



Developing Coral Restoration Road Maps

Learning Exchange Workshop

June 9th – 14th, 2024

Florida Keys Eco-Discovery Center, Key West, Florida

DAY 4

Integrating Restoration & Management Panel Discussion

Country Presentations

Regional Collaboration Opportunities

Patricia Kramer

Ocean Research & Education Foundation

Atlantic & Gulf Rapid Reef Assessment Program

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Agenda & Goals

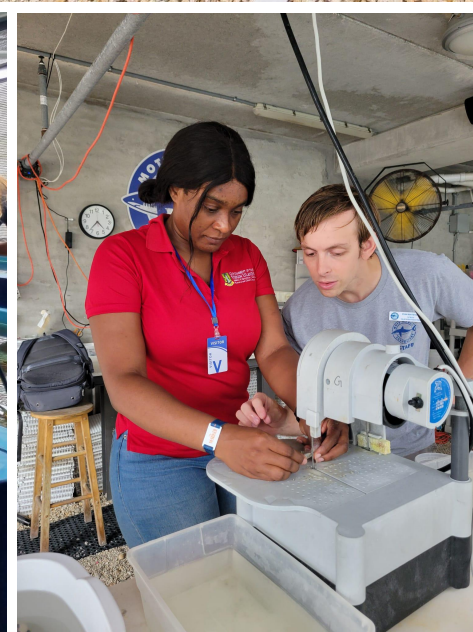
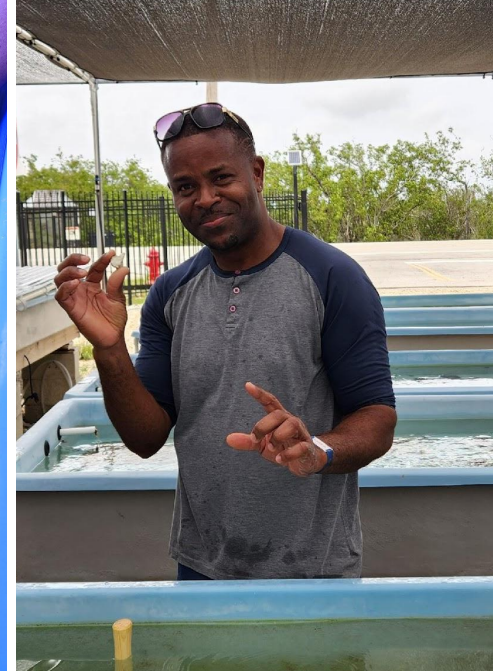
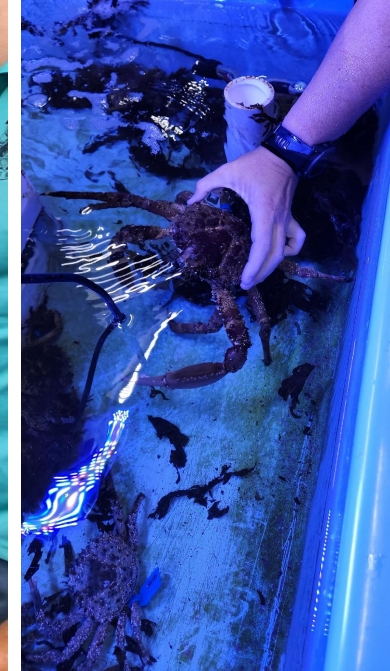
- ✓ Day 1 Restoration Techniques & Road Map Planning (Step 1)
- ✓ Day 2 Coral Rescue Café -Restoration Techniques & Road map planning (Steps 2 & 3)
- ✓ Day 3 Develop Restoration Action Plan (Step 4) & Field Trip to Mote Marine Lab
- ➔ Day 4 Integrating Restoration & Management
Country Road Map Presentations
Regional Collaboration



Day 4 AGENDA: Integrating Restoration & Management Restoration Country Presentations Regional Collaboration

7:00 – 8:00	Breakfast on your own	
8:00 – 8:30	Travel to Meeting Room	
8:30 – 9:00	Welcome, review of agenda Patricia Kramer & Lynnette Roth	
9:00 – 10:00	Integrating Restoration into MPA goals - Panel Discussion Dana Wusinich-Mendez & Gaby Ochoa	
10:00 – 10:15	Break	
10:15 – 10:30	Presentation Introduction Patricia Kramer & Judy Lang	
10:30 – 12:00	Restoration Roadmap Presentations (10min each, 5min discussion)	
	<ul style="list-style-type: none"> • Aruba: Sietske • Belize: Alicia/Kevin • Bonaire: Danielle 	<ul style="list-style-type: none"> • BVI: Argel/Amy • Cayman: Croy • Dominica: <u>Zethra</u>
12:00 – 1:00	Lunch Break	
1:00 – 3:15	Restoration Roadmap Presentations cont. (10min each, 5min discussion)	
	<ul style="list-style-type: none"> • Grenada: Christine • Honduras: Martha/Andrea • Mexico: Christian • Saba: Camille • St. Lucia: Makeba 	<ul style="list-style-type: none"> • TCI: Rebecca • SVG: Sheldon • Colombia: Elvira • Dominica Republic: Rita
3:15 – 3:30	Break	
3:30 – 4:00	Regional Collaboration	
4:00 – 4:30	Restoration Roadmaps: Next steps Patricia Kramer, Lynnette Roth	
4:30 – 5:00	Closing presentation, Certificate ceremony	
7:00	Group Dinner	

