

# Haul data and salmon numbers caught and processed from F/V Great Pacific, R/V Miller Freeman cruises in the Coastal Gulf of Alaska, NE Pacific, 2001-2004 (NEP project)

**Website:** <https://www.bco-dmo.org/dataset/3109>

**Data Type:** Cruise Results

**Version:** 1

**Version Date:** 2009-04-22

## Project

» [U.S. GLOBEC Northeast Pacific](#) (NEP)

## Program

» [U.S. GLOBal ocean ECosystems dynamics](#) (U.S. GLOBEC)

Contributors	Affiliation	Role
<a href="#">Cokelet, Edward D.</a>	National Oceanic and Atmospheric Administration (NOAA-PMEL)	Principal Investigator
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## Abstract

Haul data and salmon numbers caught and processed from F/V Great Pacific, R/V Miller Freeman cruises in the Coastal Gulf of Alaska, NE Pacific, 2001-2004.

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## Coverage

**Spatial Extent:** N:60.04 E:-137.2 S:54.29 W:-157.43

**Temporal Extent:** 2001-07-17 - 2004-11-08

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## Dataset Description

### **GLOBEC 2000: Factors Affecting the Distribution of Juvenile Salmon in the Gulf of Alaska**

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"Remarkable changes in atmospheric, oceanic and biological conditions have occurred in recent decades in the North Pacific Ocean including declines in the marine survival of some salmon stocks. Fishery scientists

generally agree that in the first few months after leaving freshwater, salmon survival and growth are linked to oceanic variability. The purpose of this research is to focus National Marine Fisheries Service studies on the GLOBEC region, augment oceanographic measurements and determine what biological and physical factors influence the distribution of juvenile salmon. Three general hypotheses are explored in this proposal: (1) juvenile salmon prefer the buoyancy-driven Alaska Coastal Current (ACC) at the head of the Gulf of Alaska, (2) they associate with oceanic temperature, salinity, current and prey fields, and (3) they migrate landward of Kodiak Island in the ACC rather than seaward in the Alaskan Stream. Annual, summer cruises aboard a chartered fishing vessel will catch juvenile salmon on 10 transects between Yakutat Bay and Kodiak Island. The vessel will be outfitted with a thermosalinograph to measure sea-surface temperature and salinity, and with an Acoustic Doppler Current Profiler (ADCP) - each operating continuously for fine-scale resolution. Modeled tidal currents will be removed from ADCP measurements to reveal the mean flow fields. At each trawl site, temperature and salinity profiles will provide water-column properties, and bongo-net hauls will give zooplankton distributions. Stomach samples from juvenile salmonids will be analyzed in the laboratory for diet composition and compared with zooplankton distributions. Analysis of salmon otoliths for hatchery thermal marks and Genetic Stock Identification techniques will be used to determine the home stream of hatchery and wild stocks in the Gulf of Alaska and their distribution with respect to oceanographic regimes. Retrospective analysis of catch per unit effort versus oceanographic and prey factors will reveal what affects the distribution of pink, chum, coho and sockeye salmon in the study region. Proxies for bio-physical factors will be developed and compared with salmon-run size."(*project proposal*)

#### **Data Collection Details:**

Types: CTD profiles, ADCP profiles of ocean current, juvenile salmonid catch statistics from trawls, salmonid stomach samples analyzed for diet composition, salmonid otolith analyses, Genetic Stock Identification, zooplankton distributions from bongo-net hauls.

Platform: Chartered fishing vessel

Spatial extent: 10 transects perpendicular to the coast between Yakutat Bay and Kodiak Island

Temporal extent: ~2 weeks each July-August of 2001-2004.

#### **Methods & Sampling**

Fish samples were collected with a 198-m-long mid-water rope trawl with hexagonal mesh wings and body, and a 1.2-cm mesh liner in the codend (Fig. 2, Table 1). The rope trawl was towed at 3.5 to 5 kt, at or near surface, and had a typical spread of 40-m horizontally and 14-m vertically. All tows lasted 30 minutes and covered 1.5 to 2.8 nautical miles. All fish sampling was done during daylight hours. Sometimes this meant that salmon trawls preceded CTD casts. For reference, sunrise occurred at 06:04 ADT and sunset at 22:27 ADT on 1 August 2003 at 58° N. Alaska Daylight Time (ADT) is 8 hours earlier than Greenwich Mean Time (GMT).

