Neuston data from the F/V Sea Eagle and F/V Frosti salmon trawl cruises in the Northeast Pacific from 2000-2002 as part of the U.S. GLOBEC program (NEP project)

Website: https://www.bco-dmo.org/dataset/2464
Data Type: Cruise Results
Version: 1
Version Date: 2012-06-19

Project
» U.S. GLOBEC Northeast Pacific (NEP)

Program
» U.S. GLOBal ocean ECosystems dynamics (U.S. GLOBEC)

Contributors	Affiliation	Role
Brodeur, Richard D	National Oceanic and Atmospheric Administration (NOAA)	Co-Principal Investigator
Pool, Suzan S	Oregon State University (OSU-CIMRS)	Co-Principal Investigator
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Abstract
Neuston data from the F/V Sea Eagle and F/V Frosti salmon trawl cruises in the Northeast Pacific from 2000-2002 as part of the U.S. GLOBEC program (NEP project)

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Coverage

Spatial Extent: **N**:44.7047 **E**:-124.1283 **S**:41.8249 **W**:-126.0125
Temporal Extent: 2000-05-29 - 2002-08-17

Dataset Description

U.S. GLOBEC Northeast Pacific California Current System Mesoscale Process Studies Neuston Data

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During juvenile salmonid trawling cruises, additional sampling included CTD profiles, neuston net tows, and chlorophyll a water samples. At most stations, data on all parameters were collected.

Results:
Detailed analyses of the neuston community are presented in Reese et al. (2005) and Pool and Brodeur (2005).

References:
Brodeur, 1991
Pool and Brodeur, 2005
Reese *et al.,* 2005
Schabetsberger *et al.,* 2003

Last modified: February 24, 2004

Methods & Sampling

A neuston net with a 1-m wide by 0.3-m high mouth and 0.333-mm mesh was utilized for collection of all zooplankton samples. A General Oceanics flowmeter was attached in the mouth of the net in order to estimate the volume of water filtered during each tow. The net was towed out of the ship's wake for five minutes at approximately two knots (3.7 km/h). Upon retrieval, the net was hosed down and contents of the cod end were transferred to a sample jar. Large jellyfish and flotsam were rinsed off with seawater to remove any attached plankton and discarded at sea. The sample was preserved with formalin in ambient seawater to make a 5% formalin solution.

Data Processing Description

In the laboratory, the samples were washed over a 0.320-mm mesh sieve with tap water to remove formalin, then transferred to water. Additional extraneous contents were subsequently removed. To obtain displacement volumes, samples were allowed to settle overnight in Imhoff settling cones or graduated cylinders depending on the sample volume. Biovolumes (ml per 100 m3) were calculated from displacement volumes and flowmeter readings.

Sample was transferred to a clear Pyrex dish on a white background for sorting and removing zooplankton .5 mm using a lighted magnifying glass. This size fraction was chosen based on prey size selected by juvenile coho and Chinook salmon in previous trophic analyses (Brodeur, 1991; Schabetsberger et al., 2003). Occasionally, large samples with many macrozooplankton were subsampled with a Folsom plankton splitter and the counts estimated. The macrozooplankton were enumerated and identified to the lowest practical taxon using a dissecting microscope. Life stages of the specimens were determined when possible. Completed samples were transferred to 70% ethanol. Counts were standardized into concentrations expressed as numbers per 100 m^3.

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Data Files

File
neuston.csv (Comma Separated Values (.csv), 227.64 KB) MD5:691d0863294f324039cf01d99461acdb Primary data file for dataset ID 2464

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Related Publications

Brodeur, R. D. (1991). Ontogenetic variations in the type and size of prey consumed by juvenile coho,Oncorhynchus kisutch, and chinook,O. tshawytscha, salmon. Environmental Biology of Fishes, 30(3), 303–315. doi:10.1007/bf02028846 https://doi.org/10.1007/BF02028846
Methods

Pool, S. S. and R. D. Brodeur. 2005. Neustonic macrozooplankton abundance and distribution in the northern California Current, 2000 and 2002. NOAA Tech. Rep.(NOAA Technical Memorandum NMFS-NWFSC-74)
Results

Reese, D. C., Miller, T. W., & Brodeur, R. D. (2005). Community structure of near-surface zooplankton in the northern California Current in relation to oceanographic conditions. Deep Sea Research Part II: Topical Studies in Oceanography, 52(1-2), 29–50. doi:10.1016/j.dsr2.2004.09.027
Results

