

----- Forwarded message -----

From: **Lisa Damrosch** <[lisadamrosch@gmail.com](mailto:lisadamrosch@gmail.com)>

Date: Thu, Mar 30, 2017 at 3:33 PM

Subject: California Groundfish Collective-Briefing Book Comment/Report- Agenda Item F.2

To: [pfmc.comments@noaa.gov](mailto:pfmc.comments@noaa.gov)

Dear Council members,

We appreciate this opportunity to submit the attached report “Electronic Monitoring in the West Coast Groundfish Fishery: Summary results from the California Groundfish Collective Exempted Fishing Permit project 2015-16” under Agenda Item F.2.

This report summarizes high-level findings and lessons learned from our on-going Exempted Fishing Permit project implementing electronic monitoring in lieu of human observers. We hope the findings detailed in the report will be useful to the Council in considering final preferred alternatives for an electronic monitoring program for the non-whiting midwater trawl and bottom trawl fisheries.

We look forward to working with the Council, PSMFC, NMFS, and other stakeholders to continue to resolve outstanding concerns and reach successful implementation of electronic monitoring as a cost-effective catch monitoring option.

Sincerely,

Lisa Damrosch- California Groundfish Collective

Kate Kauer- The Nature Conservancy

Melissa Mahoney- Environmental Defense Fund

# Electronic Monitoring in the West Coast Groundfish Fishery

Summary Results from the California Groundfish Collective  
Exempted Fishing Permit Project 2015-2016

Lisa Damrosch, Project Manager  
California Groundfish Collective

T: 650-255-2063 E: [lisadamrosch@gmail.com](mailto:lisadamrosch@gmail.com)

Photo: Corey Arnold

---

# CONTENTS

---

<b>Executive Summary .....</b>	<b>3</b>
--------------------------------	----------

<b>Background .....</b>	<b>5</b>
-------------------------	----------

<b>Project Description .....</b>	<b>7</b>
----------------------------------	----------

YEAR ONE (2015) .....	9
-----------------------	---

YEAR TWO (2016) .....	11
-----------------------	----

YEAR THREE (2017) .....	14
-------------------------	----

<b>Lessons Learned .....</b>	<b>15</b>
------------------------------	-----------

<b>Conclusion .....</b>	<b>19</b>
-------------------------	-----------

## Executive Summary

In 2014, The Nature Conservancy (TNC), the California Groundfish Collective (CGC) and the Environmental Defense Fund (EDF) formed a partnership to manage an Exempted Fishing Permit (EFP) project in the West Coast groundfish Individual Fishing Quota (IFQ) fishery. The goals of this project were to 1) develop and implement the use of electronic video monitoring (EM) in lieu of human observers for catch compliance purposes; 2) inform the development of new regulations while preserving community access to the West Coast fishery through an alternative catch monitoring option; and 3) inform proposed EM programs in other fisheries.

Since the West Coast groundfish fishery transitioned to an IFQ program with individual accountability requirements in 2011, it has faced new monitoring challenges, including high costs and logistical problems associated with the requirement for 100% human at-sea observer coverage. The EFP process in the West Coast groundfish fishery provides important opportunities to demonstrate the use of EM across multiple gear types as an option for compliance monitoring. The on-the-water learning generated by this EFP project is directly informing the development of new EM regulations on the West Coast, including program standards for whiting and non-whiting midwater trawl, fixed gear, and bottom trawl in the groundfish IFQ fishery. The program standards developed for the West Coast will likely influence EM programs across the U.S. and may benefit fishermen and managers seeking alternative monitoring options.

In 2015 and 2016, this EFP project deployed EM systems on three trawl vessels and three fixed gear vessels operating out of the ports of Fort Bragg, Half Moon Bay, and Morro Bay California. Three other EM EFP projects were also initiated, and Pacific States Marine Fisheries Commission (PSMFC) is conducting EM video review for the EFP projects. The National Marine Fisheries Service (NMFS) monitors and enforces the terms of the EFPs. Vessels participating in the project follow catch-handling requirements for video review per a Vessel Monitoring Plan (VMP) and use state logbooks as well as specific EM logbooks developed by PSMFC to report priority species catch and discard data. This EFP project produced a total of 80 unique fishing trips (32 in 2015, 48 in 2016), which have been reviewed by PSMFC staff.

Participants in this EFP project are members of the CGC, which is a voluntary collective agreement between fishermen that creates an insurance pool of quota for constraining groundfish species. Fishermen in the CGC collect and share information about the catch of constraining species and use spatial fishing plans to mitigate risk. This annual arrangement has helped participating members maintain a lower utilization rate of overfished species and a higher utilization of target species.



## Key lessons learned over the course of the two-year project include:

- EM systems can accurately validate logbook data provided by fishermen and are comparable to human at-sea observers in validating required discard information.
- Fishermen are able to develop and adapt new catch handling techniques to meet review requirements, reduce review time, and ensure the success of EM.
- Collaboration and regular communication between fishermen, NMFS, PSMFC, and private EM service providers is critical to success of the program. Establishing a single point of contact for a group of vessels can improve communication among stakeholders and streamline administration.
- A Collective Enforcement Agreement creates an opportunity for a cooperative approach to implementing EM that may increase efficiency for industry and managers.
- A comprehensive and adaptable individual VMP is imperative for compliance and enforcement.
- Many costs associated with implementing an EM program are variable and highly dependent on final program design.

The dedicated efforts of the project partners, fishermen, PSMFC and NMFS staff resulted in many of the project goals and objectives being met, and this project has provided valuable insight into the ongoing efforts to advance EM at the regional and national level. The learning generated through this EFP project and other concurrent EFP projects has informed the Pacific Fishery Management Council (PFMC) discussions and deeming of draft regulations for whiting and fixed gear EM programs at its April 2016 meeting. After taking PFMC recommendations into consideration, NMFS published a proposed rule for whiting and fixed gear EM programs in September 2016.

