



UNIVERSITY OF GUAM COHERENT AREA PROGRAM
2018 – 2023 STRATEGIC PLAN



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Prior to 1950, Guam was under United States naval rule, but the Guam Organic Act of 1950 (48 U.S.C. § 1421 et seq.) transferred federal jurisdiction from the Navy to civilian governance with executive, legislative, and judicial branches. Similar to the U.S. Virgin Islands, Guam's only congressional representation is a non-voting delegate to the U.S. House of Representatives, Michael F.Q. San Nicolas. There is an elected governor, Lourdes A. Leon Guerrero, and a unicameral legislature of 15 senators elected island wide. Mayors oversee the 19 districts— or villages— while lawmaking authority resides exclusively in the hands of the Legislature and the Governor. The judiciary is composed of the Guam Supreme Court and the Guam Superior Court.

The entire island of Guam has been locally and federally designated as a coastal zone, containing 19 watersheds in the southern half of the island and an aquifer in the north of the island (DAWR, 2006). The northern half of the island is a volcanic rock covered by a Pleistocene limestone plateau, which rises nearly 200 meters above sea level in some places (Burdick et al 2008). In contrast, the southern half of the island is weathered volcanic clay with scattered



limestone outcrops. The highest point of the island is Mt. Lam Lam in the south and rises to an elevation of 406 m. Grasslands and ravine forests characterize the vegetation in the south (DAWR, 2006).

In addition to comparisons among shallow coastal waters, Guam and the Mariana Islands feature a wide variety of unique ocean assets. This area encompasses the nation's largest pelagic fishery, true atolls, and the greatest marine diversity recorded for any area of comparable size (Paulay, 2003). The Western Pacific waters are some of least spoiled places left on the planet, and most retain considerable conservation potential, including the submarine volcanoes lying along the Mariana Archipelago, the Mariana Trench, the Jellyfish Lakes of Palau, and the world's

first (Palau) and largest (Republic of Marshall Islands) shark sanctuaries. Each of these ecosystems host a mosaic of habitats and a myriad of species found nowhere else on Earth, and yet, ironically the anthropogenic effects of global climate variability, pollution, and environmental degradation also profoundly impact them. Ever since the first Chamorro inhabitants made the Mariana Islands their home, sustainability, and environmental literacy were critical mandates for survival – the archaeological and historical record, which spans over four millennia, clearly illustrates these cultural achievements.

The major employer on the island is the Government of Guam, employing nearly 12,000 workers. The economy is intimately tied to Asian markets, driven by tourism, transportation, and the military, and to a lesser extent, by real estate and construction. As part of a global reallocation of U.S. armed forces, significant military resources will shift to Guam (expected direct investment of \$15 billion over 10 years), which is forecast to dramatically boost Guam's economic growth over the next 10 years (Economic Forecast, First Hawaiian Bank, 2006-2007). Guam faces unprecedented challenges, being on the threshold of a Department of Defense build-up that will put significant pressure upon our existing infrastructure and the sensitivity of our natural environments (UOGSG Coherent Area Program application circa 2012. Citations contained in that document).

About the University of Guam

The University of Guam (UOG) is a public, open admissions, four-year, land grant, sea grant, and space grant institution located on the island of Guam, the southernmost island in Mariana Islands chain (see location on map above). Founded in the early 1950's as the College of Guam, the university was first accredited as the University of Guam in 1968. Consistent with this long history, the university has general degree approval for bachelor's and master's degrees. A nine-member Board of Regents (BOR) governs UOG. Under the guidance of BOR policy and Guam law, ongoing planning and decision making is realized through a strong partnership between the administration and the faculty senate.

Serving students mainly from the islands of Guam and Micronesia, UOG offers 25 bachelor's degrees and 15 master's degrees to over 3,600 students, through its single campus in the village of Mangilao on Guam, two online master's degrees, and an offsite location at the College of Micronesia - Federated States of Micronesia. Its business administration, education, nursing, and social work programs are programmatically accredited, respectively, by the International Assembly for Collegiate Business Education (IACBE), the Council for the Accreditation of Educator Preparation (CAEP, formerly NCATE), the Accreditation Commission for Education in Nursing, Inc. (ACEN, formerly NLNAC), and the Council on Social Work Education (CSWE).

The vast majority of UOG's students are undergraduates (95% by FTE), who enroll as freshmen rather than transfers (~ 3% of undergraduates). Nearly three quarters of UOG students are full time (74%, as of fall 2014). The student body reflects the region the university serves; 49% are Pacific Islanders (Chamorro, Micronesian, and Marshallese) and 42% Asian. According to the university, many of its undergraduates are first generation and 75% receive financial aid, with 59% on Pell grants. Since 2004, UOG's enrollments generally have steadily increased, with UOG's 2019 headcount of over 3,600.

