Pacific Islands Biannual Electronic Technologies Implementation Plan Progress Review
May 5, 2016

Overall the Pacific Islands Regional Office (PIRO) and the Pacific Islands Fisheries Science Center (PIFSC) are on target and ahead of the priorities and activities described in the 2015 Regional Electronic Technologies Implementation Plan. We focused electronic reporting (ER) activities in the first half of 2016 on completing the installation of upgrading vessel monitoring systems (VMS) on Hawaii and American Samoa longline vessels, development of elogbooks and ER by observers in the Hawaii permitted longline fishery and improved ER and data management in the U. S. purse seine fishery. We are ahead of schedule regarding electronic monitoring (EM) activities by obtaining funding for developing EM capabilities for shallow-set vessels in the Hawaii permitted longline fishery, small boat fleets for tracking turtle bycatch around the Pacific rim and for Hawaii bottomfish fishery monitoring.

1. **Number of FMPs with Fishery-dependent data collection monitoring goals:**

Zero. The five Fishery Ecosystem Plans (FEPs) do not currently have specific goals or objectives that describe fishery-dependent data collection or monitoring. The Western Pacific Fishery Management Council (Council) is comprehensively reviewing its five FEPs to improve the readability and usefulness of the FEPs for managers and the regulated community. In March 2016, as part of this review, the Council recommended revised goals and objectives for their FEPs. The recommended goal for Improved Fishery Monitoring and Data Collection does not specifically mention electronic technology, but it does include the following strategies that may be associated with electronic technology:

   a. Improve the timeliness of data availability.
   b. Improve the quantity and quality of relevant fishery data.
   c. Increase the quality and quantity of monitoring and enforcement data through improved technology.

If NMFS approves the amendments, each FEP would have the Fishery Monitoring and Data Collection goal and objectives. We expect transmittal of the recommended amendments to the FEPs for Secretarial review later in 2016.

2. **Number of FMPs reviewed to identify fisheries where the adoption of additional electronic technologies would be appropriate for achieving data needs:**

Five. We have reviewed all of the fisheries under all of the Pacific Islands FEPs to determine if electronic technology is appropriate. This review is in the 2015 Regional Implementation Plan.

3. **Number of FMPs with electronic technologies incorporated into fishery-dependent data collection programs**

Even though all five FEPs allow ER using elogbooks, none has the technologies incorporated into fishery-dependent data collection programs, as the FEPs do not describe these programs. Regardless, NMFS will incorporate electronic technologies into the Hawaii permitted longline fishery's fishery-dependent data collection program, as authorized by the Pelagics FEP.

4. Progress at the fishery level:

Electronic Reporting:

Observer Program

As of March 2016, the Observer Program has developed the Thorium mobile application for observer data collection and is currently doing at-sea testing of this application in the Hawaii Longline fishery. The program is continuing to develop and test the user interface, including the 32 forms on a tablet that observers use to report data. The observer collects data and sends the data in real-time through a Thorium LEO VMS system to the observer program debriefing staff. To date, five observers are in different stages of beta testing with the following goals:

- Improve the quality of the platform by testing and iterating over multiple beta test cycles
- Collect and analyze user feedback to evaluate and improve system usefulness
- Ensure production release readiness for integration in the PIR Observer Program with a release candidate version of the platform with the goal of program-wide implementation
- Redefine the data management and workflow process to align with new technology
- Continue outreach to project stakeholders

The Observer Program will continue beta testing through May 2017. We have identified two areas of improvement so far including replacing the Thorium VMS unit power cords with more robust cords that can handle at-sea conditions (60 units) and improving the catch-event log eform to make data collection and transmission more efficient.

The Pacific Islands Region Observer Program (PIROP) requires funding for future transmission costs, software modifications and tablet hardware and future tablet upgrades. The PIROP has not identified any sustained long term funding.

