

Infaunal Community Characteristics, Classification and Related Environmental Data in the Long Island Sound Cable Fund Initiative Phase II area of eastern Long Island Sound

METADATA

Dataset Originator: *University of New Haven; Roman N. Zajac*

Publication Date: *6/30/2021*

Dataset Title: *Community characteristics, classification and related environmental data at infaunal sample sites in eastern Long Island Sound.*

Online Linkage: *<http://www.marine-geo.org/portals/lis/>*

Abstract: *This shapefile contains derived infaunal community characteristics (total abundance, taxonomic richness, diversity, community type), CMECS (Coastal and Marine Ecological Classification Standard) classification and related environmental data for each infaunal sample site in the Long Island Sound Cable Fund Initiative Phase II area of eastern Long Island Sound. The data were collected using the USGS SEABOSS system on the Research Vessel Connecticut (University of Connecticut) in November/December 2017 and May 2018.*

Dataset purpose: *This dataset provides detailed information on the infaunal communities in the Phase II study area which can be used to map the spatial characteristics of these communities relative to several environmental features to meet the Long Island Sound Cable Fund's goal of ecological characterization of the Long Island Sound sea floor in conjunction with habitat mapping efforts.*

Time period of content: *These data were collected over a 10 day spans in November / December 2017 and May 2018*

Dataset Status: *Complete*

Update Frequency: *None Planned*

Theme Keywords: *Benthic ecology, Infauna, Sea floor communities, Coastal and Marine Ecological Classification Standard, CMECS, Connecticut, New York, Long Island Sound, Fishers Island Sound, estuary, Long Island Sound Mapping and Research Collaborative, LISMaRC*

Access Constraints: *none*

Use Constraints:

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Data should not be used for navigation purposes.

Point of Contact: *Roman N. Zajac, University of New Haven, rzajac@newhaven.edu*

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 Seafloor Mapping Fund 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: *All attributes were evaluated during data processing and analysis as standard quality control to ensure attributes contain accurate and relevant information and values.*

Completeness: *The information provided on infaunal communities is complete*

Positional accuracy:

Horizontal Positional Accuracy: Navigation during both the 2017 and 2018 sample collection periods used Wide Area Augmentation System (WAAS)-enabled GPS. The GPS was set to receive fixes at a 2-second interval in geographic coordinates (World Geodetic System of 1984 [WGS 84]). The recorded position of each sediment sample is the position of the GPS antenna on the survey vessel, located on the aft port side of the R/V Connecticut, not the location of the SEABOSS. The antenna was located approximately 5 meters from the SEABOSS deployment location in fall 2017 and 3 meters in spring 2018. No layback or offset was applied to the recorded position. In addition, the SEABOSS may drift away from the survey vessel when deployed to the sea floor. Based on the various sources of horizontal offsets, a conservative estimate of the horizontal accuracy of the sediment sample locations is 10 meters.

Vertical Positional Accuracy: The depths recorded for each sample are approximate and were derived from an unpublished composite bathymetry dataset used by the Long Island Sound Mapping and Research Collaborative project.

Process Steps: *Sediment samples were obtained using the USGS SEABOSS system were washed on a 1 mm sieve using filtered seawater and preserved in 70% ethanol. Several samples were*

washed on a 0.5 mm sieve. Samples were sorted using a dissecting microscope and all individuals identified to the lowest taxonomic level possible. For each sample the total abundance and taxonomic richness was calculated, as well sample diversity using the Shannon diversity index H' . The entire data set was analyzed using a variety of multivariate statistical approaches to assess and identify community types. The CMECS classification system was applied to each sample using both CMECS defined classifiers as well as modified classifiers for Biotic Groups (see below). Additional information on infaunal communities is provided in two additional classification levels there added, Biotic Community and Other Elements.

