

Data Documentation

Dataset Information

Dataset Title:

NOAA NCCOS Assessment: Priority Areas Recommended for Shallow Coral Reef Management in the South Florida Coast from 2021-04-26 to 2021-05-21

Description:

The National Oceanic and Atmospheric Administration (NOAA) National Centers for Coastal Ocean Science (NCCOS) developed a spatial framework, process, and online application (Buja and Christensen 2019) to identify mapping needs along the south Florida coast to support shallow coral reef management by NOAA's Coral Reef Conservation Program (CRCP). Eighteen participants from local federal, state, academic, and other institutions entered their priorities in an online participatory Geographic Information System (pGIS). Participants used virtual coins to denote their priorities in 10.4 km² hexagonal grid cells overlaid on the study area. Grid cells with more coins were higher priorities than cells with fewer coins. Participants also reported why these locations were important, what data types were needed, and data collection methodologies using a pre-set list of options. Results were compiled, summarized, and mapped to identify high priority areas, reasons for those priorities, and information needs. Identifying these high priority areas provide a critical spatial framework for prioritizing mapping efforts in shallow coral reef ecosystems in south Florida.

Purpose:

The overall goal of the project was to systematically gather and quantify suggestions for mapping needs to support management of shallow coral reef ecosystems along the coast of south Florida. This dataset supports these goals by compiling input from a diversity of regional experts on their recommended priorities for mapping data collection.

Methods:

An advisory group was established which included individuals from NOAA CRCP and NOAA Fisheries. This advisory team customized the pGIS process specifically to meet the needs of CRCP and local coral reef manager priorities. In the online pGIS, the study area was divided into 1761 hexagonal grid cells 10.4 km² in size. Existing relevant spatial datasets (*e.g.*, bathymetry, Sanctuary Protection Areas, etc.) were provided as a digital atlas to help participants understand information and data gaps within the project area and to identify locations they wanted to prioritize for future data collections. The pGIS was used by 18 participants to convey their recommendations. Each participant was provided with 530 virtual coins to place into grid cells that they wished to prioritize. They were instructed to place more coins in grid cells that were higher priorities. A maximum of 53 coins could be placed into an individual grid cell by each respondent. Respondents also reported why these locations were important by selecting a minimum of one, and a maximum of two, management uses from the following list: endangered species management (*e.g.*), habitat restoration, monitoring, coastal vulnerability planning, watershed management, fisheries management, consultations and permitting, emergency response, and spatial protection and management. Respondents also reported what data types were needed in priority cells. A minimum of one, to a maximum of two choices were selected

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from the following list: habitat map/characterization, shoreline characterization, ground truthing (e.g. photos and videos collected using ROVs or AUVs), elevation (e.g. bathymetry and topography), backscatter and intensity (e.g. surfaces used to delineate between hard and soft substrate), 2D map product (e.g. static images used to visualize bottom type, presence/absence of taxa), georectified photomosaics (e.g. 3D products created from structure for motion), and water column (e.g. for fish biomass detection). Respondents also reported what method of data collection was desired in each priority cell. Only one response was required and were selected from the following list: satellite, lidar, multibeam echosounder, split beam echosounder, side-scan sonar, photogrammetry, drop-camera, and uncrewed systems. Coin values were summarized and mapped to identify high priority areas, reasons for those priorities, and information needs. This ESRI shapefile contains the 10.4 km² grid cells used in this prioritization and their associated coin values overall, as well as by management use, data product, and mapping methodology. Other summary values include the number of participants, number of participating groups, number of management uses, and number of data products. Also included is a ranking of each grid cell based on the total number of coins, management uses, and agencies allocating coins in the respective cell. For a complete description of the process and analysis see: Kraus et al., 2022.

Cited Publications:

- Kraus, J., C. Buckel, B. Williams, C. Ames, F. Pagan, E. Towle, D. Dorfman. 2022. Agency Priorities for Mapping South Florida's Coral Reef Ecosystems. NOAA Technical Memorandum NOS NCCOS 304. Silver Spring, MD. <https://doi.org/10.25923/qc9e-gt19>
- Kendall, M.S., K. Buja, C. Menza, S. Gandulla, and B. Williams. 2020. Priorities for Lakebed Mapping in Lake Huron's Thunder Bay National Marine Sanctuary. NOAA Technical Memorandum NOS NCCOS 276. Silver Spring, MD. 24 pp. <https://doi.org/10.25923/qyrf-tq71>

