

Electronic Monitoring Workgroup - Minutes

November 19-20, 2014 meeting, Renaissance Seattle Hotel, Seattle, WA
and December 1, 2014 teleconference

At Nov 19-20 meeting

Workgroup: Bill Tweit (chair)

Appointed: Bernie Burkholder (F/V Northern Endurance), Dan Falvey (ALFA), Don Lane (NPFA - alternate), Brian Lynch (PVOA), Howard McElderry (Archipelago Marine Research), David Polushkin (KBFA), Morgan Wealti (Saltwater, Inc. - alternate)

Agency: Dave Colpo (PSMFC), Diana Evans (NPFMC), Heather Gilroy (IPHC), Nicole Kimball (ADFG), Nathan Lagerwey (NOAA OLE), Bruce Leaman (IPHC), Martin Loefflad (NMFS FMA), Tom Meyer (NOAA GC), Jennifer Mondragon (NMFS AKR), Brent Pristas (NOAA OLE), Chris Rilling (NMFS FMA), Suzanne Romain (PSMFC), Farron Wallace (NMFS FMA)

Others attending included: Adam Batty, Dawn Mann, Craig Rose, Ernie Weiss

At Dec 1 teleconference

Appointed: Bill Tweit, Dan Falvey, Brian Lynch, Malcolm Milne (NPFA), David Polushkin, Jeff Stephan (UFMA), Morgan Wealti

Agency: Liz Chilton (NMFS FMA), Dave Colpo, Diana Evans, Martin Loefflad, Jennifer Mondragon, Brent Pristas, Farron Wallace

The Chair opened the meeting with introductions and a discussion of expected outcomes from the Workgroup meeting. The meeting primarily took place in Seattle during November 19-20th, however some additional budget information was needed to complete the discussion of how funding will be allocated for the 2015 fieldwork, and grant applications for 2016 pre-implementation. The meeting was recessed but not adjourned, and a follow-up teleconference took place on December 1st, to finalize the budget/funding discussion.

Updates

Don Lane and Morgan Wealti provided a brief update on work that the North Pacific Fishing Association and Saltwater have been doing with pot cod EM research. Don noted that pot vessels are a good candidate for EM as there is a fixed point on the vessel where the catch is sorted, and because there is less bycatch in the pot cod fishery than some other fisheries. The group would like EM for pot vessels to be integrated into the Council's implementation plans for EM, and is seeking additional funding for further pot cod EM research. **The EMWG is supportive of extending the pot cod research.** NPFA is willing to share research data with the Workgroup from future fieldwork, and is looking for guidance from the Workgroup about how to integrate its work operationally. Bill Tweit suggested that this would need to be a future discussion item, but hopefully the template that the Workgroup develops for the longline fleet will be a useful template.

Dave Colpo noted that he is currently finalizing the report for the remainder of the 2014 fieldwork video review, which will be out by the end of the year. All of the trends reported earlier have remained consistent. The document will also include metrics of the time required for video review.

Farron Wallace gave a short overview of upcoming fieldwork planned for the RFP vessel, which will be fishing pot cod through February, and subsequently longlining. The research will focus on testing standard and stereo cameras, mounted on the rail and used with the chute, and will have a sea sampler onboard for comparisons with EM data. The group discussed some of the challenges with managing a paired dataset.

Timelines

Diana Evans presented a timeline, developed with Martin Loefflad, of how the EM fieldwork and pre-implementation will integrate with the Council process for a regulatory amendment to implement the EM component, and the Observer Program Annual Deployment Plan cycles. The Workgroup discussed the major decision junctures for the Council (identified below). **Until the EM component is brought into the Council's Observer Program by regulatory amendment, all funding for the EM fieldwork and pre-implementation phases will need to come from independent sources, and cannot be supported by the observer fee.**

