Update Report
Period: 6/1/2014 - 2/28/2015
Project: E/I-22 - NMFS/Sea Grant Fellowship - Marine Resource Economics - Fish or Flight: Modeling the migration decisions of fish harvesters in rural Alaska

STUDENTS SUPPORTED

Jennifer, Meredith, jenmer8@uw.edu, University of Washington, Economics, status: new, field of study: Fisheries Economics, advisor: Chris Anderson, degree type: PhD, degree date: 2016-06-01, degree completed this period: No
Student Project Title:
Dissertation- Fish or Flight: Modeling the migration decisions of fish harvesters in rural Alaska
Involvement with Sea Grant This Period:
Fellow
Post-Graduation Plans:
Academic Job Market

CONFERENCES / PRESENTATIONS

Meredith J. Impact of fishing regulations on the migration decisions of rural Alaskans- Evidence from the regional data. Brown Bag presentation at Seattle Pacific University, Seattle, WA, February 20, 2015, public/profession presentation, 25 attendees, 2015-02-20

ADDITIONAL METRICS

P-12 Students Reached:	P-12 Educators Trained:
Participants in Informal Education Programs:	Volunteer Hours:
Acres of coastal habitat protected, enhanced or restored:	Resource Managers who use Ecosystem-Based Approaches to Management:
Annual Clean Marina Program - certifications:	HACCP - Number of people with new certifications:

ECONOMIC IMPACTS

Description	Patents	Market Impacts ($)	Non-Market Impacts ($)	Businesses Created	Businesses Retained	Jobs Created	Jobs Retained
None	0	0	0	0	0	0	0

SEA GRANT PRODUCTS

Description	Developed?	Used?	ELWD?	Number of	Names of

				Managers	Managers
Regional database of migration between Alaskan census areas linked with publicly available data about permits traded between those census areas.	Yes	No	No	0	

HAZARD RESILIENCE IN COASTAL COMMUNITIES

Name of coastal community	County	Number of resiliency trainings / technical assistance services provided	Was community hazard resiliency improved (e.g., via changes in zoning ordinances) ?
None		0	Yes

ADDITIONAL MEASURES

Number of stakeholders modifying practices: 0

Sustainable Coastal Development
# of coastal communities: 0

PARTNERS

Partner Name: NOAA Alaska Fisheries Science Center, type: Government, scale: Regional

IMPACTS AND ACCOMPLISHMENTS

Title: Sea Grant works to understand the drivers of outmigration from rural Alaskan communities
Type: accomplishment
Description:
Relevance: Declining local permit ownership in the Bristol Bay salmon fishery is of increasing concern to policy makers. Little is known about whether these permit sales correspond with rural residents leaving the village, whether they sell their permits under duress, or what policies would enhance the sustainability of rural harvesting operations.
Response: A Sea Grant fellow worked with sociologists and economists from NOAA's Alaska Fisheries Science Center in order to draft a survey designed to examine what factors are driving migration from vulnerable communities. Meanwhile, data at the regional level was analyzed to

see whether there is a correlation between fluctuations in the salmon fishery and migration flows.
Results: Although the individual household survey is not yet completed, the regional analysis concludes that there is a correlation between permit sales and migration out of rural communities. In the future, the results of the upcoming survey will test for a causal link between volatility in the fishery and rural residents leaving their villages. In addition, it will provide insight into whether permit subsidies, improved access to credit, or educational trainingt might make rural harvesting operations more sustainable.
Recap:
WSG plans to reduce the vulnerability of rural Alaskan communities by identifying policy interventions that promote the viability of local harvesting operations and reduce the probability that rural residents will be forced to exit the fishery.
Comments: none
Related Partners: NOAA Alaska Fisheries Science Center

