



SURVEY SUMMARY

NCWRC – Inland Fisheries Division – Coastal Region



Contentnea Creek Fish Survey Following a Reported Fish Kill, 2022

NEED

During May 2022, the North Carolina Wildlife Resources Commission received multiple reports of a fish kill occurring in the Snow Hill, NC to Grifton, NC area of Contentnea Creek. Species initially observed and reported to have been affected included catfish spp., sunfish spp., Largemouth Bass, and American Eel. The purpose of this investigation was to determine if management actions would be warranted to mitigate negative, long-term impacts of this event.

OBJECTIVE

Assess the status of fish populations in Contentnea Creek following a fish kill event. Collect, identify, and tally all fish species. Perform length and weight measurements for inland game fish species. Conduct relative abundance, relative frequency, and relative weight analysis when 40 or more individuals per species are collected.

METHODS

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

Waterbody: Contentnea Creek – 7 sampling sites.

Fish Sampling Gear: Smith-Root 7.5 GPP Boat-Mounted Electrofishing Unit, High Frequency, 120 PPS, 10 A. Long-handled dipnet with ¾-in (19mm) mesh.

Other Gear Utilized: YSI water quality meter for temperature (°C), dissolved oxygen (mg/L), % saturation, conductivity (µS/cm), salinity (ppt).

Sample Date(s): October 20–21, 2022.

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

Project Name in BIODIE Fish: Neuse River Sportfish Community Survey.

Citation: Shaver, N., and T. VanMiddlesworth. 2023. Contentnea Creek Fish Survey Following a Reported Fish Kill, 2022. North Carolina Wildlife Resources Commission. Federal Aid in Sport Fish Restoration, survey summary, Raleigh.

