



North Pacific Fishery Management Council

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D4 Trawl Electronic Monitoring Committee REPORT

January 20, 2023, NPRB conference room/Zoom 9am-4pm AK time

The Committee met to discuss current EM projects and provide recommendations on the future role and appropriate makeup of the Trawl EM Committee.

Appointed Committee Members in attendance¹:

Bill Tweit (NPFMC, Chair)	Jared Fuller	Mike Orcutt (Archipelago)
Julie Bonney (AGDB)	Charlotte Levy (AEB)	
Ruth Christiansen (UCB)	Heather Mann (MTC)	

Agency Committee members in attendance:

Anna Henry (NPFMC)	Jennifer Ferdinand (NMFS FMA)	Courtney Paiva (PSMFC)
Josh Keaton (NMFS AKR)	Lisa Thompson (NMFS FMA)	Tom Meyer (NMFS AKGC)
Maggie Chan (NMFS AKR)	Dave Colpo (PSMFC)	

Others in attendance included (note list is not exhaustive):

Stacey Hansen (SWI), Nancy Munro (SWI), Mike Vechter (NMFS FMA), Joel Kraski (NMFS AKR) Alicia Cozza (SWI), Dan Falvey (ALFA), Alex Perry (NMFS OLE), Wynn Carney (NMFS OLE), Abigail Turner-Franke (NPFMA) Sara Cleaver (NPFMC), Jason Gasper (NMFS AKR), Lange Solberg (Real Time Data), Craig Rose (FishNext/PSMFC EM Innovation Team), Eric Torgerson (Chordata), Dan Falvey (ALFA), Wayne Walter (PSMFC), Suzanne Romain (PSMFC), Zachary J.

The Chair opened the meeting with introductions and approval of the agenda.

Update on 2022 NFWF funding decisions

The Committee received an overview of the 2022 National Fish and Wildlife Foundation (NFWF) grant decisions. Grants funded for 2022 in the Alaska Region include the following projects and grantees: 1) Improving Data Quality through ET Implementation in the Western Gulf of Alaska, Aleutians East Borough; 2) Testing Electronic Monitoring on Trawl Catcher Vessels Participating in the Central Gulf of Alaska (CGOA) Rockfish Program, Alaska Groundfish Data Bank; 3) Real Time Electronic Logbook Data Collection and Reporting in Halibut and Groundfish Fisheries (AK), Real Time Data North America; 4) Alaska Trollers Electronic Logbook (Data Collection and Analysis Program), Alaska Trollers Association; 5) Final Year of Pre-Implementation of a Regulated EM Program for Compliance Monitoring in the Bering Sea and Gulf of Alaska Pelagic Trawl Pollock Catcher Vessel Fisheries, United Catcher Boats. The Committee did not discuss the specifics of each project as detailed presentations were scheduled for most projects under agenda item 4.

¹ AGDB = Alaska Groundfish Data Bank, UCB = United Catcher Boats, SWI = Saltwater, Inc., AEB = Aleutians East Borough, MTC = Midwater Trawlers Cooperative, NMFS AKR = NMFS Alaska Regional office staff, NMFS FMA = staff of the Fishery Monitoring and Analysis Division at the NMFS Alaska Fisheries Science Center, PSMFC = Pacific States Marine Fisheries Commission, NMFS OLE = NMFS Alaska Office of Law Enforcement, SWI=Saltwater Inc., NPFMA=North Pacific Fisheries Association, ALFA=Alaska Longline Fishermen's Association.

NMFS staff reported that there have been discussions between AKRO, AFSC and NMFS Headquarters regarding the timing of NFWF proposals and funding decisions and a request to publish final funding decisions by summer, to better align with the timing of Alaska fisheries and inform the Annual Deployment Plan. An earlier NFWF grant decision timeline is possible in the future although a potential change is not likely to affect the 2023 decisions.

The Committee discussed the importance of NFWF resources in the region and supporting Council EM priorities as well as the difficulties for agency staff with limited resources to support multiple, simultaneous projects. There was some discussion that it may be beneficial for the Fishery Monitoring Advisory Committee (FMAC) to provide more official feedback on the prioritization of future projects, specifically whether or not the focus should be on projects that are research oriented and may help advance EM in the future, versus projects that may be more applicable and ready to implement into fisheries in the near term.