PUBLICATIONS

No Publications Reported This Period

OTHER DOCUMENTS

No Documents Reported This Period

LEVERAGED FUNDS

No Leveraged Funds Reported This Period

UPDATE NARRATIVE

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Progress Report Narrative
NMFS - Sea Grant Marine Resource Economics Graduate Fellowship
Fish or Flight: Modeling the Migration Decisions of Fish Harvesters in Rural Alaska

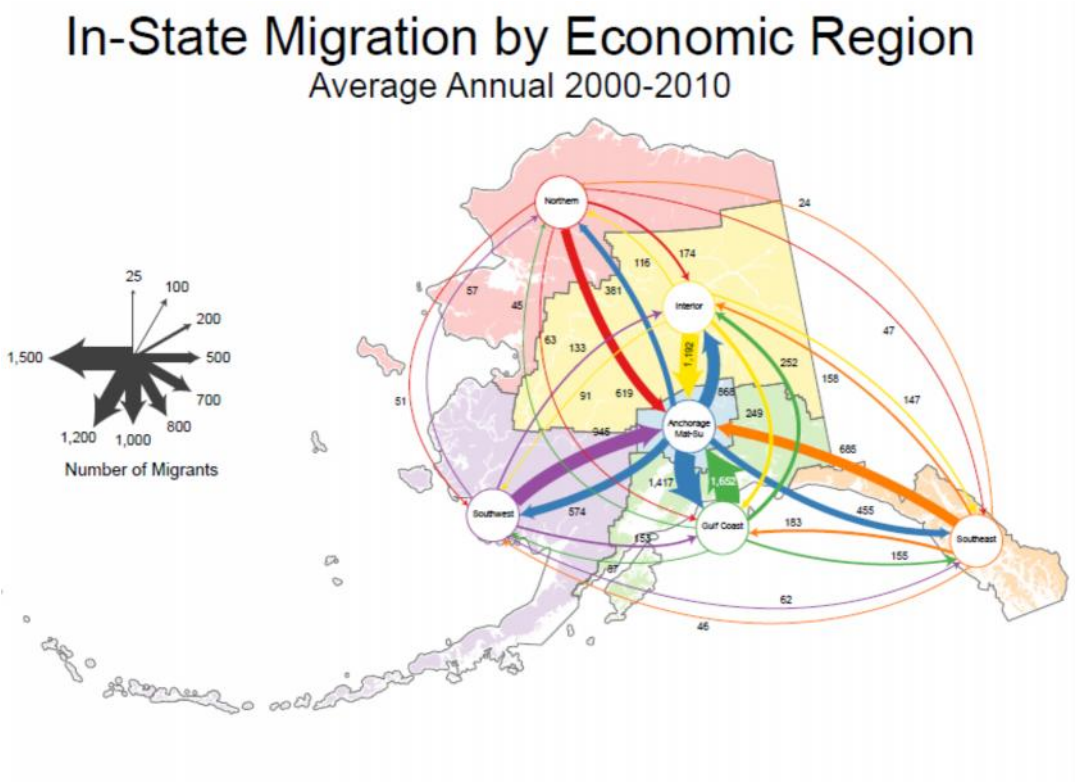
The goal of this project is to ascertain the impact of fishery regulations on migration patterns in rural fishing communities in Alaska and the accompanying effects on community well-being, vulnerability and adaptability. During this reporting period, progress towards this larger goal was made along several dimensions: analyzing trends at the regional level, building a theoretical model linking migration decisions to fisheries performance, drafting a household survey, making contacts with local NGOs and tribal associations, and planning for travel to pretest the survey and present the preliminary results.

