Evaluation of the Human Dimensions Aspects of the JRCGC Fisheries Research Project

December 2005 Report

Flaxen Conway[1] and Carrie Pomeroy[2]

Background – Why We Conducted This Evaluation

In the summer of 2003, we were contacted by the principal investigators of a near shore fisheries research project being carried out in Oregon and California. The Juvenile Rockfish, Cabezon, and Greenling Collaborative Fisheries Research (JRCGC) project's principal investigators, one of the fishermen partners, and a local scientist had designed a process to evaluate the success of the project relative to its biological objectives. They also wanted to evaluate the success of the project relative to its human dimensions. What made or could make their fisherman-scientist partnership in research work (better) with regard to partner involvement and project communication? And how could this be applied to future projects?

These questions were timely as the practice of research that deliberately connects and engages fishermen and scientists to address information needs for fishery management has recently gained attention and financial support. A 2003 National Research Council report, *"Cooperative Research in the National Marine Fisheries Service,"* states that there is a growing trend to include non-governmental parties in fisheries research under the general term "cooperative research." This trend can be seen in university research programs and in some coastal communities where local commercial fishermen are adding research to their palette of income-earning opportunities. It is also evident in fisheries management meetings where talk about having the "best available science" often conflicts with the amount and quality of data that are actually available, as research and the resources to support it often lag far behind the information needs.

Declarations are frequently made about the benefits of cooperative research, but what *is* cooperative research, and what makes it work? In addition, many of these fisherman-scientist partnerships in research are labeled variously (and even synonymously) as cooperative or collaborative. Sometimes the same project will be called "cooperative" by one partner and "collaborative" by another. But are they the same thing? If not, what is the difference between them? Although there is not full agreement in the literature, generally speaking "cooperative research" has limited roles for some partners, whereas "collaborative research" involves partners equally in all phases of the research process. It appears that most fisherman-scientist partnerships in research generally fall somewhere along a continuum, from 100% cooperative to 100% collaborative.

The question the JRCGC PIs and partners posed to us was, "from a human dimensions perspective, how is the JRGCG doing?" As an independent team of social scientists interested in partnerships in fisheries research, we responded by designing and conducting a brief survey to elicit project participants' motivations, expectations and experiences in the project, their

[1] Extension Community Outreach Specialist, Oregon Sea Grant, flaxen.conway@oregonstate.edu
[2] Marine Advisor, California Sea Grant Extension Program, cmpomeroy@ucdavis.edu

perceptions and opinions of its strengths and weaknesses, and their attitudes about participating in future fisherman-scientist partnerships in research.

Overall, participants were positive about their experience, although the need for better communication throughout the project and fishermen's desire for more substantive input at most stages in the project were noted. This report discusses the survey approach and findings, and their implications for the design, effectiveness and evaluation of future cooperative and collaborative fisheries research projects.

What We Did

To evaluate the human dimensions of the JRCGC project, we conducted a survey of project participants in summer 2004. The sampling frame for the study consisted of the two co-PIs and the 18 other project participants, whose involvement ranged from providing limited input on project design or serving as a source of contacts with prospective study participants to direct involvement in data collection and other activities throughout the JRCGC project.

To help us design an effective survey, we first reviewed documentation for the project. We then engaged in a conference call with project leaders, one fisherman participant, one scientist participant, and one Sea Grant Extension participant to determine the best approach for conducting the survey. Because of the limited resources available, our options were limited to telephone and mail surveys. Project participants on the call advised that a mail survey would be best to maximize the response rate for all three groups: fishermen, scientists and Extension agents.

We developed a cover letter and an eight-page mail survey that asked participants about their motivations for participating in the project, their expectations and experiences related to level of participation, their perceptions and preferences related to cooperative and collaborative research, and their attitudes about participating in future projects. The survey included a mix of closed and open-ended questions. Each survey respondent was assigned an id code, the key to which was maintained in a separate, secure file, so that we could track responses and assess non-responses. Respondents were assured of their anonymity in the reporting of research results. (Only Conway, Pomeroy and their research assistant have access to the individual data and the id key.) We sent the draft survey to colleagues experienced in evaluation research for their review, revised it, and then finalized it. We did not test the survey because of the small population size and the lack of suitable test participants.

