



*~Happy Holidays and Best Wishes for the New Year~*

## News from the Urban Coast Institute

### Inside this issue:

Director's Message	1
A Call for Regional Action to Restore Coastal Lakes	2
New Survey Boat to Support Benthic Mapping	2
Need for Sustainable Economic and Environmental Policies for Communities	3
In the Lab - View MicroLibrary Video Collection	3
Guess the Coastal Creature Feature	3
UCI Begins Work under NOAA Grant	4
Blue Tips - Go Green!	4
UCI News	5
NJ Coastal Facts	6
Creature Feature Answer	6

### *Director's Message by Tony MacDonald*



#### Marine Debris Continues to Degrade Our Oceans

I was honored to serve as member of a Congressionally-chartered National Research Council (NRC) Committee that was asked to evaluate the persistent and growing problem of marine debris. The NRC Committee was mandated to assess the effectiveness of international and national measures to prevent and reduce marine debris. Over the past two years, the Committee focused on debris discharged at sea, especially the problem of derelict fishing gear that has been found in huge amounts in the open ocean and along shorelines. The Committee concluded that there is a need for significant local, regional and national action.

With one of the busiest ports in the world, plans to increase the transport of garbage by barge, and an extensive coastal tourism industry that depends in large part on how clean our beaches are, marine debris is an important issue for this region. Debris discharged from vessels, as well as marine litter that washes into the sea from land during storms, is not only unsightly, it discourages people from coming to the beach, impacts local economies and can be dangerous to both people and wildlife.

The Committee report pointed out that concerted action needs to be taken by vessels owners and operators, government agencies and residents to adopt waste prevention and minimization techniques to prevent, as well as cleanup, debris.

The Urban Coast Institute concurs with the study recommendations and urges the following important actions be taken to abate marine debris:

- The U.S. should take the lead internationally in amending international treaties, as well as domestically amend laws and regulations to move toward a goal of "zero discharge" of marine debris.
- Domestic regulation and management remains fragmented; therefore, Congress should designate a lead agency and provide resources needed to abate marine debris problems comprehensively.
- The International Convention for the Prevention of Pollution from Ships (MARPOL) Annex V, which governs management and discharge of garbage from ships, should be amended to include a prohibition on discharge of garbage at sea, allowing for limited exceptions.
- Ports should provide adequate facilities for accepting and managing all vessel waste, and ships should have incentives to dispose of their waste in port.
- The U.S. Environmental Protection Agency, NOAA, and the U.S. Army Corps of Engineers should help fishing communities in New Jersey and in other coastal states explore alternative strategies and technologies for management and disposal of recovered gear.

More information or copies of the NRC report can be obtained from National Academies Press at 202-334-3313 or 1-800-624-6242 or online at [http://www.nap.edu/catalog.php?record\\_id=12486](http://www.nap.edu/catalog.php?record_id=12486), or by contacting Tony MacDonald at [amacdona@monmouth.edu](mailto:amacdona@monmouth.edu).

## A Call for Regional Action to Restore Coastal Lakes

by John Tiedemann, Assistant Director

Page 2

Herring runs, fyke nets, day sailors, rowing skiffs, gondola and swan boat rides...Monmouth and Ocean counties' coastal lakes have historically provided a variety of recreational opportunities and served as important habitats for fish and wildlife. Unfortunately, these aquatic ecosystems have become degraded or unhealthy from the impacts of the intense surrounding development including unnatural modifications to adjacent shorelines and riparian areas and the introduction of a variety of pollutants from storm water and runoff. This results in degraded water quality, and disturbed fish and wildlife habitats.

The majority of our coastal lakes are now valued less for the natural resource they support and the recreational opportunities they offer and viewed as little more than the terminal receiver of road and overland runoff from storm sewers, algae covered mud holes and havens for Canada geese. Further complicating this scenario is the fact that, with few exceptions, no organization, agency or governing body has taken responsibility for their health and management.

It is time to change this state of affairs. State, county and local governments must partner with representatives of civic groups, community organizations and local coastal and watershed management groups to develop and implement cost-effective strategies to restore, protect and maintain coastal lake ecosystems in Monmouth and Ocean counties.

Restoration goals need to be developed with a vision toward improved recreational opportunities and fishery habitat. Restoration efforts should address elimination of nuisance and invasive species, control of non-point source pollutants such as nutrients and sediment from upland areas and provide a plan for the addition of native plants and vegetation along the banks to serve as a buffer zone to collect nutrients, sediments and other pollutants and enhance the wildlife habitats around the lakes.