California vessels and project partners continue to work with NMFS and other stakeholders to resolve outstanding concerns with pending regulations and to produce recommendations for development of the mid-water and bottom trawl EM regulations based on learning from this EFP project. This report briefly summarizes high-level findings from this project and shares lessons learned for others to consider.

## Background

The West Coast groundfish fishery includes 90 different species that live on or near the bottom of the ocean. This diverse group of species including Pacific whiting, sole, rockfish, lingcod, and sablefish are harvested using different gear types such as trawl, Scottish seine, longline, and pot gear. For generations, this fishery has contributed to the cultural and economic fabric of coastal communities in Washington, Oregon and California, including the homeports of the vessels participating in this project: Fort Bragg, Half Moon Bay and Morro Bay.

The Magnuson Stevens Fishery Conservation and Management Act guides the PFMC and NMFS in managing the West Coast groundfish fishery, which has five main components: limited entry trawl, limited entry fixed gear, open access, recreational, and tribal. The limited entry trawl sector transitioned to an IFQ management program in 2011. Since the implementation of the IFQ program, vessels operating with limited entry trawl permits may use alternative gear types (e.g. fixed gear) to harvest groundfish.

The IFQ program includes requirements for 100% monitoring for compliance at sea, and 100% monitoring of landings on shore to ensure full accounting of every pound of retained and discarded IFQ species. Fishermen are required to use logbooks to report all fish retained and discarded during each fishing event (haul or pull) on every trip. Human observers verify and quantify discards at sea and Catch Monitors (CM) verify and quantify retained catch during offload. Though vessels are required to contract at-sea human observers, and offload company/first receivers are required to provide CM, the same qualified human observer has typically performed both duties.

The monitoring requirements of the IFQ program have presented challenges such as high costs and logistical problems associated with requiring the use of human observers. As of 2015, the fishing industry has been responsible for covering all costs associated with at-sea compliance and CM/shoreside monitoring. The average daily cost for an at-sea observer is now estimated at \$500<sup>1</sup>, and fishing trips tend to last between two and five days. Monitoring is conducted during and after fishing to ensure accurate reporting of discards. During any given fishing trip, vessels can spend many hours steaming to fishing grounds and setting gear, which can result in a day or more of paid observer coverage during which there is no fishing activity to observe. Based on information from NMFS's Economic Data Collection program, observer costs can be upwards of 30-60% of an average fixed gear or trawl vessel's total cost net revenue.<sup>2</sup>

As the fleet transitions to bearing more of the financial burden of monitoring, smaller businesses that are already at the margin of profitability may no longer be viable, resulting in socioeconomic impacts to fishermen and their port communities. In some regions, particularly in smaller California ports, deployment of human observers results in significant inefficiencies due to the logistical and operational challenges of

<sup>1</sup> [http://www.westcoast.fisheries.noaa.gov/publications/fishery\\_management/electronic\\_monitoring/em\\_draft\\_impact\\_review.pdf](http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/electronic_monitoring/em_draft_impact_review.pdf)

<sup>2</sup> [https://www.nwfsc.noaa.gov/research/divisions/fram/economic/economic\\_data\\_reports.cfm](https://www.nwfsc.noaa.gov/research/divisions/fram/economic/economic_data_reports.cfm)

moving people between remote port locations along the west coast; these inefficiencies tend to be passed onto fishermen by restricting when fishing can occur and requiring payment for travel fees for observers.

These monitoring challenges are not unique to the West Coast. In May of 2013, NMFS issued a policy directive to all regions of the U.S. urging consideration of and providing guidance on the adoption of electronic technology solutions for fisheries monitoring.<sup>3</sup> At the same time, the PFMC was moving forward with consideration of regulatory objectives for electronic monitoring. In 2012, the PFMC commissioned a research project for PSMFC to partner with vessels and test the feasibility of EM for catch and discard accounting. Fishing vessels volunteered to test this technology while also carrying a human observer. The learning from this research project informed the PFMC decision to permit out-of-cycle applications from interested stakeholders for Exempted Fishing Permits (EFPs) to test EM without the use of at-sea observers. The EFP process in the West Coast groundfish fishery has provided an important opportunity to demonstrate the use of EM across multiple gear types in a high-volume, multi-species fishery, proving it can serve as a key option for catch compliance monitoring.



