Message from the Chair
As Chair, I see the amazing dedication of the faculty, staff, graduate and undergraduate students. When we lose one of our family, it drives home how special our community is and how they contribute to our lives. I am lucky to observe faculty working with local fisheries to maintain sustainable but profitable industries, developing new technologies to increase local and national vibrancy, and playing the role of international ambassadors, while graduate students are providing science literacy to local communities, staff are opening up the field stations on weekends to local communities, and undergraduates are being trained and filling gaps in New Jersey's water quality sampling through the Raritan Initiative. Moving forward we want to make sure we tell their stories on what Rutgers is doing locally, nationally, internationally. To that end, we will be reenergizing our efforts on social media and through a variety of outreach efforts. While everyone is always busy, I do want to stop for a second and just say “Thanks”. I know personally that the marine team's efforts gets me energized and inspired. Oscar

Remembering Diane Adams
Our valued colleague and most importantly our friend Diane Adams passed away on June 21, 2017 at the age of 37. All the while she battled cancer, Diane was resolute in never slowing down her science, teaching, and being with her family. As stated by friends and family, she never let the disease define who she is and what she could achieve. Diane received her B.S. in Aquatic Biology (summa cum laude) from University of California Santa Barbara and her Ph.D. from the MIT/Woods Hole Program in Biological Oceanography. She was a AAAS Science and Technology Policy Fellow from 2012 to 2013. She joined the faculty at Rutgers in 2013. Dr. Adams was an active researcher who carved out a niche in a new research area of developmental biology focusing on the potential for neural plasticity and evolution to create new metamorphic changes in marine organisms in response to environmental changes. Her work also focused on climate change, breast cancer and global marine conservation. She was a contributing author of USAID's 2015 Biodiversity Research Agenda. Central to Diane's focus was the priority she placed on undergraduate and graduate students. In her four years, she mentored 12 undergraduates and advised two graduate students and two postdocs. She was an advocate and great role model for women in science. She wrote an autobiographical guide in the journal Oceanography on how to have your cake and eat it. At Rutgers she participated in the Connection Network Mentoring Program to pass on her wisdom beyond our department. Diane’s family, friends and the Department is honoring Diane's legacy by establishing an endowed graduate fellowship in her name. We also plan to initiate an award in her name for the best independent undergraduate research project each year. To donate, go to the link (https://goo.gl/Du2ayL) and specify “Diane Poehls Adams Graduate Student Support in Marine and Coastal Sciences Endowed Fund” as the fund. Please make sure you both specify this fund and identify Diane as the honoree so that these funds are directed toward their intended purpose. Alternatively, you can contact Melissa McKillip at melissa.mckillip@rutgers.ed at the Rutgers Foundation for more information or to make a donation.
Our Graduated World Class Leaders

Our graduate program was formed in Summer of 1994 and has grown into a great asset to Rutgers. To date the program has graduated 54 PhDs and 36 Masters students. Over the next year or two we will likely reach our 100th graduate student completing an advanced degree. We are extremely proud of past graduates who have gone to many great careers in academia, forming successful companies, working in federal agencies including NASA, NOAA and even the US State Department. This last season our latest cohort completed their degrees. Please join us in celebrating the recent graduates!

Congratulations to Katherine Nickerson for completing her Masters. Her thesis was titled “Changing fish assemblages in a Mid-Atlantic estuary: Sensitivity analysis of a long-term time series to climate change and guild construction.” She studied how large scale environmental changes are altering the migration of fish in the Mid-Atlantic. She conducted research in the Mullica River-Great Bay estuary, located in southern New Jersey, at the Rutgers University Marine Field Station and the Jacques Cousteau National Estuarine Research Reserve. She documented increased water temperatures in the system and explained the variability in the observed changes in the fish populations.

