Fish larvae growth rates and related data from MOCNESS tows from the R/V Albatross IV, R/V Seward Johnson, R/V Oceanus, R/V Edwin Link cruises in the Gulf of Maine and Georges Bank, from 1992-1999 (GB project)

Website: https://www.bco-dmo.org/dataset/3700
Version: 2012-08-15

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

Principle objectives of the US GLOBEC Georges Bank Program were to study the composition of the larval fish community on Georges Bank, to define larval fish distribution across the Bank and within the water column, to determine those factors which influence their vertical distribution, and to determine bank-wide versus "Patch-Study" mortality and growth rates. Emphasis is on Atlantic cod (Gadus morhua) and haddock (Melanogrammus aeglefinus) larvae along with their predators and prey. This study also includes larval distribution and abudance, analysis of feeding habits, and age and growth determination. These objectives were implemented through use of bongo nets and MOCNESS tows to make the animal collections.

Methods & Sampling

GLOBEC Fish Larvae were collected by MOCNESS nets.

For additional information on sampling and analytical methods, during the 1992 study (AL9205), see the Northeast Fisheries Science Center Reference Document 95-10: Georges Bank Stratification Study: 1992 Data Report.

Data Processing Description

BCO-DMO Processing Notes:

- Original data file was edited in excel by adding BCODMO convention header line, adding cruise and PI comment lines.

- Original file: "Buckley data for Georges Back GLOBEC website 8-6-2012.xls" contained both Bongo and MOCNESS data. This file was subsequently split into three separate data files based on gear and cruise type:

- fishlarvae_M1 contains data from MOCNESS tows
- fishlarvae_Bon_pro contains Bongo data from process cruises only
- fishlarvae_Bon_bss contains Bongo data from broadscale cruises only

These datasets are served separately.

Additional edits to dataset fishlarvae_M1 :

- Parameter names were edited to adhere to BCO-DMO and GLOBEC convention, of particular note are:
- Moc_num was edited to tow
- EDST was edited to time_local
- species was edited to common_name because some animals were not identified to species level
- cruisetype was edited to brief_desc

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Data Files

File
fishlarvae_M1.csv (Comma Separated Values (.csv), 1.30 MB) MD5:5a1b3bd7c046f0cd90995a23b81df660 Primary data file for dataset ID 3700

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Parameters

Parameter	Description	Units
cruise_id	Cruise Id, e.g., AL9306 represents the R/V Albatross cruise 9306.	dimensionless
year	Four digit year.	
brief_desc	Brief description, open-ended and specific to dataset.	dimensionless
station	Identifier associated with cruise's stations.	dimensionless
lat	Latitude in decimal degrees.	decimal degrees
lon	Longitude in decimal degrees, where negative values denote Westerly positions.	decimal degrees
yrday0_local	Day of year at local time, where Jan 1 is day zero.	dimensionless
day_local	Day of month in local time.	dimensionless
month_local	Month of year in local time.	dimensionless
time_local	Local time of observation or tow, originally reported as EDST (Eastern Daylight Savings Time).	hhmm
length_day	Number of hours between civil sunrise and civil sunset, originally reported as day_length.	decimal hours

tow	Number assigned to MOC1 tow. Submitted as "moc_num".	dimensionless
net	MOC1 net number.	dimensionless
temp_avg	Average temperature, as observed by a CTD unit, "primary sensor", ITS 68 or 90 scale, reported in degrees C. For MOC1: average of measurements recorded while net was open.	degrees Celcius
sal_avg	Average salinity, calculated from the CTD "primary sensors" of conductivity and temperature, Practical Salinity Scale, dimensionless. For MOC1: average of measurements recorded while net was open.	dimensionless
sigma_t_avg	Average sigma-t density, in kg/m3 - 1000. For MOC1: average of measurements recorded while net was open.	kg/m^3 - 1000
depth_close	Depth at which MOCNESS net is closed.	meters
depth_open	Depth at which MOCNESS net is opened	meters
vol_filt	Volume of water filtered by net.	meters^3
depth_w	Water depth in meters.	meters
sample	Unique identifier for obtained samples.	dimensionless
common_name	Common name of sample, originally reported as species. Cod = Atlantic cod (Gadus morhua) and haddock is Melanogrammus aeglefinus.	dimensionless
length	Length of dead larval specimen, originally reported as larva_len.	mm
size_class	Larval size groupings (classes), based on actual or predicted protein content of a larva. If pro 1200 then size_class=4.	dimensionless
prot_total	Total amount of protein in a larva, submitted as PRO.	micrograms
RNA	Total amount of RNA in a larva.	micrograms
DNA	Total amount of DNA in a larva.	micrograms
rings	Total number of visible rings on an otolith, beginning at the hatch check or nucleus.	dimensionless
sagitta_diam	Total diameter of sagitta otolith as measured with microscope micrometer; originally reported as sag_diam.	microns
sagitta_chk_diam	Diameter of sagitta otolith up to the hatch check (nucleus), measured with microscope micrometer; originally reported as sag_chk_diam.	microns
lapillus_diam	Total diameter of lapillus otolith, measured with microscope micrometer; originally reported as lap_diam.	microns
growth	Instantaneous protein-specific growth rate (G per day) estimated from G = -0.147 + 0.009(avg_temp)+ 0.045(sRD), where sRD is the standardized ratio of RNA to DNA (reported in the data as RNA_DNA). Equation had been validated for cod and haddock larvae with protein content	G (per day)
RNA_DNA	The ratio of RNA to DNA standardized to a DNA/RNA standard curve slope ratio of 2.43; originally reported as srd.	dimensionless
prot_predicted	Predicted total amount of protein in larvae missing protein data. For cod, predicted protein = (20.67*DNA) + 2.91. For haddock, predicted protein = (20.01*DNA) - 3.22. This parameters was originally reported as predict_pro.	micrograms

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Instruments

Dataset-specific Instrument Name	MOCNESS1
Generic Instrument Name	MOCNESS1
Dataset-specific Description	The MOCNESS nets used to collect the samples associated with these data had a 333 micrometer mesh size.
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-m2 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).

