

MOCNESS summary data from Gulf of Maine krill cruises from R/V Endeavor, R/V Connecticut EN484, EN487, CT2010 in the Gulf of Maine, Georges Bank, Southern New England Shelf and Slope Water from 2010-2010 (Krill GoME project)

Website: <https://www.bco-dmo.org/dataset/3402>

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Project

» [Biological and Physical Determinants of Euphausiid Aggregation, Behavior, and Interaction with Higher Predators at an Abrupt Topographical Feature in the Gulf of Maine](#) (Krill GoME)

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Dataset Description

Summary of environmental data collected by the MOCNESS system's (1 meter-square) electronics package.

Data Processing Description

Nov. 29, 2010:

Revised MOCNESS files for recomputed volumes using new flow meter calibration value determined on R/V Connecticut and R/V Endeavor (EN487). See write-up describing the calibration procedure in EN487 cruise report. The volume revisions were done by Peter Wiebe using a flow meter calibration value of 6.41, which was the average of the values determined on the two cruises. The following is a list of the files used (raw) and produced (pro, tab) to compute the volumes filtered.

Date revised Raw file Used New Pro file New Tab file

R/V Endeavor (EN484) Tows:

17Nov2010 M_01_1.raw M001.pro M001.tab

17Nov2010 M_1_002.raw M002.pro M002.tab

17Nov2010 M_01_003.raw M003.pro M003.tab

Note: M_1_004.raw modified to eliminate extra headers due to restarts before tow actually started.

17Nov2010 M_1_004.raw M004.pro M004.tab

R/V Endeavor (EN487) Tows:

17Nov2010 M_1_1.raw M001.pro M001.tab

17Nov2010 M_1_002.raw M002.pro M002.tab

17Nov2010 M_01_003.raw M003.pro M003.tab

Note: M_1_004.raw modified to eliminate extra lines at start of tow.

17Nov2010 M_1_004.raw M004.pro M004.tab
 17Nov2010 M_01_005.raw M005.pro M005.tab

R/V Connecticut tows:

18Nov2010 - modified M_01_002.raw to eliminate start and end data when net out of the water and also removed the "#increment_net" indicator for net 2 because it apparently did not open at the 600 m mark. Net 8 was opened at the surface and taking out this indicator provides the volumes for the towing scenario indicated on the log sheets.

18Nov2010 M_1_002.raw M002.pro M002.tab

18Nov2010 - modified M_01_003.raw to eliminate end data when net out of the water and also modified the "#increment_net" indicator in all cases so that the postprocessing would ignore the indicator. In addition all of the "+" indicators were changed to "-" to prevent spurious net number changes in the raw file from indicating a net bar had been dropped except that a "+" was added at the end of the raw file along with an "#increment_net" indicator to make the program calculate the total volume filtered for the tow. This was done because none of the nets were opened or closed on the tow. See log notes for additional details.

18Nov2010 M_1_003.raw M003.pro M003.tab

18Nov2010 - modified M_01_005 to eliminate end data when net out of the water and a "+" was added at the end of the raw file along with an "#increment_net" indicator to make the program calculate the total volume filtered for the third net that was not closed at the surface.

18Nov2010 M_1_005.raw M005.pro M005.tab

18Nov2010 M_01_006.raw M006.pro M006.tab

18Nov2010 M_01_006.raw M007.pro M007.tab

18Nov2010 M_01_008.raw M008.pro M008.tab

18Nov2010 - modified M_01_009 to eliminate 2nd header that was present because program had to be restarted during net 8 open.

18Nov2010 M_1_009.raw M009.pro M009.tab

18Nov2010 - modified M_01_012 by modifying the "#increment_net" indicator so that it would be ignored since a delayed net response took place after it was issued for end of net 8.

18Nov2010 M_1_012.raw M012.pro M012.tab to be restarted during net 8 open.

