

URBAN COAST  
INSTITUTE  
WEST LONG BRANCH,  
NJ 07764-1898  
(732)263-5662  
Fax: (732) 263-5723

*News from the*  
**Urban  
Coast  
Institute**



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URBAN COAST INSTITUTE  
**MONMOUTH  
UNIVERSITY**  
where leaders look forward<sup>SM</sup>

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*Director's Message*

By *Tony MacDonald*



**Will New Jersey Take Action to Implement Regional, Ecosystem-based Ocean Management?**

In January 2007, Governor Corzine signed a bill to establish a Coastal and Ocean Protection Council. The legislation establishes a nine-member Council appointed by the Governor. The members include public, private and academic sector experts to help coordinate the State's efforts to protect and restore the states coastal and ocean resources, and to encourage the implementation of ecosystem-based approaches to management. The Council will hold a public hearing at least once a year, make recommendations to the Commissioner of DEP, and provide periodic reports of its findings.

Increasing the focus on ocean protection would seem to be a good idea, given the substantial economic benefits generated by healthy and productive coastal and ocean resources, and the increasing (often conflicting) demand for use of the Mid-Atlantic Bight for navigation, recreation, fisheries, and offshore energy (including wind and wave energy). A New Jersey DEP report issued last year estimates that marine ecosystems provide services valued annually at \$5.3 million for estuaries/ tidal bays and \$390 million for other coastal waters. This is in addition to the estimated total direct economic value of \$750 million from commercial fisheries and \$207 million from recreational fisheries. Yet, the prospects for implementation of the Coastal and Ocean Protection Council remain uncertain.

While New Jersey decides whether and how to implement the Coastal and Ocean Protection Council, other states are moving aggressively to establish regional approaches and to implement ecosystem-based management. New York State passed the *New York Ocean and Great Lakes Ecosystem Conservation Act*, adopting a state policy "to protect, maintain and restore coastal ecosystems," and establishing an interagency Ecosystem Conservation Council to advance ecosystem management through pilot projects, and to facilitate regional coordination. California, Massachusetts, Alaska, Hawaii and Washington State have developed, and are funding, implementation of ocean action plans.

Ecosystem-based management is defined as "an integrated approach to management that considers the entire ecosystem, including humans." Recognizing that concern for ocean resources do not stop at state boundaries, other states are also collaborating on regional approaches. Examples include: the Great Lakes Regional Collaboration; the Gulf of Mexico Alliance; the Northeast Regional Ocean Council, the Gulf of Maine Council; and the West Coast Governors' Collaboration to address Ocean Health. Federal agencies are providing technical assistance and funding to help support these regional initiatives. There is no comparable effort in the Mid-Atlantic.

The Urban Coast Institute is planning to convene two workshops in the coming months to discuss how ecosystem-based and regional approaches can benefit the state and the region. For now, the jury is still out on whether New Jersey will take more aggressive action.

## UCI LAUNCHES TWO NEW INITIATIVES

by John Tiedemann, Assistant Director

### Coastal Lakes Initiative

Coastal lakes and ponds provide a variety of recreational opportunities and are important habitats for fish and wildlife. Unfortunately, these aquatic ecosystems can become disrupted or unhealthy from the introduction of pollutants from stormwater and runoff, modifications to shorelines and riparian areas, [or invasions of harmful aquatic plants or animals](#). This is especially true in the case of coastal lakes and ponds in Monmouth and Ocean Counties because of intense surrounding development and the fact that they have historically been the terminal receiver of road and overland runoff from storm sewers.

The challenge facing local officials is to manage coastal lake and pond environments in a manner that provides for maintenance of their ecological integrity and accommodates active and passive recreational activities by keeping these waterbodies safe for human health considerations. While a variety of watershed and stormwater management plans have recently been developed, local communities have struggled to identify and implement on-the-ground coastal lake restoration strategies.

The purpose the Coastal Lake Initiative is to provide municipal officials, representatives of civic groups, community organizations, and local coastal and watershed management groups with the information and tools necessary to develop and implement cost-effective strategies to restore, protect, and maintain coastal lake and pond ecosystems in Monmouth and Ocean Counties.

Key components of this initiative will include:

- Conducting an assessment of current lake and pond management efforts in Monmouth and Ocean Counties, including identification of key interest groups and responsible parties.
- Convening a Coastal Lakes Summit that brings together municipal officials, civic groups, community organizations, local watershed management groups, county, state and federal officials, and scientists to discuss the state of the coastal lakes and ponds in the region and the status of current management and restoration efforts and needs.
- Facilitating development of a regional approach to management and restoration of coastal lakes and ponds that includes identification of cost effective strategies, potential funding sources, and partnership opportunities.



