



FY2025 Government of Guam Appropriation Report
Reporting Period: October 2024 to September 2025

Prepared by:

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University of Guam Center for Island Sustainability and Sea Grant

The National Sea Grant College Program is a partnership between universities and the federal government's National Oceanic and Atmospheric Administration (NOAA), an agency within the Department of Commerce. The Sea Grant network includes more than 3,000 scientists, engineers, public outreach experts, educators, and students from over 300 institutions, representing 33 programs in states and territories.

The mission of UOG Sea Grant is to integrate and apply research, extension, and education activities to sustain and develop island environments while integrating knowledge and cultural perspectives of island people.

In 2022, NOAA designated UOG as a Sea Grant Institute after a rigorous review of program excellence and the required commitment of local matching funds demonstrated by the Guam Legislature's annual \$500,000 appropriation. The University of Guam is now both a Land Grant and Sea Grant Institution. The \$500K local investment brings in \$1.3million annual in direct federal funding from NOAA and leverages millions more in funding.

The local appropriation funds the core UOG Sea Grant program staffing, including the director, two faculty positions, a program leader, fiscal officer, and admin support staff. Additionally supplies and equipment, and facilities upgrades and maintenance to support the growing grant-supported staff and programs.

The core UOG Sea Grant team ensures program objectives are following the National Sea Grant's four focus areas: Healthy Coastal Ecosystems (HCE), Sustainable Fisheries and Aquaculture (SFA), and Environmental Literacy and Workforce Development (ELWD), and Resilient Communities and Economies (RCE).

Project Objectives

- Administer and manage the 2024-2027 UOGSG Omnibus;
- Plan and develop future programs;
- Review and evaluate ongoing programs and completed projects;
- Bring university, community, industry, and Sea Grant resources together to facilitate the best use of ocean and coastal resources in Guam and the Micronesia region of the Pacific.
- To allocate resources, including budget, personnel, and technology, in an efficient and equitable manner to support program goals.
- To manage the organization's budget effectively, including budgeting, financial reporting, and fiscal responsibility.
- Develop and maintain a skilled and motivated workforce through training, professional development, and performance evaluations.
- To foster positive relationships with internal and external stakeholders, including clients, partners, and the community.
- To implement practices that minimize the organization's environmental footprint and promote sustainability.
- To ensure clear and transparent communication within the organization and with external stakeholders.

- To engage with the local community, including participating in community service and support activities.

UOG Sea Grant Implementation Programs

Community Backyard Aquaponics Systems

The University of Guam's Center for Island Sustainability and Sea Grant (UOG CIS & SG) have partnered to launch the Community Backyard Aquaponics Systems (CBAS) program, a collaborative initiative designed to bolster food security and promote self-sufficiency on the island. This program aims to empower residents by equipping them with the knowledge and resources to produce their own fresh, nutritious food directly from their backyards. Through hands-on education and a sustainable approach to farming, the CBAS program is making a tangible impact on local communities.

The CBAS program is focused on the innovative practice of aquaponics. This sustainable method ingeniously combines aquaculture (raising aquatic animals like fish) with hydroponics (growing plants without soil) in a single, closed-loop system. The symbiotic relationship is highly efficient: the fish waste naturally fertilizes the plants, while the plants, in turn, filter and clean the water for the fish. This eco-friendly process not only conserves water but also provides a reliable source of both fresh produce and protein, such as tilapia and various types of lettuce.

The expansion of this program is a major step forward for Guam's food sustainability goals. By reducing the island's dependence on imported food and promoting local production, the CBAS program contributes to a more resilient and self-reliant community. With plans to install numerous systems across the island, the program is poised to have a significant and lasting positive impact on the lives of many residents and the overall health of the environment.

The CBAS program celebrated the graduation of the first cohort of the group with a total of 25 systems now available in the community with neighborhood and community group sets active. With support from the Office of Governor of Guam, this project has since been expanded to allow for an additional 100 community systems.

Understanding Community Perception Around Ocean Renewable Energy

In partnership with Pacific Northwest National Laboratory (PNNL) and the National Oceanic and Atmospheric Administration to learn about the residents of Guam's perceptions, understanding, and values pertaining to ocean renewable energy to ensure a smooth transition to 100% renewable energy by 2045. This project will produce a cost-effective analysis on Guam's capacity to transition to renewable energy methods, specific to ocean energy.

Since the start of this project, the team has coordinated various stakeholder engagement efforts across various government agencies, energy organizations and local groups (eg. Fishery groups) to discuss perceptions of marine energy options available to Guam.

The project team utilized QuestionPro, a free-for-use online platform, to develop the online survey, its questions and preserve the results in its digital database. Surveys were done from September 20, 2020 to November 20, 2024. Within this timeframe, multiple announcements

were made public on all social media accounts associated with UOG CIS &SG and on its official website. QuestionPro received a total of 552 responses. Results were published on July 2, 2025 and revealed robust public support for ocean-based renewable energy.