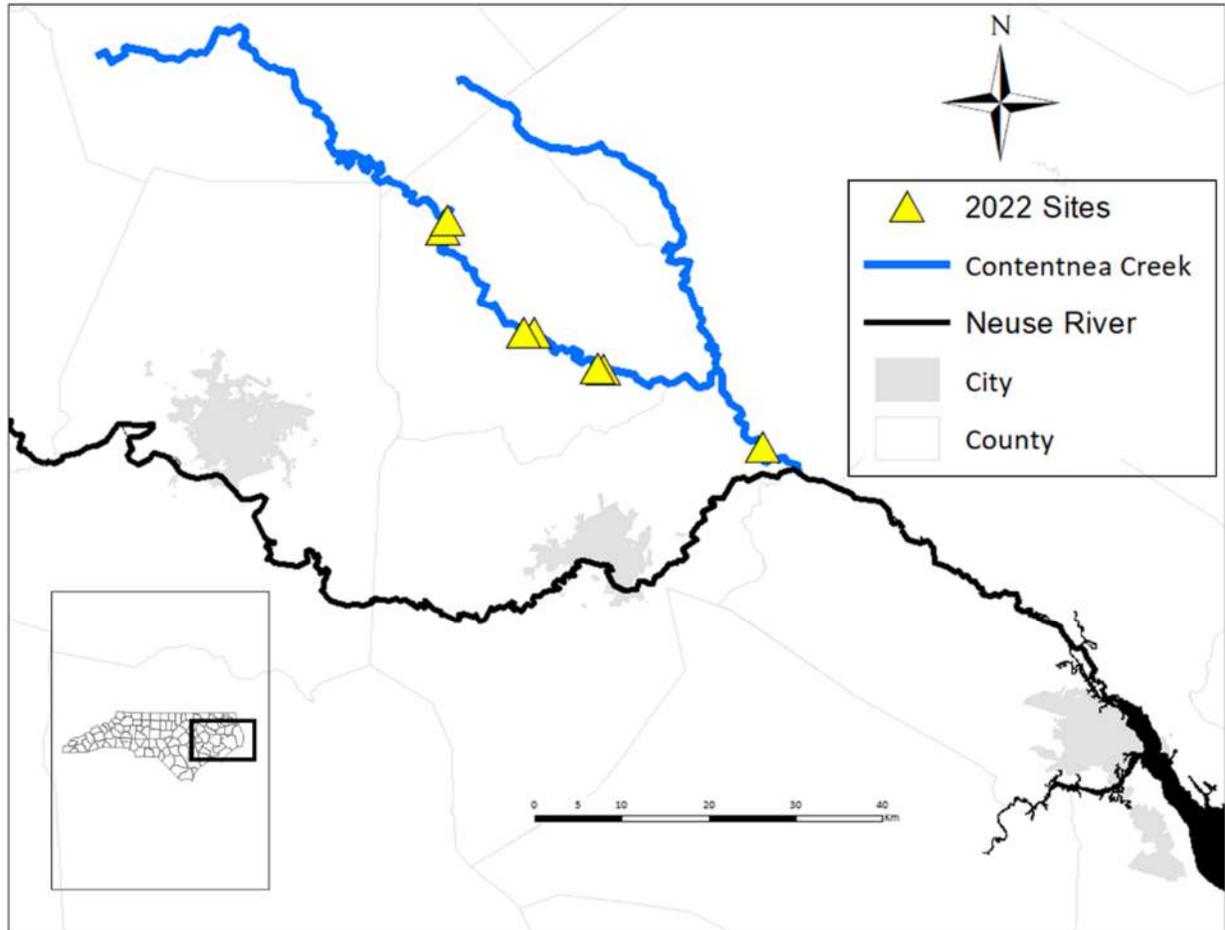


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STUDY AREA



BIOLOGICAL OBSERVATIONS

Water quality parameters measured prior to electrofishing each site were within seasonally normal ranges for aquatic systems in the region (Table 1). The most abundant inland game fish species collected were Bluegill ($n = 153$) comprising 44% of the total fish collected, Redear Sunfish ($n = 49$; 14% of total fish) and Largemouth Bass ($n = 48$; 14% of total fish). Additional fish species collected, but not in sufficient abundance to warrant additional analysis, include Channel Catfish, American Shad, Black Crappie, Redbreast Sunfish, Pumpkinseed, and Warmouth (Table 2).

Relative abundance (CPUE, fish/hr) for Bluegill was 93 fish/hr followed by Redear Sunfish (30 fish/hr), and Largemouth Bass (29 fish/hr). Bluegill total length (TL) ranged 52–217 mm with 49 (33%) individuals quality-length and 8 (5%) individuals preferred-length. Redear Sunfish TL ranged 114–302 mm with 34 (69%) individuals quality-length, four (8%) individuals preferred length, and one (2%) individual memorable-length. Largemouth Bass TL ranged 75–566 mm



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with 15 (43%) individuals quality-length, nine (26%) individuals preferred-length, and two (6%) individuals memorable-length (Table 3, Figures 1–3). Mean relative weights for Bluegill, Redear Sunfish, and Largemouth Bass suggest adequate body conditions (Table 3; Figures 4–6). Our data suggest that the Contentnea Creek fish populations show minimal negative effects from fish kills and should provide adequate angling opportunity.

MANAGEMENT RECOMMENDATIONS

1. Survey Contentnea Creek fish populations every 5 years or as needed (e.g., fish kill) to document changes in population characteristics.
2. Supplemental stocking of inland game fish species is not warranted at this time.



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TABLE 1. Site and water quality information collected during the Contentnea Creek Fish Survey, October 2022.

Date	Site	Pps	Effort (s)	Do	%Do	Cond	Sal	Temp
10/20/2022	NR-Contentnea79	120	900	8.2	80	179	0.1	14.0
10/20/2022	NR-Contentnea80	120	900	8.0	78	184	0.1	14.0
10/20/2022	NR-Contentnea 51	120	900	8.7	83	124	0.1	13.5
10/20/2022	NR-Contentnea50	120	900	8.2	79	128	0.1	13.9
10/21/2022	NR-Contentnea37	120	900	8.9	86	119	0.1	13.8
10/21/2022	NR-Contentnea36	120	900	8.9	86	119	0.1	13.8
10/21/2022	NR-Contentnea6	120	499	9.7	96	122	0.1	15.7

TABLE 2. Summary statistics of fish species encountered and ordered by most to least number collected via boat electrofishing. Asterisks (*) indicate no data available or no further analysis warranted.

Species	Number Collected	Percent Collected (%)	Minimum Total Length (mm)	Minimum Total Length (mm)	Mean Total Length (mm)
Bluegill	153	44%	52	217	137
Redear Sunfish	49	14%	114	302	195
Largemouth Bass	48	14%	75	566	270
Gizzard Shad	14	4%	*	*	*
Channel Catfish	11	3%	*	*	*
Bowfin	10	3%	*	*	*
Chain Pickerel	10	3%	*	*	*
Common Carp	10	3%	*	*	*
American Shad	7	2%	91	94	*
Black Crappie	7	2%	134	257	*
Flathead Catfish	6	2%	*	*	*
Lake Chubsucker	6	2%	*	*	*
Redbreast Sunfish	5	1%	87	164	*
Longnose Gar	4	1%	*	*	*
Notchlip Redhorse	4	1%	*	*	*
Pumpkinseed	1	0%	141	141	*
Warmouth	1	0%	180	180	*
Total	346	100%			



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TABLE 3. Relative abundance, proportional size indices, and relative weight (Wr) of select species.

