Juvenile salmon diet from F/V Great Pacific, R/V Miller Freeman GP0108, GP0207-01, MF0310 in the Coastal Gulf of Alaska, Northeast Pacific from 2001-2003 (NEP project)

Website: https://www.bco-dmo.org/dataset/3030
Data Type: Cruise Results
Version: 1
Version Date: 2009-02-27

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

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

Contributors	Affiliation	Role
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Abstract
Juvenile salmon diet from F/V Great Pacific, R/V Miller Freeman GP0108, GP0207-01, MF0310 in the Coastal Gulf of Alaska, Northeast Pacific from 2001-2003.

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Coverage

Spatial Extent: **N**:60.0404 **E**:-137.1962 **S**:56.6725 **W**:-155.2792
Temporal Extent: 2001-07-17 - 2003-08-07

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 58o 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 gorbuscha), 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.

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Data Files

File
salmon_juv_diet.csv (Comma Separated Values (.csv), 1.03 MB) MD5:da123583a9e7cda9c943dd2ab94b09ed Primary data file for dataset ID 3030

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Parameters

Parameter	Description	Units
year	year of sample collection	unitless
haul_id	First four numbers represent year, second four numbers represent haul number during year specified in first four numbers	unitless
sta_id	Abbreviation for transect name and station number along a particular transect.	unitless
control_id	First four numbers are year; following six numbers are individual fish identification numbers.	unitless
month_local	month, local time	unitless
day_local	day, local time	unitless
time_start_local	starting time of haul, local time , 24 hour clock	HHMM
yrday_local	local day and decimal time, as 326.5 for the 326th day of the year, or November 22 at 1200 hours (noon)	unitless
lat_start	latitude at starting time of measurement (west is negative), in decimal degrees	decimal degrees
lon_start	longitude at starting time of measurement; in decimal degrees (negative denotes West)	decimal degrees
distance_start	distance from start of the transect?	nautical miles
depth_start	depth at the start of the haul	meters
temp_start	water temperature at measurement depth	degrees Celsius

time_end_local	ending time of haul, local time , 24 hour clock	HHMM
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
depth_end	depth at the end of the haul	meters
temp_end	water temperature at measurement depth	degrees Celsius
habitat	nearshore, shelf, slope, or offshore	unitless
name_common	common name: chum, pink or sockeye	unitless
species	genus and species name of the fish	Genus and Species
comments_diet	comments pertaining to the salmon stomach contents	unitless
comments_haul	comments pertaining to the haul	unitless
distance_end	distance along the transect at the end of the haul?	unitless
weight_wet	wet weight	grams
sex	M = male; F = female	M or F
pred_stom_wgt	predator stomach weight	grams
pred_full	Objective measure of how full the stomach was. (1 = least full, 7 = most full)	unitless
prey_wgt	prey weight	grams
prey_dig	Objective measure of how digested prey in diet is (1 = most fresh; 5 = most digested)	unitless
prey_count	number of prey found in stomach contents	count

prey_id_nodc	prey identification, NODC standard name	unitless
prey_nodc_common_name	prey common name, using NODC standards	unitless
cruiseid	cruise identifier	unitless

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Instruments

Dataset-specific Instrument Name	Midwater Trawl
Generic Instrument Name	Midwater Trawl
Dataset-specific Description	Fish samples were collected using a midwater rope trawl, which is 198-m long, has hexagonal mesh in wings and body, and has a 1.2-cm mesh liner in the codend. 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.
Generic Instrument Description	A mid-water or pelagic trawl is a net towed at a chosen depth in the water column to catch schooling fish such as herring and mackerel. Midwater trawl nets have very large front openings to herd schooling fish toward the back end where they become trapped in the narrow "broiler". The sides of the deployed net are spread horizontally with two large metal foils, called "doors," positioned in front of the net. As the trawler moves forward, the doors, and therefore the net, are forced outward, keeping the net open. This instrument designation is used when specific make and model are not known.

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Deployments

GP0108

Website	https://www.bco-dmo.org/deployment/57499
Platform	F/V Great Pacific
Report	http://globec.whoi.edu/nep/reports/cgoa_cruises/gp0108cr.pdf
Start Date	2001-07-17
End Date	2001-08-06
Description	The July - August 2001 OCC/GLOBEC cruise focused on salmon (Oncorhynchus 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

Website	https://www.bco-dmo.org/deployment/57500
Platform	F/V Great Pacific
Report	http://globec.whoi.edu/nep/reports/cgoa_cruises/gp0207cr.pdf
Start Date	2002-07-11
End Date	2002-07-27
Description	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.

MF0310

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

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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-0109078
National Oceanic and Atmospheric Administration (NOAA)	unknown NEP NOAA

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