### UPCOMING UCI EVENTS

For more information on these events contact: (732) 263-5662

**April 17th—**  
2nd Annual Ocean  
Film and Arts Festival  
Monmouth University  
Campus

**April 29th and  
May 1st—**  
Coastal  
No Adverse  
Impact (NAI)  
April 29th-  
NY Meeting  
May 1st-NJ meeting  
Monmouth University  
Campus



## UCI LAUNCHES TWO NEW INITIATIVES (con't)

by John Tiedemann, Assistant Director

### Coastal Harbor Management Initiative

Competition for waterfront space is a growing problem in coastal regions throughout the United States. Although coastal communities have historically relied on water dependent activities such as commercial fishing and boating for their livelihood, today in coastal communities throughout the country, water dependent uses are threatened with displacement or have given way to more profitable non-water dependent uses such as residential development, hotels and motels, offices, restaurants and retail shops. In addition, the variety and intensity of activities and uses on or adjacent to the water in the multiple use environments of small coastal ports and harbors creates a unique set of challenges to local governments.

The goal of this project is to develop a model comprehensive Harbor Management Plan for New Jersey's small ports and harbors. The model Harbor Management Plan will promote and encourage development and implementation of innovative policies, programs, and management techniques that preserve and encourage water dependent uses in small ports and harbors and promotes management of these regions along sound, sustainable, environmental, social and economic lines.

Components of the model Harbor Management Plan will include:

- Identification of essential activities, uses, and infrastructure associated with commercial and recreational maritime use of waterways and the waterfront.
- An analysis of constraints on the maritime industries and water dependant uses.
- An analysis of the implications of watershed management plans and storm-water management plans to harbor management.
- An assessment framework for developing biological baselines of ecosystems and species of concern.
- Recommendations on how to formulate a marine/maritime/port preservation and management plan including:

Guidelines for development and implementation of port-specific Dredged Material Management Plans (DMMP);

Guidelines for development and implementation of a port-specific Harbor Emergency Response Plan;

Guidelines for managing future waterway uses; and

identification of measures designed to preserve the maritime industry and retain water dependant uses along the waterfront in the port.



### BLUE TIPS: WHAT YOU CAN DO TO SAVE OUR OCEAN

Here are a few ways that each of us can reduce plastic waste and have a positive impact on our environment and our ocean and help protect all the amazing life it sustains.

- \* Eliminate purchases of one-time use plastic water bottles. Instead, purchase a water bottle made from stainless steel, glass or a hard plastic.
- \* Refill the water bottle every morning and carry it around with you wherever you go. Not only do you save some marine life, you save some money as well!
- \* Encourage local restaurants and businesses to supply customers with alternatives to conventional Styrofoam containers and plastic bags.
- \* Bring your own bags to the store. Whether you are shopping at the mall, pharmacy or grocery store, canvas bags are a popular alternative to disposable paper or plastic bags. Canvas bags are strong, can be re-used and most importantly, have no adverse affects on the planet.

By Jessica Lisa,  
Research Associate

## COASTAL CONNECTION UPDATE

### Coastal Zone Management-Public Trust Doctrine and Public Access

by Jennifer DiLorenzo

During the Spring of 2007, the National Oceanic and Atmospheric Administration (NOAA) provided funding to the Urban Coast Institute to provide public information and education on the Public Trust Doctrine as it relates to UCI's Coastal Community Sustainability and Resiliency program. Toward that end, the UCI held a workshop, entitled, "Public Trust Doctrine, Private and Public Rights, and Transfer of Development Rights for Coastal Communities" on the Monmouth University West Long Branch, NJ campus on November 19<sup>th</sup>, 2007.

The purpose of the forum was to provide information to the University with respect to the relationship of PTD to various coastal interests. In addition, the workshop discussed the concept of the Transfer of Development Rights as a potential tool to assist communities with the practical application of PTD and public access and the possibility of providing more practical public access to the coastline. Speakers included: Tim Mulvaney, Deputy Attorney General, Environmental Permitting and Counseling, NJ Dept. of Law; Neil Yoskin, Esq. Sokol, Behot and Fiorenzo; Jose Fernandez, Esq. Manager, Bureau of Tidelands, NJ Dept. of Environmental Protection; Steven Mairella, of Counsel, McManimon & Scotland, L.L.C.; and Steven M. Bruder, Sr. Planner, AICP/PP, NJ State TDR Bank, NJ State Agriculture Development Committee. For copies of the meeting proceedings and presentations, please contact: [jdiloren@monmouth.edu](mailto:jdiloren@monmouth.edu) or visit [www.monmouth.edu/uci](http://www.monmouth.edu/uci).

