

DRAFT 2017 Electronic Monitoring Pre-Implementation Plan

1. Introduction

The North Pacific Fishery Management Council (Council) has established an intention to integrate electronic monitoring (EM) tools into the Observer Program for the fixed gear groundfish and halibut fisheries. The Council's intent is to develop EM to collect data to be used in catch estimation for this fleet.

At their February 2016 Meeting, the Council requested the EM Workgroup to continue developing proposals for two separate pre-implementation pools for 2017 for longline and pot vessels. The Council endorsed the Workgroup's efforts to expand the longline pre-implementation pool in 2017 to 90 vessels, and to remove the constraint that vessels must be less than 57.5 ft LOA. However, first priority in the pool would continue to be given to small longline vessels (40 to 57.5 ft LOA) that have liferaft or bunk space limitations with carrying a human observer. The Council also endorsed developing a pre-implementation pool for 30 pot vessels (of any length) for 2017. For vessels under 40' LOA, the Council supports EM Workgroup work in 2017 to undertake a demographic study of this fleet in order to identify priorities for phase in of coverage.

This document describes the EM pre-implementation plan for 2017, and also notes other EM research and development that will take place in 2017. This pre-implementation plan was developed and refined through a Council committee, the fixed gear EM Workgroup (EMWG). The EMWG provides a forum for all stakeholders, including the commercial fishing industry, agencies, and EM service providers, to cooperatively and collaboratively design, test, and develop EM systems, consistent with the Council goal to integrate EM into the Observer Program.

The overall goal of this pre-implementation plan and the cooperative research is to assess the efficacy of using EM, in combination with other tools, for catch accounting of retained and discarded catch, and to identify key decision points related to operationalizing and integrating EM systems into the Observer Program for fixed gear vessels in a strategic manner. The experience and results from the data collected during this pre-implementation and research phase will inform decisions and future Council alternatives for integrating electronic monitoring into the Observer Program. As such, it should be noted that the eventual components of the regulated EM program may have different provisions than those that are proposed in 2016 or 2017.

Under the current best-case scenario timeline, the Council is scheduled for initial review of an analysis to integrate EM in October 2016, with final action following in December. Under this timeline, regulations would be prepared in 2017, and the integrated program would be implemented for the 2018 fishing year.

Comment [DO1]: Are we still "assessing the efficacy of using EM" or are shifting to building the capacity to support the integration of EM?

Year	Fieldwork / Pre-implementation (Pre-imp)	Council process, regulations	Observer Program/ Annual Deployment Plan (ADP)
2014	<i>Fieldwork</i>	<i>EMWG develops 2015 Cooperative Research Plan (CRP), discusses alternatives for analysis</i>	<i>Oct – 2015 ADP places 10 vessels that are participating in EM research into the no selection pool</i>
2015	<i>Feb – SSC reviews CRP Jan-Jul – operational and stereo camera field research</i>	<i>Feb – SSC, Council review CRP Oct – propose a 2016 Pre-Implementation plan to Council</i>	<i>Oct – 2016 ADP proposes all EM Pre-imp vessels in no selection pool</i>
2016	<i>Jan-Dec – Pre-implementation on 58 longline vessels 40-57.5'. Jan-Jul – EM stereo camera field research on 3-5 longline vessels. Field research on pot vessels.</i>	<i>Oct – initial review for EM analysis to integrate EM into obs program. Dec – final action on EM analysis</i>	<i>Oct – 2017 ADP proposes all EM Pre-imp vessels in no selection pool</i>
2017	<i>Jan-Dec – Second pre-implementation year for longline vessels >40', and proposed pre-implementation for pot vessels. Potential research on other technology.</i>	<i>Jan-Aug – Develop proposed and final regulations for integrating EM, hold MSA-required hearings in AK, WA, OR</i>	<i>June – Annual Report provides prelim analysis on allocating observer fee between observer and EM deployment Oct – 2018 ADP allocates funding to observers and EM deployment</i>
2018	Integrated observer/EM monitoring program		

2. Management Objective

The EM management objective identified by the Council for both hook and line and pot vessels carrying EM systems is to estimate at-sea discards. Retained catch will be assessed through landings reports. The intent for EM is to identify discard species to the lowest taxonomic level possible, or at a minimum to the species level needed for management and stock assessment purposes, while acknowledging that for some species, grouping will still occur.

