Annual Progress Report-Part I: Summary
Submitted to the
WRAC Administrative Office
School of Aquatic and Fishery Sciences
Box 355020
University of Washington
Seattle, WA 98195

PROJECT TITLE: Economic Impacts of Private Sector Aquaculture-Based Recreational Fishing in the Western USA

REPORT GIVEN IN YEAR: 2009


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FUNDING LEVEL: $198,698 total budget over two years

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**PROJECT OBJECTIVES**

The objectives of this project are as follows:

1. Collect Primary data from three distinct subpopulations: Aquacultural Suppliers of Recreational Fish (ASRF), their direct customers, and recreational anglers, and prepare an economic report quantifying the magnitude and value of the economic contributions of the ASRF industry.

2. Provide an appropriate sampling frame for tracking and documenting trends over time in the ASRF Industry for use in subsequent economic analyses:

3. Generate primary research about the impacts of the regulator and competitive environment on the aquaculture industry, including the relationships between private and public hatcheries, interstate trade regulations, and Native American reservation policies.

4. Develop a variety of outreach materials (including final report, peer-reviewed articles, extension, and popular press articles) and disseminate information (conferences, meetings, etc…).

**ANTICIPATED BENEFITS**

This study will benefit ASRF producers by demonstrating the direct, indirect and induced impacts of the ASRF industry on the western United States. This will be achieved by demonstrating the backward and forward linkages between ASRF producers and their direct customers, as well as the linkages with recreational anglers. This study will also be beneficial to the ASRF industry by demonstrating to regulatory agencies its positive economic impact and by demonstrating to the general public its positive impact on the recreational fishing industry. Finally, this study will estimate anglers’ preferences for various attributes of fisheries, such as catch rates and pristine value. This will help to
demonstrate the substitutability of angling across various fisheries, for example from private to public sites, and will aid policymakers in creating regulatory policies that are more impartial to the ASRF industry.

**PROGRESS AND PRINCIPAL ACCOMPLISHMENTS**

Initial funding for the project was originally received in late January, 2008. Since that time, the project has generally progressed in accordance with the original timeline, though we decided to delay the surveying of ASRF direct customers (objective 1) until after the 2009 summer fishing season, thus slightly augmenting the original timeline. We anticipate a final report distribution date on or around May 2010.

**Objective 1: Data Collection and Economic Report, Year 2 Accomplishments**

The accomplishments for objective 1 will be subdivided into three sections: ASRF Producers, ASRF Direct Customers, and Recreational Anglers.

**ASRF Producers:**
1. Most ASRF producers in the Western United States had received surveys by September 2008. However, a new set of previously unidentified ASRF permit holders in California was revealed to the CSU research team in late 2008.
2. The information gathered from these producers has been summarized in an economic development report which illustrates many key aspects of the ASRF industry, such as demographic information, cost structure, sales outlets, location of purchases, and the geographic distribution of permit holders.
3. The information gathered from these producers was also compiled into IMPLAN input-output software in order to create a preliminary estimate of the economic contribution of the ASRF industry. Using IMPLAN, we estimate that for a 57 million dollar industry (annual) such as the ASRF, the economic contribution is roughly $110 million dollars in the Western United States, and that the ASRF industry supports approximately 1682 full time jobs. This estimate does not take into account the “forward linkages” associated with ASRF production (economic activity generated from the final use of ASRF products, such as in private fisheries or by recreational anglers). During months 22-30, the CSU team will compile information from recreational anglers and ASRF industry direct customers in order to more completely assess the economic contribution of the ASRF industry in the Western United States.

**Recreational Anglers:**
1. The CSU team, with the help of Rebecca Cooper and Ken Cline, created a survey instrument which was used to collect data from recreational anglers.
2. The CSU team conducted two focus groups on the survey instrument.
3. Rebecca Cooper and Ken Cline, with the help of Jeremy Liley, identified the specific addresses of 29 private fisheries (e.g. private fishing clubs, private
ranches, homeowner’s associations, other private property) that would be willing to have surveys distributed to their anglers.

