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**MONMOUTH
UNIVERSITY**

where leaders look forward™



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News from the

Urban Coast Institute

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Director's Message *By Tony MacDonald*



Priorities for Coastal and Ocean Policy Reform

Monmouth University's beautiful campus is located less than one mile from the Atlantic Ocean. At the Urban Coast Institute (UCI), we recognize that we have a special responsibility to the community along the Shore and the neighboring states with whom we share a common ocean. One of the key recommendations of the recent report by the *US Ocean Commission on Ocean Policy* was that leadership on coastal and ocean management must be taken at the state and local level. At a recent NJ Senate Environment Committee hearing, Monmouth University's President and former US Ocean Commissioner, Paul Gaffney II outlined three principle areas where New Jersey could improve its ocean and coastal management efforts:

- Improved governance of New Jersey's coastal and ocean resources—governance that integrates land use, watershed and regional ocean management, and applies ecosystem-based approaches that support both the environment and sustainable human uses.
- Enhanced support for coastal and ocean monitoring, observations and research, including socio-economic research;
- Support for implementation of community resilience and adaptation strategies to mitigate and respond to the increasing threats of coastal storms, sea level rise and coastal flooding.

There is currently no overarching state ocean policy or plan to assure a proper balance between the demands for offshore energy, wind farms, navigation and other productive uses, and the need for conservation of important habitats, fisheries productivity and biodiversity. The numerous NJ state agencies – DEP; Smart Growth and Community Affairs; Commerce and Tourism, Transportation and Agriculture - need to work more closely together toward shared objectives.

Regionally, NJ could take the lead in reaching out to others Mid-Atlantic states to identify opportunities for regional collaboration to address critical regional issues such as proposed offshore energy, coastal hazards and sea level rise, as well as conservation of fisheries and other living marine resources. New York has already passed legislation encouraging regional collaboration. New Jersey can look to many other states and regions for models for action including California, Massachusetts, and Washington, the Gulf of Mexico, Great Lakes and Gulf of Maine.

Director's Message (con't)

UCI always seeks to base its policy recommendations on the best available science. NJ should develop an Ocean Research, Science and Technology Agenda that encourages innovation and enhances the role of the state as a leader in ocean education, research, technology development and training. Monmouth recently entered into an agreement with Rutgers and Stevens Institute of Technology to collaborate to secure more support for coastal and ocean monitoring and observation systems, and received a \$350,000 grant from the Fairleigh Dickinson, Jr. Foundation to expand our coastal real-time water quality monitoring network in collaboration with DEP.

The reality is that a healthy and productive coast and ocean is an important part of New Jersey's economy, and we can do more to protect ocean-related businesses and jobs. NJ should undertake a statewide analysis of the economic value and benefits, including natural resource values, associated with coastal and ocean resources and coastal and ocean related businesses, and provide an annual report to the Governor and Legislators. Many other states including Florida, Massachusetts and California are undertaking comprehensive ocean economic assessments.

NJ has taken a national leadership role in climate change; yet, the state still faces significant loss of life and property from coastal hazards. It just a matter of time before 'the big one' hits New Jersey. Increased support can be provided to communities to adapt to sea level rise and mitigate the potential impact of storm. Recommendations for increased funding for "blue acres" land acquisition is a step in the right direction, but falls far short of identified needs. The UCI recently received a small grant from the National Oceanic and Atmospheric Administration to work with the University's Rapid Response Institute to develop a pilot project that will establish the mechanisms at the local level to explore how to coordinate the roles of government and local communities in disaster readiness, risk adverse behaviors, risk reduction and mitigation, disaster warning and response.

These are just a few of the coastal and ocean issues facing NJ. The UCI is working on these and other initiatives to support state and community efforts to identify the best policies and program approaches.

UPCOMING UCI EVENTS

Streamside Living in Monmouth County

Saturday
October 20, 2007
8:30 am-1:00 pm
Monmouth County
Agricultural Center

Stream Restoration:
Tools and Techniques
Tuesday, October 23, 2007
9:30 am-3:30 pm
Monmouth County
Agricultural Center

Ocean Symposium
Wednesday,
October 31, 2007
9:30 am-12:00 pm
Awards Luncheon
to follow
Reservations required

Public Trust Doctrine
Workshop
November 12, 2007
8:30 am—2:30 pm
Magill Commons
Monmouth University

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

URBAN COAST INSTITUTE
MONMOUTH UNIVERSITY
PRESENTS

*THE 3RD ANNUAL FUTURE OF THE
OCEAN SYMPOSIUM AND
CHAMPION OF THE OCEAN
AWARDS LUNCHEON*

WEDNESDAY, OCTOBER 31, 2007
WOODROW WILSON HALL

SYMPOSIUM 10:00 A.M. –12:00 P.M.
LUNCHEON FOLLOWING
CALL (732) 263-5662 FOR RESERVATIONS

***Please contact
UCI at
(732) 263-5662
with your ideas
and concerns on
coastal issues.***

COASTAL CONNECTION UPDATE

“enVisioning the Future of Coastal Management”

by Jennifer DiLorenzo

The Urban Coast Institute’s “enVisioning the Future of Coastal Management” sessions were held June 26th-28th, 2007 at three locations around the state: the Northern Coast, at Stevens Institute of Technology; the Atlantic Coast, at Ocean County College; and the Delaware Coast, at the Delaware River Port Authority.