A secondary objective for hook and line vessels has been established for seabird monitoring in 2016 and 2017, namely to determine whether seabird mitigation measures are present or absent during setting of longline gear on EM-observed trips.

3. The EM Selection Pool

The EM selection pools in 2017 will include vessels that meet the Council’s criteria for EM, and who opt into the EM pool. Not all vessels in the EM selection pool will carry cameras for all of their fishing activity (see Section 4). Vessels which opted into the EM selection pool in 2016 need not “opt-in” again.

Qualifying Criteria & Process:

- **Criteria:** The 2017 EM selection pool is open to hook and line, and pot gear vessels greater than 40’ LOA. First priority will be given to vessels 40-57.5 feet length overall where carrying a human observer is problematic, due to bunk space or life raft limitations¹.

OPTION: Limit participation in the hook and line EM selection pool to vessels fishing in GOA management Areas.

- **Process:** In February, NMFS announced their intent to send a letter to all fixed gear (both hook and line and pot gear) vessels greater than 40’ feet length overall, and request that vessels indicate

Comment [DO2]: Chris, has this been done?

¹ 170 unique vessels were identified that 1) were granted TEs or conditional release for life raft or bunk space in 2013 or 2014; 2) were granted a TE for life raft in 2015 (5 vessels); or 3) were eligible to receive temporary exemptions (TEs) for limited life raft capacity in 2015.

their interest in being in the EM pool by July 27, 2016. Following discussion of the EM Pre-implementation Plan at the October Council meeting, a final letter will be sent to vessels that have expressed interest, detailing the specific rules governing EM deployment for 2017. At that time, after reviewing final EM pool requirements, vessels may choose to contact NMFS and “opt out” of the EM program and be returned to the human observer pool. Vessels agreeing to the EM program rules, and accepted by NMFS, will be placed in the EM selection pool for the duration of the 2017 season, with no probability of carrying an observer on any trips for the 2017 fishing season. Additions to the EM pool from vessels not meeting the July 27, 2016 deadline may be considered on a case-by-case basis relative to the qualifying criteria.

EM Pool Size:

Hook and Line Vessels: The Council has endorsed a target of up to 90 vessels for the longline EM selection pool as funding permits. First priority in the pool would continue to be given to small longline vessels (40 to 57.5 ft LOA) that have liferaft or bunk space limitations with carrying a human observer, followed by vessels which were registered for the 2016 EM selection pool.

Pot Gear Vessels: The Council has endorsed a target of up to 30 vessels, of any length, for the EM pot selection pool as funding permits. First priority will be given to vessels that have liferaft or bunk limitations with carrying a human observer. Vessels selected for the pot gear EM program will be moved into the zero selection pool for human observers.

4. EM Deployment Model

A number of vessels participating in the 2016 hook and line EM pre-implementation program have expressed an interest moving the EM selection process towards a “trip selection” basis similar to that used for human observed vessels. Fleet demographics for EM vessels using pot gear also suggest a “trip selection” approach may be appropriate. Additionally, incorporating the ODDS system into the EM selection process may improve communication and selection efficiency, and provide a structure to ensure compliance with the selection process. **Therefore, the EM workgroup is recommended the 2017 EM deployment model be structured around a “trip selection” approach.**

EM Selection Process for Both Hook and Line and Pot Gear Vessels:

- **ODDs Pre-Season Registration** --Vessels in the EM Selection pool must log into the ODDS system sufficiently in advance of commencing fishing operations for the year in order to allow the EM service provider sufficient time to contact them and schedule installation of the appropriate EM equipment before departing on a trip. The suggested advance notice is 30 days.
- **ODDs Trip Selection** –Once the appropriate EM equipment is installed, vessels in the EM Selection pool must log each fishing trip into the ODDS system at least 72 hours prior to departing for a trip. The Odds system will then notify the vessel operator if a trip has been selected for EM coverage. On trips selected for EM coverage, the vessel operator must contact the EM service provider, acquire an EM control center or hard drive as needed, and comply with the operator responsibilities in Section 7 prior to leaving for the EM selected trip.
- **Changing Dates on EM Selected Trips:** Vessels in the EM selection pool may change the dates of trips selected for EM coverage, but not the order of the selected trip.
- **Pre-wiring of Vessels in the EM Selection Pool:** Pre-installation of EM equipment is an important step in the transition to a “Trip” selection process and will improve the cost

Comment [DO3]: Chris, what actions need to be taken to use ODDS for the EM pool?