UOG's mission, *Ina, Diskubre, Setbe* (to Enlighten, to Discover, to Serve), is delivered by the equivalent of a 182 full time faculty members (FTF), 143 (79%) of whom are tenured or tenure track and 39 (21%) non-tenure track, together with 808 staff, and 34 administrators. UOG's academic programs are administered through two academic colleges, the College of Liberal Arts and Social Sciences (CLASS) and the College of Natural and Applied Sciences (CNAS), and three professional schools, Business and Public Administration, Education, and Nursing and Health Sciences. UOG also supports eight research units, the faculty of which contribute primarily to graduate education: Cancer Research Center; Center of Excellence in Developmental Disabilities Education, Research and Service; Center for Island Sustainability; Micronesian Area Research Center; Water and Environmental Research Institute; Western Pacific Tropical Research Center; and the Marine Laboratory.

UOG is committed to its Land and Sea Grant missions to serve the region, focusing its education, research, and service contributions on issues and challenges specific to Guam and Micronesia, including its indigenous Pacific Islander populations. Affecting the early years of this strategic plan, the 10th president of the university, Dr. Robert A. Underwood, initiated Good to Great (G2G) in 2012, a comprehensive mission-based self-examination to find the "proper connection between resources and quality, relationships and mission." The intention was to create "a great university that is regionally responsive, fiscally responsible, and a model for higher education in the region" in light of the conditions and challenges the university faces in the coming five to ten years.

In February 2020, the 11th president of the University of Guam, Dr. Thomas W. Krise, launched a new strategic plan designed to build on the University's strengths and capacities developed over the last 20 years. The five-year plan, dubbed "Para Hulo" — CHamoru for UOG's Latin motto "excelsior," or "ever upward" — will prepare UOG for its next WASC Senior College and University Commission accreditation site visit in 2024 and continue UOG's desired trajectory toward greatness. Para Hulo' focuses on six strategic initiative areas that will further enhance UOG's ability to provide a valuable education and an engaging experience to its students, serve the needs of its communities in Guam and the region, and enhance the

recognition of the University of Guam as the flagship research and partnership institution for all of Micronesia: 1) Being recognized as a research university centered in island wisdom; 2) Leading as a partnership university; 3) Enriching the student experience; 4) Becoming a model for operations and customer service in Guam and all of Micronesia; 5) Growing our financial resources; and 6) Building and sustaining our infrastructure.

About the University of Guam Sea Grant Program

The University of Guam Sea Grant (UOGSG) has been a *Coherent Area Program* since February 2012 with the formal program establishment at UOG in August 2008. Prior to that it was a *Project* starting in October 2004 and had a *Pre-Extension Program* starting in October 2000. There are hopes that one day UOGSG will obtain *Institutional Status*.

Our **vision** is *a future where people live, work, and play along our coasts in harmony with the natural resources that attract and sustain them.*

Our **mission** is *to apply research, extension, and education activities that sustain and develop island environments while integrating the knowledge and culture of island people.*

Our **core values** are:

- A respect for scientific principles
- A respect for our many cultures and traditional knowledge
- Integrity in all we do
- Enjoying and having fun in the process of education, learning, and research



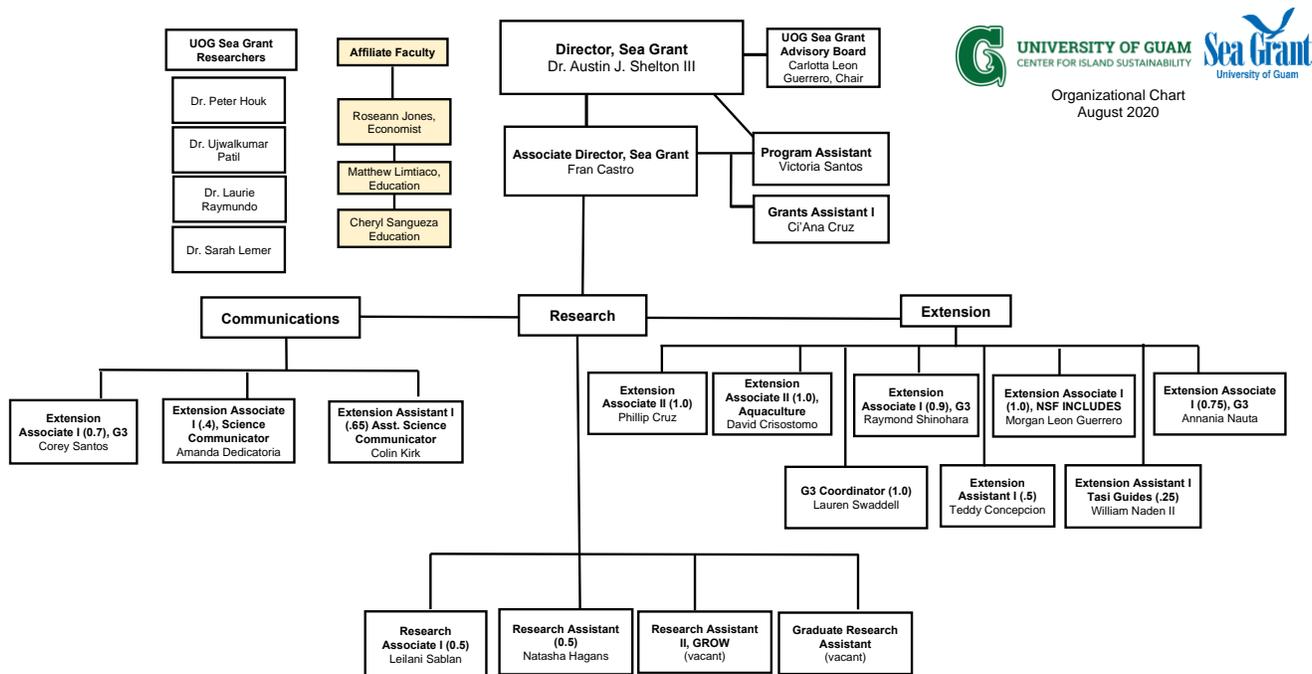
Cross Cutting Principles – Partnerships, Diversity, and Inclusion