Dataset-specific Instrument Name	Sea-Bird SBE-3 Temperature Sensor
Generic Instrument Name	Sea-Bird SBE-3 Temperature Sensor
Dataset-specific Description	Seabird temperature (Model 3) and conductivity (Model 4) sensors were mounted on MOCNESS hauls.
Generic Instrument Description	The SBE-3 is a slow response, frequency output temperature sensor manufactured by Sea-Bird Electronics, Inc. (Bellevue, Washington, USA). It has an initial accuracy of +/- 0.001 degrees Celsius with a stability of +/- 0.002 degrees Celsius per year and measures seawater temperature in the range of -5.0 to +35 degrees Celsius. more information from Sea-Bird Electronics

Dataset-specific Instrument Name	Sea-Bird SBE-4 Conductivity Sensor
Generic Instrument Name	Sea-Bird SBE-4 Conductivity Sensor
Dataset-specific Description	Seabird temperature (Model 3) and conductivity (Model 4) sensors were mounted on MOCNESS hauls.
Generic Instrument Description	The Sea-Bird SBE-4 conductivity sensor is a modular, self-contained instrument that measures conductivity from 0 to 7 Siemens/meter. The sensors (Version 2; S/N 2000 and higher) have electrically isolated power circuits and optically coupled outputs to eliminate any possibility of noise and corrosion caused by ground loops. The sensing element is a cylindrical, flow-through, borosilicate glass cell with three internal platinum electrodes. Because the outer electrodes are connected together, electric fields are confined inside the cell, making the measured resistance (and instrument calibration) independent of calibration bath size or proximity to protective cages or other objects.

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Deployments

AL9205

Website	https://www.bco-dmo.org/deployment/57365
Platform	R/V Albatross IV
Report	http://globec.whoi.edu/globec-dir/reports/al9205/AL9205DataReport.pdf
Start Date	1992-05-18
End Date	1992-05-29
Description	process

AL9306

Website	https://www.bco-dmo.org/deployment/57366
Platform	R/V Albatross IV
Report	http://globec.whoi.edu/globec-dir/reports/al9306/AL9306DataReport.pdf
Start Date	1993-05-18
End Date	1993-05-29
Description	process

SJ9503

Website	https://www.bco-dmo.org/deployment/57482
Platform	R/V Seward Johnson
Start Date	1995-03-14
End Date	1995-03-24
Description	process larvae

SJ9507

Website	https://www.bco-dmo.org/deployment/57486
Platform	R/V Seward Johnson
Report	http://globec.whoi.edu/globec-dir/reports/sj9507/SJ9507.pdf
Start Date	1995-05-08
End Date	1995-05-26
Description	process larvae

SJ9505

Website	https://www.bco-dmo.org/deployment/57484
Platform	R/V Seward Johnson
Report	http://globec.whoi.edu/globec-dir/reports/sj9505/sj9505.html
Start Date	1995-04-07
End Date	1995-04-21
Description	Process cruise looking for cod and haddock larvae.

OC301

Website	https://www.bco-dmo.org/deployment/57447
Platform	R/V Oceanus
Report	http://globec.whoi.edu/globec-dir/reports/oc301/oc301.html
Start Date	1997-04-05
End Date	1997-04-17
Description	process fish vital rates

OC303

Website	https://www.bco-dmo.org/deployment/57449
Platform	R/V Oceanus
Report	http://globec.whoi.edu/globec-dir/reports/oc303/oc303.html
Start Date	1997-05-06
End Date	1997-05-23
Description	process

AL9805

Website	https://www.bco-dmo.org/deployment/57383
Platform	R/V Albatross IV
Report	http://globec.whoi.edu/globec-dir/reports/al9805/AL9805.html
Start Date	1998-05-04
End Date	1998-05-08
Description	process

OC339

Website	https://www.bco-dmo.org/deployment/57462
Platform	R/V Oceanus
Report	http://globec.whoi.edu/globec-dir/reports/oc339/OC339.htm
Start Date	1999-03-17
End Date	1999-03-25
Description	process

EL9904

Website	https://www.bco-dmo.org/deployment/57394
Platform	R/V Edwin Link
Report	http://globec.whoi.edu/globec-dir/reports/el9904/el9904.html
Start Date	1999-04-14
End Date	1999-04-28
Description	process

EL9905

Website	https://www.bco-dmo.org/deployment/57395
Platform	R/V Edwin Link
Report	http://globec.whoi.edu/globec-dir/reports/el9905/el9905new.html
Start Date	1999-05-10
End Date	1999-05-29
Description	process

EL9906

Website	https://www.bco-dmo.org/deployment/57396
Platform	R/V Edwin Link
Report	http://globec.whoi.edu/globec-dir/reports/el9906/el9906.htm
Start Date	1999-06-14
End Date	1999-06-23
Description	long term mooring

AL9403II

Website	https://www.bco-dmo.org/deployment/57368
Platform	R/V Albatross IV
Report	http://globec.whoi.edu/globec-dir/reports/al9403.2/AL9403.2.pdf
Start Date	1994-05-17
End Date	1994-05-28
Description	process

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Project Information

U.S. GLOBEC Georges Bank (GB)

Website: 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)	unknown GB NSF
National Oceanic and Atmospheric Administration (NOAA)	unknown GB NOAA

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