

NOAA
FISHERIES
SERVICE



Manell-Geus Habitat Blueprint Focus Area Site

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Science Sunday
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Nihi Ta Fanāfa'maolek

D. Burdick



A framework to improve habitat for fisheries, marine life, and coastal communities

VISION:

Healthy habitats that sustain resilient and thriving marine resources and communities

PURPOSE:

Framework for NOAA to think and act strategically across programs and with partner organizations to address the growing challenge of coastal and marine **habitat loss and degradation**

OUTCOMES:

- Sustainable and abundant fish populations
- Recovered threatened and endangered species
- Protected coastal and marine areas and habitats at risk
- Resilient coastal communities
- Increased coastal/marine tourism, access, and recreation

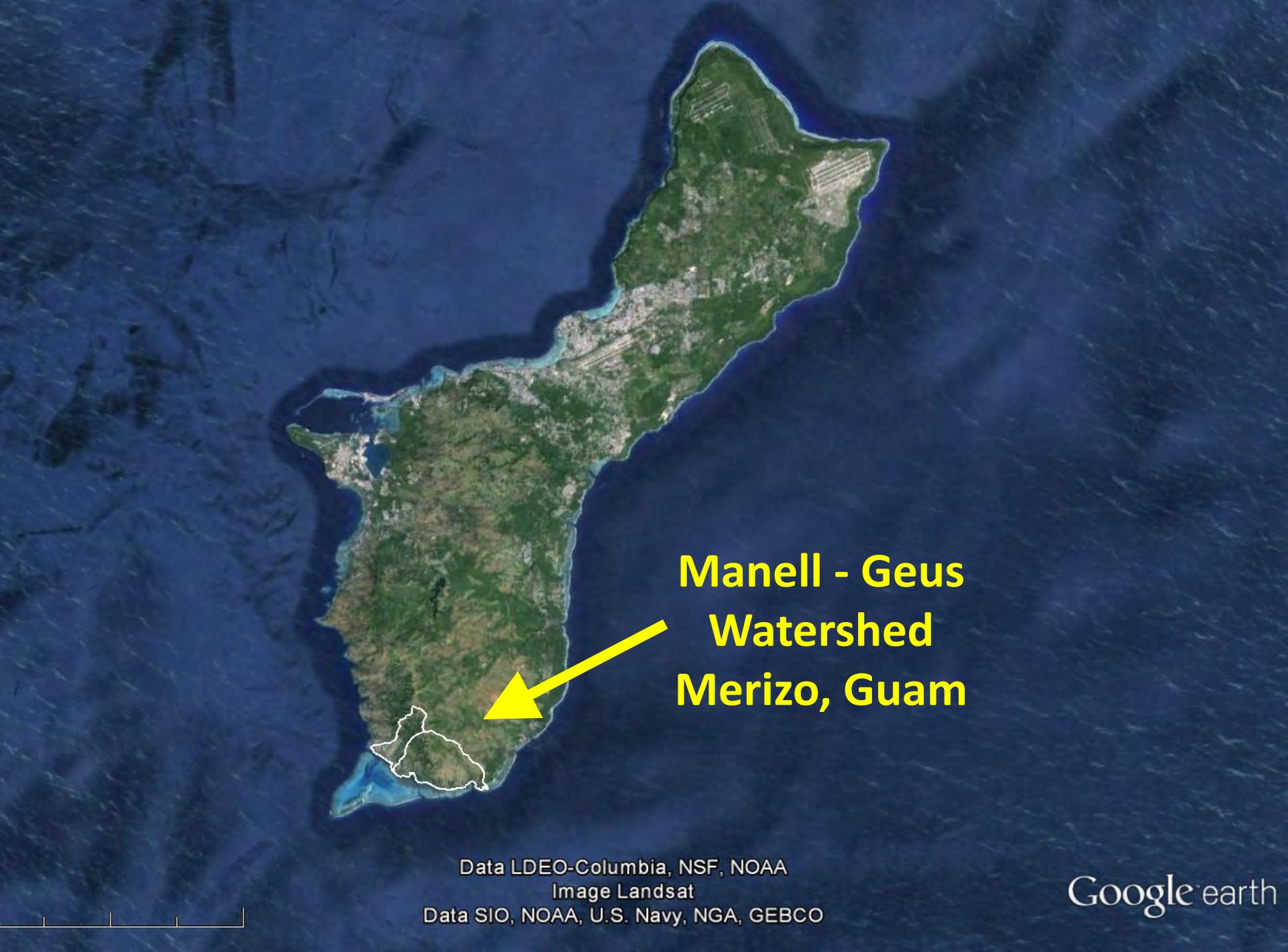


A framework to improve habitat for fisheries, marine life, and coastal communities



Focus Area Criteria:

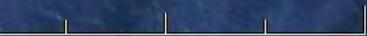
1. Potential to demonstrate long-term impact
2. Feasibility of making measureable progress in 3-5 years.
3. Cross NOAA Collaboration
4. External Partnerships and potential to link resources
5. Improves our scientific understanding of habitat function
6. Builds social and cultural attributes into ecosystem or watershed management.