<sup>3</sup> <http://www.nmfs.noaa.gov/op/pds/documents/30/30-133.pdf>

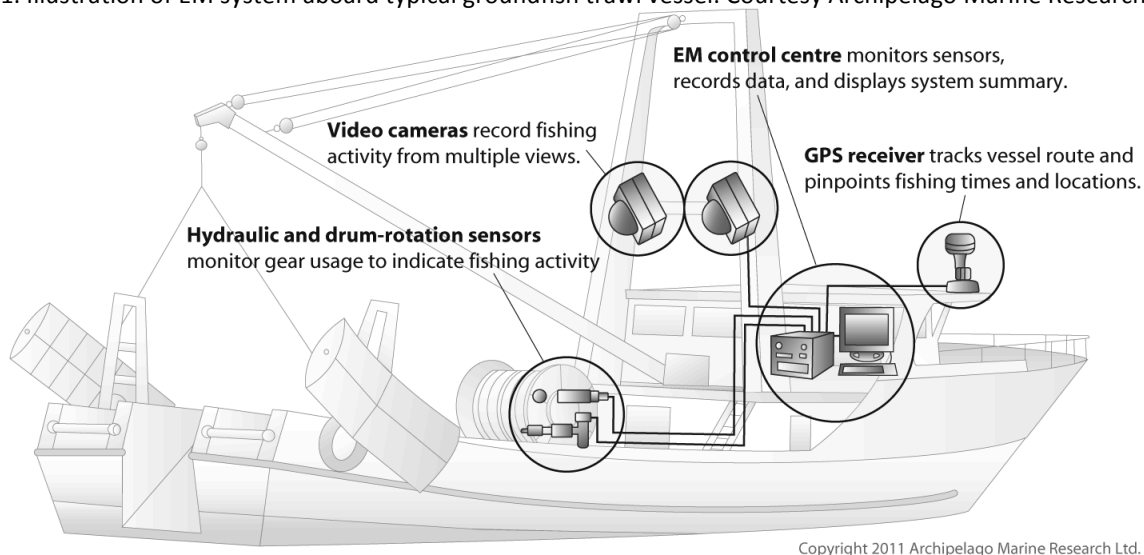
## Project Description

In 2014, TNC, the CGC, and EDF formed a partnership to develop and manage an EFP project in the West Coast groundfish fishery. The goals of this project were to 1) develop and implement the use of EM in lieu of human observers for catch compliance purposes; 2) inform the development of new regulations while preserving community access to the West Coast fishery through an alternative catch monitoring option; and 3) inform proposed EM programs in other fisheries.

During late 2014 and early 2015, the project partners collaborated with PSMFC to build upon the lessons learned from previous research projects, and worked with NMFS staff to develop terms and conditions for EFPs. This work included drafting and submitting EFP proposals, assessing vessels' interest in participation, reviewing and negotiating exempted terms, developing vessel participation selection criteria, and attending and providing public comment at PFMC and advisory body meetings. The EM EFPs were recommended for approval by the PFMC and issued by NMFS in June 2015, permitting the project partners to include up to seven groundfish IFQ vessels (three fixed gear and four bottom trawl) to carry EM systems in lieu of human observers.

Over the project period from 2015-2016, EM systems were deployed on three trawl and three fixed gear vessels (Table 1). EM systems consist of closed-circuit cameras, drum rotation and hydraulic pressure sensors, a control box and monitor, and a GPS receiver (Figure 1).

Figure 1. Illustration of EM system aboard typical groundfish trawl vessel. Courtesy Archipelago Marine Research.



This integrated system collects video imagery and fishing activity information on a hard drive that vessel operators remove and mail to PSMFC for analysis and review following fishing trips. All equipment is designed to be tamper evident.

Captains agreed to follow catch-handling requirements for video review per individual Vessel Monitoring Plans (VMP), and report landings and discard data using state logbooks as well as additional EM discard and priority species logbooks developed by PSMFC. This EFP project resulted in video footage gathered during 80 individual fishing trips, representing approximately 167 sea days and 1,029 individual fishing hauls. (Table 1)

Table 1: EFP Participation and activity by gear type (2015-2016 total):

	BOTTOM TRAWL	FIXED GEAR
VESSELS	3	3
TRIPS	45	35
HAULS	325	704

Over the project period, more than 1,100 hours of sorting time were reviewed resulting in approximately 612 hours of video review. (Table 2).

Table 2: Video review hours of sorting activity over project period by gear type

	BOTTOM TRAWL	FIXED GEAR
TOTAL REVIEW HOURS OF SORT	485	127

Many costs associated with implementing an EM program are variable and highly dependent on final program design. EFP Costs associated with EM delivery are broken down into the following categories:

- **Equipment and installation** - includes EM system control box, cameras, pressure sensors, removable hard drives, monitors and other related components which may be amortized across a five-year period, as well as equipment installation costs
- **Fixed annual costs** – includes technical support for hardware systems, program management costs, and annual software license fees.
- **Variable annual costs** – includes program coordination, research and development and on-the-ground technical support or repair costs.
- **Annual video review and data analysis** – includes costs associated with viewing video footage, analyzing the data collected, video review, data analysis, data storage, and reporting.

## YEAR ONE (2015)

After receiving approved EFPs in June 2015, the project partners developed and distributed a request for bids for EM service providers. After considering five proposals, the project partners hired Archipelago Marine Research (AMR) for the 2015 fishing season to provide, install and service EM systems, assist in the development of initial VMPs, and establish a network of service technicians in primary service ports. The project partners also hired a Project Manager, Ms. Lisa Damrosch, to coordinate all parties involved in the EFP, facilitate data collection to meet project goals, assist in development and troubleshooting of the VMP development, address technical and logistical challenges, assist in representing the project in public forums, and collaborate with external parties on compliance and reporting issues.

## COSTS (YEAR ONE)

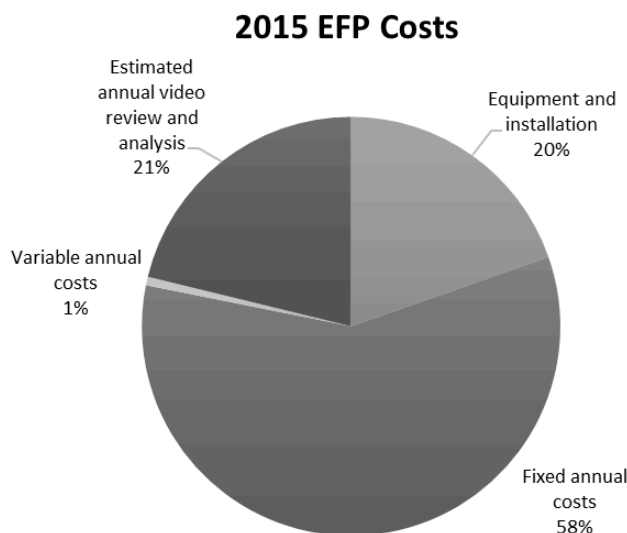


Figure 2: Cost breakdown for EM EFP Project- Year One (2015)

The estimated average total cost per vessel in 2015 was \$15,192, with the largest expense type being fixed costs (Fig. 2). Annual video review and data analysis costs are currently paid by NMFS, and were estimated for 2015 based on data provided by NMFS in the draft Regulatory Impact Review and Initial Regulatory Flexibility Analysis for the proposed rule for whiting and fixed gear EM programs.<sup>4</sup> Equipment costs for EFP participants in 2015 were covered through government grants and are not included in the EFP cost analysis.