Integration of EM fieldwork with Council process and ADPs

Year	Fieldwork / Pre-implementation (Pre-Imp)	Council process, regulations	Observer Program/ Annual Deployment Plan (ADP)
2014	Fieldwork	EMWG developing purpose & need, alternatives, 2015 Cooperative Research Plan (CRP)	October – 2015 ADP places 10 vessels that are participating in EM research into the no selection pool
2015	Jan-Feb – stereo camera field research on pot vessel (RFP)		
	Feb – SSC reviews CRP	Feb – SSC reviews CRP	
	Mar-Apr – stereo camera field research on longline (RFP and NPRB) Mar-Sep – operational research	EMWG evaluates field data	
	(other fieldwork too)	October – present a refined 2016 Pre-Imp concept to Council	October – 2016 ADP proposes all EM Pre-Imp vessels in no selection pool
2016 (Pre-imp 1)	Pre-implementation will likely focus on longline vessels <57.5', and be available to more vessels than in 2015. <i>(requires independent funding)</i>		
	Fieldwork as necessary/ possible for other elements (e.g., pot vessels, >57.5') <i>(requires independent funding)</i>	October – initial review for EM analysis. Focus on what type of EM program should go forward, and what regulatory changes are needed to allow it	October – 2017 ADP proposes all EM Pre-Imp vessels in no selection pool
		December – final action on EM analysis	
2017 (Pre-imp 2)	Pre-Imp 2, potentially expanded to include other fixed gear vessels <i>(requires independent funding)</i>	Develop regs for integrating EM	June – 2016 Observer Annual Report provides preliminary analysis to support how to allocate observer fee between observer and EM deployment
			October – 2018 ADP allocates funding between observers and EM deployment
2018	Integrated observer/EM monitoring program		

Council decision junctures:

- **February 2015** – SSC review and Council approval of the utility of the 2015 Cooperative Research Plan

- **October 2015** – Council approves proposal for 2016 pre-implementation year. Involves approving design of 2016 program, and allowing an exemption from human observer coverage for those vessels that are participating.
 - Scale of pre-implementation will largely be determined by funding and number of boats that are life raft or bunk space limited. Both factors remain to be determined, but the scale is anticipated to be considerably larger than the 14 vessels participating in 2015 research.
 - In considering the scope of pre-imp, the Council will also need to weigh the higher risk that monitoring data from pre-imp may not be fully usable in catch accounting system in 2016, as kinks of integration are worked out.
 - While the constraints of the 2016 pre-imp program can be reconsidered in the final analysis, there may be concern about changing the pre-implementation parameters
- **October/December 2016** – Council decides on regulations to integrate EM into the monitoring plan, including decision points about how the EM option will look
- **October 2017**, and subsequent years – Council decides how to allocate the available observer fee funding between human observer days and EM deployment

2015 Cooperative Research Plan

The EM Workgroup reviewed progress on the specific research projects, written and fieldwork, that were identified as components of the plan at the last meeting. Some overall points about the research plan agreed on by the Workgroup are as follows:

- There are 2 directions of fieldwork being undertaken in 2015: operational testing, and research and development work on camera technologies (standard and stereo cameras, and automated image/data processing applications) and integration of sensor data with elogbooks (for automation of set and haul positions, and effort). Both the operational and research/development fieldwork efforts in 2015 are designed to address Council decision points about EM implementation.
- There is also a third aspect, programming work, which is being undertaken to prepare for the integration of EM data into the catch accounting system. This is needed regardless of what form of EM program we choose, and is especially important in preparation for pre-implementation in 2016.
- The Workgroup agrees that operational testing needs to happen before any major EM program element can move forward to implementation.
- At this point in time, the standard camera has been shown to be effective in several compliance-based programs, and is ready for operational testing to assess its reliability, data quality, and timeliness for an integrated catch estimation program. Limited operational testing of the rail-mounted stereo camera will occur as part of the NPRB grant on vessels volunteering out of Petersburg.
- At the previous EM Workgroup meeting, we identified a suite of analytical alternatives to guide EM development. We do not have the scope to operationally test all of these program design options in 2015, even using only the standard camera. Therefore, **the Workgroup is choosing to focus 2015 operational research for volunteer vessels on variations of a stand-alone standard camera, optionally paired with vessel-reported effort information and/or special handling procedures for some species, in order to assess the camera data for use in catch estimation.**
- In October 2015, the Workgroup will evaluate the 2015 fieldwork to date, and can discuss whether to move forward with testing other program design options operationally (e.g., discard measurement options, using either standard or stereo cameras; expanding operational testing to pot vessels; or using logbooks as the source for catch estimation, audited by cameras).