We mailed the cover letter and survey to the 22 project participants in mid June 2004. In mid July, we sent a reminder note along with a second copy of the survey to those who had not yet responded. By the end of August, we had received 17 completed surveys, for a total response rate of 77%. We attribute the high response rate to project participants' interest in the human dimensions evaluation, and to several partners' efforts to encourage others to participate in the survey despite the timing of the survey (at the onset of the summer fishing and scientific research seasons). Respondents included the two co-PIs, nine fishermen, three scientists and three Sea Grant Extension agents. Non-respondents included four fishermen and one scientist, 31% and 25% or their respective groups of project participants.

The survey data were entered into an Excel database. Each respondent was assigned a unique id, and his/her identifying information was maintained in a separate, secure file. Responses to open-ended questions were sorted, post hoc, into categories of like responses for further analysis. We then imported the data into SPSS (Statistical Package for the Social Sciences), and conducted simple descriptive analyses of the data for all respondents, and by primary group or community identity: fishing, science and Extension. To simplify the analysis and better understand the perspectives of participants other than the co-PIs, we excluded the two co-PIs' responses from subsequent analysis, for a sample size of 15.

What We Learned

The results presented here are based on the responses of the 15 JRCGC project participants (other than the co-PIs) who responded to the survey. Results are presented for the group as a whole, and by primary community affiliation (fishing, research or Extension community).

Getting Started; Getting and Staying Involved

The first set of survey questions had to do with how and why partners got involved and their level of involvement. Roughly 40% of study participants reported multiple ways of learning about the project, although the majority (71%) reported that they learned about the project from a Sea Grant Extension Agent. When asked about how they became involved in the project, roughly 40% reported multiple ways, however the majority (70%) reported that they became involved because they were asked. When asked about their reasons for being involved, the two reasons cited most often were “interest in the research” (87%) and “opportunity to learn from others” (73%).

However, an analysis broken out by community revealed more about this (Table 1). Some fishermen and scientists expressed interested in the research to address a data need. The majority of fishermen and Extension Agents saw it as an opportunity to learn from others. Interestingly, nearly half of fishermen and two-thirds of the Extension Agents, but only a minority of scientists, saw their involvement as an opportunity to teach others what they know.

Table 1. Reasons participants become involved in the JRCGC (%).

	Fishermen N=9	**Scientists N=3**	**Extension Agents N=3**	**All N=15**
Availability of data on this research topic	55.6	66.7	0	46.7
Quality of available data on this topic	55.6	33.3	0	40.0
Interest in the research	88.9	100.0	66.7	86.7
Opportunity for learning from others	88.9	33.3	66.7	73.3
Opportunity to teach others what I know	44.4	0	66.7	40.0
Other	33.3	0	100.0	40.0

When asked if their decision to participate in the project was affected by the involvement of others (fishermen, scientists, or Extension Agents), 60% said "yes;" and their explanations indicated that working with others was a draw.

Table 2 shows that some roles played in the project differed by respondents' community group (fishermen, scientists, or Extension Agent), while others were more common across groups. An interesting finding was that two-thirds of the fishermen who responded reported playing an active role in problem solving.

Table 2. Individuals' involvement in the JRCGC (%).

	Fishermen (N=9)	**Scientists (N=3)**	**Extension Agents (N=3)**	**All (N=15)**
Roles played				
Research design	44.4	33.3	66.7	46.7
Networking	33.3	66.7	100	53.3
Gathering data	88.9	33.3	66.7	66.7
Analyzing data	11.1	0	33.3	13.3
Reporting results/project promotion	33.3	0	33.3	26.7
Other	22.2	33.3	66.7	33.3
Active in problem solving	66.7	33.3	66.7	60.0

When asked what factors limited their involvement, the three most important factors cited by respondents were time, funding, and environmental conditions. Time was the most important limiting factor with scientists, whereas time and environmental conditions were most important to fishermen.

When asked if their actual participation in the project differed from their expected participation, the majority (80%) said no, but explanations suggested disappointment about time constraints that limited either their involvement, their ability to fully enjoy their participation in the JRCGC as a rewarding experience, or both.

