

PC Committee

From: Michele McLean <Michele.McLean@co.maui.hi.us>
Sent: Tuesday, October 02, 2018 8:50 AM
To: PC Committee; Raynette Yap; Traci N. T. Fujita
Cc: taram@hawaii.edu
Subject: PC-10
Attachments: MauiCoastalProcessesExtension_FY19_Proposal_ToCounty.pdf

Aloha Planning Committee,

Please consider the attached in relation to item PC-10 scheduled for discussion on Thursday.

Mahalo,
Michele.

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**A PROPOSAL
SUBMITTED BY
UNIVERSITY OF HAWAII**

TO: County of Maui Planning Department

PROJECT TITLE: Maui County Coastal Hazards Extension Program

PRINCIPAL INVESTIGATOR: Darren K. Okimoto

CO-PRINCIPAL INVESTIGATOR: Tara M. Owens

DEPARTMENT: University of Hawai'i Sea Grant College Program
School of Ocean and Earth Science and Technology

PROJECT PERIOD: 07/01/18 – 06/30/19

AMOUNT REQUESTED: \$104,000

AUTHORIZING
UNIVERSITY OFFICIAL:  DATE: MAY 25 2018

Kathleen Yoshinaga
Grants Specialist, Office of Research Services

Address:

University of Hawai'i at Mānoa
Office of Research Services
2440 Campus Road, Box 368
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Please ensure that all correspondence regarding this application and project are addressed to the Office of Research Services.

I. INTRODUCTION

Major Program Benefits:

- Specialized and unbiased expertise for coastal planning
- More efficient coastal resource planning and permitting
- Direct link to state and federal resources
- Attention to strategic planning at multiple scales (island, county, state, federal)
- Liaison to community groups for shoreline programs and general concerns

Program History

In 1996, at the request of the County of Maui, the University of Hawai‘i Sea Grant College Program (Hawai‘i Sea Grant) established a partnership with the County of Maui Office of Economic Development, Maui Community College (currently University of Hawai‘i Maui College), the County of Maui Planning Department, and the U.S. Department of Interior Office of Insular Affairs by creating the Pacific Island Regional Coastal Processes Extension Project. Since its inception the objectives of the position have become more localized, now focusing primarily on coastal and shoreline issues in the County of Maui. The main objectives of the Hawai‘i Sea Grant County of Maui Coastal Processes Extension Project are to provide sound technical advice to the county on shoreline development, beach preservation and restoration, coastal hazard mitigation options, coastal erosion response, climate change adaptation including potential sea-level rise impacts, and other coastal processes-related issues. This technical support is intended to assist the County of Maui in making informed policy decisions based on the latest scientific information.

Maui’s economy is heavily dependent on revenue generated by the state’s billion-dollar tourism industry. The Hawaiian Islands have long been a popular destination due in part to the attraction of the beautiful sandy beaches. As a result of natural and anthropogenic impacts to beach sediment budgets, many sandy coastlines are rapidly eroding. Studies by University of Hawai‘i scientists of shoreline erosion on the island of Maui indicate that rates of shoreline retreat average one foot per year over the last century and more recent shoreline retreat rates of up to five feet per year or more on portions of Maui’s north shore. Island-wide, a total of at least 8 km of beach have been lost completely over the last century. Further, the most recent studies suggest that shoreline erosion will double on average by the year 2050 due to sea level rise. Over time, landowners of hotels, condominiums and houses along these eroding coastlines have resorted to haphazard erosion control measures, such as seawalls, groins and rock revetments, in many cases furthering damage the sandy beaches. It is essential to protect and preserve Maui’s beaches in order to maintain the social, cultural, environmental and economic benefits of these beaches.

Some of the beach loss that has occurred over the last 50-60 years could have been avoided by having an improved understanding coastal erosion and sea-level rise. Progressive planning practices now call for early recognition of coastal hazards, increased shoreline setbacks and elevated flood zoning in order to minimize and avoid these hazards in the future.

Program Progress in Year 21 (Maui County FY18)

Tara Owens, Hawai‘i Sea Grant Coastal Processes and Hazards Specialist for Maui Island, continues to:

Goal 1: Provide specialized expertise in shoreline processes and coastal hazards to local land use planners for science-based decisions and improved land-use planning.

