

Pacific Islands Region

Electronic Technologies Implementation Plan Progress Review

November 7, 2016

Overall, the NMFS 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 2016 on completing the installation of upgraded vessel monitoring systems (VMS) on Hawaii and American Samoa longline vessels, development of elogbooks, further developed ER by observers in the Hawaii longline fishery, and improved ER and data management in the US purse seine fishery. We are ahead of schedule regarding electronic monitoring (EM) activities by developing EM capabilities on vessels in the Hawaii-permitted longline fishery and by deploying EM systems in several small scale fisheries to monitor target catch and marine megafauna (e.g., sea turtles) bycatch around the Pacific.

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

Zero. The five Fishery Ecosystem Plans (FEPs) do not have specific goals or objectives that describe fishery-dependent data collection or monitoring. The Western Pacific Fishery Management Council (Council) is 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 the Secretary 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 in 2017.

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 managed under the Pacific Islands FEPs to determine if electronic technology is appropriate. That 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 for ER using e-logbooks, none has this technology 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

Pacific Islands Regional Observer Program

The Pacific Islands Regional Observer Program (Program) has successfully transitioned from early development of an ER platform (eReporting) to at-sea beta testing with observers and program staff. The eReporting Working Group established the following three goals:

- a. Develop a mobile application to augment observer data collection;
- b. Improve the timeliness and accuracy of observer data, and
- c. Reduce program expenses through the successful implementation of goals 1 and 2.

Based on positive user feedback from at-sea beta testers regarding usability and usefulness, the Program seeks to continue the development of the eReporting platform for program-wide implementation (Pre-implementation) and continue meeting the goals established by the eReporting Working Group. The eReporting platform includes both a mobile application for observer data collection, Thorium, developed by technology contractor CLS America, and a program database-management-system, Pacific Island Region Observer Program System (PIROPS). The Program and Operations, Management, and Information Division worked collaboratively to develop PIROPS.

PIROPS integrates the longline debriefing steps and observer procedures for Hawaii and American Samoa longline fisheries into one tool. PIROPS is a web-based intranet application available through a browser that is accessible to observers and debriefers, Observer Program management, contractor, and administrators. The purpose of this web-based application is to standardize and streamline the debriefing process by accessing one portal. This application eliminates the need to use different applications (MS Excel, MS Word, MS Access, email, etc.) to perform the debriefing duties by having all data in one place. It also ensures that debriefers do not overlook or miss steps, and that users are on the same page.

Moving forward, the Program seeks funding from the FIS/NOP to ensure the integrity of the platform throughout the multi-tiered process of Independent Verification and Validation (IV&V). IV&V is the independent, third-party examination to ensure a system is structurally sound and meets specifications. IV&V would provide the Program with an independent assessment that the eReporting platform is either well engineered or requires further development (verification). Also, IV&V would determine if the platform meets the requirements

and specifications of the organization throughout the software lifecycle (validation). Lastly, IV&V would include planning, management, and other programmatic activities involved with ensuring the successful implementation of the eReporting platform. These activities include redefining the data management and workflow process, developing the equipment support infrastructure, and aiding development of a programmatic framework that optimizes the eReporting platform (funding, records, enforceability, etc.).

The Program has completed the Statement of Work (SOW) for the second phase of open beta testing November 1, 2016, through February 28, 2018. Testing will be broken into three cycles with a feedback collation and development stage in between each cycle (ca. 10-12 tests per cycle). The eReporting project is ongoing, and program-wide implementation is contingent upon the success of testing objectives. Developers have completed the dataset structure and are developing the ingestion process for the transmitted data. The SOW includes security requirements and the hardware retrofits to address the Thorium VMS unit power cords and connectors.

PIROPS requires funding for future transmission costs, software modifications, and tablet hardware and future tablet upgrades. The Program has not identified any sustained, long term funding.

eLogbooks

Hawaii Longline Fishery

In June 2016, NMFS Science and Technology, Fisheries Information System/National Observer Program (S&T FIS/NOP) funded a PIFSC proposal for implementing Hawaii-permitted longline fishery eLogbooks. PIFSC staff issued a SOW and a solicitation for software development, end-to-end encryption, and transmission costs.

For 2017, the PIFSC requested FIS/PMT funding for eLogbooks in the Hawaii-permitted longline fishery to 1) continue beta testing of two software options, 2) develop management system for encryption keys and 3) improve ER outreach to fishermen. Implementation of eLogbooks has gone slowly and haltingly. PIFSC has completed the end-to-end data encryption to comply with NOAA Data Security requirements, but needs to develop the system for encryption key management. The PIFSC funding request for 2017 includes transmission costs and replacement tablets. 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.

PIFSC is doing parallel development of the longline software with encryption with the Integrated Fisheries Information Management System (IFMIS) as an alternative longline ER software to ensure quality control and quality assurance.

