Electronic Data Collection by Groundfish Observers - Pilot Project

FY 2014 Proposal

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1. Overview

1.1. Sponsor
Russell Porter

1.2. Focus Group
Survey Design and Evaluation

1.3. Background
This project is relevant to NOAA Fisheries' policy to encourage the consideration of electronic technologies to improve existing fishery-dependent data collection programs (NOAA 2013).Electronic data collection has been used successfully for dockside sampling by the Oregon Recreational Boat Survey and is being tested for dockside sampling by the California Recreational Fisheries Survey (Hibsch 2012). The goals of the Oregon Observer Program include: collecting information about recreational groundfish species, describing the geographic area of fishing, estimating average weight of discarded fish, and obtaining length distributions for species that are required by regulation to be discarded. Sampling at sea is the only method of reliably collecting these data. For canary rockfish and yelloweye rockfish, which cannot be legally retained, biological data are only available at sea. (For other species, biological data of retained catch can be obtained by dockside samplers.) Observers collect angler- and site-specific data that are valuable for stock assessments because the data contain disaggregated information about catch rates, species composition and location. (Dick 2012)Approximately 100 charter (for-hire) recreational groundfish trips are observed each year in Oregon. Three observers sample from March through October out of seven ports. The program began in 2001 and has been conducted annually since 2003. Electronic data collection at sea will improve data quality in a number of ways. The accuracy of angling locations and drift duration will improve because GPS coordinates and drift times will be automatically logged, eliminating errors associated with transcription and keypunching. Transcription errors occur when an observer copies coordinates from a GPS receiver onto a datasheet. In preparing observer data for the relational database, considerable efforts were made to identify and resolve many location and duration errors that had entered the database through sampler error or data entry error (Monk et al 2013). Overall accuracy will improve because an electronic data collection system will provide built-in real-time data validation checks. Under current methodology, observers submit completed datasheets to ODFW for preliminary review, after which the datasheets are mailed to PSMFC for keypunching. The elapsed time from sea to database is no less than one week and may be four weeks or more. When data errors are found or questions arise, the observer is consulted, but issues cannot always be resolved because of memory erosion.Electronic data collection at sea will also improve efficiency in a number of ways. The RecFIN data entry system with which observer data are currently entered is complex, requiring numerous data elements be entered in order for other data to be entered. As a result, observers must complete four different datasheets for each trip (Assignment Summary Form, Angler Interview Form, Onboard Form and Discard Length Form). Unfortunately, many of the data fields are redundant or superfluous, yet those data must nonetheless be recorded on datasheets and entered into the RecFIN database due to the constraints of the data entry system. Additional efficiency will be gained by having all observer-related data in one place. Oregon observers record information about angling gear in an add-on section at the bottom of a datasheet. These data are entered by ODFW into a separate database because the RecFIN system lacks flexibility to accommodate state-specific add-on data fields. Future add-on needs might include information about barotrauma symptoms or the use of descending devices. The electronic data collection system will be designed to permit flexibility.Other programs that could benefit from the outcome of this project include the California Recreational Fisheries Survey (CRFS) and MRIP at-sea surveys designed to verify logbooks (Brennan 2012) or to investigate discards such as red snapper (Sauls 2012).

1.4. Project Description
This project will develop and implement the use of electronic data collection by observers of the Oregon recreational groundfish fishery, addressing the MRIP priority to develop and test new technologies to support recreational fisheries data collection. The benefits will be improved data quality, efficiency and data accessibility. Data are used by fisheries managers and analysts to estimate total removals, describe geographic area of fishing, and determine stock status and trends. The Oregon recreational groundfish observer program provides an excellent opportunity for this project because the three samplers are long-time, experienced observers who are familiar with sampling protocol and needs. The intended outcome is a successful system of electronic data collection at sea that can be expanded to other observer programs.

1.5. Public Description

1.6. Objectives
1. Improve data accuracy by automatically recording GPS locations and implementing electronic menu choices with quality-control checks at sea.2. Improve efficiency by capturing data instantaneously, eliminating the need to manually complete multiple paper datasheets for each trip.3. Facilitate data usability by providing timely data access for fisheries managers and analysts.