Attributes:

FIELD_NO: Sediment sample designation

LONGITUDE: see

https://www.sciencebase.gov/catalog/file/get/5de9be03e4b02caea0eeda45?f=disk_b1%2Fe4%2F74%2Fb1e47494caa95e6a54c32f270518094926f78286&transform=1&allowOpen=true

LATITUDE: see:

https://www.sciencebase.gov/catalog/file/get/5de9be03e4b02caea0eeda45?f=disk_b1%2Fe4%2F74%2Fb1e47494caa95e6a54c32f270518094926f78286&transform=1&allowOpen=true

DEPTH_M: Approximate depth of water in meters at the sample location derived from an unpublished composite bathymetry dataset used by the Long Island Sound Mapping and Research Collaborative project.

GRAVEL_PCT: Gravel content in percent dry weight of the sample. Gravel consists of particles with nominal diameters greater than 2 mm (-1 phi and larger).

SAND_PCT: Sand content in percent dry weight of the sample. Sand consists of particles with nominal diameters less than 2 mm, but greater than or equal to 0.0625 mm (0 phi through 4 phi, inclusive).

SILT_PCT: Silt content in percent dry weight of the sample. Silt consists of particles with nominal diameters less than 0.0625 mm, but greater than or equal to 0.004 mm (5 phi through 8 phi, inclusive).

CLAY_PCT: Clay content in percent dry weight of the sample. Clay consists of particles with nominal diameters less than 0.004 mm (9 phi and smaller).

USGS_Class: USGS sediment classification; see

https://www.sciencebase.gov/catalog/file/get/5de9be03e4b02caea0eeda45?f=disk_b1%2Fe4%2F74%2Fb1e47494caa95e6a54c32f270518094926f78286&transform=1&allowOpen=true

Tidal_Max: Maximum tidal shear stress at sediment surface in pascals (a pressure of one newton per square meter, or, in SI base units, one kilogram per meter per second squared)

Tidal_Mean: Mean tidal shear stress at sediment surface in pascals (a pressure of one newton per square meter, or, in SI base units, one kilogram per meter per second squared)

Depth_neg: depth expressed as negative value

TRI_Pixel1: Terrain Roughness Index, values closer to 0 indicate flatter terrain (seafloor), higher values indicate increasingly variable or irregular elevation (highs and lows) within a sampled unit of seafloor.

PHI_11: Phi 11: colloid; percent by weight of sediment grain-sizes in this category of the Phi scale (the phi scale is a sediment particle size scale, defined as a logarithmic transformation of the geometric Udden-Wentworth grain size scale, the higher the phi value, the finer the particle size) for details see:

https://www.sciencebase.gov/catalog/file/get/5de9be03e4b02caea0eeda45?f=__disk_b1%2Fe4%2F74%2Fb1e47494caa95e6a54c32f270518094926f78286&transform=1&allowOpen=true

PHI_10: Phi 10, clay

PHI_9: Phi 9, clay

PHI_8: Phi 8, silt

PHI_7: Phi 7, silt

PHI_6: Phi 6, silt

PHI_5: Phi 5, silt

PHI_4: Phi 4, silt / very fine sand

PHI_3: Phi 3, very fine sand / fine sand

PHI_2: Phi 2, fine sand / medium sand

PHI_1: Phi 1, medium sand/ coarse sand

PHI_0: Phi 0, very coarse sand

PHI__1: Phi negative 1, very fine gravel

PHI__2: Phi negative 2, very fine gravel / fine gravel

PHI__3: Phi negative 3, medium gravel

PHI__4: Phi negative 4, medium gravel / coarse gravel

Phys_Set: Physical setting classifier for CMECS

Geoform: Geomorphological classifier for CMECS

Substrate: Substrate classifier for CMECS

Biotic_Set: Biotic Setting classifier for CMECS

Biotic_Cla: Biotic Class classifier for CMECS

Biotic_Sub: Biotic Subclass

Biotic_Group: General descriptor for the dominant infaunal components of the sample (see below)