Schabetsberger, R., Morgan, C. A., Brodeur, R. D., Potts, C. L., Peterson, W. T., & Emmett, R. L. (2003). Prey selectivity and diel feeding chronology of juvenile chinook (Oncorhynchus tshawytscha) and coho (O. kisutch) salmon in the Columbia River plume. Fisheries Oceanography, 12(6), 523–540. doi:10.1046/j.1365-2419.2003.00231.x
Methods

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Parameters

Parameter	Description	Units
year	Year.	unitless
cruise_id	Cruise identifier.	unitless
cast	Cast number within the cruise.	unitless
station_std	Standard station name.	unitless
lat	latitude (decimal degrees)	decimal degrees
lon	longitude (decimal degrees)	decimal degrees
depth_w	Bottom depth of station (meters)	meters
month_local	local month	unitless
day_local	local day	unitless
time_local	local time (24-hr)	unitless

inst	Sampling instrument.	unitless
gear_area_m2	Mouth area of gear (m^2)	m²
gear_mesh	Gear mesh size (mm).	mm
min_sample_depth	minimum sampling depth	not supllied
max_sample_depth	maximum sampling depth	not supplied
biovolume_ml_100m3	Settled biovolume (ml 100 m^{-3}).	ml 100 m⁻³
genus_species	Taxonomic category.	unitless
life_stage	Life stage.	unitless
abund_100m3	abundance per 100 m^3	count per 100 m^3
comments	comments about particular record	unitless
ship	Name of the ship.	unitless

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Instruments

Dataset-specific Instrument Name	Neuston
Generic Instrument Name	Neuston Net
Dataset-specific Description	A neuston net with a 1-m wide by 0.3-m high mouth and 0.333-mm mesh wasutilized for collection of all zooplankton samples.
Generic Instrument Description	Neuston Nets are nets that collect zooplankton that live in the top few centimeters of the sea surface (the neuston layer). This specialized net has a rectangular mouth opening usually 2 or 3 times as wide as deep, i.e. 1 meter by 1/2 meter or 60 cm by 20 cm, with sometimes hollow piping construction to aid in flotation. They are generally towed half submerged at 1-2 kts from the side of the vessel on a boom to avoid the ship's wake.

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Deployments

SE0005

Website	https://www.bco-dmo.org/deployment/57576
Platform	F/V Sea Eagle
Report	http://globec.whoi.edu/nep/reports/ccs_cruises/se0005cr.pdf
Start Date	2000-05-29
End Date	2000-06-11
Description	**Methods & Sampling** A neuston net with a 1-m wide by 0.3-m high mouth and 0.333-mm mesh was utilized for collection of all zooplankton samples. A General Oceanics flowmeter was attached in the mouth of the net in order to estimate the volume of water filtered during each tow. The net was towed out of the ship's wake for five minutes at approximately two knots (3.7 km/h). Upon retrieval, the net was hosed down and contents of the cod end were transferred to a sample jar. Large jellyfish and flotsam were rinsed off with seawater to remove any attached plankton and discarded at sea. The sample was preserved with formalin in ambient seawater to make a 5% formalin solution. **Processing Description** In the laboratory, the samples were washed over a 0.320-mm mesh sieve with tap water to remove formalin, then transferred to water. Additional extraneous contents were subsequently removed. To obtain displacement volumes, samples were allowed to settle overnight in Imhoff settling cones or graduated cylinders depending on the sample volume. Biovolumes (ml per 100 m3) were calculated from displacement volumes and flowmeter readings. Sample was transferred to a clear Pyrex dish on a white background for sorting and removing zooplankton .5 mm using a lighted magnifying glass. This size fraction was chosen based on prey size selected by juvenile coho and Chinook salmon in previous trophic analyses (Brodeur, 1991; Schabetsberger et al., 2003).

