

# Man, Land, & Sea

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# Planning for Fire and Recovery: Guam's First Wildland Fire Tabletop Exercise

*Submitted by: The Guam Department of Agriculture, Forestry and Soil Resources Division (DOAG-FSRD)*

Your Guam Department of Agriculture, Forestry and Soil Resources Division (DOAG-FSRD) in collaboration with the Guam Fire Department (GFD), the Bureau of Statistics and Plans (BSP), and Guam Silver Jackets, hosted Guam's First Wildfire Tabletop Exercise on Thursday, 08 May 2025. The exercise brought together a diverse group of local and federal fire and non-fire partners to strengthen interagency coordination around wildland fire preparedness and recovery. The morning session focused on fire suppression operations at a high-risk area along Route 17 a location historically prone to recurring wildfires. Using the fire conditions from the March 25, 2016 fire that burned hundreds of acres, participants worked through response scenarios that included agencies such as your DOAG-FSRD, Guam Fire Department, Mayors' Council of Guam (MCOG), Department of Public Works (DPW), Department of Parks and Recreation (DPR), UOG Drone Corps, NOAA National Weather Office, Joint Region Marianas (JRM), and Andersen Air Force Base (AAFB). The exercise underscored the unique roles each agency plays from active fire suppression and interagency communication to community protection, public safety coordination, and aligning operational priorities during large-scale wildfire events.

The afternoon session transitioned into post fire recovery and fire season preparation. Discussions included mitigation strategies, outreach, equipment needs, and interagency training opportunities. A key concern raised was the prevalence of auto and trash fires, with MCOG noting limited capacity to address illegal dumping and abandoned vehicles. Department of Public Works (DPW) clarified its role in clearing abandoned vehicles from numbered highways but acknowledged ongoing issues on village and private roads. DOAG-FSRD emphasized its support for recovery tree planting through the Forest Stewardship and Urban and Community Forestry programs, and offered technical guidance on tree species selection. North and South Soil and Water Conservation Districts (SWCD) encouraged deeper collaboration with MCOG to enhance restoration efforts. DOAG-FSRD also committed to sharing a training calendar to support partner agencies. Additional recommendations included installing fire danger rating boards in more visible public areas and collaborating with NWS to create age-appropriate fire weather messaging that aligns with local Smokey Bear outreach.



*Morning session of DOAG-FSRD's First Wildfire Tabletop. Partners included are as follows: DPW, Yona Mayor's Office, Mangilao Mayor's Office, NavFac-Marianas, NWS, Guam Fire Department, AAFB Fire, JRM Fire, BSP-GCMP, and USACE.*



*A local firefighter battles a wildfire in Southern Guam. Local agencies met for Guam's First Wildfire Tabletop Exercise to strengthen coordination around wildland fire preparedness and recovery.*



# Backyard Buoys Project

By: Camille Quichocho, Biologist - Marine Conservation District, Guam Coastal Management Program

The Bureau of Statistics and Plans, Guam Coastal Management Program (BSP-GCMP), is one of the newest partners in the Backyard Buoys project, which will bring two Sofar Ocean Spotter buoys to Guam. Lead biologist Camille Quichocho is overseeing the deployment of these buoys and has facilitated two community meetings in Hågat and Malesso'. These meetings allowed community members to learn more about the project and provide feedback on mooring locations, data accessibility, and future stakeholder engagement.

During each community meeting, Quichocho explained the purpose of the Backyard Buoys project and how this new technology could benefit Guam. The main takeaway is that the buoys will collect data on wave height, period, direction, and sea surface temperature, which can be used to make more informed decisions regarding marine activities.

The buoys used in this project are 'Spotter buoys' developed by Sofar Ocean. They operate similarly to other wave data buoys but are smaller and more affordable, making them accessible to more remote coastal communities. Guam will benefit from real-time wave data for Malesso' and Hågat, as well as higher-resolution data on nearshore wave energy. This information may help scientists and natural resource managers better understand erosion issues in the southern villages.

The community meeting in Malesso' was held at the Malesso' Youth Recreation Center on May 29, 2025. Residents from Guam's southern villages attended and provided valuable feedback on the proposed buoy locations. The Hågat community meeting took place at the Hågat Community Center on June 12, 2025. Attendees included members of the Guam Fire Department, the Guam Department of Agriculture - Division of Aquatic and Wildlife Resources (DOAG-DAWR), and the Bureau of Statistics and Plans. Some insightful feedback received included that the temperature data could be helpful for fishers targeting specific species. Additionally, the Backyard Buoys web-based app has improved access to data from other ocean data buoys, such as the Waverider buoys at Ritidian Point and Ipan.