## PARTICIPATION (YEAR ONE)

In 2015, five vessels (three fixed gear vessels and two trawl vessels) participated in the EFP, completing 32 trips. In July 2015, NMFS revoked the privilege to obtain an EFP from one trawl vessel as a result of the vessel failing to meet eligibility criteria.

	BOTTOM TRAWL	FIXED GEAR
VESSELS	2	3
TRIPS	14	18
HAULS	95	289

Table 3: Year One (2015) Project Participation by Gear Type

<sup>4</sup>[http://www.westcoast.fisheries.noaa.gov/publications/fishery\\_management/electronic\\_monitoring/em\\_draft\\_impact\\_review.pdf](http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/electronic_monitoring/em_draft_impact_review.pdf)

## Results (YEAR ONE)

In 2015, PSMFC reviewed a total of 425 hours of sorting time, representing 384 individual hauls (95 bottom trawl and 289 fixed gear) from this EFP project.

Estimated discard weights recorded in logbooks were compared to estimated discard weights recorded by video reviewers. Figure 3 shows that in 2015, logbook estimates for trawl vessels in total differed by 713 lbs compared to EM video review estimates. Fixed gear vessel logbook estimates differed by 320 lbs.

### Comparison of EM Video Review Discard Estimates and Logbook Discard Estimates - 2015

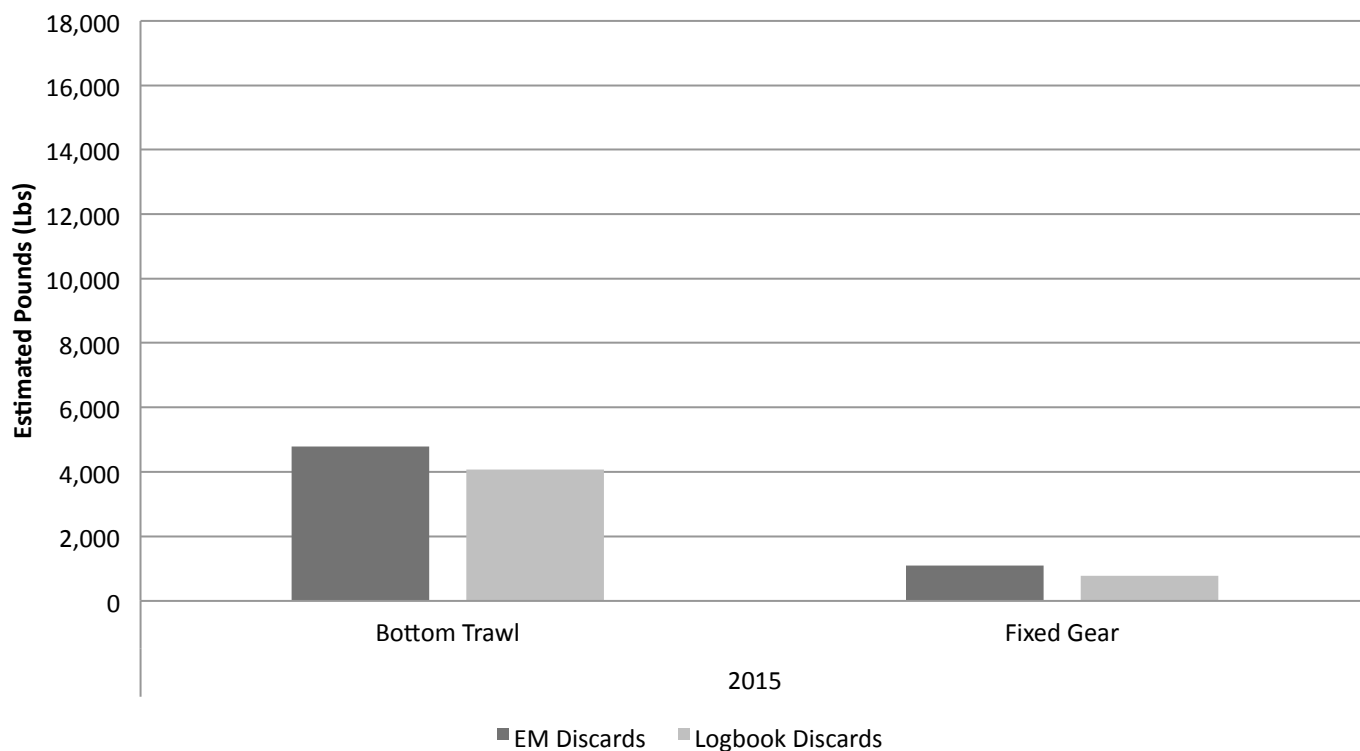


Figure 3: Comparing estimated discards from EM video review to logbook records for 2015.



## YEAR TWO (2016)

The project partners secured approval to continue the EFP project in 2016 and add up to 10 additional vessels. In January 2016, the project partners began working with NMFS and PSMFC to develop a new, singular EFP document for 2016 that incorporated a Collective Enforcement Agreement (CEA).

The CEA is a cooperative approach to implementing EM in which all involved vessels and parties assume responsibility for compliance with the terms and conditions of the EFP and individual VMPs. This approach is intended to reduce NMFS enforcement costs related to an EM program. Given the need to ensure accurate catch accounting, NMFS Office of Law Enforcement needs a timely way to respond to technical issues, as well as noncompliance with provisions of EM VMPs. However, regulations and corresponding due process requirements may make timely response difficult. Under a CEA option, agreements would become one of the criteria that vessels must satisfy to qualify for authorization to carry EM in lieu of an at-sea observer. This option also provides fishermen members with the ability to more easily and quickly adapt monitoring plans as needed.