#### **Data Processing Description**

Salmon and other fishes were sorted by species and counted. Standard biological measurements including fork length, body weight and sex. Scale samples from a preferred area (to document age and growth) were taken from subsamples of all salmon species. Subsamples of juvenile pink (*Oncorhynchus gorbusha*), chum (*O. keta*), and sockeye (*O. nerka*) salmon were frozen whole for laboratory analyses of food habits, otolith hatchery thermal marks (pink and chum salmon), and genetic analysis (chum salmon). Tissues and otoliths were also saved from immature and maturing chum salmon to determine stock distribution and migration of these salmon. All other fish species were counted; juvenile rockfish (*Sebastes* spp.) and sablefish (*Anoplopoma fimbria*) were frozen whole for laboratory analyses.

06/20/12 - DMO added cruiseid. (smr)

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#### **Data Files**

**File**

**salmon\_hauldata.csv**(Comma Separated Values (.csv), 857.33 KB)  
 MD5:bdb9e4c1ae5170b2cc1c1d3886a08bce

Primary data file for dataset ID 3109

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**Parameters**

Parameter	Description	Units
year	year, reported as YYYY, e.g. 1995	dimensionless
haul_id	Haul identification number. First 4 numbers represent year, second 4 numbers represent haul number during year specified.	dimensionless
sta_id	station identification	dimensionless
month_local	month of year, local time	dimensionless
day_local	day, local time	dimensionless
yrday_local	local day and decimal time, as 326.5 for the 326th day of the year, or November 22 at 1200 hours (noon)	dimensionless
transect	transect number, as when a ship crosses an area repeatedly.	dimensionless
time_start_local	starting time of observation, local time , 24 hour clock (HHMM)	dimensionless
lat_start	latitude at starting time of measurement (west is negative), in decimal degrees	decimal degrees
lon_start	longitude at starting time of measurement (west is negative), in decimal degrees	decimal degrees
distance_start	distance from ?? at start of sampling	nautical miles
depth_w_start	water depth at start of sampling	meters
temp_start	water temperature at measurement depth, at the start of sampling	degrees Celsius
time_end_local	ending time of observation, local time , 24 hour clock (HHMM)	dimensionless
lat_end	latitude at end time of measurement; in decimal degrees (negative denotes South)	decimal degrees
lon_end	longitude at end time of measurement; in decimal degrees (negative denotes West)	decimal degrees
dist_end	distance from ?? at end of sampling	nautical miles
depth_w_end	water depth at end of sampling	meters
temp_end	water temperature at measurement depth, at end of sampling	degrees Celsius
speed_kn	speed of vessel during sampling	knots (nautical miles per hour)
habitat	near shore, continental slope, shelf, or off the shelf	dimensionless
bongo_flag	Y=bongo sample taken; N=no bongo sample	dimensionless
tucker_flag	Y=Tucker trawl sample taken; N=no Tucker trawl sample	dimensionless
ctd_flag	Y=CTD sample taken; N=no CTD sample	dimensionless
sea_state	description of wave height, condition	dimensionless
sky_cond	description of sky condition	dimensionless
wind_speed	wind speed	knots (nautical miles per hour)

maturity	"maturity of fish: juvenile, immature or adult	text
common_name	common name of fish	text
species	genus and species name of fish	text
num_caught	number of fish caught	integer
num_kept	number of fish kept for analyses	integer
num_thermal	number of fish processed for thermal mark	integer
num_tag_release	number of fish tagged and released	integer
num_genetics	number of fish processed for genetic stock identification	integer
num_stomachs	number of fish processed for stomach analysis	integer
adipose_clipped	number of fish processed for tissue analysis	integer
comments	free text comments	text
cruiseid	Cruise identifier.	dimensionless

