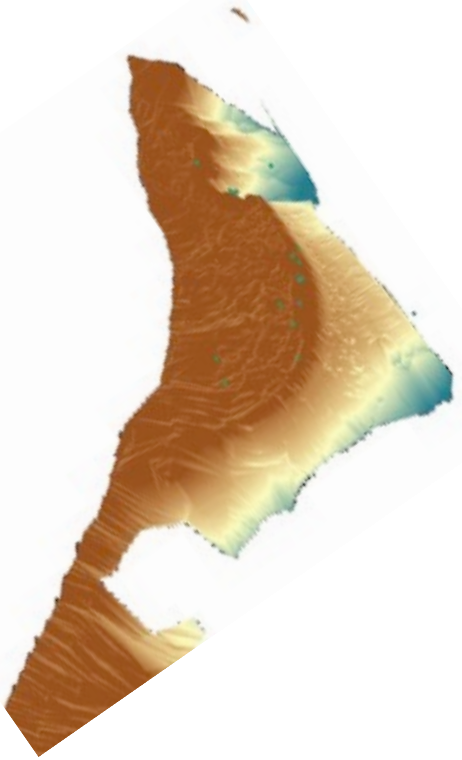
Cayman Crown Update

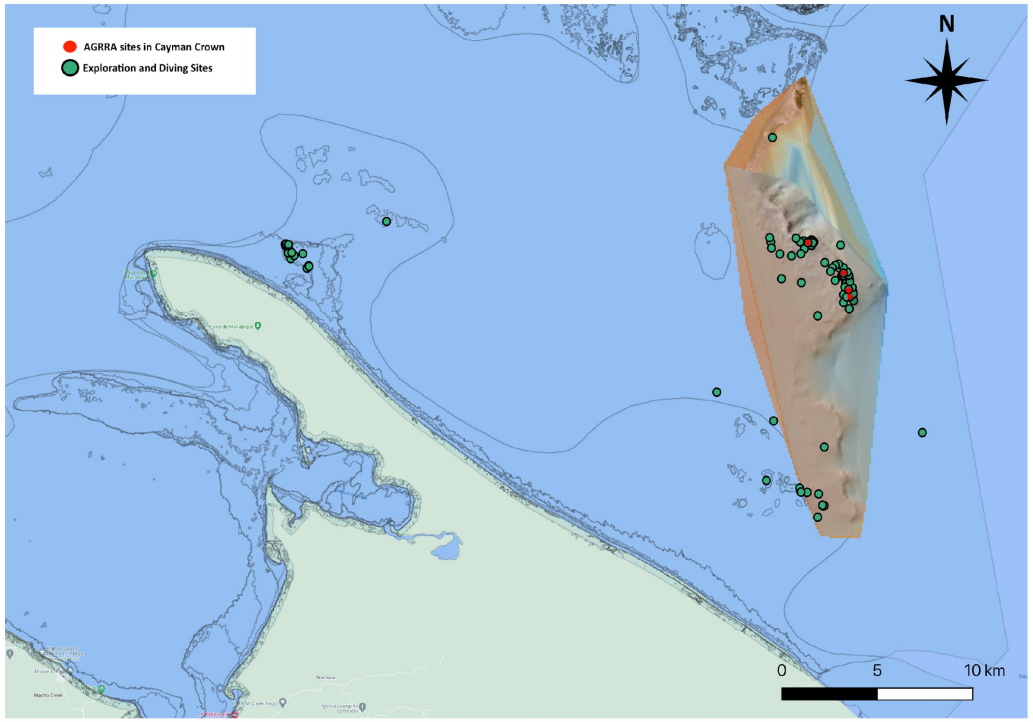
Ana Giró Petersen
Healthy Reefs for Healthy People Initiative

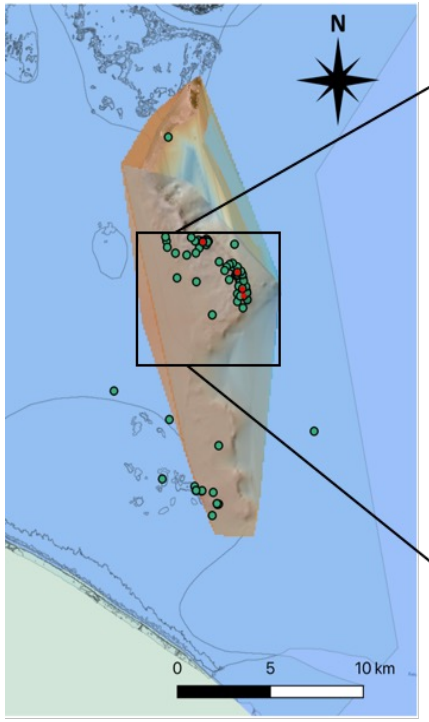
Cancun, August 8th 2023

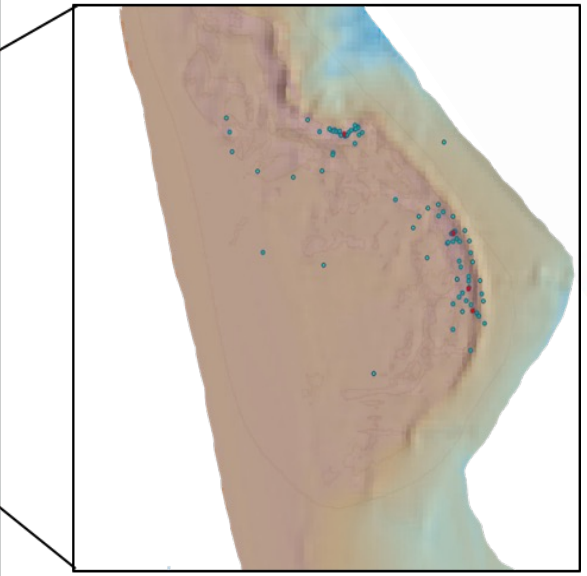
Explorations and mapping of the Cayman Crown Reef

