ELECTRONIC DATA COLLECTION IN ATLANTIC COAST ACCESS POINT ANGLER INTERCEPT SURVEY

FY 2015 Proposal

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1. Overview

1.1. Sponsor

Rob Andrews

1.2. Focus Group

Survey Design and Evaluation

1.3. Background

This project is relevant to NOAA Fisheries' policy to encourage the consideration of electronictechnologies to improve existing fishery-dependent data collection programs (NOAA 2013).A MRIP project was funded in 2012 (Hibsch 2012) to review, evaluate and test potential hardware/software platforms for field data collection via an electronic device with the stated survey objectives of 1. Reduce the cycle time to collect and key enter data by capturing data instantaneously,2. Capture more accurate data through use of menu choices, reducing keystroke and transcription errors, 3. Confirm validity of responses with response-feedback error-checks in real time, and4. Provide data accessibility for immediate short term needs, such as quota monitoring.This project was developmental in nature and intended, apparently, to develop a software application and test its functionality on some working platform (not specified in the proposal). This project does not include any capability to download or acquire the data collected from the handheld data collection device.In a funded phase 2 of the Hibsch 2012 project, a data streaming trial was conducted to integrate the received daily electronic data into a database, make it instantly available to each state's data management team, and run predetermined algorithms on the daily data to produce summary reports for fisherysampling managers (Hibsch 2013). This project is completely contingent on a successful outcome to the previously funded project yet no progress reports could be found on the public MDMS website to suggest that the previous project was successful. Its stated purpose is only to develop download capabilities for the selected hardware device so the data collected can be compiled and used for its intended purpose. No field trials were included in the stated methodology. The most recent progress report (Sept 2014) indicates this project has not been started yet due to incompletion of phase 1 so this proposal has no recommendations or insights to build upon as we prepare our actual proposal which will include field trial during conduct of the Atlantic APAIS ("02-Feb-2015 - 31-Mar-2015 Delayed as more effort required for modification of the app and extended scope to include Washington in addition to California").Two subsequent projects were funded in FY14 (Hibsch 2014a, Hibsch 2014b) to expand software capabilities and further test iPad data collections in Puget Sound and Washington state (previously the pilots were conducted in CA only). These new trials used the developed software from the vendor, Vitasys, and is intended to test the ease and accuracy of altering the software to accommodate additional states, and test the durability of the iPad in the field. The specific objectives of these projects were: to assess the durability, reliability, efficiency, accuracy, and ease of use of data collection devices and the data collection application provided by the PSFMC with the ultimate goal of assessing the value and risks of incorporating electronic data capture into the recreational fishery monitoring program of Pacific Coast states. This WA project has been reported on schedule and is currently (sept. 2014) in the process of "aligning data collected on ipads to match data layout from paper surveys to compare". I will be contacting the project teams to elicit recommendations and input on the field trials – pros and cons of using the iPads and any further advice on operational issues with use of an electronic interview platform vs. paper forms for use in personal interviewing, and any data processing issues that may have been encountered including data streaming and network connectivity, data compatibility and formatting, and functional review after interview completion.On the Atlantic Coast, no tablet or handheld device has been tested for use by the Access Point Angler Intercept Survey (APAIS) as currently conducted by the NMFS' primary contractor, RTI International (RTI), and state sub-contractors using paper forms and hand-entry of data upon delivery of forms to a central data processing office. Previously, a former Atlantic Coast contractor, Macro International/ICF-Macro tested iPad for feasibility of software development, including field testing of an abbreviated angler interview that did not include any fish handling (biological data). An angler interview form was developed that allowed for interviewer use in interviewing anglers sequentially but also to move back and forth among multiple forms within a party (as would be typical of interviewing several anglers from a single boat trip) in a field setting. Included in this initial trial was download and compilation capability and algorithms to seamlessly combine the electronically captured data with the traditional key-entered data so all data could be processed using standard survey tools. The primary recommendations included anti-glare screens and waterproof housings for the device and flexible form movement by the software application.RTI has independently developed both iOS and Android based applications for field data collection on tablets. In 2013, RTI conducted a limited field test using the proposed software, entitled Mobile Field Surveys (Mobile FS). This initial test was not funded by the government and was conducted independently of any government funded survey. The purpose of this initial trial was to examine the feasibility of using tablet computers in the field to collect APAIS data; RTI intended to use the results of the field test to inform future efforts related to in-person interviewing electronic data collection. These results may be applied to the APAIS study but may also be useful for the application of such data collection on unrelated projects.The initial field test was successful in that staff were able to collect the data in question effectively and efficiently without disrupting the existing APAIS interview process. The success of this test argues for a more rigorous pilot study to fully examine the impact, benefits, and challenges associated with tablet-based data collection on the APAIS. In particular, the pilot study will seek to examine the impact of electronic data collection on data quality and the timeliness of data delivery, two issues that are current challenges to the in-person, paper-and-pencil study. Other factors will be tested as well, including the application of passive GPS coordinate collection.Mobile FS can be used with either iOS or Android OS and has been fully field tested for a variety of uses. It works with many types of hardware, for example, Samsung Galaxy tablets, iPads, and other similar devices. The system has successfully collected different types of data for numerous projects, including several conducted in challenging outdoor environments. The following is one example of the

