

**Data Documentation**  
**NCCOS Saipan Lagoon Mapping: Accuracy Assessment and Ground Validation Datasets**

<b>Data Documentation</b>	
<b>Data Collection Title</b>	<b>NCCOS Assessment: Benthic Habitat Maps of Saipan Lagoon, Commonwealth of the Northern Mariana Islands</b>
<b>Dataset Title</b>	<b>Accuracy assessment and ground validation datasets for the Saipan Lagoon, CNMI</b>
<b>Principal Investigators</b>	Matthew Kendall, Bryan Costa US DOC; NOAA; NOS; National Centers for Coastal Ocean Science (NCCOS)
<b>Point of Contact</b>	Matthew Kendall
<b>Collaborators</b>	Steve McKagan - US DOC; National Oceanic and Atmospheric Administration (NOAA); National Marine Fisheries Service (NMFS); Pacific Islands Regional Office (PIRO), Habitat Conservation Division Lyza Johnston - Commonwealth of the Northern Mariana Islands (CNMI), Bureau of Environmental and Coastal Quality (BECQ)
<b>Authors</b>	Matthew Kendall, Bryan Costa, Steve McKagan and Lyza Johnston
<b>Abstract</b>	<p>Underwater video and photographs were acquired between 28 July 2016 and 9 August 2016 at nearly 600 sites throughout the lagoon to document the presence and percent-cover of benthic substrate and cover types. Two sets of independent data were collected, one for Ground Validation (n = 292) and the other for Accuracy Assessment (n = 273). Ground Validation (GV) data are the basis for correlating observed substrate and cover types with their associated values in the predictor datasets. Ultimately, the data are used to train and optimize mathematical models that predict habitats throughout the lagoon. Locations of the GV sites were selected manually to include the full range of habitats, depths, and environmental settings found in the lagoon. Accuracy Assessment (AA) data are used to independently evaluate the performance and accuracy of predictive models and the composite habitat map. AA sites were chosen by randomly scattering points in nine habitat types. The process for collecting both the GV and AA data was identical at each field site. Sites were typically accessed via small boat, kayak, or wading. At each site, two Go Pro HERO4 Black cameras were deployed on an aluminum pole for sites &lt;9 m deep and on a rope with a rotating camera system for deeper sites. On both deployment systems, a downward facing camera was fixed at 1 meter above the bottom to standardize the field of view to encompass ~ 1 m<sup>2</sup> of seafloor, and an oblique facing camera captured surrounding habitats. Once the cameras were deployed, our precise location was recorded every five seconds using a GPS receiver. Abundances for the five substrate and seven cover types were estimated to the nearest 10% in real time. Once back in the office, GPS data were post-processed and differentially corrected. Average positions were calculated for each site, and all underwater videos and photos were reviewed for quality control. Substrate and cover abundances were converted to presences (1) and absences (0). These presence/absence layers were used to create and evaluate the accuracy of the habitat predictions and map in Saipan Lagoon. This data package includes the following geospatial datasets (below). For complete descriptions of these datasets and the methods used to generate them, please see: Kendall et al. (2017).</p> <ol style="list-style-type: none"> <li>1. Underwater Photographs</li> <li>2. Underwater Videos</li> <li>3. Accuracy Assessment (AA) -             <ol style="list-style-type: none"> <li>a. AA Points (Abundance of Substrate and Cover Types)</li> <li>b. AA Points (Presence of Substrate and Cover Types)</li> </ol> </li> <li>4. Ground Validation (GV) -             <ol style="list-style-type: none"> <li>a. GV Points (Abundance of Substrate and Cover Types)</li> <li>b. GV Points (Presence of Substrate and Cover Types)</li> </ol> </li> </ol>
<b>Purpose</b>	CNMI's Bureau of Environmental and Coastal Quality (BECQ) and NOAA's Pacific Islands Regional Office (PIRO) partnered with NOAA's National Centers for Coastal Ocean Science (NCCOS) to develop updated habitat maps and assess habitat changes in Saipan Lagoon, CNMI. NCCOS developed these spatially resolved maps using environmental predictors, underwater videos/photos and mathematical modeling techniques. The new maps were designed to inform the Saipan Lagoon Use Management Plan (SLUMP), which is being updated in response to changes in lagoon habitats, user activities, and increases in tourism. Understanding the present spatial distribution of benthic habitats is an important part of the Territorial Government's process to evaluate zoning scenarios, minimize user conflicts, ensure public safety, and prevent environmental degradation inside the lagoon. Products from this assessment may also support coastal and ocean management efforts by other territorial and federal agencies working in Saipan. This work