SE0007

Website	https://www.bco-dmo.org/deployment/57577
Platform	F/V Sea Eagle
Report	http://globec.whoi.edu/nep/reports/ccs_cruises/se0007cr.pdf
Start Date	2000-07-28
End Date	2000-08-12
Description	**Methods & Sampling** A neuston net with a 1-m wide by 0.3-m high mouth and 0.333-mm mesh was utilized for collection of all zooplankton samples. A General Oceanics flowmeter was attached in the mouth of the net in order to estimate the volume of water filtered during each tow. The net was towed out of the ship's wake for five minutes at approximately two knots (3.7 km/h). Upon retrieval, the net was hosed down and contents of the cod end were transferred to a sample jar. Large jellyfish and flotsam were rinsed off with seawater to remove any attached plankton and discarded at sea. The sample was preserved with formalin in ambient seawater to make a 5% formalin solution. **Processing Description** In the laboratory, the samples were washed over a 0.320-mm mesh sieve with tap water to remove formalin, then transferred to water. Additional extraneous contents were subsequently removed. To obtain displacement volumes, samples were allowed to settle overnight in Imhoff settling cones or graduated cylinders depending on the sample volume. Biovolumes (ml per 100 m3) were calculated from displacement volumes and flowmeter readings. Sample was transferred to a clear Pyrex dish on a white background for sorting and removing zooplankton .5 mm using a lighted magnifying glass. This size fraction was chosen based on prey size selected by juvenile coho and Chinook salmon in previous trophic analyses (Brodeur, 1991; Schabetsberger et al., 2003).

FR0206-01

Website	https://www.bco-dmo.org/deployment/57497
Platform	F/V Frosti
Report	http://globec.whoi.edu/nep/reports/ccs_cruises/fr0206/fr0206cr.pdf
Start Date	2002-05-31
End Date	2002-06-08
Description	Event logs provide an overall summary of the sampling activities during a cruise. A hard copy of the event log is also included in the cruise report. Further documentation about event logs is available in Chief Scientist Data Reporting Requirements. For further information contact the Data Management Office Last updated November 03, 2006; gfh 20 May 2011, dld - This cruise consisted of Leg 1 and Leg 2. Metadata is edited to reflect this information which was gleaned from the event log and the cruise report. Leg 1 departed Astoria, OR late on 31 May and ended with a brief port stop in Newport, OR to exchange some science personnel and take on supplies on 8 June. The Chief Scientist was Robert Emmett. Leg 2 began late in the afternoon of 8 June departing from Newport, OR and ended 18 June in Newport, OR. The Chief Scientist was Richard Brodeur. **Methods & Sampling** A neuston net with a 1-m wide by 0.3-m high mouth and 0.333-mm mesh was utilized for collection of all zooplankton samples. A General Oceanics flowmeter was attached in the mouth of the net in order to estimate the volume of water filtered during each tow. The net was towed out of the ship's wake for five minutes at approximately two knots (3.7 km/h). Upon retrieval, the net was hosed down and contents of the cod end were transferred to a sample jar. Large jellyfish and flotsam were rinsed off with seawater to remove any attached plankton and discarded at sea. The sample was preserved with formalin in ambient seawater to make a 5% formalin solution. **Processing Description** In the laboratory, the samples were washed over a 0.320-mm mesh sieve with tap water to remove formalin, then transferred to water. Additional extraneous contents were subsequently removed. To obtain displacement volumes, samples were allowed to settle overnight in Imhoff settling cones or graduated cylinders depending on the sample volume. Biovolumes (ml per 100 m3) were calculated from displacement volumes and flowmeter readings. Sample was transferred to a clear Pyrex dish on a white background for sorting and removing zooplankton .5 mm using a lighted magnifying glass. This size fraction was chosen based on prey size selected by juvenile coho and Chinook salmon in previous trophic analyses (Brodeur, 1991; Schabetsberger et al., 2003).

FR0208

Website	https://www.bco-dmo.org/deployment/57498
Platform	F/V Frosti
Report	http://globec.whoi.edu/nep/reports/ccs_cruises/fr0208/fr0208cr.pdf
Start Date	2002-08-01
End Date	2002-08-17
Description	**Methods & Sampling** A neuston net with a 1-m wide by 0.3-m high mouth and 0.333-mm mesh was utilized for collection of all zooplankton samples. A General Oceanics flowmeter was attached in the mouth of the net in order to estimate the volume of water filtered during each tow. The net was towed out of the ship's wake for five minutes at approximately two knots (3.7 km/h). Upon retrieval, the net was hosed down and contents of the cod end were transferred to a sample jar. Large jellyfish and flotsam were rinsed off with seawater to remove any attached plankton and discarded at sea. The sample was preserved with formalin in ambient seawater to make a 5% formalin solution. **Processing Description** In the laboratory, the samples were washed over a 0.320-mm mesh sieve with tap water to remove formalin, then transferred to water. Additional extraneous contents were subsequently removed. To obtain displacement volumes, samples were allowed to settle overnight in Imhoff settling cones or graduated cylinders depending on the sample volume. Biovolumes (ml per 100 m3) were calculated from displacement volumes and flowmeter readings. Sample was transferred to a clear Pyrex dish on a white background for sorting and removing zooplankton .5 mm using a lighted magnifying glass. This size fraction was chosen based on prey size selected by juvenile coho and Chinook salmon in previous trophic analyses (Brodeur, 1991; Schabetsberger et al., 2003).

