



SURVEY SUMMARY

NCWRC – Inland Fisheries Division – Coastal Region



Roanoke River Striped Bass Spawning Stock Assessment, 2019

NEED

The Albemarle/Roanoke (A/R) stock of Striped Bass is jointly managed by the North Carolina Wildlife Resources Commission (NCWRC) and the North Carolina Division of Marine Fisheries (NCDMF). The NCWRC is responsible for Striped Bass management in the Roanoke River Management Area (RRMA), while NCDMF is responsible for Striped Bass management in the Albemarle Sound Management Area (ASMA). Independent and dependent data from both agencies are combined with long term population trends to calculate benchmark values for fishing mortality (F) and spawning stock biomass (SSB) to produce North Carolina's annual Striped Bass stock status report to the Atlantic States Marine Fisheries Commission (ASMFC). The annual survey conducted by the NCWRC allows for the assessment of the spawning portion of the A/R stock in this collaborative effort.

OBJECTIVE

1. To characterize the spawning portion of the A/R stock in the RRMA by estimating relative abundance, age-structure, and size-structure of Striped Bass collected on the spawning grounds.
2. Maintain a long-term dataset for analyzing trends and fulfill ASMFC compliance.

METHODS

Personnel: Katy Potoka and Chris Smith – District 1 Fisheries Biologists, Jeremy McCargo – Anadromous Research Coordinator

Waterbody: Roanoke River in the vicinity of Weldon, NC – 6 total sites – 2 sites from 3 strata

Fish Sampling Gear: Boat-Mounted Electrofishing, 7.5 Smith-Root GPP, 1000 V, 60 PPS, 4A.

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

Species of Primary Interest: Striped Bass

Sample Date(s): April 10, 15, 22, 29, and May 6, 15.

Funding Source: Federal Aid in Sport Fish Restoration

Project Name in BIODIE Fish: Roanoke River Anadromous Fish Stock Assessment

Citation:

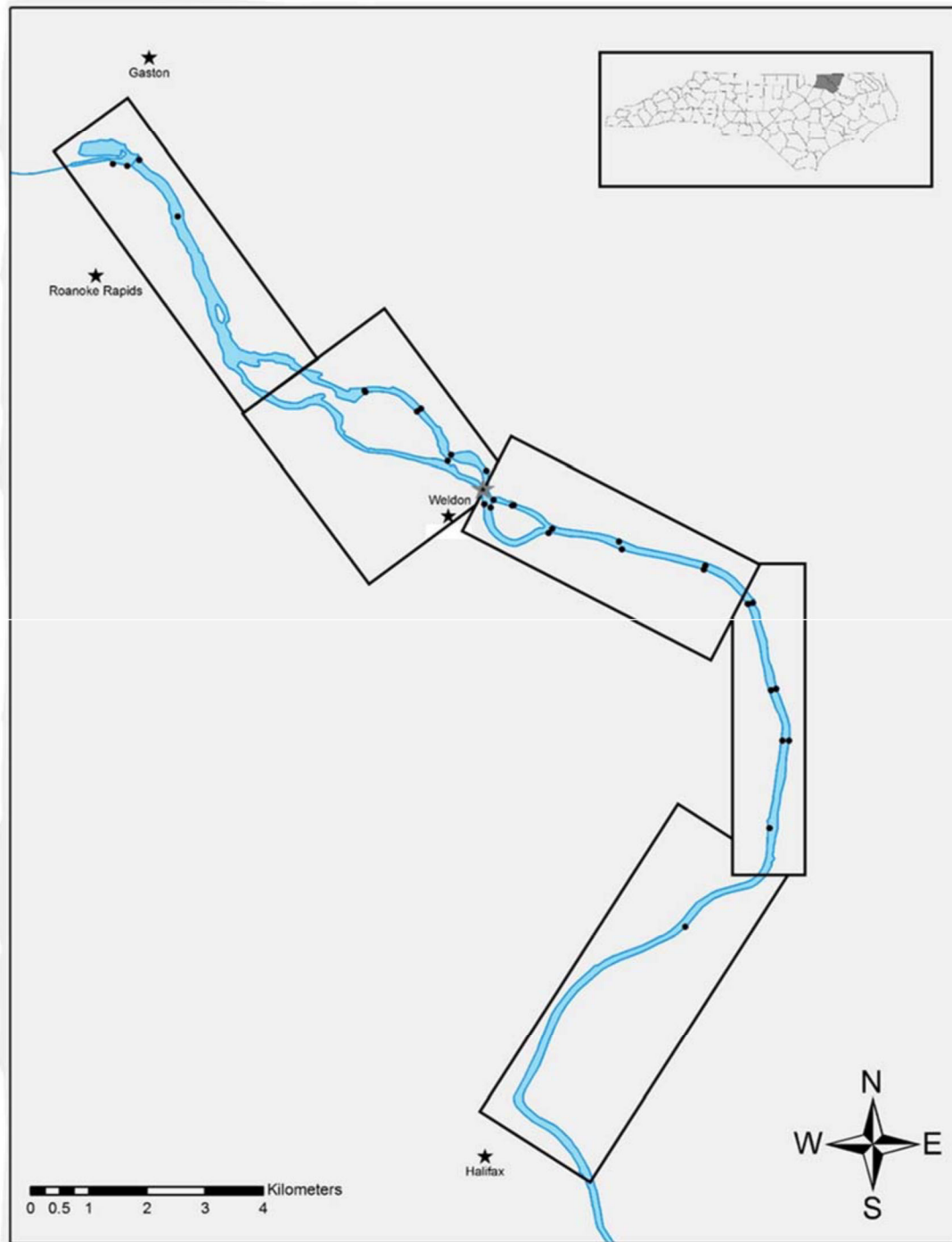
Smith, C. A., and K. Potoka. 2020. Roanoke River Striped Bass spawning stock assessment, 2019. North Carolina Wildlife Resources Commission, Federal Aid in Sport Fish Restoration, survey summary, Raleigh.