On a day-to-day basis, Ms. Owens has been providing a wide range of technical support, project review, and stakeholder coordination roles on behalf of planners. With only a few designated Coastal Zone Management planners, Hawai‘i Sea Grant provides increased capacity for interactions with other county planners, Council members and committees, Planning Commissioners, developers, consultants, community and volunteer groups, and media to advise on development permits, environmental assessments, policy recommendations, and site assessments. Expert guidance is provided on a daily basis to these stakeholder groups on topics including coastal erosion, shoreline access, shoreline armoring, dune restoration, sand resource conservation, land use decisions, and more. This level of support ensures expedited and science-based processing of Coastal Zone Management permits as well as integration of technical information into decisions at all levels of county government.

In particular, over the past several years, Ms. Owens has been working closely with the Coastal Zone Management planners to provide response to critical coastal erosion impacts in all regions of Maui. Maui's coastline, especially along the island west side, is experiencing widespread coastal erosion and beach loss. In one high profile case, condominiums along Kahana Bay, which consist of 1,000 dwelling units with a combined value of approximately \$500 million contributing over \$10 million annually in tax revenues, are imminently threatened by erosion. Existing shoreline armoring fronting four of the condominiums has contributed to the problem. With worsening erosion, temporary erosion protection has recently been installed in front of four additional properties. In response to positive results of a beach restoration feasibility study and extensive outreach supported by Hawai‘i Grant in 2016, condominium stakeholders formed a steering committee to pursue a regional erosion mitigation solution involving beach restoration. With continuing facilitation and technical support from Hawai‘i Sea Grant in 2017, the steering committee and the County of Maui are taking the necessary additional steps to fully plan and implement the project. Several significant milestones were reached in 2017, including: formalization of the Kahana Bay Steering Committee (KBSC) with a cost-share agreement among 9 condominiums and one single-family property for development of an EIS; 2) authoring a Request for Proposals for the KBSC to solicit consultant bids for development of the EIS; 3) selection of consultant team and contract awarded; and 4) collaboration with the Maui County Council Chair to draft a Bill for an Ordinance to establish a Special Improvement District to authorize special taxing as a means to fund project construction.

As another example, Ms. Owens participated in Molokai's 10-year community plan update process by providing workshops to share locally relevant information about coastal hazard impacts and sea-level rise. As a result of Hawai‘i Sea Grant-led coastal hazards workshops on Moloka‘i and subsequent discussions, the County of Maui and the Community Plan Advisory Committee (CPAC) have included, for the first time ever, a stand-alone chapter in the draft

Moloka‘i Community Plan Update. Previous Moloka‘i community plans did not specifically address coastal hazards as a priority topic. This is an important policy change because the community plan will guide future development patterns to inform decisions about new development, land use, and infrastructure over 20 years. The draft plan is expected to be adopted by Maui County Council in 2018. In a similar way, Hawai‘i Sea Grant is now participating in the update of the West Maui Community Plan.

Goal 2: Assist the County of Maui in the protection and preservation of critical coastal resources, including coordinating a sustained program of coastal sand dune restoration on Maui for coastal hazard mitigation, beach protection, and coastal natural resource and habitat protection.

Healthy coastal dunes are critical for coastal hazard mitigation, beach protection, and habitat for many native plants and animals. However, coastal dunes on Maui and throughout Hawai‘i have suffered over decades from degradation related to development practices and intense recreational use of the shoreline area. In response, Ms. Owens has been working with various County of Maui departments, community and volunteer groups, and individual stewards to improve management and protection of coastal dunes on Maui. This work involves managing a very successful dune restoration program on Maui by providing the science of dune restoration, establishing general and site-specific recommendations, and overseeing implementation. Ms. Owens has also continually provided technical assistance to the County of Maui on an effort that scientifically delineates the boundaries of coastal dunes for development projects as required by a county ordinance that prohibits the grading of primary coastal dunes. Consequently, over the past six years, many acres of coastal dunes have been restored and continue to be managed using techniques such as re-vegetation with native coastal plants, establishing designated beach access pathways, and developing educational and interpretive signage.

Goal 3: Work with State and County decision-makers to identify and implement opportunities to create or restore access to and along the shoreline.

