

SUMMARY OF GROUND FISH ELECTRONIC MONITORING POLICY COMMITTEE REPORT

August 2013

Report to the Council

At its June, 2013 meeting, the Council established a Groundfish Electronic Monitoring (GEM) Policy Committee (GEM PC) to focus on the development of alternatives for EM use in the Pacific coast groundfish trawl rationalization program (including participants with a trawl permit that switch to fixed gear) and a Groundfish Electronic Monitoring Technical Advisory Committee (GEM TAC) to advise the GEM PC. On August 20-21, 2013, both committees met to discuss development of an EM program for the trawl rationalization program. Participants reviewed the fisheries monitoring roadmap and draft purpose and need statement for an EM program. The Committees also heard a presentation regarding EM monitoring, discussed the National Marine Fisheries Service Policy Directive on Electronic Technologies and Fishery-dependent Data Collection, reviewed options from the February EM workshop, and heard from the West Coast Observer Program (WCOP) regarding the development of draft definitions for catch and discard.

A synopsis of the GEM PC and GEM TAC first meeting is provided below. It includes a general outline of the discussion, the initial thoughts of the PC, and directions the PC expects to take as it continues to develop recommendations on EM alternatives. The EM program would cover catcher vessels in the both the shoreside individual fishing quota (IFQ) fishery and the mothership coop fishery. It is not intended to replace the observers on the mothership or the catcher/processor vessels. There are no specific recommendations for Council action or requests for Council guidance, however, any guidance or direction from the Council would be of value for the Committee's upcoming meeting, scheduled for October 15-16. A summary of the meeting and recommendations for further work by the Committees is provided after the synopsis.

Synopsis

The Committees met August 20-21, 2013 to discuss development of an EM program for fisheries operating under the trawl rationalization program. Since there are multiple ways to monitor fisheries with electronic equipment and there are common and unique operational characteristics to fishing activity under the trawl rationalization program, the Committees focused primarily on an overall approach to EM rather than application by gear type (See Section 3). A set of "Key Components" was developed to help guide development of EM and would be the building blocks to further create EM alternatives that are common and unique to each fishery.

An overall approach to an EM program and how the WCOP would mesh with the use of EM were discussed. The Committees recognize that some level of biological sampling is still needed in the fishery; however, EM would not be developed with an objective of meeting the need for biological information. At this time, there is uncertainty how the shoreside capabilities of the WCOP might support an EM program. For example, would an observer be used to verify catch and discard events that are documented in the video and logbooks? In order to move forward, the Committees assumed the WCGOP would continue to collect scientific data at some level of

coverage under an EM program and that the fisheries would be monitored for regulatory compliance 100 percent of the time through a combination of EM and the continued use of industry funded observers.

Discussion also focused on how to accurately account for discards using EM. For example, is a video census needed (i.e., review all video to account for all discard) or can we rely on logbook discard numbers and verify logbook entries with video review sampling. The Committees recognize that there is risk involved when trying to account for rare events, such as catching one yelloweye rockfish, and whether EM can appropriately capture these events; however, these issues should not hinder continued development of an EM program as similar risks are present with human observer coverage as well.

Many industry participants believe that EM should be an option and not mandatory, and that participants would need to meet certain criteria to be eligible to use EM in lieu of carrying an industry funded observer. Some level of review of the EM video and sensor data would be necessary to monitor compliance in the fishery and ensure that those carrying cameras were doing so properly and responsibly. It might be possible to require increased video review for vessels that have irregularities in their EM and/or log records, and to require that the vessels pay for the additional review. In the extreme, a vessel could be required to only carry an industry funded observer. Such conditions for participation may provide a natural incentive for compliance. If an enforcement action became necessary, there would be a legal penalty for noncompliance.

The Committees provided comments on a draft purpose and need statement that has been incorporated into the scoping document, which is in the Council briefing materials for this meeting (Agenda Item G.10.a Attachment 1, September 2013). The next meeting of the GEM Committees is scheduled for Oct 15-16, 2013 and will likely focus on further development of potential alternatives that are applicable to individual fisheries under the trawl rationalization program.

