Larval krill studies - fluorescence and clearance from ARSV Laurence M. Gould LMG0106, LMG0205 in the Southern Ocean from 2001-2002 (SOGLOBEC project)

Website: https://www.bco-dmo.org/dataset/3300
Data Type: Cruise Results
Version: 1
Version Date: 2010-02-03

Project
» U.S. GLOBEC Southern Ocean (SOGLOBEC)

Program
» U.S. GLOBal ocean ECosystems dynamics (U.S. GLOBEC)

Contributors	Affiliation	Role
Quetin, Langdon	University of California-Santa Barbara (UCSB)	Principal Investigator
Ross, Robin	University of California-Santa Barbara (UCSB)	Principal Investigator, Contact
Copley, Nancy	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Abstract
The goal of the larval krill studies was to investigate the physiology and ecology of krill larvae associated with the pack ice and the microbial community on which they feed. During LMG0106 we occupied two 4-5 day ice stations (Robert and Billy) and sampled several other ice floes opportunistically. We conducted 10 instantaneous growth rate experiments, and 4 whole body clearance time experiments to determine gut passage time (decline in pigment content over time). We also sampled larvae at two additional sites for initial body pigment content (whole body fluorescence), and at 4 sites for condition factor. The under-ice algal community was sampled at one site. Length and stage frequency determinations were also determined. We occupied three time-series stations of approximately 1 week each, and in addition opportunistically sampled at times when other activities had priority. Our primary goal during the cruise was to occupy three ice camps or process stations with the intent of thoroughly studying the under-ice environment by SCUBA in conjunction with other projects working topside. (from cruise report LMG0205)

Table of Contents

Coverage

Spatial Extent: **N**:-65.08 **E**:-68.5033 **S**:-68.4817 **W**:-75.8183
Temporal Extent: 2001-08-06 - 2002-09-09

Dataset Description

"Winter ecology of larval krill: quantifying their interaction with the pack ice habitat"

The goal of the larval krill studies was to investigate the physiology and ecology of krill larvae associated with the pack ice and the microbial community on which they feed.

During LMG0106 we occupied two 4-5 day ice stations (Robert and Billy) and sampled several other ice floes opportunistically. We conducted 10 instantaneous growth rate experiments, and 4 whole body clearance time experiments to determine gut passage time (decline in pigment content over time). We also sampled larvae at two additional sites for initial body pigment content (whole body fluorescence), and at 4 sites for condition factor. The under-ice algal community was sampled at one site. Length and stage frequency determinations were also determined.

We occupied three time-series stations of approximately 1 week each, and in addition opportunistically sampled at times when other activities had priority. Our primary goal during the cruise was to occupy three ice camps or process stations with the intent of thoroughly studying the under-ice environment by SCUBA in conjunction with other projects working topside. *(from cruise report LMG0205)*

Methods & Sampling

Using SCUBA techniques allowed us to collect larval krill as close as possible to their in situ condition. Larval krill were collected for time-based experimentation at the dive hole, for shipboard experiments and preserved for later analysis. Samples of the micro-zooplankton community were sampled with suction samplers to gain a better understanding of food available to the larvae relative to their distribution under the ice. In addition, at one of the process stations we were able to deploy drift nets through the dive holes to compare day/night differences in the zooplankton community at depths of 1 m and 10 m below the ice-water interface. *(from cruise report LMG0205)*

Data Processing Description

We collected enough krill for 12 Instantaneous Growth Rate (IGR) experiments, 15 collections for whole body fluorescence experiments (WBF), 11 collections for whole body clearance experiments (WBC), and 9 collections for condition factor. Measurements of length and stage frequency of the dive and net krill collections were done routinely. *(from cruise report LMG0205)*

Associated datasets:
larval_krill_sum - summary of experiments
larval_krill_cf - condition factor, C:N ratio
larval_krill_gr - growth study

[table of contents | back to top]