Mobile FS use:Global Adult Tobacco Survey (GATS). Implementing RTI's mobile field survey software on a global scale, the GATS project has collected data in more than 150,000 household surveys in 45 languages across 26 countries. The system allowed in-country staff to design and implement country-specific questionnaires, port the software to a tablet computer, aggregate field data, and integrate data to create an analysis file.This proposal is seeking funding to develop and field test a version suitable for use by the APAIS in all states on the Atlantic and Gulf of Mexico coasts from Maine to Louisiana with flexible programming allowing for easy editing of questionnaire scripts by sub-region or state with mode-specific versions automatically loading once field assignment data are uploaded. This project will provide field testing under survey conduct conditions of a fully functional electronic interviewing script currently in use by the NMFS, a step further than the previously funded projects have demonstrated. The resultant data collected during the field trial will allow for computation of catch estimates (in conjunction with effort survey data) and comparison with those produced using the existing APAIS data to evaluate any potential survey platform effects on survey results. In addition to the technical issues to be tested and evaluated a full cost comparison between the APAIS data processing methods (paper forms, handling, hand-key-entry and data compilation) and the e-captured data methods will be made to evaluate potential implementation of tablet interviewing in the APAIS survey.

1.4. Project Description

Existing software developed for in-person interviewing using tablets with Android OS (open source code, no licensing or subscription fees) will be modified to use the APAIS Assignment Summary Form and linked Angler Interview Forms, including ability to shift from angler to angler during the interview progress. All angler interview data will be linked to the ASF to allow for automatic data coding of summary statistics such as number of interviews obtained per mode per site, date and time of interviews collected (from device clock), and geo-location of interviews (from internal GPS; not operator directed). The interviews will be auto-numbered as collected, data fields will utilize restricted value lists as possible, and all data will be transmitted daily via wifi network to the central data collection office. Daily performance summaries will be used for sampling evaluation and feedback, and catch and effort data may be used for modeling catch estimates quota monitoring during very short-term fisheries (e.g. 9-day GOM red snapper season).The field trial of the developed software/hardware will evaluate the efficiency and efficacy of the device and methods for conducting the Atlantic APAIS, including while handling fish for length and weight data collection, and for daily data accuracy and timely processing for use by fishery monitors and managers. And, although the data will be transmitted, secure copies of all data will be temporarily stored on the device as backup in the event of data-transmission error, or other error in compilation at the data compilation office.

1.5. Public Description

1.6. Objectives

1. Develop software that is adaptable for use in 15 states with flexible questionnaires suitable for use on a tablet.2. Demonstrate that APAIS intercept survey data can be successfully collected using a tablet under typical field conditions.3. Increase efficiency in the overall process of collecting and entering data, and evaluate cost savings by eliminating data forms, and hand-data entry staff or OCR hardware/software, while providing seamless integration of data into existing data processing algorithms and schedules.4. Improve data accuracy via internal data limits and checks at point of entry and QC oversight of field interviewers' activity by automatically recording GPS locations, dates, and times of survey conduct.5. Provide near real-time data access for survey data users.

1.7. References

Hibsch, E. 2014a. Electronic Data Collection for Angler Intercept Surveys: Expand and Extend. FY 2014 project plan, MRIP. Available: www.st.nmfs.noaa.gov/mdms/public/public.jsp. Hibsch, E. 2014b. Electronic Data Collection Expansion – Washington. FY 2014 project plan, MRIP. Available: www.st.nmfs.noaa.gov/mdms/public/public.jsp. Hibsch, E. 2013. Electronic Data Accessibility: Phase Two of Electronic Data Project. FY 2013 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. 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/

2. Methodology

2.1. Methodology

Software will be developed by RTI under the existing APAIS conduct contract (via SOW modification) and hardware acquired for the field trials. Field testing will take place in South Carolina and one other state to be determined by NMFS and RTI pending budget/cost evaluations. Field testing will be for 2 waves (4 months) during relatively high activity waves (May-October) following initial software trials for usability. Field sampling of the APAIS survey will be conducted at survey sample sizes for the wave, but may be restricted to only 1 or 2 modes (CH-, PR- group mixed boat mode, and SH mode). Multiple samplers will be used to obtain field staff feedback from several individuals per state. Final data compilation and analysis and a final report with recommendations for future study and/or implementation will be produced.

