



Barnegat Bay Action Plan

Comprehensive Research

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Office of Science
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Governor's Comprehensive Plan of Action

- 10 point plan
<http://www.nj.gov/dep/barnegatbay/>
- Item 9: Producing more Comprehensive Research
 - Support water quality improvement (nutrient criteria)
 - Establish the baseline conditions of the bay
 - Fill in critical data gaps
 - Advance habitat restoration on the Bay



Support for Other Points of the Comprehensive Plan of Action

- Item 1: Close Oyster Creek Nuclear Power Plant
- Item 7: Adopt More Rigorous Water Quality Standards - also support Item 9!
- Item 10: Reduce Water Craft Impacts

Change in Barnegat Bay Land Use at Forked River and Oyster Creek (1931 and 2011)

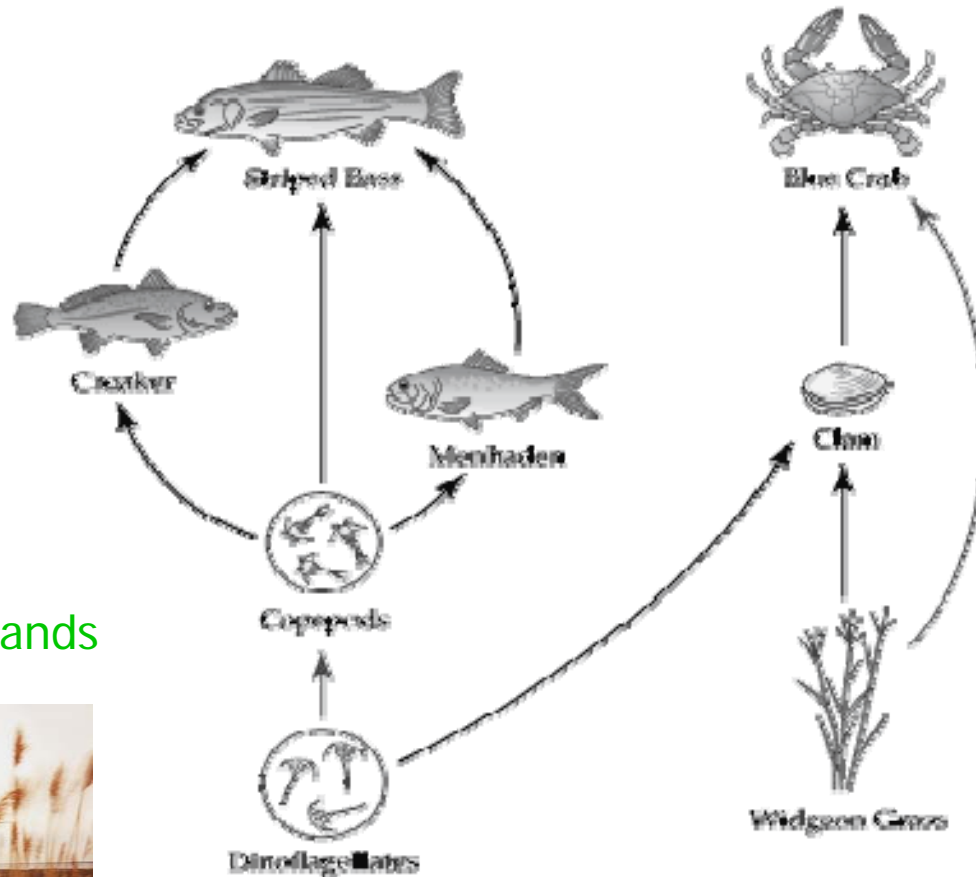






Generic Estuarine Ecosystem

ESTUARY ECOSYSTEM



Salt Marsh/Wetlands



Status – December 2011

- Budget approval for \$1.2M for FY12
- 10 Research Projects
- Contracting almost complete
- Projects start this month
- Some samples already collected
- Three years of research planned