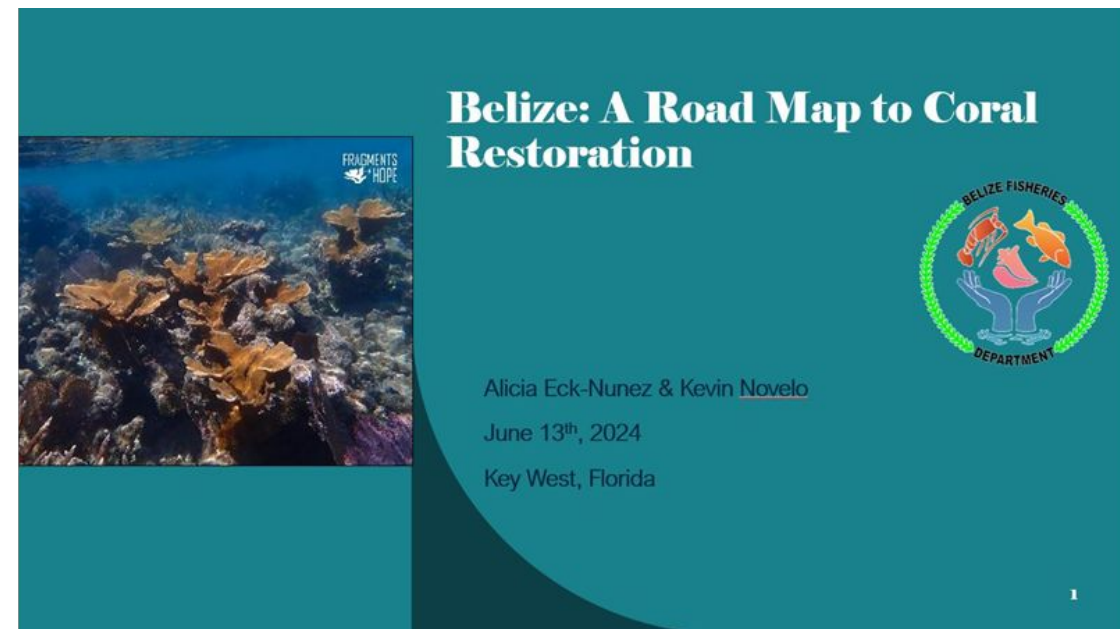
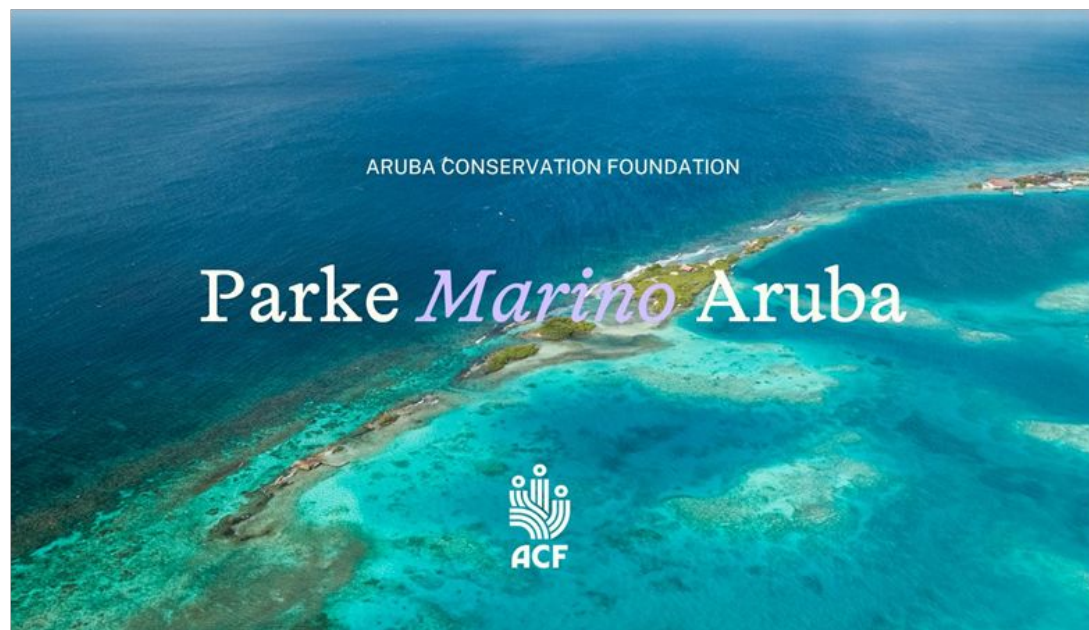
Mote Marine Lab Field Trip Review





Restoration Country Presentations

1. What is your goal? Why and How?
(Steps 1A & 1B)
2. What are your potential sites and coral species?
(Step 2)
3. What is your potential restoration intervention?
(Step 3)
4. Develop a draft restoration action plan & next steps
(Step 4)
5. Who are your potential stakeholders?