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Data Files

File
mocness_tabs.csv (Comma Separated Values (.csv), 28.37 KB) <small>MD5:6aef482cf3285549d54ebc4a4ae852e8</small>
Primary data file for dataset ID 3402

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Parameters

Parameter	Description	Units
tow	tow number	
lat_start	latitude start of MOCNESS cast, negative = South	DD.D
lon_start	longitude start of MOCNESS cast, negative = West	DDD.D
depth_w	depth of water, seafloor depth from the shipboard 12kHz Knudsen echosounder; seafloor in eventlog	meters
net	MOCNESS net number, (0-8)	
yday_local	year day as a decimal, based on Julian calendar, local time	YYY.Y
num_obs	number of observations	
vol_filt	volume filtered	meters ³
press	depth of observation or sample	psi

temp	temperature of water	degrees C
potemp	potential temperature or theta	degrees C
sal	salinity calculated from conductivity	
sigma_0	potential density	kg/m ³
angle	angle of net frame relative to vertical (0-89 degrees)	degrees
hzvel	horizontal net velocity	m/min
vtvel_min	Minimum vertical net velocity for each net measured during mocness tows.	m/min
press_avg	average pressure for a net sample	psi
angle_min	Minimum angle of tow body relative to vertical (0-89 degrees), used in BIOMAPER-II and MOCNESS systems.	degrees
angle_max	Maximum angle of tow body relative to vertical (0-89 degrees), used in BIOMAPER-II and MOCNESS systems.	degrees
angle_avg	Angle of tow body relative to vertical (0-89 degrees), used in BIOMAPER-II and MOCNESS systems. Average is the mean of all observations, not just the mean of the global minimum and maximum.	decimal degrees
hzvel_min	Minimum horizontal net velocity, reported as meters per minute, used in MOCNESS system.	m/min
hzvel_max	Maximum horizontal net velocity, reported as meters per minute, used in MOCNESS system.	m/min
hzvel_avg	Average horizontal net velocity, reported as meters per minute, used in MOCNESS system. Average is the mean of all observations, not just the mean of the global minimum and maximum.	m/min
potemp_min	Minimum potential temperature (International Practical Temperature Scale - 68 ,or 90. When known, the scale will be reported in the units field of the documentation file.	degrees Celsius
potemp_max	Maximum potential temperature (International Practical Temperature Scale - 68 ,or 90. When known, the scale will be reported in the units field of the documentation file.	degrees Celsius
potemp_avg	Average potential temperature (International Practical Temperature Scale - 68 ,or 90. When known, the scale will be reported in the units field of the documentation file. Average is the mean of all observations, not just the mean of the global minimum and maximum.	degrees Celsius
press_min	Minimum water pressure at measurement; depth reported as pressure; positive number increasing with water depth.	psi
press_max	Maximum water pressure at measurement; depth reported as pressure; positive number increasing with water depth.	psi
sal_min	Minimum salinity calculated from conductivity.	dimimensionless
sal_max	Maximum salinity calculated from conductivity.	dimimensionless
sal_avg	Average salinity calculated from conductivity. Average is the mean of all observations, not just the mean of the global minimum and maximum.	dimimensionless
sigma_0_min	Minimum potential density.	kilograms/meter ³
sigma_0_max	Maximum postential density.	kilograms/meter ³
sigma_0_avg	Average potential density. Average is the mean of all observations, not just the mean of the global minimum and maximum.	kilograms/meter ³
vtvel_max	Maximum vertical net velocity for each net measured during mocness tows.	m/min

vtvel_avg	Average vertical net velocity for each net measured during mocness tows. Average is the mean of all observations, not just the mean of the global minimum and maximum.	m/min
temp_min	Minimum water temperature for each net measured during mocness tows.	degrees Celsius
temp_max	Maximum water temperature for each net measured during mocness tows.	degrees Celsius
temp_avg	Average water temperature for each net measured during mocness tows. Average is the mean of all observations, not just the mean of the global minimum and maximum.	degrees Celsius
cruiseid	Cruise identifier (e.g. EN484 = R/V Endeavor cruise 484).	unitless

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Instruments

Dataset-specific Instrument Name	MOCNESS1
Generic Instrument Name	MOCNESS1
Generic Instrument Description	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 ² 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