Congratulations to Nicole Couto who completed her PhD. Her thesis was titled “Circulation and Heat Transport on the West Antarctic Peninsula Continental Shelf”. She studied the reasons why the West Antarctic Peninsula (WAP) is experiencing such rapid warming over the past several decades. The heat that is driving the melt is related to the location of the Upper Circumpolar Deep Water (UCDW) which is a warm water mass found in deep waters off the WAP continental shelf. She utilized a range of technologies including underwater robotic gliders, numerical models, and deep sea moorings. She was able to document how the UCDW is transported across the continental shelf at around a depth of 300 meters and is guided towards the coast of Antarctica through undersea seafloor canyons. These canyons funnel the heat to the coast and terminate at major penguin colonies along the coast. Her work revealed the complexity of circulation on the WAP and the importance of regional observations in understanding the major changes being observed in this region.
Congratulations to Rachel Gula who completed her Masters degree. Her thesis was titled “Microbial host-mutualist communications in marine organisms: Insights from the giant clam *Hippopus Hippopus*”. Her study focused on understanding how symbionts in the clam influence the development of the larvae. The work shows that the microbial symbionts resulted in faster growing clam larvae. Her work also focused on identifying the processes with which the microbial symbionts and the clam host interact. Her research has important implications to many marine organisms that rely on symbiosis.

Jacqueline focused on how temperature might impact clam feeding rates due to changes in seawater viscosity. Her results suggest that temperature effects on the physiology are more important than the changes in the seawater viscosity. These results have important implications for hard clams’ ability to survive and grow in a warming ocean and indicate that hard clams may benefit from moderate ocean warming, provided that there is sufficient food available.

Congratulations to Jacqueline Specht for completing her Master thesis titled “Effects of temperature on hard clam (*Mercenaria mercenaria*) feeding and energetics”. She studied how temperature can effect the clam’s physiology and feeding behavior.

Congratulations to Aboozar Tabatabai for completing his PhD. His thesis was titled “Physical and biogeochemical modeling in Delaware Estuary”. He developed a series of realistic numerical models for coastal physical processes to simulate the general circulation, pollutant dispersion, sediment transport, and biochemical processes in the ocean. He employed statistical and numerical methods combined with operational and experimental oceanography to address his research questions. His main focus was the study of freshwater dispersal pathways and how they affect biogeochemical interactions within the estuary and in the coastal ocean. He applied the models to understand nitrogen cycling in the Delaware estuary and the export of dissolved organic carbon to the Mid-Atlantic Bight.
How Do Corals Make Skeletons?
Among other things, corals are threatened by ocean acidification and warming. Being able to project the magnitude of these threats requires an understanding of how corals form their carbonate skeletons. Rutgers scientists combined ultrahigh-resolution, three-dimensional imaging and two-dimensional solid-state nuclear magnetic resonance spectroscopy to study coral skeletons. They found that mineral precipitation in corals is a biologically controlled process mediated by organic molecules, rather than an abiotic one that depends only on physico-chemical conditions. Many of the models used to assess trajectories of corals in future oceans were based on the assumption that it was the physico-chemical conditions that would dominate the projected change. This study has important implications for the health of corals in our warmer, higher-CO2 future. A link to the pub and video about the work can be accessed at https://marine.rutgers.edu/main/corals-can-grow-bones-in-acidic-water.

What is the Ocean Circulation During a Hurricane?
The recent tragic events in Texas due to Hurricane Harvey once again illustrate the destructive nature of these events. For those of us who went through Hurricanes Irene and Sandy, we are reminded by how deadly these events are. A recent publication, led by assistant research professor Travis Miles, studied data collected during Hurricane Sandy to better understand these natural events. As the 2012 storm, Hurricane Sandy, crossed the Mid-Atlantic Bight continental shelf, there was significant and rapid offshore advection of the coastal waters. Ocean observations during the hurricane, collected by state-of-the-art instrumentation, identified processes responsible for this transport, as well as the broader shelf-wide circulation. This study demonstrates the use of integrated ocean observing systems and regional scale modeling for understanding how the ocean responds to such events. It has applicability not only for hurricane seasons in the mid-Atlantic but also for other regions that experience similar summer tropical storm events. The publication is at http://onlinelibrary.wiley.com/doi/10.1002/2017JC013031/full and was highlighted by the Editors at the American Geophysical Union.

A electron microscope picture showing the formation of mineral deposits in a coral. Results published in Science (DOI: 10.1126/science.aam6371).
Metal Distributions in Surface Waters in Melting Polar Seas

Melting polar seas are subject to many changes that can affect marine food webs and productivity of the system. One major control is the distribution of nutrients as they fuel the growth of the plants at the base of the food-web. The West Antarctic Peninsula is one of the most rapidly changing locations on Earth due to decades of rapid warming. The impact of this on the nutrients, especially micronutrients (e.g. metals), is relatively unexplored.