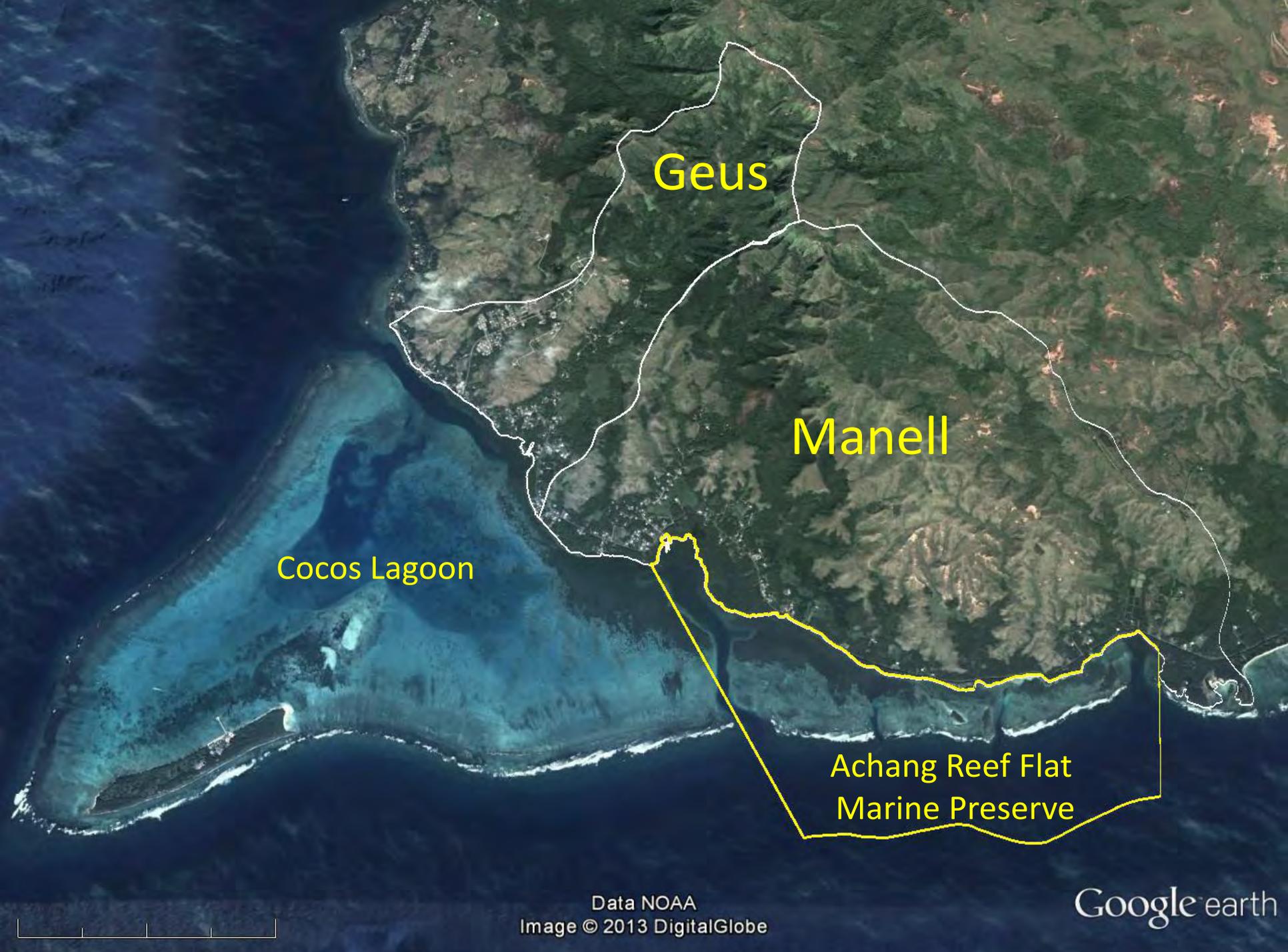
**Manell - Geus
Watershed
Merizo, Guam**

Data LDEO-Columbia, NSF, NOAA
Image Landsat
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Google earth