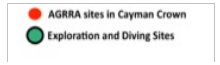
Healthy Reefs
for healthy people

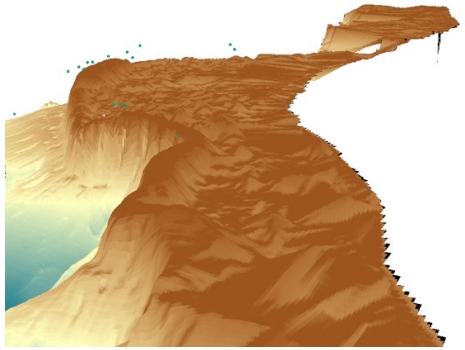






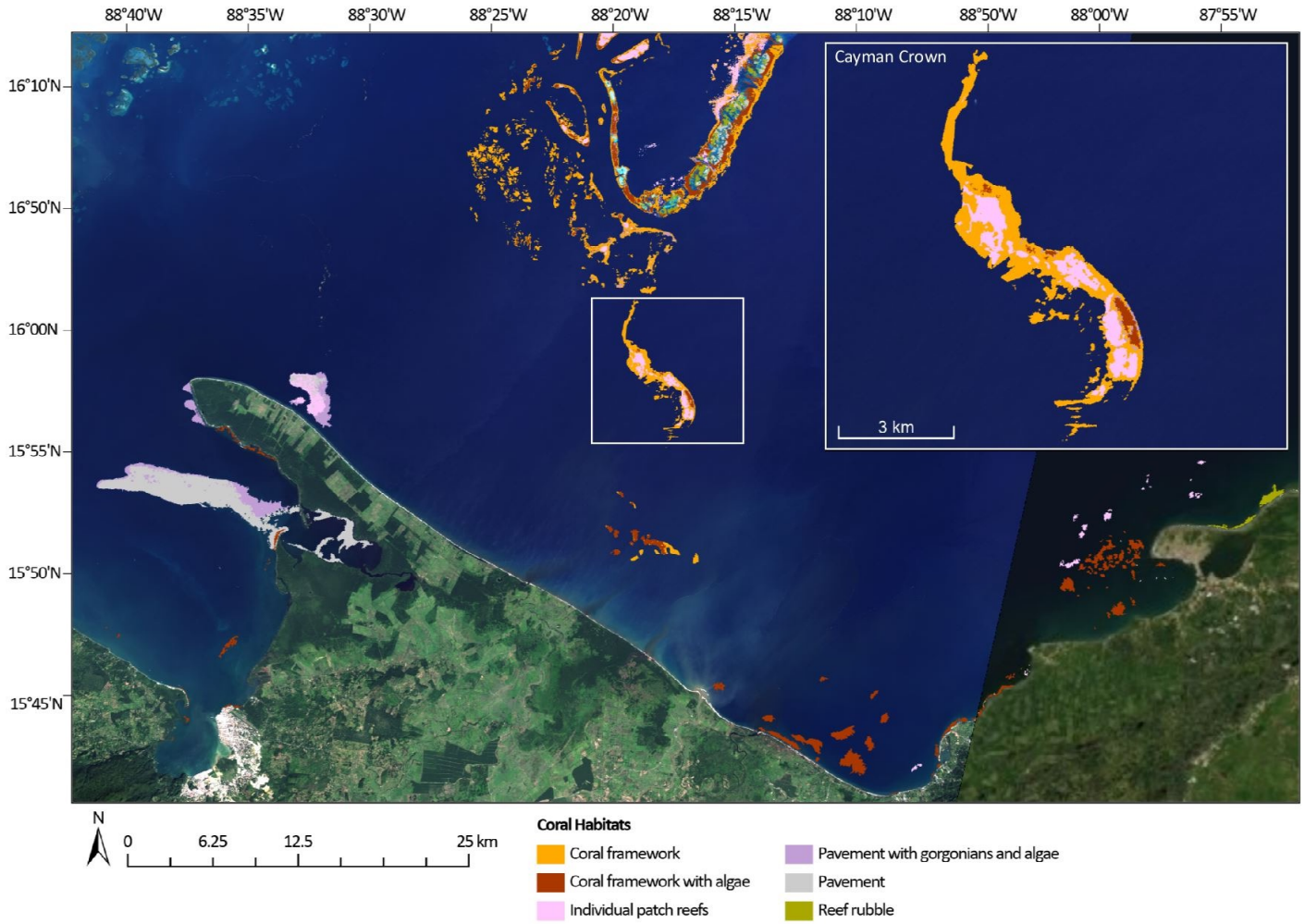


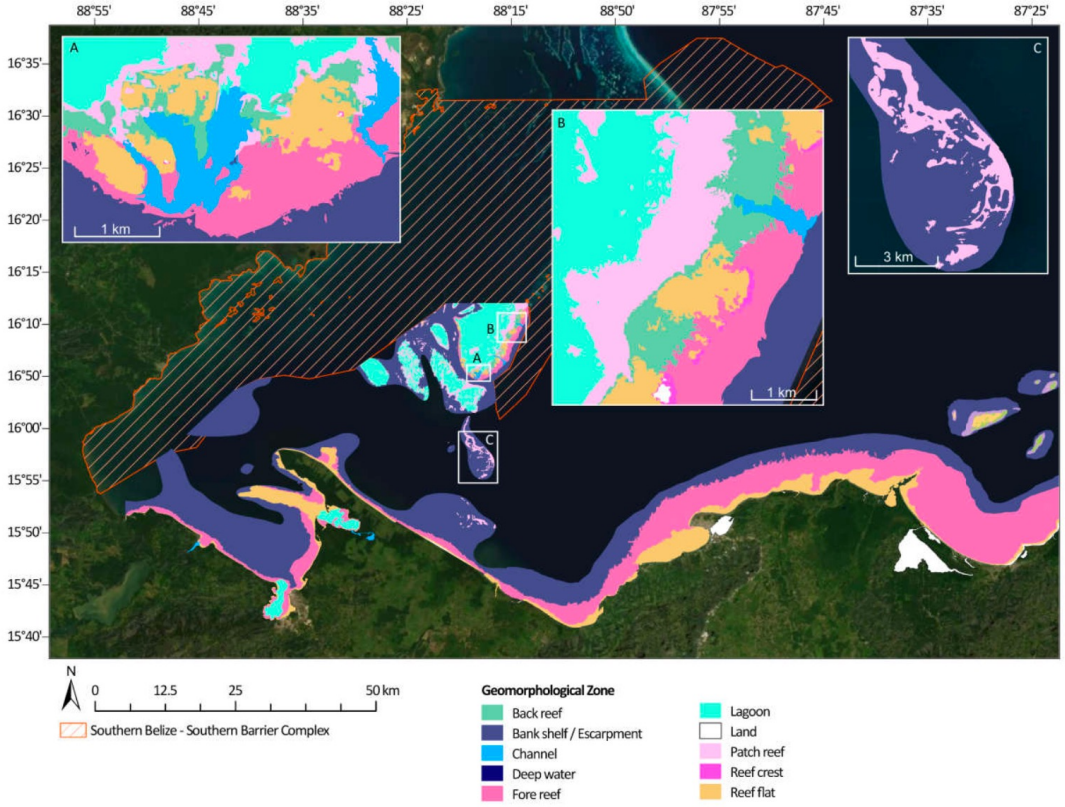




Explored 144 sites located near and on the Cayman Crown Reef.

Benthic habitat maps





SEA FROM SPACE INCORPORATED

Smithsonian Institution

Healthy Reefs for healthy people

2 Small Grants Projects - Counterpart project