Update on Trawl EM program

Regulatory implementation timeline

Josh Keaton (NMFS AKR) provided an update on the current targeted timeline for regulatory implementation of the Trawl EM Program. Given NMFS staff capacity, regulations will not be published in time to meet the target of 2024 implementation. **The NMFS AKR monitoring branch will take the lead drafting regulations, targeting a proposed rule by the end of 2023, a final rule published in mid 2024, and a commitment to 2025 implementation.**

Mr. Keaton also updated the Committee on a requirement under section 313 of the Magnuson Stevens Act, exclusive to amendments affecting the North Pacific Research Plan (i.e. Observer Program), that during the 60-day public comment period, the Secretary shall conduct a public hearing in each State represented on the Council for the purpose of receiving public comments on the proposed regulations. The specific timing of these hearings will depend on the timing of the publication of the proposed rule. **The Committee recommended the agency conduct hybrid meetings if possible and to hold the Alaska meeting in Anchorage or Kodiak, the Oregon meeting in Newport and the Washington meeting in Seattle, hopefully overlapping the dates of the Pacific Marine Expo.** These locations were selected to be most accessible to the fleet most impacted by the trawl EM program.

Funding

In December, the Council sent a letter to NOAA Fisheries requesting the agency secure adequate funding to support continued operation of the trawl EM program, including expanding participation to new vessels, during this unexpected additional year before regulatory implementation. NMFS AKR staff report that an official response from NOAA Fisheries should be available by the February Council meeting. **NMFS staff from the AKR and AFSC have discussed funding needs with NOAA Headquarters and report a positive outlook for bridge funding from NOAA HQ to cover the 2024 trawl EM program.** These potential funds are fiscal year 2023 funds, therefore AFSC Fisheries Monitoring and Analysis (FMA) division will need to submit a funding request, including a specific budget by April 1, 2023. PIs on the trawl EM EFP will assess future participation levels, to provide an estimate of new vessels to be included in funding requests as soon as possible. This estimate of 2024 participation will also help EM service providers to prepare to supply new systems. PSMFC review capacity has increased and should be able to cover any additional expansion in the program in 2024.

Bridge funding for 2024 will cover EM review costs for vessels in the full coverage and partial coverage program, and the cost of EM systems and maintenance and shoreside observers in the partial coverage program (EM systems and shoreside observers in the full coverage program will be paid for by the participants). Separate funding is available for EM systems for approximately up to 11 new vessels in the

partial coverage program from community directed spending funds procured by Senator Murkowski. If there are additional partial coverage expenses not covered by community directed spending or HQ funds, these may be assessed to the partial coverage fee.

If funds for the 2024 trawl EM program are not available, or are only partially available from NMFS HQ, PIs are encouraged to apply for NFWF funds. This was discussed as a viable contingency plan if other funding sources are unavailable. The availability of HQ funds is expected to be known prior to NFWF application deadlines and previous limitations on additional funding from NFWF would no longer apply.

Vessel feedback mechanism subgroup

NMFS provided an update on the May Committee recommendation to form a vessel feedback mechanism subgroup to discuss improvements in feedback mechanisms in the EM service provider portal. The Committee agreed the specific membership for the subgroup should include: Dan Falvey (ALFA), Abby Turner-Franke (NPFA), Alicia Cozza (SWI), Mike Orcutt (AMR), Chelsae Radell (AGDB), Courtney Paiva (PSMFC), Alex Perry (NMFS OLE), Josh Keaton (NMFS AKR). Joel Kraski (NMFS FMA/AKR) will be contacting members to schedule a meeting before the end of February. The objectives of the subgroup will be to focus on the efficiency and usefulness of the vessel feedback mechanism, focusing on communication regarding issues that impact data collection, including: 1) intelligible feedback to the vessel operator, 2) what issues may require enforcement response, recognizing enforcement looks at every case individually so this may not be easily defined, and 3) the ability to determine who is not adhering to vessel monitoring plans and risks future removal.

There was recognition that the current feedback process is working well but is not efficient given the individual time and attention required and will not be feasible when the trawl EM program transitions to a regulated program and this feedback will be included in the ODDS. Additionally, the EM Service Provider Portal and ODDS are maintained by FMA and supported by infrastructure funds that are fixed, so any additional resources required to update these systems will impact other parts of the division, particularly the full coverage observer program.

Status of current and potential future EM projects

Testing EM on Trawl Catcher Vessels Participating in the CGOA Rockfish Program (RP)

Julie Bonney (Alaska Groundfish Databank) and Mike Orcutt (Archipelago) presented information on a project leveraging the EM systems from the Trawl EM program on vessels that also participate in the CGOA rockfish program. This project will include mixed trips that use both pelagic trawl gear, which operate as max retention similar to the current trawl EM program, as well as non-pelagic gear which require some at sea discards. Phase one of the project in 2023 includes three activities: 1) Review 2022 data to evaluate present fish handling practices across a variety of vessels, both gear types, and all targets. 2) Literature review/stakeholder consults to understand discard handling and retention protocols for EM in other trawl fisheries for potential application to the rockfish CV fishery. 3) Develop and test pilot fish handling protocols on three catcher vessels during the 2023 rockfish fishery. Future plans in 2024 involve seeking funding to expand the footprint beyond three vessels and/or operationalize EM for at-sea monitoring and shoreside observers within the processing plants and applying for an exempted fishing permit (EFP) to provide operational framework for the project and exempt vessels from certain regulations such as Maximum Retainable Amounts. The program is designed to mimic the trawl EM Program with the use of vessel monitoring plans and performance standards and hope to incorporate automation of data review with the Archipelago's FishVue AI platform.