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## Instruments

<b>Dataset-specific Instrument Name</b>	Acoustic Doppler Current Profiler
<b>Generic Instrument Name</b>	Acoustic Doppler Current Profiler
<b>Generic Instrument Description</b>	<p>The ADCP measures water currents with sound, using a principle of sound waves called the Doppler effect. A sound wave has a higher frequency, or pitch, when it moves to you than when it moves away. You hear the Doppler effect in action when a car speeds past with a characteristic building of sound that fades when the car passes. The ADCP works by transmitting "pings" of sound at a constant frequency into the water. (The pings are so highly pitched that humans and even dolphins can't hear them.) As the sound waves travel, they ricochet off particles suspended in the moving water, and reflect back to the instrument. Due to the Doppler effect, sound waves bounced back from a particle moving away from the profiler have a slightly lowered frequency when they return. Particles moving toward the instrument send back higher frequency waves. The difference in frequency between the waves the profiler sends out and the waves it receives is called the Doppler shift. The instrument uses this shift to calculate how fast the particle and the water around it are moving. Sound waves that hit particles far from the profiler take longer to come back than waves that strike close by. By measuring the time it takes for the waves to bounce back and the Doppler shift, the profiler can measure current speed at many different depths with each series of pings. (More from WHOI instruments listing).</p>

<b>Dataset-specific Instrument Name</b>	Conductivity, Temperature, Depth
<b>Generic Instrument Name</b>	CTD - profiler
<b>Generic Instrument Description</b>	The Conductivity, Temperature, Depth (CTD) unit is an integrated instrument package designed to measure the conductivity, temperature, and pressure (depth) of the water column. The instrument is lowered via cable through the water column. It permits scientists to observe the physical properties in real-time via a conducting cable, which is typically connected to a CTD to a deck unit and computer on a ship. The CTD is often configured with additional optional sensors including fluorometers, transmissometers and/or radiometers. It is often combined with a Rosette of water sampling bottles (e.g. Niskin, GO-FLO) for collecting discrete water samples during the cast. This term applies to profiling CTDs. For fixed CTDs, see <a href="https://www.bco-dmo.org/instrument/869934">https://www.bco-dmo.org/instrument/869934</a> .

<b>Dataset-specific Instrument Name</b>	Tucker Trawl
<b>Generic Instrument Name</b>	Tucker Trawl
<b>Generic Instrument Description</b>	The original Tucker Trawl, a net with a rectangular mouth opening first built in 1951 by G.H. Tucker, was not an opening/closing system, but shortly thereafter it was modified so that it could be opened and closed. The original had a 183 cm by 183 cm flexible rectangular mouth opening 914 cm long net with 1.8 cm stretched mesh for the first 457 cm and 1.3 cm mesh for last 457 cm. 152 cm of coarse plankton or muslin netting lined the end of the net. Tucker designed the net to collect animals associated with the deep scattering layers, principally euphausiids, siphonophores, and midwater fish. (from Wiebe and Benfield, 2003). Currently used Tucker Trawls usually have 1-m <sup>2</sup> openings and can have a single net or multiple nets on the frame.

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## Deployments

### GP0108

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57499">https://www.bco-dmo.org/deployment/57499</a>
<b>Platform</b>	F/V Great Pacific
<b>Report</b>	<a href="http://globec.whoi.edu/nep/reports/cgoa_cruises/gp0108cr.pdf">http://globec.whoi.edu/nep/reports/cgoa_cruises/gp0108cr.pdf</a>
<b>Start Date</b>	2001-07-17
<b>End Date</b>	2001-08-06
<b>Description</b>	The July - August 2001 OCC/GLOBEC cruise focused on salmon ( <i>Oncorhynchus</i> spp.), and zooplankton distribution, and physical properties (current, temperature, and salinity) along 11 transects beginning at Icy Point near northern Southeast Alaska and ending at Cape Kaguyak at the western end of Kodiak Island. Sampling along each transect occurred over the continental shelf of the Gulf of Alaska and beyond the 200-m slope and into oceanic depths. The purpose was to investigate the relationships between biological and physical oceanographic processes that affect the distribution of juvenile salmon in the coastal Gulf of Alaska. This deployment was also known as GP0101.