FR0206-02

Website	https://www.bco-dmo.org/deployment/58670
Platform	F/V Frosti
Report	http://globec.whoi.edu/nep/reports/ccs_cruises/fr0206/fr0206cr.pdf
Start Date	2002-06-08
End Date	2002-06-18
Description	Event logs provide an overall summary of the sampling activities during a cruise. A hard copy of the event log is also included in the cruise report. Further documentation about event logs is available in Chief Scientist Data Reporting Requirements. For further information contact the Data Management Office Last updated November 03, 2006; gfh 20 May 2011, dld - This cruise consisted of Leg 1 and Leg 2. Metadata is edited to reflect this information which was gleaned from the event log and the cruise report. Leg 1 departed Astoria, OR late on 31 May and ended with a brief port stop in Newport, OR to exchange some science personnel and take on supplies on 8 June. The Chief Scientist was Robert Emmett. Leg 2 began late in the afternoon of 8 June departing from Newport, OR and ended 18 June in Newport, OR. The Chief Scientist was Richard Brodeur. **Methods & Sampling** A neuston net with a 1-m wide by 0.3-m high mouth and 0.333-mm mesh was utilized for collection of all zooplankton samples. A General Oceanics flowmeter was attached in the mouth of the net in order to estimate the volume of water filtered during each tow. The net was towed out of the ship's wake for five minutes at approximately two knots (3.7 km/h). Upon retrieval, the net was hosed down and contents of the cod end were transferred to a sample jar. Large jellyfish and flotsam were rinsed off with seawater to remove any attached plankton and discarded at sea. The sample was preserved with formalin in ambient seawater to make a 5% formalin solution. **Processing Description** In the laboratory, the samples were washed over a 0.320-mm mesh sieve with tap water to remove formalin, then transferred to water. Additional extraneous contents were subsequently removed. To obtain displacement volumes, samples were allowed to settle overnight in Imhoff settling cones or graduated cylinders depending on the sample volume. Biovolumes (ml per 100 m3) were calculated from displacement volumes and flowmeter readings. Sample was transferred to a clear Pyrex dish on a white background for sorting and removing zooplankton .5 mm using a lighted magnifying glass. This size fraction was chosen based on prey size selected by juvenile coho and Chinook salmon in previous trophic analyses (Brodeur, 1991; Schabetsberger et al., 2003).

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Project Information

U.S. GLOBEC Northeast Pacific (NEP)

Website: http://nepglobec.bco-dmo.org

Coverage: Northeast Pacific Ocean, Gulf of Alaska

Program in a Nutshell

Goal: To understand the effects of climate variability and climate change on the distribution, abundance and production of marine animals (including commercially important living marine resources) in the eastern North Pacific. To embody this understanding in diagnostic and prognostic ecosystem models, capable of capturing the ecosystem response to major climatic fluctuations.

Approach: To study the effects of past and present climate variability on the population ecology and

population dynamics of marine biota and living marine resources, and to use this information as a proxy for how the ecosystems of the eastern North Pacific may respond to future global climate change. The strong temporal variability in the physical and biological signals of the NEP will be used to examine the biophysical mechanisms through which zooplankton and salmon populations respond to physical forcing and biological interactions in the coastal regions of the two gyres. Annual and interannual variability will be studied directly through **long-term observations** and detailed **process studies**; variability at longer time scales will be examined through **retrospective analysis** of directly measured and proxy data. Coupled **biophysical models** of the ecosystems of these regions will be developed and tested using the process studies and data collected from the long-term observation programs, then further tested and improved by hindcasting selected retrospective data series.

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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
NSF Division of Ocean Sciences (NSF OCE)	OCE-0000733
National Oceanic and Atmospheric Administration (NOAA)	unknown NEP NOAA

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