By its very nature, diversity is part of everyday life on Guam. The citizens and students we serve, the people we employ, the interns we engage, and the volunteers on our Advisory Board represent the people of Guam. And, as stated previously, our Sea Grant program is small and as such we can only get our work done by the partnerships and cooperation of local and federal agencies, village mayors, citizens, colleagues at the University of Guam and Guam Community College, and volunteers.

We have recently undergone a refresh in program leadership and front-line employees that will give UOGSG a more precise focus and more measurable outcomes and impacts.

Leadership and Management

UOG Sea Grant is part of the UOG Center for Island Sustainability (CIS). The UOGSG Director also serves as the director of CIS. CIS is under the purview Office of Research and Sponsored Programs. The Sea Grant Director also has an academic reporting line to the College of Natural & Applied Sciences (CNAS). The diagram below illustrates the 2020 operational structure of UOGSG.



Stakeholder Input and Advisory Board

We communicate at least twice a year with our Advisory Board, stakeholders and key partners, as seen from this list:

- ◆ Guam Department of Agriculture, Division of Aquatic and Wildlife Resources
- ◆ Guam Bureau of Statistics and Plans
- ◆ Guam Environmental Protection Agency
- ◆ Guam Waterworks Authority
- ◆ The Nature Conservancy
- ◆ Guam Fishermen's Cooperative
- ◆ Guam Nature Alliance
- ◆ Micronesia Conservation Coalition
- ◆ Micronesia Climate Change Alliance
- ◆ Guam Soil and Water Conservation Districts
- ◆ Traditions About Seafaring Islands (TASI)
- ◆ U.S. Fish and Wildlife Service
- ◆ U.S. Coast Guard
- ◆ U.S. Joint Region Marianas
- ◆ U.S. Department of Defense
- ◆ U.S. National Park Service

Naturally, this group can generate more ideas than there is funding to support, so we hosted a listening session on August 30, 2016 to brainstorm a large list of possible work projects that ALL groups might be able to address. From this list found in the Appendix, we have chosen a few efforts and have narrowed our strategic focus to a small list of manageable areas with projects to be determined in our Plan of Work.

Outline of the Program's Planning Process

UOGSG received feedback from a program review in February 2015. That information coupled with a stakeholder listening session on August 30, 2016 and with the experiences of our new core employees, helped shape the framework of this strategic plan. UOGSG is a small program with limited resources so care was taken to only address issues that were manageable based on budget and employee time and expertise.

UOG Sea Grant's Strategic Focus Areas in the 2018-2021 Omnibus

Initially in 2018, the UOGSG Omnibus was funded at \$225,000/yr. With base increases awarded from the National Sea Grant Office, it has grown to \$425,000/yr allowing us to start a small competitive research program. We also have a Congressionally-mandated waiver of local match up to \$200,000 that we are using. Our program is the newest and smallest in the

Sea Grant family and therefore we plan to keep our efforts right sized for our budget and capabilities. Of the \$425,000 we receive each year, about 71 percent is allocated to salaries and indirect costs in Year 4 of the current UOGSG Omnibus; thus, not a lot of extra operational funds. In addition, many of the potential collaborators on Guam are federally funded, rather than Guam-funded. As such, our ability to leverage non-federal dollars in work partnerships is somewhat limited. Given these realities, we have been advised by our National Program Leader to stay with one, or two, of the National Sea Grant focus areas and therefore we are choosing *Healthy Coastal Ecosystems* and *Environmental Literacy and Workforce Development*. We were also advised to keep work descriptions at a fairly high resolution, and we have done so. Below is a description of the types of work we will do in these areas and where they fit into the National Sea Grant Strategic Plan for 2018-2021. Also included are possible projects that UOGSG might be able to assist on, but no commitments are being made at this time. Activities are proposed here at a higher level and then in the new UOGSG Omnibus, more granular plans will be provided.

