

Man, Land, & Sea

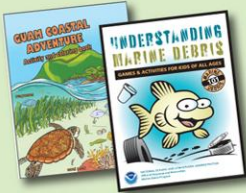
A publication by Guam Coastal Management Program

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UOG Sea Grant and Marine Lab study shows decline in parrotfish stocks over ten years.

A release from the University of Guam



Parrotfish numbers on Guam have decreased by 30 percent across the past decade, according to a University of Guam Sea Grant-funded study conducted by researchers from the UOG Marine Laboratory.

A diver surveys reef fish populations in northern Guam using stereo-video cameras.

Photo by Andrew McInnis

Part of the decline of parrotfish stocks was likely due to overfishing. According to the study, 63 percent of the surveyed sites with increased numbers of parrotfish stocks were within marine protected areas (MPA). Meanwhile, 70 percent of the surveyed sites that showed a decline were in unprotected areas.

However, the study also emphasized that overfishing is not the only cause of the decline in parrotfish stocks on Guam. The changes were likely caused by a "complex mix of exploitation, habitat change from multiple stressors, and responses to management measures."

According to the study, Guam's coral reefs have faced dynamic stress over the past decade. Several major coral bleaching events have killed large sections of coral communities. As the primary habitat for reef fishes, the widespread death of coral colonies spells an uncertain future for many fish species, like parrotfishes.

Parrotfishes (laggua, palaksi) are brightly colored, common inhabitants of Guam's coral reefs. They feed daily on reef microalgae and therefore a decline in parrotfish stocks also impacts grazing rates on local reefs.

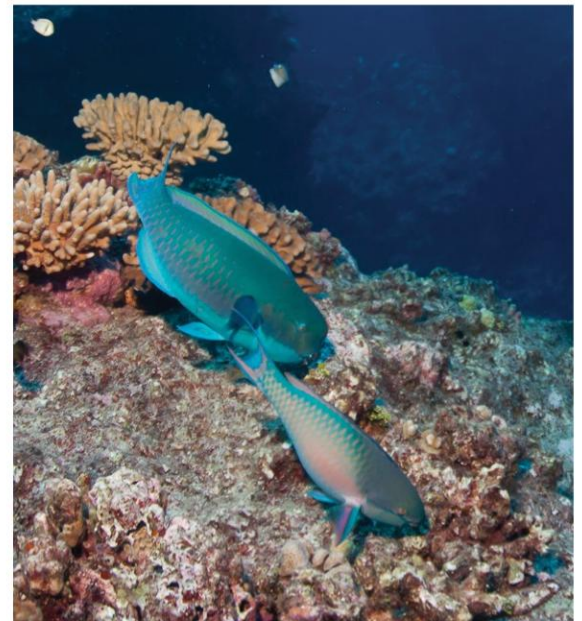
"This is not the story I was hoping to tell with our research," said Brett Taylor, Ph.D., the study's lead author, assistant professor of fisheries ecology, and UOG Sea Grant researcher. "But fortunately, there has already been positive management action that will hopefully turn this trend around," he added.

According to Taylor, an example of this positive response is Public Law 35-78, which prohibits fishing with a spear or other devices while SCUBA diving. It was enacted into law in March 2020. With the passage of the legislation, Guam joined more than 60 countries, states, and territories that banned the practice.

The study is published in the journal *Coral Reefs*. A copy is available here: <https://link.springer.com/article/10.1007/s00338-022-02315-x>

"This legislation represents the most effective management action for ensuring sustainable reef fisheries. Thus, we hope to see a rebound in fish numbers over the next decade."

- Brett Taylor



A steephead parrotfish grazes on reef substrate.

Photo by Steve Lindfield





COASTAL LEARNING BOOKS



Presented to Guam's Public Elementary Schools

The Bureau of Statistics and Plans' Guam Coastal Management Program received a grant from the 2021 Governor's Education Stabilization Fund for the production and printing of over 20,000 coastal coloring and activity books to be distributed to Guam's Public Elementary Schools.

Governor Lou Leon Guerrero and Lt. Governor Joshua presented the books on January 30, 2023, at M.U. Lujan Elementary School to the MULES 5th Grade student body officers and over a dozen GATE Pre-K students.

