



# REQUEST FOR PROPOSALS

## UNIVERSITY OF HAWAI'I SEA GRANT COLLEGE PROGRAM

### 2018-2020 Biennial Grant Award Cycle

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## OVERVIEW

Preliminary proposals are requested for the 2018-2020 University of Hawai'i Sea Grant College Program (Hawai'i Sea Grant) funding cycle. Hawai'i Sea Grant is one of 33 Sea Grant College Programs dedicated to improved understanding and stewardship of the Nation's marine and coastal resources. Created by Congress in 1966, the National Sea Grant College Program comprises a network of more than 300 participating institutions, drawing on the talents of over 3,000 scientists, engineers, educators, students and outreach specialists nationwide.

Hawai'i Sea Grant supports a multidisciplinary, integrated program of applied research, outreach, and education addressing marine and coastal issues of public concern. Information generated by Hawai'i Sea Grant-funded research reaches stakeholders via Hawai'i Sea Grant extension, education, and communications activities in Hawai'i and via the national network. Coastal and marine science education programs are supported at all levels.

## THE 2018-2020 PROGRAM

Faculty from universities and colleges; state, local and regional governments and organizations; and individuals in Hawai'i and US Pacific territories are encouraged to apply. Funding begins February 1, 2018 and ends January 31, 2020. An average award is \$35,000/year inclusive of indirect costs. Graduate trainees are funded separately; please see additional information below (Graduate Trainee Requests). University of Hawai'i established indirect cost rates will be applied to all grants awarded (see <http://www.ors.hawaii.edu/index.php/apply/budget-development/indirect-costs>).

**Proposals that integrate physical and natural sciences with social sciences toward addressing issues that are relevant to living sustainably along coasts and that engage in graduate student training will be especially encouraged.** This is not suggesting that a multidisciplinary approach is sufficient in and of itself, rather, to solve the challenges we face, we must conduct research that engages many disciplines (multi-disciplinary), integrates the physical, natural and social sciences (trans-disciplinary) and analyzes, synthesizes and harmonizes links between disciplines into a coordinated and coherent whole (inter-disciplinary).

Proposers seeking to submit "multi-investigator" proposals are encouraged to discuss pre-proposal ideas with the Hawai'i Sea Grant program leader and director. For additional information and examples of questions and/or appropriate topics, see 'Guide to Proposers' below.

Pending anticipated federal funding, Hawai'i Sea Grant expects to award funding to approximately 12-15

proposals in 2018-2020. Successful projects will: 1) be hypothesis driven; 2) demonstrate strong evidence of scholarly merit that leads to papers in peer-refereed journals; 3) focus on the mentoring of graduate and undergraduate students; and 4) identify and include targeted outreach strategies for transfer of research results to specific user groups, and address critical needs and issues as defined in the Hawai'i Sea Grant focus areas and cross-cutting themes.

The five Hawai'i Sea Grant areas of focus are: **Sustainable Coastal Development, Hazard Resilience in Coastal Communities, Sustainable Coastal Tourism, Water Resource Sustainability and Indigenous Cultural Heritage**. General themes that cut across these focus areas are also of interest: e.g., climate change impacts, renewable energy, the energy-water nexus, healthy coastal ecosystems, and education.

Hawai'i Sea Grant's focus areas and cross cutting themes are a direct result of several underlying concepts: the understanding that the majority of the issues we face in the ocean and on our coasts are due to the behavior and activities of people on land; that the solutions to these issues necessitate engagement in multi-, trans-, and inter-disciplinary research; that implementation of these solutions necessitate engagement in extension, education and outreach at all levels of our communities; that everywhere in Hawai'i is coastal.