Biotic_Community: Numerically dominant taxa found in the sample

Other_Elements: Taxa found in the sample that may have important ecological roles within the community and/or interesting features

Acoustic_Patch_Type: Patch types identified from multi-segmentation image analysis of the backscatter mosaic of the Phase II study area

Acoustic_Patch_Type_Classification: General sediment type classification of the Acoustic Patches

Season: Season in which the sample was collected, fall = late November early December 2017; spring= May 2018

S: Taxonomic Richness; the total number of taxa found in the sample

N: Total Abundance; the total number of individuals of all taxa found in the sample

H_log10: Shannon Diversity H' ; calculated using log base 10, higher values indicate higher diversity as a combination of taxonomic richness and relative abundances of the taxa in the sample

Comm_Desig: Community Designation; infaunal communities identified in multivariate analyses of the data, see below for general community descriptions

ENV_Long_Q: the sample sites divided by quartiles of longitude in Phase II study area

DETAILED DESCRIPTIONS:

<i>Biotic Groups - CMECS Classification</i>	
<i>Clam Bed</i>	<i>Sample dominated by bivalves</i>
<i>Clam Bed / Burrowing Fauna</i>	<i>Sample dominated by bivalves and burrowing fauna, generally polychaetes</i>
<i>Clam Bed / Small Tube Building Fauna</i>	<i>Sample dominated by bivalves and small tube builders, generally spionid polychaetes</i>
<i>Clam Bed / Tube Building and Burrowing Fauna</i>	<i>Sample dominated by bivalves with tube building and burrowing polychaetes of varied sizes</i>

<i>Faunal Bed</i>	<i>No evident dominant taxa</i>
<i>Large Tube Building Fauna</i>	<i>Mostly large tube building fauna such as bamboo worms</i>
<i>Mollusc Bed</i>	<i>Sample dominated by both bivalves and other molluscs</i>
<i>Mollusc Bed / Burrowing Fauna</i>	<i>Sample dominated by both bivalves and other molluscs and burrowing polychaetes</i>
<i>Mollusc Bed / Burrowing Fauna / Motile Fauna</i>	<i>as above but with surface motile taxa</i>
<i>Mollusc Bed / Tube Building and Burrowing Fauna</i>	<i>Sample dominated by bivalves and other molluscs with tube building and burrowing polychaetes of varied sizes</i>
<i>Mollusc Bed / Tube Building Fauna</i>	<i>Sample dominated by bivalves and other molluscs with tube building polychaetes</i>
<i>Motile Crustaceans</i>	<i>Sample dominated by surficial motile crustaceans</i>
<i>Motile Gastropods and Crustacea</i>	<i>Sample dominated by gastropods and crustaceans</i>
<i>Motile Surface Fauna</i>	<i>sample with surface motile fauna but no dominant taxa</i>
<i>Ophiuroids / Clam Bed</i>	<i>Brittle stars and bivalves</i>
<i>Sand Dollar Bed</i>	<i>Sample with large numbers of sand dollars</i>
<i>Sessile and Mobile Molluscs</i>	<i>Sample with gastropods and mix of sessile molluscs</i>
<i>Small & Large Tube Building Fauna</i>	<i>Sample dominated by large and small builders such as spionids and bamboo worms</i>
<i>Small Surface-Burrowing Fauna</i>	<i>Sample dominated by small polychaetes usually living just below the surface of the sediment</i>
<i>Small Tube Building Fauna</i>	<i>Sample dominated by tube building polychaete such as spionids</i>
<i>Tube Building Fauna</i>	<i>Sample dominated by a variety of tube building polychaetes</i>
<i>Tube Building and Burrowing Fauna</i>	<i>Sample dominated by a variety of tube building and burrowing fauna</i>
<i>Tube Building and Burrowing Fauna / Clam Bed</i>	<i>Sample dominated by a variety of tube building and burrowing fauna and bivalves</i>
<i>Tube Building and Burrowing Fauna / Mollusc Bed</i>	<i>Sample dominated by a variety of tube building and burrowing fauna and molluscs</i>

