

# Zooplankton abundance and biomass from MOCNESS tows from R/V Endeavor, R/V Oceanus EN307, OC332, OC334, EN330, EN331 in the Gulf of Maine and Georges Bank from 1997-1999

Website: <https://www.bco-dmo.org/dataset/3285>

Version: 2

Version Date: 2021-05-18

## Project

» [U.S. GLOBEC Georges Bank](#) (GB)

## Program

» [U.S. GLOBal ocean ECosystems dynamics](#) (U.S. GLOBEC)

Contributors	Affiliation	Role
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## Dataset Description

The primary objective of the project was to quantify the distribution of the diapausing copepod *Calanus finmarchicus* and its primary invertebrate predators in Wilkinson, Jordan, and Georges basins of the Gulf of Maine.

## Methods & Sampling

Zooplankton samples were collected in October (1997-1999) and December (1998-1999) using a 1-meter<sup>2</sup> MOCNESS tow with 9 nets and 335 micron mesh towed obliquely with the first net open on the down-haul and the other 8 nets sequentially opened on the up-haul. Only the contents of the up-haul nets are reported here, including the temperature and salinity measurements

## Data Processing Description

Samples were split and photographed using the silhouette photographic method (Davis, 1985) and then the organisms were identified to taxonomic group and their length measured using Matlab based software described by Little & Copley (2003). Biomass for the taxa were calculated using formulae established by Wiebe et al (1975) and Wiebe (1988). *Calanus* biomass was calculated for each stage and net sample by multiplying the average length of the animals in the sample for that stage by the average wet weight for the same group. One *Calanus*' average wet wgt =  $0.086 \cdot \{\text{avg. len}\}^{2.809}$ .

Small spheres tend to be copepod eggs, large spheres are usually fish eggs, and egg sacs are typically from the copepod *Paraeuchaeta norvegica*.

## References:

Davis, C. S. and Wiebe, P. H. (1985) Macrozooplankton biomass in a warm-core Gulf Stream ring: time series changes in size structure, taxonomic composition, and vertical distribution. *J. Geophys. Res.*, 90, 8871-8884.

Little, W. S. and Copley, N. J. (2003) WHOI Silhouette DIGITIZER version1.0 User's Guide. In: Woods Hole Oceanogr. Inst. WHOI-2003-05: 66 pp.

Wiebe, P. H., Boyd, S. and Cox, J. L. (1975) Relationship between zooplankton displacement volume, wet weight, dry weight and carbon. *Fish. Bull.*, 73, 777-786.

Wiebe, P. H., Burt, K. H., Boyd, S. H., et al. (1976) A multiple opening/closing net and environmental sensing system for sampling zooplankton. *Journal of Marine Research*, 34, 313-326.

Wiebe, P. H. (1988) Functional regression equations for zooplankton displacement volume, wet weight, dry weight, and carbon: A correction. *Fishery Bulletin*, 86, 833-835.

BCO-DMO data manager processing notes:

\* Version 2 (2021-05-18) replaces version 1 (2009-12-23). There was an unsupported character in the source file now fixed after the encoding conversion to utf-8.

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## Data Files

File
<b>zoo_MOC_GoM.csv</b> (Comma Separated Values (.csv), 1.52 MB) MD5:6d9c13bb3a1f8d50205d478cfc77626b
Primary data file for dataset ID 3285

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## Parameters

Parameter	Description	Units
cruiseid	cruise identifier, e.g. EN307 R/V Endeavor cruise 307	
cast	tow number	
site	Basin where sample was collected	
year	year, reported as YYYY, e.g. 2010	
month_local	month of year, local time	
day_local	day, local time	
time_local	time of day, local time, using 2400 clock format	
day_night	whether the tow occurred in the day, night, dawn, dusk	
net	net number	
depth_mid	depth at the midpoint of the opened net, used with MOCNESS tows	meters
depth_interval	thickness of water layer sampled	meters
temp_avg	average temperature of the water for a single net	degrees Celsius
sal_avg	average salinity of the water passing through the net	
taxon3	taxonomic description	
abund	number of the specific taxa/group counted per meter <sup>3</sup>	number/meter <sup>3</sup>
biomass	wet weight of a specific taxa/group identified, in units milligrams per meter <sup>3</sup>	mg/m <sup>3</sup>
comments	comment pertaining to sample	
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
yrday_local	local day and decimal time, as 326.5 for the 326th day of the year, or November 22 at 1200 hours (noon)	
taxon1	subphylum, class, order or family	
taxon2	subphylum, class, order or family	
kingdom	taxonomic kingdom	
phylum	phylum (animal) or division (plants)	
stage	organism life history stage	unitless

