

CTD data collected on R/V Lowell Weicker in the Long Island Sound in 2008

Website: <https://www.bco-dmo.org/dataset/3656>

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Project

» [Testing hypotheses about diversity, gene flow, and effective population size in marine planktonic ciliates](#)
(CiliateDivGenePop)

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Dataset Description

CTD data are provided for 6 stations sampled in Long Island Sound on 13 August 2008. Data include temperature, density, salinity, fluorescence, and oxygen saturation along a depth gradient.

Methods & Sampling

Sample stations were selected to represent a range of variation in depth, salinity, and vertical stratification. At each station, measurements were made with a SeaBird CTD for the purpose of creating density profiles.

Stations and methods are further described in the following publication:

Tamura, M, LA Katz, and GB McManus. 2011. Distribution and diversity of Oligotrich and Choreotrich ciliates in a large temperate estuary. *Aquat. Microb. Ecol.* 64:51-67. doi:10.3354/ame01509 ([PDF](#))

Data Processing Description

Data were processed with the SeaSoft program from SeaBird and smoothed by binning at 0.1 m intervals. BCO-DMO made the following modifications to the dataset: format of parameter names was changed to conform to BCO-DMO conventions; blanks and values of '-9.99E-29' were replaced with 'nd'; lat and lon values were converted from degrees/decimal minutes to decimal degrees. Note: lat and lon values are approximate for Station 2.

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Data Files

File
CTD_profiles.csv (Comma Separated Values (.csv), 58.70 KB) MD5:0caabe47f4b3042d8483018adcea31d1
Primary data file for dataset ID 3656

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Parameters

Parameter	Description	Units
cruiseid	Unique identifier for the cruise.	dimensionless
year	Year in YYYY format.	dimensionless
month_gmt	Month in which the samples were collected, in MM format (GMT).	dimensionless
day_gmt	Day on which the samples were collected, in DD format (GMT).	dimensionless
station	Numeric identifier of the sample station.	dimensionless
lat	Latitude in decimal degrees. Positive values indicate North. Values have been converted from degrees and decimal minutes to decimal degrees.	decimal degrees
lon	Longitude in decimal degrees. Negative values indicate West. Values have been converted from degrees and decimal minutes to decimal degrees.	decimal degrees
time_start_local	Local time at which the CTD cast began, in HHMM format. (Local time = GMT - 5 hours).	dimensionless
depth	Sample depth in meters.	meters
density	Density, measured in kg per cubic meter.	kg/m ³
temp	Water temperature in Celsius degrees.	degrees Celsius
sal	Salinity.	PSU
fluor	Fluorescence measured in mg per cubic meter.	mg/m ³
O2_mg	Oxygen saturation measured in mg/liter.	mg/L
time_elapsed	Time elapsed (in seconds) since the first CTD sample at the station.	seconds
day_local	Day on which the samples were collected, in DD format (local time).	dimensionless
month_local	Month in which the samples were collected, in MM format (local time).	dimensionless
time_start_gmt	GMT time at which the CTD cast began, in HHMM format.	dimensionless
ISO_DateTime_UTC	Date and time formatted to ISO8601 standard. T indicates start of time string; Z indicates UTC.	YYYY-MM-DDTHH:MM:SS.ssZ

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Instruments

Dataset-specific Instrument Name	CTD Sea-Bird SEACAT 19
Generic Instrument Name	CTD Sea-Bird SEACAT 19
Dataset-specific Description	A SeaBird SBE 19 CTD was used at each station to record temperature, salinity, and other physical data.
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

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Deployments

LW_LIS08

Website	https://www.bco-dmo.org/deployment/58823
Platform	R/V Lowell Weicker
Start Date	2008-08-13
End Date	2008-08-13
Description	Samples were collected at 6 stations in Long Island Sound on 13 August 2008 as part of the project titled "Collaborative Research: Testing hypotheses about diversity, gene flow, and effective population size in marine planktonic ciliates".

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Project Information

Testing hypotheses about diversity, gene flow, and effective population size in marine planktonic ciliates (CiliateDivGenePop)

Website: <http://microzooplankton.uconn.edu>

Coverage: Coastal Northwest Atlantic, from Long Island Sound to Maine

The microbial ecologist Tom Fenchel recently said, "The decoupling of molecular and classical (including experimental) approaches to environmental microbiology has not been fruitful and it represents one of the most important challenges for the field in the coming years." (Fenchel 2005). Classical approaches center on the centuries-old tradition of describing individual species via meticulous observation and analysis to generate monographs, such as is done for plants and animals. Unfortunately, the rush to new molecular techniques has sometimes ignored this tradition, with claims about new lineages never seen before and reports of staggering diversity of microbial eukaryotes based on environmental DNA samples not backed up by even the most elementary microscopic observations.

In the face of this disconnect between the traditional and the molecular, we propose a marriage of the two approaches in the study of marine ciliate diversity and gene flow. Our own data show that in some clades of planktonic ciliates (Strombidiidae) there is indeed a high level of molecular diversity underlying a relatively small number of morphospecies. In other clades (some choreotrichs), the opposite appears to be true, with

morphological heterogeneity underlain by apparently clonal lines, based on molecular data. Currently, we do not understand what sustains diversity in some clades; nor do we know why other clades show low diversity. But this problem is amenable to both experimental and observational approaches.

This proposal uses a two-pronged approach, combining molecular (clone libraries, DGGE, FISH) and traditional (light microscopy) techniques to address three broad questions:

- i. What are the most important physical and biological factors that affect distribution and diversity of planktonic marine ciliates?
- ii. What is the effective population size for marine ciliate populations, and how does this compare to census population sizes?
- iii. How well do traditional morphological descriptions of ciliate species fare when compared with molecular characterizations?

Using a combination of molecular and microscopy methods, we will address these questions in coastal planktonic ciliates. Analyses of the resulting data will yield insights into the nature of ciliate species and patterns of gene flow within the North Atlantic.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0648711

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