

SURVIVAL OF *MORONE* *SAXATILIS* IN LOW pH OLIGOHALINE WATERS

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ABSTRACT

The hypothesis that declines in striped bass (*Morone saxatilis*) stocks are related to acid deposition in freshwater areas of the Chesapeake Bay estuary has become widespread. Attention has focused above the freshwater/saltwater interface due to the belief that low salinity would buffer waters from pH fluctuations.

Continuous water quality monitoring of Seneca Creek waters in the Upper Chesapeake Bay revealed sustained low pH during 1985, a dry year. Low pH levels were recorded despite increasing salinity. In April, salinities of ≤ 3 ppt were found with pH > 7 , but by May pH was < 6 while salinities increased to 4 ppt. Low pH (< 6) persisted until late August despite salinity increasing to 6 ppt. Water quality surveys of surrounding embayments revealed isolated pockets of low pH (< 6) in Seneca Creek, Middle River and Gunpowder River. These findings demonstrate that acidic conditions are possible at low salinities and may be a common occurrence in poorly buffered oligohaline estuaries.

Low pH did not affect the survival of striped bass cultured in the Crane Aquaculture Facility during 1985. No difference was seen in survival between larvae held in buffered (pH ≥ 6.2) or ambient (pH as low as 5.3) water. Larvae were exposed to pH < 6 at an age of 19 days with no apparent increase in mortality.

Eight facilities, from five states, contributed striped bass to the Chesapeake Bay Striped Bass Binary Coded Wire Tagging Project; a cooperative program of the U.S.F.W.S. and Maryland Department of Natural Resources. The Crane Aquaculture Facility contributed 21.8% of the numbers and 49.8% of the biomass, demonstrating successful production during 1985. This indicates acid deposition alone is not the major factor in striped bass declines in oligohaline areas of the Chesapeake Bay.