**Of particular interest this funding cycle and of critical importance to sustainability and self-sufficiency in Hawai'i and the US central Pacific is research examining the energy/water/food nexus with particular emphasis on energy and water efficiencies, production technologies, conservation and/or the impacts of climate change on these resources.**

Water, energy, and food are linked in many ways (e.g., water used for agriculture and energy used to produce and distribute water and food). Globally, agriculture is responsible for 70% of total water use and food production accounts for 30% of global energy consumption. Demand for water, energy, and food will increase over the next decades with population growth, development, and climate change.

The sustainability of these resources is most critical in Hawai'i given our geographic isolation, fragile ecosystems, resource limitations, and the resulting increased costs of living on an island economy/ecosystem. In many aspects, our community is functioning in a manner that is not sustainable, with issues related to our coastal environment identified as one of the most pressing concerns in the context of climate change and environmental degradation. For example, there is an urgent need now for research that develops new energy and water-saving technologies and a comprehensive understanding of how they may alter/improve relative environmental, social, and economic impacts. Other related research areas include analysis of transportation, building and community design and infrastructure on energy and water-use efficiency, the engineering and cost-benefit analysis of water-production technologies (e.g., atmospheric condensation, wastewater reuse and recycling, efficient capture and use of storm water, etc.) and analysis of the practicality of converting current wastewater treatment systems for efficiency, sustainability and conservation of the environment. Effective implementation of new technologies requires that Hawai'i's citizens make informed decisions based on an understanding of their environmental/biological, social, engineering and economic impacts, and their strengths and limitations compared with business as usual.

Additional questions of interest associated with all of the above focus areas and cross-cutting themes include: 1) what can be done to ensure that human populations and the built environment work within the capacity of their ecosystems and habitats, their local energy and water resources and associated processes; 2) how can we reduce individuals' and communities' vulnerability thereby increasing resilience to coastal natural hazards; 4) how can marine or other environmentally-related technologies improve our ability to enhance human health and provide a stable and sustainable food, water and energy supply while reducing environmental impacts.

## **GUIDE TO PROPOSERS**

To achieve the Program's mission and goals, and align our research portfolio with the goals and objectives of

NOAA and the National Sea Grant College Program, proposals are solicited in support of the focus areas noted above and described below. The research carried out under each of the focus areas supports the extension and education activities of Hawai'i Sea Grant's Centers of Excellence. These Centers include: The Center for Smart Building and Community Design, The Center for Sustainable Coastal Tourism, The Center for Coastal and Climate Science and Resilience, The Institute for Hawaiian Language Research and Translation, and The Center for Marine Science Education. Information on the work of these Centers can be found on the Hawai'i Sea Grant web site (<http://seagrantsoest.hawaii.edu/>). Proposers are encouraged to develop proposals that will directly complement and help advance the work of these Centers. Extension faculty assigned to the Centers are available to assist in developing the outreach and educational components of the proposal (see "Formal Extension/Outreach Proposal Content" guidance below).

Research projects which address one or more of the cross-cutting themes as they relate to the five focus areas are particularly encouraged.

## SEA GRANT FOCUS AREAS

The following are rationale for each of the Hawai'i Sea Grant focus areas followed by example questions and/or topics of interest. ***These examples are not intended to be prescriptive but suggestive of elements appropriate to Sea Grant's mission.***

### Sustainable Coastal Development

**Rationale:** Decades of population migration to the coast continue to transform our coastal landscapes and have greatly impacted coastal marine and estuarine habitats, and intensified demand on finite coastal resources. New housing development, recreational facilities, energy development activities, port expansions, and other public and private activities are bringing more people, jobs, and recreational opportunities to coastal communities, yet they are also increasing the pressure on coastal ecosystems, lands, freshwater supply, traditional coastal businesses, as well as altering the coastal culture and way of life. To accommodate more people and activity and to resolve the growing number of conflicts, we must develop new technologies, policies and management approaches that promote the conservation and judicious use of coastal and ocean resources. Sea Grant's well-established role as an impartial broker and source of unbiased fact-based information make it a key player in responding to the needs for sound information for decision-makers, for convening stakeholders to seek common ground, and for facilitating the development and implementation of new coastal policies, plans, management approaches and conflict resolution strategies related to sustainable coastal development.