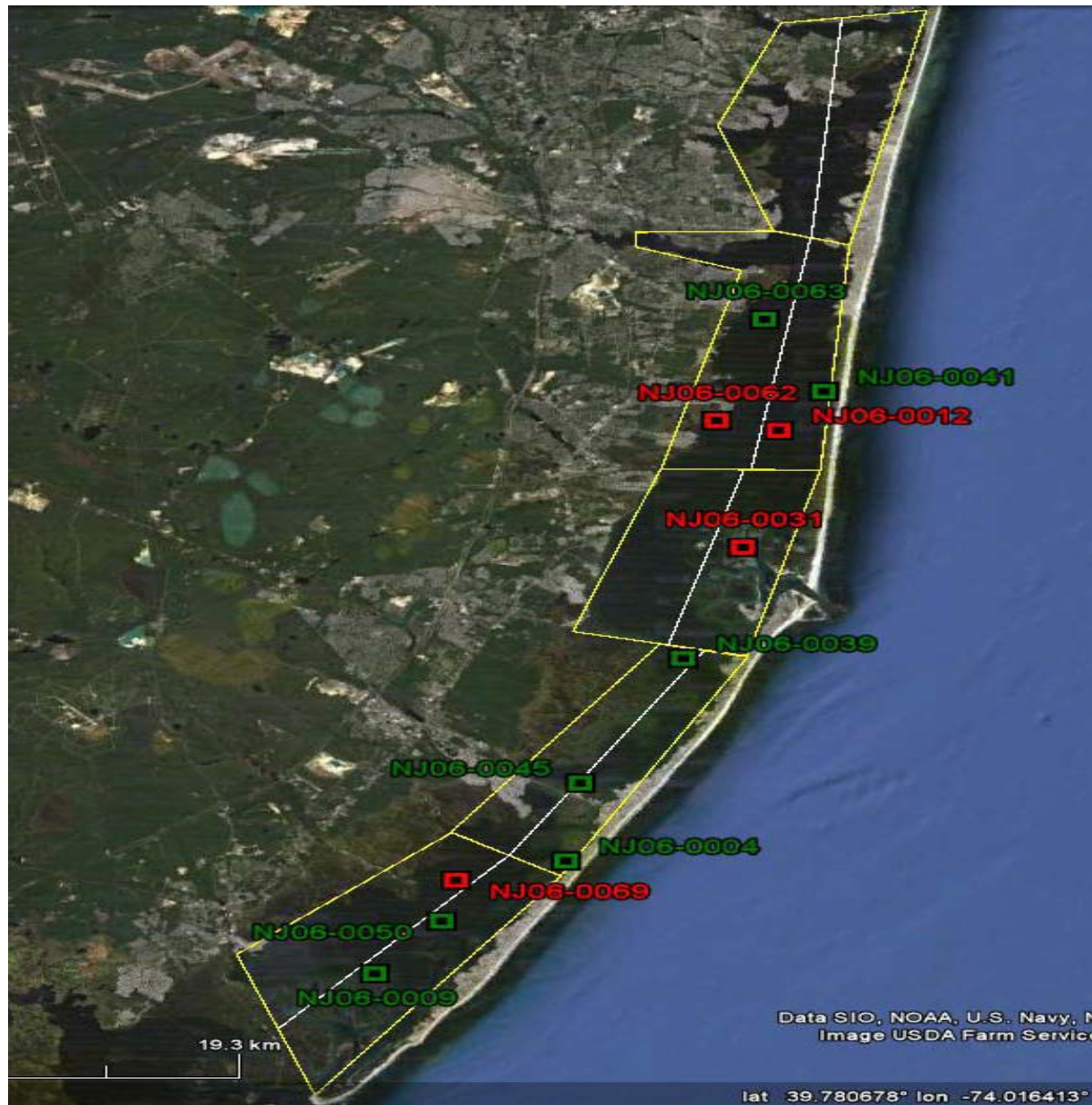


Figure 1. Proposed bay segments for sampling. Squares are locations where benthic invertebrates were sampled in 2006. Color coding is based on calculated values of the Virginian Province benthic index (Paul et al. 2001), with red indicating degraded conditions and green indicating reference, non-degraded.

Research Projects

1. Benthic Invertebrate Community Monitoring and Indicator Development for the Barnegat Bay-Little Egg Harbor Estuary (nutrient criteria)
2. Barnegat Bay Diatom Nutrient Inference Model (nutrient criteria)
3. Benthic-Pelagic Coupling: Hard Clams as Indicators of Suspended Particulates in the Barnegat Bay



Research Projects

4. Assessment of Fishes and Crabs Responses to Human Alteration of Barnegat Bay
5. Assessment of the Distribution and Abundance of Stinging Sea Nettles (Jellyfishes) in Barnegat Bay
6. Baseline Characterization of Phytoplankton and Harmful Algal Blooms



Research Projects

7. Baseline Characterization of Zooplankton in Barnegat Bay
8. Multi-Trophic Level Modeling of Barnegat Bay
9. Tidal Freshwater and Salt Marsh Wetland Studies of Changing Ecological Function and Adaptation Strategies
10. Ecological Evaluation of Sedge Island Marine Conservation Area in Barnegat Bay