### UCI 2006 Champion of the Ocean Dr. Robert Gagosian Appointed President of Ocean Leadership

By Jennifer DiLorenzo

UCI's 2006 Champion of the Ocean awardee Dr. Robert Gagosian has been appointed President of the Consortium for Ocean Leadership (Ocean Leadership) as of December 1<sup>st</sup>, 2007. Ocean Leadership was formed by the merger of the Consortium for Oceanographic Research and Education (CORE) and the Joint Oceanographic Institutions (JOI).

Dr. Gagosian was President Emeritus and former President/Director of the Woods Hole Oceanographic Institution (WHOI) from 1993 to 2006. Gagosian holds a bachelor's degree in chemistry from the Massachusetts Institute of Technology and a Ph.D. in organic chemistry from Columbia University. His scientific interests are in the area of marine geochemistry, with emphasis on the fate and transport of organic material to the ocean via the atmosphere and through the water column to the sea floor. He has written or co-written 85 scientific papers and several technical reports.

Ocean Leadership is a Washington, DC-based nonprofit organization that represents 95 of the leading public and private ocean research education institutions, aquaria and industry with the mission to advance research, education and sound ocean policy. The organization also manages ocean research and education programs in areas of scientific ocean drilling, ocean observing, ocean exploration, and ocean partnerships.



## COASTAL FACTS

### Coastal Economy and Resources

- More than 21 million people live in the coastal NY/NJ area.
- New Jersey has 127 miles of ocean beaches; coastal tourism contributes greater than \$16 billion annually to the coastal economy.
- The Port Authority of NY/NJ handled over 86 million metric tons of cargo in 2006; the total value of this cargo exceeded \$149 billion.
- New Jersey's commercial fishermen harvest 13.7 million pounds of fish annually with an estimated landing value of \$1.5 million.
- The ecosystem services of buffering and filtration of fresh and saltwater wetlands is estimated at over \$10 million.
- New Jersey has over 300,000 acres of tidal wetland habitat that also mitigates flooding and serves as a stop-over for 1.5 million migrating shorebirds.



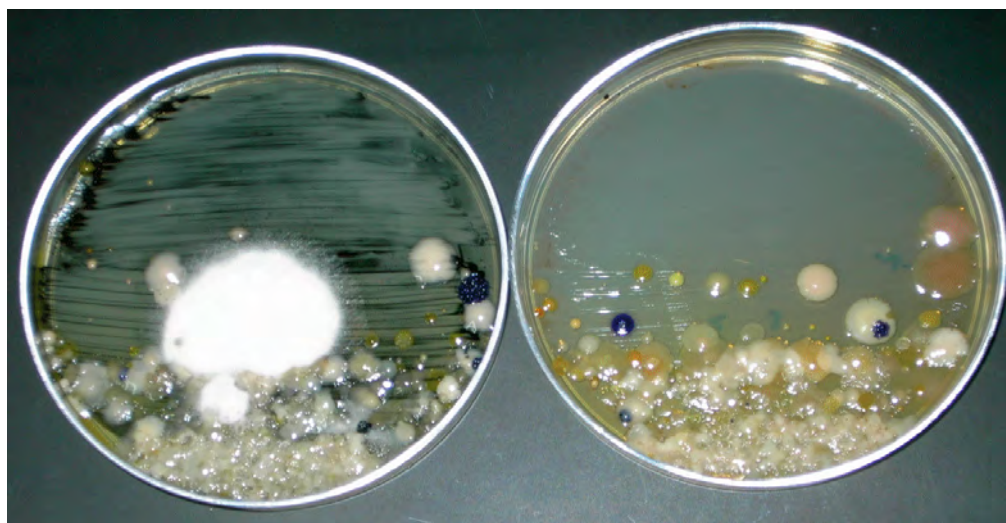


## MICROBES: *The Good, The Bad, and The Ugly*

by Mike Witty, Ph.D.