Species	CPUE (fish/hr)	PSD-Q	PSD-P	PSD-M	Mean Wr
Bluegill	93	33	5		83
Redear Sunfish	30	69	8	2	85
Largemouth Bass	29	43	26	6	87

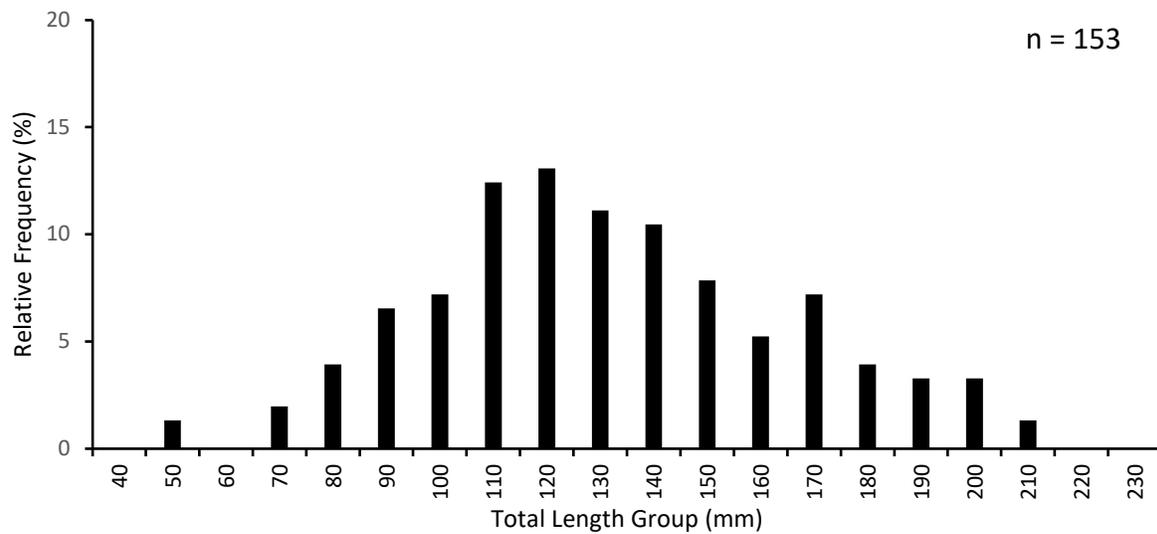


FIGURE 1. Length frequency distribution of Bluegill.