Real time electronic logbook data collection and reporting in Alaska's groundfish and halibut fisheries

Lange Solberg (Real Time Data) gave a brief overview of a new project that is just getting off the ground to use electronic logbooks in GOA fixed gear fisheries. With the support of the North Pacific Fisheries Association, Alaska Longline Fishermen's Association, Deep Sea Fishermen's Union, and Fishing Vessel Owners' Association, the project is aiming for 30 vessels to participate in the project and deploy electronic logbooks by March 1, 2023. The logbook is designed to work with fishermen as they fish, according to their workflows on the fishing grounds. The system includes the software, iPad, ruggedized case, RAM mount, as well as Bluetooth printers to comply with regulatory requirements for a paper logbook.

Improving and Enhancing Data in WGOA EM

Charlotte Levy, Aleutians East Borough (AEB), presented an overview of current and upcoming EM related projects in the WGOA. Two current projects, eLogs and data portals, are focused on increasing the quality, speed and reporting of data. eLogs were fully implemented in 2022 and are currently being updated to incorporate skipper feedback and test wifi submission at offloads which may now be possible with the development of Starlink in the WGOA. Next steps in the development of the Data Portal include using eLog and EM sensor data to provide near real time mapping of areas with high salmon bycatch and automate data transfer to NMFS.

Other projects are using electronic technologies to increase the efficiency of observer data collection. These include using EM in plants to monitor proper sorting of salmon on the sorting line; and using salmon chutes to collect images of salmon species with controlled lighting to develop, refine and test an algorithm that will identify salmon to species. Another use of AI that is in development is a human detector that identifies when crew are on deck and therefore hauls or potential catch handling are occurring. This can be run on the data prior to review to speed up review time and potentially be used to streamline data storage, focusing on footage when hauls or potential discards are occurring.

Current projects that utilize existing EM resources include a Switch Gear project to facilitate the use of EM systems from the trawl EM EFP, when those vessels participate in fixed gear. This project involves working with NMFS to develop VMPs and system configurations that can be used for trawl and fixed gear EM, testing modified catch handling and review protocols for fixed gear data and comparing EM data to observer data for a proof of concept. Three trawl vessels have also used temperature loggers to integrate temperature data with EM data to examine correlations of temperature and Chinook catch for potential future use for real time avoidance of salmon.

Improving EM image quality and feedback using machine learning onboard the vessel

Abigail Turner-Franke described a project NPFA is working on in conjunction with ALFA and Chordata to use machine learning tools to detect image quality issues such as glare or condensation on EM systems. The goal is for these issues to be identified and to notify the vessels in real time so that skippers can be aware and address the issue before more data is collected. Testing at sea will take place beginning in 2023.

Developing Artificial Intelligence (AI) Tools for Electronic Monitoring (EM) Applications

Craig Rose presented projects developed with the goal of automating some EM monitoring processes. The first project tests whether EM can validate handling and reporting of salmon bycatch in trawl deliveries to plants, relieving the need for constant observer monitoring of the sorting process throughout deliveries. This concept uses cameras and AI to detect salmon entering the sorting line. Plant sorting crew activate a "check-in," either a switch or by displaying salmon to cameras when sorting salmon off the line (this system is plant specific). Each detection should be closely followed by a check-in event and the number of check-in events should match the number of salmon on the plant report or observer count. The

salmon detector performance was promising on training runs but continued improvements are ongoing to fix or accommodate the many false positive detections that occur when applying the detector to the volume of normal deliveries. The EM innovation team is also using camera chutes for discard monitoring. The chutes are enclosures that control lighting and background to collect consistent images of fish that have been used to develop algorithms that count, classify and measure fish to account for discards.