As a follow up to the “enVisioning” sessions, UCI, NOAA (National Oceanic and Atmospheric Administration) and the Coastal States Organization (CSO) are working with sponsors of relevant federal legislation to provide stakeholder information from the “enVisioning” sessions. In late July at Coastal Zone ‘07 in Portland, Oregon, UCI Director Tony MacDonald participated in discussions with coastal management experts and stakeholders from around the country. It is expected that key principles and priorities will be identified by NOAA and CSO in early September. Thereafter, NOAA, CSO and Congressional Committees will work to develop more detailed legislative recommendations.

Two relevant bills have already been introduced are S. 1579, a bill reauthorizing the Coastal Zone Management Act, and H.R. 21 better known as “Oceans 21.” It is likely that those bills will be significantly revised before consideration by the relevant Committees or Congress. (Copies of those bills are available at <https://www.congress.gov/>). UCI Director Tony MacDonald is in the process of reviewing the legislative alternatives and preparing recommendations, based on information gathered at the New Jersey (and other) visioning sessions. This review will assist the New Jersey’s congressional delegation, and other groups, in preparation of legislation.

Identifying Priorities for Shoreline Management of Bays, Estuaries and other Sheltered Coastal Environments

By Jennifer DiLorenzo

On September 6th, Monmouth University, in cooperation with CICEET (Cooperative Institute for Coastal and Estuarine Environmental Technology) and URS Greiner Corp., held a workshop on shoreline management. A goal of the workshop was to develop a research agenda that would encourage erosion control yet still preserve and enhance natural habitats. A conference summary can be downloaded at www.monmouth.edu/urban_coast_institute/. Informative presentations on the success of “living-shorelines” emphasized the need for more research and demonstration projects that evaluate the effectiveness of “non-hardening” or “soft” technologies for erosion control.

Key findings were:

- Undertake demonstration projects to test/evaluate coastal management measures, both structural and nonstructural.
- Undertake sediment modeling to generate information to support coastal management decisions on the causes of, and responses to, erosion.
- Map “back bay” areas in terms of both physical characteristics and existing infrastructure.
- Inventory coastal areas in need of attention.
- Embrace a longer term time frame when undertaking research and planning on coastal issues and impacts (10 years plus), with full consideration of present and future conditions.

COASTAL FACTS

MULTI-STATE COASTAL POLL

Monmouth University’s Urban Coast Institute and Polling Institute announced the results of a survey of residents living on the Mid-Atlantic coast—finding that most residents believe their local coastal environments are generally in good health, but they are concerned about erosion and pollution and think that the government could be doing more to protect the coast.

Two-in-three Mid-Atlantic coastal community residents say that their shorelines (67%) and waters (64%) are in good health, but only about 1-in-7 would rate their health as “excellent.” These residents are split on whether their local coastal environment’s health has improved (27%), worsened (31%) or stayed the same (36%) over the past ten years. Another 32% anticipate no change.

The survey found that residents are willing to pay more in taxes in order to protect coastal waters, shorelines and beaches.

The full survey report is available online at:

<http://www.monmouth.edu/polling/>.



Microbial Source Tracking *by Mike Witty*

UCI scientists have been leaders in the field of microbial source tracking (MST). It is easy to identify a problem in waste water infrastructure by tracing it *downstream*. For example, once can trace along a pipeline from a sewage facility to find breaks or noting septic tank overflow at its source. However, the common occurrence of widely distributed or “non-point” pollution shows that not all *point* source problems are being solved before they disappear into the ground and emerge as poorly defined *non-point* sources. Tracing pollution from non-point sources *upstream* is the way of fixing difficult pollution problems. Bacteria all look pretty much the same under a microscope, for example *Escherichia coli* a common gut bacterium (figure 1). Many types of bacteria look just like this!

Figure 1. *Escherichia coli*



http://en.wikipedia.org/wiki/Image:EscherichiaColi_NIAID.jpg

Bacteria also look very similar when growing in our laboratory (figure 2). These marine bacteria harvested by us as part of a plankton sample all look the same, but have very different properties. Telling if pathogens are present is not possible just by looking, but they must be there because some people are getting sick from contact with pollution in New Jersey. It is also impossible to tell if the source of pollution is a leaky pipe or geese roosting in the water reservoir or anything else you can think of where feces come into contact with drinking or recreational water.



Figure 2. Sample of New Jersey marine bacteria grown on rich medium (agar) in the UCI laboratory.

We have been using intensive studies of bacteria in water sample to find pollution and trace the source of pollution using biochemical characteristics. It takes a lot of work but we are finding where some of the pollution comes from and passing the baton on to local government.