effectiveness of the program when funded by the Observer fees in the future. Pre-installation of EM systems will begin in October 2016 upon approval by the Council of this 2017 EM Pre-implementation Deployment Plan and subject to sufficient funding. The intent is to pre-install a complete EM system (EM sensors, Cameras and control centers) on vessels in the EM Pool which anticipate fishing 6 or more trips in 2017. Vessels fishing 3 to 5 trips will have the EM sensors and cameras pre-installed. Vessels fishing less than 3 trips will have EM system components pre-installed only at the discretion of the EM service provider. Anticipated numbers of vessels in each pre-installation category are listed in Table 1. Vessel operators in the EM pool are encouraged to contact the EM service provider as early as possible to arrange for pre-installation.

Comment [D04]: Does this work for pot gear vessels?

- **Target Coverage Level:** In 2017, the target selection rate will be **30% for vessels in the hook and line EM pool**, and **30% for vessels in the pot gear EM pool**
 - If equipment is available, vessels could be asked to carry EM for longer (i.e., the program would allow for higher coverage on an ad hoc basis to further test an aspect of EM).
 - A midyear budget review is planned and, if necessary, the coverage level may be adjusted downward dependent on remaining funds.

Table 1 Number of vessels anticipated in each pre-installation category for both hook and line and pot gear vessels .

Pre-installation category	Hook and Line EM vessels	Pot Gear EM Vessels
Fish less than 3 trips/yr.		
3-5 trips		
6 or greater trips		

5. Service Ports

- **Hook and Line Vessels:** There will be three primary service ports for vessels in the hook and line EM pool in 2016: Sitka, Homer and Kodiak.
- **Pot Gear Vessels:** There will be 2-3 primary service ports for vessels in the pot gear EM pool in 2016: Kodiak, Dutch Harbor and possibly Sand Point depending on funding.
- **Other Ports:** EM services in other ports will be limited to remote support or occasional visits by primary port technicians as funding permits.

6. EM Hardware

Hook and Line Vessels: In 2017, vessels participating in the hook and Line EM program will use EM equipment designed and supplied by the Archipelago Marine Research, Ltd. (AMR). The EM system consists of a control center to manage the data collection, connected to an array of peripheral components including digital IP cameras (generally 2 or 3, depending on the deck configuration), GPS receiver, and gear sensors (hydraulic pressure transducer, drum rotation sensor if appropriate). An additional camera will also be installed to determine if a seabird streamer line was used during setting.

Pot Gear Vessels: In 2017, vessels participating in the pot gear EM program will use EM equipment designed and supplied by Saltwater Inc. The EM system consists of a control center to manage the data collection, connected to an array of peripheral components including digital IP cameras (generally 2 or 3, depending on the deck configuration), GPS receiver, and a hydraulic pressure transducer.

Comment [D05]: This is Malcolm’s language and will need to be reconciled with the NMFS contracting process.

7. Operator Responsibilities on Vessels Carrying EM Systems

Vessel operators are expected to adhere to the following responsibilities when randomly selected from the EM pool to carry cameras while participating in the 2016 pre-implementation program. The EM Workgroup will use the experience from 2016 to consider how to structure the regulations with respect to these and other responsibilities; a regulated program may have different provisions.

