In February 2011, former UH Mānoa Chancellor Virginia Hinshaw announced a university-wide strategic hiring initiative to increase the pool of scholars in the teaching and research community. In a competition with 11 other departmental proposals, the University of Hawai‘i recognized the excellence of the University of Hawai‘i Sea Grant College Program (UH Sea Grant) and its longstanding commitment to coastal sustainability by selecting the UH Sea Grant-led proposal entitled “Integrating Marine Science, Economics, Engineering, Design and Policy for Sustainable Coastal Communities.” Through this initiative, UH Sea Grant hired seven new general-funded faculty. Over the next 30 years, this will represent ~$50 million investment in Sea Grant’s outreach and research program. We believe that this is likely an unprecedented commitment on the part of a university to Sea Grant and its NOAA partner. This initiative greatly increases our ability to address diverse challenges, needs, and opportunities in a multifaceted fashion.

According to Chancellor Hinshaw, “The proposal was a well-defined, tightly integrated cluster on a topic of great importance for the state with the potential for significant education, research, and community impact.” Five tenure-track faculty positions were proposed, one in each of the following areas: coastal civil engineering, coastal policy and community development, environmental economics, microbial oceanography/biogeochemistry and sustainable building/community design – all with partial (0.25 FTE) appointments in UH Sea Grant for the purpose of conducting outreach. During the faculty recruitment process, the Chancellor added a second position for microbial oceanography/biogeochemistry.

Through a second initiative from the UH Mānoa Chancellor’s Office, UH Sea Grant had the opportunity to collaborate with the Hawai‘inuiākea School of Hawaiian Knowledge and the College of Tropical Agriculture and Human Resources to hire an additional tenure track faculty. This new position was designed to transcend traditional academic boundaries and focus on cross-disciplinary solutions to natural and cultural resource management, sustainability, and food security issues facing Native Hawaiians, Pacific Islanders, and other indigenous communities using traditional Hawaiian knowledge and practices. This faculty will also have a 0.25 FTE appointment with UH Sea Grant.
Rosie Alegado will be starting as an Assistant Professor in the Department of Oceanography and the Center for Microbial Oceanography: Research and Education at the University of Hawai‘i at Mānoa starting in August 2013. Currently, she is a postdoctoral fellow at UC Berkeley studying animal origins with Nicole King.

The focus of Rosie’s research is to understand how bacteria have influenced the evolution of animals and how these interactions impact their ecosystem. Her approach is to study the interaction between choanoflagellates, heterotrophic nanoflagellates which are the closest living relatives of animals, and their microbial community. She has established the colonial choanoflagellate *Salpingoeca rosetta* and its prey bacterium *Algoriphagus* as a new system in which to test hypotheses about the evolution of interkingdom signaling.

Other current research projects include:

1. Exploring bacterial outer membrane vesicles in interkingdom signaling in a variety of animals and ecological contexts.

2. Investigating impact of bacterial sulfonolipid/sphingolipid interkingdom signals on community dynamics
   
   a. modeling changes in microbial community structure under defined nutrient regimes
   
   b. connect activity of specific microbial assemblages with metabolic and geochemical processes

3. Define the microbial biogeography of Native Hawaiian fishpond ecosystems using metagenomic approaches

4. Combine models on community dynamics with empirical data on microbial metagenomics of Native Hawaiian coastal ecosystems to estimate the impact of land use on shifts in microbial activity.
Oceana Puananeilei Francis is an Assistant Professor of Civil and Environmental Engineering in the School of Ocean and Earth Science Technology (SOEST) at the University of Hawai‘i at Mānoa (UH Mānoa), with a joint appointment to the UH Sea Grant College Program. She holds a PhD in Atmospheric Science from the University of Alaska, Fairbanks and a Master of Science in Civil Engineering from the University of Alaska, Anchorage.

Oceana has extensive academic and professional experience in the areas of civil engineering and atmospheric research, with emphases in coastal engineering and sustainability, as well as green alternatives to water and wastewater management. Her coastal sustainability research focuses on the impact of wind and waves on coastlines, and through her analysis has cultivated expertise in the areas of meteorological and oceanographic field measurements, satellite measurements, and wave and coastal modeling. She plans to apply the oceanographic measurement methods she uses to assess sea-level rise and wave height increase in the Arctic to assess similar impacts of climate change in Hawai‘i. To achieve this she has formed strong partnerships with the US Army Corps of Engineers, the University of Alaska Fairbanks, Woods Hole Oceanographic Institution, and the Naval Research Laboratory.

Some of her additional areas of interest include:

- Applying green sewage management techniques learned while conducting work in rural sanitation in Alaska to Hawai‘i communities to update and improve current systems/methods in anticipation of future impact of coastal erosion on existing wastewater management systems

- Facilitating increased use of MATLAB based software at UH to encourage students to create wave models that they can use to gain hands-on analysis experience using the field data they collect

- Incorporating ‘Olelo Hawai‘i (native Hawaiian language) into the modern civil engineering vocabulary, and validating native Hawaiian engineering techniques to show they are mathematically sound and can be applied in the context of today’s environment
Wendy Meguro is an Assistant Professor of Sustainable Buildings & Community Design in the School of Architecture at the University of Hawai‘i at Mānoa, with a joint appointment to the UH Sea Grant College Program. Wendy received a Master of Science in Architecture Studies in Building Technology from the Massachusetts Institute of Technology, and a Bachelor of Architecture from the University of Hawai‘i at Mānoa.

