

South Florida/Caribbean Network

National Park Service
Inventory and Monitoring Division



Standard Operating Procedure SEA04

Sample Allocation—Version 1.1

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Purpose

The purpose of this standard operating procedure (SOP) is to characterize the sample allocation for the SFCN seagrass protocol (Davis et al. 2022). The procedure for selecting stratified random survey sample sites is described using the NOAA BioGeo sampling tool.

Revision Log

Revision Date	Author	Changes Made	Reason for Change	New Version #
3/31/2021		Format Update	Format Update	1.1

Procedures

- The sample regions in this protocol (Davis et al. 2022) are defined as Virgin Islands National Park, Buck Island Reef National Monument, Salt River Bay National Historical Park and Ecological Preserve, and Offshore Biscayne National Park.
- This SOP will use a stratified random selection of points, with a new sample of sites drawn for each survey.
- Samples are initially proportionally allocated within each stratum. This may later be adjusted based upon the variance structure of total seagrass or focal seagrass species (to be determined in consultation with each park) in order to reduce variance and optimize the ability to detect change if it is occurring in metrics of interest.
- Total number of samples is described as the best distribution of effort as established by analysis, within the limits of budget and personnel constraints. Initial estimates and planning are for 100 sites each for Virgin Islands NP and Biscayne NP and 100 sites combined for Buck Island Reef NM and Salt River Bay NHP&EP.
- Sites are randomly selected by stratum with a sampling design tool within ArcGIS.
- Initial sample stratification is as follows (Table 1):
 - Depth: less than 5 meters (16.4 ft), 5–15 meters (16.4–49.2 ft), and greater than 15 meters (49.2 ft).

Table 1. Initial strata and sampling allocation for unconsolidated sediment.

Depth	Sampling Allocation
Depth > 15 meters (49.2 ft)	Initially proportional allocation
Depth 5 to 15 meters (16.4 to 49.2 ft)	Initially proportional allocation
Depth < 5 meters (16.4 ft)	Initially proportional allocation

Procedure for Selecting Random Sample Sites using the NOAA BioGeo Sampling Tool

- Open the NOAA Sampling Design Tool within ArcGIS. If necessary, the tool can be downloaded and installed from the NOAA website:
<https://coastalscience.noaa.gov/projects/detail?key=185>
- The user's guide is also available from the [ArcGIS website](#)
- Within the “Sampling Design Tool” window:

- Under “Sampling type”, choose “Create Point Sample.”
- Under “Sampling design”, Choose “Stratified Random.”
- Check the “Export selected features” box.
- **Note:** *This will export a shapefile of the random sample sites to the location chosen in step 3.g. below.*
 - In “Sample frame,” select the shapefile from which the random sample sites will be drawn.
 - Under “Strata field,” select the field in the attribute table containing the strata of interest.
 - Click “Run.”
- Within the “Select Stratified Inputs” window:
 - Under “Allocation Method,” click on the “Proportional” button.
 - In the “Sample units to allocate” box, enter the total number of samples desired.
- **Note:** *This will proportionally allocate samples within each stratum. The “Define the number of sample unites to select in each stratum” window will show the number of samples allocated in each stratum.*
 - Do not check the “Keep minimum distance between points” box.
 - Click “Run.”
 - In the “Save a feature class” window, navigate to the location where the shapefile of the random sample sites will be exported.
 - Under “Name:,” allocate an appropriate name for the shapefile.
 - Under “Save as type:” select “Feature classes.”
 - Click “Save.”

Naming Convention for Randomly Selected Sample Sites

- Sample sites will be initially assigned a three-digit name during the random site selection process
- A new name must be designated for each randomly selected site, such that each sample site may readily be recognized as unique and distinguishable from any other sample site. To each site number, the sampling year shall be added to the name in the following format:

- YY### (i.e. 18131, designates that this is sample # 131 of year 2018)

Literature Cited

Davis, A. D., M. W. Feeley, M. Londoño, L. Richter, J. M. Patterson, and A. J. Atkinson. 2022. South Florida/Caribbean Network seagrass community monitoring: Protocol narrative—Version 1.1. Natural Resource Report NPS/SFCN/NRR—2022/2424. National Park Service, Fort Collins, Colorado. Available at: <https://irma.nps.gov/DataStore/Reference/Profile/2293388> (last accessed July 2022).