Colombia

Goal:

- By 2054, 1 hectare of Isla Tesoro, Colombia will be restored to recover functions of three dimensional structure, biodiversity and complexity.

Potential sites and Species:

- East site of the shallow reef Barrier at Isla del Tesoro.
- Species: OFAV, OANN, DLAB, PSTR, CNAT, MCAV



Coral Restoration Road Map: HONDURAS

Presented by:

Martha Medrano

Bay Islands Wildlife and Protected
Areas Coordinator

Forestry Conservation and
Development, Protected Areas and
Wildlife Institute (ICF)



June 13th, 2024

Andrea Godoy Mendoza

Program Manager

Roatán Marine Park



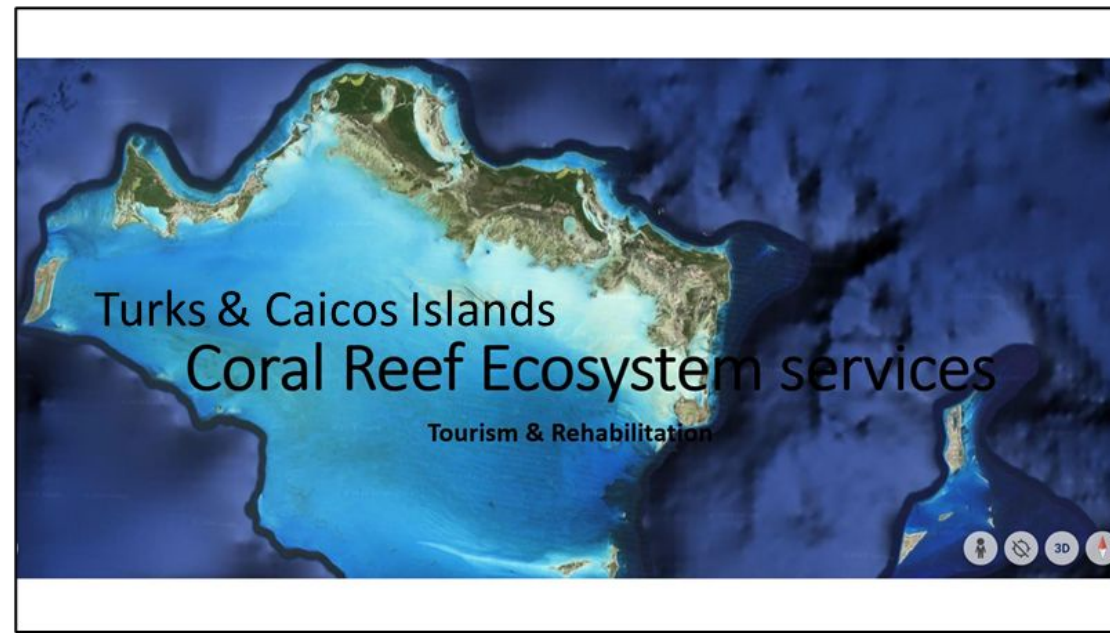
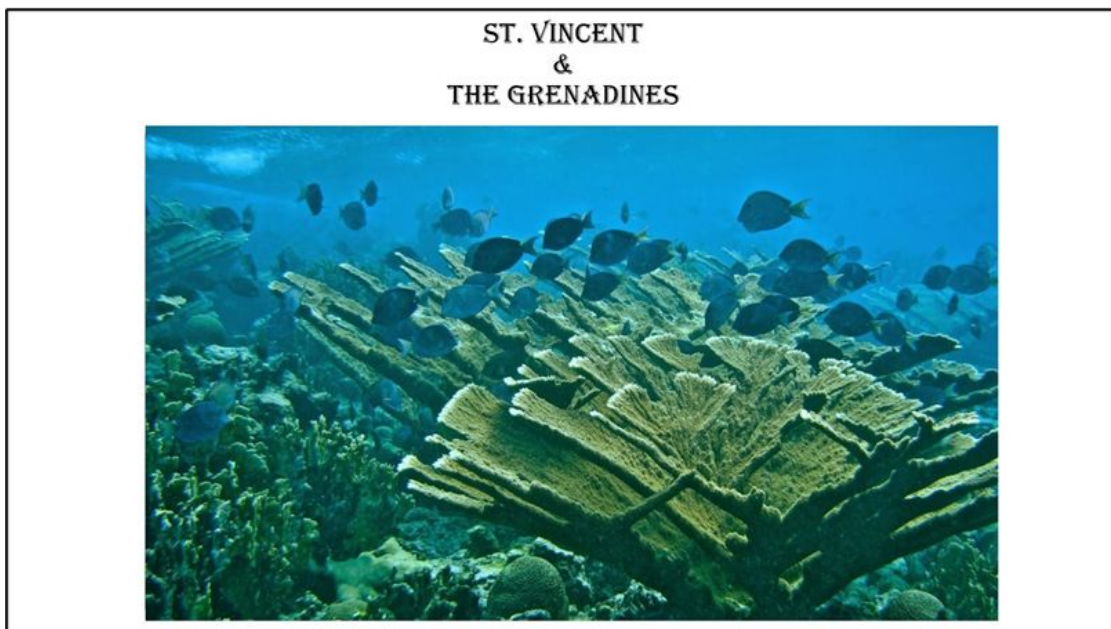
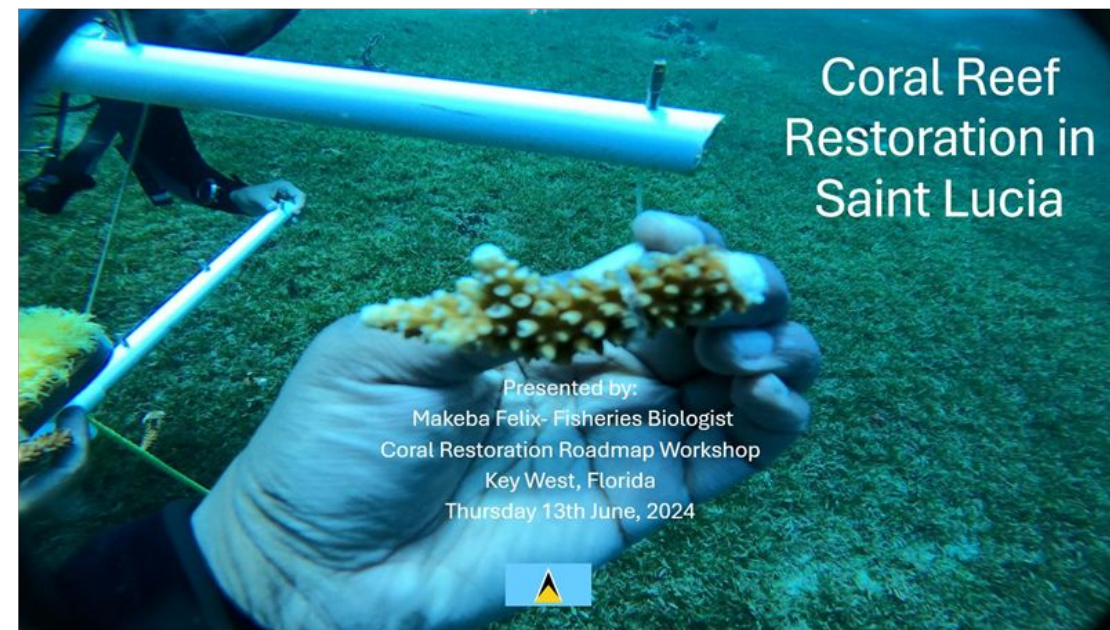
Key West, Florida



Coral Restoration Roadmap

Comisión Nacional de Áreas Naturales Protegidas
(CONANP)