The challenge facing local communities is to manage coastal lake environments in a manner that provides for maintenance of their ecological integrity and accommodates active and passive recreational activities. While a variety of watershed and storm water management plans have recently been developed, local communities have struggled to identify and implement on-the-ground coastal lake restoration strategies.

It is extremely encouraging to see the level of interest and commitment on the part of citizens throughout Monmouth and Ocean counties to seek solutions and pursue opportunities to improve the status and quality of our coastal lakes. However, this will be no easy task. New resources need to be allocated at the state, county and municipal level, permit processes streamlined, and problems such as dredging and dredged material disposal, aquatic weed control and storm water infrastructure improvements must be addressed on a regional basis.

For comments or more information, contact John Tiedemann at [jtiedema@monmouth.edu](mailto:jtiedema@monmouth.edu)

## New Survey Boat and Equipment to Support Benthic Mapping

by Jim Nickels, Marine Scientist

The UCI recently expanded its fleet with the addition of a new survey boat named the *R/V Seahawk*. The *Seahawk* is a versatile, trailer-able, 27-foot fiberglass hulled survey vessel. It is equipped with a heated and air-conditioned cabin for year-round survey work, and lighted for nighttime operations. The *Seahawk* is rigged to support a variety of scientific work including single and multi-beam hydrography, sub-bottom profiling, side scan sonar, magnetometer surveys, and benthic and water column sampling.

The UCI's new boat usage will include: student training and research, support sponsored and contract research projects and act as the center piece for data acquisition for a NOAA-funded seabed classification and benthic mapping project in several of the local estuaries.

For more information, contact Jim Nickels, [jnickels@monmouth.edu](mailto:jnickels@monmouth.edu).



## Need Sustainable Economic and Environmental Policies for Communities *by Jennifer DiLorenzo, Sustainable Coastal Community Liaison*

The Wall Street bailout is on everyone's minds these days. A \$700 billion rescue plan is certainly hard to ignore. I suggest we link economic stability with environmental sustainability.

Sustainability, in a general sense, is the capacity to maintain a certain process or state indefinitely. As applied to humans, sustainability has been expressed as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." In recent years, the concept of sustainability has also been applied more specifically to living organisms and natural systems. Certainly, economic and environmental policies cannot be mutually exclusive; comprehensive and cooperative programs must be developed that will meet the needs of future generations.

If we plan properly, we can move toward economic stability and at the same time, be able to ensure ecosystem sustainability. By that I mean that we should devote a significant portion of the "bailout" funds toward environmental sustainability, for example, remediating Brownfields, purchasing open space for natural resources protection and environmental restoration. In addition, a significant portion of the money also should be spent on renewable energy sources, so that our economy is no longer driven by a single fuel source. Job creation, economic development, and environmental quality can and should be linked together by sustainability concepts. Our future depends on it.

## View UCI Videos in the American Society for Microbiology MicrobeLibrary Visual Collection *By Mike Witty, Postdoctoral Research Fellow*

Michael Witty, Ph.D., Department of Biology, Urban Coast Institute of Monmouth University, recently published three scholarly videos in the MicrobeLibrary Visual Collection of the American Society for Microbiology. The three videos, which will increase the research data available through the Society's library, are "An Environmental Sample which Shows Ciliates Preying on Diatoms," "Video Microscopy Shows Behavior of Vorticella Colonizing Lemna," and "The Gliding Motion of Oscillatoria and Diatoms."

"This is part of my work showing nature in urban environments," observed Dr. Witty. "The environment in the corners of cities and suburbs contain valuable and fascinating features of nature that can provide valuable information for residents, planners and scientists. Static images do not show the dynamic and vital nature of microbes the way videos do."

The American Society for Microbiology's Visual Collection is a clearinghouse of high quality, peer-reviewed images, animations, and videos about the microbial world for educators, primarily at the undergraduate level. The library builds upon the scientific expertise, intellectual creativity, and private collections of the members of ASM and other researchers. Witty's videos are important additions to MicrobeLibrary because, given the current social and political climate, it is more important than ever that authoritative materials are available to help students, the general public, and other scientists understand the significance and impact of micro-organisms in the world.

## GUESS THE COASTAL CREATURE

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



Picture provided by Jennifer DiLorenzo

- A. Shark
- B. Dolphin
- C. Whale

Answer on Page 6...

