

Essential Fish Habitat project status report

Reporting date: 10/31/08

Project number: 2008-08

Title: Characterization of Benthic Infauna Community for Modeling Essential Fish Habitat in the Eastern Bering Sea

PIs: Cynthia Yeung, Mei-Sun Yang, Robert McConnaughey

Funding year: 2008

Funding amount: 66,500

Status: Complete Incomplete, on schedule Incomplete, behind schedule

Planned completion date if incomplete:

Stomach collection was completed in August 2008. Processing of stomach samples is in progress and on schedule.

Infauna and sediment grab sampling is incomplete and behind schedule. The NOAA ship *Fairweather* on which sampling was scheduled during July 21-August 9, 2008 was unable to sail for lack of an engineer. Eventually, only two of the original 19 scheduled sea days were salvaged, one of which was required for round-trip transit to the study area. One of three passes on one of six planned acoustic transects and three of 31 planned grab stations were sampled in the remaining time (Fig. 1).

A new proposal has been submitted to EFH FY09 for funds to complete the project. Additional ship days are proposed on a chartered vessel for the 2009 RACE EBS trawl survey to collect grab samples. Contingent on supplemental EFH funding, the project will be completed one year behind schedule:

August 2009 – infauna and sediment grab sampling; stomach collection completed.

February 2010 - sample processing completed.

June 2010 - data analysis and reporting completed.

Reporting: Have the project results been reported? If yes, where were the results reported?

No.

Results: What is the most important result of the study?

Sediment properties and benthic infauna community are defining habitat characteristics for certain fish species. Infauna compose a significant portion of the diets of these

species, and sediment properties are the main structuring force of infauna communities. The strength of this relationship is examined by investigating the spatial correspondence between fish diet and infauna distribution, and the predictability of infauna community by sediment properties.

We requested the collection of 15 stomachs per fish species (6) per station at 27 of the 31 planned infauna and sediment grab stations (Fig. 1) on the 2008 EBS bottom trawl survey (total stomachs requested=1620). We requested that, if possible, the 15 stomachs for each species be obtained from three length classes (<20 cm, 20-40 cm, >40 cm) in equal numbers (5). Collection was not requested at all 31 stations because effort was a concern. Actual numbers obtained were: 229 Alaska plaice (AKP); 260 yellowfin sole (YFS); 286 northern rock sole; 215 flathead sole (FHS); 70 long head dab (LHD); 10 spinyhead sculpin (SHS); (total stomachs collected=1,070). The number of stomachs collected from target groundfish species at each grab station is given in Table 1. Length class distribution of these stomachs by species is being determined. Stomach content analysis is in progress.

Results showed the feasibility, effort-wise, to collect stomachs on the trawl survey even at all planned grab stations (31), since the actual number of stomachs attained will still likely be far less than the targeted number. Hence, ship time and man power requirements would still be manageable.

Due to loss of ship time, only three of 31 infauna and sediment grab stations were sampled in 2008 (Fig. 1). Infauna analysis is in progress. Granulometric analysis of sediment samples has been completed (Table 1). Geochemical analysis of the 2008 sediment samples will be run together with the additional sediment samples to be collected in 2009 with supplementary EFH FY09 funding. This would be the most cost-efficient way to proceed. However, if funding is not available, analysis will proceed on the 2008 samples only.

Table 1. Classification of sediments collected in July-August 2008 with van Veen grab on the NOAA ship *Fairweather*, and the corresponding numbers and species of stomach samples collected in the same period during the bottom trawl survey on FV *Arcturus* and *Aldebaran*.

station	Sediment						Stomachs						
	lat	lon	type	% gravel	% sand	% mud	station	LHD	AKP	NRS	YFS	FHS	SHS
A02	55.00	166.95	SM	0.0	48.8	51.2	A02	0	0	0	0	15	11
X10*	56.44	164.44	MS	0.0	62.5	37.5	E06	0	2	15	10	0	0
F07	56.67	164.00	MS	0.0	59.8	40.2	F07	0	15	15	15	0	0

*~17 km (~9 nmi) NE of E06 in same trawl cell; see Fig. 1
type – SM=sandy mud; MS=muddy sand

Benthic sampling data from the 2008 project will be added to the dataset of 26 such samples taken in the EBS in 2006 (Fig. 1), with the eventual goal of building a shelf-scale analysis of infauna-sediment associations.

A new EFH proposal under the same title has been submitted for FY09 to complete grab sampling for this 2008 EFH project. The research plans to fulfill 2008 EFH project goals, continue building databases of benthic infauna communities and sediment characteristics in the EBS, and generate inputs to advance habitat modeling. Sampling is proposed to be conducted on a chartered EBS trawl survey vessel. Stomach collection will be requested again as a 2009 EBS trawl survey special project to (1) compare concomitantly-collected data on infauna prey field and fish diet, (2) augment sample sizes for certain species/length sizes, and, if sample sizes are adequate, (3) compare interannual variability of diet.