Access to and along the shoreline are primary tenants of Hawai‘i’s Coastal Zone Management Program. This is underscored by the cultural importance in Hawaii of public shoreline access. Yet shoreline access is still limited in many areas, mainly due to land use development patterns prior to coastal management regulations. Additionally, traditional and customary shoreline access is constantly at risk of being eliminated or forgotten as development tends to privatize the coastline. To address this need, Ms. Owens is working closely with Coastal Zone Management planning staff to identify and promote opportunities for improved shoreline access. This year, the County of Maui has received funding through the Coastal Zone Management Program to update the County of Maui’s outdated shoreline access inventory. Ms. Owens is co-managing the project, involving development of a scope of work for consultant services, overseeing consultant activities, community outreach, and the creation of a new shoreline access website to provide the inventory and supporting information in a public friendly way.

Goal 4: Enhance hazard resilience to coastal erosion, coastal storms, climate change, and sea level rise through funded research, adaptation strategies, policy recommendations, and outreach.

Through its extension network within the Center for Coastal and Climate Science and Resilience, Hawai‘i Sea Grant provides a direct link between University researchers and stakeholder needs and decision-making. This leads to collaborative projects with wide ranging expertise to address complex needs. Several grants over the past several years have been awarded to either the County of Maui and/or Hawai‘i Sea Grant to support planning activities for Maui. This includes an award of \$178,000 in 2013 from the NOAA-Hawai‘i Sea Grant Coastal Storms Program (CSP) to lead a two-year planning process to develop “Post-disaster Reconstruction Guidelines and Protocols for Conservation of Coastal Resources and Protection of Coastal Communities.” The outcomes of that effort are currently being expanded statewide through a 2016-2018 project entitled “Building Resilience to Coastal Hazards and Climate Change in Hawai‘i” in the amount of \$845,160, funded by the NOAA Regional Coastal Resilience Grant Program in 2016. This year, another successful grant award under the same program for 2017-2019 in the amount of \$500,000 will develop a real-time wave run-up forecast for West Maui’s at-risk coastlines. Wave- plus tide-driven flooding events now occur often along many shorelines of Hawai‘i. The frequency and duration of these events will grow due to rising sea levels and wave energy expected from climate change. West Maui in particular has already been experiencing significant impacts to private property and public infrastructure. The vulnerability of state and county infrastructure is a human life, health, and safety issue. Ms. Owens was integral in developing the project concept and assembling a diverse team of oceanographers, modelers, web visualization experts, and outreach specialists to implement the project. As a result, the West Maui region will gain new, locally relevant tools to mitigate the impacts of episodic flooding events and future planning scenarios for inundation that will support long-range planning efforts.

Additionally, Ms. Owens delivered many presentations to decision-makers and community groups in this year alone, reaching over 150 stakeholders. Ms. Owens also contributed directly to 5 mass media pieces (newspaper, magazine, video, radio) through live and recorded interviews, including: a segment on Hawai‘i Public Radio focusing on the new Wave Run-up Forecast System being developed for West Maui; a 20-minute TV episode for the KFVE Voice of the Sea program focused on coastal erosion on Maui; and at least 3 newspaper articles in The Maui News focused on high tide and wave events.

II. LONG TERM GOALS

There are four major long-term goals of the Maui County Coastal Hazards Extension Program. Numerous activities directed toward these goals have been developed by Hawai‘i Sea Grant with input from Maui officials and community groups since the program’s inception in 1996. Many responsibilities such as providing technical assistance to county officials and coastal communities are ongoing, while other activities are project specific.

COUNTY OF MAUI COASTAL PROCESSES EXTENSION PROJECT, YEAR 22

The major goals of the project are to:

- 1. Provide specialized expertise in shoreline processes and coastal hazards to local land use planners for science-based decisions and improved land-use planning.**
- 2. Assist the County of Maui in the protection and preservation of critical coastal resources, including coordinating a sustained program of coastal sand dune restoration on Maui for coastal hazard mitigation, beach protection, and coastal natural resource and habitat protection.**
- 3. Work with State and County decision-makers to identify and implement opportunities to create or restore access to and along the shoreline.**
- 4. Enhance hazard resilience to coastal erosion, coastal storms, climate change, and sea-level rise through funded research, adaptation strategies, policy recommendations, and outreach.**

III. PROGRAM OBJECTIVES AND ACTIVITIES for 2018-2019

Objective 1: Assist in developing mitigation strategies for areas vulnerable to coastal hazards such as coastal erosion and coastal inundation from elevated water levels (waves, tides, and sea-level rise).

