In this issue of Ka Pili Kai...

As I reflect on the year 2010, I am reminded once again of how fortunate I am to be part of the University of Hawai‘i Sea Grant College Program and our extended ohana. This year was one of great change – we welcomed several new faculty and staff; made great strides on many new exciting projects and initiatives; and worked closely with our newly created centers of excellence to expand our reach and coalesce the many talents within the university to engage more meaningfully with coastal communities throughout Hawai‘i. While it was not possible to include in the following pages a comprehensive account of all of the milestones reached in the past year, please take a few moments to browse this colorful issue and allow us to share some of the highlights from 2010.

Happy holidays and best wishes for a joyful new year,

Cindy Knapman
Communications Leader
UH SEA GRANT 2010

A new initiative, inspired by the University of Hawai‘i Sea Grant College Program (UH Sea Grant), has amplified UH Sea Grant’s capacity to build coastal sustainability and resiliency throughout Hawai‘i and the U.S. Pacific. Partnering with numerous faculty and institutions, a new operational model for Sea Grant that is based fundamentally on enhanced collaboration – the Center of Excellence model – has been established. UH Sea Grant’s traditional excellence in marine and coastal extension, research, and education now brings the capabilities of a large swath of our university into the service of coastal communities. The talented and innovative faculty who graciously agreed to serve as directors of our newly-created centers of excellence embraced this vision to combine the powerful yet discrete schools and departments within the university system, and enhance our ability to connect with, and better serve, the people of Hawai‘i.

CENTER FOR ISLAND CLIMATE ADAPTATION AND POLICY
The Center for Island Climate Adaptation and Policy (ICAP) facilitates a sustainable, climate-conscious future for Hawai‘i, the Pacific, and global island communities. A partnership among UH Sea Grant, the William S. Richardson School of Law, the School of Ocean and Earth Science and Technology, the College of Social Sciences, and the Hawai’inuiäkea School of Hawaiian Knowledge, ICAP serves as a focal point for University of Hawai‘i climate adaptation expertise.

CENTER FOR SMART BUILDING AND COMMUNITY DESIGN
In 2004, UH Sea Grant formed a unique partnership with the School of Architecture to establish the Center for Smart Building and Community Design. This center was created to find long-term solutions to the increasingly urbanized coastal communities and positively address the issues related to buildings and their impacts on the natural and human environments in coastal areas.

CENTER FOR MARINE SCIENCE EDUCATION
The Center for Marine Science Education, a partnership between the UH Curriculum Research and Development Group and UH Sea Grant, is dedicated to building partnerships that enhance marine science education at all levels in order to foster understanding of the natural world and the role of humans in protecting and sustaining it.

CENTER FOR SUSTAINABLE AQUACULTURE
UH Sea Grant partnered with the Pacific Aquaculture and Coastal Resources Center at UH Hilo to form a Center of Excellence in Sustainable Aquaculture, which explores the many facets of the industry and applies national aquaculture concerns and opportunities to help address those of the developing industries of Hawai‘i and the Pacific.

CENTER FOR SUSTAINABLE COASTAL TOURISM
The Center for Sustainable Coastal Tourism promotes the development of a sustainable and economically productive tourism industry in Hawai‘i to minimize its environmental footprint, encourage stewardship of precious coastal resources, and foster respect for all residents. This center is a collaboration among UH Sea Grant, the School of Ocean and Earth Science and Technology, the William S. Richardson School of Law, the College of Social Sciences, the School of Travel Industry Management, the Hawai’inuiäkea School of Hawaiian Knowledge, and the School of Architecture.
Develop Tsunami Inundation Maps
UH Sea Grant researcher and graduate student trainee, Dr. Kwok Fai Cheung and Yoshiki Yamazaki, developed a two-dimensional tsunami model which simulates tsunami inundation in coastal areas. Since 2004, Dr. Cheung has been leading the Hawai‘i Tsunami Mapping Project in an effort to update Hawai‘i’s existing tsunami inundation maps, which are nearly 20 years old, and make them more accurate and precise. Using this model, the new tsunami inundation maps for O‘ahu and Hawai‘i Island were released to the public in 2010, and the maps for the island of Maui are currently being finalized. In addition, this model has been implemented for tsunami inundation mapping in the US Gulf Coast states, Puerto Rico, and American Samoa. Chile recently adopted the model as their official model for tsunami inundation mapping.