“Guihan for Guåhan” Community-based Fisheries Data Collection

Guihan for Guåhan (G4G) continues to make significant strides in collecting fisheries-dependent data through close collaboration with the local fishing community. In its first “Community Science” workshop, fishers were trained to use a catch-mat method to document their catch. Participants place fish on the mat, take standardized photos, and submit them to project lead Leilani Sablan, who processes the images using the online software Ikasavea. To date, fishers have submitted over 2,000 individual fish measurements — direct contributions that enhance the project’s data quality and community ownership.

The project also continues to bridge the gap between fisheries science and the broader community. Through social media, printed materials, and in-person outreach, G4G translates technical information into content that is accessible and meaningful to the public. This year, the project hosted its first-ever Fish Fest, a community event bringing together fishers, biologists, and resource managers. The gathering created a space to celebrate Guam’s fishing culture, share knowledge, and foster dialogue across sectors.

Data collected by Sablan and Dr. Brett Taylor have been analyzed as part of stock assessments for the Guam Fisheries Management Plan. G4G was formally invited by Guam’s Division of Aquatic and Wildlife Resources to facilitate and co-author the plan. In addition to analyzing catch trends for key species comprising over 60% of local landings, G4G plays a critical role in ensuring that fishers’ perspectives are incorporated — supporting a bottom-up, community-informed management approach.

Guam Fisheries Management Plan

Together with the Guam Department of Agriculture Division of Aquatic and Wildlife Resources (DoAg DAWR) and University of Guam Marine Lab, UOG CIS &SG is planning and development of the Guam Fisheries Management Plan (FMP). The project team’s role is to facilitate discussions about the FMP with the fishing community. Due to UOG CIS & SG’s niche in extension and outreach, we have utilized our skills through our important role by bridging the science and management of fisheries to the fishing community.

UOG CIS & Sea Grant recently concluded a series of townhall meetings with the fishing community to discuss proposed fisheries regulation measures under the Guam Fisheries Management Plan. Each townhall meeting began with a 45-minute presentation introducing the FMP initiative. The presentation outlined the purpose of the townhall, the scientific research conducted to support the process, and the initial input received from the fishing community that helped shape the proposed measures. Each proposed measure was then explained in detail. A Q&A session followed, giving attendees the opportunity to ask questions and seek clarification. Afterward, an activity was conducted to gather individual feedback from participants on their level of support for each proposed measure.

The project team continues to collaborate with partners in carrying out the next steps of the FMP.

Sea Turtle Monitoring, Protection and Outreach

UGO CIS & SG's Sea Turtle Monitoring Program continued its vital conservation efforts. A key part of this work was a notable collaboration with the Guam Green Growth (G3) Conservation Corps. This work was specifically focused on preserving Guam's endangered green and hawksbill sea turtle populations and their nesting habitats.

The team's activities during this period included conducting nesting surveys to spot turtle tracks and identify active nesting grounds. They were also responsible for marking and protecting nests to ensure their safety until hatching. The program also performed nest inventories to gather crucial data on hatching success rates. To support long-term monitoring and create a safer environment for nesting turtles and their hatchlings, the team cleared survey trails and removed marine debris from nesting beaches. This year saw a record number of turtle nesters at the monitored sites. The data collected from these activities contributed to the ongoing research and conservation of Guam's sea turtle populations.

As of June 24, 2025, a total of 39 nest inventories have been conducted thus far for the 2025 season, with an average hatching success rate of 82.4% and an average emergence success rate of 76.6%.

The project team also worked closely with UOG CIS & SG's Science Communication and outreach teams to develop an educational poster focused on Guam's sea turtles during the reporting period. This poster was designed to raise awareness about these endangered marine creatures. The sea turtle poster features Guam's two endemic species: the haggan betde (green sea turtle) and the haggan karai (hawksbill turtle). The poster provides key information about the turtles, including their physical characteristics, conservation status, and diet, aiming to educate the public on their plight. The posters were distributed to schools and at public outreach events, directly involving students and the wider community in sea turtle conservation awareness. Pre and post-assessments were conducted during sea turtle classroom outreach to assess knowledge gained from the presentation. On average, assessments reflected at least a 30% increase in knowledge.

Guam Restoration of Watersheds (GROW)

UOG CIS & SG continues to address human activities that accelerate the erosion process in the Ugum watershed located in Inalahan, Guam by utilizing both traditional and innovative conservation methods. Watershed restoration efforts were expanded with the launch of the Guam Restoration of Watersheds (GROW) Initiative through the USDA Conservation Innovation Grant. The GROW team continues to propagate and care for the plants in the nursery for future out planting events.