- Phase II Cayman Crown: support conservation of the jewel of the MAR through solid science (FINALIZED)
- Phase III Cayman Crown- Communicating the scientific findings of the jewel of the MAR (FINALIZED)

Ana Giró – Healthy Reefs Initiative

Ángela Mojica – Pixan'Ja

Reef Health Monitoring in Cayman Crown

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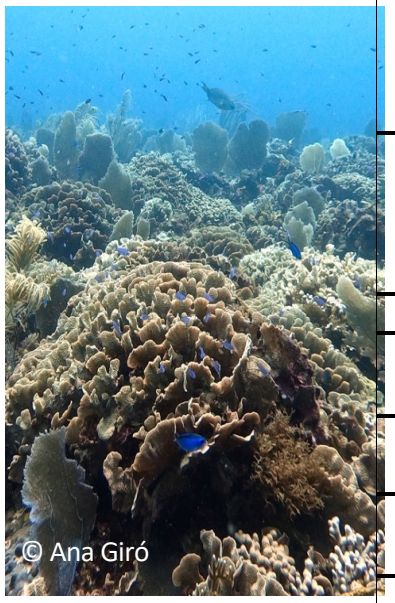
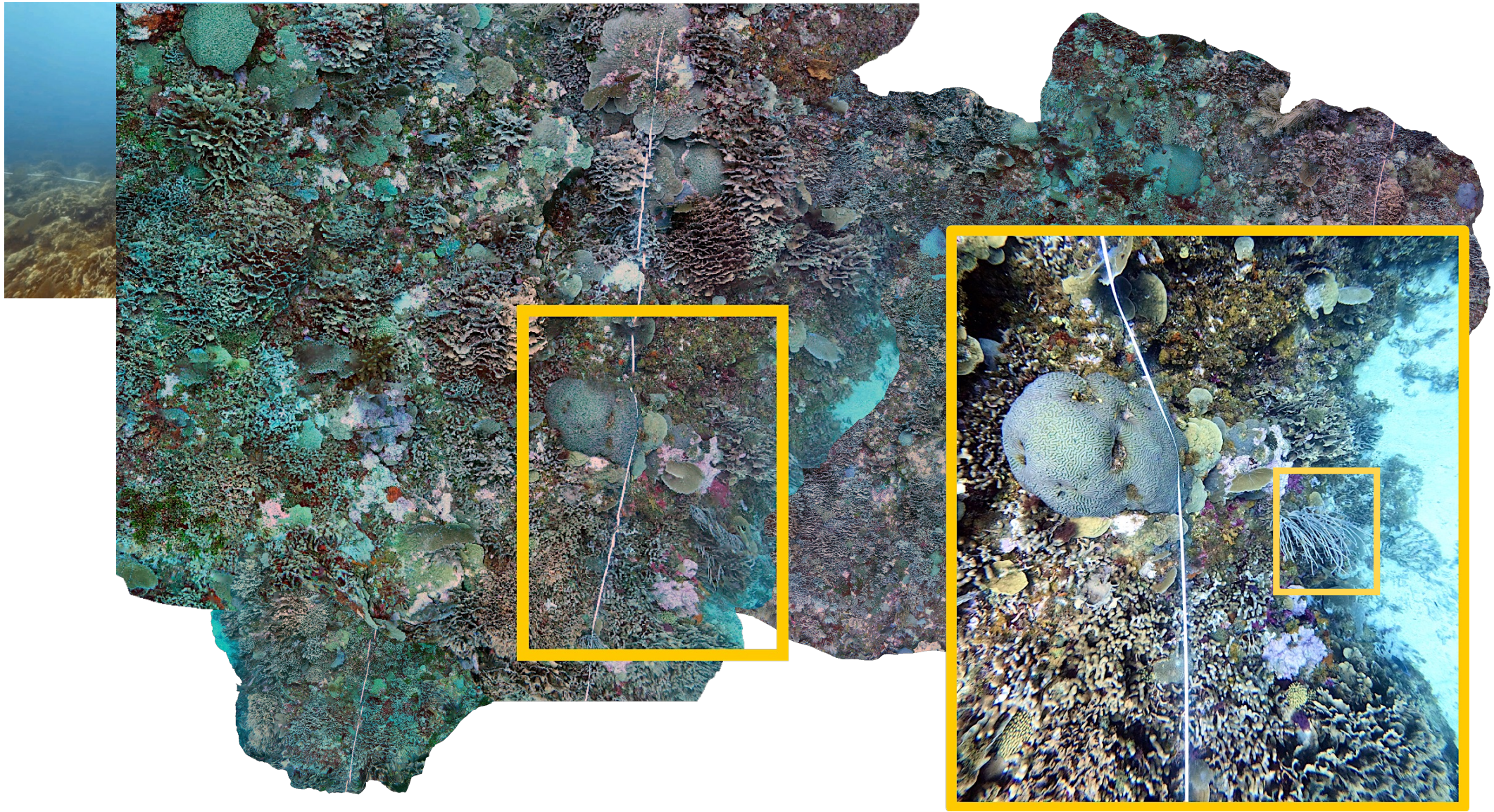