During the Hågat meeting, we proposed changing the mooring location of the Hågat buoy from directly west of Façpi Island to a spot halfway between Anae Island and Façpi Island. This adjustment aims to accommodate local boaters navigating around Façpi Island, ensuring that the buoy does not obstruct the typical route of boat traffic.



The Bureau of Statistics and Plans, Guam Coastal Management Program Staff with Malesso' Mayor, Franklin Champaco at the Backyard Buoy Community Outreach Meeting held on May 29, 2025, at the Malesso' Rec Center. (Photo by the Guam Coastal Management Program).



Guam Department of Agriculture's Division of Aquatic and Wildlife Resources (DAWR) assisted GCMP with vessel support and logistics for the deployment of the first of two Southern Backyard Buoys. (Photo by the Guam Coastal Management Program).

and the Guam Police Department to deploy the two buoys, both of which should be in the water before the end of July. We are collaborating with various agencies and organizations willing to assist with

volunteers who would like to help ensure the buoys are functioning properly! If you are interested, please contact Camille Quichocho at [camille.quichocho@bsp.guam.gov](mailto:camille.quichocho@bsp.guam.gov).



# Empowering Coastal Stewards Through Creative Outreach: The Guam Coastal Ambassador Program

By: Steven Dierking, Guam Coastal Management Program

The Guam Coastal Ambassador Program is a unique collaboration between the Bureau of Statistics and Plans (BSP), Guam Coastal Management Program (GCMP), and the Guam Community College (GCC) Business and Visual Communications Department, designed to raise awareness and promote stewardship of Guam's coastal resources through student-led outreach and education.

At the core of the program are GCC Visual Communications student interns who use their creative and communication skills to support Guam's coastal planning goals. Through multimedia storytelling, community engagement, and hands-on research, the program connects people to the environmental issues that shape the future of our island.

## Strengthening Community Connections to the Coast

The Coastal Ambassador Program focused on key issues facing Guam's shores, including public access, marine debris, wildfires, and the need for sustainable, nature-based solutions. Student ambassadors led public education efforts by producing compelling videos, photos, public service announcements (PSAs), and digital media campaigns that bring these topics into the public eye.

The interns conducted research into relevant public laws and policies and engaged with a range of stakeholders. They interviewed government agency heads, environmental experts, and community organizations to develop a deeper understanding of the challenges and opportunities surrounding coastal access and pollution prevention. These interviews and insights helped shape the themes, concepts, and storylines of the PSAs and outreach materials they created.

## Place-Based Learning with Purpose

This initiative applies a place-based learning approach, allowing students to directly explore Guam's coastal environments and engage with the communities that depend on them. From documenting shoreline conditions to highlighting efforts to reduce marine debris, student ambassadors translated their field experience into powerful educational tools that reflect Guam's culture, challenges, and aspirations through the final deliverables they produced. The content will be posted on BSP's website at [BSP.GUAM.GOV](http://BSP.GUAM.GOV) and through upcoming promotions on GCMP and BSP social media channels.

## Investing in Future Leaders

The Guam Coastal Ambassador Program is more than an internship. It's a leadership development opportunity—one that empowers students to become informed advocates for Guam's environment. By combining research, media production, and civic engagement, the program demonstrates how education can play a key role in shaping sustainable communities. The Bureau of Statistics and Plans would like to acknowledge and thank Dr. Mary Okada, GCC President; Dr. Michael Chan, Dean of the School of Technology and Student Services; and Sean Lizama, Visual Communications Instructor, for their help in making the Guam Coastal Ambassador Program a success. Congratulations to the 2025 Guam Coastal Ambassadors: Sharlene Maza, Angelina Marie Tambora, Nya Rae Belga, and Krysthian Villanueva.



**Sharlene Maza**

My name is Sharlene Maza, a Marketing and Visual Communications student at Guam Community College and a Guam Coastal Management Program Coastal Ambassador Intern. Artistic expression has always been a driving force in my life, fueling my passion for exploring various mediums to connect with others. Inspired by the work of fellow artists and the emotions their creations evoke, I am continually drawn to participating in creative projects and experiencing different forms of visual storytelling.

In my free time, I enjoy watching movies, video essays, and gameplays, spending time with my cats, and reading books.