1. *Healthy Coastal Ecosystems*

The entire island of Guam is both locally and federally designated as a coastal zone. Healthy coastal ecosystems are largely dependent on responsible land-use activities. The northern half of the island is made of limestone, and there are no standing streams. Pollutants including sediment, fertilizers, pesticides, and hydrocarbons often travel into waterways. In some areas, stormwater runoff flows directly from roads and other impervious surfaces into ocean outlets without first entering ponding basins or filtration systems. The southern half of the island is comprised of 19 watersheds with volcanic soils and dozens of running streams and rivers. The main environmental concern in southern Guam is accelerated terrestrial erosion, which is caused by poor development practices, wildland arson, uprooting of vegetation by feral ungulates, and irresponsible usage of recreational off-road vehicles. There are 8,908 acres of high priority planting areas in southern and central Guam that include bare ‘badland’ sites where topsoil and nutrients have completely eroded away (Mafnas, 2010). Land-based pollutants entering the ocean adversely affect the growth, survival, reproduction, and recruitment of corals in coastal coral reefs. The Guam Restoration of Watersheds (GROW) Project is a core initiative of UOGSG using research to develop new watershed restoration techniques with the potential for quick and wide-scale application. The GROW Project will also test methods to filter pollutants out of stormwater runoff. The tie-in to the National Sea Grant Strategic Plan is:



Focus Area: Healthy Coastal Ecosystems

GOAL 1: Habitat, ecosystems, and the services they provide are protected, enhanced, and/or restored.

| ACTIONS | DESIRED OUTCOMES | UOGSG ACTIVITIES |
|---|--|---|
| <p>Develop and share scientific understanding, decision support tools, technologies, and approaches to protect and restore ecosystems.</p> | <p>Scientific understanding and technological solutions inform and improve conservation and the management of natural resources.</p> | <p>Conduct UOGSG-funded and directed applied research on local natural resource conservation and management challenges</p> |
| | <p>Ecosystem science and conservation priorities developed through stakeholder participation are addressed.</p> | <p>Include select research topics on UOGSG research agenda (GROW) and RFPs from 2016 UOGSG Listening Session Schedule stakeholder meetings to set priorities for future research topics</p> |
| | <p>Greater awareness and understanding of ecosystem functions and services they provide improves stewardship efforts.</p> | <p>Disseminate UOGSG-sponsored data, tools, and publication through website and other outlets as appropriate to audience demographic</p> |
| <p>Sustain the habitat, the biodiversity, and the abundance of coastal ecosystems, fish, wildlife, and plants.</p> | <p>Declining biodiversity, habitats, and ecosystem functions and services are restored and sustained.</p> | <p>Develop and test tools for habitat restoration, improvement of ecosystem functions and services</p> |
| | <p>Improved collaborative planning and decision-making leads to enhanced stewardship.</p> | <p>Participate in interagency work groups (i.e., Government of Guam-led Assembly of Planners, Coral Reef Local Action Strategy working groups)</p> |

| GOAL 2: Land, water, and living resources are managed by applying sound science, tools, and services to sustain ecosystems. | | |
|--|--|---|
| ACTIONS | DESIRED OUTCOMES | UOGSG ACTIVITIES |
| Support a sound science- and management-driven framework that integrates observations, monitoring, research, and modeling to provide a scientific basis for informed decision-making. | Collaborations with partners and stakeholders support planning, research and technological solutions to address resource management needs. | <ul style="list-style-type: none"> Participate in interagency work groups (i.e., Government of Guam-led Assembly of Planners, Coral Reef Local Action Strategy working groups) Leverage research at multiple UOG institutes with UOGSG funds or other resources |
| | Citizen science initiatives are engaged and contribute to improving our knowledge with respect to coastal communities and ecosystems. | Develop citizen science initiatives through UOGSG and collaboration with EPSCoR, UOG Center for Island Sustainability |
| | Communities have access to sound science, data, tools, and the training to be effective in planning and decision-making processes. | Disseminate UOGSG-sponsored data, tools, and publication through website and other outlets as appropriate to audience demographic |
| | Resource managers understand the risks, the options, tradeoffs, and impacts of their decisions. | Provide technical assistance to resource managers through extension activities and participation in interagency work groups |

