trent River harvest regulations for sport fish and catfish.



SURVEY SUMMARY  
NCWRC – Inland Fisheries Division – Coastal Region



TABLE 1a. Site and water quality information collected during the catfish survey, August 2022.

Date	Site	Hz	Effort (s)	DO (mg/L)	%DO	Cond (µs)	Sal (ppt)	Temp (°C)
8/1/2022	NR-Trent50	15	1173	8.9	124	232	0.1	28.7
8/1/2022	NR-Trent47	15	1660	7.2	108	169	0.1	27.3
8/1/2022	NR-Trent49	120	2082	8.8	109	188	0.1	27.6
8/2/2022	NR-Trent54	15	1403	6.5	82	178	0.1	27.0
8/2/2022	NR-Trent53	15	1212	7.4	96	176	0.1	27.4
8/2/2022	NR-Trent55	120	1930	7.1	90	223	0.1	27.5
8/2/2022	NR-Trent51	120	1630	6.1	78	245	0.1	28.8
8/10/2022	NR-Trent42	15	1311	1.8	23	174	0.1	28.1
8/10/2022	NR-Trent38	15	1276	2.8	35	172	0.1	29.4
8/10/2022	NR-Trent43	120	1862	1.6	20	172	0.1	28.0
8/10/2022	NR-Trent39	120	1781	2.9	37	181	0.1	29.1
8/17/2022	NR-Trent35	15	1296	2.4	28	163	0.1	25.4
8/17/2022	NR-Trent29	15	1374	2.8	35	196	0.1	26.9
8/17/2022	NR-Trent25	15	1130	3.4	42	246	0.2	27.3
8/17/2022	NR-Trent34	120	1910	2.5	30	175	0.1	25.1
8/17/2022	NR-Trent30	120	2027	2.4	29	193	0.1	25.9
8/17/2022	NR-Trent26	120	2034	3.8	49	203	0.1	27.7
8/18/2022	NR-Trent21	15	1293	3.0	38	1950	0.9	27.2
8/18/2022	NR-Trent22	120	2030	3.1	39	1241	0.7	26.7
8/29/2022	NR-Trent18	15	1131	3.6	45	1850	0.9	27.0
8/29/2022	NR-Trent17	15	838	3.8	47	1970	1.0	27.0



SURVEY SUMMARY

NCWRC – Inland Fisheries Division – Coastal Region



TABLE 1b. Site and water quality information collected during the resident sportfish survey, October–November 2022. Asterisks (\*) indicate site was visited but environmental parameters were not suitable for boat electrofishing gear.

Date	Site	Hz	Effort (s)	DO (mg/L)	%DO	Cond (µs)	Sal (ppt)	Temp (°C)
10/27/2022	Hoods1	120	*	4.7	53	10328	6.6	19.7
10/27/2022	Wilson2	120	*	6.5	74	10806	6.9	19.9
10/27/2022	Wilson1	120	*	8.7	98	10906	7.0	19.5
10/27/2022	Hayward1	120	*	8.8	100	11155	7.1	19.9
10/27/2022	NR-Trent12	120	*	8.4	96	11227	7.2	20.0
10/27/2022	Hayward2	120	*	7.4	85	11545	7.3	20.4
10/27/2022	Brice3	120	*	4.9	55	11660	7.6	19.0
10/27/2022	NR-Trent9	120	*	10.1	116	12064	7.7	19.7
10/27/2022	Brice1	120	*	8.6	95	12374	8.1	19.1
10/27/2022	OldTown1	120	*	7.5	85	13422	8.8	19.2
10/27/2022	FDitch1	120	*	6.3	72	13587	9.0	19.0
10/27/2022	NR-Trent4	120	*	8.4	96	14101	9.3	19.1
10/27/2022	Lawsons Creek	120	*	3.6	40	15807	10.6	19.1
10/27/2022	Island1	120	900	6.9	78	6761	4.1	19.0
11/1/2022	NR-Trent24	120	907	3.9	41	1525	0.9	18.7
11/1/2022	NR-Trent22	120	915	4.4	48	2246	1.3	19.1
11/1/2022	NR-Trent21	120	925	3.3	35	3053	1.8	18.5
11/1/2022	NR-Trent19	120	916	4.6	47	4416	2.7	18.9
11/1/2022	NR-Trent16	120	914	3.6	38	5858	3.6	19.0
11/1/2022	NR-Trent15	120	*	3.6	40	7181	4.5	19.4
11/2/2022	NR-Trent35	120	928	3.2	33	208	0.1	17.6
11/2/2022	NR-Trent34	120	964	3.8	39	211	0.1	17.7
11/2/2022	Little Hell Creek	120	984	2.9	31	218	0.1	18.0
11/2/2022	NR-Trent31	120	1061	3.0	32	404	0.2	18.2
11/2/2022	NR-Trent29	120	1043	3.2	33	1390	0.8	18.5
11/2/2022	NR-Trent27	120	940	4.1	43	1780	1.0	18.8
11/3/2022	NR-Trent39	120	915	3.0	32	218	0.1	17.9
11/3/2022	NR-Trent40	120	930	3.4	35	220	0.1	17.9
11/3/2022	NR-Trent44	120	923	3.0	31	224	0.1	17.7
11/3/2022	NR-Trent43	120	934	3.1	32	224	0.1	17.8
11/8/2022	NR-Trent51	120	937	3.0	32	152	0.1	18.4
11/8/2022	NR-Trent54	120	945	2.8	29	247	0.1	18.0
11/8/2022	NR-Trent52	120	1025	2.7	28	250	0.1	18.5
11/8/2022	NR-Trent55	120	923	2.5	25	252	0.1	18.4
11/16/2022	Brice15	120	954	1.6	16	1008	0.6	16.0
11/16/2022	Brice13	120	953	1.4	15	2326	1.5	15.5



