Fish larvae growth rates and related data collected from BONGO nets from the R/V Endeavor, R/V Albatross IV, EN265, AL9605, EN282 cruises in the Gulf of Maine and Georges Bank from 1995-1999 (GB project)

Website: https://www.bco-dmo.org/dataset/3721
Version: 2012-09-14

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 the use of bongo nets and MOCNESS tows to make the animal collections.

Methods & Sampling

GLOBEC Fish Larvae were collected by Bongo nets. In some cruises nets were equiped with digital flow meters suspended in the mouth of the net and conductivity/temperature/depth measuring packages attached above the bongo.

Data Processing Description

BCO-DMO Processing Notes:

- Original data file was edited in excel to add BCO-DMO convention header line, cruise and PI comment lines.

- Because the original file: "Buckley data for Georges Back GLOBEC website 8-6-2012.xls" contained both Bongo and MOCNESS data, it was subsequently split into three separate data files based on gear and cruise type. These datasets are served separately:

- 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

Additional edits to this dataset, fishlarvae_Bon_bss:

-Stations with redundant entries were compared to the eventlog for the cruise and, where needed, lat/lon values were edited to a consistent precision for all positions taken at the same date/time.

- Two stations (6 and 36.5) in deployment EN282 in fishlarvae_Bon_bss contained identical information for station lat/lon, time, depth, avg sal, etc. but different day and yrday. When validated against other files' station information at the same location, time, etc. the day and yrday were corrected (fishlarvaeB and the eventlog for EN282 were used to validate):
    Station 6: day 12, yrday0 102 was edited day 11, yrday0 101
    Station 36.5: day 19, yrday0 109 was edited to day 18, yrday0 108

- Edited precision for sal_avg, temp_avg, sigma_t_avg to three decimals.

- Edited values of 99 for sal_avg, temp_avg, sigma_t_avg to "nd".

- Parameter names were edited to adhere to BCO-DMO and GLOBEC convention, of particular note:

- Tow was edited at the request of the PI. Station and not station_std was used due to the fact that some stations correspond to GLOBEC GB standard station numbers. However, some do not. Within the GLOBEC context, standard station numbers were reserved for specific stations with exact locations where core survey measurements were carried out (please refer to http://globec.whoi.edu/globec-dir/protocol-bs-stations-1996.html). The DMO prefers to reserve the 'standard' label for the above defined stations.

- EDST was edited to time_local
- Species was edited to common_name because sometimes the animal was identified only to family or other taxonomic level.
- Cruisetype was edited to brief_desc

Data Files

File
fishlarvae_Bon_bss.csv(Comma Separated Values (.csv), 172.38 KB)   MD5:9ee01bbbeaacd54887e13e472694db87   Primary data file for dataset ID 3721

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	Station number, submitted by PI as tow.	dimensionless
lat	Latitude in decimal degrees.	decimal degrees
lon	Longitude in decimal degrees where negative values denote Westerly postitions.	decimal degrees
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
temp_avg	Average temperature, as observed by a CTD unit, "primary sensor", ITS 68 or 90 scale, reported in degrees C. For BONGO: average of measurements recorded from 60m to surface.	Degrees celsius
sal_avg	Average salinity, calculated from the CTD "primary sensors" of conductivity and temperature, Practical Salinity Scale, dimensionless. For BONGO: average of measurements recorded from 60m to surface.	dimensionless
sigma_t_avg	Average sigma-t density, in kg/m3 - 1000. For BONGO: average of measurements recorded from 60m to surface.	kg/m^3 - 1000
depth_w	Water depth in meters.	meters
depth_tow_max	Maximum depth of a towed instrument.	meters
sample	Unique identifier for obtained samples.	dimensionless
length	Length of dead larval specimen, originally reported as larva_len.	mm
common_name	Common name of sample, originally reported as species. Cod = Atlantic cod (Gadus morhua) and haddock is Melanogrammus aeglefinus.	dimensionless
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.	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
yrday0_local	Day of year at local time, where Jan1 is day zero.	dimensionless

Instruments

Dataset-specific Instrument Name	Bongo Net
Generic Instrument Name	Bongo Net
Dataset-specific Description	Bongo nets used during this study were simple paired plankton nets, towed double-obliquely through the water column. Net diameter was 61 cm with 333 and 505 micrometer mesh size. Nets used during sampling were not capable of discrete "known-depth" sampling.
Generic Instrument Description	A Bongo Net consists of paired plankton nets, typically with a 60 cm diameter mouth opening and varying mesh sizes, 10 to 1000 micron. The Bongo Frame was designed by the National Marine Fisheries Service for use in the MARMAP program. It consists of two cylindrical collars connected with a yoke so that replicate samples are collected at the same time. Variations in models are designed for either vertical hauls (OI-2500 = NMFS Pairovet-Style, MARMAP Bongo, CalVET) or both oblique and vertical hauls (Aquatic Research). The OI-1200 has an opening and closing mechanism that allows discrete "known-depth" sampling. This model is large enough to filter water at the rate of 47.5 m3/minute when towing at a speed of two knots. More information: Ocean Instruments, Aquatic Research, Sea-Gear

Dataset-specific Instrument Name	CTD Sea-Bird SEACAT 19
Generic Instrument Name	CTD Sea-Bird SEACAT 19
Dataset-specific Description	The CTD was attached on the wire above the Bongo frame.
Generic Instrument Description	The Sea-Bird SBE 19 SEACAT Recorder measures conductivity, temperature, and pressure (depth). The SEACAT is self-powered and self-contained and can be deployed in profiling or moored mode. The SBE 19 SEACAT was replaced in 2001 by the 19plus. more information from Sea-Bird Electronics

Deployments

EN265

Website	https://www.bco-dmo.org/deployment/57405
Platform	R/V Endeavor
Start Date	1995-04-11
End Date	1995-04-22
Description	broad-scale

AL9605

Website	https://www.bco-dmo.org/deployment/57375
Platform	R/V Albatross IV
Report	http://globec.whoi.edu/globec-dir/reports/al9605/al9605.html
Start Date	1996-05-06
End Date	1996-05-17
Description	broad-scale

EN282

Website	https://www.bco-dmo.org/deployment/57415
Platform	R/V Endeavor
Start Date	1996-04-08
End Date	1996-04-20
Description	broad-scale

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.

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).

Funding

Funding Source	Award
National Science Foundation (NSF)	unknown GB NSF
National Oceanic and Atmospheric Administration (NOAA)	unknown GB NOAA