

**PONAR IMAGING AND SAMPLING SYSTEM FOR ASSESSING HABITATS (PISSAH) VIDEO FRAME CAPTURE AND ANALYSIS FOR THE PHASE IIB ASSESSING ECOLOGICAL CHANGE AND RESILIENCY (AECR) PROJECT**

**METADATA**

**Dataset Originator:** University of Connecticut: Ivar G. Babb

**Publication Date:** 12/1/2024

**Dataset Title:** Phase 2B AECR PISSAH Video Image Capture and Analysis

**Online Linkage:**

LDEO Data Repository - <http://www.marine-geo.org/portals/lis/>

Data\_doi=

Data url=

**Abstract:**

*This dataset contains the results of image analyses of frame captures of video collected by the Ponar Imaging and Sampling System for Assessing Habitat (PISSAH) developed by the Long Island Sound Mapping and Research Collaborative (LISMaRC) to obtain both physical sediment grab samples and ultra-high definition (4K) video using the latest version of GoPro cameras. A three-day survey using the PISSAH deployed from the Research Vessel Weicker was conducted from October 19-21, 2022 to obtain seafloor imagery and grab samples in the Phase II area. The PISSAH was used to acquire both physical sediment grab samples as well as the GoPro video from 18 sites in the Phase I and II areas of the Long Island Sound Cable Fund (LISCF) Seafloor Habitat Mapping Initiative that served as a modern-day assessment of the seafloor communities at these sites. The videos obtained were and representative images (frames) captured and analyzed for the presence and percent cover of key taxa identified for the Assessing Ecological Change and Resiliency (AECR) project to compare with historical data/imagery from these sites to assess change or stability in these areas of Long Island Sound.*

**Dataset purpose:**

*This dataset represents the results of images acquired from the down looking video obtained by the GoPro cameras mounted on the PISSAH. Individual video frames (range of 10 to 30) were captured as image files (.TIFF) using VLC's (v. 3.0.20, 2023) Snapshot Tool. Most of the images were color corrected using the IrfanView software, indicated by the file name ending in a .irfvnwcolor suffix. A total of 532 frames were captured, saved and exported as .jpeg files for archival purposes using the MacOS Preview program retaining the same image size (25.1 MB), dimensions (38840x2160), resolution (72x72) and color space (RGB). Of these images, 235 were deemed adequate (ie visibility, presence of parallel lasers) for analysis using the ImageJ software for presence/absence, point count and percent cover of observed taxa. Results were presented in Excel spreadsheets for cell counts and percent cover and presence/absence for each of the 18 sites. Spatial data in the form of ESRI shapefiles were also developed showing the location of each image, along with the presence/absence data.*

**Time period of content:**

*The PISSAH imagery were reviewed and analyzed from July, 2023 to June, 2024.*

**Dataset Status:** *Complete*

**Update Frequency:** *None planned. However, the possibility of periodic site revisitation has been proposed to the CT-DEEP to monitor future changes in the seafloor communities of LIS, given the changes observed from the historical imagery (videos and photos) to recently collected imagery (videos and photos).*

**Theme Keywords:**

*Connecticut, New York, Long Island Sound, estuary, RV Lowell Weicker, backscatter, multibeam sonar, raw data, GoPro, video, University of Connecticut, UConn, Long Island Sound Mapping and Research Collaborative, LISMaRC, Long Island Sound Cable Fund, LISCF, image analysis, ImageJ, epifauna, ecological change, resiliency, PISSAH, video.*

**Access Constraints:** *None*

**Use Constraints:**

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**Point of Contact:**

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**Dataset Credit:**

*The Long Island Sound Mapping and Research Collaborative (LISMaRC). LISMaRC is the University of Connecticut, the University of New Haven and the US Geological Survey. Funding provided by the Long Island Sound Cable Fund Seafloor Habitat Mapping Initiative administered cooperatively by the EPA Long Island Sound Study and the Connecticut Department of Energy and Environmental Protection (DEEP).*

**Data Quality Considerations:** *See below*

**Attribute accuracy:**

*See below for positional accuracy*

**Completeness:**

*Complete - Complete – All down looking PISSAH videos have been reviewed, images captured and analyzed for presence and percent cover of the key AECR taxa.*