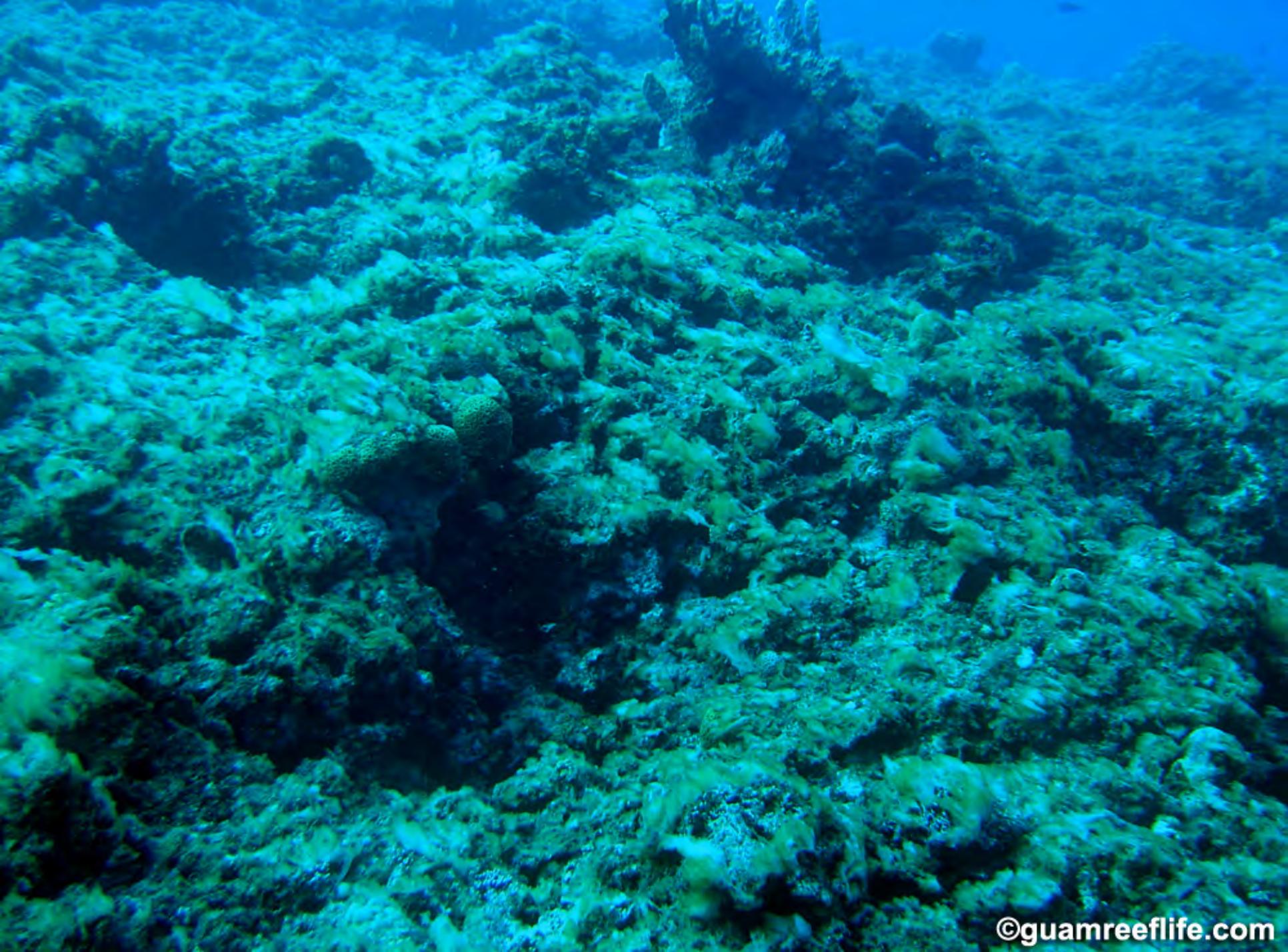
Geus

Manell

Cocos Lagoon

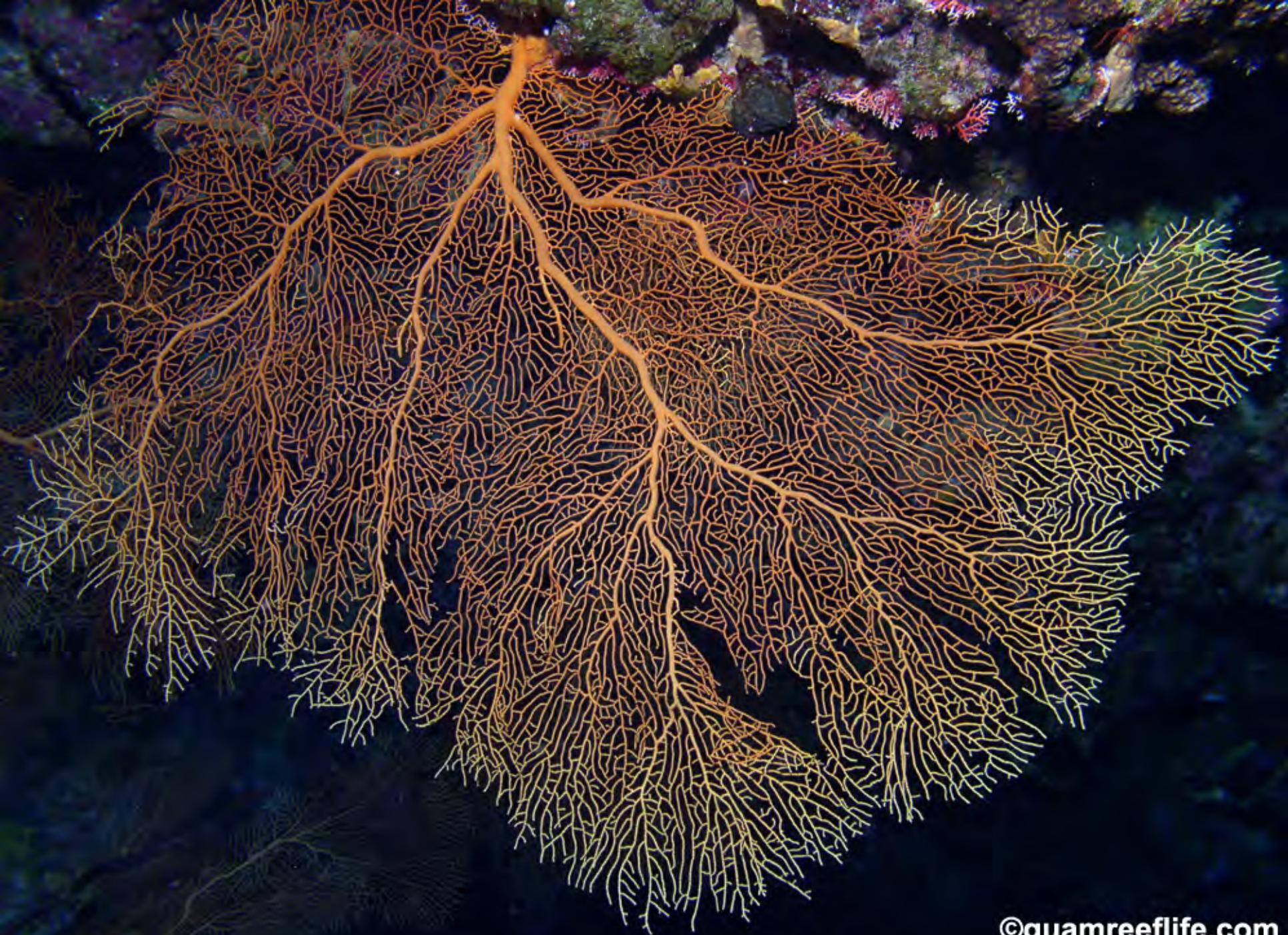
Achang Reef Flat
Marine Preserve

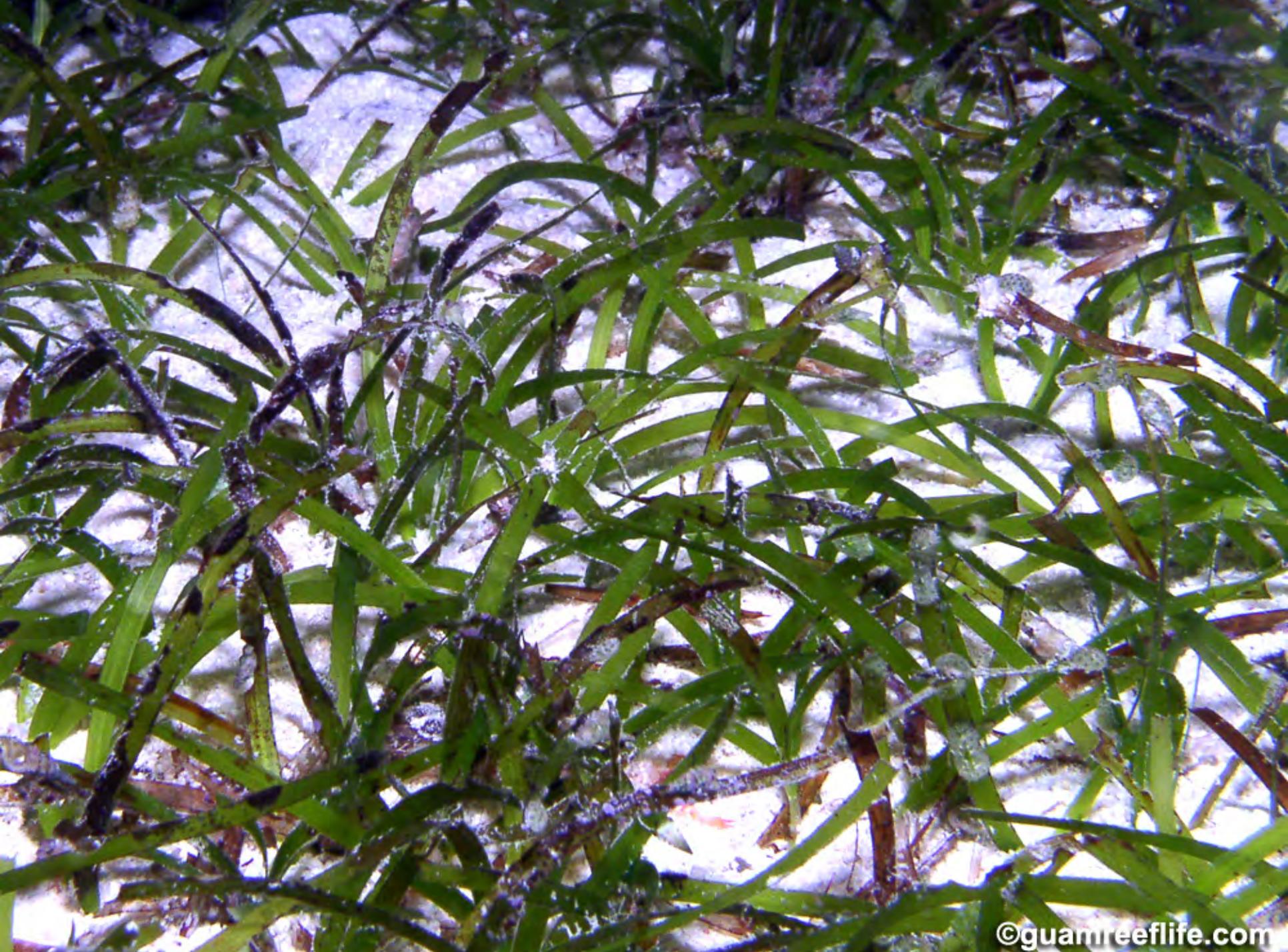




















Geus

Manell

Cocos Lagoon

Achang Reef Flat
Marine Preserve



GUAM'S MARINE PRESERVES

TUMON BAY



Map of Tumon Bay Marine Preserve
 Located in the northern part of Guam, Tumon Bay is a popular area for recreation. The preserve includes the bay and surrounding reefs.