Carl Linnaeus' early work on plant anatomy helped him to group plants which share similar anatomical features. This made it easier to label specimens in museums or describe plants in letters between people in different countries. Over many years he developed a classification scheme which could be used to put a name to anything you might find in a nature walk. It sounds trivial but is important, because how could you tell if you were talking about the same creature with your friend in Canada or not? Or better yet, if you had discovered something new and rare! All you need are anatomical characteristics of the creature you find interesting to plug what you see into the wealth of information discovered by other people, for example by looking it up on the internet. The more characteristics you can see, the finer the distinctions you can make.

Anatomy is fine for plants or animals because they *have* anatomy. What do you do for microbes which cannot even be seen with the naked eye and look almost identical even under a microscope? How can they be described and sorted? How can we say that this small green spot is something to preserve because it is an important part of the Common Loon diet or if it is something to dispose of because it is poisoning our clam beds? The answer comes from the laboratory. I don't know if you are reading those newspaper articles about genomes, but there is an awful lot of genetic data coming from your tax dollar at the moment. It consists of repetitive coded information like this: ATGATCTGCCACGCAGAATTG TGGATAACAACCTACTAG . . . on and on for millions and millions of letters. The information is used in nature to code instructions for regulating the activities of all living cells. However, we can treat each letter like an anatomical feature. By extracting DNA from that unknown green spot we can classify it and collect all the information related to it into one file, including information that comes from research done at the Urban Coast Institute (see photo below) and similar organizations all over the world. When we have that we will be able to keep an eye of those microbes and find out if they are one of **the Good, the Bad or The Ugly**. For more information, please visit: <http://en.wikipedia.org/wiki/Linnaeus>.



Bacterial cultures from Manasquan River Water, Jan 8th, 2008

## GUESS THE COASTAL CREATURE

By Jessica Lisa  
Research Associate

Test your skills and knowledge of the beaches and ocean. Can you identify the sea or shore creature based on this picture?



- A. piping plover
- B. Harbor seal
- C. Minke whale

Answer can be found on  
page 7



## Notes from the Field—Unwanted Summer Guests *by Jessica Lisa, Research Associate*



During the summer, New Jersey experiences an influx of unwelcome visitors that prevent us from enjoying the beaches along our estuaries to the fullest extent. These unwanted visitors come in large groups and crowd our waters just when the water is getting warm and the sun is shining bright. At times, there are so many of these pests, their presence may even deter us from going in the water altogether. Can you guess what we're talking about? We're talking about sea nettles!

Sea nettles, *Chrysaora quinquecirrha*, are a species of jellyfish belonging to Phylum Cnidaria. This year, sea nettles were commonly seen by Urban Coast Institute scientists while conducting studies in the Barnegat Bay and the Manasquan River Estuary.

These gelatinous creatures inhabit estuarine and marine waters from New Jersey to the Caribbean and the Gulf of Mexico. Historically their habitat range didn't extend past Cape May, but over the past few years, northern NJ waters have become a more suitable habitat and sea nettles were apparently able to extend their range. Sea nettle populations become visibly abundant in the northeastern estuaries around late summer or early fall.

It may seem that the population of sea nettles increases just when the waters are warm enough to swim in and enjoy, but this isn't entirely true. Sea nettles are actually year round inhabitants of these waters and can be found in various life stages during the different seasons if you know what to look for. The life cycle of a sea nettle is similar to the life cycle of most other cnidarians, but there are a few notable differences which enable sea nettles to inhabit the chilly waters of New Jersey estuaries during the winter.

Free swimming, adult sea nettles are either male or female. Spawning takes place in the later summer or early fall, males release sperm into the water and females pump the sperm-laden water through their body to fertilize their eggs. The miniscule larvae are released and soon after spawning, the adult sea nettles die. The larvae are free floating and vulnerable to predators and the current for several days before they settle down on the bottom and attach to a substrate. After settling, the larvae grow and develop into flower-shaped polyps. At this stage, polyps are able to form encysts and survive the harsh conditions of winter for months or years, until more favorable conditions arise. When water temperatures increase in the spring, sea nettle polyps emerge from the dormant state and transform into tiny free floating microscopic versions of the adult sea nettle that grow into the painfully frightening adult sea nettles that most of us encounter in the late summer and early fall.