- **EM system installation:** Vessels selected from both the hook and line EM Pools must have an installed, functioning EM system for the trip selected for EM coverage. During the EM system installation, it will be the vessel owner's responsibility to assist with planning the best wiring routes and installing the hydraulic oil pressure and engine oil pressure sensors with the assistance of the EM technician.
- **Vessel Monitoring Plan:** the EM service provider will work with each participating vessel to develop a vessel monitoring plan (VMP) which will identify the specific practices required for each vessel's unique configuration. The VMPs will include a cover letter that includes program details, such as the EM system details, operator responsibilities, operator checklist, and troubleshooting protocols. The VMPs will also include an installation summary defining vessel-specific installations details, system settings, camera locations and views. Additionally, a description of how to conduct a hard drive swap and typical troubleshooting strategies, and contact information for key program resources and participants will be provided. Vessel operators will sign the VMP in acknowledgment of the operator responsibilities and system setup requirements.
- **EM system operation.**
 - **Onboard Power:** The EM systems that will be used in 2017 can accommodate DC power from 12-32 volts, or use AC power from an inverter or gen set. It will be the vessel owner's responsibility to work with the EM technician to identify a stable power supply and maintain power to the EM system at all times when underway. To avoid battery drain, the EM systems on hook and line vessels will be allowed to power down to sleep mode when the engine is off.
 - **Function Test:** Prior to leaving port, the vessel operator must turn the system on and conduct a system functionality test following the instructions in the VMP. If the functionality test identifies a malfunction, the vessel operator must contact the EM service provider immediately to resolve the issue. The EM service provider will determine if the malfunction is critical or non-critical. A critical malfunction is one that prevents the data collection objectives from being achieved.
 - **Non-Critical EM System Malfunction:** If the malfunction cannot be fixed in a timely fashion, the vessel operator may depart on the scheduled trip, but must follow the service provider's instructions to trigger video recording manually. The vessel operator may not depart on a second trip without a functioning EM system unless approved by the EM service provider.
 - **Critical EM System Malfunction:** If the malfunction is a camera defined as "critical" in the vessel must remain in port for up to 48 hours to allow the EM service provider time to effect repairs. If the problem cannot be fixed within the 48 hour window, the vessel may receive a release and depart on the scheduled trip. The malfunction must be fixed prior to departing on subsequent trips.
 - **Equipment breakdown at sea:** If the system passes the function check prior to leaving port, and remains continuously powered during the trip, the operator would **NOT** be required to return to port in the event of a breakdown. However the malfunction must be fixed prior to departing on subsequent trips. If a vessel has repeat problems with EM

system reliability or video quality, that vessel may be removed from the EM pool for a period of time and placed in the human observer pool.

- **Hard Drive Capacity:** The vessel operator must ensure that the system has adequate memory to record the entire trip before departing port. The vessel operator must carry one or more spare hard drives, sufficient to record the entire trip, as a back-up.
- **Video quality:** The vessel operator will be required to check the monitor before each haul and to wipe water and slime off the camera lenses to maintain video quality. Video quality for each set will be recorded on the vessel score card.
- **First Trip Quality Control Review:** Operators of vessels selected for EM coverage will be strongly encouraged to make their first landing at an EM service port to allow for a quality control visit.

Catch handling:

Hook and Line Vessels:

- **Discard control points.** The vessel operator will be responsible for ensuring all catch is handled within view of the cameras as described in the VMP. A deck camera will be used to ensure that all discards are done in view of the rail cameras.
- **Seabirds:** An additional camera will be installed to determine if a seabird streamer line was used during setting. Vessel operators will be required to hold incidentally caught seabirds up to the camera for 2-3 seconds and ensure that certain key parts of the animal, such as the beak, are captured by the cameras. Goals of 2017 would be: 1) determining presence/absence of mitigation measures; 2) test different triggers associated with the setting of gear to turn the seabird cameras on (instead of just having them on all the time); 3) if birds are caught and there are images of birds, have a seabird expert look at those images to see if they can identify the species & verify if the presentation times are acceptable.

Pot Gear Vessels

- **Discard control points.** The vessel operator will be responsible for ensuring all catch is handled within view of the cameras as described in the VMP.

Effort logbooks:

Hook and Line Vessels: Vessel operators will be required to keep a simple logbook and write down their hook size, spacing, skate length, and the number of skates on each set. They will not be required to record catch information, other than what is already required in IPHC or other logbooks. The effort log is shown in Attachment 1. For vessels already filling out a NMFS or IPHC logbook, a physical copy or high quality photo of the existing logbook will be acceptable.

Pot Gear Vessels: Vessel operators will be required to keep a simple logbook and write down date and time information for each pot set/haul event. The pot gear effort log is shown in Attachment 2.

8. Dockside Monitoring

No dockside monitoring is proposed for 2017, other than quality control and maintenance visits to the vessel.

9. Data Turnaround Times

Hook and Line Vessels: Hard drives will be collected by field support staff biweekly or after each selected trip and mailed to PSMFC for review. Vessel operators not landing in a service port may be required to follow simple procedures to retrieve the hard drive, and mail it to PSMFC at the appropriate time. Instructions will be provided in the Vessel Monitoring Plan.

Pot Gear Vessels: Hard drives will be collected by field support staff biweekly or after each selected trip and mailed to Saltwater Inc. for review. Vessel operators not landing in a service port may be required to follow simple procedures to retrieve the hard drive, and mail it to Saltwater Inc. at the appropriate time. Instructions will be provided in the Vessel Monitoring Plan.

Option: Evaluate Local EM data review for improvement in turnaround time, and costs.

