

Status and Trends of Caribbean Coral Reefs: 1970-2024

Status of Coral Reefs of the World: 2025

A Guide for Data Contributors

The Global Coral Reef Monitoring Network (GCRMN)

An operational network of the *International Coral Reef Initiative* (ICRI) and hosted at the *Australian Institute of Marine Science* (AIMS)

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This guidance document has been developed by the [Global Coral Reef Monitoring Network](#) (GCRMN) and the Specially Protected Areas and Wildlife Regional Activity Centre (SPAW-RAC). **The goal of this document is to support those with coral reef monitoring data who wish to contribute to the next GCRMN “Status and Trends of Caribbean Coral Reefs: 1970-2024”, to update [the previous regional report](#) that was published in 2014. Data collated are also intended to be used to produce the next GCRMN “Status of Coral Reefs of the World: 2025”, to update [the previous global report](#) published in 2021.**

Within this guidance you will find information on how the data contributed are used, the data which are of interest to the GCRMN for this global assessment, and how you can share your data most efficiently. Additional information is presented on metadata, data storage and standardisation, and acknowledgement of contributions.

1. THE GLOBAL CORAL REEF MONITORING NETWORK

The GCRMN is an operational network of the [International Coral Reef Initiative](#) (ICRI) aiming to provide the best available scientific information on the status and trends of coral reef ecosystems for their conservation and management. The GCRMN is a global network of scientists, managers and organisations that monitor the condition of coral reefs throughout the world, operating through [10 regional nodes](#): Australia, Brazil, Caribbean, East Asian Seas, Eastern Tropical Pacific, Pacific, Red Sea and Gulf of Aden (PERSGA), Regional Organization for the Protection of the Marine Environment (ROPME) Sea Area, South Asia, Western Indian Ocean.

The GCRMN was established by ICRI in 1995 to monitor the condition of the world’s coral reefs. The GCRMN has published an extensive range of global, regional, and thematic reports on coral reef status and trends. The GCRMN collates and presents coral reef data, aggregating from national to regional levels, and then to a global level.

THE FOUR PRIMARY GOALS OF THE GCRMN	
GOAL 1	Improve understanding of coral reef status and trends, globally and regionally
GOAL 2	Analyse and communicate coral reef biophysical, social and economic trends, providing science-based recommendations in support of raising awareness, management and policy development
GOAL 3	Enable and facilitate greater utilization of coral reef data, including in research
GOAL 4	Build human and technical capacity to collect, analyse and report biophysical and socio-economic data on coral reefs

The implementation of the GCRMN is led by a global coordinator, who is supported by a host institution, and who works closely with the regional coordinators, the time-bound task forces mandated by a steering committee, and relevant technical experts providing input when needed. The GCRMN is governed by a steering committee that derives its mandate from the ICRI. The GCRMN steering committee is composed of ICRI host secretariat representatives, non-governmental and technical ICRI members, major supporters of the GCRMN, and regional coordinators.

The flagship products of the GCRMN are the “Status of Coral Reefs of the World” reports, supplemented by topical reports developed upon request of the global community and ICRI, and regional reports highlighting the status and trends of coral reefs across the network’s 10 regions. Since 1995, six “Status of Coral Reefs of the World” global reports have been published by the network at large. The sixth edition of the GCRMN “Status of Coral Reefs of the World” report released in 2021, was the first since 2008, and the first based on the quantitative analysis of a global dataset compiled from raw monitoring data contributed by more than 300 members of the network. The global dataset spanned more than 40 years from 1978 to 2019 and consisted of almost 2 million observations from more than 12,000 sites in 73 reef-bearing countries around the world.

The GCRMN is a critical mechanism for supporting coral Nations in reporting against their international commitments and targets, especially the Global Biodiversity Framework and the Sustainable Development Goals. Given the urgency to conserve coral reefs and the commitments made by countries to 2030, the GCRMN has commenced its preparations for the development of its seventh “Status of Coral Reefs of the World” global report.

The GCRMN-Caribbean, representing the Caribbean Node of the GCRMN, is an open network of over 250 members: coral reef scientists, managers, and government expert representatives. The GCRMN-Caribbean is led by a Steering Committee (SC) with the support of UNEP-CEP and the Regional Activity Centre for the Protocol Concerning Specially Protected Areas and Wildlife for the Wider Caribbean Region (SPAW-RAC) as regional coordinator. Following the [“Status and Trends of Caribbean Coral Reefs: 1970-2012”](#) (Jackson et al., 2014) report UNEP-CEP initiated efforts to revitalise and strengthen coral reef monitoring.