Activities:

- Assist Maui County Coastal Zone Management Planners and the Planning Commission with reviewing Coastal Zone Management policies and Shoreline Management Area rules for possible revisions and additions, specifically relevant to shoreline hardening, sea-level rise, and post-disaster recovery.
- Assist with planning, monitoring and implementation of dune restoration and small-scale community beach nourishment projects on Maui.
- Provide technical reviews and recommendations for innovative beach management and erosion prevention techniques such as the relocation of coastal structures, dune restoration, drainage outlet management, and the construction of elevated dune walkovers.
- Assist with the development and implementation of high-resolution sea-level rise inundation models and begin working with appropriate community and government officials in planning for long-term infrastructure adaptation and relocation.
- Provide technical assistance to government agencies regarding incorporating potential sea-level rise risk assessments in coastal development review.
- Work with the University of Hawai‘i and the County of Maui Planning Department on updating Maui’s coastal erosion maps, as required by the Maui Shoreline Rules.
- Identify opportunities to plan for offshore sand resource studies for beach replenishment purposes.
- Continue long-term planning for post-disaster rebuilding in Maui County and in Hawai‘i through a funding award from the NOAA Regional Coastal Resilience Initiative.

Outcomes/Impacts:

- Special Management Area rules will be strengthened to support permitting decisions that are environmentally-beneficial, and provide a framework to further reduce development hazards.
- Beaches will be better protected from the damaging, illegal or poorly planned, *ad-hoc* erosion control that frequently exacerbates beach loss.
- Approved beach replenishment projects will result in a greater number of restored beach and dune ecosystems.
- Public shoreline access and recreational opportunities will be protected in areas where beach replenishment is used as an erosion mitigation tool.
- The economy of Maui will benefit from improved management of coastal resources and beaches as the visitor experience is improved.
- Long-term planning to address low-lying areas and infrastructure threatened by sea-level rise, flooding and erosion will be initiated, potentially saving public funds by not developing new infrastructure in areas at high risk of sea-level rise inundation.
- Updated coastal erosion maps will more accurately reflect long-term shoreline change trends for shoreline setback purposes.
- An inventory of offshore sand resources will be greatly beneficial in terms of identifying potential sources of sand for beach replenishment.

Objective 2: Improve public and government agency awareness of coastal processes and sea-level rise, and promote wise use of coastal resources.

Activities:

- Organize and present at workshops or presentations on coastal hazards, sea-level rise and beach management to government agencies, non-governmental organizations, community groups and associations, and school classrooms.
- Work with decision makers to implement policies, programs, regulations, and legislation that will reduce the risk and improve the mitigation of coastal hazards.
- Assist with general plan/community plan update processes.
- Explore expansion of the shoreline change study to include Moloka‘i and Lāna‘i.
- Distribute Hawai‘i Sea Grant educational literature such as the *Purchasing Coastal Real Estate in Hawaii* guidebook, Homeowner’s Handbook to Prepare for Natural Hazards, and *Hawaii’s Changing Climate* briefing document.
- Involve planners and planning commissioners in the revision and implementation of the of the 2009 Beach Management Plan for Maui.
- Promote use of the Hawai‘i Coastal Hazard Mitigation Guidebook by developers.
- Promote use of the County of Maui Planning Department’s Coastal Zone Management website, including the erosion hazard maps, early-on in planning and development stages for coastal properties, as well as for potential buyers of coastal properties.
- Assist with continued updates to the statewide shoreline access information website.

Outcomes/Impacts:

- Decision makers will be able to make informed decisions when reviewing coastal developments and land-use planning.
- Community groups armed with a basic understanding of local coastal processes will be better able to provide feedback to government officials with regards to the community perspective on coastal developments and land use planning.
- Coastal property owners will make better-informed decisions with regards to managing their shoreline resources and erosion problems so as to better protect the shoreline.
- Students with an understanding of coastal hazards and coastal management will be able to pass on their knowledge to family, friends and communities, and minimize damage to coastal resources from their recreational activities.
- Potential coastal property buyers will have an understanding of all the responsibilities, liabilities and allowable activities for shoreline properties before committing to their purchase.
- A comprehensive resource for public shoreline access information will be available.

