Title: Have Fish Decreased in Narragansett Bay with Managed Nutrient Reduction?
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Abstract
We examined the Rhode Island Department of Environmental Management and Graduate School of Oceanography Trawl Survey data for signs of fish decrease associated with the managed decrease in nutrients achieved in 2012 in Narragansett Bay. Surface primary production has decreased 31 to 45% in the open Bay with a nutrient reduction of 60% for dissolved inorganic nitrogen and 61% for dissolved inorganic phosphorus. Fish and invertebrate biomass before, during and after nutrient reduction were compared.

While large changes have occurred to the structure of communities in the Bay the overall biomass does not appear to have changed much. Crab and lobster biomass have decreased by 81% at the GSO Fox Island station while fish increased 53% between the 10 year period before and the 10 year period during nutrient reduction. The decrease in decapods may have been due to predation and permitted bottom-feeding fish to increase. In the upper Bay fish, particularly Scup, have increased by over 100% at Ohio ledge and over 50% at Warwick Light DEM trawls compared to the decade before. A statistical analysis of DEM station annual fish yield after the decapod decline compared 2009 to 2012 during nutrient reduction to the 2013 to 2016 period after nutrient reduction. A significant decline of about 11% was detected bay wide. This change in fish may or may not be due to reduced nutrients and could be due to other drivers.