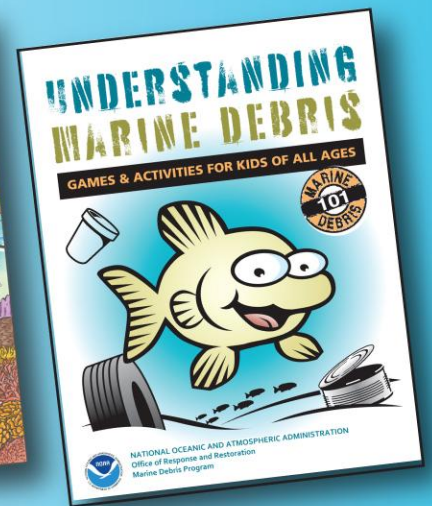
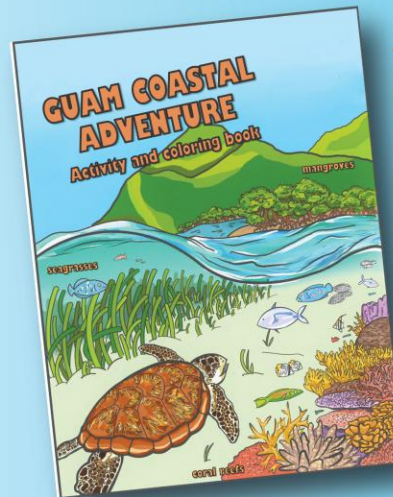
The books are a great educational resource for children to learn about Guam's unique marine and terrestrial environments, as well as identify and learn about important environmental issues facing Guam, such as invasive species, erosion control, marine debris, protecting coral reefs and various other environmental threats to our island.



Governor Lou Leon Guerrero and Lt. Governor Josh Tenorio speak with students at M.U. Lujan Elementary School about the Coastal Learning Books.



The Guam Coastal Adventure Activity and Coloring book was originally created with funding from a NOAA Coral Reef Conservation Program (CRCP) Grant written and illustrated by Cara Lin, a recently graduated 2020-2022 coral reef management fellow, Cara worked on writing and illustrating the book for nearly a year. The book was also edited with input from other local natural resource managers, including Whitney Hoot, program manager for the Guam Coral Reef Initiative, and Marie Auyong, National Oceanic and Atmospheric Administration (NOAA) affiliate. The Chief Hurao Academy also shared their expertise to ensure that the book featured accurate CHamoru language terms and cultural references.



The second activity book titled: "Understanding Marine Debris" features information and activities for children to identify marine debris and learn the importance of preventing marine debris from entering Guam's oceans. The book is an original product of the NOAA Marine Debris Program.



OFFICE FOR COASTAL MANAGEMENT
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



UOG Sea Grant, Guåhan Sustainable Culture host off-grid aquaculture workshop

A release from UOG Sea Grant

The University of Guam Sea Grant and Guåhan Sustainable Culture (GSC) held a half-day aquaculture workshop and food demonstration on Saturday, Jan. 28, at the Sagan Kotturan CHamoru (SKC) in Tamuning.

Participants learned about operating and managing a basic aquaculture set-up and running an off-grid system. David Crisostomo, UOG Sea Grant aquaculture specialist facilitated the workshop and provided a hands-on fish harvesting demonstration with the participants.



Representatives from UOG Sea Grant, Guåhan Sustainable Culture and the Hyatt at the Sagua Koturan CHamoru.



“GSC’s system inside the SKC compound fully operates on solar energy and is run off just a 100-watt air pump and that is enough to operate the entire system. It’s low-energy, and fairly low maintenance and can produce about 400 lbs. of fish per year if it is stocked up to the maximum density,” Crisostomo said. “Local company Generation Renewable Inc. demonstrated what is needed to implement this in a home,” said GSC President Michelle Crisostomo.



Hyatt Executive Chef Mirko Agostini also conducted a food demonstration using the tilapia harvested from the aquaculture system. “The Hyatt has been really excited to be involved in sustainability and in our projects, and so we want to bring them in. Chef Mirko, the executive

chef at the Hyatt, has offered to do a cooking demonstration with the tilapia. That will be exciting,” Crisostomo said.

Through UOG Sea Grant’s funding and technical support, several recirculating aquaculture systems or RAS have been distributed to nonprofits and other community partners. UOG Sea Grant provided basic infrastructure support, workforce development, training, or workshops.

UOG Sea Grant plans to expand the program to other groups with the aim to revitalize the aquaculture industry in Guam.





Guam Silver Jackets Brief New USACE Commander



U.S. ARMY CORPS OF ENGINEERS
HONOLULU DISTRICT

Lt. Col. Christopher (Ryan) Pevey
District Commander



Lt. Col. Christopher (Ryan) Pevey became the 73rd Honolulu District Commander June 24, 2022. Prior to joining Honolulu District, he most recently served as the 25th Infantry Division and U.S. Army Hawaii Engineer.

Pevey is from Athens, Georgia and was commissioned into the U.S. Army Corps of Engineers in April 2004.