Promote Education and Stewardship at the Hanauma Bay Nature Preserve
Due to high visitor popularity and intense demand on the natural resources at Hanauma Bay, UH Sea Grant identified the need for public education of Hanauma Bay in the late 1980’s and, in 2010, the UH Sea Grant Hanauma Bay Education Program (HBEP) celebrated its 20-year anniversary. Also in 2010, UH Sea Grant’s HBEP staff worked with over 150 volunteers who contributed 9,230 hours; conducted 46 weekly evening programs for community audiences; gave presentations to over 200 visiting groups (5,500 individuals); and provided a brief orientation to over one million visitors to Hanauma Bay.

Restore the Waikiki Ecosystem
To enhance the public’s understanding of coastal and ocean environments and promote stewardship of healthy coastal ecosystems, Jennifer Barrett, UH Sea Grant Waikiki Coastal Coordinator, developed and oversees community-based marine education and training programs. In 2010 she recruited, trained, and supervised over 80 project volunteers and six interns to conduct coastal monitoring activities and collect valuable data regarding the use and condition of Waikiki’s nearshore resources.

UH Sea Grant extension faculty and staff on the island of O‘ahu include:

Jennifer Barrett, Waikīkī Coastal Coordinator; Maxine Burkett, Director, Center for Island Climate Adaptation and Policy; Ryan Buzetti, Ocean Data Collection Technician, PacIOOS; Craig Coleman, Project Manager, Energy and Greenhouse Gas Solutions; Chris Conger, Coastal Management Specialist; Richard (Abe) Coughlin, Ocean Information Systems Specialist, PacIOOS; Eileen Ellis, Sustainability Specialist; Dolan Eversole, NOAA Seagrant Coastal Storms Program Coordinator, Pacific Region; Marcie Grabowski, Outreach Coordinator, PacIOOS; Kimberlee Harding, Fisheries Extension Agent; Dennis Hwang, Coastal Hazard Mitigation Specialist;
Examine Statewide Shoreline Setback Policies
At the request of Senator Shan Tsutsui, the UH Sea Grant Center for Island Climate Adaptation and Policy developed a report titled *Shoreline Impacts, Setback Policy & Sea Level Rise*. It determined Senate Bill 468, 2009, as originally drafted, is an effective vehicle for long-range coastal climate change adaptation, and, although the bill has not yet become a law, it represents the first step in Hawai‘i to developing statewide shoreline setbacks that account for coastal erosion and sea-level rise.

Evaluate Hawai‘i’s Environmental Review Process
To improve the process of environmental review for major actions in the state of Hawai‘i, Peter Rappa, UH Sea Grant Coastal Resources Management Extension Agent, served on the State Environmental Review System Study Team. The team issued a report to the state legislature containing proposed legislation for amending the present law that governs the environmental review system. The report was a compilation of information from over 100 interviews with 170 relevant stakeholders including government agency personnel, consultants, business representatives, environmental groups, lawyers, and academicians.

Evaluate University of Hawai‘i Mānoa (UHM) Campus Lighting
In early 2010, the Mānoa Energy and Performance Assessment team of students led by UH Sea Grant extension faculty finished lighting audits of 800,000 square feet of building space on the UHM campus. Since then, UHM Facilities Management has moved forward with plans to retrofit the inefficient lighting in several buildings on the UHM campus. As a pilot project, the office of the UH Sea Grant director was delamped, retrofitted to advanced LED lighting, and equipped with a motion detector which has reduced the power consumption for lighting by 77 percent.
HAWAI‘I ISLAND

HIGHLIGHTS

Develop New Aquaculture Industry
Drs. Maria Haws and Robert Howerton, UH Sea Grant Aquaculture Extension Specialists, are working with the UH Hilo Pacific Aquaculture & Coastal Resources Center to examine the feasibility of creating a new commercial bivalve industry for Hawai‘i. Historically, issues related to appropriate species, sites, lack of a certified laboratory for conducting water analysis of shellfish growing sites, and gaps in state policy have impeded grow-out of edible bivalves in Hawai‘i. Drs. Howerton and Haws are collaborating with four organizations on O‘ahu and Moloka‘i in this research, and to date bivalves have been grown to market size in one-third the time it takes mainland sites to grow oysters.

Offer Volunteer Observer Program
Sara Peck, UH Sea Grant Coastal Resources Extension Agent, with the help of dedicated volunteers and the State Division of Aquatic Resources, started Big Island ReefWatchers in the late 1990’s. These coastal and nearshore volunteer observers provide long term data from specific areas by observing and recording the information. In 2010, five ReefWatcher trainings were held for 73 new volunteers.

Coordinate Free Public Education Presentations
ReefTalks, free public education presentations started by UH Sea Grant faculty nearly 17 years ago, is a popular event for many Big Island residents. The talks highlight the latest technical advancements, research projects, and sustainable island living initiatives, all of which in some way relate to healthy ocean and marine resources. In 2010 ten ReefTalks were held for 516 attendees, and four of the talks were aired on public television, reaching approximately 4,000 viewers per airing.