SURVEY SUMMARY  
NCWRC – Inland Fisheries Division – Coastal Region



TABLE 2. Summary statistics of all fish game and nongame fish collected during the Trent River catfish and resident sport fish survey, August 2022 and October–November 2022. Asterisks (\*) indicate no data available or no further analysis warranted.

Species	Number Collected	Percent Collected (%)	Minimum Total Length (mm)	Maximum Total Length (mm)	Mean Total Length (mm)
<b>Game Fish</b>					
Bluegill	141	29.3	69	212	132
Redear Sunfish	87	18.1	53	300	169
Largemouth Bass	70	14.6	65	608	281
Redbreast Sunfish	24	5.0	79	206	143
Pumpkinseed	21	4.4	78	173	127
Chain Pickerel	12	2.5	181	503	361
Warmouth	6	1.2	104	175	134
Yellow Perch	5	1.0	201	305	234
Black Crappie	2	0.4	83	148	116
<b>Nongame Fish</b>					
Bowfin	42	8.7	*	*	*
Flathead Catfish	31	6.4	119	1147	623
Blue Catfish	11	2.3	295	809	467
Gizzard Shad	11	2.3	*	*	*
Channel Catfish	5	1.0	313	504	420
American Eel	4	0.8	*	*	*
Lake Chubsucker	3	0.6	*	*	*
Longnose Gar	3	0.6	*	*	*
Striped Mullet	2	0.4	*	*	*
Common Carp	1	0.2	*	*	*
<b>Total</b>	<b>481</b>	<b>100%</b>			



SURVEY SUMMARY  
NCWRC – Inland Fisheries Division – Coastal Region



TABLE 3. Relative abundance, proportional size indices, and mean relative weight (Wr) of select species collected during the Trent River resident sportfish survey, October–November 2022. Asterisks (\*) indicate no individuals collected of those size groups.

Species	CPUE (fish/hr)	PSD-Q	PSD-P	PSD-M	Mean Wr
Bluegill	23	30	3	*	82
Largemouth Bass	12	64	13	4	90
Redear Sunfish	14	51	17	*	81

TABLE 4. Relative abundance of catfish species collected during the Trent River catfish survey, August 2022.

Species	Number collected	Percent collected (%)	CPUE (fish/hr)	
			15 Hz	120 Hz
Flathead Catfish	31	69	7.0	6.0
Blue Catfish	11	24	3.0	2.0
Channel Catfish	3	7	0.7	0.6
Total	45	100		