I currently serve as the Program Manager for the Coastal Ambassador Program, where I have had the privilege of using my skills to raise awareness about marine debris and public access. Learning about these issues has deepened my understanding of their significance to our island community. One of the most fulfilling aspects of this internship is collaborating with like-minded individuals to develop meaningful projects that inform and inspire the community through our collective efforts.



### Angelina Marie Tambora

I am a Marketing and Visual Communications student at Guam Community College and the president of GCC's Digital Arts Society. In my role, I help foster a creative community by organizing events and opportunities for students to collaborate, learn, and showcase their talents. My passion for art since childhood has guided my journey — especially through digital art, traditional painting, and creating handmade trinkets. Alongside my studies, I run Crappy N' Crafty, a small business I started to share handmade jewelry and clay crafts with the community. When I'm not creating, I enjoy powerlifting, baking, and spending time with my dog, Milo.

Currently, I am part of the Coastal Ambassador Internship Program as the writer and social media specialist, working alongside my friends and our supervisor, who also advises our Digital Arts Society. This experience has been both rewarding and enjoyable, allowing me to collaborate with people I know while learning more about Guam's environment and public access rights. Through this program, I've been able to apply my skills in writing, marketing, and social media to soon help educate the community on important environmental issues. It has pushed me to explore new topics about Guam's coastline and how creative media can inspire environmental stewardship. This internship is helping me grow not only as a creative professional, but as someone passionate about giving back to the island through meaningful work.



### Nya Rae Belga

Buenas Yan Hafa Adai! My name is Nya Rae Belga, and I am a Marketing and Visual Communications student at Guam Community College. I am also the vice president of the Digital Arts Society (DAS) club, where I engage in the arts of creativity and innovation with my fellow peers. I am always captivated by how creative a person can be, building universal languages and meanings through something that begins as a simple idea or thought and is brought into reality.

In addition, I enjoy music, reading a good book, hitting the gym, and reconnecting with nature.

Working with the Coastal Ambassadors program, along with my friends and supervisor, has offered me a valuable opportunity to explore topics related to marine debris and public access rights. My experience creating awareness and informing our community about these issues has deepened my connection to the roots of our island. It has encouraged me to bring that passion to share with the audience. Together, we can find solutions and support our island while working as a community to protect our shores for future generations to come.



### Krysthian Villanueva

I am a dedicated student at GCC, currently pursuing two degrees—an Associate of Science in Information Technology and a degree in Visual Communication. With a passion for both technology and creativity, I strive to stay at the forefront of industry standards, continuously expanding my knowledge to make an impact in both fields. Outside of academics, I enjoy watching sports and living a healthy, active lifestyle.

Alongside my studies, I am deeply inspired by the power of visual storytelling in film and aspire to become a skilled and effective cinematographer. I am committed to personal and professional growth, always looking for new ways to use technology to improve the quality of life. I am also enthusiastic about collaborating with teams to achieve collective success.



# Student researchers are helping to solve a Guam seagrass mystery - is there disease in our waters?

By: *Cara Lin, Seagrass and Mangrove Conservation Coordinator, Guam Coral Reef Initiative*

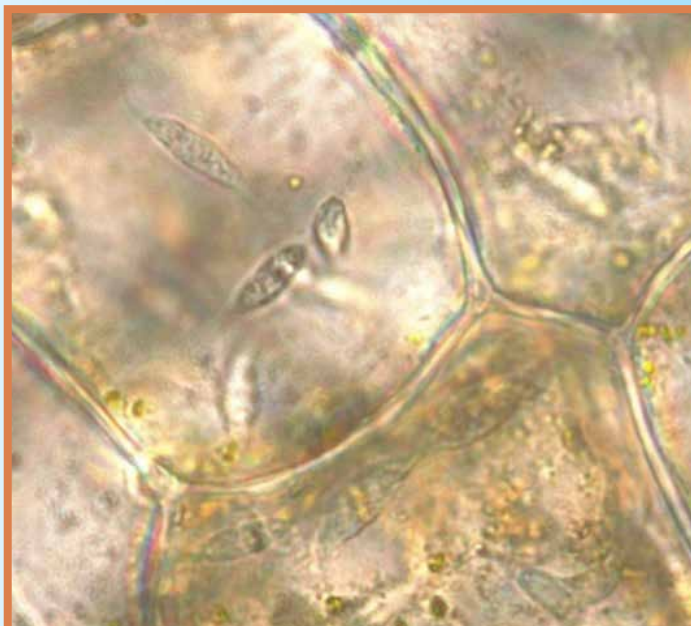
Did you know, similar to humans, plants can get diseases from viruses, bacteria, and other microorganisms? You may have seen signs of plant disease in your own yard or home, such as the circular moldy spots that often appear on papaya fruits. Unfortunately, Guam's unique and valuable seagrass meadows have been shrinking in recent years, putting our fisheries, marine life, and shorelines at risk. The cause of the seagrass loss is not well understood, and one potential factor may be disease.

