

Oil Spill Recovery Institute Graduate Fellowship Annual Report

I. Personal Information

Name: Catherine W. Foster

Date: June 30, 2006

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II. Project Information

Grant Number: #05-10-15

Project Title: *Doctoral Dissertation: Human Dietary Response to Climate Change and Resource Availability*

Dates of Reporting Period: July 1, 2005 – June 30, 2006

Statement of Schedule:

The activities I have undertaken during the 2005-2006 academic year are as follows:

Activity	Quarter
a) Studied for and passed Department of Anthropology General Exam	Summer/Fall 2005
b) Wrote, submitted, and was awarded National Science Foundation Dissertation Improvement Grant for lab work	Fall 2005
c) Presented dissertation project in various venues (see below)	Winter/Spring 2006
d) Traveled to Kodiak to pull radiocarbon samples from archaeological collections	Spring 2006
e) Pulled otoliths from archaeological collections	Fall 2005
f) Began to clean, rehouse, and prepare archaeological collections for analysis	Winter 2006 – present
g) Began fish bone analysis	Winter 2006 – present
h) Began otolith preparation for sampling	Spring 2006 – present

In previous quarterly reports, I have mentioned that I have not begun the otolith sampling because the mass spectrometer at the University of Washington that accommodates small calcium carbonate samples is broken. As a solution, I have arranged to work with Steve Wishniowski, an otolith reader at the International Halibut Commission in Seattle, to

prepare the archaeological otoliths in the spring and summer of 2006 (www.iphc.washington.edu/halcom). I will travel to the Woods Hole Oceanographic Institute Fish Ecology lab in September 2006 (www.whoi.edu) to sample and analyze the otoliths under the direction of Simon Thorrold. Based on this development, and the good progress I am making with the archaeological fish bone identification, I feel that I have conformed to my milestone schedule and will begin writing my dissertation during the next academic year.

Research Description:

This research employs zooarchaeological remains, stable isotopes extracted from archaeological fish otoliths, and prehistoric salmon abundance data to test the idea that climate change and resource availability influenced prehistoric fishing strategies. This research involves three major data collection projects:

1) **Fish bone identification and quantification:** I am currently identifying the fish bones from two archaeological collections excavated on Kodiak Island. Each fish bone is categorized as “identifiable” or “unidentifiable,” then identifiable portions are identified to the lowest taxonomic level possible using comparative skeletons borrowed from the University of Wisconsin, as well as bone identification reference texts. When the identification is complete, I will use relative abundance measures and statistical methods to test my hypotheses.

2) **Otolith preparation and sampling:** I have pulled otoliths from the archaeological collections, and have been working with Steve Wishniowski at IPHC to prepare them. We have identified the otoliths as Pacific cod (*Gadus macrocephalus*) and determined that they are intact enough for analysis. After cleaning, the otoliths will be cut in half using a diamond saw and then polished to reveal the growth rings for aging. After they have been aged, we will determine a sampling strategy for the stable isotope study based on the growth rings observed during the aging study. Following this procedure, I will travel to WHOI where Simon Thorrold will teach me to sample the otoliths using a micromilling device and will also process the samples using a mass spectrometer. The stable isotope data will be used to reconstruct changes in paleotemperature in the Gulf of Alaska and to make predictions about what fish species would have been available off the coast of Kodiak over the last 2200 years.

3) **Data analysis:** This portion of the project will involve me compiling existing salmon abundance data for Kodiak Island, the fish bone data, the otolith data, and other paleoenvironmental data for the Gulf of Alaska. These data will then be arrayed against one another to test my hypotheses during the writing stage of my dissertation research.

Presentations:

- a) Breadth in Anthropological Research Graduate Student Conference, University of Washington, Department of Anthropology, paper presented January 28, 2006
- b) Alaska Anthropological Association Annual Meeting, Kodiak, Alaska, paper presented March 2, 2006
- c) Department of Anthropology Dissertation Colloquium, University of Washington, presented March 10, 2006
- d) International Council for Archaeozoology Conference, Mexico City, paper to be presented August, 2006

Other notable events, etc:

- a) Awarded Alaska Anthropological Association Scholarship (\$750) for 2006-2007 academic year
- b) BAR Graduate Student Conference “Most Innovative Methods” award
- c) Awarded travel grant from University of Washington Quaternary Research Center (\$960), for travel to Kodiak in March 2006
- d) Awarded a second year of funding through the Oil Spill Recovery Institute Graduate Fellowship program (\$33,333)
- e) Awarded a National Science Foundation Dissertation Improvement Grant (\$19,800)