We have recently completed studies of water quality for Wreck Pond, Shark River, Deal Lake and Silver Bay. By using intensive studies of antibiotic resistance of bacteria in water samples we have been able to find pollution and attribute the source to categories like human, farm, bird or pet. This is important because the solution to a sewerage problem is very different to the solution of a Canada Goose problem. It takes a lot of work but we are finding where some of the pollution in New Jersey comes from and will help local government find the best way to improve water quality by improving the **right** infrastructure.

For more information, contact Dr. Witty at (732) 263-5662.

BLUE TIPS: WHAT YOU CAN DO TO SAVE OUR OCEAN

[Plastic Waste Reduction](#)
Plastic pollution is a persistent problem in marine waters for numerous reasons. Every year, plastics are responsible for the deaths of over 1,000,000 sea birds, 100,000 marine mammals, and countless fish. Marine animals die either from ingestion of plastic or entanglement and drowning. 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:

[Participate in local beach sweeps](#)
Clean Ocean Action, Water Watch, and other ocean oriented organizations hold several sweeps a year to clean our waterways of garbage and debris. Historically, clean ups have documented that plastic debris make up over 80% of the garbage collected on NJ beaches and beaches throughout the country. Beverage and food debris associated with people's eating habits made up almost 50% of the plastics. For more information and for ways to get involved in clean-ups visit:

<http://www.cleanoceanaction.org/>
and <http://www.njwaterwatch.org/>.



Notes from the Field *by John Tiedemann & Jessica Lisa*



Osprey pair nesting on a channel marker in Barnegat Bay

Motoring slowly along the intracoastal waterway to our next sampling station, we notice that something looks different about the channel marker off the starboard bow. As we get closer, the silence is broken by a frenzied *cheereek! cheereek!* as an osprey emerges out of the mass of branches piled on top of the platform on the marker.

The osprey, also known as the fish hawk, is a raptor that inhabits coastal rivers, marshes, bays, inlets and other water bodies, and feeds almost exclusively on fish. Ospreys tend to nest on platforms, dead trees, channel markers and other pole-like structures close to their fishing grounds but far from human interaction. Nests tend to be high above the ground or water and provide perched osprey with an unobstructed view of their surroundings.

Osprey populations were once abundant along the New Jersey coast in the early 1800s. Later that century, populations declined significantly due to loss of habitat from human settlement of coastal areas, the removal of trees which served as nesting sites, egg collecting and hunting.

The osprey population suffered another substantial decline in the 1940s and 50s with the indiscriminate overuse of the pesticide Dichloro-Diphenyl-Trichloroethane (DDT). DDT is a synthetic chemical that was used to eradicate mosquito populations and prevent the spread of malaria. Because of its wide use, DDT, which is a persistent compound, contaminated local fish populations. When ospreys fed on the contaminated fish, over time they accumulated high levels of DDT in their bodies. DDT contamination in ospreys prevented calcium metabolism and reduced the strength and thickness of eggshells. The weight of nesting ospreys on the eggs caused the shells to break which severely impaired the population's ability to reproduce.

Coastal populations of osprey pairs in New Jersey were estimated at 500 prior to the use of DDT. That number dwindled down to 53 pairs over the next several decades. In 1968, New Jersey recognized the severe environmental impacts of DDT and banned its use. In 1972, the Environmental Protection Agency banned its use nationwide. The banning of DDT use, along with the osprey being placed on the New Jersey Endangered Species List, provided the impetus for a recovery program to be implemented by New Jersey's Endangered and Non-game Species Program. As a result, the osprey population began to slowly recover, success of reproduction increased, and man-made habitats were accepted and used by the osprey. In 1985, the osprey became the first species to be removed from New Jersey's Endangered Species List with its status upgraded to threatened.

Currently, there are more than 360 nesting pairs of ospreys in New Jersey. All summer, while conducting several UCI research projects in local estuaries, including Shark River and Barnegat Bay we have had the pleasure to observe numerous occupied osprey nests and have been able to see these apex predators in action.

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WATER QUALITY MONITORING UPDATE

Using Data Loggers *by Jim Nickels*

The UCI is embarking on implementation of a long-term, near real-time water quality monitoring network in the northern estuaries of New Jersey. This work is done in collaboration with the New Jersey Department of Environmental Protection Bureau of Marine Water Monitoring and local/regional watershed management groups. It is funded by the Fairleigh Dickinson, Jr. Foundation and the U.S. Environmental Protection Agency.

Deploying 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. It also allows them to readily respond to episodic events as soon as they happen which can facilitate more accurate planning and decision-making.

Project Status:

- The selection of the deployment sites has been finalized. Four sites are being established under funding from the U.S. Environmental Protection Agency – two sites in Barnegat Bay and two sites in the Manasquan River Estuary.
- Two additional sites are being established with funding provided by the Fairleigh Dickinson, Jr. Foundation – one in the Shark River Estuary and one in the Navesink River Estuary.

All of the equipment necessary to implement the project has been procured and assembled and is currently undergoing field testing; initial deployment is scheduled for early October. For more information, please contact Jim Nickels at (732) 263-5686.