Operational testing fieldwork plan

The EMWG reviewed two documents prepared by Archipelago Marine Research. The first pulled together background data and context to assess some of the design parameters of the EM program, and the second identified key research areas and decision points that will need to be decided as part of the Council's EM analysis (scheduled for October 2016). The Workgroup highlighted some of the research questions that can be addressed through the study design for 2015 operational research, in addition to the following comments:

- The data that have been put together so far to determine which ports will be most effective for EM are based on landings data. Refinements will be made based on the Workgroup's discussion. Additionally, home port data should be considered, particularly when deciding where it will be most efficient to initially install EM units. This is worth considering for 2015, but will be especially important when planning pre-implementation for 2016.
- The document also included a comprehensive list of observed species by target fishery, for vessels <58', preliminarily listing how accurately each species can be identified with cameras. This information is important to hone in on the species for which special handling may be required (e.g., showing the fish to the camera in a particular way to ensure identification, or retaining certain species for dockside identification). The AFSC memo is one resource for identifying high priority species and catch estimation needs for stock assessments. Jennifer Mondragon offered to provide additional clarifications to the table with respect to how each of the species are managed, and also to include a column that addresses the need for timeliness of the data, such as identifying whether the species is managed actively inseason, or whether an annual catch estimate is acceptable. This will help inform whether the data to assess that species needs to come from EM, or perhaps can be obtained another way (e.g., expansion from observed vessels, crew data collection, dockside).
- It was proposed that we should think about the scope and scale of the 2016 pre-implementation program, in order to understand what the goal of the EM component is, and how to plan for it. There are some fixed costs that will be part of an EM program, such as port technicians, and we would want to have a program of sufficient scale to make those costs affordable for the major ports where landings occur. Ideally, the 2015 research program will begin growing the field service infrastructure for the 2016 program.

Seabird handling

Kim Rivera provided a detailed presentation on the need for seabird monitoring in the longline fleet, and studies to date on the difficulties of identifying a short-tailed albatross with a camera. However, using cameras to ensure compliance with streamer lines would be a positive advancement for seabird monitoring. A subgroup was formed to consider appropriate seabird handling procedures to test in the 2015 operational fieldwork (see updated projects list for subgroup members and other notes).

Cost Framework

Sam Cunningham presented an initial discussion of cost issues that will need to be understood to frame the tradeoff discussion with respect to the various EM program options, and received feedback from the Workgroup. He will interact with the operational fieldwork subgroup to ensure that the research collects data necessary for cost comparison of EM options. There was a discussion of how to assess opportunity costs associated with the EM program, and a suggestion that this will largely have to be assessed in terms of additional time (e.g., additional handling procedures, or returning to port due to broken equipment). Sam will provide input to ALFA on their exit interview with EM participants, and will look for other opportunities to get feedback from industry. There are a number of previous EM studies that provided cost information and these will be used to help inform the analysis of costs.

Catch estimation, methods to get to weight

Jennifer Mondragon is preparing a methodology discussion on how EM data for different species could be used in catch estimation. Assessing the species list in each fishery, which was requested for planning the operational fieldwork, will be a first step towards considering whether each species is better estimated through EM data or through expanded observer data. Jennifer and Farron are also working on the outline of methods to get to species weight from the piece counts collected in the EM data from standard cameras. She shared an outline of the weight methodology paper with the EMWG.

Data review protocols

The Workgroup agreed that there should be some reconsideration of the data review protocols for the 2015 fieldwork, compared to what was used for the 2014 video review. In 2014, the standard was to only review video if it was complete for the whole trip, and was associated with dockside monitoring. There was also some video review of hook counts, which is not planned for the future. The group agreed that limiting the review only to trips with associated dockside monitoring is not necessary for 2015, and it is appropriate to reconsider the review criteria. The group discussed the value of sometimes reviewing hauls, rather than only complete trips, although also expressed the need to understand and document why and where there is incomplete information. It will be important in the 2015 research to evaluate what percentage of the time high quality data can be collected, including how often species can be identified to a particular level. The discussion of how to develop a robust sampling protocol for EM was delegated to the data review subgroup (for members see project list), who agreed to set up a meeting in early January.