The CEA must be vetted with NMFS and must be developed in cooperation with participating vessels. The core components of a CEA include criteria for participation, EM program and VMP requirements, prohibited activities, responsibility for enforcement, penalties and other remedial actions, and individual and collective liability.

As a condition of issuing this new type of EFP, NMFS required the project partners to assume primary responsibility for ensuring that vessels, vessel owners, and vessel operators participating in operations under the EFP complied with the terms and conditions of the EFP and CEA (however, NMFS retained full discretion to independently enforce the terms and conditions of the EFP). NMFS issued the new EFP referencing the CEA in August 2016 and all vessels switched to operating under this agreement at that time.

After distributing a request for bids for EM services, the project partners again hired AMR for the 2016 fishing season to provide, install and maintain EM systems.

## PARTICIPATION (YEAR TWO)

In 2016, four vessels (two fixed gear vessels and two trawl vessels) participated in the EFP, completing 48 trips. One fixed gear vessel did not fish in 2016 due to vessel construction, a Scottish Seine vessel was added as a second trawler.

	BOTTOM TRAWL	FIXED GEAR
VESSELS	2	2
TRIPS	31	17
HAULS	230	415

Table 4: Year Two (2016) Project  
Participation by Gear type



## COSTS (YEAR TWO)

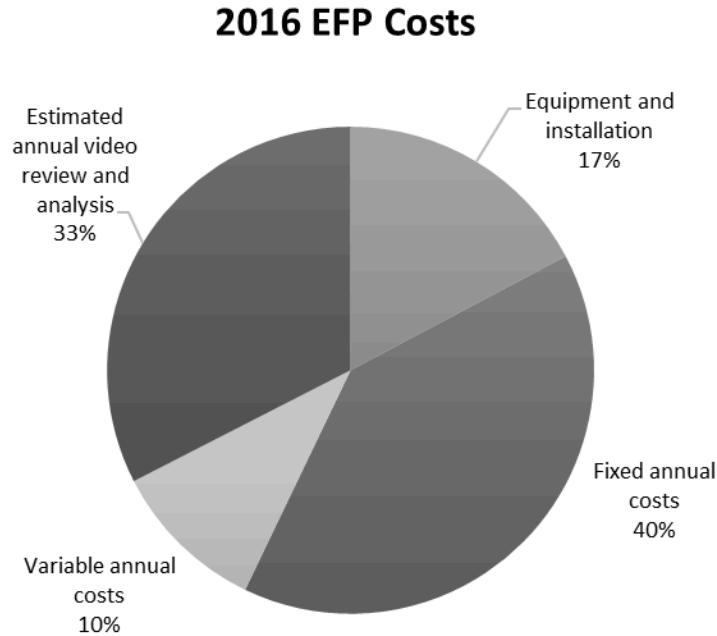


Figure 4: Cost breakdown for EM EFP Project- Year One (2016)

The breakdown of costs associated with the EFP project in 2016 are presented in Figure 4. As in 2015, annual video review and data analysis costs are currently paid by NMFS, and are thus presented as estimates based on data provided by NMFS<sup>4</sup>. Additional equipment costs in 2016 were again covered through government grants. The estimated average total cost per vessel in 2016 was \$11,233, indicating there was some savings between 2015 and 2016, mostly attributable to reduced EM service provider fees.

<sup>4</sup> [http://www.westcoast.fisheries.noaa.gov/publications/fishery\\_management/electronic\\_monitoring/em\\_draft\\_impact\\_review.pdf](http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/electronic_monitoring/em_draft_impact_review.pdf)

## RESULTS (YEAR TWO)

In 2016, PSMFC reviewed a total of 748 hours of sorting time, representing 645 individual hauls (230 bottom trawl and 415 fixed gear) from this EFP project.

Estimated discard weights recorded in logbooks were compared to estimated discard weights recorded by video reviewers. Figure 5 shows that in 2016, logbook estimates for trawl vessels in total differed by 544 lbs compared to EM video review estimates. Fixed gear vessel logbook estimates differed by 575 lbs.