4. Supplemental funding from a similar project was leveraged in order to facilitate a more robust angler sample.

5. Surveys have been distributed to roughly 1400 surveys have been distributed in Colorado (by the CSU research team) and roughly 700 in California (by the UC Davis research team). These surveys have been distributed at public lakes, rivers, streams, and ponds. Surveys have also been distributed at private fishing clubs, dude ranches, homeowners’ associations, and other private property. When the project is completed, we anticipate having distributed 2200 surveys in both states (total).

6. We anticipate that the project will continue to stay on schedule and that data gathering from ASRF direct customers will commence shortly in mid-October (Month 22).

**ASRF Direct customers:**

While no data has been collected to date, a survey instrument has been created and will be taken to focus group during the next month. Furthermore, as outlined in the next section, a sampling frame has been created for this population and surveys will begin to be distributed during October, November, and December 2009 in order to align with the completion of the 2009 fishing season.

**Objective 2: Sampling Frame Development, Year 2 Accomplishments**

1. The CSU team has further refined their ASRF sampling frame from 2008 by including an additional 100 aquaculture permit holders from California.
2. The CSU team, with the help of Rebecca Cooper and Ken Cline, created a sampling frame for recreational anglers in both California and Colorado. Nearly 60 policy relevant recreational angling sites, along with nearly 2000 recreational anglers in both California and Colorado, have been identified. All of the aforementioned individuals have been surveyed.
3. Finally, with the help of Rebecca Cooper and Ken Cline, a list of over 1000 direct customers to the ASRF industry have been identified in Colorado. These individuals will be receiving surveys starting mid-October, 2009.

**Objective 3: Other Primary Research, Year 2 Accomplishments**

1. One issue identified by the research team is the presence in the Northwest (primarily Washington and Alaska) of private, non-profit producers that supply recreational fish. While the key focus of the study is for-profit firms, we believe it will be appropriate to discuss the non-profits in the context of the final report. The CSU team will commence work on other components of this objective after all primary data has been collected.
2. A second identified area of research is the nature of the regulatory structure of the ASRF industry, especially as the regulators tend to be production competitors. From an economic standpoint, this is an extremely unusual structure, which likely leads to incentives that may not be in line with maximization of social welfare. The team intends to explore this relationship in a theoretical paper that will document the various incentives that result from this structure.

Objective 4: Outreach Material Preparation and Delivery, Year 2 Accomplishments

1. Outreach objectives, in terms of preparation and dissemination of research results, have been distributed through various media during 2009. Presentations have been made to the Colorado Aquaculture Association and to the Western Agricultural Economics Association by Daniel Deisenroth about the economic contribution of the ASRF industry.

2. Furthermore, in addition to two extension pieces authored in 2008, Craig Bond and Daniel Deisenroth have authored 4 extension articles in The Fishline (published by the CO Aquaculture Association) and one economic development report in order to broaden the audience which is exposed to the results of this study.

3. In order to inform anglers about the nature of the project and the reasons for collecting the data on recreational fisheries, we created a FAQ website about the project (http://dare.agsci.colostate.edu/csuagecon/anglersurvey).

USEFULNESS OF FINDINGS

The team of researchers at CSU has already compiled a list of active ASRF producers and used this list to gather information regarding basic operations, expenditures, labor and demographics of the ASRF industry. This data has been used to demonstrate the economic contribution of the ASRF industry to the Western United States. We have evaluated the direct effect of the ASRF through sales, as well as the indirect and induced effects of these businesses on their local economy. The indirect and induced effects are found by using statistical models to trace the economic impacts of backward linkages (up the supply chain) and forward linkages (down the supply chain) of the ASRF, and estimating a number called a “multiplier.” The multiplier gives the amount of dollars an industry will produce for an economy for every one dollar put into that industry. For example, an output multiplier of 1.89 indicates that for every dollar that is put into the ASRF industry, $1.89 dollars is returned to the local or regional economy. This multiplier is used to estimate that a $57 million dollar industry like the ASRF industry contributes roughly $108 million of economic activity annually to the Western United States. Similar logic is applied to estimate that this industry contributes roughly 1682 jobs to this same region.