- Site 1 decreased from Fair (2019) to Poor (2021)
- Site 2 decreased from Poor (2019) to Critical (2021)

	Phase I - 2019		Phase II - 2021			
Characteristics	**Site 1 – AGRRA Code 13CCNRC**	**Site 2- AGRRA Code 011CCNRC**	**Site 1 – AGRRA Code 13CCNRC**	**Site 2- AGRRA Code 011CCNRC**	**Site 3 - Bajon GT008**	**Site 4- Corona 022 GT0010**
GPS coordinates:	Latitude: 15.9556 Longitude: -88.28128	Latitude: 15.96983 Longitude: -88.29862	Latitude: 15.9556 Longitude: -88.28128	Latitude: 15.96983 Longitude: -88.29862	Latitude: 15.94762 Longitude: -88.2788	Latitude: 15.9445 Longitude: -88.27815
Name:	13 Cayman Crown, pH and Temp logger	11 Cayman Crown, Temp logger	13 Cayman Crown, pH and Temp logger	11 Cayman Crown, Temp logger	Bajón Corona Caimán	Corona 022
Depth:	10.2 m	11.4 m	12.7m	15.5m	13.1m	12.1m
Rugosity description:	High	High	High	High	High	High
Site Habitat:	Spur and groove	Spur and groove	Spur and groove	Spur and groove	Spur and groove	Spur and groove
Reef Zone:	Fore Inner Reef	Fore Inner Reef	Fore Inner Reef	Fore Inner Reef	Fore Inner Reef	Fore Inner Reef
Reef Health Index (RHI):	**Fair 3**	**Poor 2**	**Poor 2**	**Critical 1**	**Poor 2**	**Critical 1**
Live Coral cover	5	5	5	4	3	4
Fleshy macroalgae cover	4	2	3	1	1	1
Herbivorous fish biomass	2	2	1	1	2	1
Commercial fish biomass	1	1	1	1	2	1

Photomosaics to track disease, bleaching and reef health in a specific area or colony



MAR FUND

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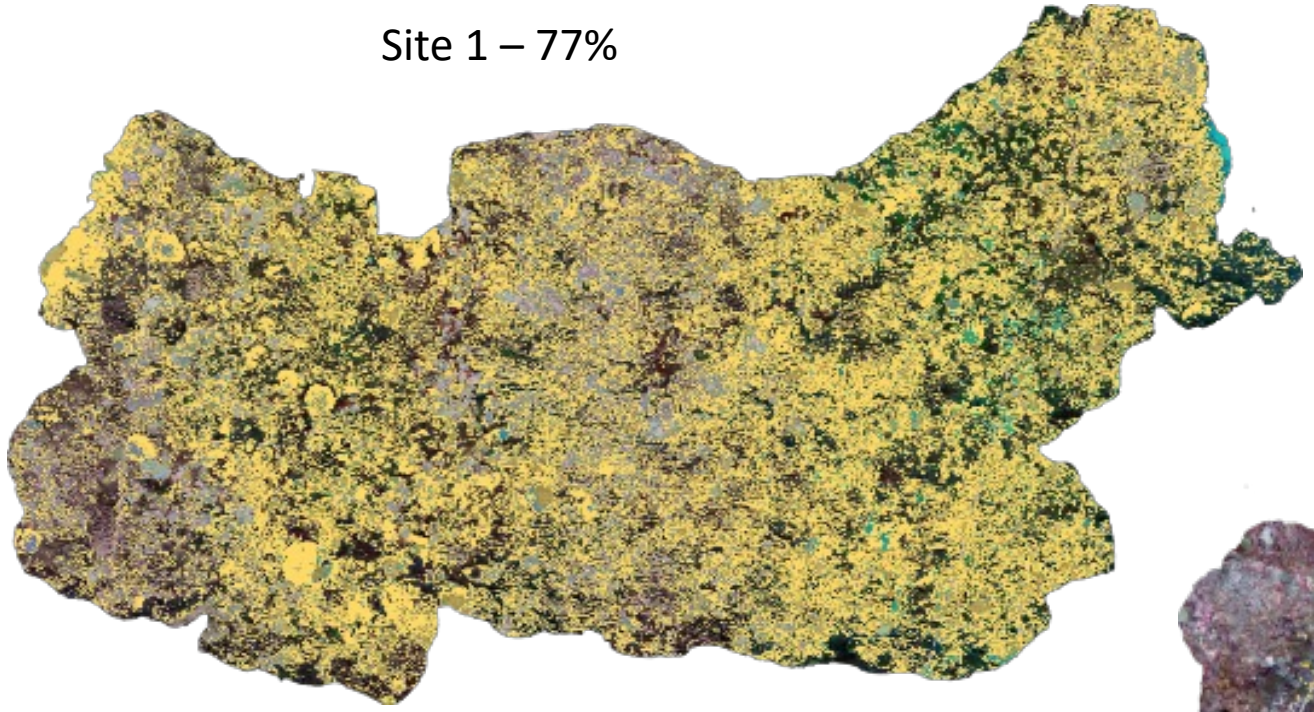
Coral cover percentage estimate from the photomosaics.