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<b>Methods</b>	See Kendall et al. (2017).
<b>Citations</b>	Kendall, M., B. Costa, S. McKagan, L. Johnston, and D. Okano. 2017. Benthic Habitat Maps of Saipan Lagoon. NOAA Technical Memorandum NOS NCCOS 229. Silver Spring, MD. 79 pp.
<b>Start Date</b>	2016-07-28
<b>End Date</b>	2016-08-09
<b>Northern Boundary</b>	15.2742160669
<b>Southern Boundary</b>	15.1209203637
<b>Western Boundary</b>	145.684723941
<b>Eastern Boundary</b>	145.794770192
<b>Projection</b>	World Geodetic System 1984 (WGS84), Universal Transverse Mercator, Zone 55 North (UTM 55N)
<b>Resource Provider</b>	NCCOS Data Manager < <a href="mailto:nccos.data@noaa.gov">nccos.data@noaa.gov</a> >
<b>Comment</b>	<i>This data documentation describes numerous geospatial datasets archived together as a NOAA NCEI data collection, and is intended to provide dataset-level metadata for the purposes of discovery, use, and understanding.</i>
<b>Use Limitation</b>	<i>Please note: NOAA makes no warranty, expressed or implied, regarding these data, nor does the fact of distribution constitute such a warranty. NOAA cannot assume liability for any damages caused by any errors or omissions in these data.</i>

<b>Datasets: Accuracy Assessments and Ground Validation</b>	<b>Definition</b>
Underwater Photographs	Underwater photographs taken at GV and AA sites in Saipan Lagoon. Available upon request by contacting Matt Kendall, <a href="mailto:Matt.Kendall@noaa.gov">Matt.Kendall@noaa.gov</a> . Format JPEG; no compression; spatial resolution n/a; units n/a, time period 2016-07-28 to 2016-08-09; instrument Go Pro Hero 4 Black camera (3008 x 1692 pixels resolution) and Olympus digital camera (4608 x 3456 pixels resolution); data source Kendall et al. 2017.
Underwater Videos	Underwater videos taken at GV and AA sites in Saipan Lagoon. Available for viewing and downloading at: <a href="https://maps.coastalscience.noaa.gov/biomapper/biomapper.html?id=Saipan">https://maps.coastalscience.noaa.gov/biomapper/biomapper.html?id=Saipan</a> . Format MP4; no compression; spatial resolution n/a; units n/a, time period 2016-07-28 to 2016-08-09; instrument Go Pro Hero 4 Black camera (30 frames per second, 1920 x 1080 resolution); data source Kendall et al. 2017.
Accuracy Assessment (AA) Points: Abundance of Substrate and Cover Types	Abundance (to the nearest 10%) of substrate and cover types at 273 AA sites. AA sites were used to evaluate the performance of the models and accuracy of the composite habitat map. Format point shapefile; no compression; spatial resolution n/a; units n/a; time period 2016-07-28 to 2016-08-09; instrument Trimble Geo XH GPS; data source Kendall et al. 2017.
Accuracy Assessment (AA) Points: Presence of Substrate and Cover Types	Presence (1) & absence (0) of substrate and cover types at 273 AA sites. AA sites were used to evaluate the performance of the models and accuracy of the composite habitat map. Format point shapefile; no compression; spatial resolution n/a; units n/a; time period 2016-07-28 to 2016-08-09; instrument Trimble Geo XH GPS; data source Kendall et al. 2017.
Ground Validation (GV) Points: Abundance of Substrate and Cover Types	Abundance (to the nearest 10%) of substrate and cover types at 292 GV sites. GV sites were used to train the models and composite habitat map. Format point shapefile; no compression; spatial resolution n/a; units n/a; time period 2016-07-28 to 2016-08-09; instrument Trimble GPS Geo XH; data source Kendall et al. 2017.
Ground Validation (GV) Points: Presence of Substrate and Cover Types	Presence (1) & absence (0) of substrate and cover types at 292 GV sites. GV sites were used to train the models and composite habitat map. Format point shapefile; no compression; spatial resolution n/a; units n/a; time period 2016-07-28 to 2016-08-09; instrument Trimble GPS Geo XH; data source Kendall et al. 2017.
Key for Fields in GV and AA Shapefiles	Aliases and description of fields in GV and AA shapefiles. Format Excel spreadsheet; no compression; spatial resolution n/a; units n/a, time period n/a; instrument n/a; data source Kendall et al. 2017.