1.7. References

Brennan, K. 2012. Pilot project: validation methods for headboat logbooks. FY2012 project plan, MRIP. Available: www.st.nmfs.noaa.gov/mdms/public/public.jsp Dick, E. 2012. Development of relational databases for onboard observer data and creation of abundance indices for use in stock assessments. FY 2012 project plan, MRIP. Available: www.st.nmfs.noaa.gov/mdms/public/public.jsp Hibsch, E. 2012. Electronic data collection for angler intercept surveys: a pilot project. FY 2012 project plan, MRIP. Available: www.st.nmfs.noaa.gov/mdms/public/public.jsp Monk, M., E.J. Dick, T. Buell, L. ZumBrunnen, A. Dauble, and D. Pearson. 2013. Documentation of a relational database for the Oregon Sport Groundfish Onboard Sampling Program. NOAA Technical Memorandum NMFS, NOAA-TM-NMFS-SWFSC-519, 69 p. Available: swfsc.noaa.gov/publications/TM/SWFSC/NOAA-TM-NMFS-SWFSC-519.pdf NOAA (National Oceanic and Atmospheric Administration). 2013. Policy on electronic technologies and fishery-dependent data collection. National Marine Fisheries Service Policy Directive 30-133, May 3, 2013. Available: www.nmfs.noaa.gov/directives/ Sauls, B. 2012. A Summary of Data on the Size Distribution and Release Condition of Red Snapper Discards from Recreational Fishery Surveys in the Gulf of Mexico. SEDAR31-DW11. SEDAR, North Charleston, SC. 29 pp. Available: www.sefsc.noaa.gov/sedar/Sedar_Documents.jsp?WorkshopNum=31&FolderType=Data

2. Methodology

2.1. Methodology

Specific tasks include:1. Research and review previous or present uses of handheld devices at sea to electronically collect data including GPS coordinates, times and fish lengths. 2. Collaborate with Ed Hibsch, Team Leader for the MRIP project that is developing the use of electronic data capture for dockside angler surveys in California and Washington (Hibsch 2012). That project is expected to expand to include California at-sea observer data, which has many data needs in common with Oregon. The Oregon and California recreational observer programs currently use the same data forms, and data are processed using the same data entry system.3. Research and determine whether there are existing vendor solutions that will meet our needs or whether a custom solution is required. 4. If a custom solution is required, secure a contractor to program a data capture application that may wirelessly transmit secure data from a handheld device to a server. The design is expected to focus on a tablet-type device. 5. Test the application using fictitious data to assure usability by observers and correct operation.6. After successful Beta testing, deploy devices with observers for additional testing to assure usability on rolling seas in the sun, wind and rain by a possibly nauseous user.7. Prepare a final project report.

2.2. Region

Pacific

2.3. Geographic Coverage

Oregon (seven ports from Garibaldi to Brookings)

2.4. Temporal Coverage

At-sea testing will be conducted in March and April 2015

2.5. Frequency

Approximately ten trips are typically observed from March through April

2.6. Unit of Analysis

Trip level, drift level (e.g., GPS coordinates) and fish level (length)

2.7. Collection Mode

Handheld device

3. Communication

3.1. Internal Communication

Relevant members of the project team will communicate monthly at a scheduled meeting or conference call to review progress and discuss any issues affecting the project. A meeting summary will be distributed to all team members by e-mail immediately thereafter. During the field testing phase, weekly conference calls with or individual calls to samplers will be made to share feedback on data collection.

3.2. External Communication

Monthly reporting to the MRIP Operations Team will occur through the MRIP online reporting system. We will also submit a detailed final report. Periodic updates will be hand-delivered by samplers to the charter fleet.

4. Assumptions/Constraints

4.1. New Data Collection
N

4.2. Is funding needed for this project?
Y

4.3. Funding Vehicle
RecFIN grant

4.4. Data Resources
No data are required from NOAA

4.5. Other Resources
Necessary staff are listed as Team Members in the Leadership section

4.6. Regulations
Charter vessel trip data are confidential per Oregon state public records laws ORS 192.501 and 192.502. The Oregon recreational groundfish fishery is open all year (offshore waters are closed from April through September).Oregon state regulation requires ODFW to solicit bids for contract work.

4.7. Other
Assumptions include: 1. A programmer will be available to develop code and program handheld devices. The use of an internal programmer will depend on workload. If an outside programmer is used, bids will need to be solicited and a contract successfully awarded in a reasonable amount of time.2. Charter boat captains will continue to participate in the Observer Program when data are captured electronically. Currently observers are allowed by most captains to sample aboard their boats using paper datasheets, pencils and GPS receivers; fishing locations are transcribed from the GPS receiver to the datasheet but are not saved on the GPS receiver. 3. The Oregon Observer Program will continue to be funded.