He served in other command and staff positions to include: Deputy Commander for the Kansas City District, U.S. Army Corps of Engineers. Deputy G3 for the 1st Infantry Division; Executive Officer and Operations Officer for the 82nd Engineer Battalion in Kuwait and Fort Riley.

Pevey was the Executive Officer to the Deputy Commanding General for Civil and Emergency Operations at Headquarters, U.S. Army Corps of Engineers; Commander of the 557 EN CO (Horizontal), 864th Engineer Battalion at Joint Base Lewis McChord, Washington. He also served as the Chief of Operations for the 130th Engineer Brigade and Security Force Assistant Officer in Operation Iraqi Freedom 09-10 and Schofield Barracks, Hawaii; Assault and Obstacle Platoon Leader in Echo Company, 2-9 Infantry Regiment at Camp Casey, Korea.

Pevey holds a Bachelor's Degree in History from the University of Georgia, and a Master of Science Administration, Public Administration from Central Michigan University.

His military education includes graduation from the Command and General Staff College, Engineer Officer Basic and Advanced Courses, Ranger Leader Course, and Airborne School. Pevey's awards and decorations include the Bronze Star Medal, Meritorious Service Medal (5), Army Commendation Medal (4), Army Achievement Medal, National Defense Service Medal, Iraq Campaign Medal, the Meritorious Unit Commendation, Ranger Tab, and Parachutist Badge.

Pevey is married and has two children.

BUILDING STRONG®

U.S. ARMY CORPS OF ENGINEERS – HONOLULU DISTRICT
www.poh.usace.army.mil

Members of Guam Silver Jackets team recently convened at the Governor's Conference Room in Adelup to share information on current projects and meet the new commander of the U.S. Army Corps of Engineers. Lt. Col. Christopher (Ryan) Pevey became the 73rd Honolulu District Commander in June 24, 2022. LTC Pevey oversees all Guam projects.

Team members briefed the new commander on the work they are doing to build resilience in the community. The projects include tools to help with engaging communities to establish action plans, strengthening Guam's stormwater management manual; and address flooding in vulnerable areas.

The Silver Jackets Guam charter was signed and adopted by six agencies within the government of Guam and federal partners in 2019. The Silver Jackets team comprises of multiple agencies that merge to develop an all-encompassing solution. By applying their shared knowledge, their goal is to work with communities to enhance an area's resilience to natural disasters such as flooding. They can provide education, support, and resources in order to do so. In time of disaster response, agencies are often identified by the color jacket or shirt they wear. For example, FEMA has typically worn blue and USACE has worn red. The color silver represents many agencies working together to tackle flooding issues.





Feasibility Study to Enhance Reef Fish Populations



The Government of Guam Department of Agriculture (DOAg), Division of Aquatic and Wildlife Resources (DAWR), received Federal financial assistance for a project titled **“Development of a Feasibility Study to Enhance Reef Fish**

Populations” from the U.S. Fish and Wildlife Service (USFWS) CFDA Program 15.634.

The purpose of this project is to conduct a feasibility study to identify practices, logistics, and operational protocols that will be needed to sustainably run an “in-water protected/enhanced habitat aquaculture operation” and an “above-ground or in-land aquaculture operation”.

Aquaculture operations may include grow-out systems, mariculture systems, hatcheries, and nurseries. DOAg will be releasing a Request for Proposals (RFP) announcement to sub-award a vendor to carry out the study. Project proposals must focus on conducting a market analysis rather than a scientific experiment to determine the feasibility of both aquaculture operation(s) for Guam.

DAWR’s aim is to fund project proposals that provide financial projections as a baseline for future aquaculture projects. The overall goal is the reintroduction and restoration of Species of Greatest Conservation Need (SOGCN) to designated habitats – page 212 of the Guam Wildlife Action Plan (GWAP) in order to protect habitat and implement management actions to protect and improve the status of SOGCN.

Please contact the Project Lead, Frank C. Roberto, Biologist (DAWR), at (671) 735-0292 or email at Frank.Roberto@doag.guam.gov if you have any questions.
Si Yu'os Ma'åse.