PITI BOMB HOLES



Map of Piti Bomb Holes Marine Preserve
 This preserve is located in the central part of Guam and is known for its diverse marine life and coral reefs.

FATI POINT



Map of Fati Point Marine Preserve
 Situated in the southern part of Guam, Fati Point is a well-known diving spot with clear waters and healthy reefs.



SASA BAY



Map of Sasa Bay Marine Preserve
 Located in the western part of Guam, Sasa Bay is a beautiful bay with a mix of natural and developed areas.

ACHANG REEF FLAT



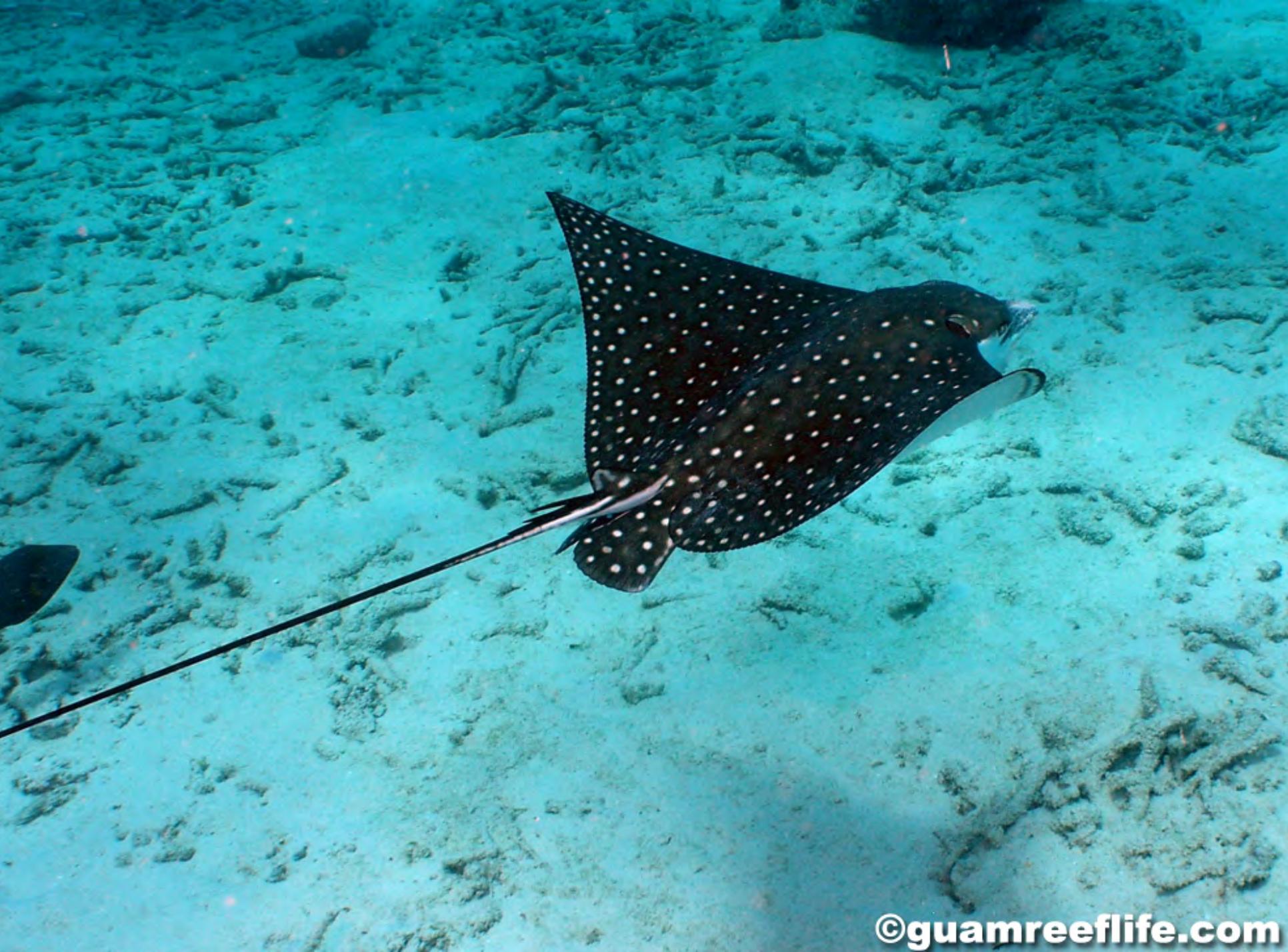
Map of Achang Reef Flat Marine Preserve
 This preserve is located in the southern part of Guam and is characterized by its extensive reef flat and diverse marine ecosystem.

GENERAL RESTRICTIONS

- No alcohol, tobacco, or other intoxicating substances are allowed in the preserves.
- No firearms, explosives, or other weapons are allowed in the preserves.
- No motor vehicles, boats, or other motorized equipment are allowed in the preserves.
- No fishing, hunting, or other activities that may harm the marine life are allowed in the preserves.
- No littering or dumping of any kind is allowed in the preserves.
- No collection of any marine life or other natural resources is allowed in the preserves.
- No use of any equipment that may damage the coral reefs or other marine life is allowed in the preserves.
- No use of any equipment that may create noise or disturbance to the marine life is allowed in the preserves.
- No use of any equipment that may pollute the water or air is allowed in the preserves.
- No use of any equipment that may harm the land or other natural resources is allowed in the preserves.