Regional Collaboration

**INSPIRE
EMPOWER
MOTIVATE**



Coral Research
& Development
Accelerator
Platform



Restoration Roadmaps

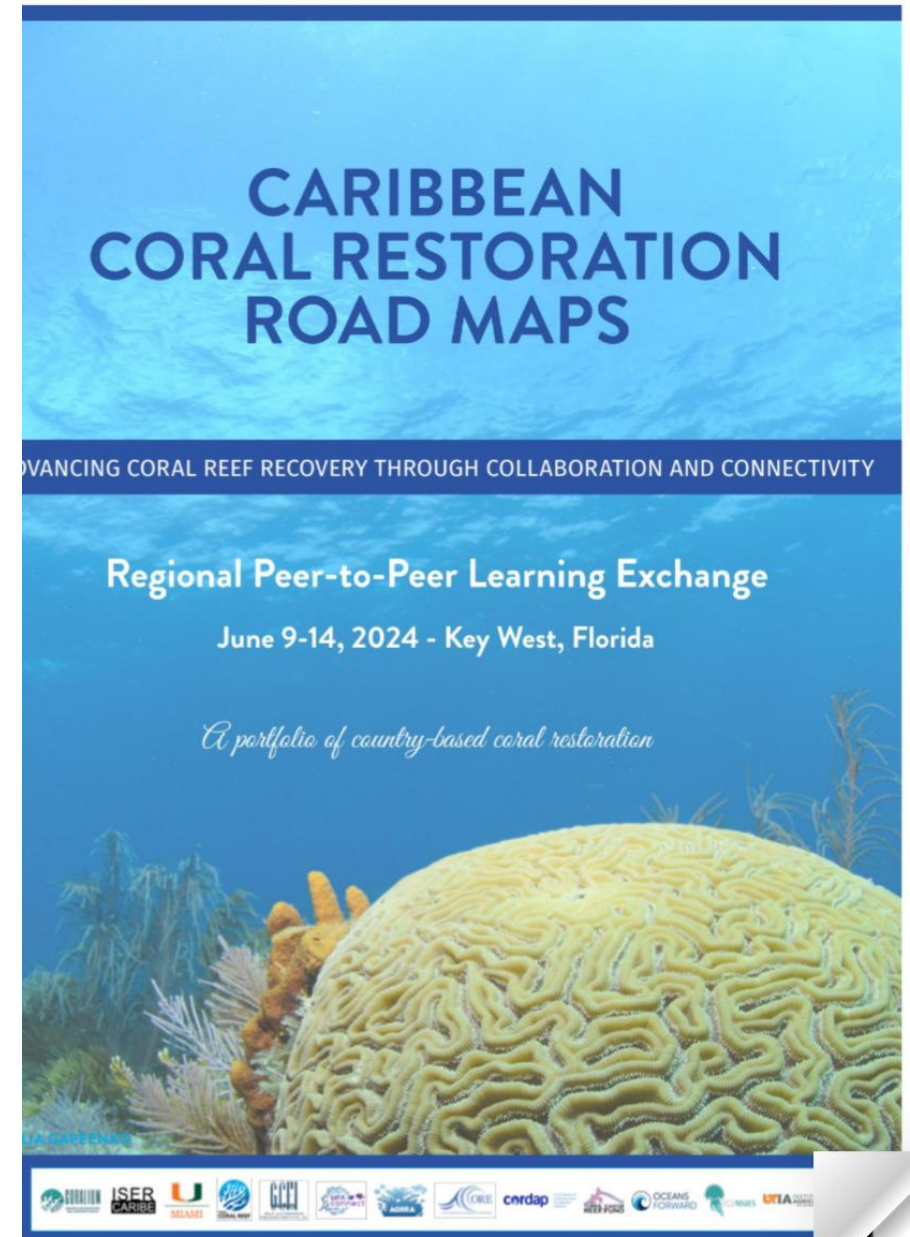
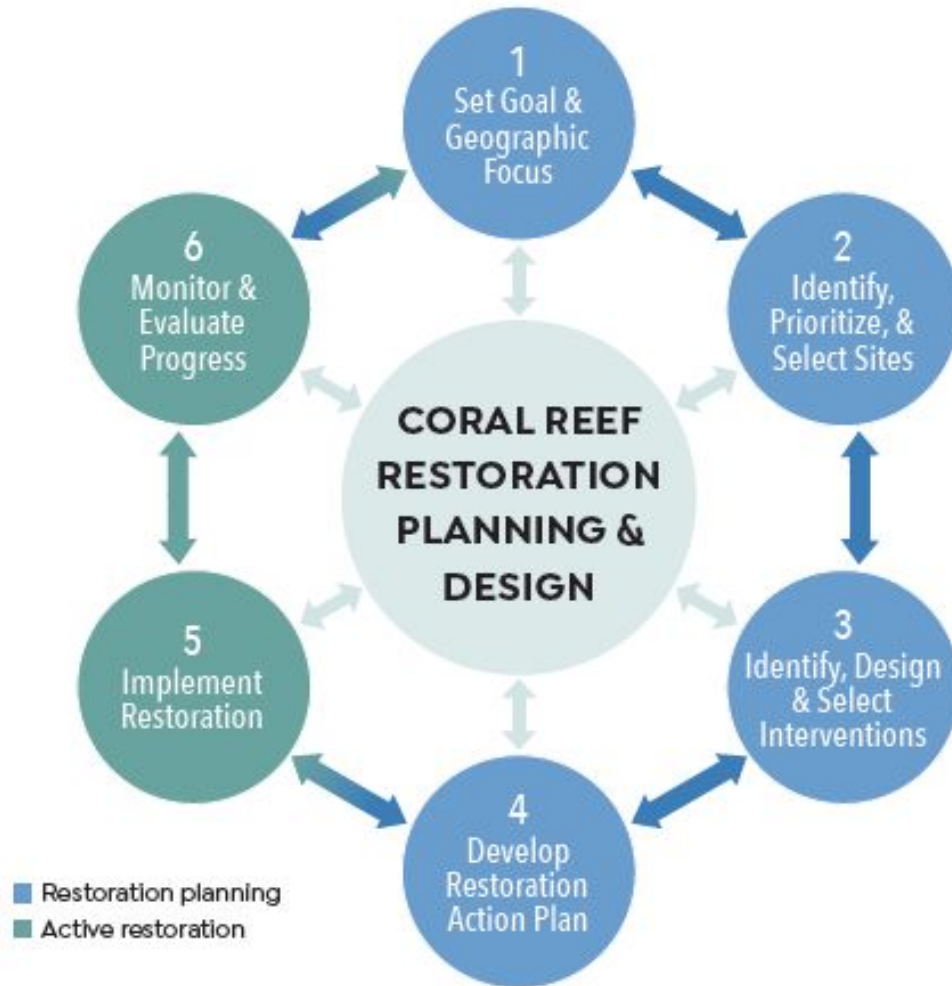
Objectives