**Positional accuracy:**

*Video File/Image Positional Accuracy – The position of the sampler was assumed to be directly below the stern of the vessel, although there may have been some deviation from this position based upon the unit being pushed by any bottom currents. Given this assumption, a GPS antenna was mounted on the stern rail of the RV Weicker to provide an accurate record of the position of the PISSAH throughout the course of the deployment. The GPS receiver was a GlobalSat BU-353N5 connected via USB to a laptop operating ArcGIS Pro. The GlobalSat web site describes the receiver as: “very high sensitivity chipset (Tracking Sensitivity: -165 dBm), with extremely fast TTFF (Time To First Fix) at low signal level and support of NMEA 0183 data protocol. The USB GPS is WAAS/EGNOS capable, and for units sold in North America through authorized resellers, these units are WAAS/EGNOS enabled unless otherwise stated. Accuracy can be up to 5 meters 3D RMS with WAAS enabled and 10-15 meters 2D RMS WAAS disabled.” The 3D RMS was enabled, therefore, the positional accuracy of the PISSAH and therefore the acquired video was assumed to be ~5 meters.*

**Process Steps:**

*Video Review and Frame Captures: Individual frames (range of 10 to 30) were captured from each down-looking video file as image files (.TIFF) using VLC’s (v. 3.0.20, 2023) Snapshot Tool. Most of the images were color corrected using the IrfanView software, indicated by the irfnvwcolor suffix. Frame capture filenames included the project name, team, date, original GoPro video filenames and time that the frame capture was made. The GoPro file name and time of capture were included in the analysis spreadsheet to allow for tracking of the results for each of the images saved to the LDEO archive. A total of 532 frames were captured, saved and of these 235 were analyzed per the process below.*

*Image Analysis: Images were analyzed using ImageJ (v. 1.53k, 2021). Image analysis consisted of overlaying a 8x5 cell grid (40 total cells) on the image (using ImageJ’s Grid tool) and marking the occurrence of the key taxa identifiable organisms, biogenic and artificial materials, and surficial sediment type within each cell (using ImageJ’s MultiPoint Tool). Percent cover was determined as the number cells featuring the occurrence of an organism, material, or sediment type expressed as a percentage of total visible cells Results were presented in an Excel spreadsheet containing tabs for cell counts and percent cover and presence/absence for each of the 18 sites. Spatial data in the form of ESRI shapefiles were also developed showing the location of each image, along with the presence/absence data.*

**Process Contact:** Christopher Conroy, University of New Haven, [cwconroy@newhaven.edu](mailto:cwconroy@newhaven.edu)

**Attributes:**

*Frame Capture Image Files: The GoPro 10 cameras recorded the HEVC video format in the .MP4 wrapper at a resolution of 5312x2998 pixels and data rate of 60 megapixels/second. The frame grabs used for the analyses were using VLC (v. 3.0.20, 2023) and saved in .tiff format with PackBits compression at 3840x2160 pixels using the RGB color model.*

*The vessel track: The vessel track was recorded every second into a .csv (comma separated value) file, with the date/time/time\_ISO8601 and latitude and longitude in decimal degrees recorded. The logs for all three days were merged into one .csv file and an ESRI shapefile (.shp) was developed.*

Taxa Identified

*A subset of taxa of interest were identified as key taxa by the AECR project and included the following:*

<b>Common name</b>	<b>Taxonomic name</b>
Slipper shell	Crepidula fornicata
Blue mussel	Mytilus edulis
Branching sponge	Haliclona oculata
Boring sponge	Cliona spp. (celata)
Carpet tunicate	Didemnum sp.
Northern star coral	Astrangia poculata
Frilled anemone	Metridium senile
Common sea star	Asterias rubens
Kelp	Phaeophyceae

*Additional taxa were also identified and analyzed including the following:*

Halichondria panicea
Microciona
Halisarca
Botrylloides
Diadumene leucolena
erect bryozoa
Bugula sp.
tubulation
barnacle
gastropod
Arbacia
Henricia

Libinia
Homarus americanus
unknwon shrimp
bony fish
winter flounder
summer flounder
striped sea robin
rock gunnel
black sea bass
cunner
tautog
scup
grubby sculpin
red algae
rock rust
brown algae
sugar kelp
green algae

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