Data Files

File
larval_krill_pig.csv (Comma Separated Values (.csv), 15.18 KB) MD5:826a9b06c5a7cc07ec0e17d1348e3fe9 Primary data file for dataset ID 3300

[table of contents | back to top]

Parameters

Parameter	Description	Units
cruiseid	cruise identification	text
year	year of experiment in YYYY format	unitless
sample_id	sample identification: WBC=whole body clearance expt.; WBF=whole body fluorescence on collection	alpha-numeric
lat	latitude, in decimal degrees, North is positive, negative denotes South	decimal degrees
lon	longitude, in decimal degrees, East is positive, negative denotes West	decimal degrees
day_local	day of month, local time	
month_local	month, local time	
time_local	time of day, local time, using 2400 clock format	
yrday_local	local day and decimal time, as 326.5 for the 326th day of the year, or November 22 at 1200 hours (noon)	
time_sample	time of sampling for pigment content after collection; decline of pigment content with time was used to calculate time to clear the gut of pigment.	minutes
pigment_content	pigment content	micrograms total chl/grams wet weight
stage_id	stage development index of larvae in sample (furcilia = F1-6 = 1-6, juvenile = J=7)	
wet_weight	average wet weight/larvae in sample	mg

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	Hand-net
Generic Instrument Name	Hand-held plankton net
Generic Instrument Description	A Hand-held plankton net is a fine-meshed net designed for sampling microzooplankton, mesozooplankton or nekton.

Dataset-specific Instrument Name	SCUBA
Generic Instrument Name	Manual Biota Sampler
Generic Instrument Description	"Manual Biota Sampler" indicates that a sample was collected in situ by a person, possibly using a hand-held collection device such as a jar, a net, or their hands. This term could also refer to a simple tool like a hammer, saw, or other hand-held tool.

[table of contents | back to top]

Deployments

LMG0106

Website	https://www.bco-dmo.org/deployment/57639
Platform	ARSV Laurence M. Gould
Report	http://www.ccpo.odu.edu/Research/globec/cruises01/lmg0106_menu.html
Start Date	2001-07-21
End Date	2001-09-01

LMG0205

Website	https://www.bco-dmo.org/deployment/57644
Platform	ARSV Laurence M. Gould
Report	http://www.ccpo.odu.edu/Research/globec/main_cruises02/lmg0205/report_lmg0205.pdf
Start Date	2002-07-29
End Date	2002-09-18

[table of contents | back to top]

Project Information

U.S. GLOBEC Southern Ocean (SOGLOBEC)

Website: http://www.ccpo.odu.edu/Research/globec_menu.html

Coverage: Southern Ocean

The fundamental objectives of United States Global Ocean Ecosystems Dynamics (U.S. GLOBEC) Program are dependent upon the cooperation of scientists from several disciplines. Physicists, biologists, and chemists must make use of data collected during U.S. GLOBEC field programs to further our understanding of the interplay of physics, biology, and chemistry. Our objectives require quantitative analysis of interdisciplinary data sets and, therefore, data must be exchanged between researchers. To extract the full scientific value, data must be made available to the scientific community on a timely basis.

[table of contents | back to top]

Program Information

U.S. GLOBal ocean ECosystems dynamics (U.S. GLOBEC)

Website: http://www.usglobec.org/

Coverage: Global

U.S. GLOBEC (GLOBal ocean ECosystems dynamics) is a research program organized by oceanographers and fisheries scientists to address the question of how global climate change may affect the abundance and production of animals in the sea.

The U.S. GLOBEC Program currently had major research efforts underway in the Georges Bank / Northwest Atlantic Region, and the Northeast Pacific (with components in the California Current and in the Coastal Gulf of Alaska). U.S. GLOBEC was a major contributor to International GLOBEC efforts in the Southern Ocean and Western Antarctic Peninsula (WAP).

[table of contents | back to top]

Funding

Funding Source	Award
NSF Antarctic Sciences (NSF ANT)	ANT-9909933

[table of contents | back to top]