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STUDY AREA





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BIOLOGICAL OBSERVATIONS

In 2019, 1,434 Striped Bass were collected in 10.2 hours of electrofishing over six days of sampling (Table 1). Relative abundance of 140.3 fish/h was an increase from recent years; yet was similar to overfished relative abundance in the early 1990s (Figure 1). Males accounted for 86.5% (1,239 individuals) of the total catch, while females comprised the remaining 13.5% (194 individuals). All Striped Bass were assigned ages using an age-length key comprised of Roanoke River Striped Bass scale ages from 2010–2018. Age distribution ranged 1–13 years (Figure 2). The 2016 year-class (age 3) was the largest age-class seen in 2019, and it made up 45% of the total catch. Relative abundance of Striped Bass nine years or older was 0.4 fish/h (4 fish in 10.2 h; Figure 3). The relative abundance of this age-group in 2019 was similar to the 1990s when the stock was overfished. Length distributions for both males and females were unimodal, with peaks at 375 mm and 500 mm, respectively, and very few fish larger than 650 mm were captured in 2019 (Figure 4).

MANAGEMENT RECOMMENDATIONS

1. Continue annual spawning stock surveys of Roanoke River Striped Bass.
2. Continue to collect aging structures from a subsample of Striped Bass.
3. Continue to collaborate with NCDMF in the development of the Albemarle-Roanoke Striped Bass stock assessment and fishery management plan.



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TABLE 1. Daily pooled CPUE (daily catch/daily effort) of Striped Bass collected by electrofishing on the Roanoke River spawning grounds during 2019. Mean daily discharge was reported from the US Geological Survey gaging station (02080500) at Roanoke Rapids, NC.

