



Urban Coast Institute | Annual Report 2015

**MONMOUTH
UNIVERSITY**

URBAN COAST INSTITUTE

A scenic view of a beach with people, a rocky pier, and a boat on the water. The sky is blue with some clouds. The beach is sandy and has many people. There are blue barrels along the pier. A boat is on the water in the foreground.

OUR MISSION

To serve Monmouth University and the public as a forum for research, education and collaboration in the development and implementation of science-based policies and programs that support stewardship of healthy, productive and resilient coastal ecosystems and communities.



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A Word from the Director

2015 was an exciting year of growth for the Urban Coast Institute (UCI).

We completed the Marine Science & Policy Initiative Challenge Grant campaign, including the implementation of innovative research grant programs that promise to give a new generation of scientists invaluable experience and support opportunities for faculty development. We added talented staff members who are making a difference in our communities, helping us forge new partnerships and sharing the UCI's story with stakeholders. Ground was broken on an extensive renovation of the Monmouth University School of Science building that will provide a new suite of offices for the UCI. We exposed thousands of students and members of the public to critical coastal issues through innovative events.

Thanks to our work in 2015, towns throughout the state are more resilient and better prepared for future major storm events. Residents and public officials have a clearer understanding of not only how vulnerable coastal communities are to the sea, but how vulnerable the ocean is to the impacts of human activities. UCI-funded research has taught us more about the region's marine wildlife and the pivotal role the ocean plays in our economy.

This Annual Report provides just a snapshot of our impacts in 2015. I encourage you to stay up to date with all of our work in the year ahead by signing up for our newsletter, reading our blog and following us on Facebook and Twitter.

Be an Ocean Champion every day!

Tony MacDonald

Director, Urban Coast Institute

Research and Engagement Helps Communities Build to Last



Contact the UCI to learn about how we can assist with the Regional Coastal Communities Initiative, waterfront resilience matters or Sandy high water mark mapping in your town.

Although the floodwaters have long subsided and the debris is cleared, the recovery from Superstorm Sandy is far from over for the Jersey Shore. Much work remains to protect our waterfront areas and revise emergency response and community resiliency plans so our communities can withstand and bounce back more effectively to the next extreme storm. The scientific expertise to meet these challenges was at a premium in 2015, and the UCI was there to answer the call.

As part of a joint partnership with the New Jersey Sea Grant Consortium, UCI Community Resilience and Climate Adaptation Specialist Dr. Michael Schwebel (bottom right) provided expert assistance to dozens of municipalities in Monmouth, Ocean, Atlantic, Cape May and Cumberland counties. Dr. Schwebel helped these towns to implement the state's Resilient Coastal Communities Initiative (RCCI), which offers resources and guidance for communities to assess their vulnerability to climate change, learn how sea level rise may impact their waterfront areas, seek access to technical expertise, apply for grants and more.

The high level of interest in coastal resilience since Sandy also put UCI staff in demand for speaking engagements organized by local civic groups. At "The Shore's Future: Living with Storms and Sea Level Rise," held in Toms River over the fall, Dr. Schwebel engaged many other respected experts in a unique "debate and caucus" forum that educated attendees on how climate change will impact their communities in the years ahead.

UCI Marine Scientist Jim Nickels and Dr. Schwebel are working with Monmouth County on a Federal Emergency Management Agency-funded project that delineates the high water marks reached during Sandy in local communities. The results will help inform discussions on the issue and could be useful as local governments, residents and businesses make development decisions in the future.



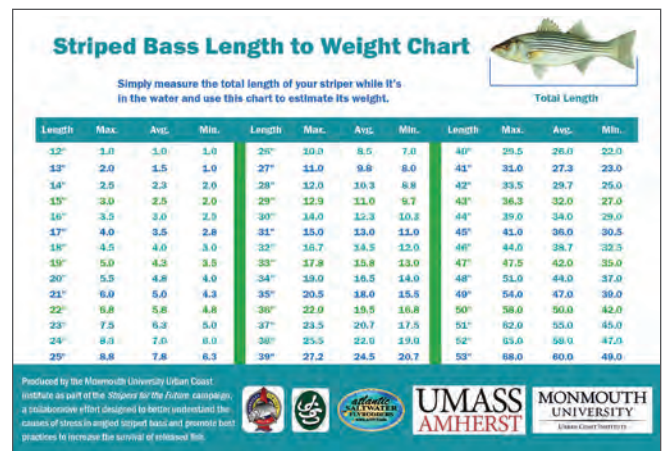
Fostering Student Engagement and Cutting-Edge Research