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1. Attendance

GEM PC Attendees:

Bob Alverson - Individual fishing quota fixed gear representative
Geoff Bettencourt - Individual fishing quota fixed gear representative
Dave Hanson serving as Chair
Travis Hunter - Shoreside bottom trawl representative

Paul Kujala - Shoreside bottom trawl representative
Shems Jud - Conservation representative
Heather Mann - Shoreside mid-water trawl representative
Howard McElderry - Electronic monitoring provider
Brent Paine - At-sea whiting representative

GEM TAC Attendees:

Dan Chadwick - Washington Department of Fish and Wildlife
Dave Colpo - PSMFC
Dayna Matthews - NMFS Office of Law Enforcement
Mariam McCall - NOAA General Counsel
Jon McVeigh - NMFS Northwest Fisheries Science Center (partial by phone)
Robert Puccinelli - California Department of Fish and Wildlife
Maggie Sommer - Oregon Department of Fish and Wildlife

2. Draft Purpose and Need Statement

The Committees reviewed and suggested modifications to the draft purpose and need statement to ensure that operational flexibility is included as a major reason for considering development of EM for compliance monitoring, citing the lack of observer coverage in small ports and timely availability among other concerns. This draft purpose and need statement, as modified based on the committee recommendation, has been incorporated into the scoping document that is in the Council briefing materials under Agenda Item G.10.a Attachment 1, September 2013:

“Since implementation of the Pacific coast trawl rationalization program, there is a continuous need to maintain the full functionality of the program, including individual accountability and adequate monitoring of the fisheries for compliance with existing regulations. The program currently utilizes 100 percent observer coverage; however, future costs to continue this level of coverage may not be economically feasible to fishery participants and managers, or provide operational flexibility for program participants. Therefore, there is a need to adequately monitor the program in an economical and flexible manner yet meet the goals and objectives of national policies and standards, the Pacific Groundfish Fishery Management Plan (FMP), and the trawl rationalization program.

NMFS and the Council identified that EM may be a viable option to monitor fisheries for compliance; therefore, the purpose of developing an EM program for the Pacific coast groundfish trawl fisheries is to meet the regulatory objectives identified by the Council at the June 2013 meeting (See Section 2.1).

While considering policy adjustments to meet these needs, there is also a need to ensure continued collection of adequate scientific data on the fishery. The effect of any changes in observer coverage on the quantity and quality of other biological and habitat data will need to be considered during development of an EM program and appropriate adjustments made if EM is implemented.”

2.1 Council Recommended EM Regulatory Objectives

The following regulatory objectives pertain to compliance monitoring of the Pacific coast trawl rationalization program, as adopted by the Pacific Council at its April 2013 meeting. The regulatory objectives are to:

1. reduce total fleet monitoring costs to levels sustainable for the fleet and agency;
2. reduce observer costs for vessels that have a relatively lower total revenue;
3. maintain monitoring capabilities in small ports;
4. increase national net economic value generated by the fishery;
5. decrease incentives for fishing in unsafe conditions;
6. use the technology most suitable and cost effective for any particular function in the monitoring system; and
7. reduce the physical intrusiveness of the monitoring system by reducing observer presence;

While:

8. maintaining current individual accountability for catch and preserving equitable distribution of monitoring coverage among members of the fleet,
9. supporting the collection of biological information necessary for managing the fishery, for stock assessments, and to meet other needs for scientific data, with no degradation relative to pre-trawl catch share program standards,¹
10. taking into account agency budgets and abilities to support any new policy,
11. maintaining capabilities for annual catch limit management (e.g. for non-quota species), and
12. following an implementation path most optimal for the fishery.

These regulatory objectives are for an action to develop an EM program for compliance monitoring, not for the collection of scientific data. The first seven items in the above list are direct regulatory objectives, i.e., reasons for considering EM. Items eight through twelve in this list are considerations, i.e., the Council would not be undertaking this action in order to achieve items eight through twelve but rather, in pursuing the first seven objectives, will be bounded by items eight through twelve. These objectives do not displace the original objectives for the trawl rationalization program (Amendment 20 objectives) or the Pacific groundfish FMP.

3. Key Components of an EM Program

3.1 Overall Approach

The Committees developed a general list of “Key Components” for an EM program to monitor for compliance. The identified key components could be applicable to each fishery sector under the trawl rationalization program. However, this list may be incomplete and will likely be developed further to meet the needs for compliance monitoring of each sector. Further discussion is needed to define “compliance monitoring” (i.e., monitor discards for IFQ and fishery quota management) and what elements of the trawl rationalization program need to be monitored. An EM system must be able to adequately capture the information managers require for enumerating managed species. Compliance monitoring requires ensuring that all catch is accounted for. Landings are accounted for by shoreside monitors (deliveries to motherships are accounted for by observers). Observers on catcher vessels currently account for discards and EM is being considered as an alternative approach for fulfilling this role. The Committees propose consideration of the following approaches to monitor discard in the trawl rationalization program.