Andrew Bohlander, Coastal Lands Use Specialist; Chatal Chung, Assistant to the Coastal Resources Extension Agent; Maria Haws, Aquaculture Extension Specialist; Kevin Hopkins, Director, Center for Sustainable Aquaculture; Sara Peck, Coastal Resources Extension Agent
Conduct Energy Science Professional Development Course
Energy science is an emerging field with high relevance for Hawai‘i, but its novel nature means that few teachers are well versed in the background needed to teach energy science. In an effort to address this need, Dr. Kanesa Seraphin, director of the UH Sea Grant Center for Marine Science Education, collaborated with the County of Maui Economic Development Board to develop and teach a professional development course to Maui teachers focusing on issues such as energy efficiency, wind energy, and solar energy. This was part of a broader state-wide effort, and approximately 65 teachers had the opportunity to attend the workshops which were conducted on each island.

Organize Maui County Tsunami Symposium
On behalf of Maui County Civil Defense Agency, Tara Miller Owens, UH Sea Grant Coastal Hazards Extension Agent, organized and facilitated the Maui County Tsunami Symposium in coordination with the Maui County Hotel and Resort Security Association’s annual conference. Approximately 120 participants from Maui County agencies and hotel and resort management attended the tsunami symposium which focused on “Improving Evacuation and Sheltering,” in particular for the large visitor population on Maui.

Build New Dune Walkover for Maui’s Kamaole III Beach Park
Healthy sand dunes are important to protect shorelines from seasonal erosion and to provide habitat for plants and animals. One important method of avoiding degradation of the dune is to provide designated pathways for access to the beach, so Tara Miller Owens worked with a cadre of South Maui volunteers to build a new elevated dune walkover in early December 2010 at Maui’s Kamaole III County Beach Park. The walkway was built entirely with volunteer labor and support. Other similar dune walkovers will be planned as needed in the future.
an ethanol fuel plant altered its plans from burning coal to biomass for its energy source, and the community on Kauaʻi is supportive of the first large-scale renewable energy project - a biomass gasification facility that will generate ten percent of the island’s electrical needs.

Provide Technical Assistance on Coastal Issues
In recent years, development pressure on Kauaʻi’s coast has increased, bringing with it a growing concern on behalf of local communities wanting to ensure preservation of shoreline access and the exceptional quality of its coastal natural resources.

To assist in these efforts, James O’Connell (retired April 2010), UH Sea Grant Coastal Processes Specialist, drafted updated language for the Kauaʻi County “Shoreline Setback and Coastal Protection Ordinance” and also provided guidance to the county on its implementation; assisted in the planning, design, permitting and implementation of a dune restoration project at Poipu Beach County Park; developed alternatives to replace a failing seawall fronting Pono Kai in Kapaʻa; and served as co-lead on Kauaʻi County’s Tsunamis Observation Team, which will provide tsunamis inundation data to university modelers for improved prediction of tsunamis inundation areas.
**Homeowner’s Handbook to Prepare for Natural Hazards**  
by Dennis J. Hwang and Darren K. Okimoto

Designed specifically for homeowners, this is a critical resource for anyone wanting to reduce the risks to family and property from the threats caused by natural hazards. The handbook covers basic information on emergency preparedness and evacuation planning in the event of a tsunami, hurricane, earthquake or flooding event, and steps to take in advance to protect your property.

Dennis Hwang, UH Sea Grant Faculty and attorney, and Dr. Okimoto, UH Sea Grant Extension Leader, developed the Homeowner’s Handbook to Prepare for Natural Hazards and collaborated with Mississippi-Alabama Sea Grant Consortium to develop a state-specific version of the handbook, which was printed in 2010.

**Snorkeler’s Guide to the Fishes of Hanauma Bay**  
by John E. Randall

This 66-page waterproof fish guide provides full color photographs, names, and descriptions of the fishes most commonly viewed by snorkelers and swimmers at Hanauma Bay.

**Hawaiian Reef Plants**  
by John M. Huisman, Isabella A. Abbott, Celia M. Smith

Hawaiian Reef Plants is an easy-to-use yet comprehensive guide on nearly all species of marine plants present in Hawai‘i accompanied by stunning photographs and illustrations. Its 264 pages include keys, descriptions, introductory chapters, sections on Hawaiian use of seaweeds, and much more.

**Hawai‘i’s Changing Climate**  
by Charles (Chip) Fletcher

This briefing sheet describes what is known in answer to the question "How is global warming influencing the climate in Hawai‘i?" as published in peer-reviewed scientific journals and in government reports and websites.