When asked whether they felt there were benefits from their involvement in the project, 89% of fishermen, and 67% of scientists and Extension agents responded positively, and cited mutual learning, improvements in data collection methodology, and developing relationships with other project participants.

Fewer than half of the survey respondents (44% of fishermen and 33% of scientists and Extension Agents) reported no costs or drawbacks to their involvement in the project. Among those who reported costs or drawbacks, fishermen cited unanticipated insurance costs (noted also by an Extension Agent), while scientists reported unexpected time requirements.

Another question we had was whether participation in the project resulted in changes to relationships within and between groups .The most notable changes in relationships were reported by the fishermen who participated in the project (Table 3). Most of them reported that

they experienced an improvement in relationships with all three groups, although some reported no change in their relationships, and one respondent reported that his relationship with scientists had worsened. At least half of the Extension Agents also reported improvements in their relationships with their own and the other two groups. Among the scientists, only one (of three) reported an improved relationship with fishermen. All three scientists reported no change in their relationships with other scientists or Extension Agents. Explanations of improvements in relationships spoke to the benefits of learning from each other, meeting new people (even within community group), and improving relationships over time. In the one case where a fisherman reported a change for the worse in his relationship with scientists, he explained that he was troubled by a "lack of interest from other scientists [outside the project]."

Table 3. Change in relationships within and among groups of JRCGC participants (%).

Relationships with	**Fishermen (N=9)**	**Scientists (N=3)**	**Extension Agents (N=3)**	**All (N=15)**
Fishermen				
Better	77.8	33.3	66.7	66.7
Worse	0	0	0	0
No change	22.2	66.7	33.3	33.3
Don't know	0	0	0	0
Scientists[1]				
Better	66.7	0	50.0	50.0
Worse	11.1	0	0	7.1
No change	11.1	100	50.0	35.7
Don't know	11.1	0	0	7.1
Extension agents				
Better	77.8	0	66.7	80.0
Worse	0	0	0	0
No change	22.2	100	33.3	20.0
Don't know	0	0	0	0

[1] N = 2 for Extension agents and 14 for All.

Looking over these results, one might speculate that how fishermen-scientists partnerships get started is important, and the act of requesting partners' participation, having mutual interests in the topic of the research, and an opportunity to learn together might be key factors. Involvement may be another key to improving fisherman-scientist partnerships in fisheries research; not just in comfort with the amount of involvement but also in various levels of involvement. Both the possible roles that can be played and the potential barriers to involvement are important considerations in the design and implementation of fisherman-scientist partnerships in research.

Communication

The second set of questions on the survey had to do with project communication. When asked about communication with project leaders, all of the survey participants stated their

communication was “good” (Table 4). Responses related to communication with the three groups of participants other than the project leaders were generally positive, but more variable. Where communications were reported as “not good,” or respondents "didn't know," respondents' explanations revealed the issue of having limited contact with partners (scientists, fisherman, or Extension Agents).

Table 4. Communication within and among groups (%).

Communication with	**Fishermen (N=9)**	**Scientists (N=3)**	**Extension Agents (N=3)**	**All (N=15)**
Project leaders				
Good	100	100	100	100
Not good	0	0	0	0
Don't know	0	0	0	0
Fishermen				
Good	88.9	33.3	66.7	73.3
Not good	11.1	0	33.3	13.3
Don't know	0	66.7	0	13.3
Scientists				
Good	55.6	33.3	66.7	53.3
Not good	11.1	0	0	6.7
Don't know	33.3	66.7	33.3	40
Extension agents				
Good	66.7	66.7	66.7	66.7
Not good	11.1	0	0	6.7
Don't know	22.2	33.3	0	20
No response	0	0	33.3	6.7

Overall, the communication that occurred in the project was good but explanations reflected an interest in more, regular communication and that participants expected that more contact with other partners would lead to additional benefits. One might then speculate that designing and implementing mechanisms to regularly communicate is important and beneficial to fisherman-scientist partnerships in research. It is important to make sure these mechanisms allow partners to become informed yet do not maneuver them into complacent positivism when adjustments might need to be made.