Examples of questions/topics:

- Assessment of the potential benefits and impacts for coastal communities and natural ecosystems of coastal and offshore energy development.
- Development of habitat mapping and ecosystem assessments for use in coastal and marine spatial planning efforts.
- How can we develop the coastal environment to reduce human populations' vulnerability to natural hazards and climate change impacts (e.g., sea-level rise)?
- Assessment of Hawai'i's groundwater resources and how this information contributes to water resource management practices and policies.
- Economic analysis of cost and benefit projections of climate change adaptation strategies.
- What are the potential social, economic, and policy impediments and incentives to developing a region-wide industry for rainwater catchment?
- How does the built environment (e.g., buildings, infrastructure, and transportation networks) impact ecosystem health, public health, and the economy?
- How can sustainable energy, water, and waste management policies and practices contribute to achieving healthy coastal communities that function within the carrying capacity of their ecosystems? What are the economic implications of these policies and practices?
- How do development patterns and land-use decisions in Hawai'i impact natural resources (e.g., water, habitat, living marine resources) within the coastal environment?

## Hazard Resilience in Coastal Communities

**Rationale:** Sea-level rise, increased number and intensity of coastal storms, and other climate-related changes are placing more people and property at risk along the nation's coasts than ever before. These circumstances have major implications for ecosystem stability and for human safety and the economic vitality of coastal communities in the coming decades. It is essential that residents and leaders in coastal communities understand these risks and adopt strategies and policies to reduce their vulnerability as well as respond quickly and effectively when hazardous events occur. Hawai'i Sea Grant, with its strong education and outreach capabilities will play a major role in helping local citizens, decision-makers, and businesses understand and plan for these events and maximize their communities' ability to prepare, respond, and recover when natural hazards strike.

Examples of questions/topics:

- Analysis of public perceptions of risks associated with coastal natural hazards (e.g., coastal flooding, hurricanes, tsunamis, sea-level rise, etc.)?
- How can land-use policies and siting decisions be optimized to reduce human populations' vulnerability to coastal natural hazards and climate change impacts (e.g., sea-level rise, ocean acidification, increased sea surface temperatures) and what are the implementation strategies?
- What new technologies, construction products, planning tools and guidelines, or model policies can be used by local governments to increase resiliency to coastal natural hazards (e.g., water level changes)?
- Analysis of the socio-economic costs and benefits of implementing different adaptation and resilience actions for communities or states.
- How can we enhance real-time storm surge models and products to include meteorological, land use/land cover, and improved boundary and wave elevations data to better predict impacts from storms at local or regional scales?
- Evaluation of effectiveness of tsunami warning systems.
- What are the primary factors for communicating risk to coastal communities for improving community resilience to coastal natural hazards?

## Indigenous Cultural Heritage

**Rationale:** The ability to protect land and water resources from depletion and still provide the materials and other resources needed by people and communities to thrive is called sustainability. Before "container" ships, airplanes and the internet, the people and communities that populated the Hawaiian Islands necessarily lived, in large part, sustainably from their land, freshwater streams and surrounding ocean. This success depended upon systems of land division in which district boundaries were carefully planned and delineated. One level of these divisions are known as ahupua'a. Ahupua'a boundaries were drawn to include agricultural land, freshwater sources, and access to the shoreline and open-ocean, providing sufficient resources for area residents to survive and thrive. Much can be learned from the success of the Hawaiian resource management systems and associated practices of resilience and sustainability. While it is not known for certain, it has been estimated that Hawaiian approaches to resource management supported a population ranging from 400,000 to 1,000,000 people on the Hawaiian Islands.

