

# Zooplankton net haul metadata and specimen removal records collected from the R/V Gunnerus in the Tronheimsfjord, Norway during 2012 (Calanus Diapause project)

Website: <https://www.bco-dmo.org/dataset/551905>

Version: 2015-02-18

## Project

» [Identification of Diagnostic Markers of Diapause Preparation in the Copepod Calanus finmarchicus](#)

(Calanus\_Diapause)

Contributors	Affiliation	Role
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## Dataset Description

This dataset consists of metadata associated with zooplankton net tows taken in Trondheimsfjord, Norway in spring 2012. A list of the specimens removed from the sample are also provided here.

## Methods & Sampling

Zooplankton samples were collected in Trondheimsfjord near Trondheim, Norway from 3 May to 11 June 2012 using a Sea-Gear 75-cm diameter ring net equipped with 150 micron mesh net and a cod end. Oblique tows were conducted over the upper ~50 m for nearly all tows. A close-open-close mechanism was used to collect zooplankton samples with the same net between roughly 250 and 350 m on three occasions. The volume filtered by the net was estimated using a General Oceanics flowmeter suspended in the center of the net mouth, and sample depths were measured using a SeaBird SBE39 depth-temperature recorder. Zooplankton samples were held on ice during transport back to the NTNU/SINTEF laboratory in Trondheim. Samples were live sorted to remove some late-stage *Calanus finmarchicus*, and then preserved in 5% buffered formalin. A small aliquot (subsample) of the bulk sample was removed and all taxa contained therein were enumerated. Species- or taxon-specific abundance of zooplankton was estimated from the raw counts, the subsample volume, sample volume, and the volume filtered by the net.

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## Data Files

**File**

**haul\_meta.csv**(Comma Separated Values (.csv), 6.45 KB)  
MD5:1b4cf70739f12028f6c85bf59b649925

Primary data file for dataset ID 551905

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**Parameters**

Parameter	Description	Units
station	sampling location	unitless
cruise_name	cruise name assigned by PI	unitless
year	sampling year	yyyy
haul	plankton tow number	unitless
date	sampling date	yyyy-mm-dd
lat_start	latitude at start of haul; north is positive	decimal degrees
lon_start	longitude at start of haul; east is positive	decimal degrees
lat_end	latitude at end of haul; north is positive	decimal degrees
lon_end	longitude at end of haul; east is positive	decimal degrees
time_start	local time at start of haul	HH:MM:SS
time_end	local time at end of haul	HH:MM:SS
wire_out	meters of wire out	meters
depth_w	depth of water	meters
gear_type	type of sampling gear: ring = ring net	unitless
mesh	plankton net mesh size	microns

net_diam	net diameter	meters
haul_type	type of haul: vertical or oblique	unitless
depth_start	depth at start of sample collection	meters
depth_end	depth at end of sample collection	meters
flow_serial_num	flow meter serial number	unitless
flow_count_start	initial flow count reading	unitless
flow_count_end	final flow count reading	unitless
flow_revolutions	number of flow count revolutions	revolutions
flow_cal_constant	flow meter calibration constant	meters/revolution
volume_haul	volume of water filtered during haul	cubic meters
taxa_removed_1	taxa removed from sample (1)	unitless
num_removed_1	Number removed from sample (1)	specimens
taxa_removed_2	taxa removed from sample (2)	unitless
num_removed_2	Number removed from sample (2)	specimens
taxa_removed_3	taxa removed from sample (3)	unitless
num_removed_3	Number removed from sample (3)	specimens
vol_subsample	volume of subsample	milliliters
vol_sample	sample volume	milliliters
processed_flag	flag designating sample processed: 1 = yes	unitless

ISO_DateTime_Local_start	Local date and time in ISO format	YYYY-MM-DDTHH:MM:SS.xx
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## Instruments

<b>Dataset-specific Instrument Name</b>	Flow Meter
<b>Generic Instrument Name</b>	Flow Meter
<b>Dataset-specific Description</b>	General Oceanics flowmeter
<b>Generic Instrument Description</b>	General term for a sensor that quantifies the rate at which fluids (e.g. water or air) pass through sensor packages, instruments, or sampling devices. A flow meter may be mechanical, optical, electromagnetic, etc.