Date	Effort (h)	Catch	Pooled CPUE	Mean Discharge (cfs)	Water Temp (°C)
Apr 10, 2019	1.84	209	113.6	13,757	14.2
Apr 15, 2019	1.75	217	123.7	7,878	16.8
Apr 22, 2019	1.39	356	256.3	12,712	16.8
Apr 29, 2019	1.69	440	260.7	13,363	18.2
May 06, 2019	1.91	71	37.2	8,842	20.6
May 15, 2019	1.64	141	85.9	9,672	20.9
Total	10.22	1,434			



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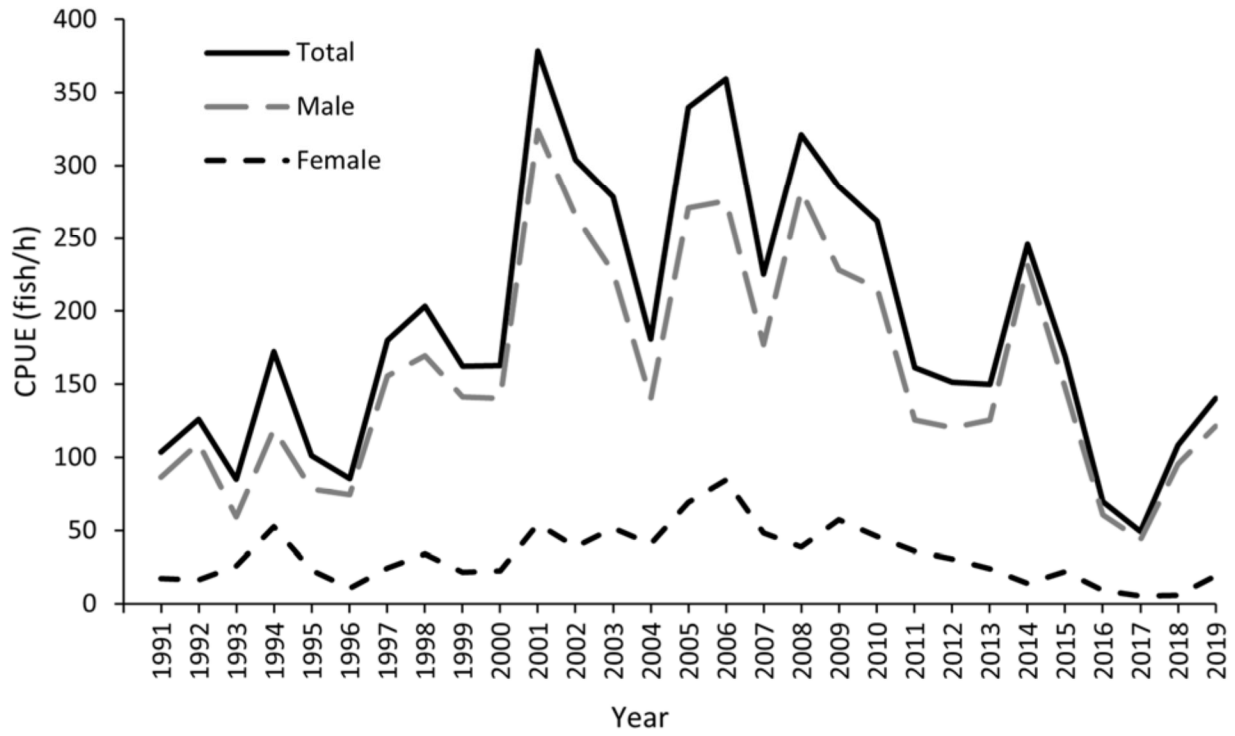


FIGURE 1. Relative abundance (CPUE; fish/h) of male and female Striped Bass from the Roanoke River, North Carolina from 1991 to 2019.