SURVEY SUMMARY  
NCWRC – Inland Fisheries Division – Coastal Region



n = 141

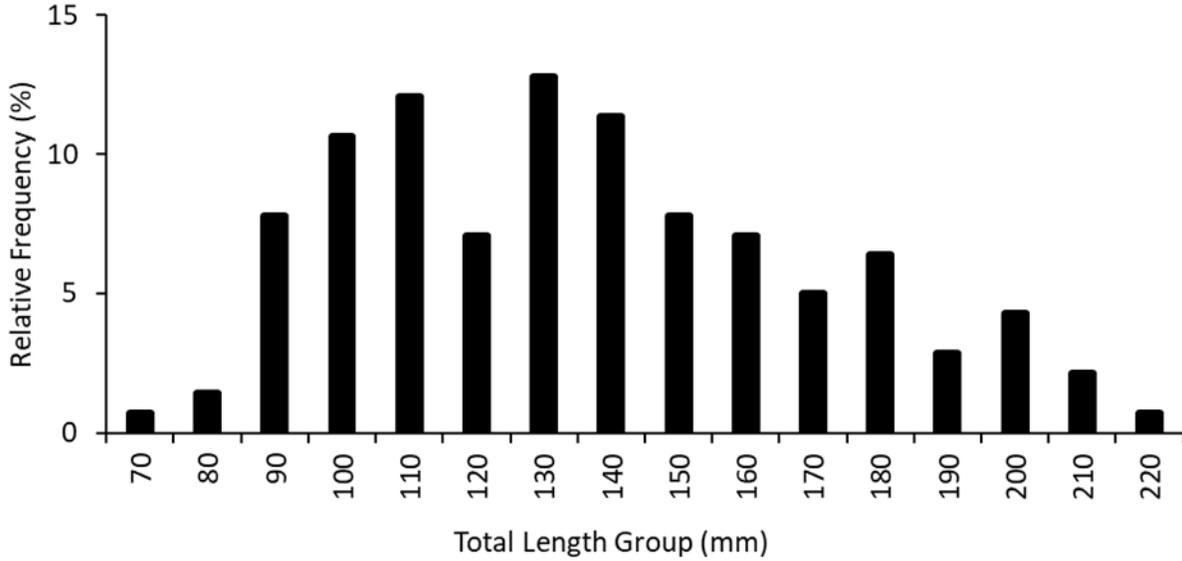
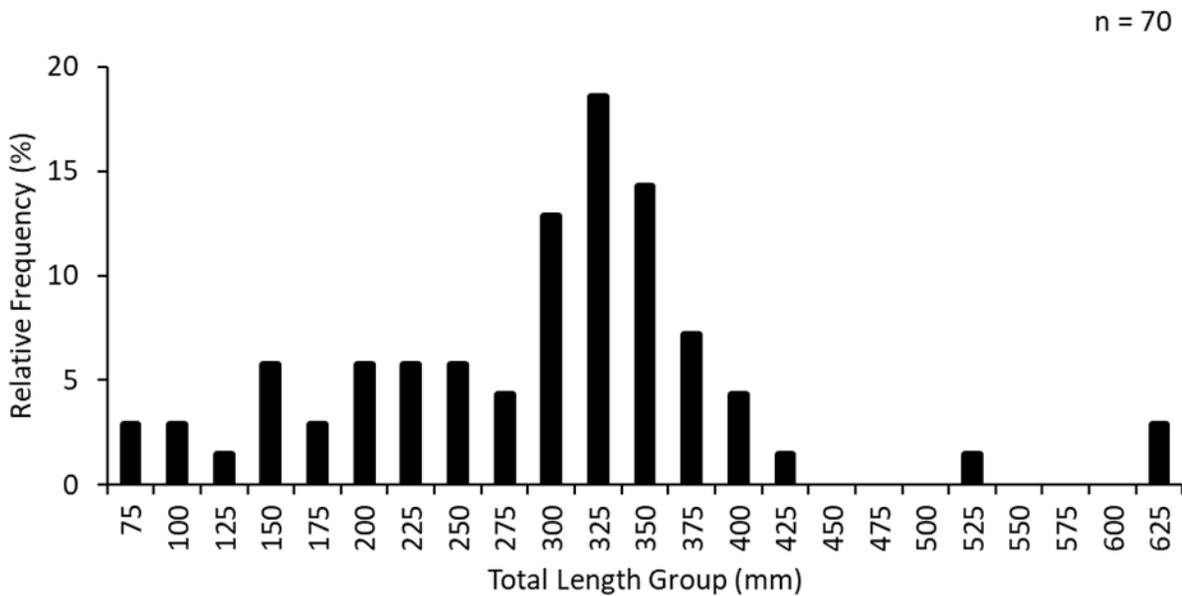


FIGURE 1. Length frequency distribution of Bluegill collected during the Trent River resident sportfish survey, October–November 2022.



n = 70

FIGURE 2. Length frequency distribution of Largemouth Bass collected during the Trent River resident sportfish survey, October–November 2022.



