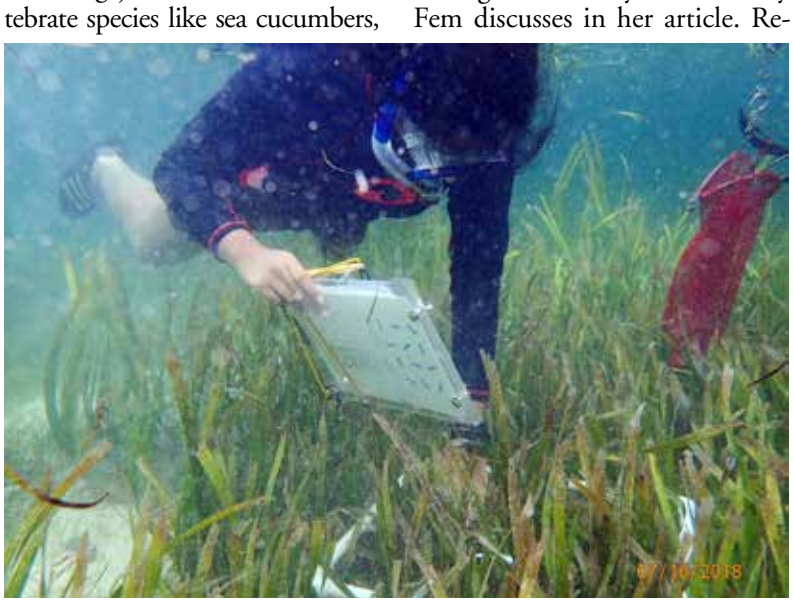
Seagrass – the unsung hero of coastal resilience

For most people a perfect beach setting includes: warm, clear water, powdery white sand, and colorful marine flora and fauna to set eyes on. With this perception, many people are hesitant to get in water filled with seagrass patches because these ecosystems don't exactly fit into most people's iconic vision of a tropical paradise. In some cases, they are even actively removed to ensure hotel fronts are dominated by white sand. This makes people unaware of the importance of seagrass and how they play a vital role in our marine ecosystems.

Seagrass habitats promote biological productivity and biodiversity for numerous organisms including juvenile fish and invertebrate species like sea cucumbers, crabs, snails, and clams. Seagrasses serve as filters that absorb inorganic nutrients through their roots and leaves, while also ensuring coastal protection from currents and waves (Terrados & Borrum, 2004). Ultimately, the presence and abundance of these plants can determine the overall environmental quality of our coasts.

Under the Coral Reef Initiative Summer Internship Program, my partner Mary Fem Urena and I were part of a seagrass study with mentors from the National Oceanic and Atmospheric Administration (NOAA) CNMI Field Office. Surveying 11 out of 25 sections of the Saipan Lagoon that stretched from Quartermaster to Tanapag, our project analyzed individual colonies of *Enhalus acoroides*, the long bladed seagrass that dominates much of our lagoon. Our goal was to determine change in each patch's size and geographic distribution over time, setting baselines for future interns. Every field day, we carried a dive buoy that held all our materials – a quadrat, measuring tape, reel, clipboard with our data sheets, camera, and GPS device. We measured the seagrass bed's diameter, canopy height, shoot density, and macro algae and invertebrate cover within three quadrat tosses per colony. We also used a computer mapping program to locate sections of the lagoon to study, which Mary Fem discusses in her article. Results of this study can be further analyzed by local agencies, such as BECQ, to quantify and manage coastal protection.



As someone who always thought that balati (sea cucumber) were only good for playing catch in the water, and that seagrasses were nothing but a nuisance, this internship has definitely been an eye-opening experience. It made me appreciate the front row seat we have in experiencing the beauty of both the land and the sea. Our islands are characterized by very high biodiversity, including some of the richest and most fragile ecosystems on earth. Although seagrass beds receive little attention and often do not make it to most people's "must-visit destinations" list, their ecological value and roles in our environment should not be overlooked.

Maps are fascinating visualizations that aid in the study and management of our natural resources. If you observe a satellite view of the Saipan Lagoon, you can see dark green clumps near the shore spreading apart as they reach farther out into the ocean. These dark clumps are most likely *Enhalus acoroides* seagrass habitats, flowering aquatic plants sheltering juvenile fish and invertebrates, such as young Mafute' (black-spot emperor fish) and balate' (sea cucumber). According to Brodie and N'Yeurt (2014), "seagrass habitat losses by the year 2100 are estimated at between 5 to 35%" in the Pacific region. This loss is caused by global climate change and overpopulation stressors and local run off pollution and urban development pressures. Without seagrass beds, our lagoon would not only lose important fish nurseries but coastal protection and stormwater filtration. Thus, more research, monitoring, and mapping of local seagrass beds must be conducted to comprehend their current and future conditions.As this summer's CNMI Coral Reef Initiative (CRI) interns under the National Oceanic and Atmospheric Administration (NOAA), my partner Dianne Pablo and I gathered measurements on discrete *Enhalus acoroides* seagrass colonies to understand their health. This seagrass monitoring project is a continuation of work from last year's CRI interns, who built the research foundation and created twenty-five field sampling zones (from Quartermaster to Tanapag) across our lagoon. This summer, we enhanced the way we analyze seagrass by integrating an amazing, complex geospatial processing program. We would input the colonies' locations from our Global Positioning System device into the ArcMap program and create helpful maps that visualize important characteristics of observed sea grass colonies, such as area size, shoot density, and macroalgae cover. Our work developed baseline information for future summer NOAA CRI interns who will contribute new data and evaluate change in colony metrics over time. The map visuals and pivot tables we produced, along with our spatial and ecological data, can be used by local environmental agencies and researchers to better manage our seagrass habitats and lagoon.

Personally, I found it fulfilling to work closely with our beautiful *Enhalus* seagrass beds, learn valuable mapping software and data analysis skills, and gain more research experience through this CRI internship. It was memorable to find coral amongst the seagrass and spot juvenile fish swimming in groups through *Enhalus* shoots. Let's support our seagrass beds by working to reduce our runoff pollution and mitigate climate change!