**GP0207-01**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57500">https://www.bco-dmo.org/deployment/57500</a>
<b>Platform</b>	F/V Great Pacific
<b>Report</b>	<a href="http://globec.whoi.edu/nep/reports/cgoa_cruises/gp0207cr.pdf">http://globec.whoi.edu/nep/reports/cgoa_cruises/gp0207cr.pdf</a>
<b>Start Date</b>	2002-07-11
<b>End Date</b>	2002-07-27
<b>Description</b>	NEP GLOBEC gave this cruise the designation GP0207 and NOAA gave this cruise the designation GP0201. The data say 0201. The cruise report, inventory and eventlog say GP0207. 18 May 2011, dld - This cruise consisted of Leg 1 and Leg 2. Metadata is edited to reflect this information gleaned from the event log and the cruise report. The cruise report starts with a transit, not the science. Leg 1 includes the 11-16 July 2002 transit from Dutch Harbor to Yakutat where science personnel and gear were picked up. The Leg ends on 27 July in Seward. Chief Scientist was Edward D. Cokelet. Leg 2 departed Seward on 28 July and arrived in Dutch Harbor on 8 August with Christine Kondzela as Chief Scientist.

**GP0401-01**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57501">https://www.bco-dmo.org/deployment/57501</a>
<b>Platform</b>	F/V Great Pacific
<b>Report</b>	<a href="http://globec.whoi.edu/nep/reports/cgoa_cruises/gp0401cr.pdf">http://globec.whoi.edu/nep/reports/cgoa_cruises/gp0401cr.pdf</a>
<b>Start Date</b>	2004-10-17
<b>End Date</b>	2004-10-28
<b>Description</b>	23 May 2011, dld - This cruise consisted of Leg 1 and Leg 2. Metadata is edited to reflect this information gleaned from the event log and the cruise report. Leg 1 departed Dutch Harbor. The Leg ended in Kodiak. Chief Scientist was Jamal H. Moss. Leg 2 departed Kodiak and arrived in Dutch Harbor. Chief Scientist was Edward D. Cokelet.

**MF0310**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57556">https://www.bco-dmo.org/deployment/57556</a>
<b>Platform</b>	R/V Miller Freeman
<b>Report</b>	<a href="http://globec.whoi.edu/nep/reports/cgoa_cruises/mf0310cr.pdf">http://globec.whoi.edu/nep/reports/cgoa_cruises/mf0310cr.pdf</a>
<b>Start Date</b>	2003-07-18
<b>End Date</b>	2003-08-09

**GP0207-02**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/58669">https://www.bco-dmo.org/deployment/58669</a>
<b>Platform</b>	F/V Great Pacific
<b>Report</b>	<a href="http://globec.whoi.edu/nep/reports/cgoa_cruises/gp0207cr.pdf">http://globec.whoi.edu/nep/reports/cgoa_cruises/gp0207cr.pdf</a>
<b>Start Date</b>	2002-07-28
<b>End Date</b>	2002-08-08
<b>Description</b>	NEP GLOBEC gave this cruise the designation GP0207 and NOAA gave this cruise the designation GP0201. The data say 0201. The cruise report, inventory and eventlog say GP0207. 18 May 2011, dld - This cruise consisted of Leg 1 and Leg 2. Metadata is edited to reflect this information gleaned from the event log and the cruise report. The cruise report starts with a transit, not the science. Leg 1 includes the 11-16 July 2002 transit from Dutch Harbor to Yakutat where science personnel and gear were picked up. The Leg ends on 27 July in Seward. Chief Scientist was Edward D. Cokelet. Leg 2 departed Seward on 28 July and arrived in Dutch Harbor on 8 August with Christine Kondzela as Chief Scientist.

#### GP0401-02

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/58671">https://www.bco-dmo.org/deployment/58671</a>
<b>Platform</b>	F/V Great Pacific
<b>Report</b>	<a href="http://globec.whoi.edu/nep/reports/cgoa_cruises/gp0401cr.pdf">http://globec.whoi.edu/nep/reports/cgoa_cruises/gp0401cr.pdf</a>
<b>Start Date</b>	2004-11-01
<b>End Date</b>	2004-11-12
<b>Description</b>	23 May 2011, dld - This cruise consisted of Leg 1 and Leg 2. Metadata is edited to reflect this information gleaned from the event log and the cruise report. Leg 1 departed Dutch Harbor. The Leg ended in Kodiak. Chief Scientist was Jamal H. Moss. Leg 2 departed Kodiak and arrived in Dutch Harbor. Chief Scientist was Edward D. Cokelet.

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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
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-0109078</a>
National Oceanic and Atmospheric Administration (NOAA)	<a href="#">unknown NEP NOAA</a>

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