Her research, teaching, and outreach focus on making Hawai‘i’s coastal communities exemplars in energy and water-efficiency, resiliency, economic success, and social well-being. Wendy’s work is motivated by a nation-wide recognition that buildings use 40% of our energy, and local recognition that Hawai‘i’s marine coastal ecosystems will soon need to adapt to the effects of climate change. She is focused on advancing and implementing energy and water-efficient building practices that simultaneously protect natural resources, honor cultural heritage, and promote economic prosperity. For example, many building practices are a “win-win,” both reducing greenhouse gas emissions and enhancing resiliency, such as daylighting, natural ventilation, water reuse, and pedestrian-friendly communities. Wendy plans to work with various stakeholders including community members, design professionals, scientists, and policy makers to remove barriers and facilitate implementation of such energy and water-efficient practices.

Wendy has eight years of professional experience in high-performance, sustainable building design. Prior to joining UH, Wendy was an Associate at Atelier Ten where she consulted architecture design and construction teams on energy efficiency, water conservation, stormwater management, visual and thermal comfort, material selection, carbon emissions reductions, and LEED certification. In teaching, she will share her experience using building simulation (in daylight, energy, water, and comfort) alongside life-cycle cost analysis to inform design decisions.

Working with an integrated design team, she consulted on a wide variety of projects including the 17-acre Columbia University Manhattanville, the Department of Energy’s Energy Efficient Buildings Hub, the Rising Currents exhibit at the Museum of Modern Art, the National Geographic Headquarters, the Weill Cornell Medical College, the Croton Water Treatment Plant, and the GSA Federal Building. Wendy had the pleasure of working with distinguished architectural clients including Renzo Piano Building Workshop, Kieran Timberlake, Weiss Manfredi, Ennead, Grimshaw, and many others.

In addition to creating individual buildings, Wendy worked with large institutions to create long-term environmental sustainability plans by identifying goals, setting quantitative metrics and timelines, and creating implementation manuals. She plans to apply this experience to the UH Mānoa Campus, joining efforts to reduce energy and water use and demonstrate its cost-effectiveness and replicability.

As a former faculty member at Parsons The New School for Design in New York City, Wendy also has five years of experience teaching courses on Environmental Technology, Daylighting Workshop, and Design Studio.
Craig Nelson will be an Assistant Researcher (beginning Fall 2013) with the Center for Microbial Oceanography: Research and Education (C-MORE) via a joint appointment to the Department of Oceanography and UH Sea Grant. Prior to joining the UH faculty, Craig was researcher with the Marine Science Institute at the University of California, Santa Barbara from 2008-2012. He earned his BA in Integrative Biology and English from UC Berkeley in 1998 and his PhD in Ecology, Evolution and Marine Biology from UC Santa Barbara in 2008. His academic career has followed a circuitous route, including research stints in forestry, entomology, medicine, limnology and his present disciplinary emphasis of coastal microbial oceanography.

Craig’s research lies at the interface of microbial ecology and ecosystem science, specializing in the structure and function of natural microbial communities in aquatic habitats such as coral reefs, lakes, streams, and the open ocean. By studying microorganisms such as Bacteria and Archaea in the context of the ecosystems which they inhabit, his research broadly aims to simultaneously shed light on their immense undiscovered diversity and illustrate their collective role in controlling the key elemental transformations that sustain life on Earth. His work over the past decade has focused on culture-independent characterization of natural bacterial communities, including taxonomic and metagenomic structure and measurement of biogeochemical processes in the surrounding environment which regulate and are regulated by these microbes. His research often seeks to integrate microbial ecology with relevant ecological problems such as nutrient pollution, land use change, and aquatic pathogen proliferation. He combines extensive field surveys with laboratory and in situ experimentation to link bacterial identity to function, relying heavily on next-generation molecular approaches, bioinformatics, and multivariate statistics to integrate microbiology with spatial and temporal environmental context. Much of Craig’s published work has sought to link the dynamics of bacterial communities with important but poorly understood aspects of freshwater and marine carbon cycling, including dissolved organic matter utilization, ecosystem metabolic balance, and the role of microbes in food webs.

Some motivating questions underlying past and current research projects include…

What is the role of bacteria in coral health and reef metabolism? How do bacteria in coral reefs differ from the surrounding ocean? Are bacteria facilitating the spread of algae on reefs worldwide?

What do bacteria in the ocean eat? Is the diversity of these bacterial communities determined by the types of organic matter on which they specialize? Can we track different organic compounds into specific bacterial lineages?