BARNEGAT BAY COMPREHENSIVE RESEARCH - OBJECTIVES

	Research Project (in order of priority)	Nutrient Bio-Criteria	TMDL	Power Plant	Tourism & Recreation	Food Safety	Comprehensive/ Baseline/Data Gaps
1	Benthic Invertebrate Community Monitoring and Indicator Development for Barnegat Bay.	X	X	X			X
2	Nutrient and Ecological Histories of Barnegat Bay	X	X				X
3	Assessment of Hard Clam Populations in Barnegat Bay			X	X		X
4	Assessment of Fishes and Crabs Responses to Human Alteration of Barnegat Bay.			X	X		X
5	Assessment of the Distribution and Abundance of Stinging Sea Nettles (Jellyfishes) in Barnegat Bay			X	X		X
6	Baseline Characterization of Phytoplankton Communities and Harmful Algal Blooms (HABs)	X	X		X	X	X
7	Baseline Characterization of Zooplankton Communities	X	X	X			X
8	Multi-Trophic Level Modeling of Barnegat Bay			X	X		X
9	Tidal Freshwater and Salt Marsh Wetland Studies of Changing Ecological Function and Adaptation Strategies				X		X
10	Ecological Evaluation of Sedge Island Marine Conservation Area in Barnegat Bay				X		X

Research Project	Funding	Principal Investigators/Affiliation	Office of Science Project Managers	NJDEP Program Contact
1. Benthic Invertebrate Community Monitoring and Indicator Development for Barnegat Bay-Little Egg Harbor Estuary	\$171,633	Grassle, Charlotte M. Fuller & Rosemarie F. Petrecca, Rutgers University, Institute of Marine & Coastal Sciences	Tom Belton	Bob Schuster
2. Barnegat Bay Diatom Nutrient Inference Model	\$108,207	Charles, NJ Sea Grant Consortium: The Academy of Natural Sciences	Tom Belton	Kevin Berry
3. Benthic-Pelagic Coupling: Hard Clams as Indicators of Suspended Particulates in the Barnegat Bay	\$132,398	V. Monica Bricelj, John Kraeuter & Gef Flimlin, Rutgers University	Bruce Ruppel	Mike Celestino
4. Assessment of Fishes and Crabs Response to Human Alteration of Barnegat Bay.	\$233,297	Kenneth W. Able, Thomas Grothues, Rutgers University and Paul Jivoff, Rider University	Bruce Ruppel & Gary Buchanan	Brandon Muffley
5. Assessment of the Distribution and Abundance of Stinging Sea Nettles (Jellyfishes) in Barnegat Bay	\$83,333	Paul Bologna and John Gaynor, Montclair State University	Joe Biliniski	Bruce Friedman

<p>6. Baseline Characterization of Phytoplankton and Harmful Algal Blooms</p>	<p>\$101,934</p>	<p>Ling Ren & Donald Charles, NJ Sea Grant Consortium: The Academy of Natural Sciences</p>	<p>Bob Hazen & Bruce Ruppel</p>	<p>Bob Schuster</p>
<p>7. Baseline Characterization of Zooplankton in Barnegat Bay</p>	<p>\$100,000</p>	<p>NJSGC: James Nickels & Ursula Howson, Monmouth University & Thomas Noji & Jennifer Samson, NOAA, Sandy Hook</p>	<p>Bob Hazen & Gary Buchanan</p>	<p>Bob Schuster</p>
<p>8. Multi-Trophic Level Modeling of Barnegat Bay</p>	<p>\$130,000</p>	<p>Olaf Jensen and Heidi Fuchs, Rutgers, Institute of Marine and Coastal Sciences</p>	<p>Tom Belton and Gary Buchanan</p>	<p>Brandon Muffley</p>
<p>9. Tidal Freshwater and Salt Marsh Wetland Studies of Changing Ecological Function and Adaptation Strategies</p>	<p>\$100,000</p>	<p>David Velinsky and Tracy Quirk, NJ Sea Grant Consortium: The Academy of Natural Sciences</p>	<p>Bob Hazen & Tom Belton</p>	<p>Ginger Kopkash</p>
<p>10. Ecological Evaluation of Sedge Island Marine Conservation Area in Barnegat Bay</p>	<p>\$55,865</p>	<p>Paul Jivoff, Rider University - NJ Sea Grant Consortium</p>	<p>Joe Bilinski</p>	<p>Terry Caruso</p>



STATE OF NEW JERSEY

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A Selected Bibliography of Ecological and Land Use Studies of Barnegat Bay

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Alphabetical order by first author

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Green text indicates that this link will be leaving the DEP web site.

Able KW, Fahay MP. (2011). Ecology of Estuarine Fishes: Temperate Waters of the Western North Atlantic. Baltimore, MD: The Johns Hopkins University Press.

Able KW, Grothues TM. (2007). [Diversity of estuarine movements of striped bass \(*Morone saxatilis*\): a synoptic examination of an estuarine system in southern New Jersey.](#) [Fishery Bulletin](#);105(3):426-435.

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