



# Atlantic States Marine Fisheries Commission

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## MEMORANDUM

**TO:** Atlantic Striped Bass Management Board  
**FROM:** Atlantic Striped Bass Technical Committee  
**DATE:** July 26, 2021  
**SUBJECT:** Review of Albemarle Sound-Roanoke River Juvenile Abundance Index

The juvenile abundance index (JAI) for the Albemarle Sound-Roanoke River (A-R) striped bass stock in North Carolina showed recruitment failure for three consecutive years (2018, 2019, 2020), which tripped the recruitment-based management trigger established through Amendment 6 to the Atlantic Striped Bass Interstate Fishery Management Plan (FMP). The definition of recruitment failure is a value that is below 75% (the first quartile, or Q1) of all values in a fixed time series appropriate to each JAI, as defined through Addendum II to Amendment 6. If any survey's JAI falls below their respective Q1 for three consecutive years, the Technical Committee (TC) should recommend appropriate action to the Management Board (Board).

The TC met on July 15, 2021 to review potential factors contributing to A-R recruitment declines and consider recommending action to the Board. North Carolina's JAI values for 2018 (0.40), 2019 (1.20), and 2020 (0.02) were below its respective Q1 (1.33; Figure 1). Staff from the North Carolina Division of Marine Fisheries (NCDMF) provided an overview of the JAI trawl survey and trends, results from analysis of river flow and striped bass year-class strength, and a summary of management action in response to the 2020 A-R stock assessment.

Considering North Carolina's recent management action to reduce striped bass total allowable landings for the Albemarle Sound and Roanoke River management areas as well as ongoing monitoring and analysis of river flow impacts on recruitment, **the TC recommends no action by the Board at this time.**

### ***Flow Analysis***

NCDMF conducted an analysis of river flow in the Roanoke River and its relationship to young-of-year recruitment in Albemarle Sound for 1987–2020 (Lee et al. 2021). The results suggest that as flow increases above the upper recommended flow range, year-class strength decreases, and that high May flows (>20,000 ft<sup>3</sup>/s) are associated with poor striped bass year classes. The low JAI values from 2017–2020 align with high flow rates (at or above 20,000 ft<sup>3</sup>/s) observed during those years which exceeded the upper bound of flow that provides the greatest chance of successful striped bass spawns (Figure 2).

Prior to this analysis, a stocking adaptive management contingency plan had already been established based on flow rates. If flows from Roanoke Rapids Dam meet or exceed 12,000 ft<sup>3</sup>/s for a continuous period of at least 14 days during the critical spawning and transport period (May 1–June 10), 100,000-300,000 Phase I A-R striped bass will be stocked in the western Albemarle Sound nursery area.

### **A-R Management Action**

Under Addendum IV of the FMP, the A-R striped bass stock is managed by the State of North Carolina using reference points from the latest A-R stock assessment which is reviewed by the Striped Bass Technical Committee and approved for management use by the Board. In May 2021, the Board accepted the 2020 Albemarle Sound-Roanoke River Stock Assessment and Peer Review Report (Lee et al. 2020) for management use. In response to the 2020 assessment results showing the A-R stock is overfished and overfishing is occurring, North Carolina took management action to reduce the total allowable landings (TAL) for Albemarle Sound and Roanoke River management areas for 2021 and 2022 from 275,000 pounds to 51,216 pounds in order to reduce F to the target level (NCDMF 2020).

### **References**

- Lee, L.M., T.D. Tears, Y. Li, S. Darsee, and C. Godwin (editors). 2020. Assessment of the Albemarle Sound-Roanoke River striped bass (*Morone saxatilis*) in North Carolina, 1991-2017. North Carolina Division of Marine Fisheries, NCDMF SAP-SAR-2020-01, Morehead City, North Carolina. 171 p.
- Lee, L.M., Y. Li, and T.D. Tears. 2021. Examining the relationship between flow and year class strength of striped bass in the Roanoke River, North Carolina. North Carolina Division of Marine Fisheries, Morehead City, North Carolina. 8 p.
- North Carolina Division of Marine Fisheries (NCDMF). 2020. November 2020 Revision to Amendment 1 to the North Carolina Estuarine Striped Bass Fishery Management Plan. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. Morehead City, NC. 12 p.

Figure 1. Juvenile abundance index for the Albemarle Sound-Roanoke River striped bass stock, North Carolina. Source: Annual State Compliance Report. Q1 = first quartile.

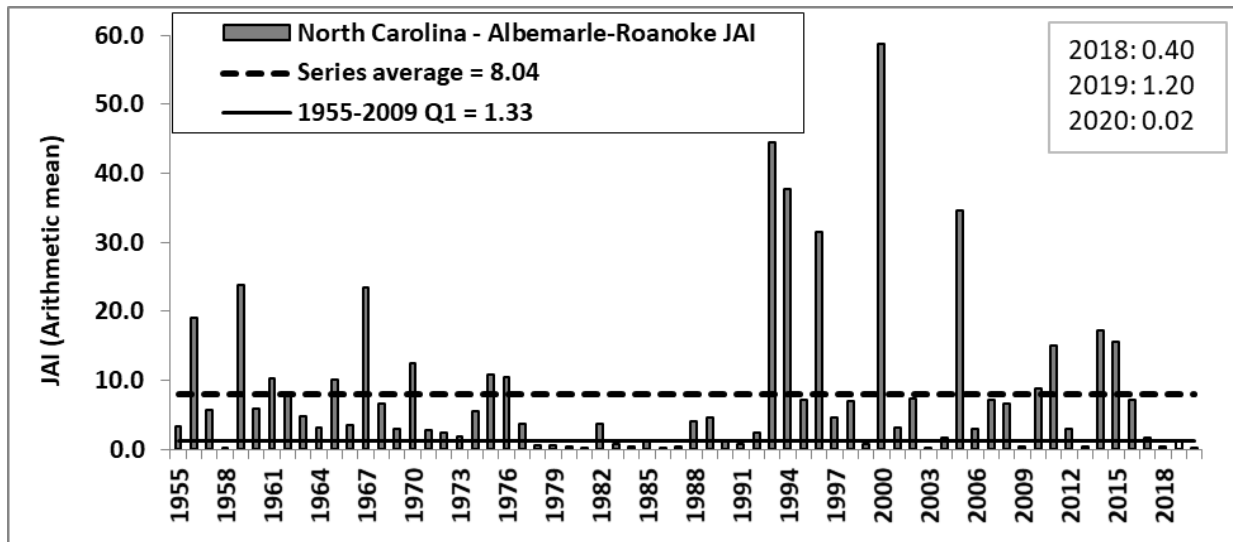


Figure 2. Mean daily flow (black line) for Roanoke River at Roanoke Rapids for 2017–2020 with corresponding Albemarle Sound-Roanoke River JAI values. Source: NCDMF and NCWRC. Green line is the upper bound of flow providing the greatest chance for successful striped bass spawns; blue line is the lower bound of flow providing the greatest chance for successful striped bass spawns; red line is the median flow providing the greatest chance for successful striped bass spawns.