2. HOW DOES THE GCRMN USE CORAL REEF MONITORING DATA?

A critical function of the GCRMN is to provide a trusted source of information to the global community on the status and trends of the world's coral reefs. Accurate information on the status of coral reefs is essential to assess their condition, identify changes over time, and predict future outcomes, whilst equipping Nations with a reporting mechanism and supporting their effective conservation, protection, and restoration.

Data from monitoring practitioners around the world have contributed to the production of GCRMN global (e.g. [Status of Coral Reefs of the World: 2020](#)) and regional (e.g. [Status and Trends of East Asian Coral Reefs 1983 - 2019](#)) reports on the status and trends of coral reefs.

The production of future GCRMN reports, both at the regional and global level, therefore, relies on the ongoing support of data contributors who are willing to share their coral reef monitoring data for this purpose.

3. WHICH DATA ARE OF INTEREST FOR THE GCRMN?

GCRMN reports are focused on widely collected indicators that represent the status of coral reefs. For the "Status of Coral Reefs of the World: 2025" global report, we are looking for monitoring data on **percentage cover of benthic organisms**. These data can be from consistent, long-term temporal monitoring programs (i.e., repeated, multiple surveys over time) or from once-off spatial surveys (i.e., a single survey in time). Ideally, the GCRMN is looking for the **finest spatial level** (e.g. photo-quadrat 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 GCRMN is also looking for **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). We are also looking for 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). If the data were not collected from within an MPA but the area is under some form of protection, please indicate this (e.g. a Locally Management Marine Area). More broadly, we are interested in any additional information that you consider necessary for the correct interpretation of your data.

4. HOW TO SHARE YOUR DATA WITH THE GCRMN?

Depending on where your dataset is stored, you can consider one of three following options.

1. If your dataset is associated with a data paper or a data repository (e.g. OBIS, figshare, zenodo), please provide the DOI (Digital Object Identifier) to us as we can cite it appropriately. We encourage the publication of coral reef monitoring datasets as "data papers" for transparency and reproducibility.
2. If your data are stored on [MERMAID](#) or [ReefCloud](#) platforms, please inform us and authorise us to access your dataset as a user if you are willing to contribute. We will then be able to integrate your data automatically, without you having to share your dataset in Excel or CSV format.
3. If your data are not within a repository, published, or stored via a third-party platform, you can share your data with the GCRMN via Excel (.xls, .xlsx) or CSV (.csv) formats. We can work with you for any other data extension, if needed. If your dataset is large, you could consider using a file-sharing service such as *Google Drive* or *WeTransfer* and providing the associated link.

You don't have to modify the data you have (i.e., data structure, variable names, and units), since this process will be handled by the GCRMN data collation team during the data standardisation process (see the part below "*How will the data be standardized?*"). If you are unsure about the best course of sharing your data, please contact the data collation team (Jérémy Wicquart - jeremywicquart@gmail.com, Tom Dallison - thomas.dallison@icriforum.org).

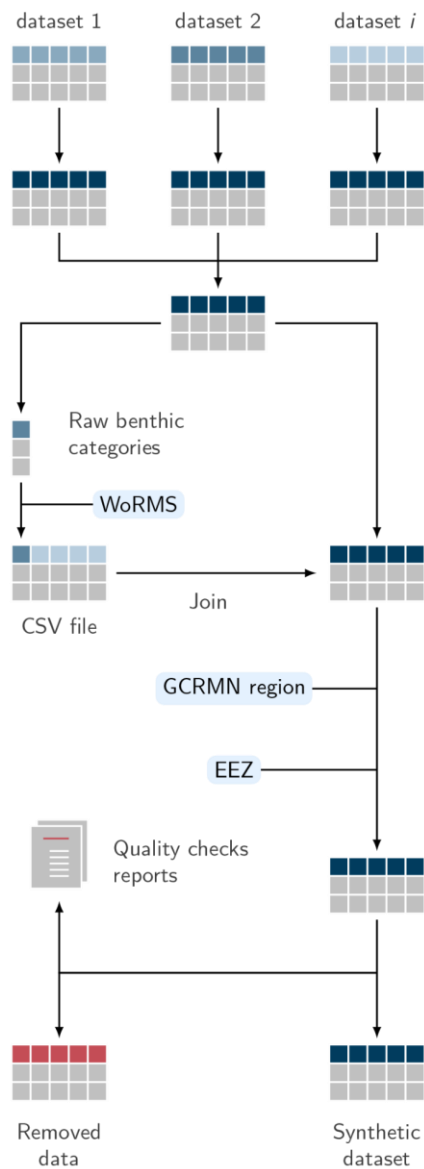
If required, and where you, as the contributor, deem necessary, the GCRMN will enter into a formal Data Sharing Agreement (DSA) with you. This DSA will set out the terms and conditions under which the GCRMN can use your data and how you will be acknowledged for your contributions.