**Reef and Shore Fishes of the Hawaiian Islands**  
by John E. Randall

Containing 1007 illustrations, this 560-page volume covers the 612 species of fishes found in the Hawaiian Archipelago from the shore to 200 meters depth. The author regards this as his finest publication, the result of 47 years of study of Hawaiian fish fauna.

**Climate Change in the Federated States of Micronesia: Food and Water Security, Climate Risk Management, and Adaptive Strategies**  
by Charles H. Fletcher and Bruce M. Richmond

This study is an outgrowth of concern over the vulnerability of the Federated States of Micronesia (FSM) to sea-level rise and drought associated with climate change. The purpose is to identify climate risk and options in the FSM.
Support the Development of New Aquaculture Industries
Dr. Maria Haws, UH Sea Grant Aquaculture Extension Specialist, in collaboration with Simon Ellis has been working with the Marine and Environmental Research Institute in Pohnpei, the College of the Marshall Islands, and other partners to support the development of pearl, coral, giant clam, and sponge farms in the Pacific region. Because of these efforts, four new sponge farms, three new coral farms and three new giant clam farms were created. In addition, a new species of cosmetic sponge was developed and is now being marketed by Pacific island farmers.

Establish NOAA Sea Grant Coastal Storms Program in the Pacific Islands Region
To improve coastal community hazard resilience, the NOAA Sea Grant Coastal Storms Program (CSP) entered the Pacific Islands region this year. The program is part of a nationwide NOAA effort to assist coastal communities in decreasing the negative impacts of coastal storms on families, communities, the environment, natural resources, and property.

To accomplish this, CSP will bring together various entities within the state of Hawai‘i, the territories of Guam and American Samoa, the Commonwealth of the Northern Mariana Islands, the Federated States of Micronesia, and the Republic of the Marshall Islands.

Established Regional Governance Structure for Pacific Islands Ocean Observing System (PacIOOS)
To ensure the PacIOOS system was responsive to the priorities of the stakeholder community it serves, PacIOOS worked over the past three years to define and establish a Governing Council for the program. This Governing Council, formalized in May of 2010, allows for 15 voting members and three non-voting delegates that represent a range of stakeholder sectors (fisheries, homeland security, conservation, ecosystems, planning and policy, transportation, recreation/tourism, and commerce) within each of the PacIOOS.
UH Sea Grant extension faculty and staff working in the Republic of the Marshall Islands and American Samoa include:

Murray Ford, Coastal Processes Extension Specialist; Ephraim Temple, Aquaculture Extension Agent

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The Governing Council is charged with programmatic oversight including, but not limited to: developing strategic partnerships; providing guidance to Chris Ostrander, PacIOOS director; determining development priorities; and advocating for the program region-wide.

Murray Ford, Coastal Processes Extension Specialist; Ephraim Temple, Aquaculture Extension Agent

Establishing Sea Grant Coastal Management Extension Agent Position

As a joint appointment between the UH Sea Grant College Program and the College of the Marshall Islands, a coastal management extension position was established in 2009 to conduct research on coastal processes, public outreach, extension, formal educational activities, and liaise with other specialists on relevant regional initiatives. Dr. Murray Ford was hired for the position and one of his responsibilities in 2010 was to partner with scientists from the University of Auckland in New Zealand to conduct a hands-on hazard and vulnerability training for members of the Marshallese government and the non-governmental organization community. The focus of this training was to help build in-nation capacity to assess the local variations in vulnerability, particularly with respect to coastal inundation and erosion.

Establish the Center for Sustainable Integrated Agriculture and Aquaculture at American Samoa Community College (ASCC)

In an effort to demonstrate best management practices for freshwater aquaculture and conduct aquaculture research, Ephraim Temple, Aquaculture Extension Agent in American Samoa, provided the design and spearheaded the construction of a new Center for Sustainable Integrated Agriculture and Aquaculture facility. The facility was established on the ASCC campus in collaboration with Land Grant to address important issues relating to optimizing production of freshwater organisms, and serve as a training and demonstration facility for the benefit of students, fish farmers, and community stakeholders. Currently, fingerlings produced by brood stock are being distributed to local fish farmers for grow out. The center also has equipment to make controlled feeds research possible and is working on developing recipes and methods for local feeds that will be made available to tilapia farmers.
Nā mea like ‘ole

CHECK OUT OUR NEW WEBSITE!
http://seagrant.soest.hawaii.edu

Do you have questions about coastal and beach access in Hawai‘i?
Visit http://seagrant.soest.hawaii.edu/coastal-access-hawaii for information regarding public access and traditional gathering rights, private/public land boundaries, city and state contacts, maps, and more!