10. Feedback Systems

Past experience has shown that to obtain high quality EM data, a comprehensive feedback system involving the vessel operator, the EM service provider, and the EM video reviewer's needs to be in place. The 2017 EM program will have four feedback systems. These feedback systems are intended to be educational and adaptive in nature rather than citation oriented.

The first feedback system involves a quality control visit by the EM service provider after the first trip. During the quality control visit, the EM service provider will review the sensor logs and video images, then confer with PSMFC to identify any installation or deck operational changes that need to be made to meet the goals of the program. Quality control visits are not mandatory on the vessels part, but are strongly encouraged.

The second feedback system will use a Vessel Scorecard (see examples in **Error! Reference source not found.** and **Error! Reference source not found.**) to track the long-term performance with respect to, EM system performance, the compliance with operator responsibilities, and the quality of data coming from the vessel. This data will be used to evaluate normal thresholds for performance. The intention would also be to use the 2017 vessel scorecard to evaluate potential incentive systems, and consider how performance in given year could be used as a criterion for allowing vessels to continue to participate in the EM program in future years.

The third feedback system will use an incident report to document EM system failures at sea.

The fourth feedback system will provide vessel operators with the opportunity to provide feedback on 1) the "user experience"; 2) vessel costs or impacts; 3) how much time it required to have EM on the boat (installation, cleaning lens, changes to fishing practices, etc).

11. Data review procedures

Hook and Line Vessels: PSMFC will review all EM data collected to assess whether data is complete, how many trips and hauls were captured, and the video quality of those hauls. A ~~XX~~ subsample of hauls will receive further review for species identification and disposition. All review information will be entered on the vessel score card (**Error! Reference source not found.**). The EM Workgroup will provide direction to PSMFC on protocols for reviewing video for species identification.

Option: Evaluate local EM data review for improvement in turnaround time, and costs.

Comment [D06]: Howard, can you update this section with the procedures and forms Adam put in place?

Comment [D07]: Need NMFS to complete the subsampling report.

Pot Gear Vessels: Saltwater Inc. will review all EM data collected to assess whether data is complete, how many trips and hauls were captured, and the video quality of those hauls. A 30% subsample of hauls will receive further review for species identification and disposition. All review information will be entered on the vessel score card (**Error! Reference source not found.**). The EM Workgroup will provide direction to Saltwater Inc. on protocols for reviewing video for species identification. Review information will be submitted to AFSC via web portal. PSMFC or NMFS will review a percentage of the data collected on pot gear vessels to assess whether data is complete, how many trips and hauls were captured, video quality, and species discards. The EM Workgroup will provide direction to PSMFC or NMFS on protocols for data review.

Comment [D08]: This is Malcolm and Nancy's suggestion and needs to be reconciled with the NMFS contracting process and goals/objectives of the Council.

Option: Evaluate local EM data review for improvement in turnaround time, and costs.

12. Data Storage and Archiving.

EM video will be stored for a limited period of time (suggest 120 days) to allow for quality control review by a 2nd party but not stored indefinitely. If any enforcement issues are identified during the EM review, the trip will be flagged and turned over to OLE for resolution.

Comment [D09]: We dropped this section out last year, but I have had consistent feedback from industry groups that they want the storage issue resolved and the roll of OLE clarified.

13. Catch Accounting

Steps & decision points needed to use EM data in catch accounting

NMFS is not yet using EM data being collected through the EM Cooperative Research Plan in catch accounting. However, the goal during pre-implementation is to make the necessary infrastructure modifications and catch estimation programming changes to incorporate EM data into the catch accounting system so that it is available for inseason management. EM data processing occurs at three locations: Pacific States Marine Fisheries Commission, Alaska Fisheries Science Center (AFSC) and the Alaska Regional Office (AKRO). Figure 1 illustrates the data processing steps that need to occur during each of these phases as well as the data transfer that will need to occur between these entities. On the right-hand side of the figure, we have noted estimation decision points (in blue) and data quality/validation decision points (in purple) that need to be taken into consideration as the data estimation process is implemented.

Comment [D010]: Need to update status of this work

For hook and line EM vessels, in 2017, NMFS will obtain piece counts from EM and will apply average weight by species to the piece counts using other sources of information to derive weight for catch estimation purposes. The 2017 program does not include a provision for measuring species length on hook and line vessels.