3.1.1 Self-reporting and Audit Approach

The first option is to create a “self-reporting and audit” system. Under this approach, the harvester reports the catch in a logbook and the EM system is used to verify the logbook information. The EM system allows for auditing, on an event basis, of all fishing activities and in particular disposition of catch as evidenced by signs of discards. The events for analysis might be a trip, a haul/set, or some other subdivision of a trip for which it would be possible to cross check video against fishing logs and landings receipts. An accurate log of all fish discarded is critical to accurate accounting of all catch and to avoid conducting a high percentage of video review/verification of fishing events. All catch, either retained or discarded, is accurately recorded by species with estimated weight in the fishing logbooks by the fishermen. While retained catch estimates are recorded in the logbooks, the final retained catch amounts used for IFQ accounting come from the shoreside landing receipts and shoreside catch monitor reports. For example, video images would be captured on a hard drive and some percentage (e.g., X%) of all fishing events across all trips recorded on the hard drive would be randomly selected for review to verify discard events noted in the logbooks. If fishing events do not match then further review and verification may be necessary (up to 100 percent), possibly at the vessel’s expense. See Section 3.7 for an example.

Further Committee Work: Review British Columbia Groundfish Trawl Pacific Hake At-Sea Monitoring Requirements to inform development of this type of system.

Further Committee Work: It would be useful to define compliance monitoring, and define some fishery specific terms for self-reporting, audit, catch, discard, maximum retention, full retention, selective and non-selective discards based on the WCOP definitions as applicable and when available. Next step is to look at definitions and how they relate to EM.

3.1.2 Video Census Approach

Under this approach all video would be reviewed to estimate total discard quantities and retention of select species. This information would be used to monitor shoreside IFQ and at sea coop discards.

3.1.3 Video Sampling for Expansion Approach

This approach would include estimating discards by the random viewing of some percentage (e.g., X%) of all fishing events across all trips on the vessel hard drive. This information would be expanded to estimate total discard, and used to monitor IFQs or the quota management system in place.

3.1.4 Spatial Management Alternative

This option could be applied to any of the above approaches. Under this option, fishing activity in areas that are likely to have lower bycatch could be monitored with EM rather than using observers. Vessels would declare their fishing area prior to departure and be required to follow the appropriate fishing protocols for that area.

3.2 Vessel Activities and Processes

3.2.1 Retention Alternatives

The species for which discard will be allowed for each fishery should be specified to determine how to monitor the fishery accurately and appropriately. So far, three options have been identified.

- i) Alternative 1-Maximize/Full retention fishery (similar to shoreside whiting exempted fishing permit program)
 - (1) Discard of Endangered Species Act (ESA) and Marine Mammal Protection Act (marine mammals, turtles, short-tailed albatross)
 - (2) Discard of Non-ESA (i.e., seabirds, halibut, crab, salmon)
 - (3) Non selective discards only (i.e., safety issue discard)
 - (4) Selective discards (i.e., unmarketable species)
- ii) Alternative 2 - Discard of non regulated species only
- iii) Alternative 3 - Allow selective IFQ or regulated species discards with adequate camera species identification and weight estimate of discard (e.g., cameras system for identification, length/weight measurements)
 - (1) Sub-option full retention of rockfish only

3.2.2 Obligations for verifying system operations (e.g., image quality and continuity)

Vessel operators will have responsibilities for monitoring the EM system on the vessel to ensure that equipment is operating properly with adequate image quality, continuity of images, etc.

3.2.3 Electronic Monitoring Plan Specifications

There is utility in requiring individual vessel EM Plans. It's likely that the GEM PC will recommend that individual vessel EM Plans be mandatory. Such plans would specify how the EM system will be configured on the vessel and the hardware to be used. It may include very specific information that relates to layout of vessel, number of cameras needed with placement specifications, screen shots of all camera views, types of sensors and sensor data capture, download/maintenance schedule, and process for emergency or back-up equipment use protocols. It may also include vessel obligations with respect to care and maintenance of the EM system, as well as any specific onboard catch handling protocols necessary for EM to accurately monitor fishing operations. It would connect the basic monitoring objectives to the output of the data and serve as a communication tool between vessel, regulatory authorities, those reviewing data, and field service personnel. It can be a "living document" so analysts or field service personnel can recommend changes or updates to the plan. The plan would be certified by NMFS (i.e., EM system and equipment) and be similar to the first receiver (FR) program in the shoreside IFQ fishery. Under this type of EM plan, enforcement action could be taken if vessels are not complying with specific requirements of the plan. Each individual plan may contain EM system characteristics and data transfer protocols that are general and applicable to all individual plans such as how, what and when data will be captured, stored, downloaded, and transferred for review.