Guidebook to Development Requirements now available for free download

Fundamental resource ready for developers

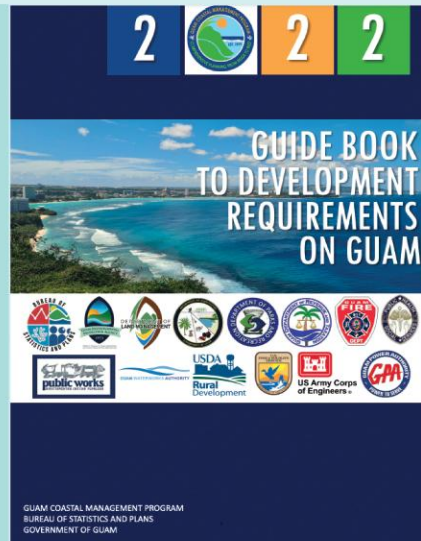
Guam Coastal Management Program announces updated 2022 guidebook, serves as reference for island developers



This new guide is a fundamental resource that's available free of charge to developers planning to undertake any major or minor project on Guam. Updated as of March 2022 the guide serves as a reference point for developers researching how to execute environmentally compliant development projects.

A key component of the guidebook is the Permit and Construction Enforcement Matrix, which identifies general project types and lists typical types of plans, specifications, calculations, reviews, approvals or other agency permits required. The matrix is useful in finding the description that best corresponds with a proposed project, along with which plans, specifications, calculations and other associated permits and approvals are required.

Within the 252-page guide, you will find information on laws, regulations, permits and clearances, as established by numerous local and federal regulatory agencies. This includes all categories of construction, earthmoving and agriculture, as well as other types of land use and water-oriented construction.



The guide provides an overview of development requirements on Guam.

Guam Coastal Management Program, Bureau of Statistics and Plans

The guide also aims to provide an overview of major permitting requirements of typical development projects on Guam. It outlines the applicable considerations at local and federal levels to help streamline the permitting process and support compliance objectives.

In addition to the permitting information, the guide contains the following resources:

- **Directory of government agencies, including contact information**
- **Sample forms**
- **Glossary of acronyms**
- **Definitions of key terms**
- **Key public laws**
- **Environmental mapping on Guam**
- **Permitting matrix**

This guide is not meant to be used as the sole resource that developers should rely on when executing projects. You are advised to consult the appropriate government agencies as early as possible in the planning stage. For reference, you can turn to representatives at the Department of Public Works, the Department of Land Management, the Guam Environmental Protection Agency and the Bureau of Statistics and Plans for help in determining which laws, regulation permits clearances are required for a particular project.

A limited number of hard copies of the guidebook are available to the public. You can also download a copy at bsp.guam.gov/guam-development-guidebook/ For more information, please contact steven.dierking@bsp.guam.gov or call (671) 475-9647.



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



FREE

HOUSEHOLD HAZARDOUS WASTE DISPOSAL

Limited to 15 Gallons or 100 pounds of household hazardous waste items per day.

No charge to residents of Guam for these accepted items:



FROM THE HOME AND GARDEN:

- Aerosol cans
- Batteries, button
- Batteries, rechargeable
- Dry cleaning solvent
- Fertilizer (with pesticides)
- Fungicide
- Furniture polish
- Metal polish, solvent-based
- Insect spray
- Light ballast
- Mothballs
- Pesticides
- Pool chemicals
- Rat poison
- Shoe polish
- Spot remover
- Stump remover
- Thermostats
- Weed killer



FROM THE GARAGE:



- Acetone
- Artist paints and media
- Antifreeze
- Auto body repair products
- Automobile oil
- Battery Acid
- Brake fluid
- Car wax, solvent-based
- Contact cement
- Driveway sealer
- Fiberglass epoxy
- Florescent light bulbs
- Gasoline/oil mixtures
- Gasoline and other fuels
- Glue, solvent-based
- Joint compound
- Kerosene
- Latex paint
- Lighter fluid
- Non-automotive oil
- Oil filters
- Oil-based paints
- Paint thinner
- Paint stripper
- Parts cleaner
- Photographic chemicals
- Rust remover
- Shellac
- Stain
- Transmission fluid
- Turpentine
- Varnish
- Wood filler
- Wood preservative



FROM THE KITCHEN:

- Cleaners, solvent-based
- Disinfectants
- Floor care products
- Hair remover
- Kitchen oil
- Nail polish
- Nail polish remover
- Oven cleaner
- Thermometer

ELECTRONICS:

- Televisions
- Monitors
- Radios
- Cell Phones
- Pagers
- Computers
- Printers
- DVD players
- UPS systems
- Lap tops

DISPOSAL DROP LOCATIONS:

Household Hazardous Waste Facility (HHW) & Harmon Residential Transfer Station

Both facilities are located on Harmon Industrial Park Road behind the Government of Guam's Department of Public Works Complex.

OPEN: Thursday through Monday, 9 a.m. - 5 p.m.

(Closed on Govt. of Guam Holidays)



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
for more information.
*limited supplies available per cleanup event.