Elogbooks

The PIFSC is beta testing elogbooks in the Hawaii permitted longline fishery. Working with CLS America, PIFSC completed the ER software certification. CLS America held a Captain's workshops June 15 and June 17, 2015 where the captains received the tablets programmed specifically to their vessel's VMS. The vessel operator uses the new Thorium LEO VMS to transmit the data. The vessel operator uses eforms on an Asus Nexis 7 Tablet. The testing currently involves fishermen submitting both their paper logsheets and an electronic data submission to allow PIFSC to compare the types of data. Implementation of elogbooks has gone slowly and haltingly. PIFSC initially distributed 40 tablets to vessel captains after the CLS America training in June 2015. Of these 40 tables, only one captain was able to successfully enter and transmit data. PIFSC required CLS America to modify their software to improve version control, interface, and function; and continues to work with CLS America to use their product. Beta testing will continue to resolve connectivity issues between the tablet and VMS and assess necessary software modifications.

PIFSC is not entering data directly into the catch database at this time. Once the data entry and transmissions are functioning, PIFSC will receive the elogbook data and will incorporate the data

into the database. PIFSC uses software to recompile data to populate a logsheet, which PIFSC then saves as a PDF and archives. NOAA Office of Law Enforcement (OLE) requires the recompiled logsheets, which has statements regarding catch, Captain's name, commercial marine license, and a check box in lieu of an electronic signature.

PIFSC requires funding for future transmission costs, software modifications especially with regard for end-to-end encryption, tablet hardware and software training of fishermen. PIFSC will be addressing these aspects with S&T (FIS/NOP) FY16 funding.

Although the FEP for the Hawaiian Archipelago does not describe ER, a form of ER is ongoing in the Main Hawaiian Islands Deep-7 bottomfish fishery. As part of the joint State and Federal management of this fishery under the FEP, NMFS supports the State of Hawaii's fishery-dependent data collection on fishing occurring in both state and federal waters. A growing proportion of Hawaii deep-7 bottomfish fishermen use online submission to make their catch reports. These have been helpful in providing more rapid and up-to-date in-season tracking of catch in relation to the annual catch limit (ACL). The FEP calls for a within-season closure of this fishery when harvests reach the ACL.

Though not part of an FEP, all U. S. Purse Seine vessels have Integrated Fisheries Information Management System (IFIMS) subscriptions, and they electronically submit nonfishing day claims to Pacific Island Countries (PIC) that accept them. Almost all PICs accept electronic claims, but Kiribati still requires paper forms. Vessel operators may submit nonfishing day claims or may use the vessel management company to submit the claims. Vessels can submit the claims via their shipboard internet carrier or via transmission from a tablet through a satellite phone. Most vessels relay the information to their companies who then enter the information at the office.

Currently, no vessels are using IFIMS to submit their catch and effort data. Some vessels are using E-Tuna-log, which is a fillable pdf form that is the same as the logsheet, and exports data in an xml format. PIFSC has developed a mechanism for importing data from E-Tuna-log into their database and is using E-Tuna-log for data entry.

Electronic Monitoring

The OLE has completed installing upgraded Thorium VMS units and provided reporting tablets for 140 Hawaii and 20 active American Samoa longline vessels. Installing VMS units and providing electronic reporting tablets posed some logistical difficulties for vessels that were formerly Hawaii-based and are now U. S. West Coast-based.

PIFSC will be conducting the following EM projects this year supported by S&T (FIS/NOP) FY16 funding.

- Developing a low cost EM system as a tool for sea turtle bycatch monitoring in small-scale Mexican and Indonesian fisheries. In addition, PIFSC will (1) compare newly developed low-resolution EM devices that use data transfer via cell phone technology that can be implemented in small-scale fisheries with current low cost EM devices under

development, and (2) pilot the implementation of EM devices on the small vessels of the Hawaii-based bottomfish fishery.

- ==EM Feasibility Study for the Shallow-set Longline Fishery in the Pacific Islands Region==. Depending on unit cost, the project anticipates EM hardware and installation on six to 10 shallow-set vessels targeting swordfish, EM logistics, data view software and training for conducting catch and bycatch comparisons and writing a technical report. The shallow-set longline fleet comprised 22 active vessels in 2015.