The UCI has made valuable use of the incredible intellectual asset that surrounds it each day—Monmouth University’s highly skilled student body. This young talent brought expertise and original perspectives to UCI projects in 2015, gathering professional experience while improving our work.

The UCI administers two student-faculty research grant programs that exemplify the transformative learning experience stressed in Monmouth University’s Strategic Plan. **The Marine Science & Policy Initiative** and the **Heidi Lynn Sculthorpe Summer Research Program** emphasize hands-on research projects that deliver real world experience to students and make a difference in the communities where the activities take place.

This year, the UCI awarded its first round of competitive grants for research projects through the Marine Science & Policy Initiative. Four research projects were completed by students with faculty mentors. Topics included oyster populations in New York’s East River, flood levels in Monmouth County during Hurricane Sandy, the Asian



shore crab’s presence in Barnegat Bay and catch and release best practices for Atlantic striped bass. The latter project built on the work of School of Science Interim Dean John Tiedemann’s Stripers for the Future public awareness campaign, with students also assisting with design of a waterproof length to weight chart for anglers (see above).



Students also completed six projects with faculty mentors through the Heidi Lynn Sculthorpe Summer Research Grant Program. Topics ranged from the use of low-cost paper microscopes that could help proliferate marine science in developing countries to a study of rise in domestic violence in the post-Sandy environment.

The UCI embraced opportunities to work with students of all academic disciplines on projects. In the fall, the UCI began a two-semester collaboration with two students from the University's Advanced Project Graphic Design course. Products they designed include a new brochure, fact

sheets, a UCI 10-year anniversary icon (see top right) and attractive graphic elements for the UCI website—all of which will help us communicate our mission and work. In addition, students from the University's Statistical Consulting class assisted the UCI with an analysis of data that showed the economic impact of recreational boating in New Jersey, Delaware, Maryland and Virginia.

Marine Science & Policy Initiative Challenge Grant Campaign Successful

In January, the University concluded a successful **2014 Challenge Grant** campaign to fund the Marine Science & Policy Initiative. An anonymous donor pledged \$3 million if the University could raise \$2 million in matching gifts. The challenge was met, thanks to the generous support of Santander Universities and many other donors.

The program promises to be a major part of the UCI's work and identity in the years ahead. These funds are making many of the innovative activities described in these pages possible, along with key facilities/equipment upgrades, the creation of the first endowed marine science professor position in the School of Science, and much more.

The UCI offers its gratitude to all who helped make this campaign a success.

The Monmouth-Rockefeller University Partnership

Monmouth University and the UCI have entered a valuable partnership with the Rockefeller University Program for the Human Environment (PHE) through the Marine Science & Policy Initiative.

Beginning in 2016, the universities will co-organize four annual conferences on scientific and policy topics of regional and national interest, alternating between the MU campus and RU's in New York City. With guidance from UCI Ocean Policy Fellow Paul G. Gaffney and Professor Jesse Ausubel, Director of the PHE, the partnership will extend to cutting-edge research projects on topics such as ocean noise, emerging marine exploration technologies and the use of environmental DNA (eDNA) fragments to detect the presence of aquatic species.

In addition, Professor Ausubel will visit Monmouth's campus on a regular basis to lecture and meet with students and faculty. In September, Professor Ausubel led a well-attended guest lecture on the "re-wilding" of American lands and his colleague Dr. Mark Stoeckle discussed his eDNA research projects at a lunch lecture.

The partnership will produce additional opportunities for MU students to work with Professor Ausubel, as well as summer placement or other collaboration opportunities.

