Status of Coral Reefs in the Caribbean, What's the Situation?

Estado de los Arrecifes de Coral en el Caribe, ¿Cuál es la Situación?

État des Récifs Coralliens des Caraïbes, Quelle est la Situation?

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EXTENDED ABSTRACT

INTRODUCTION

Coral reefs in the Caribbean are vital ecosystems supporting biodiversity, coastal protection, and economic livelihoods. However, these ecosystems are under unprecedented stress due to climate change, pollution, overfishing, and disease outbreaks. The first report on Caribbean coral reefs (Jackson et al., 2014) highlighted alarming trends in reef degradation. Ten years later, a new assessment spearheaded by the GCRMNCaribbean aims to evaluate the status and trends of coral reefs from 1970 to 2024. This initiative, coordinated by UNEPCEP/SPAWRAC and supported by Healthy Reefs for Healthy People (HRI), seeks to provide actionable insights for conservation managers and decisionmakers in the region.

In light of a recent mass bleaching event beginning in February 2023 and recordhigh sea surface temperatures, this effort takes on greater urgency. This extended abstract previews the upcoming 2025 Caribbean coral reef status report, presenting preliminary findings, challenges, and key recommendations.

METHODOLOGIES

The GCRMNCaribbean network integrates data from 3,195 sites across 41 Caribbean countries and territories. Surveys span from 1982 to 2024 and encompass biophysical and socioeconomic indicators, leveraging standardized methodologies outlined in the GCRMNCaribbean guidelines.

Data Collection:

- Biophysical Monitoring: Includes metrics on coral cover, algal cover, fish biomass, and disease prevalence.
- Socioeconomic Monitoring: Employs SocMon protocols to assess human interactions with coral reefs.

Technical analysis:

- Spatiotemporal analysis of reef health indicators.
- Identification of trends in major benthic groups and fish families.
- Mapping of data gaps to guide future monitoring efforts.

The GCRMNCaribbean is looking for monitoring data on percentage cover of benthic organisms. These data can be from consistent, longterm temporal monitoring programs (i.e., repeated, multiple surveys over time) or from onceoff spatial surveys (i.e., a single survey in time). Ideally, the GCRMN is looking for the finest spatial level (e.g. photoquadrat level instead of site averaged level) and the finest taxonomic level (e.g. species level instead of broad category). The more data we receive at finer spatial and taxonomic levels, the more accurate the indicators will be. The call for data is closing the 30th of November 2024.

The Node is also seeking metadata associated with these data. Metadata is additional information that is necessary to contextualise and interpret data. Two types of metadata are necessary: 1) latitude and longitude of monitoring sites, and 2) year of the monitoring event (or ideally the date). Additional metadata about the depth where the observation has been collected, the monitoring method used (e.g., line intercept transects, 50m long transect), the name of the person in charge of the observation, the equivalences of benthic organism's code used (if any), the level of protection of the site (e.g., within a Marine Protected Area or not) are also highly beneficial.

RESULTS AND DISCUSSION

During the GCFI, the outline of the forthcoming "Status of the Caribbean coral reefs" report was presented. This plan stems from a data workshop held in Mexico in October 2024 with GCRMN experts:

1. Coral reefs on the Caribbean
Distribution and extent
Biodiversity
Human population
Ecosystem services

2. Key Threats:
- Climate Change:
  - Mass bleaching linked to marine heatwaves and rising sea surface temperatures.
  - Ocean acidification impacts coral calcification rates.
  - Coastal development and land use
  - Nutriments and sediments
  - Other pollutions
  - Shipping
- Diseases outbreaks:
  - Stony Coral Tissue Loss Disease (SCTLD). This disease continues to spread, decimating key coral species. Any pieces of information regarding SCTLD is sent to the coordination of the SCTLD Regional Cooperation Team.
  - Urchin dieoffs exacerbate algal overgrowth.
  - Fish diseases
- Unsustainable fishing
  - Herbivores
  - Carnivores
  - Invertebrates
- Invasive species
  - *Pterois volitans*
  - *Unomia stolonifera* and *Xenia umbellate*
  - Peyssonelids

3. Temporal Trends:
- Benthic Cover:
  - Hard coral cover shows
  - Coralline algae cover
  - Macroalgae cover
  - Turf algae cover
- Trends in major hard coral genera
  - Merulinidae
  - Acroporidae

4. Temporal trends in coral reef fish size and biomass
- Spatiotemporal distribution of monitoring
- Size distribution of major fish families
  - Parrotfish
  - Surgeonfish
  - Groupers
  - Snappers
- Temporal trend in biomass of major families.

5. **Recommendations:**
Greenhouse gas emissions to mitigate climate impacts.
Reduction of local threats
Implementation and enforcement of marine protected areas
Maintenance and development of monitoring
Reef restoration.

CONCLUSION AND RECOMMENDATIONS

The GCRMNCaribbean report will be a cornerstone for understanding and addressing coral reef health in the region. Preliminary findings highlight the dual importance of local management (e.g., MPAs) and global action on climate change.

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LITERATURE CITED

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KEYWORDS: Coral Reefs, Monitoring, Caribbean, SPAW, GCRMNCaribbean.