This information has directly benefited the producers of the ASRF by acting as an educational tool for the general public and for regulatory agencies. As a result, policy decisions may be impartial and thus potentially more favorable than past legislation which was made without the aforementioned information at hand.
Finally, while all business information gathered during this process will be kept confidential as per the original confidentiality agreement, the names and locations of the individual ASRF firms, separated from those firms who hold non-ASRF aquaculture permits, will be useful for any future research regarding this industry. Furthermore, information regarding the geographic distribution of the ASRF industry should prove useful in terms of policy decisions.

These economic contribution estimates take account for all dollars spent on ASRF inputs, such as fish feed, equipment, and labor, collectively known as “backward linkages”. Money spent on inputs to ASRF production trickles through a local or regional economy and these dollars ultimately lead to an output multiplier of 1.89. However, one shortcoming of this type of analysis is that it does not take into account for economic activity generated by the final users of ASRF products.

The direct customers of the ASRF industry, along with recreational angling at many venues, depend critically on the presence of the ASRF industry. Failing to take into account the economic activity generated by these sectors would potentially grossly understate the true economic contribution of the ASRF industry.

As such, researchers have created a sampling frame for both of these groups (ASRF direct customers and recreational anglers), and have already collected data from thousands of recreational anglers from around the West. This data, coupled with data collected from ASRF direct customers in late 2009, will be used to estimate the economic contribution of these sectors which is derived from the presence of the ASRF industry. By May 2010, these estimates will be combined with the previous estimates of the ASRF industry economic contribution in order to estimate the total economic contribution of the ASRF industry in the Western United States.

**WORK PLANNED FOR NEXT YEAR**

Work has generally progressed in accordance with the original timeline, with a few delays which will ultimately result in a final report distribution date of May 2010. Work planned for next year includes the following:

2. Create outreach material relating to the economic contribution of recreational fishing that comes as a result of the presence of the ASRF industry (Months 22-27).
3. Distribute Surveys to the direct customers of the ASRF producers via mail (Months 22-24).
4. Create outreach material relating to the economic contribution of the direct customers of the ASRF industry (Months 22-27).
5. Integrating the results from all three groups (ASRF producers, their direct customers and recreational anglers) into input-output models such as IMPLAN in
order to estimate the total economic contribution of the ASRF industry (Months 22-30).

6. Preparing the final economic report (Months 22-30).

7. Continuing investigation into the scale and scope of non-profit Northwest suppliers and impacts of the regulatory and competitive environment on the aquaculture industry, possibly including the relationships between private and public hatcheries, interstate trade regulations, and Native American reservation policies (Months 22-30).

8. Preparation and dissemination of the research findings in peer-review academic journals, extension publications, popular press publications and conference and meeting presentations (Months 22-30).

IMPACTS

The impact of this research will come in the form of greater awareness of the ASRF industry. Specifically, by demonstrating the economic impact of the ASRF industry, policy makers will be able to make more informed decisions regarding regulations of this industry, which may help to facilitate lower costs and more profitability for the ASRF producers while ensuring greater regional economic prosperity.

SUPPORT

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SUBMITTED BY: 9/14/09

Title: (Work Group Chair or PI) Date

APPROVED: 9/14/09

Technical Advisor Date
PUBLICATIONS, MANUSCRIPTS, AND PAPERS PRESENTED:

Publications in Print


Deisenroth, D. and C.A. Bond (2009a) “The Aquacultural Suppliers of Recreational Fish: A Look at the Freshwater Recreational Fish Industry in the Western United States” (Appendix 5)


Presentations

“The Economic Contribution of the Aquacultural Suppliers of Recreational Fish in The Western United States”
  • Presented at the WAEA annual meetings in Lihue, Hawaii, June 2009.

“A Preliminary Look at the Aquacultural Suppliers of Recreational Fish in The Western United States”