For pot gear EM vessels in 2017, NMFS will obtain piece counts from EM and will apply average weight by species to the piece counts using other sources of information to derive weight for catch estimation purposes. The 2017 program may include work to develop the process for measuring species length on pot gear vessels.

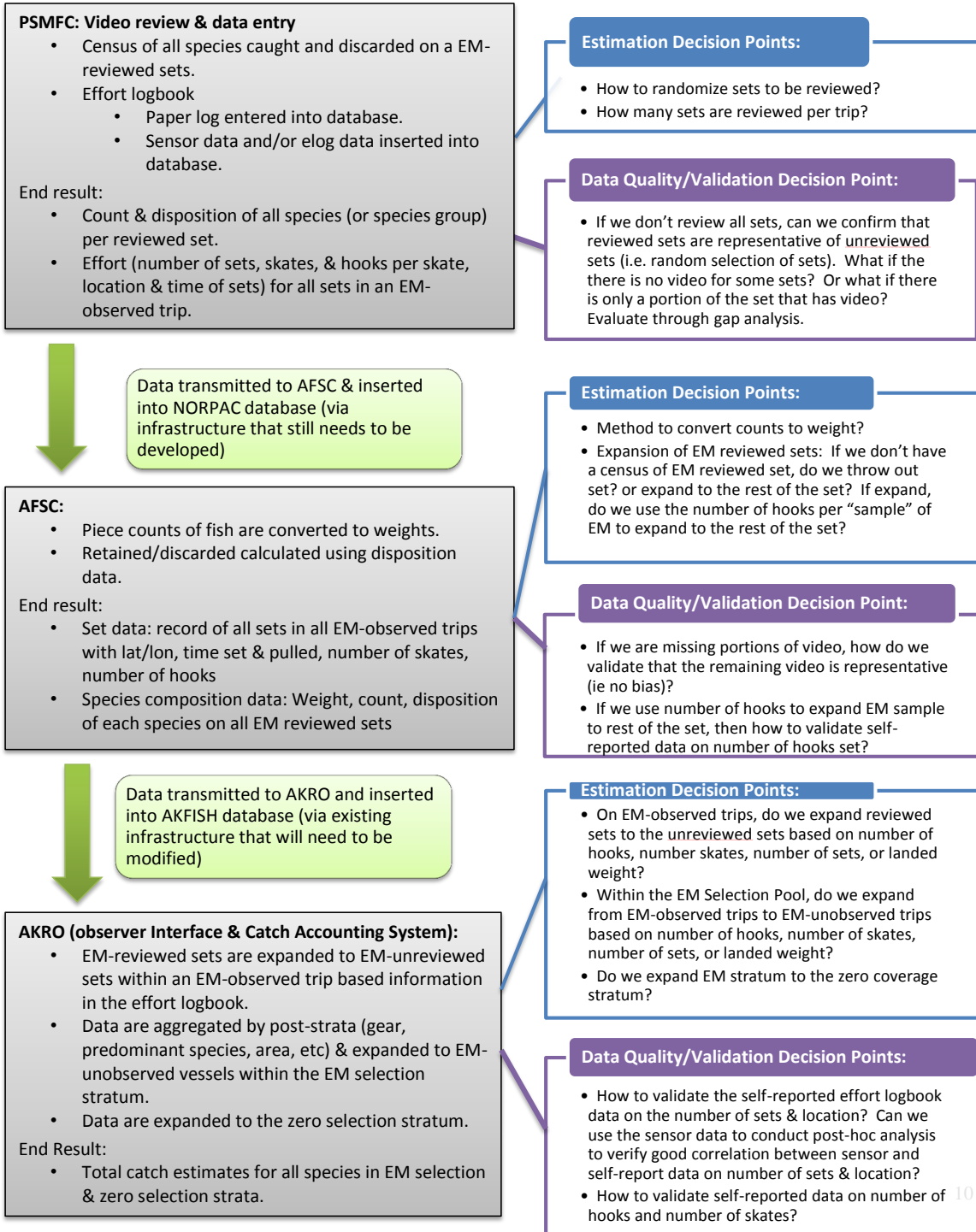
EM sampling terminology

In an attempt to use consistent terminology, we have defined the layers in the EM sampling hierarchy:

- **EM Selection Pool:** the vessels that meet the Council's criteria for EM and who opt into EM. It may be that not all vessels in the EM Selection Pool will carry cameras for all of their fishing activity.
 - **EM-unobserved vessels:** the vessels that are in the EM selection pool, but who are not selected to carry EM for a time period.

