Epifaunal abundance and diversity in McMurdo Sound, Antarctica from October 2010 (McMurdo Marine Benthos project)

Website: https://www.bco-dmo.org/dataset/4050
Version: 2
Version Date: 2013-11-06

Project
» Decadal Variation in Antarctic Marine Benthic Ecosystems (McMurdo Marine Benthos)

Contributors	Affiliation	Role
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Dataset Description

Epifaunal abundance and diversity in McMurdo Sound, Antarctica in 2010, from ROV images.

Methods & Sampling

Sampling and Analytical Methodology:
Seafloor imagery was collected by a remotely operated vehicle (SCINI) during the austral summer 2010. Surface (dive hole) locations were recorded with a handheld GPS, and quadrants were located within 200 m of the hole. Depths were accurate to 2%. Images were scaled with parallel lasers, from which we determined total area quantified, as well as area, length and/or diameter of individual organisms. Each line in the database indicates the presence of one individual of the taxa in that quadrant, even when there is no data listed for organism area or size; this allows abundance to be calculated. Organisms were identified to the lowest possible taxonomic category.

Data Processing Description

Related Literature:

LTERB proposal, "Collaborative Research: Decadal variation in Antarctic marine benthic ecosystems"

Cazenave, F, R Zook, D Carroll, M Flagg, S Kim. 2011. Development of the ROV SCINI and deployment in McMurdo Sound, Antarctica. Journal of Ocean Technology 6(3):39-58.

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Data Files

File
McMurdo_transects_v2c.csv (Comma Separated Values (.csv), 574.74 KB) MD5:43b53560bffa3a43cfbe27774d512c71 Primary data file for dataset ID 4050

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Parameters

Parameter	Description	Units
lat	latitude; North is positive; negative denotes South	decimal degrees
lon	longitude; East is positive; negative denotes West	decimal degrees
phylum	taxonomic phylum of organism	unitless
class	taxonomic class of organism	unitless
order	taxonomic order of organism	unitless
family	taxonomic family of organism	unitless
length	length of organism	centimeters
diameter_cm	diameter of organism	centimeters
area_organism_cm2	area of organism	centimeters squared
area_photo_cm2	area of organism	centimeters squared
year	year of sampling	unitless
month_local	month; local time	unitless
day_local	day of month; local time	unitless
synonomy	other identifying notes	unitless
depth_min	shallower depth of the range sampled	meters
depth_max	deeper depth of the range sampled	meters
species	the taxonomic binomial consisting of the genus name followed by the species name of the organism (separated with an underscore)	unitless
sta	station identifier	unitless

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Instruments

Dataset-specific Instrument Name	ROV
Generic Instrument Name	Remotely Operated Vehicle
Dataset-specific Description	Submersible Capable of under Ice Navigation and Imaging (SCINI) is a small, slender vehicle that can fit through a 20 cm hole in the ice, allowing for deployment without heavy drilling equipment and with minimal logistical support. Its maximum depth capability is 300 m. SCINI is equipped with two video cameras, scaling lasers, and lights, with forward speeds of up to 4 knots. SCINI uses Ethernet over power on a 400 m long two-wire tether. A long baseline acoustic positioning system is used for navigation which uses a combination of two to four acoustic transducers hanging below the ice and a synchronized pinger on the vehicle for positional accuracy of better than 1 metre. [See Cazenave, F, R Zook, D Carroll, M Flagg, S Kim. 2011. Development of the ROV SCINI and deployment in McMurdo Sound, Antarctica. Journal of Ocean Technology 6(3):39-58.]
Generic Instrument Description	Remotely operated underwater vehicles (ROVs) are unoccupied, highly maneuverable underwater robots operated by a person aboard a surface vessel. They are linked to the ship by a group of cables that carry electrical signals back and forth between the operator and the vehicle. Most are equipped with at least a video camera and lights. Additional equipment is commonly added to expand the vehicle's capabilities. These may include a still camera, a manipulator or cutting arm, water samplers, and instruments that measure water clarity, light penetration, and temperature.

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Deployments

McMurdo_SCINI_2010

Website	https://www.bco-dmo.org/deployment/59093
Platform	shoreside McMurdo_Dayton
Start Date	2010-10-01
End Date	2010-12-30
Description	Submersible Capable of under Ice Navigation and Imaging (SCINI) is a small, slender vehicle that can fit through a 20 cm hole in the ice, allowing for deployment without heavy drilling equipment and with minimal logistical support. Its maximum depth capability is 300 m. SCINI is equipped with two video cameras, scaling lasers, and lights, with forward speeds of up to 4 knots. SCINI uses Ethernet over power on a 400 m long two-wire tether. A long baseline acoustic positioning system is used for navigation which uses a combination of two to four acoustic transducers hanging below the ice and a synchronized pinger on the vehicle for positional accuracy of better than 1 metre. [See Cazenave, F, R Zook, D Carroll, M Flagg, S Kim. 2011. Development of the ROV SCINI and deployment in McMurdo Sound, Antarctica. Journal of Ocean Technology 6(3):39-58.]

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Project Information

Decadal Variation in Antarctic Marine Benthic Ecosystems (McMurdo Marine Benthos)

Website: http://iceaged2010.mlml.calstate.edu/

Coverage: Western Antarctic

From proposal abstract:

The ability to document and understand long-term trends in ocean climate and ecology, including the role of human activities on the biosphere, depends on an adequate knowledge of natural interdecadal fluctuations. The proposed research will document changes in benthic ecosystems in McMurdo Sound over the last four decades, i.e., since the beginning of quantitative studies of population and community organization in this region. The investigators will retrieve, analyze, and archive historical data of benthic assemblages in both hard and soft substrata, and continue work on several time series projects begun in the mid-1960s and early 1970s. The investigators will focus on the succession of marine invertebrate communities that have settled and survived on a variety of artificial substrates placed on the sea floor from the late 1960s to 1989. The substrates harbor several decades of information on patterns of settlement, growth, survival, longevity, overgrowth and other biological interactions and processes. The original researchers will relocate and permanently mark (with GPS) historical sampling sites; recover data from as much of the historical work as possible; provide meta-data to insure that past data are understood and sites can be properly resampled; and make all data available to the general science community in a permanent database housed at SCAR-MarBIN. The proposed work will be closely coordinated with an international macroecology program in the Ross Sea, represented by collaborator Simon Thrush (Latitudinal Gradient Project). In addition to reporting results in peer-reviewed publications and providing research support and opportunities for at least two graduate students, the investigators also will involve undergraduate and high school interns in the project, and participate in teacher education programs. The investigators will continue ongoing collaborations with K-12 outreach and college programs that focus on ocean science, and develop a new, broader public outreach effort with the Birch Aquarium at Scripps Institution of Oceanography.

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Funding

Funding Source	Award
NSF Antarctic Sciences (NSF ANT)	ANT-0842064

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