### Comparison of EM Video Review Discard Estimates and Logbook Discard Estimates - 2016

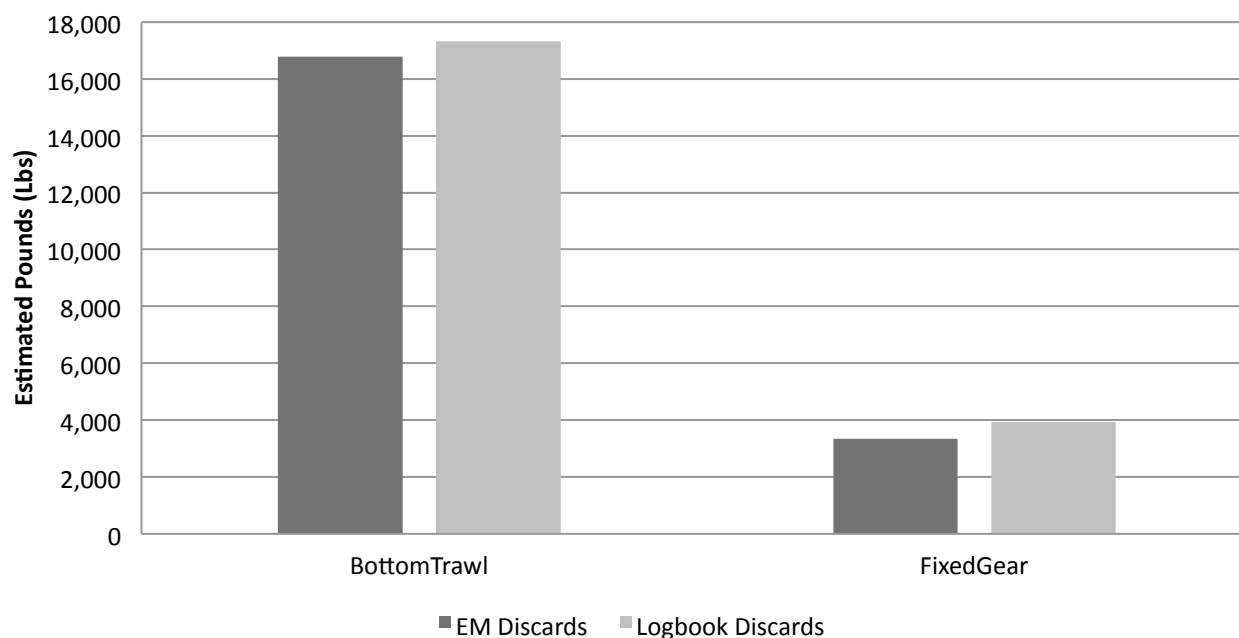


Figure 5: Comparing estimated discards from EM video review to logbook records for 2016.

At the March 2016 meeting, the PFMC chose to extend the expiration date of the EM EFPs for the bottom trawl, non-whiting mid-water trawl, whiting mid-water trawl, and fixed gear sectors through 2018.

In April 2016, the PFMC deemed draft regulations for whiting and fixed gear EM programs. After taking PFMC recommendations into consideration, NMFS published a proposed rule for whiting and fixed gear EM programs in September 2016.

## YEAR THREE (2017)

At PFMC's November 2016 meeting, NMFS communicated a likely delay in the implementation of the fixed gear and whiting regulations until spring or summer of 2017 and potential rulemaking for bottom/mid-water trawl sectors EM program in 2018. Given the delayed implementation of a regulatory EM program for fixed gear vessels participating in our EFP project, NMFS has extended the term of the EFP and CEA for both fixed gear and trawl vessels through 2017.

When the regulatory program for fixed gear is implemented, vessels will transition out of the EFP and operate under the regulatory program. The project partners are continuing to engage in the regulatory process to clarify cost analyses and advocate for preferred options to include in the pending trawl and mid-water trawl sectors EM program regulations.

### ESTIMATED PARTICIPATION (YEAR 3)

During the 2017-18 fishing season, there will be three trawl vessels and three fixed gear vessels participating in this EFP project.

	BOTTOM TRAWL	FIXED GEAR
VESSELS	3	3
TRIPS	TBD	TBD
HAULS	TBD	TBD

Table 5: Year Three (2017) Anticipated Project Participation by Gear type



## Lessons Learned

Over the course of the two-year project, we have had significant learning that can provide insight for future EM programs in other fisheries.

### EM systems can accurately validate logbook data provided by fishermen.

Over the project period, when comparing logbook estimates to EM video review estimates there is not a significant difference between the two (Fig.6; PSMFC). Total difference for 2015-2016, logbook estimates for trawl vessels in total differed by 1257 lbs compared to EM video review estimates. Fixed gear vessel logbook estimates differed by 895 lbs. Difference can vary by species. (Fig. 7; PSMFC)