Objective 3: Minimize impacts to coastal resources and improve resilience of coastal structures for proposed coastal developments or redevelopments.

Activities:

- Provide technical advice and expert testimony to the County of Maui on proposed shoreline developments, proposed legislation, and other activities that may be subject to sea-level rise inundation or coastal hazards, or interfere with natural coastal processes, as needed.
- Review environmental impact statements, environmental assessments and special management area permit applications for coastal developments and provide recommendations to minimize coastal impacts and improve coastal resource management.
- Perform site visits to examine coastal processes, evaluate the risk of coastal hazards, and provide recommended plans of action as requested.

Outcomes/Impacts:

- Coastal resources, in particular beaches and coastal dunes, will be better protected.
- Lateral shoreline access will be protected for public use.
- Developers and government personnel will become better educated with regards to ways of conducting appropriate development in the coastal zone.
- The safety of the inhabitants of coastal structures, from coastal hazards, will be improved.

Objective 4: Improve regional understanding of climate change impacts including coastal hazards.

COUNTY OF MAUI COASTAL PROCESSES EXTENSION PROJECT, YEAR 22

Activities:

- Organize and/or participate in community and county agency groups that devise policy recommendations for the climate change adaptation and mitigation of coastal hazards and disasters.
- Participate in the State of Hawai‘i Interagency Climate Adaptation Committee.
- Participate in the Sea Grant Climate Network.
- Participate as an advisor for community groups such as the Maui Nui Marine Resource Council, Hoaloha ‘Aina (South Maui Volunteers), and the Wailuku Community Marine Managed Area (CMMA).
- Participate as the Maui Island Board Member for the Hawai‘i Shore and Beach Preservation Association.

Outcomes/Impacts:

- Coastal resources will be better protected.
- Residents and visitors will be better educated around how to prepare for and react to climate change and coastal hazards.

Objective 5: Work with government agencies and community groups to design and implement dune restoration projects and enhance stewardship of coastal dune ecosystems.

Activities:

- Assist local agencies and community groups with design, implementation, and maintenance of dune restoration projects, such as the Hoaloha ‘Aina projects currently underway at Kamaole I, II, and III beach parks in Kihei, and expanding to several sites on Maui’s north shore including Stable Road, the Kahului Wastewater Facility, and others.
- Encourage dune restoration as part of the development process for new resorts and improvements to existing resorts.
- Assist the County of Maui in requiring that resorts undergoing dune restoration develop literature on the importance of dunes and ways to minimize damage to dunes and distribute this information to every visitor.

Outcomes/Impacts:

- Coastal dunes will be protected and enhanced.
- Healthy vegetated dunes will lead to decreased losses of wind-blown sand from beaches, and slow rates of erosion.
- Students involved in dune restoration will develop a sense of ownership in a local dune area and will be more likely to educate family, friends and the public on how to protect the area they helped to restore.
- Visitors to resorts involved in dune restoration will be educated on dune protection.

IV. PROGRAM BUDGET

**Maui County Coastal Hazards Extension Program Budget
Maui County Planning Department**

Budget Category	Budget Amount
1. Salary (0.62 FTE for 12 months)	\$ 57,456
2. Fringe (64.55% of salary)	\$ 37,089
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Subtotal	\$ 94,545
3. Indirect costs (10%)	\$ 9,455
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Total	\$104,000

Budget Justification

- 1, 2. These budget categories will cover approximately sixty-two percent (62%) of salary and fringe benefits for the County of Maui Coastal Processes Extension Agent for a twelve-month period. The other thirty-eight percent (38%) of salary and fringe benefits will be funded by Hawai'i Sea Grant using federal funds and other grant sources. Hawai'i Sea Grant will also cover operational expenses associated with the position, including technology, selected travel, and other project supplies.
3. Indirect costs for projects utilizing non-federal funds are ten percent (10%) of the project budget.