

South Florida/Caribbean Network

National Park Service
Inventory and Monitoring Division



Standard Operating Procedure CR05

Collecting Coral Species Diversity Data on Benthic Transect —Version 2.1

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Summary

This SOP describes how to collect the coral species list from the benthic transect during coral video monitoring. The collection of coral species present within the transect provides an important indicator of long-term reef conditions by tracking the gain or loss of coral species and is especially important for threatened and endangered species. Developing a baseline of current coral species diversity is a valuable tool in understanding trends and assisting park management. An annual refresher/review of this SOP is recommended among staff to ensure consistency.

Revision Log

Revision Date	Author	Changes Made	Reason for Change	New Version #
2009	Andrea Atkinson	Initiated recording field in situ coral species lists at MB, TK, YZ, BK and some DRT0 extensive sub-sites in 2m x 10m belt transects centered on videography tape.	Increasing the accuracy to determine when a coral species has disappeared (rather than is momentarily undetected) improves the ability to describe the effect of an episodic event on the coral community in a timeframe useful to management.	1.00
2010	Andrea Atkinson	Expanded collection of coral species lists in the field to all sites.	Pilot showed time versus value of information was appropriate and expanded collection to all sites	1.01
June 2014	Mike Feeley	Switched to using 4-letter species codes.	This makes us more consistent with other monitoring groups and makes simple typos like DC vs DCA less likely.	1.02
January 2015	Jeff Miller	SOP written to meet I & M program, organization and format requirements.	Tied to I&M 2.00 version of protocol.	2.0
April 2020	Jeff Miller	SOP name changed from 5 to CR05. Add steps for entering data into iPad.	Renamed according to regional guidance. The iPad is used as our primary data entry method.	2.1

Introduction

Three options were considered during the formulation of this SOP to collect species information:

- Generate a list from coral species identified from dot analysis. Using this method, a coral species would be listed only when found under random dots assigned during the dot analysis.
- During the dot analysis, the analyst would generate a coral species list identifying any coral observed in the pictures, regardless as to whether a random dot fell upon that species. This method often required the viewing of the video along with the photo analysis to help the analyst identify a coral to species. The list was collected either electronically (e.g., text or word file), or written on paper.

- In the field a diver would swim along the transect generating a species list of all coral species identified within a 1-meter (3.3 foot [ft]) belt on both sides of the 10-meter (32.8 ft) transect.

These options were tested during annual monitoring at the Virgin Islands National Park (VIIS) and Buck Island Reef National Monument (BUIS) monitoring sites from April 2009 through April 2011 (280 transects: 20 transects per 14 sample events). Evaluation of those comparisons revealed there were more species listed from observing captured images than by coral species just occurring under dots. However, the field observation option consistently (95%) revealed the same or more species per transect than either of the image analysis methods. While this option looks at a larger area (10×2 meter belt [32.8×6.5 feet belt]) than the image analysis options ($10 \times \sim 0.5$ meter ‘belt’ [32.8×1.6 ft]), the field method searches for coral species in the same area searched for diseased corals, linking data from those two SOPs. Given the results of this comparison and the value of the data collected to the managers, this SOP contains methods for the field collection option only.

Equipment

No specialized equipment is necessary

- iPad in iDive with low pressure inflator hose attached
- One clipboard with pencil attached
- Pre-printed data sheet on waterproof paper (Figures 1 and 2 in SOP CR02 *Counting Long-spined Sea Urchin, Diadema antillarum, on Coral Reefs—Version 2.1* [SFCN 2025a])
- Rubber bands (to hold paper to clipboard)
- 1 meter (3.3 ft) length of transect tape

Procedures

The diver conducting this SOP must be familiar with Caribbean and Florida coral taxonomy.

The diver can begin at either end of the transect and using the segment of transect tape as a guide, slowly swim a 10×1 meter belt (32.8×3.3 ft) of the transect searching for and recording each coral species observed within the belt. A coral colony need not be entirely located within the belt transect to be listed (only some living portion of coral tissue needs to be located within the belt transect to be counted). The diver should search on every surface within the belt. Once the length of the transect has been explored, the diver repeats the survey on the other side of the transect completing the 10×2 meter (32.8×6.6 ft) survey. Once the diver has completed both sides of the transect, it is recommended a second traverse is done along both sides of the transect in the reverse direction as the first pass. In this manner, corals located on the sides of benthic features opposite to the direction of travel are more likely to be discovered. A coral species need only be listed once per 10×2 meter (32.8×6.6 ft) belt. A new list is made for each transect surveyed.

Enter the coral species observed in the iPad (see SOP CR24 *iPad Preparation, Data Entry, and Download—Version 1.0* [SFCN 2025]b). If the iPad fails, or is not available for data entry, record the species observed on the data sheet (see Figures 1 and 2 in SOP CR02; SFCN 2025a). Once back at the office, transfer the species list data from the data sheet into the iPad following SOP CR24 (SFCN 2025).

Literature Cited

South Florida/Caribbean Network (SFCN). 2025a. Counting long-spined sea urchin, *Diadema antillarum*, on coral reefs—Version 2.1. South Florida/Caribbean Network Standard Operating Procedure NPS/SFCN/SOP—CR02. South Florida/Caribbean Network, Palmetto Bay, Florida. Available at: <https://irma.nps.gov/DataStore/Reference/Profile/2309540> (last accessed April 2025).

South Florida/Caribbean Network (SFCN). 2025b. iPad Preparation, Data Entry, and Download—Version 1.0. South Florida/Caribbean Network Standard Operating Procedure NPS/SFCN/SOP—CR24. South Florida/Caribbean Network, Palmetto Bay, Florida. Available at: <https://irma.nps.gov/DataStore/Reference/Profile/2309559> (last accessed April 2025).