| ACTIONS | DESIRED OUTCOMES | UOGSG ACTIVITIES |
|--|--|--|
| <p>Identify and promote case studies and strategies that enhance resilient ecosystems and watersheds in the context of changing conditions.</p> | <p>Communities have access to information and understand projected changes within coastal ecosystems and how changes will impact coastal ecosystems.</p> | <p>Disseminate curated collection of coastal ecosystem scientific literature, case studies, and extension guides through appropriate outlets</p> |
| | <p>Communities can access case studies, training and tools to improve their ability to plan, prepare and adapt to future ecosystem conditions.</p> | |

2. Environmental Literacy and Workforce Development

Global impacts include sea level rise, increasing frequency and intensity of storms, and warmer sea surface temperatures. Island communities can build resilience to these impacts by reducing local environmental stressors, assessing vulnerability, and planning adaptation



strategies. A series of extension workshops will transmit coastal science to the local community in a useful and usable format. Extension activities will include climate change vulnerability and disaster preparedness projects. UOG Sea Grant staff will participate as facilitators and recorders in community meetings for the UOG-Office of the Governor of Guam Climate Change Vulnerability study funded by Office of Insular Areas,

Department of the Interior. These meetings are a major component of the first vulnerability-resilience planning for Guam and UOG Sea Grant will have significant outreach collaboration with the undertaking. UOG Sea Grant will continue disaster preparedness (e.g., tsunami, typhoons) activities, expanding the distribution of the Sea Grant funded *Mariana Islands Homeowner's Handbook* as well as coordinating workshops.

UOG Sea Grant will provide important coastal science and resource information to the Guam tourism industry as it plans to welcome a large increase in visitors to the island. In 2014, the Guam Visitors Bureau released its *Tourism 2020* strategic plan with a primary goal of increasing tourist arrivals from 1.3 million in 2012 to 2 million by 2020. The plan identifies major opportunities for industry growth in ecotourism and the cruise market, aspires to implement a business improvement district modeled on the Waikiki Improvement District, and projects the addition of 1,640 hotel rooms, or a 20% growth in overall room inventory. Comprehensively, this information indicates that UOG Sea Grant is extremely well positioned to be the primary coordinator for the delivery of science-based information about coastal resources, in relationship to the tourism industry. UOG Sea Grant will interpret scientific and socioeconomic information about coastal resources for government and commercial tourism industry stakeholders, with the long-term goal of establishing viable models for sustainable tourism and development practices on Guam.

Focus Area: Environmental Literacy and Workforce Development

GOAL 1: An environmentally literate public that is informed by lifelong formal and informal opportunities that reflect the range of diversity of our communities.

| ACTIONS | DESIRED OUTCOMES | UOGSG ACTIVITIES |
|---|--|---|
| <p>Enable the public to engage in community planning processes with respect to adaptive management to changing conditions by providing the best available information.</p> | <p>Communities are knowledgeable and equipped with the best available science and technology in order to contribute to adaptive management planning processes and stewardship.</p> | <ul style="list-style-type: none"> • Implement science-based extension activities (i.e. workshops, field trips) on locally significant coastal resource topics (i.e., changing coastline adaptations for homeowners) • Produce culturally competent and appropriate extension education materials (i.e. factsheets, apps, outreaches) |
| <p>Increase effective environmental literacy instruction for K-12 students by formal and informal educators.</p> | <p>Teachers and students are better informed in science, technology, engineering, and mathematics fields and can employ their knowledge to support sustainable practices within their communities.</p> | <ul style="list-style-type: none"> • Deliver STEM presentations to students and teachers • Participate in local science fair coordination, mentoring, and judging |

| | | |
|---|---|---|
| <p>Increase effective environmental literacy communication to stakeholders, including how ecosystem change affects economic, social, and cultural values, as well as implications for conservation and management.</p> | <p>Stakeholders develop a sense of awareness, understanding and stewardship in order to sustain watershed, coastal, and marine ecosystems and resources.</p> | <ul style="list-style-type: none"> • Implement science-based workshops and activities (i.e. workshops, field trips) on locally significant coastal resource topics (i.e., changing coastline adaptations for homeowners) • Produce culturally competent and appropriate extension education materials (i.e. factsheets, apps, outreaches) |
| | <p>Communities implement sustainable strategies when managing natural resources and make decisions based on information acquired through informal science education.</p> | <p>Collaborate on agenda-setting and implementation of the annual UOG Regional Conference on Island Sustainability</p> |
| <p><i>GOAL 2: A diverse and skilled workforce is engaged and enabled to address critical local, regional, and national needs</i></p> | | |
| <p>ACTIONS</p> | <p>DESIRED OUTCOMES</p> | <p>UOGSG ACTIVITIES</p> |
| <p>Grow awareness among the nation’s diverse population of career paths that support the needs of the nation’s coastal communities.</p> | <p>All members of a community are enabled to explore and pursue the variety of occupations that are essential to sustain the nation’s coastal communities and ecosystems.</p> | <p>Implement science-based workshops, activities, and learning opportunities that promote or educate about occupations related to the coastal sciences (i.e. workshops, field trips)</p> |