Examples of questions/topics:

- How can we support, enhance, perpetuate, utilize, and learn from the indigenous cultural heritage of the Hawaiian Islands?
- What can we learn from the oral and written history, and from contemporary practitioners of Hawaiian value systems, beliefs, traditions and lifestyles (e.g., literature, newspapers and other writings) about how the land, streams and oceans were utilized historically (e.g., the ahupua'a, lo'i, fishponds and fisheries) and continue to be used today?
- What are the impacts of climate change and ocean acidification on: near-shores fisheries distribution and productivity; ecological and human systems; and protected species and how can we apply indigenous values and practices to inform how we manage these in the future and guide adaptation to climate change?

- How, and to what extent, did the ahupua'a system of management achieve sustainability and how can we adapt and apply that knowledge and those strategies used for success in the past to improve the way we live and use natural resources today?
- What can we learn from historical/traditional methods of ecosystem management, agroforestry, capture fisheries and fishponds to inform and improve current practices in aquaculture, aquaponics and hydroponics and improve food security?
- What can be learned from contemporary efforts to apply Hawaiian knowledge and resource management practices to restoring social and ecological systems? What challenges and successes are encountered and how might these apply in other settings? How might such efforts be encouraged?
- Do indigenous structures such as lo'i and fishponds provide ecosystem services such as improved water quality, buffer from storm and flood impacts, and reduced sediment loads in nearshore coral reef ecosystems?

## Sustainable Coastal Tourism

**Rationale:** Tourism has central importance for the people of Hawai'i, the state's economy and the environment. Yearly visitor expenditures have comprised \$14 billion or 22 percent of Hawai'i's economy and employed more than 175,000 people statewide. ***In Hawai'i, the environment is the economy.*** Thus, Hawai'i's economy and tourism are inextricably linked to healthy and sustainable ecosystems that attract the constant flow of visitors to the state. As such, improving the quality of our natural and built environment, restoring habitats and ecosystems, and reducing the energy and water needed to support tourism will result in positive impacts on Hawai'i's economy. Toward this end, we seek to link the tourism industry to: the sustainable use of our natural resources; promotion of healthy coastal ecosystems, and; respect for our indigenous people and the unique multicultural fabric of our society. A central question is: "How can the tourism industry move forward to simultaneously improve the economic condition of the state while reducing the sector's environmental footprint and supporting habitat restoration?"

Examples of questions/topics:

- In Hawai'i, to what degree is the economic health of tourism tied to the health of coastal ecosystems?
- What is the role of tourism in promoting sustainable and healthy coastal ecosystems?
- To what degree could tourism in Waikīkī be energy and water independent; what are the technologies that would facilitate this; and what are the costs and benefits?
- How can improvements in the efficiency of physical plants and operations concurrently improve profitability and reduce the environmental footprint of the tourism industry?
- How do we integrate the social and natural sciences in ecosystem-based management, including valuation of ecosystem services, optimization of communication networks, and improving governance models?
- Comprehensive and multidisciplinary research on innovative restoration techniques and the ecological success and functional value of large restoration projects?
- Analysis of the ecological, social, and economic implications of developing keystone fisheries to control aquatic invasive species (e.g., parrotfish as keystone species)?
- To what degree are robust populations of parrotfish essential to the health of Hawai'i's coral reefs?
- How do human populations in Hawai'i alter ecosystem health and processes and what can be done to reduce the negative effects of human activity on ecosystem function?
- How can the restoration and maintenance of healthy coastal ecosystems be integrated into the Hawai'i tourism experience?