PIFSC is not entering ER data directly into the operational longline 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 eLogbook data to populate a logsheet, which PIFSC then saves as a .pdf file and archives. NOAA Office of Law

Enforcement (OLE) requires the recompiled logsheets, which have Statements regarding catch, Captain's name, commercial marine license, and a check box in lieu of an electronic signature.

An issue affecting the implementation of ER is that the Hawaii-permitted longline fishery participants are from several cultural groups, each with various levels of English competency and computer technical skills. PIFSC plans to train individual fishermen in 2017, but has not identified personnel to address the issue of training in particular for Vietnamese- and Korean-speaking fishermen.

Hawaii Deep-7 Bottomfish Fishery

Although the Hawaii FEP 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 fishery-dependent data collection for fishing in both State and Federal waters. A growing proportion of Hawaii deep-7 bottomfish fishermen use online data 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.

US Purse Seine Fishery

US Purse Seine vessels have IFIMS subscriptions, and the industry provides for the full costs for the software and data transmission. All US Purse Seine vessels (37) electronically submit non-fishing 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 non-fishing 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. IFIMS managers trained vessel operators in August 2016 on entering data through IFIMS for the regional purse seine logsheet. Starting October 1, PIRO required operators to report purse seine sets on FADs preferably by IFIMS and approximately half the fleet is entering its catch and effort data through IFIMS. PIFSC needs to conduct back-end database development in order to incorporate IFIMS 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 virtually all Hawaii and American Samoa permitted longline vessels. Installing VMS units and providing electronic reporting tablets posed some logistical difficulties for vessels that were formerly Hawaii-based and are now US West Coast-based.

PIFSC received funding from S&T FIS/NOP for the following two projects:

- EM Feasibility Study for the Shallow-set Longline Fishery in the Pacific Islands Region.

In June 2016, S&T FIS/NOP provided funding to PIFSC/PIRO/PIROP for EM cameras in the Hawaii-permitted longline fishery. PIFSC will be working with Saltwater Inc. to install cameras on seven longline vessels. We prefer shallow-set longline vessels as they also have 100 percent observer coverage; and longline retrieval occurs during daylight, facilitating species identification. The shallow-set longline fleet comprised 22 active vessels in 2015. PIFSC and Joint Institute of Marine and Atmospheric Research contractors will review the video, compare the observer and video data, and write the project report.

- Low Cost (<\$750) EM System for Target Catch and Sea Turtle Bycatch Monitoring in Small-scale National and International Fisheries.

PIFSC staff has developed EM tailored to small-scale fisheries including using high quality video linked to a GPS system. Recent changes to the independent battery system has increased its multiday deployment capacity and increase flexibility in power source by allowing the EM system to tie into vessel power and into the future solar power. Also, staff replaced the top cap assembly with a modular removable camera assembly to reduce field service complexity and improved the robustness of the system via improved external pass through seals. PIFSC staff redesigned the existing door assembly to upgrade the original foam gasket seal to an end fit O-ring with square sealing face. This change yields a more consistent moisture barrier. Lastly, PIFSC staff converted the primary latching mechanism of the door assembly from a hand operated retaining screw to a draw latch. Converting the latching mechanism significantly reduces the time and dexterity required to open and close the EM system control panel in the field, eliminates an easy to lose locking screw, and adds the provision for an external security lock to prevent unit tampering during deployment.

PIFSC staff deployed and tested this EM system in three different small-scale fisheries: Mexico's coastal small-scale gillnet fisheries, Peru's coastal gillnet fisheries, and Indonesia's coastal gillnet fisheries. Deployment in a fourth fishery will begin in early November 2016 on small fishing vessels in the Hawaii bottomfish fisheries.

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. Limited EM projects for the longline fisheries and for small-scale fisheries may be applied to Pacific Island fisheries with further

development. We will continue to examine the potential for electronic technologies in other fisheries as we build on our successes and as resources allow.

Summary Bullets for Leadership Meeting, November 2016

- **Progress:** PIRO and PIFSC are on target, or ahead, of the priorities and activities described in the 2015 Regional Electronic Technologies Implementation Plan. To support ER, in 2016, we:
 - Installed upgraded VMS on Hawaii and American Samoa longline vessels, including those operating out of California;
 - Developed elogbooks for the Hawaii longline fishery;
 - Further developed ER tablets for observers in the Hawaii longline fishery; and
 - Improved ER and data management in the US purse seine fishery.
- We are **ahead of schedule** for EM activities by
 - Developing EM capabilities for shallow-set longline vessels in the Hawaii-permitted longline fishery;
 - Testing EM for the small boat fleets for tracking catch and turtle bycatch around the Pacific rim; and
 - Pilot testing small boat EM technology in the Hawaii bottomfish fisheries.
- **Emerging and Ongoing Issues:**
 - Addressing cultural and technology challenges in the Hawaii longline fisheries; and
 - Securing sustained funding for implementing ER data transmission, ER/EM data management and software/hardware maintenance and upgrades.