

David Gregg McHenry. Health and condition of largemouth bass in the lower Roanoke River, North Carolina based on a fish health assessment index. (Under the direction of Charles W. O'Rear, Jr.). Department of Biology, July 2000.

A fish health assessment index (FHAI) was used to assess largemouth bass (*Micropterus salmoides*) health in the lower Roanoke River, North Carolina in 1998 and 1999. The index scores the health of fish based on an autopsy evaluation of their organs and tissues with higher scores indicating poorer health relative to lower scores. The objective was to determine if largemouth bass health and population characteristics differed between upstream non-tidal and downstream tide-influenced river regions due to changes in physical habitat and water quality.

The FHAI indicated largemouth bass health was similar in upstream and downstream regions of the river, however seasonal differences in health scores were observed. In the summer of 1999, sustained drought and low river flow conditions allowed periodic brackish water with low dissolved oxygen to intrude from Albemarle Sound into normally fresh tidal regions of the river. Mean FHAI scores for all the repeated sites were 19, 24, and 33 in the fall, spring, and summer samples, respectively. The FHAI scores and relative weights of largemouth bass, which were low overall, showed a consistent spatial pattern of fish health. The hepatosomatic index varied according to the reproductive maturity of largemouth bass or suggested spatial differences in feeding or diet.

Overall, the FHAI scores indicated that largemouth bass were relatively healthy and comparable to reference or average conditions observed in other river and lacustrine systems. Therefore, despite the extreme water quality condition in the summer, the lower Roanoke River does not appear to have obvious habitat problems. However, largemouth bass in upstream regions of the river were less abundant and slower growing than fish from downstream regions, which suggests the downstream region of the river is more productive largemouth bass habitat.