5. **Information on why other FMPs or fisheries are not being considered for the incorporation of electronic technologies**

As described in our 2015 Regional Electronic Technology Implementation Plan, we must carefully evaluate each fishery to determine the need and the practicality of using electronic technology for reporting and monitoring. In reviewing our managed fisheries, we identified those fisheries that have the most urgent need for improved quality and timeliness of data and that may have the capabilities to use electronic technologies. Due to limited resources, we first focus our efforts to implement ER in the Hawaii permitted longline fishery. Learning from this experience, we will work with the next fishery with the greatest need and most likelihood of success with ER, the American Samoa permitted longline fishery. We will continue to examine the potential for electronic technologies in other fisheries as we build on our successes and as resources allow.

Table 1. EM Program Cost Template for reporting program costs and cost share. Include FTE and contractor costs.[1]

Camera-based Electronic Monitoring Hawaii and A. Samoa longline fisheries	Total Cost	% Government cost share?	% Industry cost share?	NMFS budget line (e.g., FRM, catch shares, NOP, etc)
Planning (technical system design, vessel monitoring plans, support system design)	32,000	100%		
Technical software system design QA/QC, metadata, integration				
Commercial off- the shelf/3rd party developer option				
Regulation development and implementation				
Hardware	1,383,000	100%		
Camera(s)				
Sensors				
Media/storage				
Government IT infrastructure				
Software, database dev., software licenses				
Field Support				
Installation	246,000	100%		
---Labor				
---Wiring, connections, etc				
Training (labor, materials, travel)	45,000	100%		
Maintenance/Repair/Replacement	100,000	100%		
Help Desk				
Data Communications & Reporting				
At sea				
Shoreside				
Government IT infrastructure				
Data Retrieval				
Data Validation				
Data Analysis				
Software	15,000	100%		
---development				
---license	4,000	100%		
Labor (assuming 100% vessel video review, which is scaleable)	1,200,000	100%		
System maintenance	8,000	100%		
Data Storage/Archiving				
On board				
On shore				
Government IT infrastructure	12,000	100%		
Other (specify)				

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[1] Provide reference for the program, including brief description and a citation to the implementing rule

Table 2. ER Program Cost Template for reporting program costs and cost share. Include FTE and contractor costs.[2]

E-logbook Monitoring Hawaii and A Samoa longline fisheries	Total Cost	% Government cost share?	% Industry cost share?	NMFS budget line (e.g., FRM, catch shares, NOP, etc)
System Development & Maintenance				
Specifications setting				
Technical software system design QA/QC, metadata, integration	30,000	100%		
System maintenance				
Commercial off- the shelf/3rd party developer option				
Data storage / archiving				
Hardware and Infrastructure				
CPU, GPS, etc.	75,000	100%		
Telecommunications Satellite, cellular, (specify)	85,000	100%		
Government IT infrastructure	12,000	100%		
Field Support				
Installation				
---labor				
---Wiring, backup power, connections, etc.				
Training (labor, materials, travel)	26,000	100%		
Data validation				
Maintenance/Repair	25,000	100%		
Help Desk	15,000	100%		
Data Communications & Reporting				
At sea				
Shoreside				
Government IT infrastructure				
Data Retrieval				
Data Validation				
Data Storage				

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[2] Provide reference for the program, including brief description and a citation to the implementing rule

Observer Program E-reporting Hawaii and A Samoa longline fisheries Beta testing and development	Total Cost	% Government cost share?	% Industry cost share?	NMFS budget line (e.g., FRM, catch shares, NOP, etc)
System Development & Maintenance				
Specifications setting				
Technical software system design QA/QC, metadata, integration	90,000	100%		
System maintenance	27,000	100%		
Commercial off- the shelf/3rd party developer option				
Redesign of user interface and dynamic interface	60,000	100%		
Data storage / archiving				
Hardware and Infrastructure				
CPU, GPS, etc.				
Telecommunications Satellite, cellular, (specify)				
Government IT infrastructure				
Field Support				
Installation				
---labor				
---Wiring, backup power, connections, etc.				
Training (labor, materials, travel)				
Data validation				
Maintenance/Repair				
Help Desk				
Data Communications & Reporting				
At sea transmission	20,160	100%		
Shoreside				
Government IT infrastructure				
Data Retrieval				
Data Validation				
Data Storage				
Encryption	37,200	100%		