## UCI Begins Work under NOAA Grant to Improve Coastal and Ocean Stewardship *by Tony MacDonald, Director*

The UCI has began work under an \$800,000 grant from the National Oceanic and Atmospheric Administration (NOAA) to undertake projects that will foster improved coastal planning and stewardship at the state and regional level, promote the creation of sustainable coastal communities, and identify coastal restoration and conservation opportunities.

The projects, which will be undertaken over the next two years, started in September 2008 and include efforts that promote coastal and marine conservation, foster restoration and regional ecosystem-based management.

UCI staff will work with community elected officials, planning boards, environmental commissions, and municipal attorneys to review their current regulations and policies, recommend changes and develop model local ordinances. Information on sustainable communities and communities that are coastal hazard ready will be prepared as "how to" guides for coastal communities.

The UCI staff will also seek to advance the public trust doctrine in New Jersey by developing support for improved coastal zone management rules and promoting community-provided public access to the waterfront.

Another project will provide municipal officials, representatives of civic groups, community organizations, and local watershed and marine resource management groups with the tools they need to protect and restore critical areas in watersheds. The areas to be targeted will include the Manasquan, Shark, Shrewsbury and Navesink rivers.

This is part of a broader UCI strategy that will focus on mapping and linking shallow water habitats and shoreline conservation and restoration efforts, expanding the network of coastal observation points, including the network of six near-real time monitoring stations UCI owns and two additional it operates.

The grant also will provide funding for up to six faculty research projects and a Public Scholars in Residence program. Research undertaken through these programs will involve local community partners and will leverage other sources of support.

The primary beneficiaries of the projects and activities will be the local communities, local elected officials, environmental commissions and community groups. The efforts will strengthen collaboration among academic, non- governmental organizations and the private sector working with communities, as well as at the regional level.

For more information, contact Tony MacDonald at [amacdona@monmouth.edu](mailto:amacdona@monmouth.edu).



## BLUE TIPS - GO GREEN!

### 10 WAYS YOU CAN REDUCE EMISSIONS

1. **Become Carbon-Conscious.** Start by using one of several publicly available carbon-footprint calculators.
2. **Change Your Driving.** Drive less; choose a fuel efficient vehicle.
3. **Look for the Energy Star Label.** When buying new appliances look for the EPA's Energy Star label.
4. **Choose Clean Power.** Consumers in NJ can purchase electricity generated from renewable resources that produce no carbon emissions.
5. **Unplug an Underutilized Refrigerator.** Unplugging a rarely used refrigerator or freezer can lower CO2 emissions.
6. **Get a Home Energy Audit.** Simple measures (e.g. a programmable thermostat) can each reduce a family's CO2 emissions.
7. **Change Light bulbs.** Incandescent light bulbs with an energy-saving compact fluorescent light bulb (CFL), will reduce global warming pollution.
8. **Buy Good Wood.** When buying wood products, check for labels that indicate the source is from forests managed in a sustainable way.
9. **Help Others.** Set a good example while inspiring and assisting others.
10. **Get Involved.** Let policy makers know you are concerned about climate change.

**Source:** Adapted from *Union of Concerned Scientist's Citizens Guide to Reducing Emissions*.

**UCI News.....*****Hazard Resilient Coastal Communities Project***

The UCI has begun a coastal resiliency indicator project that will identify parameters that can be measured over time to determine how well coastal communities are preparing to avoid and bounce back in response to coastal hazards such as hurricanes, nor'easters and flooding events. The project, supported by NOAA, is based on a resiliency framework developed for UCI by Dr. Susan Cutter, Professor of Geography at the University of South Carolina and Director of the Hazards Research Lab. The initial work is focused on Monmouth County and there are plans to expand into Ocean County in 2009. A copy of the resiliency framework is available on the UCI website. [www.monmouth.edu/urban\\_coast\\_institute](http://www.monmouth.edu/urban_coast_institute) under link to "White Papers."

***Sustainable and Resilient Community Workshop***

The UCI also held a Sustainable and Resilient Communities Workshop on September 10<sup>th</sup> to provide information for Monmouth County communities on coastal issues including sea level rise, coastal hazards planning, green building and sustainability. A workshop summary and copies of presentations are available on the UCI website under link to "Activities and Reports." Additional information can be obtained by contacting Jennifer DiLorenzo at 732-263-5567 or [jdiloren@monmouth.edu](mailto:jdiloren@monmouth.edu)

***UCI Offers Sustainable/Resilient Coastal Community Presentation***

The UCI is offering staff presentations to your organization on how to create sustainable "green" communities and promote resiliency, particularly in preparation for coastal storms. The UCI also is offering "No Adverse Impact" training for communities. For more information or to schedule a presentation, please contact Jennifer DiLorenzo, at 732-263-5567 or [jdiloren@monmouth.edu](mailto:jdiloren@monmouth.edu).