<b>Dataset-specific Instrument Name</b>	Ring Net
<b>Generic Instrument Name</b>	Ring Net
<b>Dataset-specific Description</b>	Sea-Gear 75-cm diameter ring net equipped with 150 micron mesh net and a cod end
<b>Generic Instrument Description</b>	A Ring Net is a generic plankton net, made by attaching a net of any mesh size to a metal ring of any diameter. There are 1 meter, .75 meter, .25 meter and .5 meter nets that are used regularly. The most common zooplankton ring net is 1 meter in diameter and of mesh size .333mm, also known as a 'meter net' (see Meter Net).

<b>Dataset-specific Instrument Name</b>	Temperature and depth recorder
<b>Generic Instrument Name</b>	Water Temperature Sensor
<b>Dataset-specific Description</b>	SeaBird SBE39 depth-temperature recorder
<b>Generic Instrument Description</b>	General term for an instrument that measures the temperature of the water with which it is in contact (thermometer).

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## Deployments

**Baumgartner\_fjord\_2012**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/551934">https://www.bco-dmo.org/deployment/551934</a>
<b>Platform</b>	R/V Gunnerus
<b>Start Date</b>	2012-05-03
<b>End Date</b>	2012-06-11
<b>Description</b>	Zooplankton sampling on the RV Gunnerus (102') and RV Calanus (~22') out of the Norwegian University of Science and Technology (NTNU). Sampling by day trips in Trondheimsfjord.

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## Project Information

### Identification of Diagnostic Markers of Diapause Preparation in the Copepod *Calanus finmarchicus* (*Calanus\_Diapause*)

**Coverage:** Trondheimfjord (near Trondheim, Norway)

*Extracted from the NSF award abstract:*

Oceanic copepods in the family Calanidae, such as *Calanus finmarchicus*, are among the most abundant animals on the planet, and they serve a key role in marine food webs by transferring energy from phytoplankton to higher trophic levels. The life history of these copepods has been well-studied, but fundamental questions remain about the regulation of an important period of dormancy called diapause. In the last juvenile stage of development, *C. finmarchicus* either proceed to the terminal molt (i.e., molt into adults) or vertically migrate to depth and initiate diapause. This divergence in developmental pathways has critical implications for *C. finmarchicus* population dynamics, but is difficult to study experimentally because *C. finmarchicus*, like all other copepods in the family Calanidae, do not reliably enter diapause in the laboratory. In addition, most temperate populations of calanoid copepods have multiple generations in a single year with variability in the timing of reproduction and development that causes significant heterogeneity in age structure. Thus, field sampling of these heterogeneous populations yields a mixture of copepods that are preparing for diapause, are preparing for the terminal molt, or are not yet preparing for either fate. Studies of diapause preparation in such populations are extremely difficult.

To enable direct investigation of the factors that influence diapause initiation, we require markers that reliably predict the fate of individual copepods (entry into diapause or continued maturation to adulthood) within heterogeneous populations. Fortunately, the fjord population of *C. finmarchicus* off the coast of Norway during the late spring is remarkably synchronous and is comprised of juvenile copepods that are all destined to undergo diapause. This project will use high-throughput 454 pyrosequencing to identify genes that change in expression as these copepods progress toward diapause. In collaboration with Norwegian researchers, the investigators will also rear copepods in a unique continuous culture and conduct additional transcriptional profiling to identify genes that change in expression as copepods prepare for the terminal molt. Comparison of gene expression patterns in the wild and cultured populations will enable the principal investigators to develop robust markers of diapause preparation that can be used to study diapause initiation in more heterogeneous temperate populations.

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## Funding

Funding Source	Award
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-1132567</a>

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