Recommendation for Further Committee Work: Review what is being developed for the Alaska fisheries.

Recommendation for Further Committee Work: Review Archipelago Marine Research Ltd. monitoring plan example to lay out what the basic elements of an EM plan, then discuss at next meeting.

3.2.4 Vessel Hardware, Data Capture, and Data Maintenance Onboard

An overall approach or specification of the hardware/software and protocols for downloading/retrieving data may be necessary to capture the appropriate data. This could include:

- a) An Electronic Monitoring Plan (See Section 3.2.3)
- b) Specified or general EM system components
- c) Data elements (e.g., global positioning system, winch monitors/sensors, etc.)
- d) Download/maintenance schedule, and process for emergency or back-up equipment use protocols

3.2.5 Data Transfer Processes

The method for physical transfer of the data will need to be considered in order to fully assess the effectiveness, costs, and benefits of the system. Note: If new logbook requirements are created, the states and fishermen should be consulted to ensure that the new or revised logbooks capture all required data elements and are compatible with fishing vessel practices and electronics as much as possible.

Notes: If a self-reporting/audit methodology is used to cross check video events with logbook entries, it would be good for managers to consider the related data needs and potential efficiencies when changing or adding state logbook fields.

When data transfer processes are considered they will need to take into account:

- a) Video and sensor data
- b) Logbooks (electronic and paper)
- c) Landings data
- d) Possible methods for physical transfer of data (i.e., a through c above)
 - i) different methods among sectors or fleets; (standardize if possible)
 - ii) Vessel Monitoring System, Wifi, email, thumbdrive

3.2.6 Data Processing, Validation, and Analysis

EM data processing would likely involve analysis of EM sensor, video data, and electronic logs. The following is an outline of some of the considerations to be taken up under this topic.

- a) Video review and log comparison (would need to develop a review process)
 - i) Options for percent of video review (i.e., 10 percent of all trips are reviewed)
 - ii) Protocols for additional video review when non-compliance issues arise
 - iii) If audit methodology is used, may need to define audit units that match fishing logs units (i.e., fishing events). For some fisheries fishing events are not clearly defined to facilitate an audit.
 - iv) Could use observer data from an EM trip to validate data collected (video and/or logbook) – on trips for which the biological observers overlap with EM.
 - v) Use landings data as part of audit for video
 - vi) Include sensor data in video to verify time and location of fishing events
- b) Electronic logs processed by NMFS for quota pound accounting regarding discards
 - i) Encourage the use of electronic logs to increase timely submission, lessen data entry errors
 - ii) Be mindful that not all vessels will be capable of electronic logs or willing to change
- c) Potential reviewers
 - i) Sustainable Fisheries Division
 - ii) Pacific States Marine Fisheries Commission
 - iii) Independent contractor

For Future Committee Consideration: Should an observer be used to validate EM and logbook data?

3.3 Compliance Incentives and Enforcement Actions

The committee will deliberate further on compliance incentives and enforcement actions. Considerations include:

- a) Participation requirements
 - i) “Good standing” required for participation and/or continued participation
 - ii) Create incentives to comply (management incentives vs. enforcement action)
 - iii) Potential exemptions from compliance observer coverage based on standards of compliance (no special exemption from biological observer coverage)

- b) Ways the Alaska coops model might be used to implement the program, e.g., self-imposed sanctions within a group or fleet

3.4 Organizational Structure and Cost Distributions

The committee will deliberate further on organizational structure and the distribution of costs including:

- a) Cost distribution issues
 - i. Who pays for equipment?
 - ii. Who pays for video review (industry or government)?

3.5 EM Participation

Many industry participants believe that EM should be an option and not mandatory, and that participants would need to meet certain criteria to be eligible to use EM in lieu of carrying an industry funded observer. The committee will deliberate further on whether the use of EM will be optional or mandatory.

- a) EM is voluntary
 - i. Must be eligible
 - ii. Must have plan to participate; (e.g., monthly, annual, quarterly plan, etc, as specified by NMFS or agreement between fisher and provider)
 - iii. Declaration of EM or observed trip; enforcement must be in the loop
- b) EM is mandatory

For Future Committee Consideration: Is an EM program a voluntary option for participants? Can set the rules up such that the only way to use EM is through a coop or can a non-coop EM option be specified.