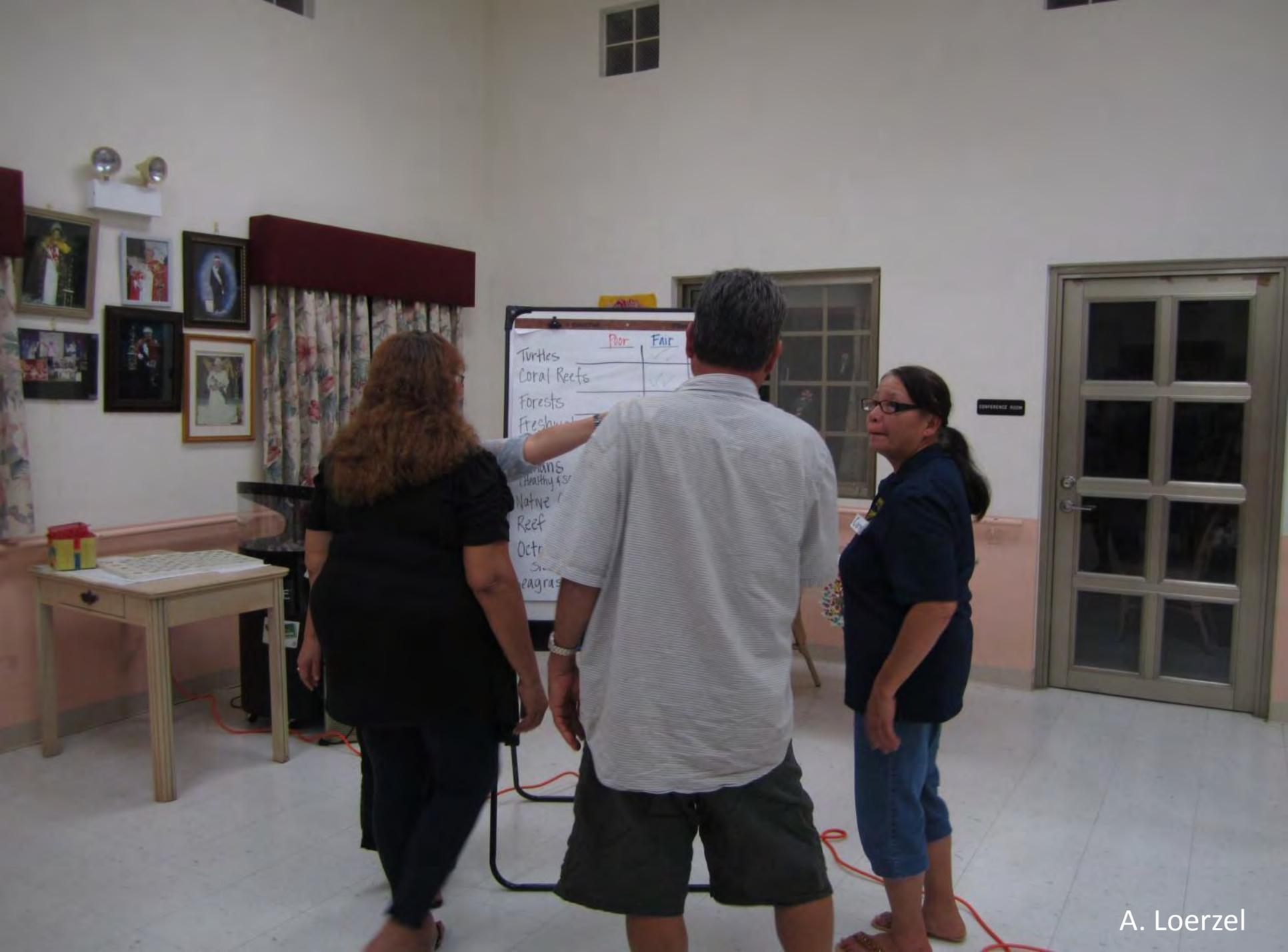






Item	Price
Turkey	
Coral Reefs	
Prints	
Freshwater	
(snails, plants)	
Humans	
(snails, plants)	
Johnnie Walker	
Red Field	
Octopus	
and other	
snuggles	

What would Che Lu do?