Community Designation

Community Type	Taxa making up ~ 70% of the total distinctness of the community (see Final Report for details; see Phase II Infauna Master.xlsx for full taxonomic identifications)
a	<i>Mulinia lateralis</i> , <i>Nucula proxima</i> , <i>Asychis elongatus</i> , <i>Anadara transversa</i>
b	<i>Astarte</i> spp., <i>Anadara transversa</i>
c	<i>Astarte</i> spp., <i>Glycera capitata</i> , <i>Echinarachnius parma</i> , <i>Paraonis fulgens</i> , <i>Astarte castaneum</i>
d	<i>Marenzallaria viridis</i> , <i>Nephtys picta</i> , <i>Corophium</i> spp., <i>Spiophanes bombyx</i> , <i>Mediomastus ambiseta</i> , <i>Protohaustorius wigleyi</i> , <i>Praxillella praetermissa</i> , <i>Sabellaria vulgaris</i> , <i>Magelona papilliformis</i> , <i>Tellina agilis</i> , <i>Chiridotea tuftsii</i>
e	<i>Crepidula fornicata</i> , <i>Pista cristata</i> , <i>Arabella iricolor</i> , <i>Astyris lunant</i> , <i>Diastylis ratheki</i>
f	<i>Corophium</i> spp., <i>Crepidula fornicata</i> , <i>Nicomache lumbricalis</i> , <i>Praxillella praetermissa</i> , <i>Ceriantheopsis americanus</i> , <i>Cirratulus cirratus</i>
g	<i>Crepidula fornicata</i> , <i>Astyris lunata</i> , <i>Crepidula plana</i> , <i>Corophium</i> spp., <i>Anadara transversa</i> , <i>Astarte</i> spp., <i>Pyramidellidae</i> Family, <i>Lepidonotus squamatus</i> , <i>Pagurus longicarpus</i>
h	<i>Astarte</i> spp., <i>Corophium</i> spp., <i>Mytilus edulis</i> , <i>Praxillella praetermissa</i> , <i>Spiophanes bombyx</i> , <i>Ampharete arctica</i> , <i>Pagurus longicarpus</i> , <i>Lepidonotus squamatus</i> , <i>Nicomache lumbricalis</i>
i	<i>Corophium</i> spp., <i>Astarte</i> spp., <i>Mediomastus ambiseta</i> , <i>Pagurus longicarpus</i> , <i>Arabella iricolor</i> , <i>Tharyx acutus</i> , <i>Lyonsia hyalina</i> , <i>Nucula</i> spp, <i>Scalibregma inflatum</i> , <i>Anadara transversa</i> , <i>Asychis elongatus</i> , <i>Spiochaetopterus costarum oculatus</i> , <i>Nephtys picta</i> , <i>Astarte undata</i> , <i>Amphipholis squamata</i> , <i>Nicomache lumbricalis</i> , <i>Spiophanes bombyx</i> , <i>Syllidae</i> , <i>Amphipholis abditis</i>
j	<i>Astarte</i> spp., <i>Ampharete arctica</i> , <i>Harmothoe imbricata</i> , <i>Corophium</i> spp., <i>Glycera capitata</i> , <i>Spiophanes bombyx</i> , <i>Pagurus longicarpus</i> , <i>Anadara transversa</i> , <i>Nicomache lumbricalis</i> , <i>Mediomastus ambiseta</i> , <i>Cirratulus cirratus</i> , <i>Marenzallaria viridis</i> , <i>Marphysa sanguinea</i> , <i>Praxillella praetermissa</i> , <i>Paraonis fulgens</i> , <i>Glycera dibranchiata</i> , <i>Mytilus edulis</i> , <i>Mulinia lateralis</i> , <i>Astarte undata</i>
k	<i>Astarte</i> spp., <i>Corophium</i> spp., <i>Glycera capitata</i> , <i>Mediomastus ambiseta</i> , <i>Spiophanes bombyx</i> , <i>Paraonis fulgens</i> , <i>Tharyx acutus</i> , <i>Anadara transversa</i> , <i>Syllidae</i> , <i>Astyris lunata</i> , <i>Cirratulus cirratus</i> , <i>Praxillella praetermissa</i> , <i>Crepidula fornicata</i> , <i>Ampelisca vadorum</i> , <i>Pagurus longicarpus</i>