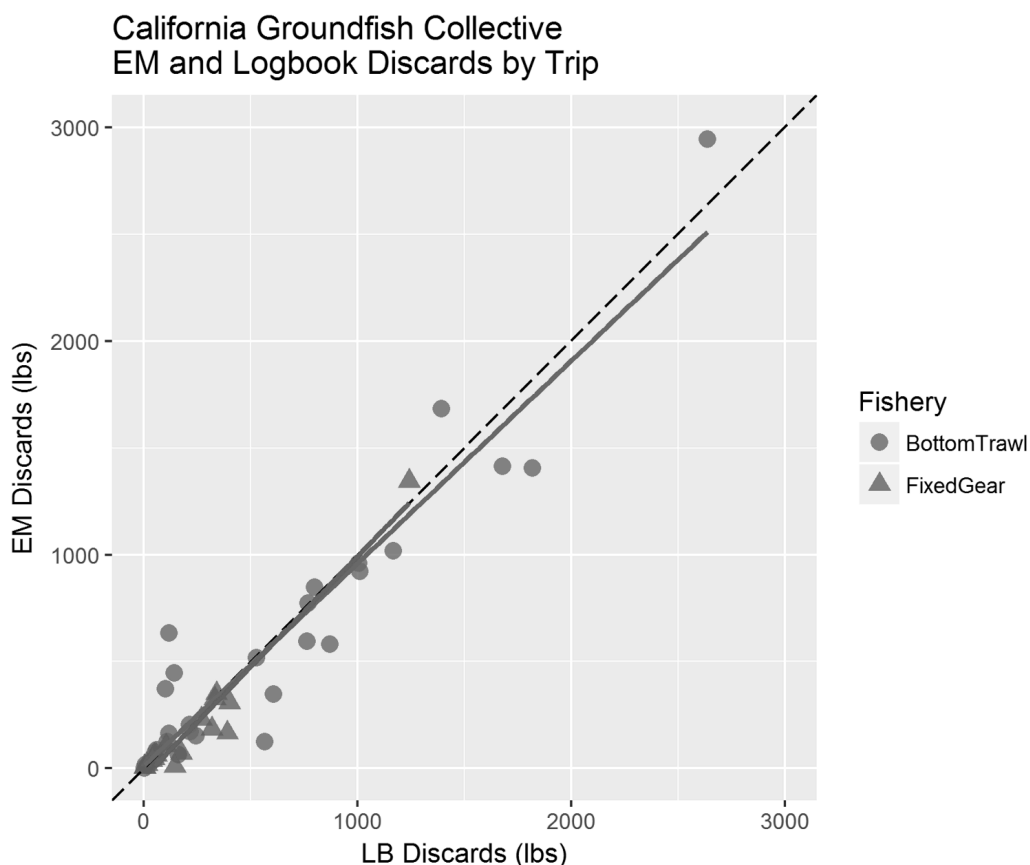


Figure 6: EM and Logbook (LB) Discards by Trip by gear type

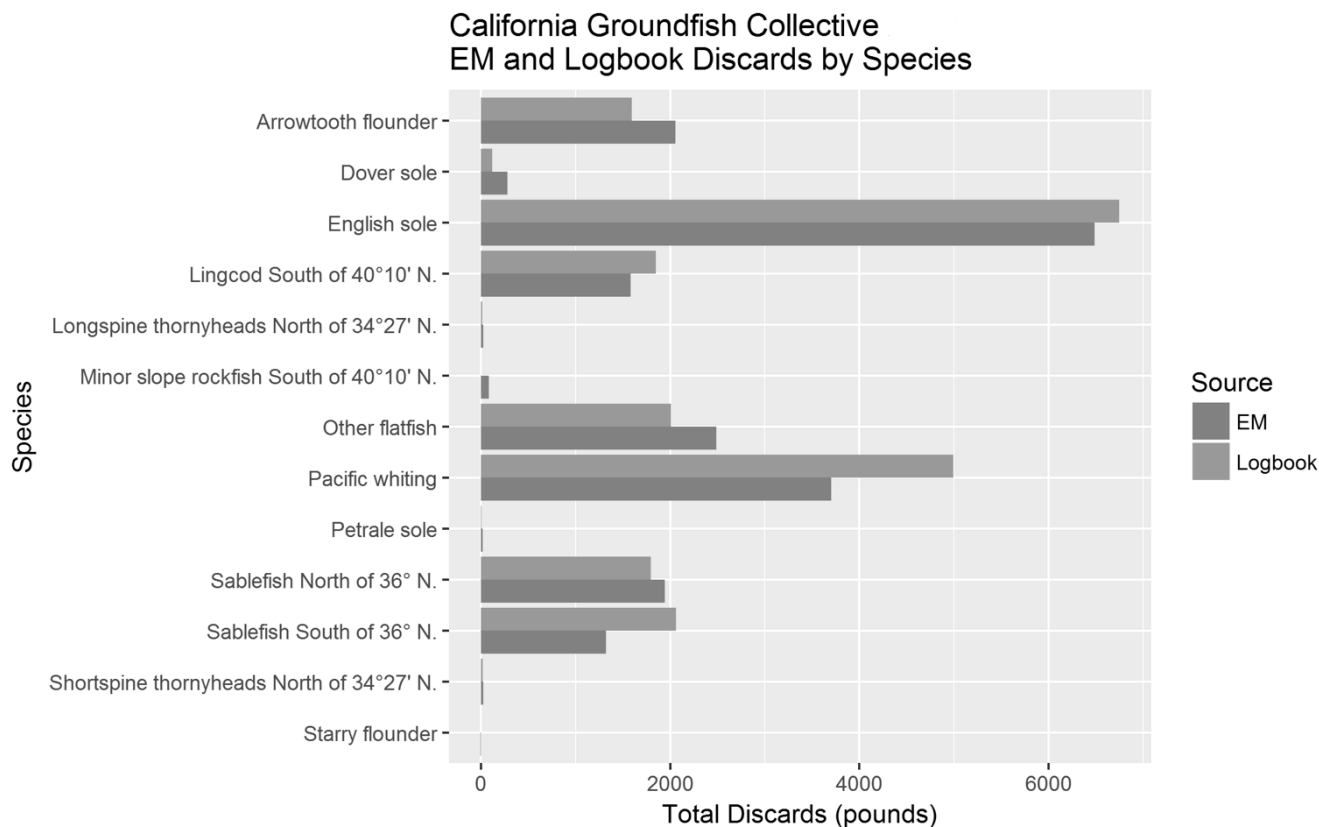


Figure 7: EM and Logbook Discards by Species

## Fishermen can develop and adapt new catch handling techniques to ensure the success of EM.

Participating fishermen have demonstrated that when committed to participating in EM that they can change on board behavior to meet review requirements, reduce review time and ensure the success of EM. However, potential future participants in EM programs should understand that EM is not a passive replacement for human observers due to additional commitment and participation. Changes to catch handling may influence costs to the vessel due to increased sorting time, increased retained catch, and other considerations.

Clearly visible monitors showing EM camera views should be positioned in the wheelhouse so that captains may oversee crew catch handling. All crew members (and scientific observers when on the vessel) must be trained not only in catch handling, but also in camera awareness during fishing activity.

---

## **Collaboration across stakeholders is essential.**

---

Captain and crew participation, collaboration across stakeholders, and frequent communication between all parties involved is essential during the development and implementation of an EM program. In addition, working with a single point of contact for a group of vessels can improve communication and streamline administration of an EM program.

---

## **A Collective Enforcement Agreement creates an opportunity for a cooperative approach to implementing EM that may increase efficiency for industry and managers.**

---

The use of a CEA requires close collaboration with NMFS to ensure compatibility with existing rules and regulations. The benefits of a CEA include:

- Reduced need for direct enforcement actions, reducing NMFS administration and enforcement costs while retaining flexibility.
- Collective oversight and collective incentives for vessels to comply with EM rules and regulations.
- Allows for more timely response to technical challenges or misuse of EM.
- Non-compliance can be quickly addressed (the exemption to use EM systems can be quickly nullified for non-compliant vessels).
- Ability to enter into collective agreements with service providers, if desired.
- Provides centralized contact points for service providers, PSMFC and NMFS.
- Allows for adaptation of monitoring plans as needed without requiring revision of all EFP documents.

The challenges of a CEA include:

- Developing and vetting the components and terms within the agreement in collaboration with all stakeholders, including NMFS.
- Securing final approval and signatures.
- Ensuring compliance if participation is widely distributed geographically.