## Water Resource Sustainability

**Rationale:** Hawai'i is nearly 100 percent dependent on groundwater for drinking water and much of the potable groundwater is used for purposes that do not require this level of quality. Significant examples include the use of potable water in cooling towers for air conditioning, toilets, laundry, and landscaping/irrigation. These uses are steadily increasing in concert with Hawai'i's rising population. It is clear that the increases in population and development simultaneously increase water consumption, while reducing groundwater recharge through an

ever-growing impervious coverage of the land. For example, many of the streams on the island of O‘ahu are concrete-lined for flood control, resulting in direct conduits for rainwater to move rapidly over the surface of Hawai‘i’s watersheds into the ocean rather than contributing to the recharge of the island’s fresh water aquifers. Climate change impacts exacerbate these issues through reduced rainfall/increased drought conditions, increased runoff during extreme storm events and sea level rise (in particular to the latter is the increased inundation of seawater into the islands’ fresh water lenses). In addition to these negative impacts on the quantity and supply of fresh water, the quality of Hawai‘i’s drinking water sources are threatened by increases in human activity and land use practices described above. For example, the contamination of wells from agricultural chemicals and increased chloride levels are likely a result of excessive rates of withdrawal. Approximately 150 million gallons of wastewater are treated and “disposed” of through offshore discharge via ocean outfall pipes by the state of Hawai‘i daily. In addition, a number of sites around the state (approximately 250 known sites) utilize land-based injection wells to discharge wastewater, the fate of which is unclear; in some cases these wells--via the discharged enriched wastewater--have been postulated to nourish offshore algal blooms. Also unclear is the fate of the wastewater products from the approximately 100,000 cesspools in the state; the largest number of any state in the Nation. Notably, as Hawai‘i’s population grows so does the volume of wastewater and attendant issues. Underlying these issues is the fact that water and energy are inextricably linked, a relationship known as the “energy-water nexus.” Generating, delivering and disposing of water uses significant amounts of energy while producing and using energy is water-intensive. The latter is particularly relevant in Hawai‘i, where the preponderance of energy is derived from the burning of imported fossil fuels, a water-intensive activity. However, the energy-water nexus offer significant opportunities as savings and efficiencies in the manner in which one leads to savings in the other.

Examples of questions/topics:

- What are the necessary land use changes and technologies needed to restore ecosystem services and improve water recharge while maintaining flood control?
- What are additional sources of freshwater and what are the technologies needed to capture them (e.g., rainwater catchment, desalination, atmospheric water generation, condensation traps)?
- How can research support policy changes necessary to engage new technological and/or environmental solutions to improve water sustainability?
- What are the potential social, economic, and policy impediments and incentives to developing an industry for rainwater catchment?
- What is the practicality of converting wastewater treatment systems to support efficiency, sustainability and conservation of the environment?
- What is the practicality, cost/benefit analysis and policy implications to treating wastewater for grey water use? Potable use?
- What are the economic and social impacts of engaging in new technologies for water conservation, recycling and reuse compared to business as usual?
- What energy saving practices, new technologies or new policies would result in water savings via the energy-water nexus and vice versa.
- How is climate change impacting drought and flooding events and how can we adapt to these changes?
- What are the human health and safety impacts of Hawai‘i’s Onsite Sewage Disposal systems (OSDs) and how can we better track and manage these systems?
- Potential new methods, technologies and associated policies for rapidly assessing the human health risk of pathogens in coastal waterways and nearshore waters in Hawai‘i.
- How do we assess human health risk of water-borne pathogens in coastal sediments?

## **CROSS-CUTTING THEMES**

The following cross-cutting themes are expected to play a significant role in the selection of goals and objectives in each of the five focus areas.

**Climate Change Impacts and Adaptation.** Climate change is occurring now and is accompanied by increases in the rate of sea-level rise, more powerful storms, increased sea surface temperature, and ocean

acidification, all with implications for coastal residents and property and the long-range futures of human and natural coastal communities. Related to this, alternative energy development has emerged as a national priority and coastal areas are now a major focus for alternative energy development (e.g., liquefied natural gas terminals, wind turbines, tidal buoys, etc.) with significant economic and environmental impacts and benefits. All coastal-related planning and decision-making must now address climate change and alternative energy development for the long-term sustainability of coastal communities.

