

Effects of Climate Change on Estuarine Fish Nurseries: Analysis and Implications from Decades-Long Time-Series

Dr. Kenneth W. Able
Principal Investigator
Department of Marine and Coastal
Sciences
Rutgers, the State University
of New Jersey
609-296-5260 x230
able@marine.rutgers.edu

Dr. Thomas M. Grothues
Department of Marine and Coastal
Sciences
Rutgers, the State University
of New Jersey
609-296-5260 x262
grothues@marine.rutgers.edu

Katherine Nickerson
Graduate Student – Oceanography
Department of Marine and Coastal
Sciences
Rutgers, the State University
of New Jersey
609-296-5260 x255
knickerson@marine.rutgers.edu



Global climate change is associated with increased temperatures, stronger winds, rising water levels, and intensified storms. The effects of climate change will be especially relevant to estuaries, which are important nurseries for juvenile fish including species of recreational and commercial importance. Estuaries may be especially susceptible to climate change because they are relatively shallow and this effect may be compounded by greater anthropogenic influences such as development, pollution, and habitat degradation as a result of human pressures. Further, the complicated relationships between climate and fish recruitment are not always intuitive. Our understanding of these interrelationships can benefit from long-term monitoring.

This study will determine the impact of changing temperature and other environmental variables due to climate change on estuarine fish recruitment by analyzing time-series data, over

seasonal and annual periods, from a representative New Jersey estuary. More specifically, to test the response of larval and juvenile fishes to climate change, this study will examine species composition, abundance, size, and phenology relative to environmental variables from 25 years of data collected at weekly to seasonal frequencies.

This project has several benefits. First, it is consistent with the need to determine the effects of climate change on estuarine fish nurseries. Second, this analysis will help plan for management and related estuarine impacts on important commercial and recreational fisheries. Third, the project should help us to understand estuarine impacts of climate change on our fisheries and thus help to evaluate their resiliency.