SURVEY SUMMARY  
NCWRC – Inland Fisheries Division – Coastal Region



n = 87

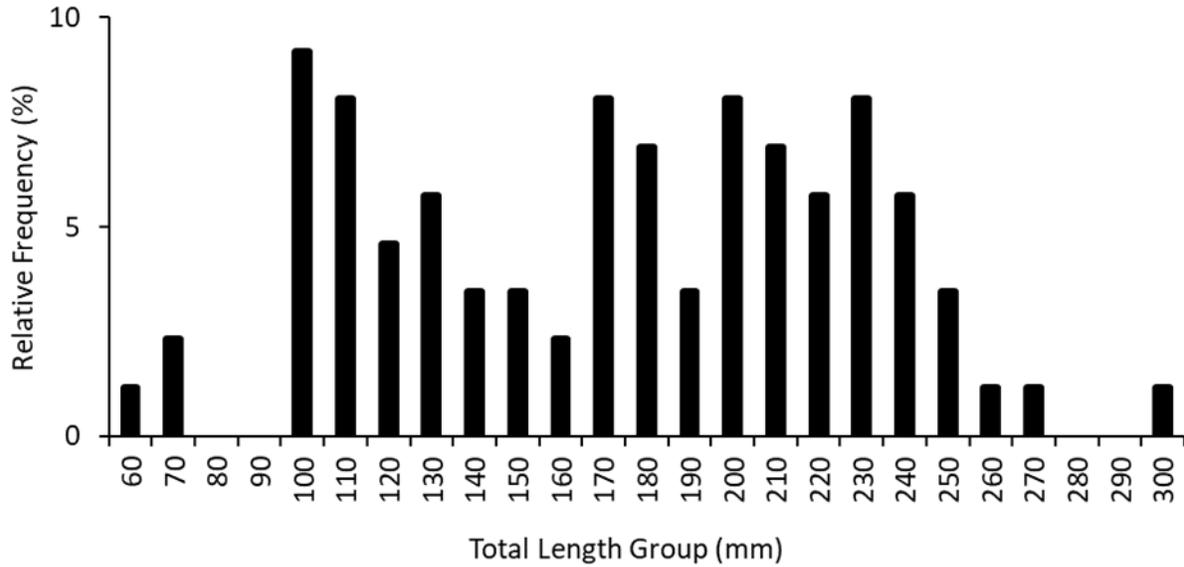


FIGURE 3. Length frequency distribution of Redear Sunfish collected during the Trent River resident sportfish survey, October–November 2022.

n = 138

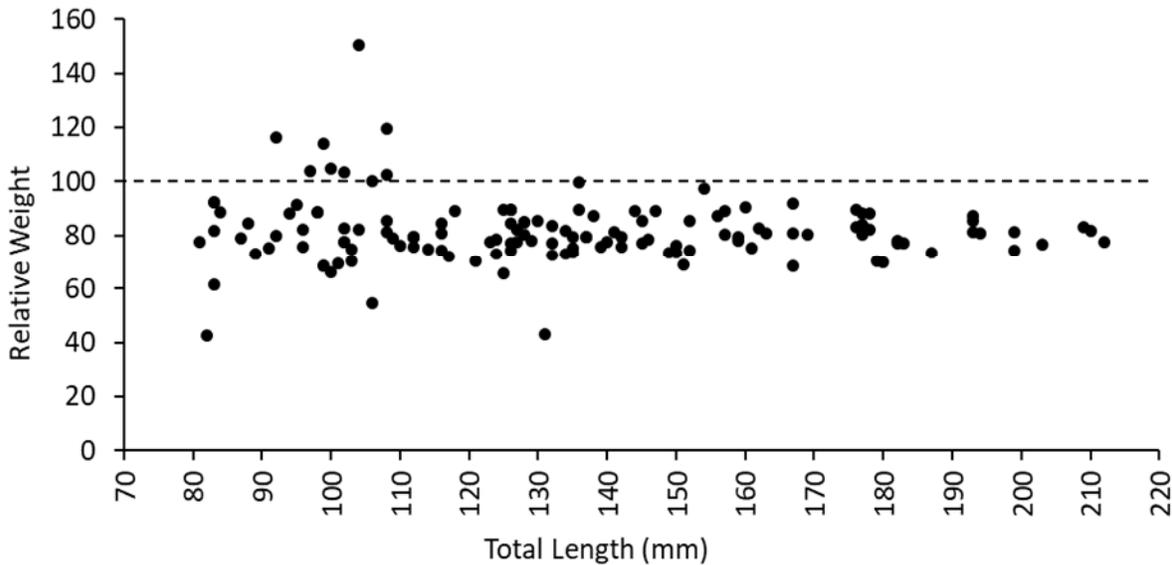


FIGURE 4. Relationship between total length and relative weight of Bluegill collected during the Trent River resident sportfish survey, October–November 2022.



