

## **Bering Sea Integrated Ecosystem Research Project: October 1, 2009 Report for B72**

**Project #: B72**

**Title: Spatially explicit integrated economic model of pollock and cod**

**Principal Investigator(s) and Recipient Organization(s):**

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**Contract Period and Amount of Funding: Summer 2008 – September 20, 2010. Current contract amount in spending plan is \$248,051. Total B72 project amount through 2012 is \$455,734.**

**Report Period: This covers work through September 2009.**

**Report Date: October 1, 2009**

**Lead Author of Report: Alan Haynie**

**Proposed timeline and milestones within report period**

- Submit paper predicting fishing using VMS data; complete draft of new pollock modeling for AFSC internal review.
- Complete data organization of environmental and Pacific cod data; run first pollock models with environmental data.
- Present revised pollock model with environmental data; run “basic” cod models.

**Project Summary:** This project will model how fishing effort is likely to change in the Bering Sea cod and pollock fisheries under changing environmental conditions. These models will be constructed both directly, through the inclusion of spatially-explicit environmental data into existing models, and indirectly, through the inclusion of spatial predictions of fish abundance from FEAST or other BSIERP-related models. This project will allow us to model how research conducted on the Bering Sea ecosystem (as reflected in hypotheses 1-4) will translate into changes in fishing effort, as discussed more directly in hypothesis 5.

**Progress Summary:** Since the April project report, project-related work has included:

- Interviewed post-doctoral candidates and hired post-doctoral economist Lisa Pfeiffer. Lisa is working with Alan Haynie on modeling the pollock catcher processor fleet and organizing cod and environmental data.
- Revised a manuscript after AFSC internal review which develops a methodology that allows us to use VMS data to accurately predict where fishing occurs for unobserved trawl vessels.
- Revised and re-submitted existing manuscript (joint work with David Layton of UW) that contains first pollock fisher location choice models for the catcher vessel fleet; manuscript has been accepted and is forthcoming in the *Journal of Environmental Economics and Management*.
- For a related project, wrote a conference draft manuscript of a new spatial-GEV model to supplement the existing modeling approach (joint work with David Layton of UW); this new method has the potential to provide a significant improvement in the spatial modeling of fisheries behavior

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- Analyzed salmon bycatch in the pollock fishery for a related project, which will be very important in future predictions of fishery behavior in the pollock fishery after new salmon bycatch regulations are implemented in 2011
- Continuing to organize environmental data for the project, including satellite, weather station, and buoy data.
- Held meetings with pollock and cod industry representatives to discuss data collection and fleet organization.

### **Lessons learned and project adjustments:**

We were unsuccessful in our first effort to find a suitable post-doc, but fortunately have now found the ideal person in Lisa Pfeiffer, who began working at AFSC on August 30. This delay has led to PI effort on the project being shifted from FY09 to FY10. Work in FY09 has focused on various aspects of modeling as well as data preparation. Alan and Lisa are currently working together with data and modeling, with Lisa being 100% dedicated to this task.

**Integration activity:** The following integration activities have taken place to during the last 6 months:

- Participating in modeling and PI conference calls
- Continuing to work with other PIs to identify the linkage between B72 and other project elements.

### **Education and Outreach:**

Spatial-GEV modeling approach presented at the World Conference of Spatial Econometrics in July with some discussion of BSIERP project.

### **FY10 Project B72 Workplan**

Current: Continuing to organized fishery and environmental data and to develop pollock model for offshore sectors.

January 2010: Present revised pollock model with environmental data.

April 2010: Run first cod models with environmental data; submit pollock paper for review and present in Sendai, Japan.

September 2010: Present revised cod models.

### **2009-2012 Tasks, Assignments, Timeline:**

B72: Spatially explicit integrated economic model of pollock and cod, Contact: Alan Haynie, [Alan.Haynie@noaa.gov](mailto:Alan.Haynie@noaa.gov), 206-526-4253.

All work will be overseen by Alan Haynie with the assistance of AFSC postdoctoral economist Lisa Pfeiffer and potentially other researchers who may collaborate on related work if external funding will support this work. Below is an outline of the 5-year plan for this B72 project.

January 2010: Present revised pollock model with environmental data.

April 2010: Run first cod models with environmental data; submit pollock paper for review and present in Sendai, Japan.

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September 2010: Present revised cod models.

September 2011: Submit manuscripts for publication. Incorporate FEAST and other spatially-explicit BSIERP model output into pollock and cod models, as feasible.

September 2012: Finalize and submit all publications.

Depending on the interaction of this project with other aspects of BSIERP, years 3-5 could extend slightly depending on the pace of other projects.