- **Increase coral populations and health of SCTLD-affected corals**
- **Develop science-based and management-relevant Restoration Roadmaps with MPAS**
- **Share coral restoration technical expertise**
- **Expand restoration with MPAs in the Caribbean region**

Regional Collaboration Opportunities

- Track coral species at highest risk – Map Regionally (Map)
- Tracking Coral Spawning –Regional Database and Map
- Regional Atlas of Photomosaics (all MPA connect sites? Restoration sites?)
- Training Courses – online & field courses
- Continued Road Map Planning
- Continued conversation
- Other?

Review Restoration Road Map Planning



Restoration Training Hub & Opportunities



Road Map
Resources

Access



Coral
Monitoring
Training

Access



Imagery
Training

Access



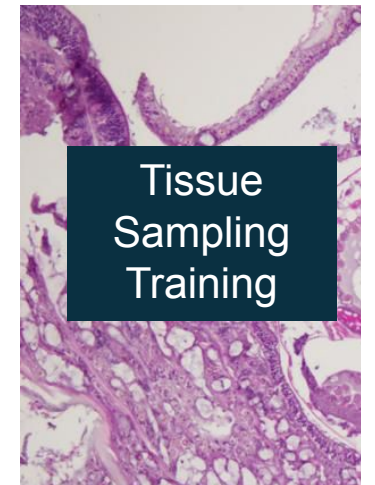
Larval
Propagation
Training

Access



Ecosystem
based
Training

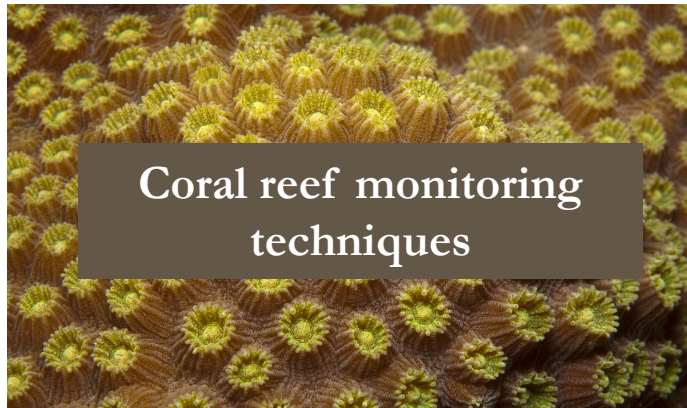
Access



Tissue
Sampling
Training

Access

Techniques in coral reef baseline/restoration monitoring



Coral reef monitoring techniques

Course name: *Techniques in coral reef monitoring for restoration, data analysis & management*

Course Dates:

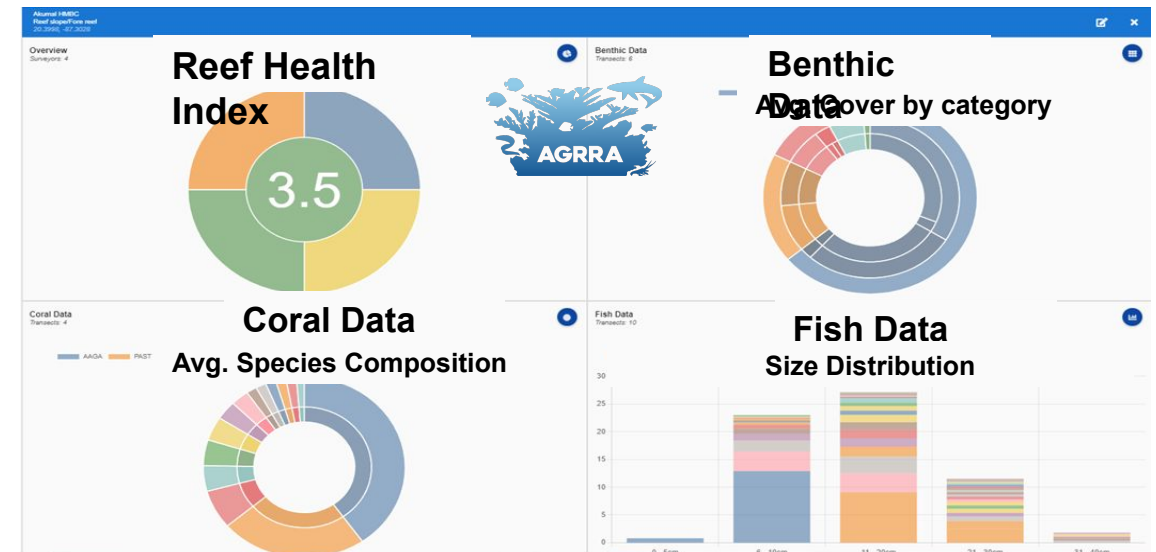
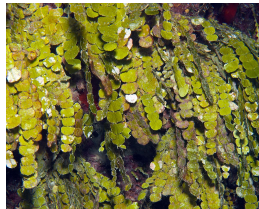
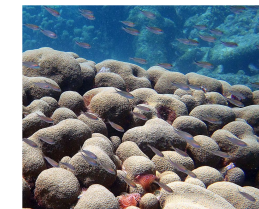
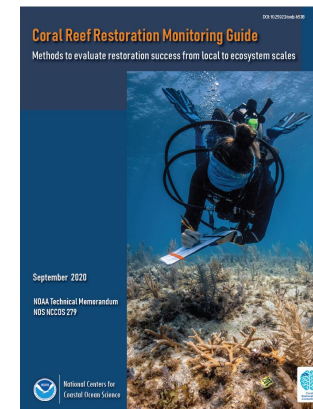
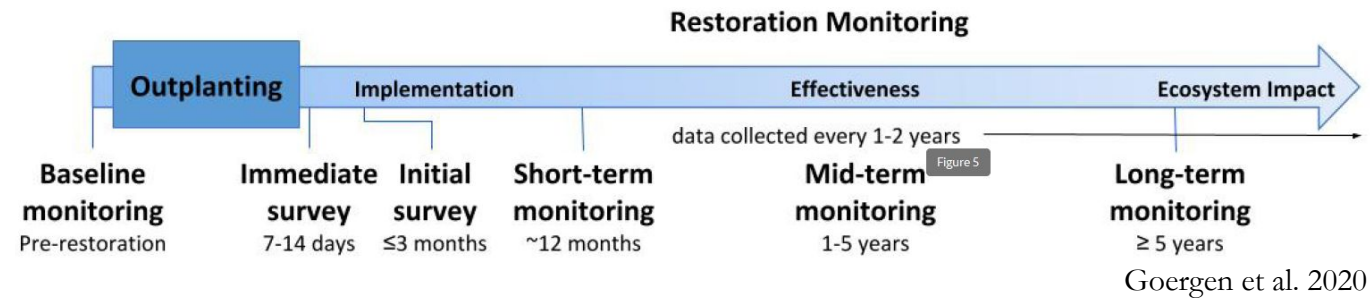
Part 1: Virtual Online 2024

Part 2: Field Training TBD

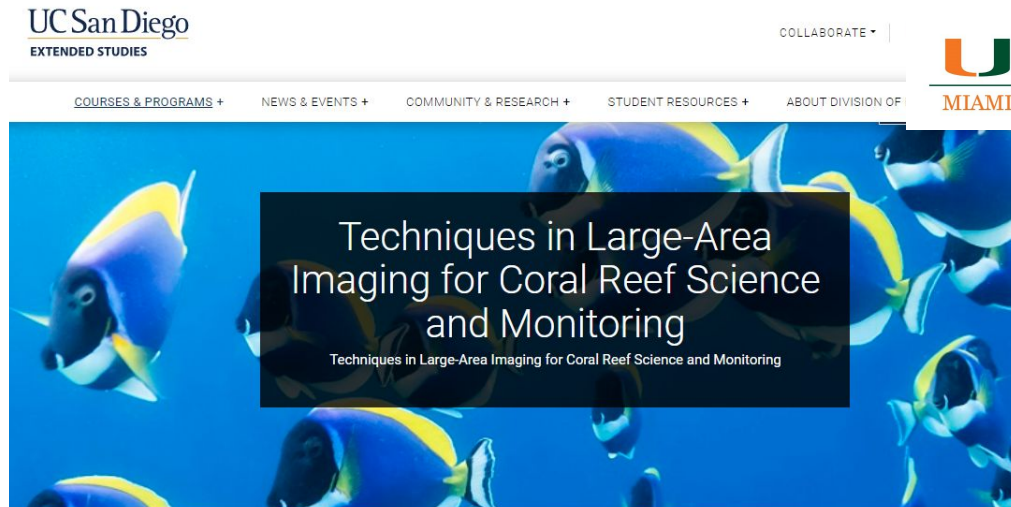
Credit: Certificate of Completion

Course Information:

The goals of the course are to train participants in coral reef monitoring using the Atlantic and Gulf Rapid Reef Assessment (AGRRA) Program method, with a focus on coral restoration and evaluation. Participants will learn how to assess important structural and functional attributes of tropical Western Atlantic coral reefs to track coral reef status and restoration progress.