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UCI Events Promote Awareness of Ocean Issues

The UCI exposed thousands of members of the Monmouth University community and beyond to emerging scientific and policy issues through its special events in 2015. These events continued to draw internationally respected experts in their fields, bolstering the University's growing reputation as the premier state and regional center for ocean and coastal policy.

The UCI's signature annual event, the **Future of the Ocean Symposium & Champions of the Ocean Awards Luncheon**, was headlined by renowned ocean explorer **Dr. Sylvia Earle** and National Geographic Society Chief Science and Exploration Officer **Terry Garcia**. Students, faculty and members of the public were treated to a captivating discussion about these speakers' lives at sea during the free educational symposium. The subsequent luncheon, which raised critical funding for student research and UCI programs, celebrated the work of Earle, Garcia and representatives of the Garden State Seafood Association, The Nature Conservancy and the Mid-Atlantic Fishery Management Council, three organizations that collaborated to ensure the preservation of 38,000 square miles of sensitive East Coast coral habitats.

Among other highlights:

- The UCI and the Manhattan Institute co-sponsored a lunch lecture in New York City with **Dr. Robert Ballard**, perhaps best known as the discoverer of the Titanic wreck. Ballard shared his views on the past, present and future of ocean exploration, as well as stories from his many adventures at sea with roughly 100 attendees, which included Monmouth University President Paul R. Brown and School of Science faculty.
- Four free lectures were offered to the public during the spring as part of Monmouth University's Science, Sustainability, and Society Series, sponsored by the UCI. Speakers included former New Jersey **Gov. James J. Florio**; **Paul Greenberg**, author of "Four Fish: The Future of the Last Wild Food"; **Caleb McClennen**, director of marine conservation for The Wildlife Conservation Society; and University of Delaware Professor **Douglass Tallamy**, author of "Bringing Nature Home: How You Can Sustain Wildlife with Native Plants."
- The UCI hosted a presentation on climate change in the Arctic region by explorer **David Thoreson** in September.

These were just some of the opportunities for educational enrichment and professional networking made possible by the UCI in 2015. Stay tuned for announcements on exciting events being planned for 2016.

The UCI's signature annual event, the Future of the Ocean Symposium & Champions of the Ocean Luncheon, draws national experts while raising critical funding for student research and programs. Visit Monmouth.edu/uci for a full library of videos and multimedia from this year's event.



Exploring and Restoring the Barnegat Bay

With the help of Monmouth University faculty and students, the UCI took steps in 2015 that will help improve the Barnegat Bay's health for future generations.

In the spring, UCI Marine Scientist James Nickels and Monmouth University Biology Professor Ursula Howson completed a three-year research project that revealed Sandy altered the balance and makeup of zooplankton living in the bay. The duo concluded that when Sandy temporarily formed an inlet through the barrier island at Mantoloking, the influx of sea water carried with it a wave of organisms that wouldn't normally thrive in warmer estuarine water.

Their work was part of a comprehensive New Jersey Department of Environmental Protection (NJDEP)

research effort to determine the sources and extent of environmental problems in the bay, and identify actions that could be taken to slow and ultimately reverse the bay's decline.

The UCI held a mini-symposium at Monmouth University in November that provided researchers from related Barnegat Bay projects with an opportunity to share their findings with each other.

The UCI also contributed to an American Littoral Society-led effort to revive the bay's oyster population. The UCI conducted underwater mapping to locate an ideal habitat to build an artificial reef for the oysters, then participated with Monmouth University student and other volunteers to deposit baby oysters at the site in July.



UCI Leads Development of Interactive Ocean Mapping Site

If every map tells a story, the Mid-Atlantic Ocean Data Portal would have plenty to say about the people, places and critters at sea.

Managed by the UCI with the Mid-Atlantic Regional Council on the Ocean (MARCO) and other partners, the Portal (portal.midatlanticocean.org) is an interactive mapping site and online toolkit that enables users to visualize and analyze ocean resources and human use information such as fishing grounds, recreational areas, shipping lanes, habitat areas and energy sites, among others.

The site is regularly updated with relevant data, blog content, educational “Ocean Stories” features, calendar listings for notable ocean planning events and more. The site has a special focus on the five-state Mid-Atlantic region (New York, New Jersey, Delaware, Maryland and Virginia).