**Education.** With more than one-half of the US population living along or near the coast, it becomes increasingly important that communities and their federal, state, and local decision-makers have a fundamental understanding of the issues and trade-offs related to managing our coasts. Fundamentally, we must build social, human and natural capital to address the multidisciplinary challenges and opportunities that we face. We cannot hope to address all of the issues with regard to the protection, use, and enjoyment of ocean and coastal resources unless we raise the level of understanding about the inter-connectedness and vulnerability of these resources. Equipping ourselves to deal with the challenges we face requires a wide range of educational activities: the design and execution of K-12 and adult education curricula and programming; teacher training; creation and application of usable knowledge for decision-makers; and recruitment for and provision of advanced marine professional education programs to build the social and human capital for success.

**Healthy Coastal Ecosystems.** Intensified development along the coast and related human activities are leading to water quality degradation, wetlands loss, invasive species, and a host of other challenges that must be understood and addressed in order to restore and maintain the healthy ecosystems that are the foundation for all life along the coast. Ecosystem-based management, reduction and mitigation of anthropogenic impacts, protection of critical areas, and regional habitat restoration are some of the avenues we have identified to address these challenges. Sea Grant research, education, and outreach initiatives must continue to play a major role in building our understanding of how these natural systems function, in advancing regional problem solving, and in supporting planners and decision-makers at all levels of government and in other sectors in moving toward an ecosystem-sensitive based approach to managing coastal resources and the services that they provide.

**Open and Informed Decision-making.** Management and decision-making structures and processes are not keeping pace with growing pressures on the coastal environment. There is greater conflict among users at a time when decision-making remains or becomes more fragmented and narrowly focused. Much current data and mechanisms are inadequate for identifying and addressing the short and long-term socio-economic impacts of the choices we face, the competing interests that must be accommodated, and the conflicts we need to resolve. Collectively, we must transform our coastal management and decision-making processes to reflect the growing complexity of problems we face. This will include learning to integrate public and private decision-making and activities to create and sustain healthy human and natural coastal, ocean, and Great Lakes communities. Sea Grant must harness its particular strengths to work collaboratively with university, intra-agency, inter-agency, and public-private partnerships to find integrated solutions to problems at the local, state, regional, national, and international levels.

## **FORMAL EXTENSION/OUTREACH COMPONENT**

Hawai'i Sea Grant is committed to ongoing enhancement of technology and information transfer of Sea Grant-funded research results to stakeholders and relevant users. Toward this goal, **a well-developed program for extension and outreach activities is to be included in all proposals.** To assist principal investigators (PI) in identifying and developing such activities, collaborative assistance from a Hawai'i Sea Grant extension faculty member will be provided. For those invited to submit full proposals, the PI will be asked to identify by name the extension faculty member with whom they will work. Principal investigators are encouraged to contact our extension faculty prior to submission to strengthen this aspect of their proposal (<http://seagrant.soest.hawaii.edu/directory>). Principal investigators who are unfamiliar with our extension faculty areas of expertise are encouraged to contact the Hawai'i Sea Grant Associate Director, Dr. Darren Okimoto, 808-956-7031 or [okimotod@hawaii.edu](mailto:okimotod@hawaii.edu), and/or Program Leader, Ms. Maya Walton 808-956-6992 or [waltonm@hawaii.edu](mailto:waltonm@hawaii.edu), who can assist with identifying an appropriate extension faculty member to assist PIs

with developing the extension and outreach component.

## **EVALUATION CRITERIA**

The Hawai'i Sea Grant College Program does not make decisions about funding proposals. Proposals are peer reviewed and refereed. Reviewers and the review panels are chosen for their areas of expertise and use several criteria for evaluating research proposals: 1) scientific merit; 2) relevance to Hawai'i Sea Grant's mission; 3) qualifications of the PI; 4) qualifications of Co-Investigator(s); 5) value to graduate and/or undergraduate education; 6) benefit to Hawai'i; and 7) overall value of the proposal.