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## Instruments

<b>Dataset-specific Instrument Name</b>	MOCNESS1
<b>Generic Instrument Name</b>	MOCNESS1
<b>Dataset-specific Description</b>	1 m <sup>2</sup> MOCNESS with 335 micron mesh, 9 nets.
<b>Generic Instrument Description</b>	The Multiple Opening/Closing Net and Environmental Sensing System or MOCNESS is a family of net systems based on the Tucker Trawl principle. The MOCNESS-1 carries nine 1-m <sup>2</sup> nets usually of 335 micrometer mesh and is intended for use with the macrozooplankton. All nets are black to reduce contrast with the background. A motor/toggle release assembly is mounted on the top portion of the frame and stainless steel cables with swaged fittings are used to attach the net bar to the toggle release. A stepping motor in a pressure compensated case filled with oil turns the escapement crankshaft of the toggle release which sequentially releases the nets to an open then closed position on command from the surface. -- from the MOCNESS Operations Manual (1999 + 2003).

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## Deployments

### EN307

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57424">https://www.bco-dmo.org/deployment/57424</a>
<b>Platform</b>	R/V Endeavor
<b>Report</b>	<a href="http://globec.whoi.edu/globec-dir/reports/en307/greenrpt.html">http://globec.whoi.edu/globec-dir/reports/en307/greenrpt.html</a>
<b>Start Date</b>	1997-10-08
<b>End Date</b>	1997-10-17
<b>Description</b>	process

### OC332

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57456">https://www.bco-dmo.org/deployment/57456</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://globec.whoi.edu/globec-dir/reports/oc332/oc332rpt.html">http://globec.whoi.edu/globec-dir/reports/oc332/oc332rpt.html</a>
<b>Start Date</b>	1998-10-19
<b>End Date</b>	1998-10-30
<b>Description</b>	process

### OC334

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57458">https://www.bco-dmo.org/deployment/57458</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://globec.whoi.edu/globec-dir/reports/oc334/cruise-report.html">http://globec.whoi.edu/globec-dir/reports/oc334/cruise-report.html</a>
<b>Start Date</b>	1998-12-03
<b>End Date</b>	1998-12-13
<b>Description</b>	process

### EN330

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57433">https://www.bco-dmo.org/deployment/57433</a>
<b>Platform</b>	R/V Endeavor
<b>Report</b>	<a href="http://globec.whoi.edu/globec-dir/reports/en330/en330new.htm">http://globec.whoi.edu/globec-dir/reports/en330/en330new.htm</a>
<b>Start Date</b>	1999-10-16
<b>End Date</b>	1999-10-26
<b>Description</b>	process

### EN331

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57434">https://www.bco-dmo.org/deployment/57434</a>
<b>Platform</b>	R/V Endeavor
<b>Report</b>	<a href="http://globec.whoi.edu/globec-dir/reports/en331/en331rpt.6sept2000.html">http://globec.whoi.edu/globec-dir/reports/en331/en331rpt.6sept2000.html</a>
<b>Start Date</b>	1999-12-04
<b>End Date</b>	1999-12-13
<b>Description</b>	process

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## Project Information

### U.S. GLOBEC Georges Bank (GB)

**Website:** [http://globec.whoi.edu/globec\\_program.html](http://globec.whoi.edu/globec_program.html)

**Coverage:** Georges Bank, Gulf of Maine, Northwest Atlantic Ocean

The U.S. GLOBEC [Georges Bank](#) Program is a large multi- disciplinary multi-year oceanographic effort. The proximate goal is to understand the population dynamics of key species on the Bank - Cod, [Haddock](#), and two species of zooplankton ([Calanus finmarchicus](#) and [Pseudocalanus](#)) - in terms of their coupling to the physical environment and in terms of their [predators and prey](#). The ultimate goal is to be able to predict changes in the distribution and abundance of these species as a result of changes in their physical and biotic environment as well as to anticipate how their populations might respond to climate change.

The effort is substantial, requiring broad-scale surveys of the entire Bank, and process studies which focus both on the links between the target species and their physical environment, and the determination of fundamental aspects of these species' life history (birth rates, growth rates, death rates, etc).

Equally important are the modelling efforts that are ongoing which seek to provide realistic predictions of the flow field and which utilize the life history information to produce an integrated view of the dynamics of the

populations.

The U.S. GLOBEC Georges Bank [Executive Committee \(EXCO\)](#) provides program leadership and effective communication with the funding agencies.

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## 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).

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## Funding

Funding Source	Award
National Science Foundation (NSF)	<a href="#">unknown GB NSF</a>
National Oceanic and Atmospheric Administration (NOAA)	<a href="#">unknown GB NOAA</a>

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