3.6 Implementation

- a) Consider a phased in approach that includes a pilot implementation of the program

3.7 Example for Self Reporting - Maximized retention fishery

The self reporting approach is discussed above in section 3.1.1. One Committee member provided an example for self-reporting. A self-reporting approach would be applicable to those fisheries under the trawl rationalization program including shoreside (trawl and non-trawl) and mothership sectors. As an example of that approach, a vessel that wants to carry an electronic monitoring system versus a human observer would need to meet certain criteria:

- a) No selective discards
- b) It must carry and complete a logbook reporting specific information including non-selective discard events (discards that do not take place on purpose)
- c) It will carry a camera system set up to view all activity on the decks

- d) The video taken by the camera will validate two things: that no selective discards occurred and an audit of discards being reported in the logbook
 - i. if a discard is viewed on the tape but not reported by the fishermen – he has a violation (could be a fine, warning, to be determined). If it happens twice he no longer meets the criteria to carry a camera for a certain amount of time
 - ii. if the video reveals discrepancies between what is being self reported and what occurs on the video he is in violation. The first time he receives an administrative warning. If it happens twice he no longer meets the criteria to carry a camera for a determined amount of time.

Suboption for non-compliance with discard– to avoid regulatory and enforcement delays and ensure swift responses, violations could be addressed through an industry coop structure.

3.8 Developing EM Cost Estimates

Cost is a major factor when considering the implementation and use of EM. Even if cost per day for EM is comparable or more expensive than observers, an EM program may provide the industry with the flexibility to choose which coverage is best for their business model. The Committees understand that full individual accountability of discard is critical, so either approach must achieve full IFQ accurate discard accounting for each fishing vessel. To begin developing cost estimates for an EM program, the following non-mutually exclusive cost factors to consider were discussed:

- 1) Review time
- 2) Coverage of reviews (i.e., 10 percent, 20 percent, 50 percent, or 100 percent of all trips)
- 3) Type of EM system needed (minimum components needed)
- 4) Cost of EM system (type of system, number of camera per boat, etc.)
- 5) Cost to maintain system
- 6) Servicing ports (per-vessel costs)
- 7) Fixed and variable costs
- 8) Labor and material estimates
- 9) Quantity of data to be collected

Servicing of EM can be separated into three categories:

- 1) Interaction/installation, ongoing service emergency service timelines for collection (monthly, quarterly when data is full)
- 2) Data services: looking at entire data set, analysis for extraction (sensor values, discard review protocols), audits, hard drive management
- 3) Administrative element: define end user functions/needs

For Future Committee Consideration: To analyze costs, one approach is to conceptualize a system, do a cost estimate, and then evaluate the impacts, costs, program needs, and potential tradeoffs for cost savings. The first step is to develop fleet profiles for each fishery as a base for activity with some assumptions about characteristics, activity, landings, discards, and seasonality. Then define general characteristics for a type of monitoring system that would meet the data needs. Next, map out time and space of fishery, choose a variety of sensors needed to monitor activity, choose a maximum number of cameras needed to monitor discard events, and put in a ball park cost figure for the necessary equipment. There are multiple issues with estimating labor costs (video review, installation, maintenance, etc); however, it's possible to use

previous EM experience to inform development for those sectors that are lacking EM experience. After these initial steps are completed for each fishery, a cost analysis could be done to examine how to distribute costs, possible data loss, and potential tradeoffs for cost savings.

Recommendation: Staff and region work to start profiling fishery and identifying data needs.

4. Cost-Benefit Analysis

The costs and benefits of the EM should be evaluated not only to determine whether there will be an overall net benefit to participants and managers, but also to ensure that the benefit of each additional program requirement or feature outweighs the costs of the added feature.

5. General Committee Statement Regarding Development of EM

There are concerns about the ability for EM to capture and estimate discard events using decision rules similar to those currently employed by human observers. Different potential scenarios were discussed based on the region's definitions of discard and catch. The GEM PC believes EM can be an effective tool for estimating discards. The GEM Committees recognize that both observer and video review of discard events may be subjective. Developing a methodology for utilizing cameras for discard estimation is important and will require a thoughtful and thorough discussion but the GEM Committees do not believe it is an insurmountable barrier to developing and implementing an effective EM system.

6. Continued Development

As recommended by the Council in the June 2103 meeting:

Develop an initial scoping package that would include the strawman proposals contained in the EM Workshop reports as initial EM alternatives (splitting pot and longline as recommended in the Supplemental GAP Report), as well as an alternative of electronic monitoring participation agreements, the information resulting from the information requests in the report as available and an initial list of the issues and tradeoffs that will need to be addressed.

Next meeting: October 15-16, 2013: Continue to develop EM program options and alternatives based on Council recommendations.

PFMC
09/06/13
C/R