5. WHERE WILL THE DATA BE STORED?

All the data collated by the GCRMN for this global report process will be stored on the computer of the data analysts as well as a GCRMN Core Team Google Drive folder with restricted access. The GCRMN data analysis team will have access to the synthetic dataset for the data analyses to produce GCRMN reports. Data for the Caribbean regional report will be hosted by the SPAW-RAC based in Guadeloupe. Data will be hosted on the center's server, which guarantees data unitization only for the GCRMN reports mentioned in the Data Sharing Agreement. The aim is also to ensure data storage and continuity for the next report in 2035. The modelled temporal trends resulting from the analysis of the synthetic dataset that will be the foundation of the “Status of Coral Reefs of the World: 2025” report will be published in a publicly accessible data repository. **Please note, however, that your raw data will not be shared or made publicly available without your prior permission.**

6. HOW WILL THE DATA BE STANDARDISED?

Coral reef benthic cover data are often very heterogeneous in terms of data formats (e.g., Excel, CSV) and data structure (e.g., variables names and units) from one contributor to another. This makes it necessary for the GCRMN to standardise the contributed datasets to perform a regional or global-level analysis. **The GCRMN will take charge of the standardisation of your dataset, so you don't need to modify your dataset before sharing it.** To achieve this work, the GCRMN has developed a workflow to standardise coral reef monitoring data (see **Figure 1**) and put in place a GitHub repository, named [gcrmn db benthos](#).



- 1 Standardization
Standardize all individual datasets to the same format
- 2 Grouping
Bind all standardized individual datasets together
- 3 Taxonomic recategorization
Correct, recategorize, and find upper taxonomic levels
- 4 Spatial attribution
Assign GCRMN region, country, and territory to each site
- 5 Quality checks
Control data quality and remove incorrect rows

Figure 1. Illustration of the data integration workflow used for the creation of the `gcrmn_db_benthos` synthetic dataset (see [Wicquart et al., 2022](#)). EEZ = Economic Exclusive Zone. Additional information can be found on [gcrmn_db_benthos](#). **Note that the `gcrmn_db_benthos` is a code repository and not a data repository.** Once again, your data will not be shared or made publicly available without permission. Note that this data integration workflow is dedicated to the percentage cover of benthic organisms and that a similar workflow will be produced for fish abundance and biomass data.

WHAT IS GCRMNDB_BENTHOS?

The [gcrmnadb_benthos GitHub repository](#) aims to gather individual datasets on benthic cover that have been acquired in the world's coral reefs over the last decades and to integrate them into a unique synthetic dataset. The gcrmnadb_benthos used by the GCRMN offers the following advantages:

1. It attributes the dataset to a unique ID, which will remain the same for all GCRMN reports, enabling the contributor to track the data usage,
2. It increases transparency, making the code available to the contributor and the public, for suggestions of improvements and error corrections,
3. It enables the creation of a list of existing datasets on benthic coral reef monitoring data (see this table).

It is important to note that the gcrmnadb_benthos is a code repository, which consists of a hub to store the code used for data integration, and not a data repository.

7. HOW WILL YOU BE ACKNOWLEDGED IN GCRMN PUBLICATIONS?

If you share your data with the GCRMN, you will be acknowledged in publications that include your data. This may be as an author or as a data contributor, depending on the level of your contribution and based on accepted authorship criteria, which are specified in the **GCRMN Data Sharing Agreement**.

We aim to acknowledge the work of all people involved in the acquisition of your data, and kindly ask you to provide the names (and email addresses, if known) of the contributors who must be acknowledged in GCRMN publications. GCRMN will use a modified version of CRediT statements (<https://credit.niso.org/>) to describe each contributor's specific contribution to the GCRMN publication. For example, a person contributing to the data collection would be acknowledged for their contribution to "Data acquisition" in the CRediT statement. In addition, you could be invited to contribute to the writing and review of some sections of the report, and you will be acknowledged appropriately (see example below, "W" stands for Writing of a section and "R" for Review).

	Funding acquisition	Conceptualization	Facilitation	Data acquisition	Data integration	Data analysis	Participation to workshop	Writing and review	Executive summary	Part 1 – Overall synthesis	Part 2 – Regional syntheses	Case studies	Materials and methods	Layout	Communication
Jane Doe	•	•	•			•	•	•	W	W	W	W	W	•	•
John Doe				•			•			R	W				

8. CONTACT AND FURTHER HELP

If, after reading through this guide, you are still not clear on the GCRMN data contribution process or have questions about the process, please do not hesitate to reach the teams in charge of the production of the “Status and Trends of Caribbean Coral Reefs: 1970-2024” and the “Status of Coral Reefs of the World: 2025” GCRMN reports.

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