Cooperation/collaboration

The third set of survey questions had to do with perceptions of and preferences for cooperation and collaboration in research. At the beginning of this section of the survey, we provided the following statement:

> *There is growing interest in cooperative and collaborative fisheries research. Cooperation and collaboration are not the same thing. Cooperative research*

involves limited roles for some partners. Collaborative research, in contrast, involves partners equally in all phases of the research process (idea/vision, research question generation, implementation, decision-making, reporting). Research projects generally fall somewhere along a continuum, from 100% cooperative to 100% collaborative.

We first asked participants where along this continuum they felt the JRCGC project fell. We then asked them their comfort with this, and whether they would have preferred that the project were more cooperative or more collaborative. The results were very interesting (Table 5). The fishermen's responses had a normal distribution, with most responses indicating their perception of the project as a mix of cooperation and collaboration. The scientists who responded also viewed the project as a cooperative-oriented mix. The Extension Agents, in contrast, saw the project as being primarily (75%) collaborative.

Although more than 75% of respondents were comfortable with the cooperative-collaborative nature of the project, there were clear differences between communities. Most notably, two thirds of the science community respondents indicated "don't know" which may have been due to their uncertainty about the project itself, or to their being more accustomed to traditional scientific research (which has tended not to use cooperative or collaborative approaches). When asked a paired set of questions about whether they would prefer the project to be more cooperative or more collaborative, these respondents also uniformly indicated they would prefer more cooperative research, and that they "don't know" whether they would prefer more collaborative research. These responses taken together suggest an interest in continuing to work with fishermen on research projects, but uncertainty or ambivalence about collaborative as opposed to cooperative research. In contrast, most fishermen and all Extension Agents reported that they would *not* prefer that the project were more cooperative, and half reported that they would prefer that it were more collaborative.

Table 5. Perceptions of and preferences for the JRCGC as a cooperative or collaborative project (%).

	Fishermen	Scientists	Extension Agents	All
Perception of project as cooperative v. collaborative[1]				
100% cooperative	12.5	0	0	8.3
75% cooperative	25	50	0	25
50-50	25	50	0	25
75% collaborative	25	0	100	33.3
100% collaborative	12.5	0	0	8.3
Comfort with nature of project[2]				
Yes	88.9	33.3	100	78.6
No	11.1	0	0	7.1
Don't know	0	66.7	0	14.3
Prefer more cooperative[3]				
Yes	11.1	100	0	7.7

No	77.8	0	100	69.2
Don't know	11.1	0	0	23.1
Prefer more collaborative[4]				
Yes	50	0	50	41.7
No	50	0	0	33.3
Don't know	0	100	50	25

[1] N = 8 for fishermen, 2 for scientists, 2 for Extensions Agents, and 12 for All.
[2] N = 2 for Extension Agents and 14 for All.
[3] N = 2 for scientists, 2 for Extension Agents and 13 for All.
[4] N = 8 for fishermen, 2 for scientists, 2 for Extensions Agents, and 12 for All.

Despite these discrepancies among groups' perceptions of the project and their preferences for it to be cooperative versus collaborative, respondents' explanations indicated that they liked working together on many aspects of the project and that improvements could have been made by getting the fishermen involved earlier in the project design.

Where to go from here?

Finally, we asked about participants' interest in continuing the project, their ideas for improving it, and their ideas for future fisherman-scientist research projects. Overall, 87% of those surveyed were interested in continuing their participation in the JRCGC project. There were some differences between community groups. Whereas all of the fishermen partners surveyed responded "yes," two thirds of the scientists and Extension Agents did so. One fishing community member wrote, "This is very important work on two fronts: data being collected and building relationships with fishers and scientists." A scientist echoed this, stating "This project has been a very beneficial project for me from both the fisheries / marine science perspective…It provided further evidence of the cost-effectiveness and efficiency of working together and sharing knowledge and resources."

The last set of questions on the survey had to do with participants' thoughts and perceptions about future fishermen-scientists partnerships in research. When asked whether they had ideas for developing new research involving fishermen and scientists, 80% of those surveyed offered ideas, thereby indicating their positive interest. Nearly 90% of the fishermen, and 67% of the scientists and Extension Agents offered ideas. The same percentages resulted when asked for suggested ideas for new fisheries research. Among the topics suggested were nearshore stock assessments and gear efficiency studies.