People & Projects

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 - Office of Oceanic and Atmospheric Research (OAR), Atlantic Oceanographic & Meteorological Laboratory (AOML)

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- National Marine Fisheries Service (NMFS)
 - Restoration Center (RC)
 - Southeast Regional Office (SERO)
- National Ocean Service (NOS)
 - Office of National Marine Sanctuaries (ONMS), Florida Keys National Marine Sanctuary (FKNMS)
 - National Centers for Coastal Ocean Science (NCCOS)
 - Christine Buckel, Bethany Williams, Cory Ames, Dan Dorfman
 - Office of Coastal Management (OCM); Coral Reef Conservation Program (CRCP)
 - Francisco Pagan
 - OCM CRCP National Coral Reef Monitoring Program (NCRMP)
 - Erica Towle
- US DOI; National Park Service (NPS)
 - Dry Tortugas National Park (DTNP)
 - Biscayne Bay National Park (BBNP)
- US DOI; US Geological Survey (USGS)
- Florida Department of Environmental Protection (DEP)
- Florida Fish and Wildlife Research Institute (FWRI)
- University of Miami (UM), Cooperative Institute for Marine and Atmospheric Studies (CIMAS)
- Nova Southeastern University (NSU)
- The Nature Conservancy (TNC)

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- US DOC; NOAA; NOS; National Centers for Coastal Ocean Science (NCCOS)
- US DOC; NOAA; NOS; (OCM); Coral Reef Conservation Program (CRCP)
 - NOAA CRCP project #31322 - Mapping Gap Analysis for US Shallow Coral Reef Areas

Associated Online Resources:

- NCCOS Project, Defining Future Seafloor Mapping Priorities to Inform Shallow Coral Reef Management, <https://coastalscience.noaa.gov/project/defining-future-seafloor-mapping-priorities-to-inform-shallow-coral-reef-management/>
- US Shallow Coral Reef Mapping Priorities, <https://us-shallow-coral-reef-mapping-priorities-noaa.hub.arcgis.com/>
- Buja, K., and Christensen, J. 2019. Spatial Prioritization Widget: A Tool to Identify Mapping Priorities. Available Online: <https://coastalscience.noaa.gov/project/spatial-prioritization-widget/> (Accessed 26 June, 2019).

Extents

Start Date: 2021-04-26
End Date: 2021-05-21

Northern Boundary: 27.28
Southern Boundary: 24.37
Western Boundary: -83.15
Eastern Boundary: -79.96

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Keywords

Sea Areas, Water Bodies, Marine Protected Areas:

- Atlantic Coast
- Gulf of Mexico

NCCOS Keywords:

- NCCOS Research Priority > Marine Spatial Ecology
- NCCOS Research Topic > Ecological and Biogeographic Assessments
- NCCOS Research Topic > Habitat Mapping
- NCCOS Research Location > Region > Atlantic Ocean
- NCCOS Research Location > U.S. States and Territories > Florida
- NCCOS Research Data Type > Geospatial
- NCCOS Research Data Type > Derived Data Product

CoRIS Keywords:

- CoRIS Discovery Thesaurus:
 - Geographic Information > Socioeconomic
 - Geographic Information > Marine Managed Areas
 - Numeric Data Sets > Bathymetry
 - Documents > Observational Report
- CoRIS Theme Thesaurus:
 - EARTH SCIENCE > Biosphere > Zoology > Corals > Reef Monitoring and Assessment > Mapping
- CoRIS Place Country/Territory Keywords:
 - COUNTRY/TERRITORY > United States of America > Florida
 - COUNTRY/TERRITORY > United States of America > Florida > Florida Reef Tract (26N080W0007)
- CoRIS Place Ocean/Seas Keywords:
 - OCEAN BASIN > Atlantic Ocean > North Atlantic Ocean > Florida
 - OCEAN BASIN > Atlantic Ocean > North Atlantic Ocean > Florida Reef Tract (26N080W0007)

File Information

Total File Size:	953 KB total, 6 files in 1 folder (unzipped), (66.2 KB zipped)
Data Files:	CRCP_GapAnalysis_Priorities_Florida.SHP
Documentation Files:	DataDocumentation.PDF
Data File Format(s):	Shapefile .SHP (and ancillary files .DBF, .PRJ, .SHX)
Data File Compression:	zip
Data File Resolution:	10.4 km ²
GIS Projection:	WGS 1984 (WKID 4326)

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Parameter Information

Parameter Description:

Parameter: Number of virtual coins, respondents, agencies, management uses, or data products, and rank

Property Type: Calculated

Units: none

Observation Category: model output

Data Sources: none

Sampling Instrument: Models/Analyses > Data Analysis > Environmental Modeling

Sampling and Analyzing Method:

The data product is derived from a summary of expert opinions obtained using a custom application created in ESRI's Web AppBuilder that implemented a coin placement technique where each expert allocated virtual coins on a map grid to express their mapping priorities. For a complete description of the process and analyses used in a similar project, see Kendall *et al.* 2020.