	Door	Fair
Turtles		
Coral Reefs		
Forests		
Freshwater		
Humans Healthy & Safe		
Native		
Reef		
Octo		
Seagrass		

CONFERENCE ROOM



	Poor	Fair	Good
Turtles		✓	
Coral Reefs		✓✓	
Forests		✓✓✓	
Freshwater (rivers, pools)	✓✓		
Humans (Healthy & safe)	✓		✓
Native Crabs	✓		✓✓
Reef Fish			✓✓
Octopus, squid, & shellfish			✓✓
Seagrass	✓✓✓		

	Poor	Fair	Good
Turtles		✓✓	
Coral Reefs		✓✓	
Forests		✓✓✓	
Freshwater (Rivers, pools)	✓✓✓		
Humans (Healthy & safe)	✓	✓	
Native Crabs	✓		✓✓
Reef Fish			✓✓
Octopus, squid, & shellfish			✓✓
Seagrass	✓✓✓		

Summary of Threats from MG CAP

	CORAL REEF ECOSYSTEM	FOREST ECOSYSTEM	FRESHWATER ECOSYSTEM	HEALTHY & SAFE HUMAN COMMUNITIES	NATIVE WILDLIFE	REEF FISH & EDIBLE INVERTS	SEAGRASS ECOSYSTEM	TURTLES	MANGROVE ECOSYSTEM	SUMMARY THREAT RATING
OVER-HARVESTING	MEDIUM			LOW	MEDIUM	HIGH		VERY HIGH		HIGH
SEDIMENTATION	HIGH		HIGH	LOW			MEDIUM			HIGH
INVASIVE SPECIES		HIGH	LOW	MEDIUM	VERY HIGH					HIGH
EROSION		HIGH	HIGH	MEDIUM						HIGH
FIRE		HIGH		MEDIUM	LOW					MEDIUM
FLOODING	LOW		LOW	HIGH			LOW			MEDIUM
PCB				MEDIUM						LOW
CROWN OF THORNS STARFISH	MEDIUM									LOW
PHYSICAL DAMAGE	LOW	LOW	LOW				LOW		LOW	LOW
SUMMARY TARGET RATINGS:	MEDIUM	HIGH	HIGH	MEDIUM	HIGH	MEDIUM	LOW	HIGH	LOW	HIGH



Upper reaches of the
Geus River



Upper reaches of the
Geus River















Threats

- Erosion
 - Fire, Streambank Erosion, Shoreline Erosion, Off-roading, and Invasive Species
- Sedimentation
- Flooding
- Climate Change
- Marine Debris
- Crown of Thorns Starfish
- Over-harvesting
- Lack of Public Awareness









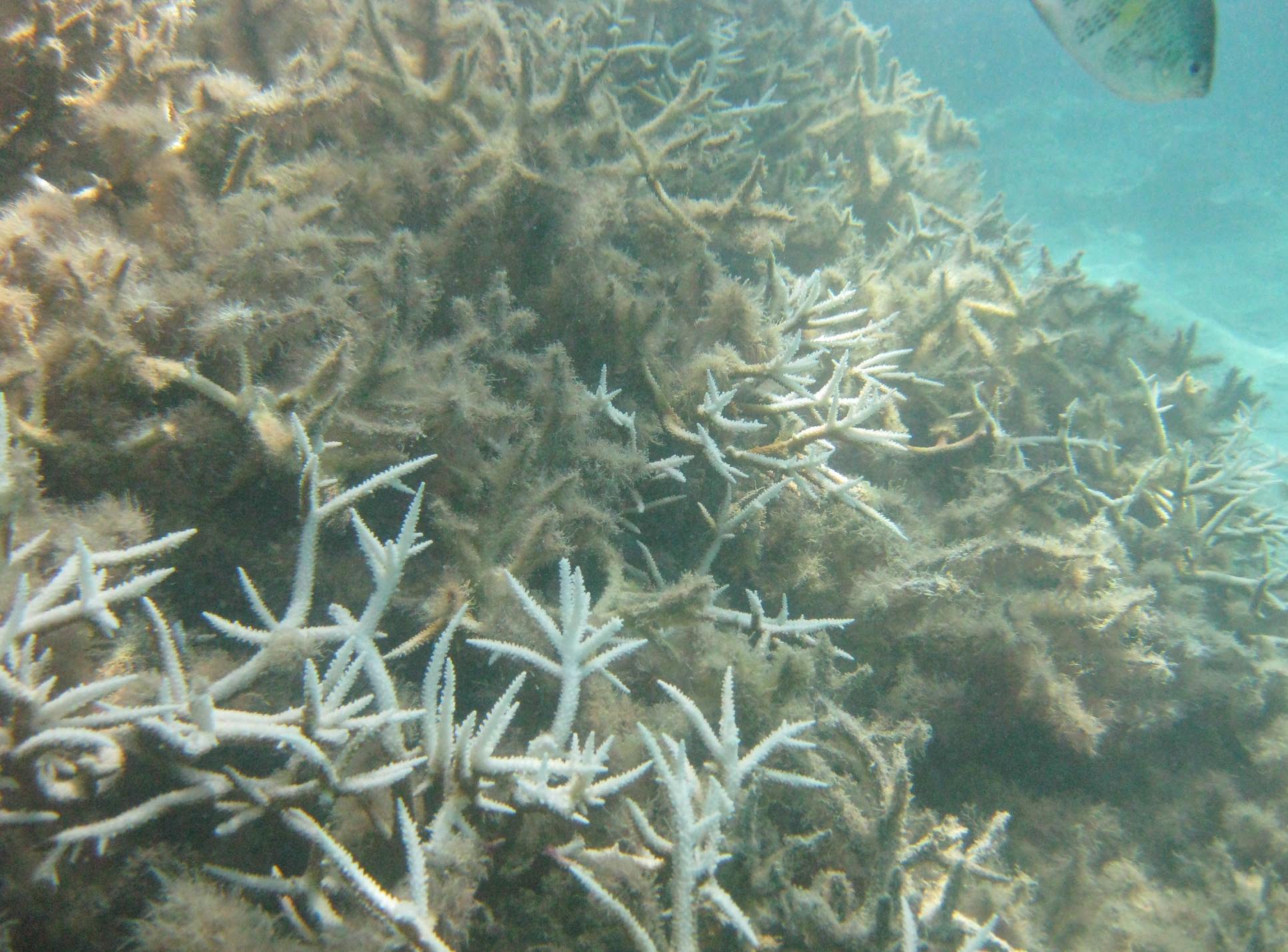
**NOAA
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DAWR