Site 1 – 77%



Site 2 – 47%

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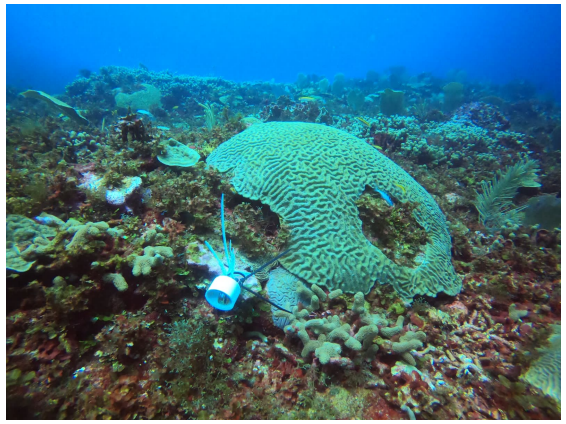
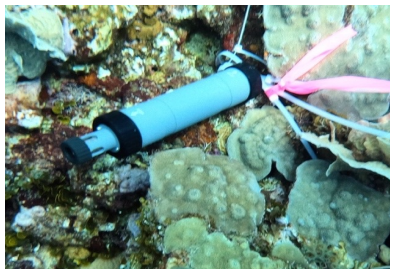
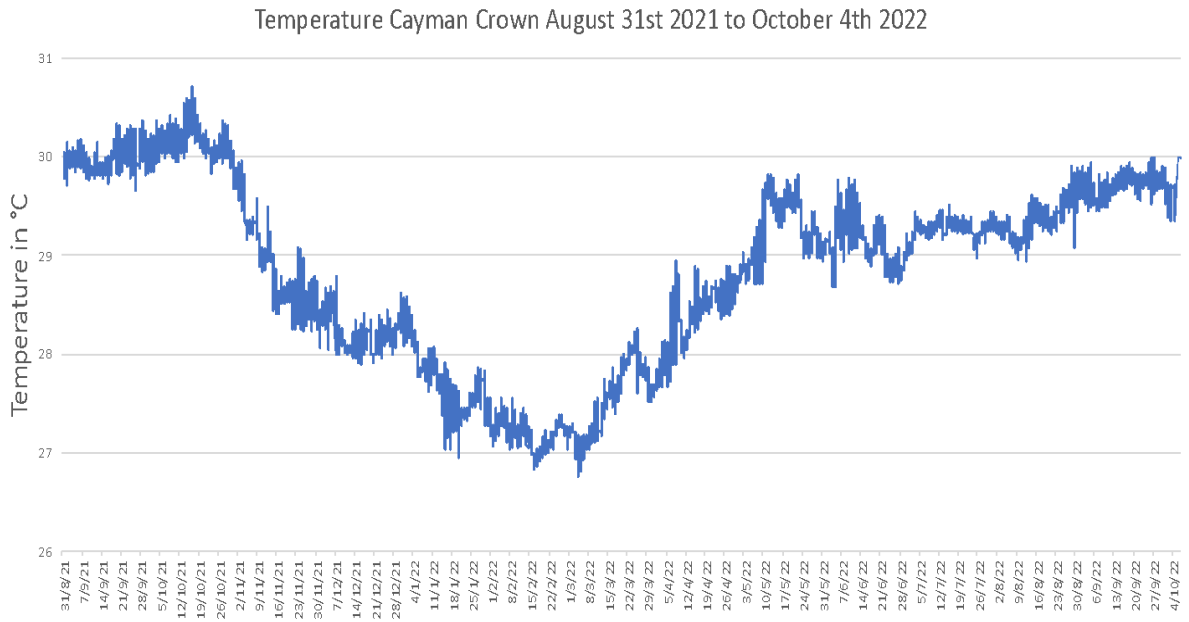
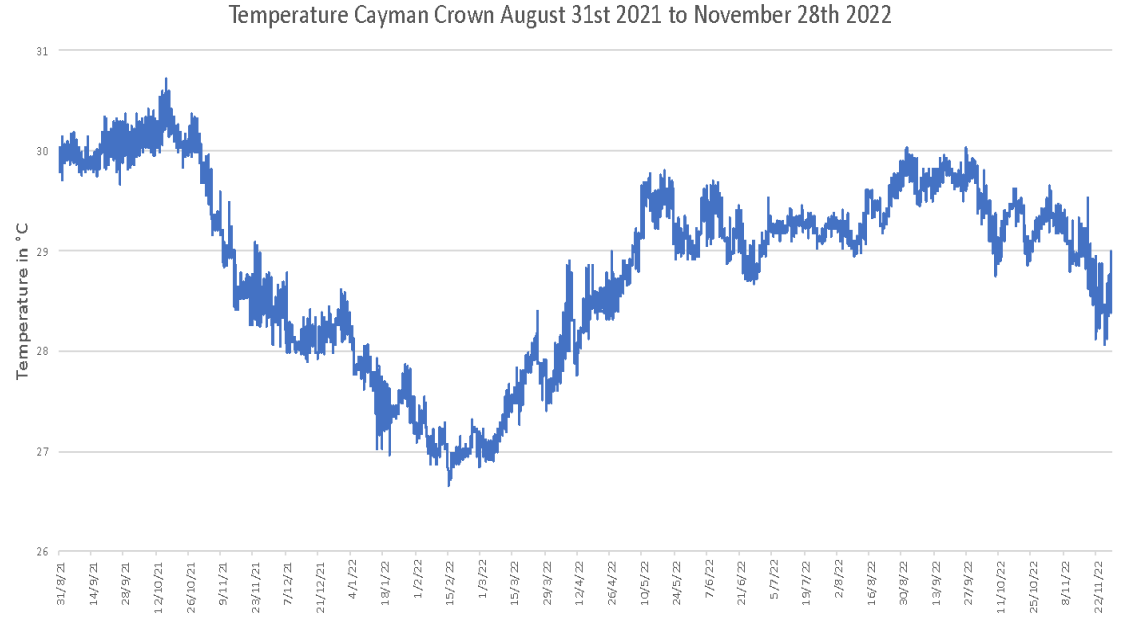
Measuring- Temperature

- 2 loggers installed
- The logger on Site 1 has been placed on one of the sides of a spur (coral reef habitat specific formation) in the coral reef area (12.2 m). This site is located near a wall that drops from 9 m to 180 m.
- The logger on Site 2 was placed on top of a spur (15.5m), there is a slope with a wall near by.
  - 2 recording periods- May 29th 2019 to June 16th 2020 and August 31st 2021 to October 4th and November 28th 2022 respectably.



