Chlorophyll data from McMurdo Sound, Antarctica from 2012 to 2015 (McMurdo Predator Prey project)

Website: https://www.bco-dmo.org/dataset/679685
Version:
Version Date: 2017-02-08

Project
» Food web dynamics in an intact ecosystem: the role of top predators in McMurdo Sound (McMurdo Predator Prey)

Contributors	Affiliation	Role
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Coverage

Spatial Extent: **N**:-77.5843 **E**:166.0604 **S**:-77.6722 **W**:165.8024
Temporal Extent: 2012-11-12 - 2015-01-09

Dataset Description

This dataset includes chlorophyll, phaeopigments, depth, lat, lon, and station from McMurdo Sound, Antarctica collected between the austral years 2012/2013 and 2014/2015.

Methods & Sampling

Small holes were drilled through the McMurdo Sound fast ice. A Niskin Bottle was deployed below the fast ice and water was collected just below the ice-water interface and at a pre-determined depth (Chlorophyll maximum) as determined by a fluorescence sensor on a CTD. Water samples from the Niskin bottles were collected in 4 L amber Nalgene bottles and then immediately stored in a dark cooler. Gloves were worn for sample collection and bottles and caps were rinsed three times before sample collection. The sample bottles were immediately processed as soon as they returned from the field. The collection bottle was gently swirled and 50 to 2000 mL were filtered under low vacuum onto a 25 mm GF/F filter. Filters were immediately placed in 13 mm borosilicate test tubes containing 7 mL 90% v/v HPLC grade acetone and extracted in the dark for 24 h at -20 degrees C. After extraction, fluorescence was measured with a Turner Designs 10 AU fluorometer before and after acidification. The fluorometer was calibrated at McMurdo Station at the beginning of the field

season using Chlorophyll a standards from Sigma-Aldrich and rechecked using a solid standard from Turner Designs several times during the field season. Chlorophyll a was determined using the methods of Parsons et al. (1984).

Reference:
Parsons, T.R., Maita, Y., Lalli, C.M., 1984. A Manual of Chemical and Biological Methods for Seawater Analysis. Pergamon Press, New York, pp. 107–110.

Data Processing Description

BCO-DMO Data Manager Processing Notes:
* added a conventional header with dataset name, PI name, version date
* modified parameter names to conform with BCO-DMO naming conventions
* blank values replaced with no data value 'nd'
* changed all dates to yyyy-mm-dd that were not already

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Data Files

File
chl.csv (Comma Separated Values (.csv), 9.22 KB) MD5:8cb7d657f43b4aa60202f75c0c9b43b4 Primary data file for dataset ID 679685

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Parameters

Parameter	Description	Units
station	CTD station name where niskin bottle sample acquired	unitless
date	Date in format yyyy-mm-dd in local time (UTC+12)	unitless
lat	Latitude of CTD cast; north is positive	decimal degrees
lon	Longitude of CTD cast; west is negative	decimal degrees
depth	Depth of sample	meters
chl	Chlorophyll a	micrograms per liter (ug/L)
phaeo	Phaeopigments	micrograms per liter (ug/L)

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Instruments

Dataset-specific Instrument Name	
Generic Instrument Name	CTD Sea-Bird SBE SEACAT 19plus
Generic Instrument Description	Self contained self powered CTD profiler. Measures conductivity, temperature and pressure in both profiling (samples at 4 scans/sec) and moored (sample rates of once every 5 seconds to once every 9 hours) mode. Available in plastic or titanium housing with depth ranges of 600m and 7000m respectively. Minature submersible pump provides water to conductivity cell.

Dataset-specific Instrument Name	
Generic Instrument Name	Niskin bottle
Generic Instrument Description	A Niskin bottle (a next generation water sampler based on the Nansen bottle) is a cylindrical, non-metallic water collection device with stoppers at both ends. The bottles can be attached individually on a hydrowire or deployed in 12, 24, or 36 bottle Rosette systems mounted on a frame and combined with a CTD. Niskin bottles are used to collect discrete water samples for a range of measurements including pigments, nutrients, plankton, etc.