UOG Sea Grant

Strategic Plan 2018-2023

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| <p>Increase opportunities for undergraduate and graduate students to gain knowledge and experience in the science and management of watershed, coastal, and marine resources.</p> | <p>College level courses and internships provide increased literacy, experience, and preparedness in areas of watershed, coastal, and marine ecosystems for all students, particularly those from underrepresented groups.</p> | <ul style="list-style-type: none"> • Connect college students with external research experiences and internship opportunities • Fund student research, internships, and other development opportunities targeting underserved populations in coastal science or resource management fields <ul style="list-style-type: none"> • Mentor and advise students |
| | <p>Undergraduate and graduate students, particularly those from underrepresented groups, are supported and have access to formal and experiential learning, training, and research experiences.</p> | <ul style="list-style-type: none"> • Implement authentic STEM learning experiences, mentorship through graduate fellowships and undergraduate student worker and internship positions targeting underserved populations • Train students in extension and outreach skills • Connect students to research experiences and conferences through National SG network • Participate in professional groups and networks that promote the advancement of underserved populations in STEM fields |
| <p>Prepare a responsive and diverse workforce to advance and benefit from sectors that support the needs of the nation’s coastal communities and ecosystems (e.g. industry, research, government, etc.), and to adapt and thrive in changing conditions.</p> | <p>Employment in all sectors of the U.S. coastal resource enterprise expands and diversifies.</p> | <p>Engage local businesses in sustainable management of coastal resources through stakeholder needs assessments and participation in regularly scheduled meetings</p> |
| | <p>The existing and future workforce is able to adapt and thrive in changing environmental, social, and economic conditions.</p> | <ul style="list-style-type: none"> • Provide professional development resources and opportunities for UOGSG affiliated collaborators and clients (including students) • Participate in career development events (i.e. career day, science fair, educator symposia) |

ADDENDUM



The UOGSG 2018-2023 Strategic Plan is ongoing and succinct. As a normal course of action, the majority of program effort will be placed on the two selected Sea Grant focus areas; 1) Healthy Coastal Ecosystems and 2) Environmental Literacy and Workforce Development. The plan will be implemented by full-time Sea Grant staff and leveraged part-time staff from other grant-funded projects who will provide logistical support as needed to complete deliverables. At the same time, UOGSG is rapidly growing and intends to identify the best approaches suited to tackle the diverse and interconnected issues that affect Guam's coasts through integrated research, extension and education. UOGSG aspires to grow from Sea Grant Coherent Area Program Status to Institutional Status in the near future. Therefore, the program will actively seek opportunities to explore strategic areas of growth and expansion through external funding, the creation of a program development fund, and partnerships where we play a supportive role. Topic areas may include aquaculture, resilient coastal ecosystems, sustainability, and regional and international initiatives.

These projects could be:

1. *Supporting Sea Grant's International Efforts*

As appropriate, UOGSG may assist the National Sea Grant office with collaborating Sea Grant programs in the Asia region. These may include the current programs in South Korea and Japan, and future programs in Indonesia and the Philippines. Guam is within four hours of most east and southeast Asian capital cities and is very well positioned for the strategic expansion of Sea Grant programs in the region. We propose to make initial contacts in coordination with the International Programs Division of NOAA, Sea Grant leadership in NOAA, University of Hawaii Sea Grant, and the WESTPAC IOC organization to promote exchanges and mutual support for these international programs.

2. Traditional Local/Ecological Knowledge (TLK/TEK)

UOGSG recognizes the importance of traditional local knowledge in our island culture and want to align efforts with the NSGO's network visioning efforts in TLK and TEK.

To implement the visioning plan developed by the NSGO traditional local knowledge team, UOGSG provides an opportunity for students to learn about the importance of preserving and maintaining TLK practices through course instruction by a traditional leader. UOGSG has been working with Master Navigator Larry Raigetel to offer traditional seafaring courses which includes an element of climate adaptation as it pertains to celestial navigation. UOGSG will continue to host TLK classes to encourage students to learn more about traditional knowledge, celestial navigation, and climate adaptation.