With support from Guam Forestry, the Southern Guam Soil & Water Conservation District, and community volunteers, trees and shrubs were planted in the Ugum watershed throughout the year. Project site's existing forest stand was maintained to reduce the spread of wildfires caused by arson. Erosion mitigation devices, such as waddles, were installed throughout the property.

The GROW team and volunteers planted 5,267 native and nutrient-serving trees during the project year. With three large community planting events and over 10 smaller events, the group

was able to help stabilize the soil and prevent erosion causing less stress on the water treatment plant and helping to reduce water outages for the southern village residents. Efforts also led to the lessening of runoff entering the bay and smothering coral reefs.

Carbon Credit Certification

The University of Guam's Center for Island Sustainability (UOG CIS & Sea Grant) is pioneering a carbon-offset initiative under its Guam Restoration of Watersheds (GROW) program with leveraged funds from the U.S. Climate Alliance. By pursuing Gold Standard Carbon Credit Certification, the program aims to transform years of reforestation work—over 16,800 native and culturally significant trees planted in Guam's degraded southern "badlands"—into measurable carbon sequestration that generates sustainable funding. These revenues will be reinvested into conservation efforts such as reducing land erosion, protecting freshwater supplies, and restoring downstream coral reef and fish habitats.

Guided by environmental consulting firm Hā Sustainability and funded by the U.S. Climate Alliance, the project recently hosted a public meeting to gather community feedback and ensure broad support. Next steps include completing the rigorous Gold Standard certification process, quantifying the carbon storage potential of restored areas, and creating a mechanism for selling credits to fund ongoing restoration. The initiative ultimately seeks to establish a scalable, community-driven model for financing island conservation in Guam and across the Pacific.

Crown of Thorns Research

The University of Guam's Center for Island Sustainability and Sea Grant, in collaboration with the UOG Marine Laboratory and NSF EPSCoR, is leading research to understand and mitigate outbreaks of the crown-of-thorns starfish (COTS). These starfish are known to prey on coral and can cause significant damage to Guam's reefs.

Led by researchers like Ciemon Caballes Ph.D., the project investigates several key hypotheses about what triggers these outbreaks. One theory suggests that high fertilization rates, where a single female starfish can produce over 100 million eggs in a season, are a natural biological factor. Another hypothesis points to the overfishing of natural COTS predators, which releases the starfish from predatory pressure. The research also explores the nutrient hypothesis, where elevated nutrient levels from river runoff can lead to phytoplankton blooms that serve as a food source for COTS larvae, potentially improving their survival rates.

The research also considers climatic triggers, such as the influence of strong El Niño events and high precipitation on COTS populations. Findings from this work, which has been underway since 2022, have been used to develop the Guam COTS Outbreak Strategic Management Plan. The UOG team has also been testing if culling the starfish can improve the survival of transplanted corals. This multi-agency effort includes training and coordinating monitoring with local and federal partners to protect Guam's marine ecosystems. Workshops and trainings were held to teach people about how to dispatch COTS.

Guam and regional researchers funded

The University of Guam Center for Island Sustainability and Sea Grant announced approximately \$350,000 in competitive research funding for the 2024-2026 period. These grants

support projects that address key challenges facing Guam and Micronesia's coastal areas, communities, and economies. The research is focused on healthy coastal ecosystems, environmental literacy, sustainable fisheries, and resilient communities.

The funded researchers and their approved proposals include: Bastian Bentlage, Ph.D., from the UOG Marine Laboratory, who will map the distribution of bacteria from land to reef in the La Sa Fua watershed; Peter Houk, Ph.D., also from the Marine Laboratory, whose project aims to find ways to reduce the effects of climate change on Micronesian coral reefs; Tom Schils, Ph.D., who will study the abundance and contribution of crustose calcifying red algae on Guam's reefs; Heloise Rouze, Ph.D., whose project focuses on using micro-symbionts to restore the *Acropora virgata* coral species; Christina Karanassos from the Palau International Coral Reef Center, who will assess commercially important reef fish populations; and Laurie Peterka from Friends of the Mariana Trench, who will conduct a study on "intergenerational and culturally adaptive ocean literacy" in the CNMI.

University officials emphasized that these projects will not only provide valuable scientific data but also include a strong outreach component to engage the community, resource managers, and industry stakeholders.

UOG CIS & SG has since completed its 2024-2027 Research Competition, which will award another \$350,000 of funding for research projects.

Graduate Research Assistantship

UOG CIS & SG announced the 2024-2025 Graduate Research Assistantship (GRA). After a competitive application process, Kreshele Conteras was selected for the GRA position under the mentorship of Dr. Brett Taylor.