Dataset-specific Instrument Name	WET Labs ECO-AFL/FL
Generic Instrument Name	Wet Labs ECO-AFL/FL Fluorometer
Generic Instrument Description	The Environmental Characterization Optics (ECO) series of single channel fluorometers delivers both high resolution and wide ranges across the entire line of parameters using 14 bit digital processing. The ECO series excels in biological monitoring and dye trace studies. The potted optics block results in long term stability of the instrument and the optional anti-biofouling technology delivers truly long term field measurements. more information from Wet Labs

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Deployments

McMurdo_CTDs_2012-2014

Website	https://www.bco-dmo.org/deployment/679688
Platform	McMurdo Station
Start Date	2012-11-12
End Date	2015-01-09

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Project Information

Food web dynamics in an intact ecosystem: the role of top predators in McMurdo Sound (McMurdo Predator Prey)

Website: https://scini-penguin.mlml.calstate.edu/pauls-wordpress-test-site/

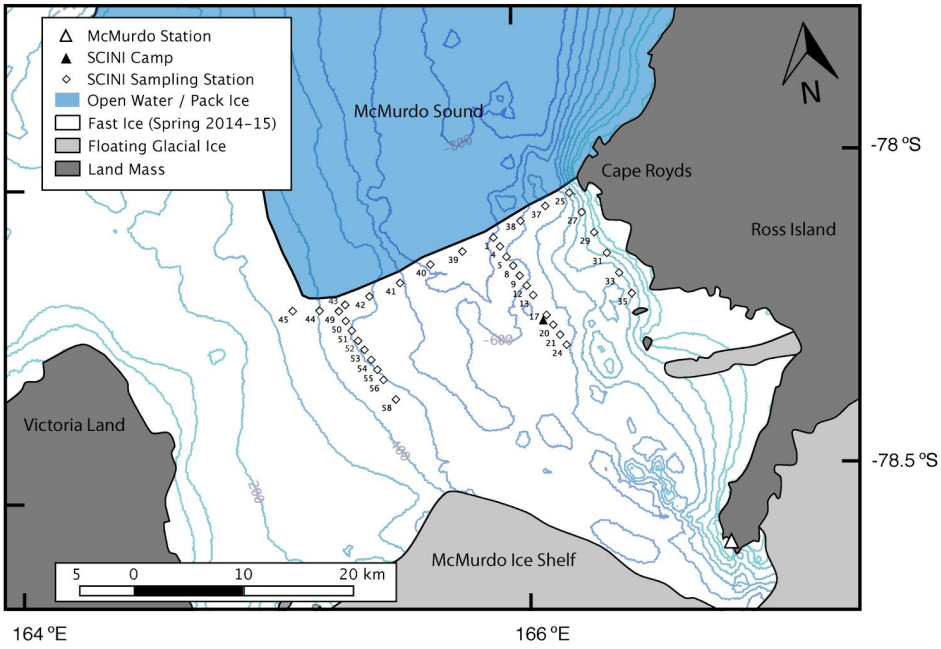
Coverage: McMurdo Sound, Antarctica

Extracted from the NSF award abstract:

The research project investigates the importance of top down forcing on pelagic food webs. The relatively pristine Ross Sea includes large populations of upper-level predators such as minke and killer whales, Adélie and Emperor penguins, and Antarctic toothfish. This project focuses on food web interactions of Adélie penguins, minke whales, and the fish-eating Ross Sea killer whales, all of which exert foraging pressure on their main prey, crystal krill (*Euphausia cyrstallorophias*) and silver fish (*Pleuragramma antarcticum*) in McMurdo Sound.

The investigators used a video- and acoustic-capable ROV, and standard biological and environmental sensors to quantify the abundance and distribution of phytoplankton, sea ice biota, prey, and relevant habitat data. The sampling area included 37 stations across an 30 x 15 km section of McMurdo Sound, stratified by distance from the ice edge as a proxy for air-breathing predator access. This study will be among the first to assess top-down forcing in the Ross Sea ecosystem and will form the basis for multidisciplinary studies in the future.

Map sampling stations



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Funding

Funding Source	Award
NSF Division of Polar Programs (NSF PLR)	PLR-0944511

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