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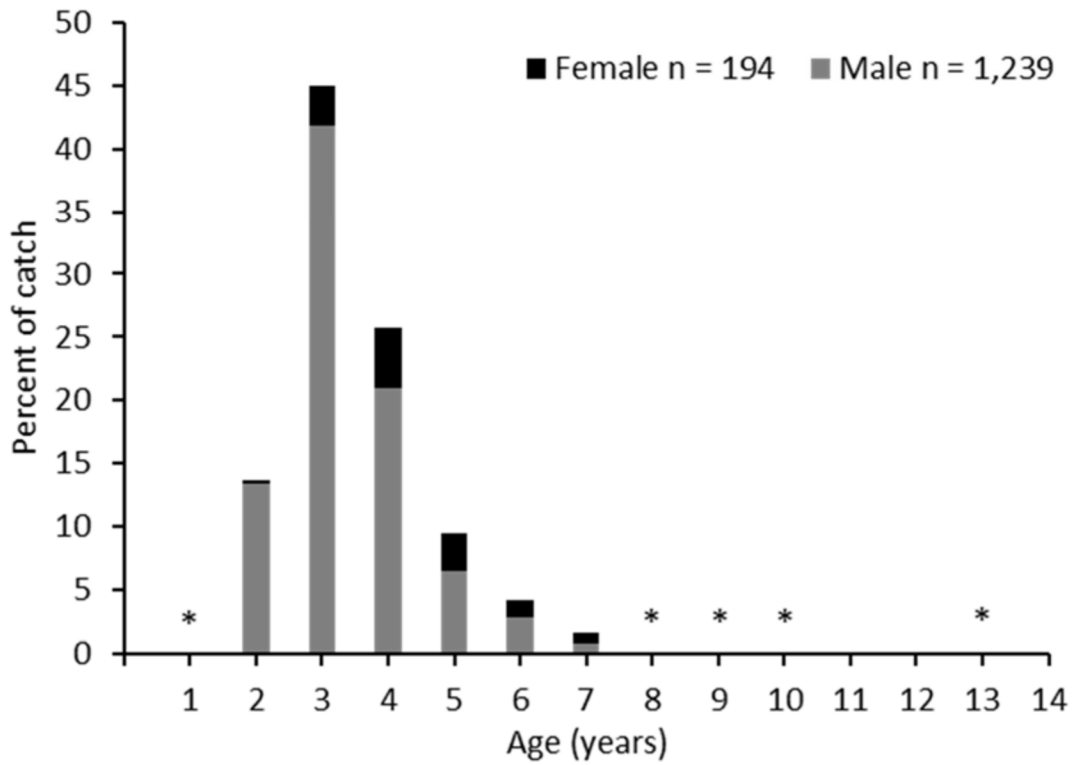


FIGURE 2. Age distribution for Striped Bass collected from the Roanoke River, spring 2019. Ages were estimated using an age-length key. Though not visible, ages 1, 8–10, and 13 account for less than one percent of total catch (asterisk).



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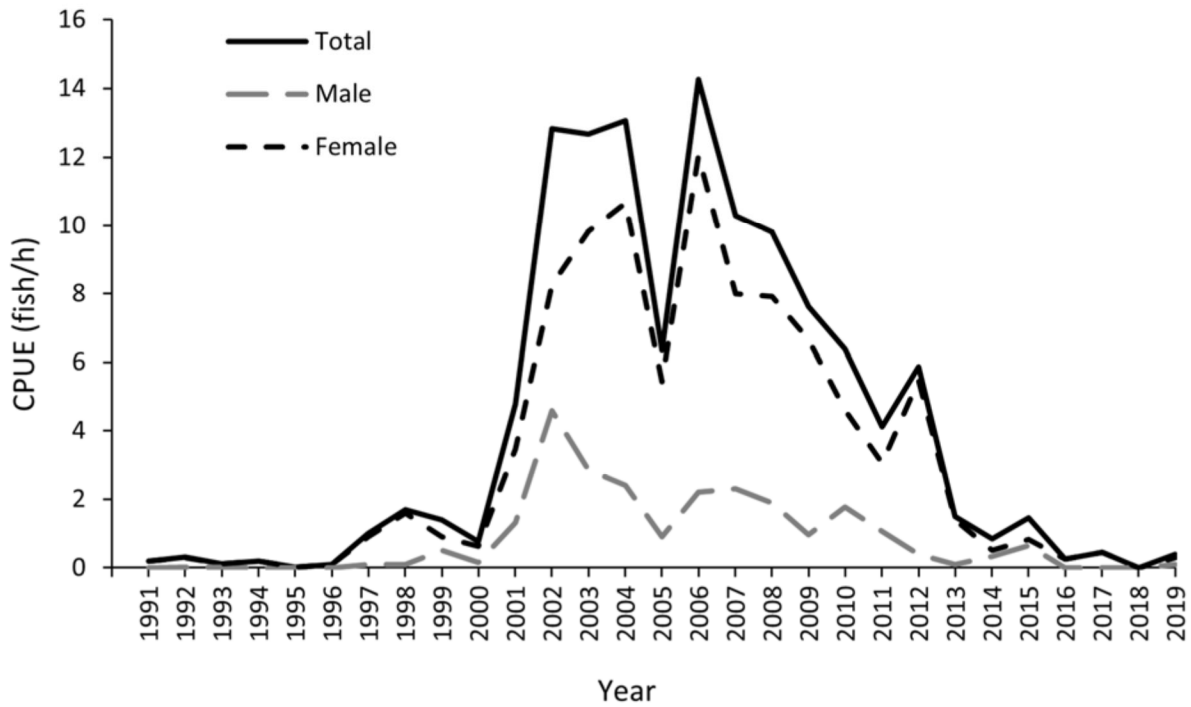