How do bacterial communities change as water flows through watersheds? How does land use change the types of bacteria in watersheds? How do these changes impact the bacteria released into coastal habitats?
Michael Roberts is an Associate Professor in the Department of Economics and with Sea Grant at the University of Hawai‘i at Mānoa. He is currently on leave from North Carolina State University, where he was an Assistant and then Associate Professor from Fall 2008 through Spring 2012. Before joining the faculty at NCSU, he worked for USDA’s Economic Research Service.

His research is mainly empirical and focuses on the intersection of agricultural and environmental economics. He has published many reports and articles on the effects of U.S. agricultural policies on production, land use, land values and the size of farms. Since leaving USDA, his research has focused increasingly on the potential effects of climate change on production, world commodity prices and price volatility of staple food grains, especially through increased exposure to extreme heat. He is also examining how much biofuel growth has contributed to rising world food prices and food price variability.

Other current research projects include:

1. (i) design of procurement auctions, with an eye toward finding simple and cost-effective ways to buy environmental services like carbon sequestration from farmers and landowners;

2. (ii) optimal crop planting decisions given rotational benefits and price uncertainty;

3. (iii) separating moral hazard from adverse selection in government-backed crop insurance;

4. (iv) market price and consumer welfare impacts of appliance energy efficiency standards;

5. (v) estimation of risk and uncertainty-adjusted market discount factors for investments in energy conservation.

6. (vi) combining crop models based on plant physiology with statistical models to disentangle the mechanisms that underlie observed associations between extreme heat and crop outcomes.
Daniele Spirandelli is an Assistant Professor of Coastal Policy and Community Development in the Department of Urban Regional Planning with a joint appointment in the Sea Grant Program at the University of Hawai‘i at Mānoa. Prior to joining UH faculty, Daniele was part of a multi-disciplinary team in the Urban Ecology Research Laboratory at the University of Washington while pursuing a PhD in Urban Design and Planning and a Masters in Landscape Architecture. She also earned a BA in International Development and Social Change from Clark University. Much of her passion for interdisciplinary research has grown out of her involvement in scientifically grounded urban ecological research, in an ongoing effort to understand environmental change that is caused by human action and how these changes impact human communities.

Daniele’s research follows two related paths: the relationship between urban development patterns and environmental conditions, and human’s response to environmental change, whether through individual behavior, community restoration efforts or through formal institutional arrangements. To this end, she focuses on three substantive areas of investigation: 1) characterizing the relationship between urban development patterns and environmental quality; 2) examining feedbacks between environmental change and human behavior; and 3) developing community-based indicators for ecosystem health and human well-being. She uses the emerging science of urban ecology as her primary framework for examining the dynamics of human-natural systems and draws on theories of complex adaptive systems, risk perception, and resilience. Developing relevant scientific information and knowledge for citizens, policy makers and planners to make decisions is the basis for her research.

Daniele’s most recent research examines landscape patterns of urbanization and alternative wastewater infrastructures, and how these patterns interact to impact near-shore ecosystems. She builds a more complex and nuanced understanding of urban landscape patterns by revealing the complex interactions between wastewater decisions, land use, and near-shore water quality. The integration of land use planning and alternative wastewater technologies offers a promising mechanism through which urban areas can more effectively protect near-shore ecologies.
Mehana Blaich Vaughan will be joining the faculty of the University of Hawai‘i (UH) in Fall 2013 as an Assistant Professor of Sustainable Watershed and Coastal Management in the Department of Natural Resources and Environmental Management, with a joint appointment to UH Sea Grant. She will be part of a consortium of scholars who focus on cross-disciplinary solutions to natural and cultural resource management, sustainability, and food security issues. She holds a PhD from the Emmett Interdisciplinary Program for Environment and Research at Stanford University.

Mehana comes from the rural Halele‘a district on the Hawaiian island of Kaua‘i. Prior to pursuing a doctoral degree, she was a middle and high school teacher who worked on developing place-based education programs with Kaua‘i community groups. She has also been involved in a number of community planning efforts, including work related to community stewardship of natural resources in Wai‘anae on O‘ahu, in Miloli‘i on the island of Hawai‘i, and on Kaua‘i.

Mehana’s research interests are focused around community efforts to care for natural resources at the local level, collaborative resource management partnerships, and how different user communities relate to the same place. Her dissertation research focused on collaborations between Hawaiian communities and state government to care for in-shore marine resources within traditional Hawaiian subdivisions, called ahupua‘a. The Hawaiian ahupua‘a system is often held up as a model for sustainable resource management, and her thesis investigated how partnerships between Hawai‘i communities and state government can be designed to more effectively enhance cultural and ecological sustainability. Mehana hopes her future research will include:

- Investigating and enhancing community capacity to monitor the health and use of natural resources, as well as to enforce sustainable harvest practices
- Documenting stories of community leaders and policy makers in Hawai‘i with decades of collaborative, local-level, resource management experience whose knowledge of past agreements, land uses, and planning efforts are invaluable
- Understanding how Hawaiian values and practices related to resource care and management are being transmitted and changing across generations

Mehana is grateful to her children, husband, family, and to all of the Hawai‘i communities that have supported and informed her work.