- **EM-observed vessels:** vessels in the EM selection pool that are selected to carry EM for a time period.
 - **EM-observed trip:** the trips taken by EM-observed vessels where they are carrying EM.
 - **EM reviewed hauls:** the hauls within an EM-observed trip that are selected for EM review. The number of EM reviewed hauls could be all or some portion of the hauls within an EM-observed trip.
 - **Unreviewed hauls:** the hauls within an EM-observed trips where the video is not reviewed. This could be because there was incomplete video for the trip, or due to sub-selection and sampling of the hauls within an EM-observed trip.

Figure 1. Roadmap & decision points for using EM data in catch accounting.



14. Other EM cooperative research in 2016

Within the confines of the budget, the EM Workgroup recommends continuing with other EM research projects in 2017 such as developing additional EM technologies, and continued progress towards expanding EM into other fixed gear sectors.

Research and development of other EM technologies for the fixed gear fleet

If funding permits, in addition to the 90 vessels in the longline EM selection pool, up to 3 additional vessels may volunteer to participate in continued testing of Stereo Cameras. These vessels would be moved into the zero selection pool and be required to carry stereo cameras on 30% of their anticipated trips in 2017. Stereo Camera vessels will not be part of the random selection process in 2017.

Progress towards expanding EM into other fixed gear sectors

Hook and line vessels <40ft LOA: For vessels under 40' LOA, the EM Workgroup will undertake a demographic study of this fleet in order to identify priorities for phase in of coverage. Aspects to be evaluated include the number of trips, the distribution of vessel lengths, volumes landed, and primary ports. This work would support the development of a plan for specific field research in the under 40' fleet in 2018.

Comment [DO11]: Need to summarize workplan for demographic study

15. Budget for all 2016 EM deployment and research

The total available 2017 EM budget is \$xxxxxxx, available from the following sources:

- \$xxxxxx – NMFS Alaska Region
- \$xxxxxxx – NMFS National Catch Share Program
- \$xxxxxxx – NMFS National Observer Program
- \$xxxxxx – NMFS Fisheries Information System
- \$456,051 – ALFA NFWF Funds (total amount, to be spent in 2016 and 2017)

The 2017 EM funding will support work in 4 major areas:

1. Operation and deployment of EM on hook and line vessels greater than 40 ft LOA in the EM selection pool;
2. Operation and deployment of EM on pot gear vessels greater than 40 ft LOA in the EM selection pool;
3. Funding for EM infrastructure in order to integrate the data from EM into the observer program database for use in catch accounting; and
4. EM research and development projects,

The four areas are described in more detail below. The EM Workgroup also recommends maintaining a reserve of funding to support pre-implementation in 2018. Remaining funds in 2017 may be used to fund a request for proposals for EM work in 2018.

EM operation and deployment on hook and line vessels Greater than 40 ft LOA

Description: Operational testing of EM on fixed gear vessels according to the EM Pre-implementation plan developed by the EM workgroup will cover purchasing EM equipment (cameras, wiring, hard drives, etc.) field support for deployment and retrieval of the EM systems and time for Pacific States Marine Fisheries Commission (PSMFC) employees to conduct review of imagery data.

Available Budget:

- \$xxxx NMFS Alaska Region
- \$xxxx NMFS National Catch Share Program (NCSP)
- \$xxxxxx ALFA National Fish and Wildlife Foundation Funds (NFWF)

Total: \$xxxxxxx

Projected Spend Plan

- \$xxxx NMFS funds (combined NMFS Alaska Region and NCSP)
- \$xxx NMFS funds (video review)
- \$xxxx ALFA NFWF Funds

Total: \$xxxxxK

Balance/Carryover for 2018

- \$xxxx NMFS funds
- \$xxx ALFA NFWF Funds

Total: xxx

Attachment 4 provides a more detailed budget specific to the fieldwork portion of the 2017 EM operation and deployment project.

EM operation and deployment on pot gear vessels Greater than 40 ft LOA

Description: Operational testing of EM on fixed gear vessels according to the EM Pre-implementation plan developed by the EM workgroup will cover purchasing EM equipment (cameras, wiring, hard drives, etc.) field support for deployment and retrieval of the EM systems and time for Saltwater Inc. employees to conduct review of imagery data.