An adult sea nettle has a transparent bell that pulsates or contracts, allowing the creature to move through the water. The stinging sea nettle also has anywhere from 8 to 24 tentacles that can reach up to 4 or 5 feet in length. Each tentacle is armed with specialized stinging cells called Cnidocytes that contain stinging organelles called nematocysts. Nematocysts each contain a trigger and venomous barb enable this predator to entangle and stun its prey prior to consuming it. Sea nettles generally prey upon small fish, shellfish larvae, worms, zooplankton and other jellyfish such as the comb jelly. As efficient as these hunters are, their stinging mechanisms do not allow sea nettles to distinguish between prey and humans, making accidental contact with sea nettles a painful, but harmless experience for us.

Unfortunately, in the near future we may be experiencing a sting from a nettle more often than we would like. According to Dr. Michael Kennish of Rutgers University and the Barnegat Bay National Estuary Program (BBNEP), sea nettles were rarely seen in New Jersey coastal estuaries prior to 2000. Each year following 2000 periodic blooms of jellyfish have been recorded in Barnegat Bay and Little Egg Harbor Estuaries.

## Notes from the Field (con't) *by Jessica Lisa, Research Associate*

Studies conducted at the University of Maryland have noted a direct correlation between waters with elevated nutrient levels and jellyfish blooms. These findings point to a direct relation between human activities within watersheds and jellyfish blooms. Such human activities which include; fertilizers, pesticides, leaking car oil, and septic system malfunctions. Population booms of cnidarians in Barnegat Bay and Little Egg Harbor Estuaries are consistent with these findings as both estuaries are eutrophic.

UCI scientists have seen high numbers of sea nettles in The Barnegat Bay Estuary, consistent with those observations of Dr. Kennish and the BBNEP. UCI scientists have also routinely spotted sea nettles further north, in the Manasquan River Estuary. Sightings such as these may indicate future problems of sea nettle blooms for all New Jersey estuaries.

It is unclear if these creatures are here to stay, permanently expanding their habitat range to include New Jersey estuaries, or how their presence will influence the ecosystem. But whether just visiting or here to stay, the UCI scientists will be perfectly content encountering these painful creatures from above the surface on our boat or in our kayaks.

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**Guess the Coastal Creature Answer: The shore creature pictured here is the piping plover.**



*Photograph courtesy of Bill Dalton*

The piping plover is a shore bird that migrates from its southern wintering grounds to the Jersey Shore each spring. The piping plover is a protected species under The Endangered Species Act and is designated as threatened along the Atlantic Coast. The Urban Coast Institute participates in a cooperative project with the New Jersey Division of Fish and Wildlife Endangered and Nongame Species Program. Through this project, summer interns from Monmouth University are hired to assist in monitoring nesting sites of the piping plover and another threatened shore bird, the Least Tern. Nesting areas are identified and areas surrounding the nests are roped off to minimize interactions with beachgoers. Plover nests are even caged off to protect eggs and newly hatched chicks from predators such as gulls, feral cats, dogs and fox.



Urban Coast  
Institute

Monmouth  
University  
West Long Branch,  
New Jersey 07764

(732) 263-5662

[www.monmouth.edu/  
urban\\_coast\\_institute](http://www.monmouth.edu/urban_coast_institute)

**TONY MACDONALD**  
DIRECTOR

**JOHN TIEDEMANN**  
ASSISTANT DIRECTOR

**JENNIFER DILORENZO**  
SUSTAINABLE COASTAL  
COMMUNITY LIAISON

**JIM NICKELS**  
MARINE SCIENTIST

**MIKE WITTY**  
BIOLOGIST

**JESSICA LISA**  
RESEARCH  
ASSOCIATE

**LORRAINE JORDAN**  
ADMINISTRATIVE  
ASSISTANT

## WATER QUALITY MONITORING UPDATE

Using Data Loggers *by Jim Nickels*

A network of automated water quality sensors in important estuarine waters of the state will allow scientists to better understand these ecosystems and discern the links between water quality, biological activity, and stress-induced events. Continuous monitoring of water quality conditions using near real-time data collection techniques eliminates the need for frequent trips to monitoring sites and benefits scientists and managers by allowing them to track environmental conditions at any given moment and more readily respond to episodic events as they happen which, in turn, can facilitate more accurate planning and decision making.



To date:

- As of early October monitoring commenced in the Navesink River at the Oceanic Bridge, Shrewsbury River at the Pleasure Bay Bridge, and in the Western Manasquan River at Daymark 13.
- In early January stations will be added in northern Barnegat Bay at Mantoloking and in Shark River at the Belmar Basin.
- Funding has been provided by the U.S. Environmental Protection Agency and the Dickinson Foundation.

**Sea Stars of the Jersey Shore** ([Asterias reubens](#)) in the UCI aquarium.