EN484

Website	https://www.bco-dmo.org/deployment/58140
Platform	R/V Endeavor
Report	http://bcodata.whoi.edu/Krill_GoME/EN484_Cruise_Report_FINAL.pdf
Start Date	2010-09-22
End Date	2010-09-30
Description	<p>Cruise EN484, Chief Scientist Gareth Lawson's September 2010 Krill cruise to the northern flank of Georges Bank and the southern portion of the Gulf of Maine region (42 North 67.5 West), is the first of two cruises in Fall 2010 doing the same work in the same study location. The cruise was scheduled to allow an examination of the impact of herring predation on euphausiid aggregations. The first cruise each year (two similar cruises are planned for 2011) is timed to begin one week after the NOAA Ship Delaware II will have commenced its herring survey. Real-time data collected during that survey will be used to define the exact survey grid for our project. During EN484, the first 2010 cruise, the herring were expected to be pre-spawning and therefore not feeding on euphausiids (the target species for this project). The second cruise each year is timed to begin in the last week of October (EN487 in 2010). At this time, herring and euphausiids will still be present in the study region, but the herring will be post-spawning and will have resumed feeding on euphausiids. Cruise information and original data are available from the NSF R2R data catalog.</p> <p>Processing Description See Dataset Description - Processing for notes.</p>

EN487

Website	https://www.bco-dmo.org/deployment/58141
Platform	R/V Endeavor
Report	http://bcodata.whoi.edu/Krill_GoME/EN487_Cruise_Report_FINAL.pdf
Start Date	2010-10-27
End Date	2010-11-06
Description	<p>Cruise EN487, Chief Scientist Gareth Lawson's October-November 2010 Krill cruise to the northern flank of Georges Bank and the southern portion of the Gulf of Maine region (42 North 67.5 West), is the second of two cruises completed for the Gulf of Maine Krill project in Fall 2010. The cruises were designed to conduct the same work in the same study location. The timing of the cruises was selected to allow an examination of the impact of herring predation on euphausiid aggregations. The first cruise (cruise EN484 in 2010) each year (two similar cruises are planned for 2011) is timed to begin one week after the NOAA Ship Delaware II will have commenced its herring survey. Real-time data collected during that survey will be used to define the exact survey grid for our project. During the first cruise, EN484, the herring were expected to be pre-spawning and therefore not feeding on euphausiids (the target species for this project). The second cruise each year (EN487 in 2010) is timed to begin in the last week of October. At this time, herring and euphausiids will still be present in the study region, but the herring will be post-spawning and will have resumed feeding on euphausiids. EN487 cruise track JPEG image from URI (vessel operator) Cruise information and original data are available from the NSF R2R data catalog.</p>

CT2010

Website	https://www.bco-dmo.org/deployment/58661
Platform	R/V Connecticut
Start Date	2010-07-08
End Date	2010-07-16
Description	The CT2010 cruise was supported by funds from Woods Hole Sea Grant, and field work was done on the southern New England Shelf and in nearby slope waters. This is a different study area from the sites visited by the other Krill project cruises that sampled in the Gulf of Maine.

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Project Information

Biological and Physical Determinants of Euphausiid Aggregation, Behavior, and Interaction with Higher Predators at an Abrupt Topographical Feature in the Gulf of Maine (Krill GoME)

Coverage: Gulf of Maine; Georges Bank

from the NSF award abstract:

Distribution, Aggregation, and Ecological Importance of Euphausiids in the Gulf of Maine Region

Zooplankton are key members of marine ecosystems, but the biological and physical factors governing their distribution and aggregation are not fully understood, especially at the continental shelf break and margins of the deep basins of the shelf. Euphausiids are an important group of crustacean zooplankton in North Atlantic pelagic food webs and represent an interesting model species for the study of zooplankton aggregation due to their strong swimming capabilities and active aggregative behaviors. This project will address the hypotheses that the formation and variability of euphausiid aggregations along the northern flank of Georges Bank and the southern portion of the Gulf of Maine during fall relate to the interaction of physical concentration mechanisms with local topography and with plasticity in diel vertical migration and active aggregative behaviors, and that this plasticity arises from variability in food availability and predation by herring. These hypotheses will be addressed through a field program employing a comprehensive array of sensors, including both conventional narrowband and recently-developed broadband acoustic systems to sample the euphausiids, and a variety of other acoustic, optical, net, and other sampling devices to quantify their physical and biological environment. These sensors will be used in an inventive combination of (1) coarse-scale grid surveys to characterize along- and across-slope variability in the distribution of euphausiids, their predators, other zooplankton, phytoplankton, and physical conditions (e.g., the flow field), and (2) fine-scale adaptive surveys used to track individual euphausiid aggregations and observe how their three-dimensional structure and vertical position vary with changing environmental conditions. Repeat surveys will be timed to capitalize on known or likely variations in the flow field, food availability, light levels, and predation.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0928801

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