First, data on migration between Alaskan census areas was obtained from the State of Alaska's demographer and combined with permit ownership data from the Alaska Commercial Fisheries Entry Commission and fisheries revenue data from NOAA. The aim of this regional analysis was both to ascertain whether permit sales or low fisheries revenue years are linked with increased migration out of rural areas at the annual level and to identify particular regions and fisheries that would be ideal to sample from for the household survey in the next stage of the project. The results between 1991 and 2011 (these are the years of migration data available from the IRS files) demonstrated that there has been an increase in migration from rural regions that depend on fisheries (particularly Bristol Bay) to the urban Anchorage/Mat-Su region (see Figure 1). However, the correlation between migration and permit sales or fisheries revenue is highly dependent on both the individual census area and the fishery that is being examined. Some fisheries like Bristol Bay salmon appear to be more directly linked to the communities' migration decision. Within this fishery, there is a relatively strong correlation between years when many permits were sold and years when many residents left the region. One of the issues that came up during this analysis was that regional migration data from prior to 1991 is not electronically available and thus we cannot examine the impact of the initial allocation of limited entry salmon permits in 1975, but we can still explore the impact of volatility in salmon landings and prices on migration decisions. Moving forwards, more analysis at the regional level will be conducted in order to aid in targeting specific communities for the household survey to be conducted in the winter of 2016. We are also in the process of incorporating additional control variables such as annual wages in census areas, fuel prices, and Permanent Fund Dividend payments that will allow us to isolate the impact of the fishery.

We also spent time building an economic model that would link the migration decision of rural harvesters to the sale of their permit or quota and their performance within the fishery. The resulting model assumes that harvesters are optimizing their utility across regions by choosing to migrate from rural to urban settings either when the extra utility from increased wages minus the cost of moving is greater than the rural utility (mainly from commercial and subsistence fishing) or when their income dips below a threshold that forces them to sell their permit and permanently decreases their rural utility. We believe that this model makes a contribution to the

literature on ecosystem-based fisheries management by incorporating the impact of uncertainty in the fishery upon human decisions and the vulnerability of small communities.

Figure 1



Another major focus during this reporting period was drafting the household survey that will be administered in winter of 2016. Since this project deals with human subjects and learning to design a survey instrument is a major component of my fellowship experience, it was necessary to obtain Delayed Onset of Human Subjects approval from the UW IRB (this was obtained in January of 2015). We are working with the Human Subjects Division to obtain approval of the focus group materials that we plan to conduct as early as May 2015. We plan to submit for full human subjects review by July of 2015. Prior to this, we plan to pretest our draft of the survey in focus groups to be conducted in the major regional hubs of Nome and Dillingham. The preliminary draft of the survey includes questions on migration history, qualitative questions about perceptions of the drivers of migration, income from fishing, and many control variables such as education and age.

Related to the pretesting of the survey, we have made contact with representatives of Kawerak and Bristol Bay Economic Development Corporation (BBEDC) in order to get advice about the project and also potentially forge relationships that would facilitate the survey. Kawerak is the regional Alaska Native nonprofit corporation of the Bering Strait region and is based out of Nome. Their mission is to economically and socially empower Native Alaskans and they are very interested in natural resource management. We have made plans to meet with Kawerak representatives in April of 2015 in order to discuss the project, how they might provide contacts to assist with the survey, and also to arrange pretesting of the survey in Nome. In addition, we have been in contact with Norman Van Vactor who is the CEO of BBEDC and he has expressed an interest in assisting with the project. We have plans to meet Mr. Van Vactor in Dillingham in April 2015 and are hopeful that this relationship will facilitate both the

conduction of the Dillingham focus groups in May 2015, the eventual household survey which would ideally take place in the Bristol Bay region, and possibly refer us to potential locals who would be interested in employment as enumerators or survey research assistants.

In addition to planning travel to Nome and Dillingham for April and May of 2015, we also submitted an abstract to the North American Association of Fisheries Economists (NAAFE) Forum. Our abstract was accepted and we will be presenting our preliminary regional analysis results, theoretical model, and soliciting feedback on the sampling strategy for the planned household survey at this forum in late May of 2015 (in Ketchikan, Alaska). We are hopeful that the input of fisheries economists, other social scientists, and industry experts who are familiar with the region and the fishery will be invaluable to our progress.