***Link to Water Quality Monitoring Goes Live on UCI Website***

A link to UCI network of eight long-term, near real-time water quality monitoring stations is now available on the UCI website [http://www.monmouth.edu/urban\\_coast\\_institute/coastal\\_water\\_quality/default.asp](http://www.monmouth.edu/urban_coast_institute/coastal_water_quality/default.asp). The network is operated in collaboration with the New Jersey Department of Environmental Protection Bureau of Marine Water Monitoring (NJDEP BWM), Barnegat Bay National Estuary Program, Monmouth County Board of Health, local and regional watershed management groups, and other partners. Parameters measured include: dissolved oxygen, O<sub>2</sub> saturation, water temperature, turbidity, water salinity, chlorophyll and pH. For more information about UCI water quality monitoring, contact Jim Nickels [jnickels@monmouth.edu](mailto:jnickels@monmouth.edu).

***White Papers Posted on UCI Website Reviewing Coastal Management Rule and Regulations and Promoting Regional Ocean Stewardship***

As part of the UCI's on-going efforts to analyze and stimulate discussion of critical coastal and ocean issues in the state and region, two 'white papers' have been posted on the UCI website.

The first, entitled *Coastal Resource Protection: A Review of Select New Jersey Regulatory and Planning Tools*, was authored by Susan M. Kennedy, Esq. The paper analyzes two of New Jersey's most well-known and, at times, controversial aspects of our Coastal Management Program: (i) the Rules on Coastal Zone Management (the Coastal Rules), the regulatory scheme that, among other things, implements CAFRA, New Jersey's premier coastal protection statute; and (ii) CAFRA/Coastal Town Center Designations, a tool that combines the regulatory protections of CAFRA and the planning protections of the State Plan. This analysis explores the strengths and weaknesses of these tools and suggests ways in which they might be better utilized.

The second paper, drafted by Robbin Peach, MA, MPA, *Improving Regional Ocean Stewardship in Mid-Atlantic Coastal States and Federal Waters*, provides a brief background on regional multi-state collaboration approaches, and outlines issues and process guidelines to consider when working toward "Regional Ocean Governance". These guidelines include the following: identify champions and build coalitions, create mandate mission and vision, consider the structural framework, identify priority issues, articulate outcomes, clarify role of ecosystem-based management, communicate to public, measure progress and adapt, prepare the next generation and think creatively.

## NEW JERSEY COASTAL FACTS DID YOU KNOW?

### Trends in Temperature and Sea Level

- ◆ There is a statistically significant rise in average statewide temperature over the last 110 years. Both winters and summers have become warmer in New Jersey during that period.
- ◆ Sea level at the NJ coast sites of Atlantic City, Cape May, and Sandy Hook has risen at a rate of approximately 3 to 4 mm/y since recording began.
- ◆ The human caused contribution to the recent higher rate of rise is approximately 1-2 mm/y, approximately one-half of the total observed rate of rise. Some of the human-caused rise is due to land subsidence caused by groundwater withdrawal, especially at Atlantic City site.
- ◆ By the 2020s, climate change could result in an increase in summer heat-related mortality of 55% and a more than doubling in mortality by the 2050s.
- ◆ Warmer temperatures are expected to lead to more intense rain.
- ◆ The effects of sea level rise will be exacerbated in NJ since relative sea level rise in NJ will be greater than the global average due to coastline subsidence.
- ◆ Effects of rising sea level are magnified during storm events. Higher sea levels will increase the severity of storm-related flooding in coastal and bay areas. In addition to significant property losses, sea level rise will adversely impact coastal ecosystems and may threaten coastal fresh water supplies due to salt-water intrusion.
- ◆ **Source:** NJDEP, Climate Change in New Jersey: Trends in Temperature and Sea Level (2006)

### Guess the Coastal Creature Answer:



Photo courtesy of Jennifer DiLorenzo

The shore creature pictured here is the **Bottlenose Dolphin**.

A pod of bottlenose dolphins, some pictured here, made their way into Monmouth County's own Shrewsbury and Navesink Rivers in late June, and are still enjoying their time in Jersey.

Marine Scientists remain convinced that the 12 dolphins are doing just fine, are healthy, and will survive the winter in inland coastal waters.

**Source:** NOAA's Fisheries Service, 12/18/08

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