3. Cooperative Ecosystem Studies Unit (CESU) - Endangered Species Monitoring

Endangered species particularly sea turtles play an important role in ocean ecosystems by maintaining healthy seagrass beds and coral reefs, providing key habitat for other marine life, helping to balance marine food webs and facilitating nutrient cycling from water to land.

The U.S. Department of Navy and Joint Region Marianas installation on Guam have an obligation to meet the goals and objectives of their Integrated Resources Management Plan. Competitive requests are often solicited to conduct monitoring of endangered species such as green sea turtles. UOGSG has been successful in applying for these opportunities as these projects are relevant to our focus areas. Taking on monitoring projects for green sea turtles at Anderson Air Force Base on Guam and in the Northern Mariana Islands have increased the capacity of UOGSG staff biologists and has exposed UOGSG in building a network of partners in both local and federal agencies.



4. Guam Green Growth (G3)

Aligned with the 17 United Nations Sustainable Development Goals (UN SDGs), the Guam Green Growth (G3) Initiative cultivates an ecosystem for transformative action to achieve a more sustainable, prosperous, and equitable future for Guam. Through G3, Guam participates as a founding member of the Local2030 Islands Network which launched during the 74th United Nations General Assembly (UNGA) and Climate Week 2019 to advance the UN SDGs in locally and culturally effective ways. The Governor and Lt. Governor of Guam recently signed and adopted the G3 Action Framework, formally launching the most comprehensive action plan ever created to achieve a sustainable future for Guam. The framework is a ten-year strategy to advance tangible solutions to sustainability challenges and contribute to a green economy for the island. The framework was developed by the G3 Working Group, comprised of 97 members representing government agencies, academia, nonprofits, businesses, and youth. The G3 Working Group was established in September 2019 through Executive Order 2019-23 and its facilitation was assigned to the University of Guam Center for Island Sustainability. UOGSG is an active participant in the G3 Initiative. The UOGSG Director is the overall co-chair of G3 and the Associate Director is the co-chair of the *Thriving Natural Resources Team* which has a focus on *Life on Land*, *Life Below Water*, and *Climate Action* goals aligning with our current focus areas. UOG CIS and UOGSG facilitate the overall G3 process and hosts several Sea Grant employees working part-time on G3 projects.



5. Aquaculture Development

The Governor of Guam has identified aquaculture as a priority and established the Guam Aquaculture Task Force which the UOGSG Director is a member. UOGSG is working to develop an aquaculture program with the main objective to encourage aquaculture practices that combine traditional knowledge with recent advances and techniques for long-term sustainability. To achieve our objective, we will introduce the concept of backyard aquaponics systems, create educational materials to be used by the public and assist community members with their aquaponics system processes. The outcome will be implementation of sustainable strategies in blue economies, more professional development opportunities, and a blue industry workforce that is able to adapt and thrive in changing environmental, social and economic conditions. UOGSG will also explore opportunities for marine/offshore aquaculture and participate in the West Coast and Pacific regional working group, and Pacific aquaculture hub activities.

6. Management of Coastal Fisheries

Coastal fisheries are generally in decline throughout Micronesia. Published studies show many signs of declining stocks along a gradient of human footprints that define fishing pressure. This is a problem for food security, local economies, and for coral-reef ecosystem resilience, which are all focus areas for UOG Sea Grant. At present, sound science on how to improve fish stocks has been produced and published by academic researchers but are not always applied by managers to support fisheries policies and regulations. Evidently there's a need on Guam to bridge the science to communities, leaders and lawmakers. This is an opportunity for UOGSG to engage in translating science to communities on Guam and to expand our extension services.

7. National Science Foundation - Inclusion Across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES) Supporting Emerging Aquatic Scientists (SEAS) Island Alliance

To advance the Environmental Literacy and Workforce Development focus area, as well as contribute to the National Sea Grant Diversity, Equity, and Inclusion Community of Practice, UOGSG applied for and received a National Science Foundation (NSF) INCLUDES Design & Development Launch Pilot (2017-2019) and later an NSF INCLUDES Alliance award (2019-2024). NSF INCLUDES is a comprehensive national initiative to enhance U.S. leadership in discoveries and innovations by focusing on diversity, inclusion, and broadening participation in STEM at scale. The NSF INCLUDES: SEAS Island Alliance addresses the grand challenge of increasing islander representation in the nation's STEM enterprise, particularly in the marine and geosciences. The NSF INCLUDES Islands Alliance will use a collective impact approach to build upon two successful NSF INCLUDES Design & Development Launch Pilots (DDLPs) in the U.S. Virgin Islands and Guam to establish a national network focused on coastal geoscience pathways in seven U.S. or U.S.-affiliated island jurisdictions (U.S. Virgin Islands, Puerto Rico, Guam, Commonwealth of the Northern Mariana Islands, Republic of Palau, Federated States of Micronesia, and the Republic of the Marshall Islands). UOGSG coordinates the Guam Hub of the alliance and the UOGSG director serves as PI. Partners include the National Sea Grant network, Maryland Sea Grant, and Puerto Rico Sea Grant.