In June, the UCI announced the first major redesign of the Portal since its launch in 2010. Among the new features were a Map Groups function that allows Portal users to create online communities where they can share maps they design and shapes they create with the Portal’s Drawings tool.

The Portal work is being supported through grants from the Gordon and Betty Moore Foundation and the National Oceanic and Atmospheric Administration. The grant also



enables the Portal Team to coordinate efforts with the MARCO to engage stakeholders and raise awareness of the importance of ocean resources to the region’s economy and environment.

Several major improvements underway will make the Portal a more powerful tool in 2016. The Portal team is currently working to develop new map layers related to marine life, ocean conditions, weather patterns and the many ways people interact with the ocean.



Charting the Future for the Mid-Atlantic Ocean



History will be made this year when the first-ever Ocean Action Plan (OAP) for the Mid-Atlantic region is submitted for federal approval. The UCI has been a leading voice in this process, serving on several influential committees and work groups tasked with developing the plan and Ocean Data Portal that will help inform it.

In 2010, the federal government established the National Ocean Policy, which called for greater collaboration among states and regional authorities on marine issues and supported the formation of regional planning bodies to develop ocean plans for their respective territories by the end of 2016. The Mid-Atlantic Regional Planning Body is one of eight such groups established nationally and is now guiding the creation of a plan for New York, New Jersey, Delaware, Maryland and Virginia.

An important milestone for the OAP was reached in September when the UCI joined government officials, Tribal representatives, industry leaders, members of the public and other stakeholders in Norfolk, Virginia, for a series of meetings focused on ocean issues in the five-state region. The following are some key dates scheduled in the plan's development:

- **Mid-June:** Release of draft plan
- **June-July:** Public comment period on plan
- **September:** Revised plan delivered to federal government for concurrence
- **December:** Final adoption

The UCI will continue to engage in the regional ocean planning process and share information on the OAP's progress throughout 2016.

UCI Director Co-Organizes Oceans Day at COP21

UCI Director Tony MacDonald traveled to Paris in December to help support an Oceans Day at the 21st United Nations Framework Convention on Climate Change (COP21), hailed as one of the most significant climate conferences in history. Delegates from almost 200 countries debated and approved a new international agreement to limit global warming at COP21.

The Dec. 4 Oceans Day brought together high-level leaders from governments, international organizations, academia, nonprofits and the private sector to discuss major climate and ocean issues, with a focus on their impacts on the most vulnerable peoples and ecosystems.

Prince Albert II of Monaco, Mary Robinson, President of the Mary Robinson Foundation and former President of Ireland, and Ségolène Royal, French Minister of Ecology, Sustainable Development and Energy, were among those who addressed attendees, stressing the need for decisive action on climate that also fosters ocean conservation and resilience, supports human rights and dignity, and recognizes the need for sustained commitments.



PARIS2015
CONFÉRENCE DES NATIONS UNIES
SUR LES CHANGEMENTS CLIMATIQUES
COP21 • CMP11

The Year in Photos



1. HONOREES AND SPEAKERS AT THE 10TH ANNUAL CHAMPIONS OF THE OCEAN AWARDS LUNCHEON, FROM L-R: GREG DIDOMENICO AND ERNIE PANACEK, THE GARDEN STATE SEAFOOD ASSOCIATION; DR. SYLVIA EARLE AND TERRY GARCIA, THE NATIONAL GEOGRAPHIC SOCIETY; RICK ROBINS, THE MID-ATLANTIC FISHERY MANAGEMENT COUNCIL; AND JAY ODELL, THE NATURE CONSERVANCY.
2. MONMOUTH UNIVERSITY PRESIDENT PAUL R. BROWN DELIVERS THE OPENING REMARKS AT THE FUTURE OF THE OCEAN SYMPOSIUM.
3. SAILOR DAVID THORESON (LEFT) AND UCI COMMUNITY RESILIENCE AND CLIMATE ADAPTATION SPECIALIST DR. MICHAEL SCHWEBEL SPEAK WITH AUDIENCE MEMBERS AT SEPTEMBER'S "ARCTIC JOURNEYS IN THE ERA OF CLIMATE CHANGE"
4. UCI DIRECTOR TONY MACDONALD (SECOND FROM L.) MEETS WITH GLOBAL OCEAN FORUM REPS AT THE DECEMBER COP21 CLIMATE CHANGE CONFERENCE IN PARIS.
5. UCI PROGRAM AND PROJECT DIRECTOR SUSAN KENNEDY MEETS WITH LEGENDARY OCEAN EXPLORER DR. ROBERT BALLARD AT AN EVENT JOINTLY SPONSORED BY THE UCI AND THE MANHATTAN INSTITUTE.
6. ROCKEFELLER UNIVERSITY PROFESSOR JESSE AUSUBEL DELIVERS A GUEST LECTURE AT MONMOUTH UNIVERSITY.
7. PROFESSOR NICKELS GUIDES THE RESEARCH VESSEL SEAHAWK UP THE NAVESINK RIVER.
8. MU STUDENT AND FACULTY RESEARCHERS EXAMINE A STRIPED BASS.

