

Coastal movements of Atlantic Sturgeon within the Mid-Atlantic Bight

Dunton, K.J.^{1,5}, M.C. Melynychuk², A. Jordaan³, K.A. McKown⁴, and M.G. Frisk⁵

¹ Monmouth University, Department of Biology, West Long Branch, NJ

² School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA

³ Department of Environmental Conservation, University of Massachusetts Amherst, Amherst MA

⁴ New York State Department of Environmental Conservation, Division of Fish, Wildlife and Marine Resources, Bureau of Marine Resources, East Setauket, New York

⁵ School of Marine and Atmospheric Sciences, Stony Brook University, Stony Brook, NY,

Between, 2010-2015, 500 sub-adult Atlantic sturgeon were captured and acoustically tagged in coastal aggregation areas off Rockaway, New York. Movements of individuals were monitored by acoustic arrays located in the New York Bight and other locations maintained by cooperative partners. Atlantic sturgeon exhibited rapid seasonal migrations with strong spatial-temporal patterns in habitat use, with the frequency of detections across all locations being repetitive and consistent among years. Peak abundances along the coasts of NY and NJ occurred during spring and fall months, with summer aggregations in LIS and the Hudson River. Multi-state mark-recapture models were used to quantify seasonal patterns in survival and migration while accounting for detection probabilities of tagged fish along the Long Island Coast. Larger fish transitioned among strata more frequently, but also had slightly lower survival than smaller fish which may result from selectivity for larger individuals caught incidentally in bottom trawl or gillnet fisheries. Weekly total mortality rates, including both natural and fishing mortality, averaged 0.24%. Highest weekly survival rates were observed during periods of decreasing sea surface temperature in fall and winter, while lowest survival was observed during periods of increasing temperature in spring and summer while sturgeon migrated through areas of known bycatch.