Data Quality Method:

Results were presented for comment to the participating experts and the Technical Advisory Team. Collectively, these groups recommended and endorsed the details of the dataset.

Processing and analysis methods are described in the reference publication. For a complete description of the process and analyses see Kraus *et al.* 2022.

Table 1: Data Dictionary

Variable Name	Definition
GRIDID	Unique number assigned to each grid cell in the Prioritization
TotCoin	Total number of coins allocated to grid cell among all respondents, where the coins allocated by respondents at the same agency were averaged
PtcpNum	Number of respondents placing coins in a grid cell
AgenNum	Total number of agencies placing coins in a grid cell
ManNum	Total number of management uses identified in a grid cell
ProdNum	Total number of mapping products identified in a grid cell
SumRank	Cell rank based on the sum of cell ranks by total coins, number of agencies, and number of management uses
Monitor	Number of coins for the management use <i>Monitoring (Long-term biophysical monitoring, discrete management/restoration assessments, or emergency/disaster response assessment).</i>
Fish	Number of coins for the management use <i>Fisheries management (Planning, enforcement, and assessment of fisheries management actions).</i>
SptPrt	Number of coins for the management use <i>Spatial protection and management (Planning, enforcement, and assessment of spatially managed areas, such as marine protected areas, marine managed areas, etc.).</i>
HabRest	Number of coins for the management use <i>Habitat restoration (Restoration planning and implementation of coastal and marine habitats such as corals, submerged aquatic vegetation, etc.)</i>
ESA	Number of coins for the management use <i>Endangered species management (Including consultations, recovery planning and implementation).</i>
Permit	Number of coins for the management use <i>Consultations and permitting (Planning and assessment for federal (e.g. USACE, ONMS, etc.) and/or state permits and</i>

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Variable Name	Definition
	<i>environmental compliance with other federal regulations (e.g., NEPA, ESA, MSA, etc.).</i>
Wtrshed	Number of coins for the management use <i>Watershed management (Planning and implementation of watershed management and restoration projects to improve coastal water quality).</i>
CstVul	Number of coins for the management use <i>Coastal vulnerability planning (Planning to mitigate for climate change impacts and other coastal hazards).</i>
Elevat	Number of coins for the data product <i>Elevation (Bathymetry and topography collected using modern technology such as multibeam, sidescan, and lidar).</i>
HabMap	Number of coins for the data product <i>Habitat Map/Characterization (Models of habitat suitability using mapping data, imagery, etc.).</i>
Bcksct	Number of coins for the data product <i>Backscatter and intensity (Surfaces used to delineate between hard and soft substrates).</i>
Photomo	Number of coins for the data product <i>Georectified photomosaics (3D products created using a combination of methods such as Structure from Motion, satellite derived bathymetry, etc.).</i>
Map2D	Number of coins for the data product <i>2D map product (Static Images used to visualize bottom type, presence/absence of key taxa).</i>
GT	Number of coins for the data product <i>Ground truthing (Photos and videos collected using ROVs, AUVs or other camera platforms).</i>
Multi	Number of coins for the mapping methodology <i>Multibeam echosounder.</i>
Lidar	Number of coins for the mapping methodology <i>LiDAR.</i>
Photogr	Number of coins for the mapping methodology <i>Photogrammetry.</i>
Side	Number of coins for the mapping methodology <i>Side-scan sonar.</i>
Uncrew	Number of coins for the mapping methodology <i>Uncrewed systems.</i>
Sat	Number of coins for the mapping methodology <i>Satellite.</i>

Document Information

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Resource Provider: NCCOS Data Manager, nccos.data@noaa.gov, US DOC; NOAA; NOS; National Centers for Coastal Ocean Science (NCCOS)

Comment: This data documentation describes data files archived as a Zenodo data accession, and is intended to provide dataset-level metadata for the purposes of discovery, use, and understanding.

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