SURVEY SUMMARY  
NCWRC – Inland Fisheries Division – Coastal Region

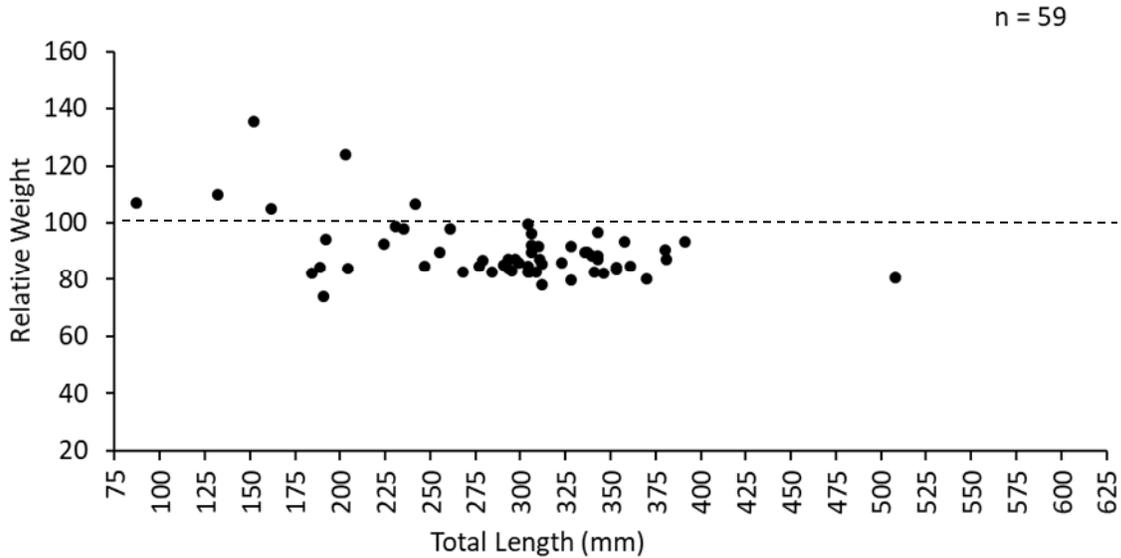


FIGURE 5. Relationship between total length and relative weight of Largemouth Bass collected during the Trent River resident sportfish survey, October–November 2022.

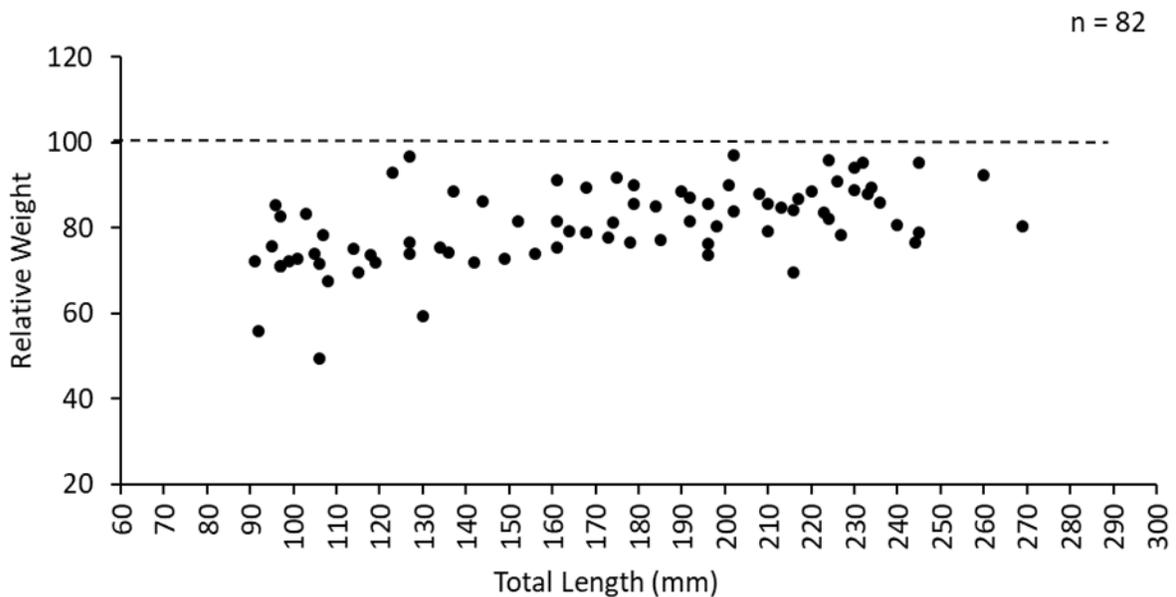


FIGURE 6. Relationship between total length and relative weight of Redear Sunfish collected during the Trent River resident sportfish survey, October–November 2022.