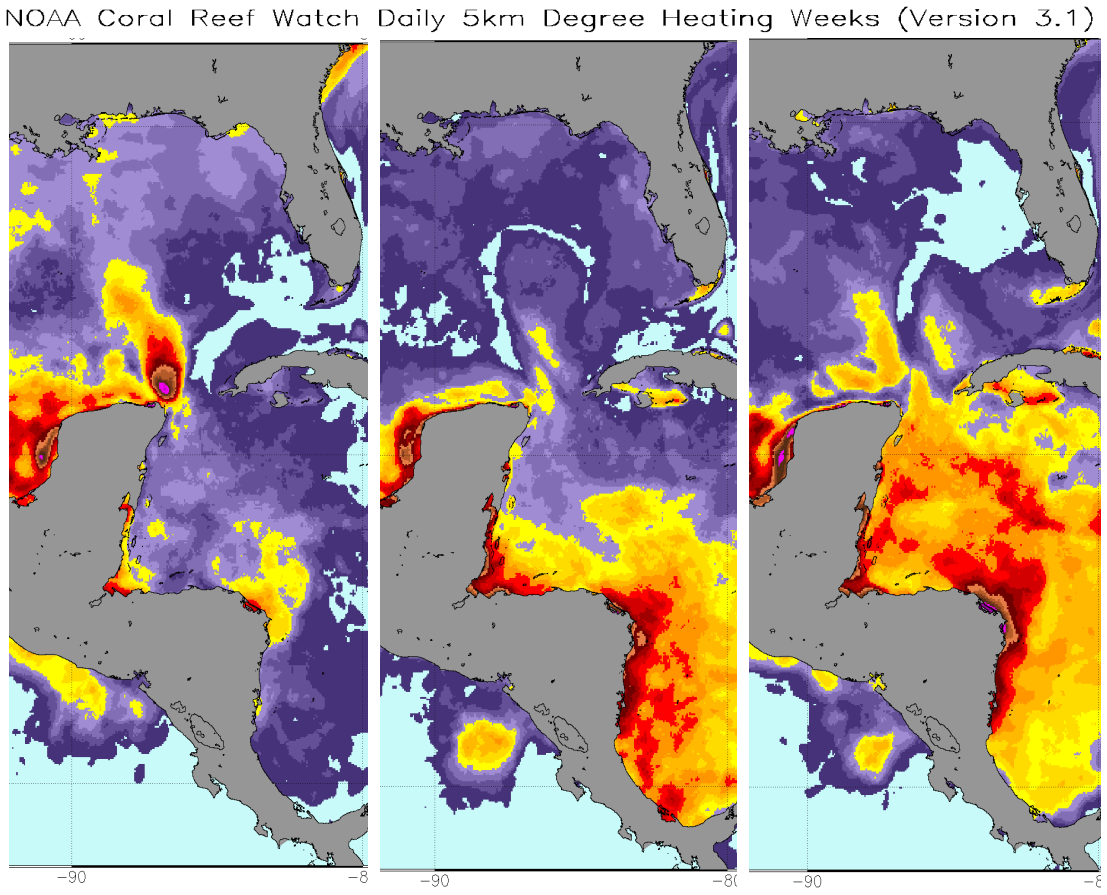




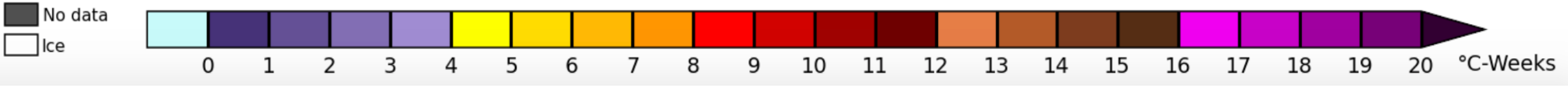


BleachWatch monitoring - Cayman Crown

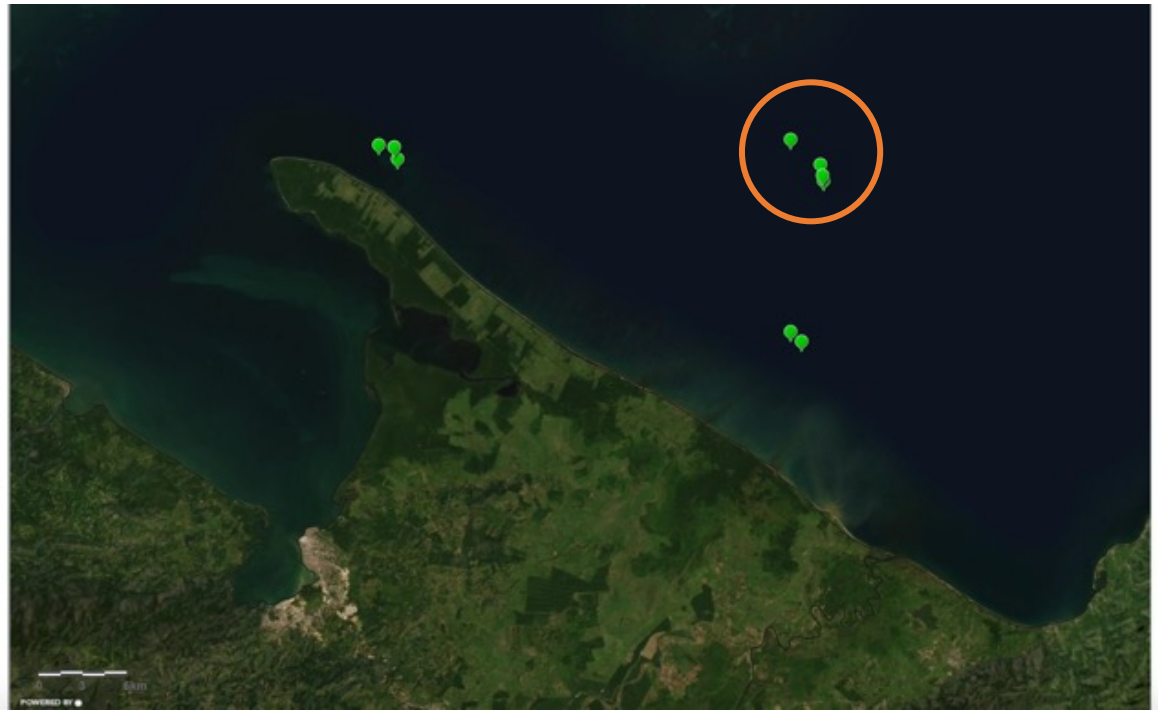
NOAA Coral Reef Watch – Degree Heating Weeks