## APPLICATION PROCEDURE

To receive consideration, preliminary proposals are due electronically via the Hawai'i Sea Grant proposal submission website, eProjects ([http://www.soest.hawaii.edu/eProjects/logn/logn\\_login.php](http://www.soest.hawaii.edu/eProjects/logn/logn_login.php)) no later than **5:00 pm (Hawai'i Standard Time), Wednesday, November 30, 2016**. This is also where you will find instructions and templates for submittal. Principal Investigators are encouraged to submit electronically via eProjects well prior to the deadline to avoid delays associated with heavy internet traffic during the day on which proposals are due. Hard-copy, faxed or emailed proposals, ancillary information or appendices will not be accepted nor evaluated. For detailed submission instructions and format guidelines see the Hawai'i Sea Grant eProjects website listed above. For questions on eProjects submission, please contact Dr. Hal Richman (808-956-8191; [eprojects@soest.hawaii.edu](mailto:eprojects@soest.hawaii.edu)). For questions concerning preliminary proposal content, please contact Ms. Maya Walton (808-956-6992; [waltonm@hawaii.edu](mailto:waltonm@hawaii.edu)) or Dr. Darren Lerner (808-956-7031; [sgd@hawaii.edu](mailto:sgd@hawaii.edu)). For questions on fiscal matters, please contact Ms. Darlene Kiloglu (808-956-3009; [dkiloglu@hawaii.edu](mailto:dkiloglu@hawaii.edu)). Full proposals will be invited from successful peer reviewed and refereed preliminary proposals.

***Preliminary proposals from principal investigators or co-investigators, who have failed to meet Hawai'i Sea Grant fiscal and administrative reporting requirements, will not be considered.***

### Required Non-Federal Match

A 1:2 (non-federal match dollars: Hawai'i Sea Grant dollars requested) non-federal fund match is required for all funds requested from Hawai'i Sea Grant. This requirement is mandated by the US Federal Government and as such no waivers for match can be entertained. Principal investigators will be required to provide actual match, legal documentation of promised or pledged match, and/or audit defensible documentation of in-kind match prior to the awarding of first year funds. For questions on acceptable match, please contact Ms. Darlene Kiloglu (808-956-3009; [dkiloglu@hawaii.edu](mailto:dkiloglu@hawaii.edu)).

### Other Federal/University of Hawai'i Requirements

Funding cannot be issued to successful applicants until the Principal Investigator has obtained approval(s) from the following as applicable: 1) Use of Human Subjects (outreach projects, surveys, etc.); 2) Use of Vertebrate Animals (Institutional Animal Care and Use Committee [IACUC]); 3) Health and Safety (compressed gas diving, radioactive material, importation of micro-organisms; use of recombinant DNA). Depending on the nature of the activity proposed, other approvals/certifications may also be applicable. Non-UH entities will be responsible for applicable federal assurances.

### Graduate Trainee Requests

Please note: there is an entry opportunity in the on-line application within eProjects to request a graduate student trainee. **DO NOT include costs for a graduate student trainee in preliminary proposal budgets**, simply indicate as directed in the application that you wish to be considered for such support. Please note, however, that should you be requesting a graduate trainee and submitting a full proposal, you will be required to demonstrate and provide 50 percent non-federal funding match for all graduate trainee funds awarded. The match requirement for a graduate assistant is \$18,230. This is based on a total value of \$36,459 composed of \$23,028 (GA Step 9) salary, \$2,738 fringe benefits (11.89% est.), and Indirect Cost of \$10,693 (41.50% of total cost).

### How many proposals can I submit?

An individual may not participate as a Principal Investigator (PI) or Co-Investigator (Co-I) on **more than two preliminary proposals** submitted to Hawaii Sea Grant. Preliminary proposals in excess of the limit for any PI or Co-I will be returned without review.