DAWR







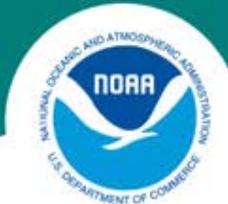


Draft Habitat Focus Area Objectives

- Prevent and reduce discharge of land-based pollutants, such as sediment and nutrients, to coral reef ecosystems.
- Identify and implement management actions to increase coral reef health and resilience and mitigate localized climate change effects to coastal communities, coral reefs, and marine resources.
- Support community and local capacity to manage coral reefs and coastal and marine resources.



Build and expand the understanding of biological, physical, and climate related factors to habitat condition through improved data collection and modeling, and provide the necessary tools and information to communities and local resource managers.



Work Completed

- Manell-Geus Conservation Action Plan Updated
- Na Para I Guafi – RARE Pride Campaign about Wildfires Completed
- Household Survey on Attitudes, Perception and Knowledge of the Residents of the Manell-Geus Watershed (King 2013).
- Assessment of the publicly owned areas of the Geus, Liyog, and Asgadao Rivers in the Manell Watershed

PERTINENT FINDINGS
OF THE
HOUSEHOLD SURVEY
MEASURING
ATTITUDES, PERCEPTIONS AND
KNOWLEDGE
OF THE
RESIDENTS
OF THE
MANELL-GEUS WATERSHED
CONDUCTED IN 2010



Work In Progress

- NOAA testing streambank stabilization , bamboo removal, and riparian buffers in the Geus, Liyog and Asgadao Sub-Watersheds
- Center for Island Sustainability Community Rain Garden Program
- NOAA setting up small grants program to enhance propagation of native plants and availability of erosion control materials





Work In Progress

- Guam Long Term Monitoring Program to establish sites on the forereef of the Achang Reef Flat Marine Preserve and Cocos East
- Guam Community Coral Reef Monitoring Program to identify groups in Merizo and establish reef flat sites in the Achang Preserve
- NOAA CRED baseline fish surveys along fore reef in Achang MP, Cocos East, and Cocos Lagoon



Work In Progress

- Department of Agriculture Forestry and Soil Resources Division Forest Stewardship Program
- USDA-NRCS private landowners Wetland Reserve Program
- Community coral ambassador program
- Guam Fire Department/UOG Extension - Fire prevention and safety education and outreach



Future Work

- Update the CAP for Habitat Blueprint
- Conduct Baseline Ecological Surveys of Reef Flats, Mangroves, and Streams
- Establish Socio-economic monitoring and baseline
- Additional plantings to prevent erosion and stabilize streambanks
- Cleanup of the Tire Reef in Cocos Lagoon and under Merizo Pier
- Satellite tracking of resident sea turtles in Cocos Lagoon
- WERI study: Assessment of turbidity in the Geus River Watershed in Southern Guam
- Leverage partnerships to encourage DPW and FHWA to help improve stormwater management in the village



Partners

Existing Partners:

Guam Coastal Management Program

Merizo Mayor's Office

Guam Department of Agriculture

-Division of Aquatic and Wildlife Resources

-Forestry and Soil Resources Division

The Nature Conservancy

Guam Environmental Protection Agency

University of Guam

-Water and Environmental Research Institute

- Center for Island Sustainability

- Marine Laboratory

USDA Natural Resource Conservation Service

Environmental Education Committee/ GNA

Humatak Community Foundation

Humatak Project

NMFS PIFSC

NMFS RC

Marianas Research and Development Council

Potential Partners:

UOG College of Natural and Applied Sciences

Guam Department of Public Works

Federal Highway Administration

Guam Community College

TASI

San Dimas Parish

Ayuda Foundation

Soil and Water Conservation Districts

Merizo business owners

Cocos Lagoon marine operators

Guam Visitors Bureau



Challenges

- Reconciling the mission goals of the numerous partners
- Funding hard infrastructure improvements to address flooding and safety issues
- Continued fires may be difficult to address
- Concern about PCBs in fish in Cocos Lagoon
- Some of the work will have to take place on private land



A. Loerzel



Results in 3-5 Years

- **Coral Reefs** – Decrease sedimentation impacts in the next 5 years
- **Seagrass Beds** – Maintain or increase areal extent and density of beds over the next 5 years.
- **Mangroves** – Establish monitoring plan to detect changes in the health of the mangrove forests.
- **Stream Beds** – Improve stream habitat and increase presence of native fauna in at least 3 streams
- **Community** – Increase community engagement in conservation programs



D. Burdick



Long Term Results

- Resilient reefs and terrestrial habitats that will be able to sustain the people of Merizo well into the future.



D. Burdick



- A safer, more resilient and engaged human community

Si Yu'os Ma'ase!

