Climate Change Impacts on Larval Fish Composition in Little Egg Inlet, New Jersey

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There is increasing evidence for the effects of climate change on ecosystems; however it is more difficult to assess these impacts in marine systems. Studies have shown that shallow temperate estuaries can be greatly affected by increasing temperatures. Utilizing data collected from long term water temperature monitoring (1976-present) and weekly ichthyoplankton sampling programs (1989-2010, > 350,000 individuals) at Little Egg Inlet, NJ, there is evidence that rising temperatures may have influenced the ingress of larval fish into the estuary. The annual variation of both larval fish species composition and abundance has decreased for northern species (originating from Georges Bank and the Gulf of Maine, e.g. Atlantic herring, American sand lance) but has increased in southern species (originating in the Sargasso Sea and the South Atlantic Bight, e.g. Atlantic croaker, silver perch). This increase in southern spawning species is especially evident in the late summer and early fall. Because of the importance of estuaries to the early life history of important commercial and recreational fishes and their prey, the impacts of climate change can greatly affect not only the ecology of the estuary, but also its societal and economic importance.