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n = 49

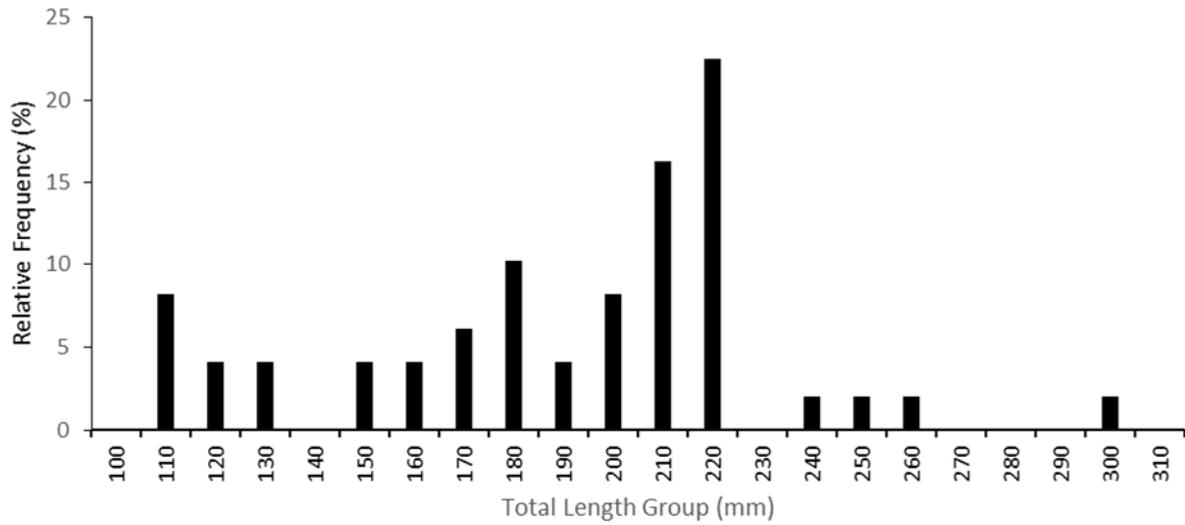
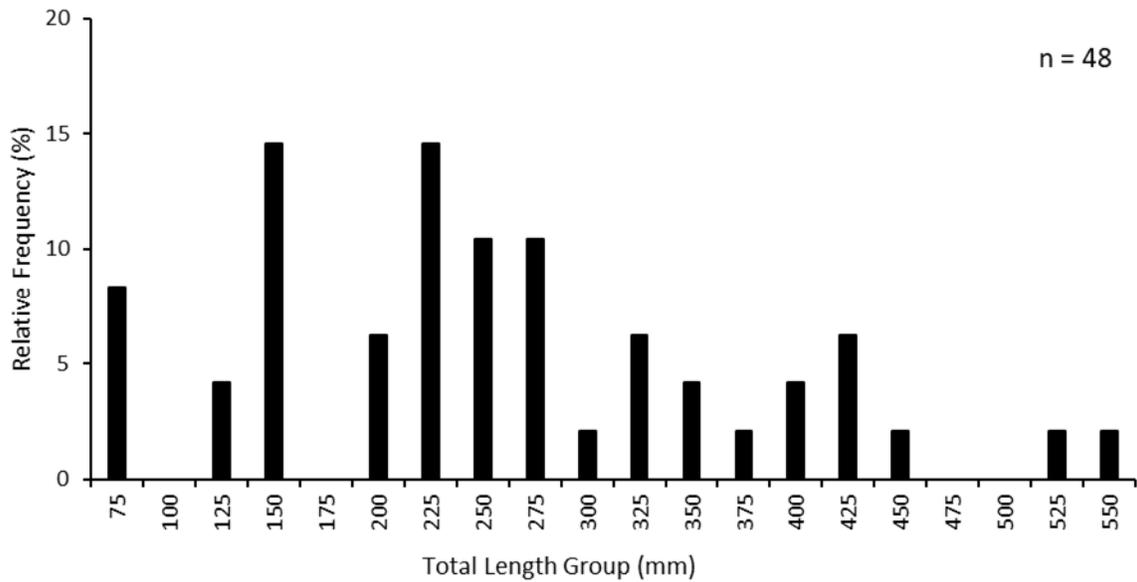


FIGURE 2. Length frequency distribution of Redear Sunfish.



n = 48

FIGURE 3. Length frequency distribution of Largemouth Bass.



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n = 146

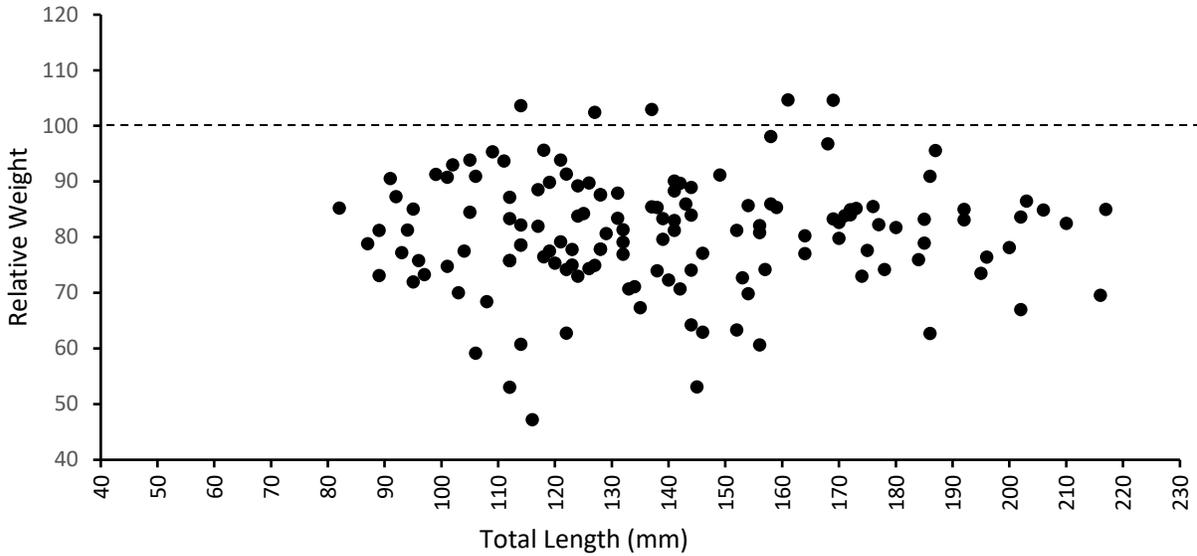


FIGURE 4. Relationship between total length and relative weight of Bluegill. The dashed line represents the 75th percentile of relative weight for Bluegill across their geographical distribution.