Kreshele Contreras has made substantial progress in her role as a GRA in supporting a National Fish and Wildlife Foundation (NFWF)-funded project focused on coral reef fisheries around Guam. Her primary responsibilities have centered on annotating stereo-video fish surveys from various reef habitats across the island. Through this work, Kreshele has become proficient in species identification, length measurements, and quality control procedures that ensure accurate data integration—skills directly aligned with her thesis on reef fish ecology.

In addition to her video annotation duties, Kreshele has begun training in the processing of fish specimens for life-history analysis. This includes dissection techniques, otolith extraction, and preliminary aging procedures, which are critical components of fisheries biology and stock assessment. Her involvement in both field and laboratory components of the research has provided her with a strong foundation in fisheries-independent monitoring and the biological underpinnings of sustainable management.

Kreshele's assistantship not only contributes vital data to the larger NFWF project but also strengthens her own academic development through applied research experience. Her work is advancing both institutional objectives and her professional trajectory in marine science, with a strong focus on the conservation and management of tropical reef fisheries.

Regional Partnerships

The University of Guam Center for Island Sustainability and Sea Grant began a groundbreaking partnership in 2024 with South Korea's Gyeonggi Sea Grant (KSG) program. This collaboration is the first official U.S.-South Korea Sea Grant research cooperation. It introduces KSG's advanced digital twin technology, which creates virtual models for real-time simulations and predictive analysis, to Guam Sea Grant's marine science research.

The technology enables real-time simulations and predictive analysis, enhancing understanding of marine environments. Leveraging KSG's modeling expertise and UOG's marine data, the partnership provides tools for managing ocean resources. It highlights the global nature of marine science and the importance of international cooperation in addressing ocean challenges.

Leaders from both programs enthusiastically support the partnership. KSG Director Seung-Buhm Woo believes integrating South Korea's modeling with Guam's marine data will significantly advance understanding and promote sustainable marine resources, highlighting the global need for international cooperation. UOG Sea Grant researcher Brett Taylor, Ph.D., noted digital twin technology's potential to expand understanding of near-shore environments and test hypotheses, enriching scientific inquiry.

This Guam-Korea Sea Grant collaboration will greatly boost marine science research. By combining KSG's digital twin technology with UOG Sea Grant's marine data, researchers gain powerful new tools for analysis and environmental insight, leading to better resource management. The partnership also fosters scientific exchange, strengthens international cooperation, and significantly aids global marine ecosystem conservation, setting a new standard for future efforts.

Matching and Leveraged Funds

The Guam Legislature's appropriation of \$500,000 to the University of Guam provides critical base support for the Sea Grant program. It also has the added benefit of serving as critical local matching dollars to leverage external federal dollars.

The National Sea Grant College Program requires \$600,000 in local matching funds per year for \$1,200,000 in federal dollars. The Guam Legislature's local appropriation satisfies \$500,000 the majority of required local match each year. Other leveraged funds are used satisfy the remainder. This translates to an immediate 2x return on investment (ROI) for the local dollar investment from the Guam Legislature. However, the local base funding support allows the University of Guam to elevate the Sea Grant Program and compete for many more additional external dollars for greater impact in areas such as natural resources management and conservation, renewable energy, watershed restoration, climate resilience, regional expansion, and capacity building and outreach.

In calendar year 2024, local appropriations to UOG CIS&SG resulted in a 33.9 x Return on Investment (ROI). For every \$1 in local funds, UOG brought in \$33.9 in additional federal and external grants funding. More details on impacts and leveraged funds are available in the [UOG CIS and SG 2024 Impact Report](#).

FY2025 Local Appropriation Actual Expenditure Summary

<i>FY2025 Local Appropriation Expenditure Summary</i>	
Salaries and Fringe for key Senior Personnel, UOGSG Faculty, Research Coordinator, and Outreach & Community Engagement Staff • Director (1.0) FTE – Oversight of UOG CIS/SG • Associate Director for Communications (0.3 FTE)- develop materials for education and community engagement • UOGSG Research Coordinator & Marine Extension Faculty (1.0 FTE) – facilitate competitive research competitions, teach marine courses, act as mentor for UOGSG funded students • Program Leader – Lead program activities and reporting for the CIS and Sea Grant programs.	\$421,487.21
General supplies and materials for UOGSG activities Funds for supplies and operations will support office and field supplies, printer/copier lease, gas and vehicle maintenance, and phone service.	\$1,837.97
Small equipment and furniture for UOGSG operations Funds for small equipment and furniture to support program operations.	\$2,330.00
Contractual - Construction Design of planned renovation of UOGSG office spaces in Dean's Circle – which require infrastructure improvements to provide adequate workspaces, alleviate mold and asbestos, ensure ADA compliance, etc. Electrical upgrade and monitoring services,	\$65,344.82
Stipends Stipends for UOG CIS & Sea Grant education and outreach projects.	\$9,000.00
TOTAL	\$500,000