FIGURE 3. Relative abundance (CPUE; fish/h) of Roanoke River Striped Bass > age 9 collected by electrofishing during spawning stock surveys at Weldon, NC; 1991–2019.



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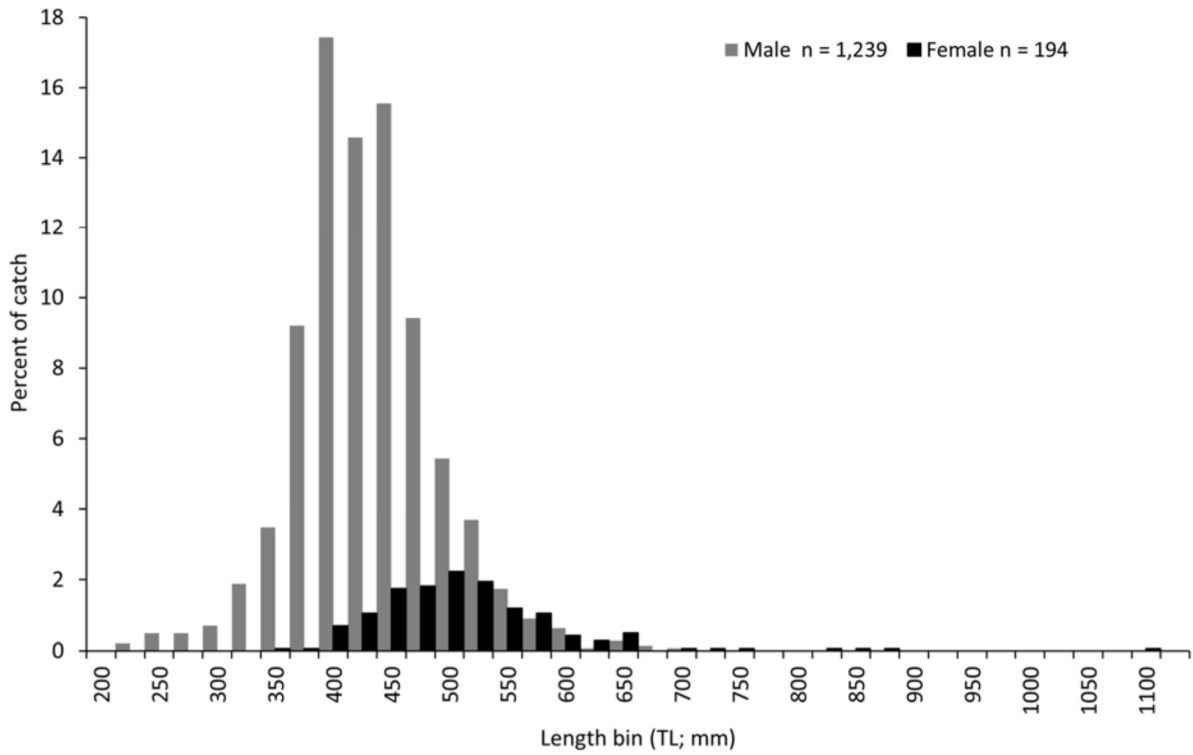


FIGURE 4. Length frequency histograms for Striped Bass collected in spring 2019.