(Katherine W. Myers)

WORK-IN-PROGRESS CLIMATE-OCEAN EFFECTS ON CHINOOK SALMON

PROJECT 712

PRINCIPAL INVESTIGATOR

Katherine W. Myers
University of Washington

CONTRIBUTING ORGANIZATION

Kawerak, Inc.

RESEARCH PERIOD

July 2007 - June 2010

BUDGET

$622,887.00

NATURE OR NETS?

A high priority issue of Arctic-Yukon-Kuskokwim region salmon management is to determine whether the ocean environment is a more important cause of variation in the abundance of salmon populations than marine fishing. At present, however, population-specific data on the ocean life history of AYK salmon are too limited to rigorously test hypotheses about the relative effects of environment versus fishing on their marine survival. Data on Chinook salmon in the marine environment are even more limited because of their low abundance compared to other salmon species. However, they are an important subsistence food to residents of the region.

OUR OBJECTIVES

Examine patterns of use of marine resources (habitat and food) by Chinook salmon and explore how they are affected by climate-ocean conditions in the Bering Sea and North Pacific Ocean.

Develop a comprehensive high seas Chinook salmon database (1955–2009) and map Chinook salmon marine distribution, migration routes and associated climate-ocean conditions, and the variability in ocean growth potential.

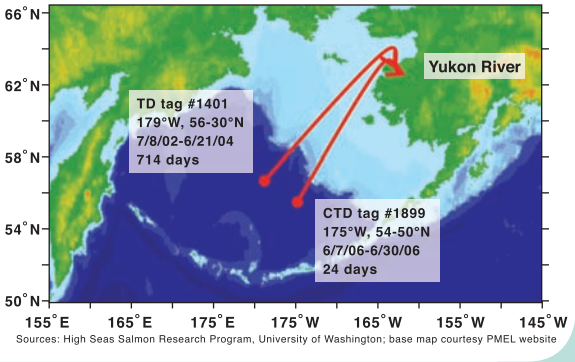
Reconstruct the histories of Chinook salmon ocean age, growth, and size-selective mortality; collect new data on diet; estimate consumption and growth under different conditions; and simulate different climate effects on age and growth.

RESEARCH FRAMEWORKS:
SALMON LIFE CYCLE – *PRIORITY #1;*

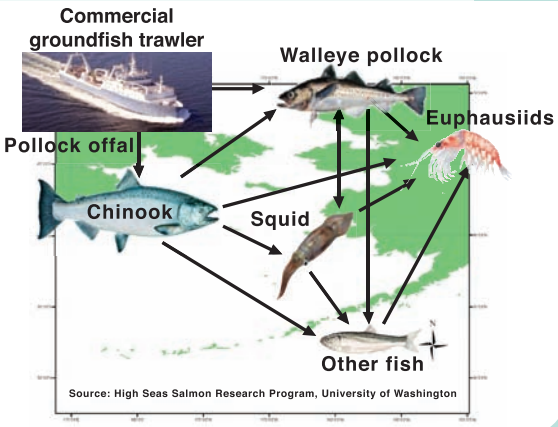
SYNTHESIS & PREDICTION – *PRIORITY #10*

SNAPSHOT

This project will examine the effects of ocean and climate conditions in the Bering Sea and North Pacific on Chinook salmon patterns of feeding and habitat use. Historical and current data will be incorporated into maps and models that will enable researchers to examine ocean migration patterns, bioenergetics, growth potential, and the effects of changing climate.



Wakatake maru international cooperative high seas salmon tagging, 1991-2009: Bering Sea release locations, release & recovery dates, and number of days of data recorded for two Chinook salmon tagged with electronic data storage tags & recovered by Yukon River fishermen. TD=temperature-depth tag; CTD=conductivity, temperature, depth tag. (Myers, UW)



Winter food web of AYK Chinook salmon in the eastern Bering Sea. (Myers, UW)

HOW WE WILL DO IT

We will compile historical data into a database and use this database to develop a GIS atlas of information on stock-specific Chinook salmon ocean distributions. We will also use research and commercial catch data to develop GIS maps of monthly distribution and relative abundance by ocean age and maturity group. Using scales from up to 50 fish per year, we will reconstruct ocean age and growth patterns. Stomach samples will provide information on diet. We will develop a gridded atmospheric and oceanographic database specific to Chinook salmon habitats in the Bering Sea. Using our collected historic and current data, we will create a bioenergetics model, growth potential maps, and a model for simulating climate effects on ocean growth rates of Chinook salmon.

REPORT COMPLETION

August 2010

AYK SSI Mission: *To collaboratively develop and implement a comprehensive research plan to understand the causes of the declines and recoveries of AYK salmon.*

ARCTIC-YUKON-KUSKOKWIM SUSTAINABLE SALMON INITIATIVE

BERING SEA FISHERMEN'S ASSOCIATION
110 W. 15TH AVENUE
ANCHORAGE, AK 99501
(907) 279-6519