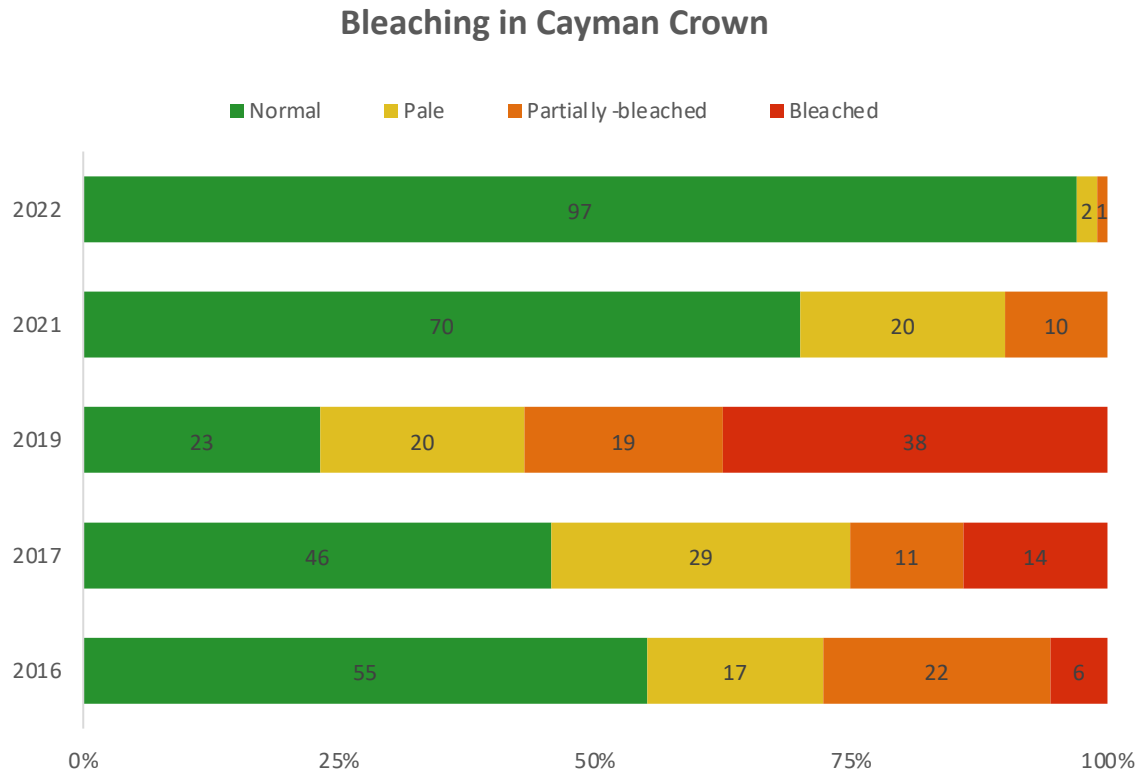
20 Oct 2016 | 20 Oct 2017 | 20 Oct 2019 | 20 Oct 2021 | 20 Oct 2022 | 2 Aug 2023



BleachWatch and SCTLD monitoring in Cayman Crown



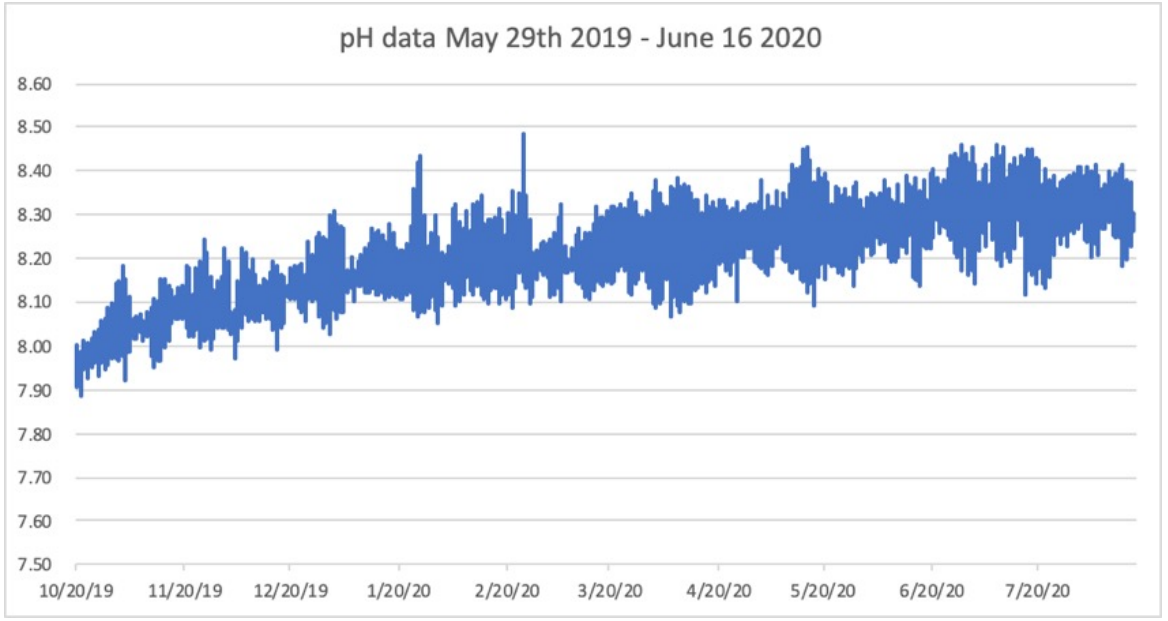
Comparison of bleaching alert monitoring results from 2016, 2017, 2019, 2021 and 2022 for Cayman Crown Reef