Techniques in large-area imaging for restoration monitoring



Spring 2024

Part 1: Virtual online

Part 2: In-field follow available

Course name: Techniques in large-area imaging for coral reef science and monitoring

Course Dates: 2024

Credit: Certificate of Completion

Course Information

The first in a two-part series, this course will teach students to apply underwater 3D imaging techniques to coral reef and restoration monitoring.

This course will introduce students to Structure-from-Motion (SfM) and Large-area imaging (LAI) through the following topics: technical background and applications of LAI and SfM, how to plan and execute an LAI project, as well as the basics of 3D model generation. The second course in the series will introduce students to advanced concepts of 3D model generation and other derived products, and ecological data extraction.

Previous coral reef monitoring, research, and/or restoration experience is preferred but not required.

The goals of this course are:

- Introduce basic LAI and SfM concepts for coral reef monitoring, research, and restoration projects.
- Demonstrate how to successfully collect imagery for a coral reef monitoring, research, and restoration projects.
- Provide training on how to create a basic 3D model in Agisoft *Metashape* and how to share that model with others.

Techniques in Coral Spawning & Larval Propagation



Course name: Techniques in coral spawning & larval propagation

Course Dates:

Part 1: Virtual Online 2024

Part 2: One week Field Course Aug or Sept 2024 or 2025

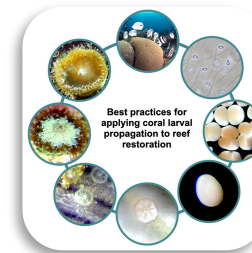
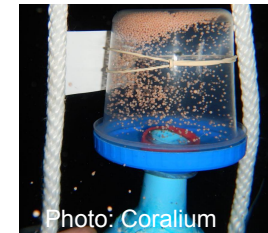
Credit: Certificate of Completion

Course Information:

1. Coral reproduction
2. Coral spawning observations & calendars
3. Collecting spawn & assisted fertilization in the field or lab
4. Larval propagation & larval settlement
5. Outplanting & monitoring

Month	1	2	3	4	5	6	7	8	9	10	11	12
SP												
CLP												
AMP												
CLP												
SP												
AMP												
CLP												
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* Spawning: 185-255 minutes after sunset
* Dominican Republic 130-150 and 220-270 minute after sunset



- Coral spawning
- Spawning calendars
- Larval propagation
- Assisted fertilization
- Best Practices

Banaszak, A. et al. 2023. Applying coral breeding to reef restoration: best practices, knowledge gaps, and priority actions in a rapidly evolving field. Restoration ecology, p.e13913.

Techniques in Ecosystem-based restoration



ISOR
CARIBE



Techniques in ecosystem-based restoration

Course Number:

Course Dates:

Part 1: Virtual Online Spring 2024

Part 2: One week Field Course July 2024

Credit: Certificate of Completion

Course Information:

The goals of this course are:

- Focus on SCTLD susceptible corals
- Coral propagation techniques (sexual vs micro-fragmentation)
- Design, development, and maintenance of land based and in situ nurseries
- Restock *Diadema* & other herbivores
- Techniques to restore corals and herbivores



Land based



SCTLD susceptible corals



Photos @
ISOR



Corals & *Diadema*

© S. Griffin

Techniques in tissue sampling for coral disease



Fall 2024*

Part 1: Virtual online

Part 2: Guided mentoring

Course name: Techniques in coral tissue sampling





Course Dates: TBD – Fall/Winter 2024

Credit: Certificate of Completion

Course Information:


This course will cover the pre-dive, dive and post-dive tasks that need to be followed when sampling coral tissues for histopathological or molecular analyses during disease outbreaks. Preservatives, collection vials and detailed instruction would be provided, but participants would need their own field tools, UW cameras and to keep accurate records of the photos, collected materials and metadata associated with each sampled coral.

Next Steps – Fill out future opportunities & needs



Next Steps - Developing Caribbean Restoration Road Maps

perigeeenv@gmail.com [Switch account](#) 

 Not shared

* Indicates required question

What is your name? *

Your answer

Do you need any help with technical training on restoration methods and approaches? If so, what type? *

Your answer



Advancing coral reef recovery through collaboration and connectivity

Thank you to all the coral restoration researchers, resource managers, and MPACoconnect partners at the 2024 Key West Meeting for joining together to catalyze regional coral restoration efforts within the Caribbean. Thank you to CORDAP for supporting this inspiring and productive learning exchange.