Postdoctoral researcher Amber Annett, with Rob Sherrell and colleagues, recently mapped the distribution of dissolved and particulate micronutrients along this region. Their work showed that iron availability was most strongly related to meltwater associated with glacial melt and precipitation. Therefore, projections suggest an increase in meltwater will increase the delivery of iron in the surface waters along the Antarctic peninsula. This will potentially increase the overall productivity of the system. This work was published in the journal of Marine Chemistry.

How do Marine Assemblages Respond to Winter Climate Variability?

Postdoctoral researchers James Morley and Ryan Batt, along with professor Malin Pinsky, conducted a large study to assess how marine species may respond to climate variability along the northeast coast of the United States. They found that many species, including several important fisheries species, were sensitive to the temperatures they encountered during the preceding winter. Much of the sensitivity was related to the thermal preference of the species. The winter temperatures appear to affect the mortality and migration patterns. Given the predictions for increased warming, we will expect the food-webs to change in a myriad of ways, and to understand why certain species are thriving in the spring and summer, we will need to understand what were the conditions in the prior winter. This work was published in the journal of Global Change Biology.

Distribution (a) and biomass (b) responses of 61 species within the spring assemblage to winter temperature anomalies, as related to temperature preference. Positive responses indicate species that were distributed farther north (a) or that had greater biomass (b) following warm winters. Check out the full piece of work published by Morley et al. (2017) in the journal of Global Change Biology (DOI: 10.1111/gcb.13578)
Tracy Wiegnner, former Marine and Coastal Sciences graduate student and current faculty member at the University of Hawaii at Hilo, is working with students, researchers from other institutions, non-governmental organizations, community groups, and state and federal agencies to document coastal microbial pollution stemming from sewage pollution on Hawaii island. Her research team uses multiple tools to detect sewage, including fecal indicator bacteria (*Enterococcus, Clostridium perfringens, Bacteriodes*), as well as stable isotopes of nitrogen, oxygen, and boron in coastal waters and seaweed tissues, and dye tracer studies. She has developed tools for visualizing temporal and spatial distributions of microbial pollution. She is currently working on developing a model to predict unsafe swimming conditions using real-time water quality data from water quality buoys and other real-time gages for river flow, rainfall, and waves. Dr. Wiegnner is also examining concentration distributions of *Staphylococcus aureus*, a bacterium that causes serious skin infections, in coastal waters to see if they are related to sewage pollution, other water quality parameters, or environmental conditions. Hawai‘i state has the highest number of Staph infections in the nation, and it is largely thought that many of them are acquired during recreational water activities. Data that she and her team collect and tools that they are developing are being shared with Hawaii county, state, and federal government decision-makers and natural resource managers to help manage and reduce sewage pollution on Hawai‘i Island. “We have worked closely with two communities on island to collect data documenting that sewage pollution from homes is entering near-shore waters, impacting natural resources, and posing a health risk to recreational water users,” she says. “It is my goal to provide these communities with sound scientific data they can use to make informed decisions on how to improve wastewater disposal in their communities, and for them to be able to use it to develop strong cases to persuade decision makers to assist them in their efforts.” She hopes that her efforts on Hawai‘i Island can be used elsewhere in the state and region to reduce sewage pollution and improve near-shore water quality. Next stop may be Republic of the Marshall Island.
Haskin Shellfish Lab Wins Excellence Award

The Water Resources Association for the Delaware River Basin has awarded the Rutgers’ Haskin Shellfish Research Laboratory the Dr. Ruth Patrick Excellence in Education Award for its world-class research, transfer of knowledge to fishermen, aquaculturists, and state agencies, and outreach programs to students of all ages in support of sustainable management of the Bay’s resources. Research in shellfisheries began at Rutgers in 1888 when Biologist Julius Nelson was hired for the then newly formed New Jersey Agricultural Experiment Station NJAES. Nelson persuaded the NJAES to establish a Department of Oyster Culture at Rutgers now known as the Haskin Shellfish Laboratory. The biological and technical knowledge accumulated by HSRL’s research staff forms the basis for practical information transferred to oystermen, watermen, fishermen, coastal ecologists and coastal engineers. Over the years, successive Directors have expanded HSRL’s research. Harold Haskin, the first recipient of WRA’s Ruth Patrick Award, branched out to include hard clams and surf clams. Richard Lutz envisioned a multispecies aquaculture demonstration facility known as the NJ Aquaculture Innovation Center in North Cape May. Eric Powell brought expertise in mathematical modeling of fish and shellfish populations, paleoecology and expanded offshore fisheries research programs. The current Director, David Bushek, brings expertise in estuarine ecology, shellfish pathology and restoration science. Current research includes aquaculture, fisheries, bacteriology, ecology, genetics and breeding, numerical modeling, pathobiology and shellfish restoration. Dr. Bushek accepted the award. Congratulations to all faculty and staff at HSRL.