Other fieldwork projects

Farron updated the committee on the various research and development projects that he is working on: the stereo and chute camera research on the RFP vessel, operational testing of the stereo camera with Petersburg vessels (NPRB grant), a proposal to put stereo cameras on the IPHC survey vessels to collect images for processing applications, a proposal to put stereo cameras on the sablefish survey to collect stereo images with different reflectance for processing applications, and e-logbook testing and application design. The study design for the first item has previously been reviewed by the Workgroup in May (as Track 2/3 study design), and will be reviewed by the SSC. The sablefish survey proposal is not currently funded under the available budget for 2015.

Bruce Leaman reported that the IPHC has been looking into a field study of discard mortality rates, and is still trying to figure out logistical difficulties with how to construct the study. They are investigating two streams, tagging some fish (to determine survivability), and testing different release methods.

Plan for finalizing the 2015 Cooperative Research Plan

In September, for each of the different projects the Workgroup had created a table describing them, indicating whether they result in written products and in field testing, appointing a project lead and other team members to work on them, identifying timing with respect to whether the outcome of each project needs to either be presented to the SSC, or feed into the design of the 2015 fieldwork. At this meeting, the Workgroup updated the table, which is posted on the EMWG webpage. An additional column indicates notes from this meeting.

The Workgroup is preparing two documents for the SSC in February, which will be reviewed by the Workgroup at the January meeting. The first is the 2015 research plan itself, which will consist of an introductory section explaining how the different research projects integrate within the plan, a summary of each project, and then as appendices, will contain specific study designs for the projects that the SSC will review in February (the operational testing, and standard configuration and chute camera research

projects). The Workgroup also noted that the SSC is considering holding an EM workshop in February, which would provide background and context for the Workgroup presentations. The agenda for such a workshop, if it happens, would be discussed at the January meeting.

Regardless of whether a workshop is possible, the EMWG will prepare a context document for the 2015 research plan, which will describe how the 2015 research fits in with the Council's purpose and need for EM development, as described in the last EMWG minutes, and the draft alternatives that are guiding that development. The document will also provide some background on EM, and the timeline for integrating the 2015 EM fieldwork into a pre-implementation program, and eventual implementation with the Observer Program.

At a minimum, the research plan will be presented to the SSC by Diana Evans (context document and introduction), Farron Wallace (research and development study design), Howard McElderry (operational testing study design), and Jennifer Mondragon (methodology for weight estimation). Jennifer and Sam Cunningham will also be available to discuss other methodology elements (e.g., catch estimation methods for different species, cost framework), if they come up in discussion.

Funding / Budget

At the November meeting, and subsequently at the teleconference, the Workgroup discussed how the budget available for 2015 is allocated among projects (referencing documents prepared by NMFS and PSMFC), and what other funding opportunities are available for 2015 and 2016.

The types of projects proposed for 2015 funding fall into one of three categories: operational testing, research and development, and integration of EM data (from any source) into the catch accounting system. For the operational testing, currently 10 vessels have been selected for participation, which operate out of two ports (Homer and Sitka). An additional 2-3 vessels may also be selected out of Petersburg, who will be participating in logistical testing of the stereo camera under the NPRB grant. Currently, the budget allocates funding for the operational testing fieldwork on the 10 vessels (camera lease, port support, installation/retrieval, video review), video review for the Petersburg stereo camera research, a programmer for the data integration project, and funding for the research and development fieldwork (stereo camera purchase, video review for the IPHC survey work, and 2 contractors). The discussion addressed the following points:

- Workgroup members would like to do more/larger projects than is possible with the available funding, and disagree about how to balance the available funding among the proposals.
- The Workgroup agreed to have a continuing discussion about how to allocate the available 2015 budget among projects, and this will be an agenda item for the January EMWG meeting.
- The EMWG understands that the Council wants to continue with both operational testing and continued research and development of new technology.
- Currently, approximately \$1.3 million is available for EM research in 2015. Of this, about \$570,000 is obligated to specific projects (elogbook and sensor integration, image processing and analysis, and an \$83,000 NPRB grant to test stereo cameras). \$765,000 is available for discretionary spending on EM projects.
- NMFS and Workgroup members are looking at additional funding opportunities, but it is not yet known whether any will be available for 2015 fieldwork. Therefore there is a need for projects (operational testing and research and development) to be discrete, or scalable.
- To facilitate a budget discussion, there needs to be a clear justification of the value of each project, or scaled up component of a project, to the Council's EM implementation goals. For EM fieldwork that exempts additional vessels (beyond the 10-13 already contemplated) from observer coverage, this is especially important.

- Given our timeframe, we should plan for what is currently allocated in the budget, and if more funding becomes available, other proposals or project components could be funded.
- Currently, the funding for the operational testing component is based on the estimated participation of the 10 volunteer vessels already selected, and accounts for all costs associated with the program (camera lease, port support, Archipelago contract, video review, etc.). Based on the budget numbers discussed at the meeting, **the budget for the operational testing fieldwork (10 vessels) is estimated at approximately \$300,000, plus 400 hours of video review.** This should inform the development of the study design for this work.
- Of the remaining portion of the discretionary funds in the EM budget (\$765,000), approximately \$125,000 is allocated to research and development fieldwork (\$25,000 of camera/computer equipment, and contract costs for 2 personnel), plus 875 hours of video review. The remainder (approximately ~\$340,000) amalgamates the cost of the programmer (which benefits everybody), the cost of video reviewers (for all fieldwork projects), and PSMFC supplies, services, and overhead for administering the grant.

Regarding additional funding opportunities for 2015, Chris Rilling and Martin Loefflad noted that there is likely to be a line in the Federal budget for electronic monitoring, but it is unknown how much of that money would come to Alaska, and when it would be available. The Workgroup discussed grant opportunities, through NPRB, NFWF, and Saltonstall-Kennedy. Workgroup members agree to put together a coordinated pre-proposal for the NFWF Fisheries Innovation Funds, which is due on December 19. If successful, funds would more likely be available for 2016 rather than 2015. The due dates for the other grant applications were too imminent for the group to apply this year.

The Workgroup also started thinking about the scale of 2016 pre-implementation, in order to approximate funding needs for Federal budget planning. There was discussion of whether a survey, or a questionnaire through ODDS, would be useful to determine how many people may want to participate next year, but it was decided to look at other information first. NMFS agreed to pull together information for the January meeting that may inform 2016 participation from the 40-57' fleet, for example, participants interested in EM in the past, and vessels that have requested bunk space or life raft exemptions.

Alaska Regional Implementation Plan for Electronic Technologies

Jennifer Mondragon presented the current draft of the Alaska Regional Implementation Plan for Electronic Technologies, being developed by NMFS. In October, the Council requested that the EMWG review the Plan before it is submitted to NMFS HQ at the end of the year. Jennifer highlighted a table that communicates how much Alaska has already incorporated electronic monitoring and electronic reporting technologies in the fishery management program. The Workgroup suggested some clarifications with respect to proposed costs, to better convey Alaska EM funding needs in the short- and long-term.

Scheduling

The Workgroup plans to meet again on January 13, 2015, to finalize the 2015 Cooperative Research Plan for review by the Council and the SSC in February, and continue other discussions relating to the 2015 field season and 2016 pre-implementation as necessary. The various subgroups identified to address the specific research projects may also meet or correspond before January, to complete their tasks (see updated projects list for further detail).

The Workgroup tentatively identified that, following the January meeting, the next series of Workgroup meetings would be to prepare for an October 2015 presentation of a pre-implementation plan for 2016. To meet that schedule, the Workgroup tentatively identified a 2-day workshop in July (July 30-31, 2015), followed by a one-day meeting in September (September 8, 2015).