The Committee was impressed with all of the ongoing work and research on ET and EM and commented on the amount of crossover between projects and applications and the utility of a forum to share information on current projects. Many vendors or EM providers are working with industry groups to develop tools, but groups are also discussing how EM technologies can be used to improve EM in the region. **To encourage and showcase these collaborative efforts the Committee suggested that the Council consider organizing an evening activity during an Anchorage Council meeting to present current projects to the public in a concise manner.**

ET Implementation plan EM priorities

Maggie Chan (NMFS AKR) presented an overview of the Alaska Region Electronic Technologies Implementation Plan. A draft of the plan was shared with the Trawl EM Committee in 2020 and was published on the NMFS website in 2021. At the time, the intention was to update the document annually, but given workload constraints, future updates will likely be at a less frequent interval as determined by NOAA Fisheries HQ. Committee discussion focused on a table in section 4.2 of the document that outlines the suite of EM projects that are currently in progress, have been identified by the Council as high priorities, or have been suggested through the Council's monitoring committees but have not yet been identified as a priority. Dr. Chan summarized these projects into the following themes:

- Maintain and improve existing monitoring systems that are used for compliance monitoring, assist onboard observer, or integrated into NOAA Fisheries catch accounting system and stock assessment processes
- Continue development of EM for pelagic pollock trawl catcher vessels (CVs)
- Identify the most appropriate and cost efficient monitoring solutions for partial coverage fixed gear vessels
- Develop multi-faceted monitoring that covers diversity of fishing opportunities a single vessel may participate in
- Continue development of EM solutions for pelagic trawl vessels
- Test Monitoring Cooperatives as a potential to reduce deployment costs
- Test and evaluate the expansion of EM to non-pelagic trawl tender deliveries
- Test integration of machine learning (ML) and artificial intelligence (AI) algorithms into EM review protocols
- Test and evaluate ER tools for observers to record and transmit data

Some projects have been completed by the Trawl EM Committee work on the trawl EM program or are currently included in the partial coverage cost efficiencies analysis. Other projects have not been prioritized relative to one another which presents a struggle with limited agency staff capacity and when some projects may compete against each other. One example of this is the trade-off between competition or cost efficiency. The Committee discussed that the general position of the Council has been that while EM is an emerging field, there is value in fostering innovation and a healthy marketplace for multiple service providers. However, this may not be the most cost-effective strategy when some provider systems are less expensive and at what point do we consider EM systems and programs to no longer be in the formative years and an emerging field? **The Committee recommended the Council specifically identify a priority of cost versus competition in terms of the number of EM service providers, prior to funding decision deadlines in late fall.**

Future role and appropriate makeup of the Trawl EM Committee

The Committee agreed that the Trawl EM Committee has been successful, due to the collaborative approach of the members and the rather limited focus of the Committee on a large, tangible deliverable in the development of EM on pelagic trawl CVs targeting pollock. The Committee has successfully provided a forum for continuous updates to the public and the Council on the trawl EM program as well as providing an expeditious process to ensure all participants, agency, stakeholders, PIs, service providers, are communicating effectively.

The Committee discussed multiple issues related to EM that will require Council Committee involvement in the future:

- 1) Maintaining current EM programs-** EM is a regular element of the monitoring program that is involved in every component of monitoring: partial coverage, full coverage, catcher processing, shoreside processing, etc. Therefore any future Committee review and recommendations regarding the monitoring program will require expertise and representation from EM programs.
- 2) Determining new EM priorities-** given the numerous current EM projects in the region and likely expansion of projects with potential future NFWF support, standardized review and prioritization of projects will be necessary to effectively allocate staff resources and provide efficient agency support.
- 3) Project specific oversight and support for the next EM project(s) that are identified as high priorities.**

Given the diverse Committee work related to EM identified above, the Trawl EM Committee made the following recommendations regarding monitoring committee structure:

- **The Committee recommends the Council reassess the membership of the Fisheries Monitoring Advisory Committee (FMAC) to ensure sufficient expertise to address EM issues.** This may include representation from processors and full coverage EM programs. With representation from all aspects of monitoring, the FMAC would provide the appropriate venue to maintain current EM programs and determine new EM priorities (aspects 1 and 2 above).
- **The Committee recommends the creation of an EM subcommittee or working group to address specific EM projects as needed.** As specific EM projects are identified as Council priorities, this smaller group would be formed with the appropriate expertise relevant to the specific project (addressing aspect 3 above). This group would work on the detailed, nuts and bolts required for the successful implementation of new EM programs. The Committee did not recommend the specific format of this group, recognizing that a subcommittee would be a more public process that requires publicly noticed meetings and makes recommendations to either the FMAC or the Council, while workgroup meetings are not public and no decisions or recommendations are made, but would provide relevant information to the FMAC or Council. The Committee did not provide specific input on the makeup of this group, but discussed that if the FMAC membership were to be expanded as recommended above, the FMAC would identify and recommend the appropriate projects and relevant membership.

This structure of an expanded FMAC and more specific EM body would provide both a more comprehensive venue to address overall monitoring issues, including EM, as well as a targeted venue for specific EM project development, while facilitating more efficient agency staffing of monitoring issues. This approach would also provide an appropriate monitoring body to address each of the project themes identified in the ET implementation plan.

Scheduling & other issues

The Committee determined that there was no need to meet again unless issues arise during the rulemaking process or implementation of the trawl EM program that require Committee review and recommendations to the Council.