5. Final Deliverables

5.1. Additional Reports
None (final report only)

5.2. New Data Set(s)
None

5.3. New System(s)
At-sea electronic collection of recreational groundfish observer data

6. Project Leadership

6.1. Project Leader and Members

First Name	Last Name	Title	Role	Organization	Email	Phone 1	Phone 2
Robert	Anderson	Fisheries Technician	Team Member	PSMFC	randerson@psmfc.org	541 351 1567	
Troy	Buell	State Fishery Managment Program Leader	Team Member	ODFW	troy.v.buell@state.or.us	541 867 0300 225	
Mark	Freeman	Marine Information Project Leader	Team Member	ODFW	mark.freeman@state.or.us	541 265 8306 x229	

First Name	Last Name	Title	Role	Organization	Email	Phone 1	Phone 2
Ed	Hibsch	Programmer /Analyst	Team Member	PSMFC	ehibsch@psmfc.org	503 595 3100	
Melanie	Howey	Fisheries Technician	Team Member	PSMFC	mhowey@psmfc.org	541 351 1061	
Sheila	Johanns	Fisheries Technician	Team Member	PSMFC	sjohanns@psmfc.org	503 812 0818	
Linda	ZumBrunnen	Sport Studies Sampling Coordinator	Team Leader	ODFW	linda.zumbrunnen@state.or.us	541 867 0300 x260	

7. Project Estimates

7.1. Project Schedule

Task #	Schedule Description	Prerequisite	Schedule Start Date	Schedule Finish Date	Milestone
7	Analyze data and sampler feedback	6	03/14/2015	04/30/2015	
4	Test functionality in house	3	10/01/2014	02/20/2015	Y
3	Program handheld devices	2	09/01/2014	01/20/2015	
5	Train observers to use handheld devices	4	02/27/2015	02/28/2015	
8	Incorporate final changes	7	05/01/2015	05/31/2015	
9	Prepare final report		04/25/2015	06/30/2015	Y
1	Determine programming needs and design of application		07/01/2014	08/31/2014	
2	Purchase handheld devices	1	09/01/2014	09/21/2014	
6	Test functionality of handheld devices in the field (collect and upload data)	5	03/01/2015	04/30/2015	Y

7.2. Cost Estimates

Cost Name	Cost Description	Cost Amount	Date Needed
Travel	Travel related to training and testing (6 days, 3 nights)	$562.00	07/01/2014

Cost Name	Cost Description	Cost Amount	Date Needed
ODFW indirect/administration fee	26%	$9298.00	07/01/2014
Project staff	Sampling coordinator (3 mo), ODFW information management support (1 mo)	$30250.00	07/01/2014
Equipment	(5) handheld devices with 64gb, protective case, flotation appliance, external battery ($990 each)	$4950.00	07/01/2014
Programming	Contract to develop application code (8 months full-time at $60/hour)	$80000.00	07/01/2014
PSMFC administration fee	1.51%	$1888.00	07/01/2014
TOTAL COST		$126948.00	

8. Risk

8.1. Project Risk

Risk Description	Risk Impact	Risk Probability	Risk Mitigation Approach
Loss of funding for at-sea sampling	With the demise of at-sea sport groundfish sampling, electronic data capture would not be needed.	Medium	Funding for sampling has been received through September 2014. We expect in mid-summer to begin getting an idea about where we stand with Sport Fish Restoration funding for FY2015. The schedule for this project calls for the majority of costs to occur after we have a better understanding of the FY2015 funding picture.
Change in state or federal angling regulations that prohibit ocean bottomfishing during the field testing period (March-April)	Field testing would be delayed until regulations allowed fishing	Low	This risk probability is very low. Inseason adjustments to groundfish angling regulations in the past have not been made so early in the year.
Lack of adequate field testing due to ocean conditions or sampler unavailability	Field testing would be delayed until ocean conditions improved or staff were recruited.	Low	Be prepared to deploy samplers as soon as possible and as often as ocean conditions allow; recruit ODFW staff to participate in at-sea testing.

Risk Description	Risk Impact	Risk Probability	Risk Mitigation Approach
A system that is not able to meet unanticipated needs	Wasted resources	Low	Take advantage of groundwork laid out by previous electronic capture projects; seek opinions from fishery managers about future needs; and select a flexible development environment that allows changes in any aspect of the data collection process.
Reduction or loss of charter boat participation	Field testing might be delayed or impossible as planned	Low	Communicate early and periodically with the charter fleet about the project.

9. Supporting Documents