n = 48

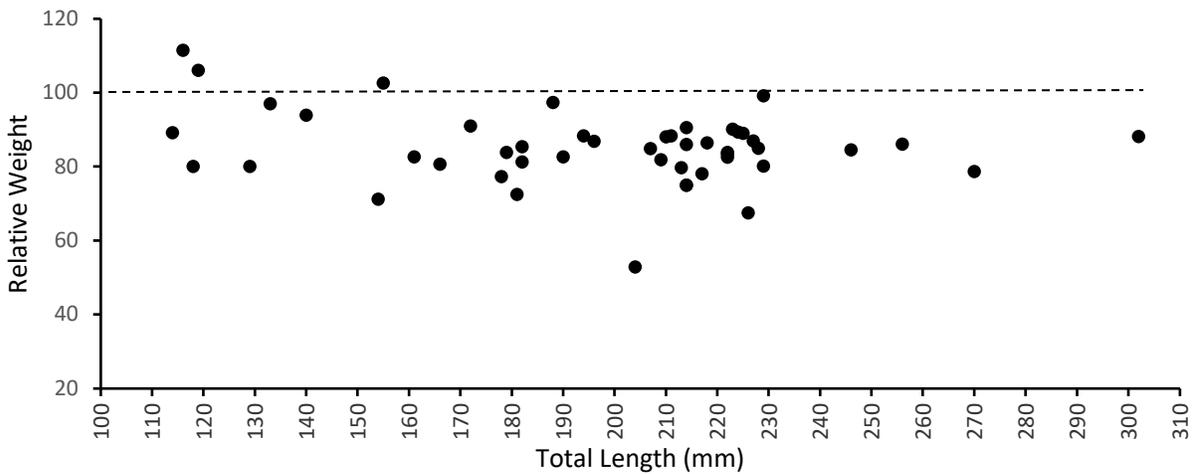


FIGURE 5. Relationship between total length and relative weight of Redear Sunfish.



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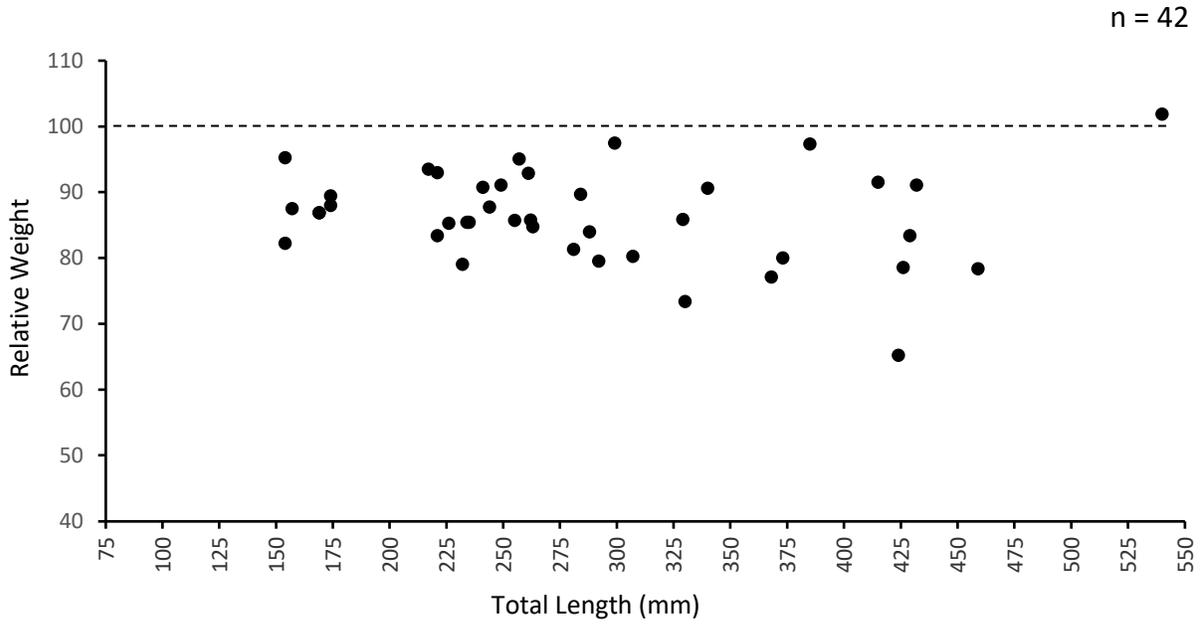


FIGURE 6. Relationship between total length and relative weight of Largemouth Bass.