When asked how future projects could be improved in several areas – planning, logistics, timing, information collection, involvement, and communication – respondents offered many suggestions (Table 6). The area that received the highest level of response was planning, with most of the comments related to getting partners involved in the research partnership in the planning stage to insure that participants are clear on the goals and to make improvements in project design (e.g., data collection methodology) before the project begins.

Responses related to logistics and timing were somewhat interwoven, and were primarily related to equipment testing and sampling, and how these are coordinated with fishing seasons. Responses related to information collection indicated a common desire to collect as much data a possible as efficiently as possible, and suggested that having fishermen involved in the design and planning could help further this goal. Responses could lead one to speculate that involvement and communication were connected: get partners involved early and keep them involved through regular communication. Some respondents highlighted the importance of reaching out within and across communities: "Communities need to know what we are doing." Suggestions included communicating project information through the press, community forums, signage, and mixing funding from various sources (fishing organizations and other new partners) to "strengthen the impact, dissemination, and use of the data."

Table 6. Ideas for improving future projects (%).

	Fishermen (N=9)	Scientists (N=3)	Extension Agents (N=3)	All (N=15)
Planning	66.7	66.7	66.7	66.7
Logistics	55.6	0	33.3	40
Timing	55.6	0	33.3	40
Information types collected	66.7	0	33.3	46.7
Amount of partner involvement	44.4	0	33.3	33.3
Type of partner involvement	44.4	0	33.3	33.3
Partner communication	44.4	0	33.3	33.3
Community communication	55.6	0	33.3	40
Cross-community communication	55.6	0	33.3	40
Other	11.1	0	33.3	13.3

Conclusions

As interest in the practice of research that deliberately connects and engages fishermen and scientists to address information needs continues to grow, it is critical to determine the benefits and drawbacks of these partnerships and to determine what actually makes them succeed or fail, in human as well as biological dimensions. It is also important to gain some clarity on the differences between cooperative research and collaborative research, and the continuum from one to the other.

This effort looked at how one fisherman-scientist partnership research project worked with regard to partner involvement and project communication, and how this learning could be applied to future projects. Overall the participants in this project were satisfied with the project. They were clear about what got them involved, the benefits and drawbacks of their involvement, and the role communication played in their continuing involvement. They shared an appreciation of their involvement in the project, and offered concrete ideas about ways to improve it, many of which have been put in place. Generally, participants wanted to be involved and felt rewarded by involvement. Regular, meaningful communication was important for starting the project, and keeping it running smoothly.

Future projects will, no doubt, bring more clarity to the roles partners can play in fisherman-scientist partnerships in research. As this clarity develops, so too will the perceptions of the sometimes nuanced differences between cooperative and collaborative approaches to research. Some may prefer to initiate and run projects as more cooperative, with some participants playing more or different roles than others. Indeed, some projects may be more amenable to such a structure. Others may prefer or be able to effectively use a more collaborative arrangement. Documentation and sharing of this experience will be critical for facilitating the development and success of more cooperative and more collaborative research project alike.

Whether cooperative or collaborative approaches are used, we suggest six considerations for designing and implementing fisherman-scientist partnerships:

1. *The beginning is important.* Consider who should be involved and how early involvement might improve the project.

2. *Stay true to your mission.* Resist the urge to overwhelm the project or lose sight of your research questions.

3. *Communicate regularly.* Set up non-leading, open, and unbiased mechanisms to regularly communicate.

4. *Track resources.* Design and implement clear systems to track all types of resources - time, funding and people.

5. *Monitor and evaluate.* Design and implement a system to monitor and evaluate both the biological and human dimensions of the project.

6. *It's not just science, it's relationships.* Realize that you will be developing personal relationships. This takes time, a conscious effort, and a genuine, ongoing commitment.

It would be wise for anyone who might enter into a fisherman-scientist partnership to consider these as foundational principles.

Acknowledgements
We would like to thank the participants in this study for their thoughtful participation in the survey, and for sharing their experience and perceptions with us. We would also like to thank Cathy McBride for her help with data input, and Oregon Sea Grant and California Sea Grant for support of this project.