8. The Micronesia Challenge+ 2030

The Micronesia Challenge is a regional initiative between the governments of Palau, FSM, Marshall Islands, CNMI, and Guam. The initiative was originally launched in 2006 with a declaration to effectively conserve 30% nearshore marine resources and 20% terrestrial resources by 2020. Governments have renewed their commitment and launched the new scaled-up conservation targets through the Micronesia Challenge Plus 2030 (MC+ 2030) to effectively manage at least 50% marine resources and 30% terrestrial resources across Micronesia. UOGSG has been a host for Guam’s Micronesia Challenge Champion for two consecutive years.

This is an internship funded by the Micronesia Challenge to promote the initiative on Guam through education and outreach. The young champions were assigned to work on UOGSG outreach and extension projects and promoting Guam’s goals towards the Challenge. We hope to continue hosting interns in our office to build capacity and interest in the environmental and natural resources field. For more information about the Challenge, please visit www.micronesiachallenge.org.



Performance Measures and National Targets 2018-2021

| National Sea Grant Performance Measures, Metrics and Targets for 2018 – 2023 | | | |
|---|--|-----------------------------------|---|
| University of Guam Sea Grant Program - Performance Measures, Metrics and Targets for 2018 – 2023 | | | |
| | 2018-2021 National Performance Measure and Metrics | 6-Year Targets (2018-2023) | Brief Justification (If targets are significantly different from the last 4-year cycle) |
| 1 | Number of resource managers who use ecosystem-based approaches in the management of land, water, and living resources as a result of Sea Grant activities | 4 | Limited number of resource agencies and personnel on island and in the region and we will attempt to work with them all. |
| 2 | Number of acres of coastal habitat protected, enhanced, or restored as a result of Sea Grant activities | 1 | During this period, we will focus on developing habitat restoration tools and promote their wide scale adoption in future years but cannot guarantee wide scale use at this time. |
| 3 | Number of fishermen, seafood processing and aquaculture industry personnel who modify their practices using knowledge gained in fisheries sustainability and seafood safety as a result of Sea Grant activities | 1 | |
| 4 | Number of communities that adopt/ implement sustainable economic and environmental development practices and policies as a result of Sea Grant activities | 5 | |
| 5 | Number of communities that adopt/implement hazard resiliency practices to prepare for and respond to/minimize coastal hazardous events as a result of Sea Grant activities | | |
| | Number of Communities | 1 | |
| | Number of hazard resiliency training/ technical assistance provided | 1 | |
| | Community hazard resiliency improved | 2 | |
| 6 | Number of Sea Grant products that are used to advance environmental literacy and workforce development | 8 | |
| 7 | Number of people engaged in Sea Grant-supported informal education programs | 2000 | |

| | | | |
|-----------|--|-------------|--|
| 8 | Number of Sea Grant-supported graduates who become employed in a job related to their degree within two years of graduation. | 4 | |
| 9 | Number of Sea Grant tools, technologies and information services that are used by our partners/customers to improve ecosystem-based management. | | |
| | Number of Products 'developed' | 8 | |
| | Number of Products 'used' | 5 | |
| 10 | Economic and societal impacts derived from Sea Grant activities impacts derived from Sea Grant activities (market and non-market; jobs and businesses created or sustained) | | |
| | Economic Benefit | \$1,000,000 | Guam's reefs generate \$127,000,000/yr in value according to a 2007 study. Our work can help keep the quality of the reefs up and thus continue or create additional value per year. |
| | Jobs Created | 0 | |
| | Jobs Sustained | 2 | |
| | Businesses Created | 0 | |
| | Businesses Sustained | 2 | |
| | Patents | 0 | |
| 11 | Number of Marinas Certified as "Clean Marina" by the Clean Marina Program as a result of Sea Grant Activities | 0 | |
| 12 | Number of individuals certified or recertified in Hazard analysis critical control point (HACCP) as a result of Sea Grant activities | 0 | |
| 13 | Number of peer-reviewed publications produced by Sea Grant | 4 | UOGSG has 1 PhD and UOG has no PhD students and so this number is purposely conservative. |

APPENDIX

For this cycle, the NSGO is making a temporary change in the traditional process and allowing both the National Plan and the strategic plans of individual Sea Grant programs to be extended or updated for two years through 2023.

Therefore, the August 30, 2016 Community Listening Session still applies to this strategic plan. A new listening session will be scheduled in 2023 prior to the next Omnibus and strategic plan cycle.

DESCRIPTION

August 30, 2016 – Community Listening Session