Available Budget:

- \$xxxx NMFS Alaska Region
- \$xxxx NMFS National Catch Share Program (NCSP)
- \$xxxxxx NPFA National Fish and Wildlife Foundation Funds (NFWF)

Total: \$xxxxxxx

Projected Spend Plan

- \$xxxx NMFS funds (combined NMFS Alaska Region and NCSP)
- \$xxx NMFS funds (video review)
- \$xxxx NPFA NFWF Funds

Total: \$xxxxxK

Balance/Carryover for 2018

- \$xxxx NMFS funds
- \$xxxx NPFA NFWF Funds

Total: \$xxxx

Attachment 5 provides a more detailed budget specific to the fieldwork portion of the 2017 EM operation and deployment project.

EM infrastructure and staff support

Description:

Available Budget:

Total:

EM research and development

Description:

Available Budget:

Total

Attachment 1: Sample hook and line effort log for the EM pre-implementation plan.

2016 EM Program Effort Logbook									
Vessel Name:				Start Port:					
ADF&G Number:		Trip Start Date (mm/dd):		Offload Port:					
Operator Name:		Offload Date (mm/dd):		Did you haul at night? Y N					
Did the EM system function normally the entire trip? Y N				Gear ID	Gear Type	Length of Skate (feet)	Hook Size	Hook Spacing (ft)	No. Hooks Per Skate
If no, please describe any problems:				A					
				B					
				C					
				D					
Set		Haulback		Seabirds Caught?	Did you discard legal-sized halibut?	Gear ID	No. Skates Set	No. Skates Lost	
Date (mm/dd)	Start Time	Date (mm/dd)	Start Time						
				Y N	Y N				
				Y N	Y N				
				Y N	Y N				
				Y N	Y N				
				Y N	Y N				
				Y N	Y N				
				Y N	Y N				
				Y N	Y N				

Shaded areas are not required if you are completing and sharing your IPHC logbook with EM program staff.

Attachment 2: Sample pot gear effort log for the EM pre-implementation plan.

Comment [DO12]: Nancy, can you provide.

Attachment 3: Sample vessel feedback reporting forms.

Sample Vessel Scorecard as completed with field technician

Data Set Details			
Vessel name:		Operator Name:	
Data Set Start:	Click here to enter a date.	ADF&G Number:	
Data Set End:	Click here to enter a date.	Current Port:	
Logbooks Completed		Requirement	
EM Program Effort Logbook		Y N	
Verified IPHC Logbook (photo or e-log printout)		Y N	
Fish Ticket (photo)		Y N	
Requirement		Requirement	
		Yes	
		Optional	
		Optional	
Duty of Care		Comments	
Function test run at the start of each trip?		Y N	
Sensor data complete throughout trip		Y N	
Initial image quality assessment		H M L	
Initial catch handling assessment*		1 2 3	

*Guide to catch handling assessment: 1) All catch was handled out of view; 2) Some catch was handled within view, and some out of view; 3) All catch was handled within view.

Sample Vessel Scorecard as completed by PSMFC reviewer

Data Set Summary			
Vessel name:		Operator Name:	
Data Set ID:		ADF&G Number:	
Trip Start Date:	Click here to enter a date.	Start Port:	
Trip End Date:	Click here to enter a date.	Landing Port:	
Number of days on hard drive:			
Trip Assessment			
Effort Logbook Submitted:	Y N	Function test run at the start of each trip?	Y N
IPHC Logbooks submitted:	Y N	Continuous power (with exception of sleep events)	Y N
Fish ticket submitted:	Y N		
Fishing Event Assessment			Comments
Seabird Mitigation Devices Used:	Y N		
Seabirds Captured:	Y N		
Extended Presentation?	Y N		
All discarding at control points?	Y N		
Comments:			
Reviewer's Average Data Confidence	H, M, L, U		
Data Confidence Reason	Catch handling – in camera view		
	Catch handling – not in camera view		
	Image quality		
Event Image Quality			Comments
Average Image Quality During Haulback	H, M, L, U		
	NA (if image quality high)		
	Obstruction		
	Dirty camera(s)		
	Night lighting		
	Water spots		
	Condensation		
	Glare		
	No video recorded, scrambling or white screen		
	Out of focus		
	Poor camera angles		

Attachment 4: Hook and Line EM Budget summary

Attachment 5: Pot Gear EM budget Summary

Attachment 6: Copy of EM Pre-implementation Plan Opt-In Letter

Attachment 7: Copy of 2017 EM Pre-implementation Opt-In Confirmation Letter