Seagrasses are underwater plants that can be found in Guam's central and southern lagoons. The most common seagrass in Guam, known as tape grass or lo'u in CHamoru, can grow over 5 ft in length. Seagrass-wasting disease appears as black and brown

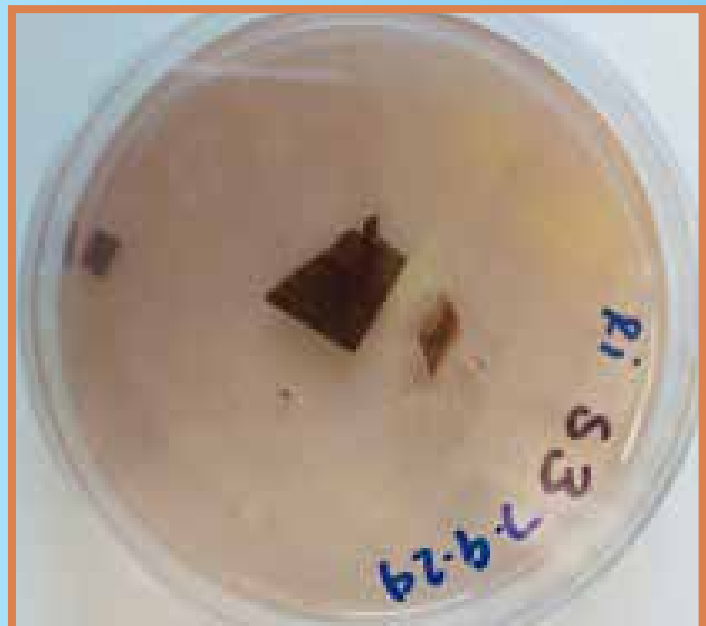
splotches or lines on the seagrass leaves, and similar dark spots have been seen in Guam's seagrass. This seagrass disease has been reported in other species in the world and the most well-known cause is *Labyrinthula*, a genus (group) of small single-celled organisms. However, most of our general understanding of seagrass-wasting disease comes from reports from cooler temperate waters, with almost no information about seagrass disease in the tropical Pacific. Since this past summer, the first study of seagrass disease in Guam was led by student researchers, Andrew Kang (JFK High School), Stephanie Santos (UOG), and Kylie Naguit (UOG). All three students worked under the mentorship of Dr. Glenn Dulla at the UOG Plant Pathology lab and Cara Lin at the Guam Coral Reef Initiative. Andrew Kang participated as part of his short-term summer research experience in the 2024 NIH STEP-UP program, and Kylie



*A seagrass leaf with a dark splotch suspected to be seagrass-wasting disease. Photo credit: Cara Lin*



*Multiple rice-shaped Labyrinthula were found inside seagrass cells. Photo credit: UOG Plant Pathology Lab*



*Petri dish with seagrass sample on top to grow Labyrinthula colonies. Photo credit: Cara Lin*



Naguit joined the research team as a 2024 Fall NASA Space Grant intern.

Researchers took samples of leaves with dark sections from Hagåtña and observed them under the microscope. Microorganisms were found that matched the description of *Labyrinthula*, which are mostly clear rice-shaped ovals with tapered edges. The single-celled organisms can grow in number, forming groups, and can slowly move along a thread of exuded slime. Many different types of dark blotches, or lesions, were examined and had *Labyrinthula*.

To further study the microorganisms, small pieces of the seagrass were placed onto petri dishes with agar and seawater. The *Labyrinthula* population multiplied, eating the nutrients in the agar, and formed a network of slime to expand their colony. Since this microbe causes seagrass disease elsewhere in the world, the next mystery was to test whether the *Labyrinthula* found in Guam was also causing disease in Guam's lo'u seagrass.

Pieces of diseased seagrass and healthy seagrass were placed onto different petri dishes, and colonies of the *Labyrinthula* only grew in the petri dishes that had disease. This was a sign that *Labyrinthula* was only associated with diseased areas, and not found everywhere on the seagrass. However, it is possible that the *Labyrinthula* doesn't cause disease itself, but only infects and eats already weakened seagrass. To truly be able to test if the *Labyrinthula* in Guam could initiate disease, it would need to be introduced to a healthy plant and cause disease in the new plant.