2.2. Region

Mid-Atlantic, North Atlantic, South Atlantic

2.3. Geographic Coverage
South Carolina, a second Atlantic Coast state - RI

2.4. Temporal Coverage
Four months (two Waves).

2.5. Frequency
Weekly – the sample schedule will be directed to not conflict with the actual APAIS survey (site/day

2.6. Unit of Analysis
Angler Interview

2.7. Collection Mode
In-person.

3. Communication

3.1. Internal Communication
This project will be part of an existing contract with RTI and there are two existing channels of communication which will be utilized for this pilot study: direct email among team members and RTI staff, and bi-weekly, scheduled conference calls with RTI project management staff. If additional time is required outside the bi-weekly, one-hour conference calls, topic-oriented conference calls will be scheduled as needed.

3.2. External Communication
Monthly reports via the MDMS reporting tool, and direct email reports to our OT sponsor, Rob Andrews as appropriate (unforeseen circumstances within a month).

4. Assumptions/Constraints

4.1. New Data Collection
Y

4.2. Is funding needed for this project?
Y

4.3. Funding Vehicle
Atlantic Coast APAIS Contract (mod)

4.4. Data Resources

4.5. Other Resources
APAIS field staff may be utilized if excess time available or new field staff will be hired specifically for this study. Coordinator and supervision of field staff labor will be provided by RTI or state partners. Programming staff will be used to develop, test, and trouble-shoot the devices' operation and questionnaire software.

4.6. Regulations
None

4.7. Other

5. Final Deliverables

5.1. Additional Reports
Recommendations for improvements or modification for tablet use in field data collections.

5.2. New Data Set(s)

Alternative APAIS intercept data files and resultant catch estimates from tablet data collections.

5.3. New System(s)

Tablets with functional APAIS questionnaire app installed.

6. Project Leadership

6.1. Project Leader and Members

First Name	Last Name	Title	Role	Organization	Email	Phone 1	Phone 2
Laura	Johansen	Programmer /Analyst	Team Member	NMFS-OST		3014278141	
thomas	sminkey		Team Leader	NOAA Fisheries	tom.sminkey@noaa.gov	3014278177	4104490793

7. Project Estimates

7.1. Project Schedule

Task #	Schedule Description	Prerequisite	Schedule Start Date	Schedule Finish Date	Milestone
1	Software Development		02/01/2015	02/28/2015	Y
2	Field Testing	1	05/01/2015	08/31/2015	Y
3	Data Analysis	2	09/01/2015	11/30/2015	Y
4	Reporting - writing and submission	3	12/01/2015	12/31/2015	Y

7.2. Cost Estimates

Cost Name	Cost Description	Cost Amount	Date Needed
Software Development	Programmer labor - to develop tablet application, including ASF and Angler interview forms	$20000.00	03/01/2015
Field Testing	Field staff labor - to conduct APAIS field surveys	$80000.00	05/01/2015
Hardware	6 Android OS tablets	$1800.00	04/01/2015
TOTAL COST		$101800.00	

8. Risk

8.1. Project Risk

Risk Description	Risk Impact	Risk Probability	Risk Mitigation Approach
The adherence to the project plan and schedule is dependent on continuing operation of the tablets in the field. Other field trials	Delay scheduled completion of all field trials, however, with 6 tablets scheduled for parallel fielding, the	Low	Training in proper handling and operation of field devices. Utilization of 'otter boxes' or other protective devices on the

Risk Description	Risk Impact	Risk Probability	Risk Mitigation Approach
of tablet use for angler interviewing reported hardware failures and accidental destruction, which delayed field implementation after initial trials (FIS-NC pilot). If substantial delays in field work are encountered, the fielding will be extended into subsequent month(s). Software programming staff time is not considered to be constraining to the proposed schedule.	majority of data collection trials are expected to be completed on schedule.		tablets while in the field. This project would replace any defective or damaged hardware and proceed.

9. Supporting Documents