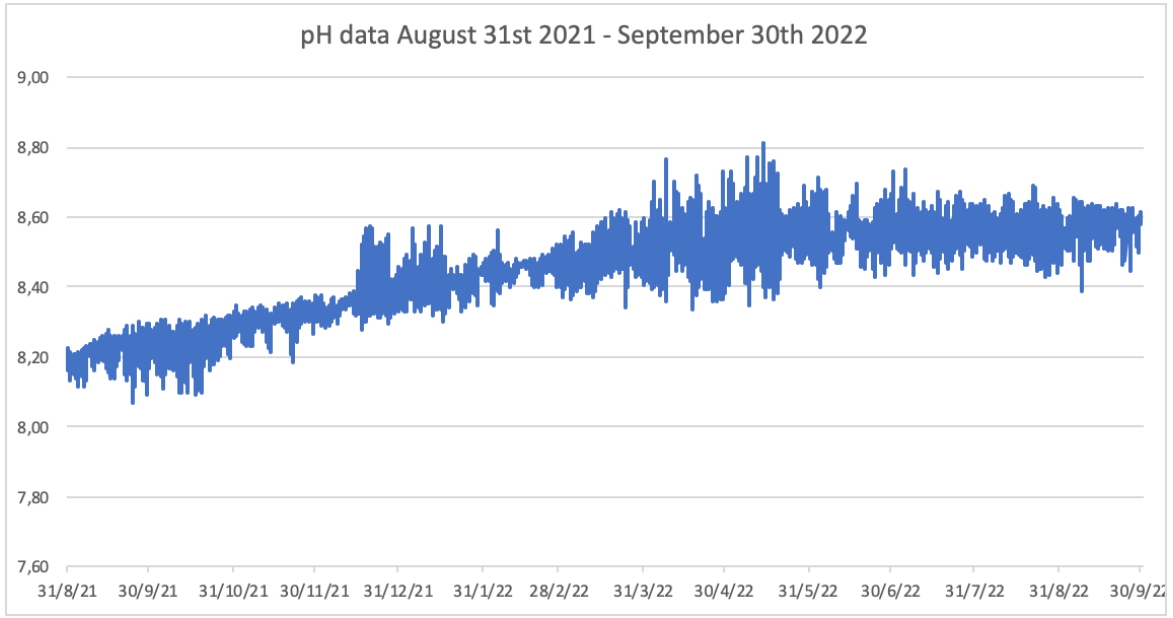


2019- 77% of the corals showed signs of affection.
2021- 30% of the corals showed signs of affection.
2022- 3% of the corals showed signs of affection.

Measuring- pH

- The pH was measured using an Onset HOBO pH and Temperature Data Logger.
- This site had an average pH recording of 8.6 during the first readings from May 29th 2019 to June 16th 2020. The second deployment was made from August 31st 2021 to September 30th 2022. The average ocean pH registered for this site during this recording period was 8.41.
- During the retrieval of the pH and Temperature logger we noticed that the bulb which is the part of the sensor that takes the data was broken, this may have resulted in the variability of the data.





Passive acoustic monitoring for fish noise mapping

- With Small Grants we were able to buy a hydrophone, the hydrophone was installed in one of the reef areas 18.5 m deep where we have seen different fish aggregate (jacks, Atlantic spadefish, snappers and ocean triggerfish) and have also seen a few groupers with colorations of possible spawning (Sassy Wrasse site).
- We have downloaded the recordings and have data from December 2021 to December 2022.

Megafauna

Communicate about the importance of sustainable fisheries, marine ecosystems and FSAs through HRIs Report Cards, Eco-Audits and social media

- Essentials Report Card 2022
- Full Reef Health Report Card 2022
- Media stories covering the Report Card launch (40 national and international media outlets for both essentials and full report).
- Communications campaign about the results of the Report Card and about different marine species.
- Green Times (El Periodico) in Guatemala (25 publications 2021- 2023).
- Informative video about Cayman Crown was developed through Phase III of Small Grants (8min video). Video to inform about the discovery of the Cayman Crown reef, the most relevant results gathered through our scientific explorations and monitoring, the conservations measures put in place by both Guatemala and Belize, and the most relevant and urgent call to action to continue supporting the conservation efforts of this unique ecosystem.
- Draft Scientific article about Cayman Crown
- Participated in the The Treasure of the Caribbean a PBS Nature Film.

Next Steps

- Field activities to collect the logger as well as the hydrophone. Download the information and reinstall them.
- Continue with the analysis of temperature, pH and acoustics.
- Continue mapping on the deeper reefs on the Cayman Crown reef and validate some of the areas included in the satellite-based habitat maps.
- AGRRA training
- Reef Monitoring near FSAs
- Continue to communicate about the importance of fully protected replenishment zones, sustainable fisheries, marine ecosystems and FSAs.

GRACIAS

giro@healthyreefs.org

www.healthyreefs.org

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