Additional experiments were designed to deliver *Labyrinthula* to healthy seagrass and see if dark spots formed. Agar with colonies of *Labyrinthula* grown in petri dishes, and diseased leaves with spots, were placed on top of healthy leaves. In one case, disease seemed to develop, and a dark brown streak spread over the healthy leaf. However, to better confirm these results and understand whether disease is a threat to the seagrass, more research would be needed both in the lab and in monitoring seagrass meadows. Other methods to analyze the DNA sequences of the *Labyrinthula* in Guam might also help researchers understand how it relates to the *Labyrinthula* found to cause disease in other countries. Student researchers, Andrew Kang, Kylie Naguit, and Stephanie Santos helped test protocols for extracting DNA from the seagrass samples and amplify it for future research.

Although studying seagrass disease may seem oddly specific, seagrasses are an important contributor to life in Guam. Seagrasses form lush meadows that are home to mafute', mañahak, and other marine life such as snails and slugs that support local fisheries. As waves roll over the reef and through the tall seagrass, the leaves sway back and forth, absorbing the energy of the wave and keeping in shore waters calm. Smaller seagrasses also spread roots through the sediment and help keep it in place, preventing erosion and helping to keep the water clear. With additional research, scientists and managers hope to better understand what is impacting our seagrass and how to take action to protect them. Sharing information can also help us collaborate better among islands, the tropical Pacific, and research labs. Andrew Kang presented on seagrass disease as part of the national NIH STEP-UP symposium last August, and both Andrew and Kylie Naguit shared their findings at the 2025 Marianas Islands Conservation Conference.



*Stephanie gathers seagrass samples while snorkeling. Photo credit: Sabrina Medina*



*Kylie Naguit conducts gel electrophoresis after amplifying DNA*



**Man, Land and Sea  
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<https://bsp.guam.gov/guam-coastal-management-program/>

**Organizing  
a Beach  
Cleanup?  
We can help!**

Contact the Guam Coastal Management Program and get connected with other volunteers and supplies. Call 671-475-9647 or email [gcmp@bsp.guam.gov](mailto:gcmp@bsp.guam.gov) for more information.

\*Limited supplies available per cleanup event.



# COMPLIANCE MATTERS

**Protect Guam's Water Lens with Guam Public Law 37-105**

**ATTENTION ALL DEVELOPERS, CONTRACTORS,  
AND INDUSTRY PROFESSIONALS:**

Guam's commitment to safeguarding its natural resources has taken a major step forward. Guam Public Law 37-105, new wastewater discharge regulations are in effect and must be followed for all applicable projects.

**KEY REQUIREMENTS UNDER THE LAW**

Where water is available from a public water system as defined by 10 GCA, Chapter 53, § 53102, but a public sewer is not available, toilet facilities shall be of Type 2 or 4 pursuant to regulations promulgated by GEPA. In no case shall the construction of new cesspools be allowed.

**UPDATED ENVIRONMENTAL  
CLEARANCE PROCESS:**

**The Guam Environmental Protection Agency (EPA)** will now enforce strict environmental clearance requirements for building permits issued by the Department of Public Works. Clearances will align with the provisions of Public Law 37-105.

**EFFECTIVE IMMEDIATELY!** These changes are now in force — compliance is non-negotiable.

**NORTHERN GUAM  
AQUIFER**



**WHY THIS MATTERS**

-  **Protect Guam's Drinking Water:** The Northern Guam Water Lens is essential to the island's water supply—proper wastewater management is vital to preserving its quality.
-  **Avoid Costly Delays or Penalties:** Ensure your projects meet the latest regulatory standards to prevent issues during permitting or construction.
-  **Build Responsibly for the Future:** Incorporate sustainable wastewater solutions to support Guam's long-term environmental health and resilience.

**TAKE THE NEXT STEP**

Plan now to ensure compliance with Guam Public Law 37-105.

For more information on updated guidelines and how they apply to your projects, contact the Guam Environmental Protection Agency: 671.300.4751

**Learn more: <https://epa.guam.gov/>**



**BUILDING RESPONSIBLY.  
PROTECTING GUAM.  
ENSURING A SUSTAINABLE FUTURE.**



A MESSAGE BROUGHT TO YOU BY THE GUAM COASTAL MANAGEMENT PROGRAM  
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