6



7



8



Welcome Aboard

Meet the three new members of the UCI team

SUSAN KENNEDY, Program and Project Director:

Susan brings more than 20 years of experience in the environmental realm working on land use, water quality and coastal issues from a variety of perspectives, including as an attorney practicing environmental and administrative law; as a project manager/biologist for the U.S. EPA Region 2 Superfund Division; and as a water quality analyst for the Monmouth County Department of Health's Environmental Laboratory. She also ran her own consulting business, serving the New Jersey and Mid-Atlantic environmental, legal and academic community with an emphasis on coastal zone management issues.

DR. MICHAEL SCHWEBEL, Community Resilience and Climate Adaptation Specialist: Dr. Schwebel's research and practice areas focus on climate change policy, resilience, community outreach and adaptation at the local, regional and state levels. He also teaches classes at the University in geography, climate change and policy, and is an extension agent of the New Jersey Sea Grant Consortium. Prior to the UCI, he developed and instructed several environmental courses at Temple and Rutgers universities. He is also a registered landscape architect and LEED-accredited professional, specializing in green buildings, landscape and design.

KARL VILACOBA, Communications Director: Karl previously worked for the North Jersey Transportation Planning Authority, where he handled a variety of public relations efforts and served as managing editor of *InTransition*, a national magazine covering transportation. He also spent eight years as a reporter and editor at Greater Media Newspapers and *USA Today's* Manhattan Bureau. The lifelong Shore resident served for several years as a member of the Lake Como Planning & Zoning Board and its Environmental Commission.

Financial Summary: 2015 Funding Sources

The Urban Coast Institute's work is made possible through a combination of funding from grants, donations, the Marine Science & Policy Initiative, Monmouth University and vessel contracts. The chart below reflects the percentage of UCI funding in these categories during fiscal year 2014-15.

45%
Grants

19%
Donations/Fundraiser

17%
Marine Science & Policy Initiative

16%
University

3%
Vessel Contracts

UCI Advisory Committee

Kenneth Pringle, *Chair*

Raymond Bogan

Laura Brinkerhoff

Michael Bruno

Nancy Byrne Reinhart

Bradley Campbell

Jay Cosgrove

David Ennis

Alfred Ferguson

Russell Furnari

Frederick J. Kaeli

Gordon Litwin

Tavit Najarian

Steve Souza

Dennis Suszkowski

UCI Staff

Tony MacDonald
Director

Susan Kennedy
Program and Project Director

James Nickels
Marine Scientist

Dr. Michael Schwebel
*Coastal Resilience and Climate
Adaptation Specialist*

Danica Simmons
Administrative Assistant

Karl Vilacoba
Communications Director

GIVE A GIFT NOW

Your gift to Monmouth University has a direct impact on the everyday lives of students. If you would like to make a tax-deductible gift to the Urban Coast Institute, please use the contribution form at the link listed below. Monetary gifts to the Urban Coast Institute support the Heidi Lynn Sculthorpe Summer Research Grants, the Marine Science & Policy Initiative and UCI operations.

www.monmouth.edu/give

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