Dr. Scott Glenn Named MTS Fellow

Scott Glenn was named a Fellow of the Marine Technology Society at the society’s Oceans 2017 meeting held from September 18 to 21 in Anchorage, Alaska. Designation as a Marine Technology Fellow is one of the highest accolades an individual can achieve. Since 1975, this title has been awarded to MTS members who have made outstanding contributions to the advancement of the Society’s objectives and who have had distinguished accomplishments and experience in their professional fields. This honor recognizes Dr. Glenn’s career efforts in developing novel technologies used to forecast the Gulf Stream dynamics, developing integrated ocean observatories, improving our ability to sample and forecast hurricane, intensity and his focused efforts on integrating undergraduate education into all his research efforts. In addition to Scott’s honor, Rutgers Undergraduate student Cassidy Gonzalez-Morabito advanced into the finals of the student research competition. Cassidy was the only undergraduate from around the world in the finals. Cassidy is a mechanical engineering student. She used her research on the flight dynamics of underwater gliders to gain a better physical understanding of mixing in hurricanes. Cassidy has raised the bar for what a Rutgers undergraduate can accomplish at MTS. Congratulations to both Dr. Scott Glenn and Cassidy Gonzalez-Morabito.
New Grants

Janice McDonnell “OOI Data in Teaching” NSF $99,909
Kim Thamatrakoln “4th Molecular Life of Diatoms Meeting” Gordon & Betty Moore Foundation $15,000
Rob Sherrell “GEOTRACES Arctic section: Dissolved Micro-nutrient Trace Metal Distributions and Size Partitioning” Texas A&M $119,420
Josh Kohut “2017 NJDEP Slocum Glider Deployment” NJDEP $70,000
Silke Severmann “Uranium and Chromium Isotope Behavior in Continental Margin Sediments” NSF $521,801
David Bushek “Delaware River Main Channel Deepening Project Upper Reach Oyster Bed Turbidity Monitoring” Army Corps of Engineers $148,024
Carrie Ferraro “Advancing multidisciplinary research, enhancing the student experience and applying science to inform planning and public policy: Initiating the Rutgers Raritan River Consortium” New Brunswick Office of Rutgers Chancellor. $175,000 2017-2018

Weekly Seminars

10/30/17 Hollie Putman “Ecophysiology of Marine Invertebrates” University of Rhode Island
11/6/2017 Douglas A. Campbell “Photoperiods, Photosystems & Phytoplankton” Mount Allison University
11/13/17 Nirnimesh Kumar “Surf Zone and Inner-Shelf Processes, Wave-Current Interaction and Sediment Transport” University of Washington
11/20/17 Kiva Oken, Samantha Bova “The Role of Predation in Fished Marine Ecosystems, and Hydroclimate variability in the Heart of the Western PAacific Warm Pool over the Last 800 ky” Rutgers University
11/27/2017 Anne Hollowed “Status of Stocks and Multispecies Assessment Program at the Alaska Fisheries Science Center” National Marine Fisheries Service, Alaska Fisheries Science Center
12/04/2017 Samantha Siedlecki “The role of the coastal ocean in global biogeochemical cycles” JISAO, University of Washington
12/11/2017 AGU - No Seminar

New Publications


Please help Rutgers oceanography support the next generation

Rutgers oceanography needs your support to meet the environmental and educational challenges facing the world today. Your support is critical to enabling high risk and high reward research, developing students to be the leaders of tomorrow and bringing the public with our scientists into the ocean. Your private gifts will create new laboratories, student fellowships, endowments and feed ambitious new programs. Even the smallest gifts have huge impacts by getting students out on the water or to a professional meeting. To make a donation please contact Melissa McKillip@ 848-932-4214 or melissa.mckillip@rutgers.edu . Proudly wear the Rutgers Oceanography tee-shirt. Only $15. Contact Sarah Kasule (kasule@ marine.rutgers.edu).