<i>l</i>	<i>Ampelisca vadorum, Praxillella praetermissa, Spiophanes bombyx, Pagurus longicarpus, Corophium spp., Arabella iricolor, Spiochaetopterus costarum oculatus, Nephtys incisa, Nicomache lumbricalis, Mediomastus ambiseta, Scalibregma inflatum, Clymenella torquata, Nephtys picta</i>
<i>m</i>	<i>Phoxocephalus holbolli, Nephtys picta, Pagurus longicarpus, Tellina agilis, Paraonis fulgens, Glycera capitata, Ilyanassa trivittata</i>

Metadata reference: Roman N. Zajac, University of New Haven, rzajac@newhaven.edu

Infaunal Community Database for the Long Island Sound Cable Fund Initiative Phase II area of eastern Long Island Sound

METADATA

Dataset Originator: *University of New Haven; Roman N. Zajac*

Publication Date: *6/30/2021*

Dataset Title: *Community composition and abundance at infaunal sample sites in eastern Long Island Sound.*

Online Linkage: *<http://www.marine-geo.org/portals/lis/>*

Abstract: *This Excel file contains data for taxa and their abundance at for each infaunal sample site in the Long Island Sound Cable Fund Initiative Phase II area of eastern Long Island Sound. The data were collected using the USGS SEABOSS system on the Research Vessel Connecticut (University of Connecticut) in November/December 2017 and May 2018.*

Dataset purpose: *This dataset provides the data for the composition and abundance of all infaunal taxa in the Phase II study area which formed the basis of analyzing infaunal community characteristics relative to environmental features and the distribution of patch types in the Phase II study area to meet the Long Island Sound Cable Fund's goal of ecological characterization of the Long Island Sound sea floor in conjunction with habitat mapping efforts.*

Time period of content: *These data were collected over a 10-day spans in November / December 2017 and May 2018*

Dataset Status: *Complete*

Update Frequency: *None Planned*

Theme Keywords: *Benthic ecology, Infauna, Sea floor communities, Coastal and Marine Ecological Classification Standard, CMECS, Connecticut, New York, Long Island Sound, Fishers Island Sound, estuary, Long Island Sound Mapping and Research Collaborative, LISMaRC*

Access Constraints: *none*

Use Constraints:

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Point of Contact: Roman N. Zajac, University of New Haven, rzajac@newhaven.edu

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 Seafloor Mapping Fund 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: *All attributes were evaluated during data processing and analysis as standard quality control to ensure attributes contain accurate and relevant information and values.*

Completeness: *The information provided on infaunal communities is complete*

Positional accuracy: *Doeas not appy but positions of all samples can be obtained in the associated shapefiles*

Process Steps: *Sediment samples were obtained using the USGS SEABOSS system were washed on a 1 mm sieve using filtered seawater and preserved in 70% ethanol. Samples were sorted using a dissecting microscope and all individuals identified to the lowest taxonomic level possible. All taxonomy was verified using the World Register of Marine Species (WoRMS) <http://www.marinespecies.org/index.php>)*

Attributes:

Top Row: Provides sampling station identifiers for sampling stations in columns

Subsequent rows: Provide the number of individuals of any specific taxon found in the sample; sample area was 0.1 m²

First four columns provide the name of the taxon, and its Phylum, Class, and Family

Metadata reference: Roman N. Zajac, University of New Haven, rzajac@newhaven.edu