---

**Many costs associated with implementing an EM program are variable and highly dependent on final program design.**

---

Results from the project indicate that EM systems have the potential to reduce existing monitoring costs without compromising data quality or integrity. Actual costs, however, will depend on program goals (e.g., regulatory compliance vs. discard estimation) and the actual program design (e.g., audit vs. 100% video review [also known as a census approach]). Fishery characteristics such as the relative geographic isolation and number of ports, and the amount of fishing activity (by vessels or fleet) also drive EM costs.<sup>5</sup> In addition, any analysis of cost-effectiveness depends on a detailed accounting of the cost for deploying human fishery monitors. Given these ongoing uncertainties, a conclusive evaluation of the cost-effectiveness of EM programs is not yet possible. However, this project can inform the relative cost picture and help shape perspectives on how to advance EM regulations that have a likelihood of being more cost-effective than current monitoring approaches.

---

<sup>5</sup> Sylvia, G., Harte, M. and Cusack, C. 2016. Challenges, Opportunities, and Costs of U.S. Fisheries Electronic Monitoring. Unpublished report. 30pp.



## Conclusion

This EFP project has served as an important demonstration of the use of EM in lieu of at-sea observers for compliance monitoring in the West Coast groundfish fishery. This project implemented EM across multiple gear types in a high-volume, multi-species fishery, and project results have informed the development of new EM regulations. Photo: David Hills.

The participants in this EFP project have identified challenges facing the implementation of EM in the groundfish fishery. For instance, vessels using EM face the challenge of limited or reduced availability of CMs for offloads. In ports with fewer landings, it can be difficult to hire, train and retain people to serve in CM roles given the education and training requirements and the inability of CM providers to recoup costs. CM service costs borne by first receivers are typically passed on to vessels, and the logistical challenges associated with moving CMs between remote ports can delay offloads and in some cases, may offset cost savings achieved by using EM. The project partners and other stakeholders are continuing to advocate for the evaluation of potential solutions to CM challenges, including revising educational and training requirements, the types of entities that can serve as certified CM providers, and testing the use of EM technology to monitor offloads.

The project partners and other stakeholders recognize there are significant outstanding questions related to the ongoing costs of EM. The full cost of an EM program is dependent on final EM program design, and pending decisions related to issues such as the required levels of video review and data processing, submission, and storage requirements will significantly impact the full cost of the EM program. These critical program standards will affect costs to the industry and to government and will determine whether EM can serve as a more cost effective alternative to human at-sea observers in the groundfish fishery.

Nevertheless, results from this EFP project indicate that EM systems have the potential to reduce existing monitoring costs without compromising data quality or integrity, and therefore may be an alternative compliance monitoring option for some fishing operations in the groundfish fishery.

The project participants look forward to continuing to work with the PFMC, NMFS and other stakeholders to resolve outstanding concerns and reach successful implementation of EM as an alternative catch monitoring option.



---

## Acknowledgements:

---

The project partners would like to thank staff members Dave Colpo, Courtney Donovan and Aileen Smith from PSMFC, Melissa Hooper, Steve Freese and Dayna Matthews from NOAA's West Coast Region and Science Centers, the EM service technicians and staff at Archipelago Marine Research. Captains, Vessel Owners and Crew of the F/V Moriah Lee, F/V Mr. Morgan, F/V Donna J, F/V Blue Pacific, F/V Pioneer, F/V Brita Michelle.





Herb Pollard, Chair  
Pacific Fishery Management Council  
7700 NE Ambassador Place, Suite 101  
Portland, Oregon 97220

March 29, 2017

RE: Agenda Item F.2 Electronic Monitoring (EM) Non-Whiting Midwater & Bottom Trawl EFP Update & Final Preferred Analysis (FPA)

Dear Chairman Pollard,

On behalf of Environmental Defense Fund (EDF) and our more than 2 million members, I am writing to express our strong support for this Council moving toward full implementation of EM for all sectors of the IFQ program. EDF remains committed to reducing monitoring costs in the trawl catch share program while maintaining full accountability. Providing opportunity to *all* participants to utilize EM technologies will improve the economic performance of the program.

As part of our commitment, EDF has been working with our partners over the last two years to test the use of EM on bottom trawl and fixed gear vessels in California. The four EFPs that were approved in 2015 to test EM are now in their 3<sup>rd</sup> year of fishing. During this time, staff from PSMFC and NOAA's West Coast Region have worked collaboratively with EFP participants and EM Service Providers to address logistical challenges and develop protocols essential for a successful EM compliance program. For example, fishermen are learning to adapt to the catch handling/sorting required to document discards via EM, increasing efficiencies through the year. NMFS staff have developed business rules (standards) for catch accounting and the feasibility is being tested through analyzing both logbook and EM data (NMFS report March 2016). These activities have helped answer important questions about the optimal design for EM in this fishery that would provide greater flexibility and cost savings while maintaining accurate and reliable compliance monitoring.

We'd like to address three potential challenges for implementing a successful EM program across the IFQ fleet.

**Video Review Protocol: Start at less than 100% or set a clear pathway to reduce review rate over time**

The intention behind adding EM as an alternative monitoring tool is to achieve greater cost-efficiencies than the current system. Setting video review rates higher than they need to be for accurate accounting may significantly compromise industry adoption of EM<sup>1</sup>. Cost data from the EM EFPs operating the last two seasons show a proportionally higher video review cost per sea day for trawl trips than for whiting or fixed gear trips<sup>2</sup>. This is due to greater diversity and volume of the catch, and the need to ensure there are no discards after sorting. Thus, if the audit rate for trawl were to be arbitrarily set at 100% review requirement, it is almost certain that the cost of EM will be higher than using observers for many operations, particularly those that are most economically vulnerable.

It will be important to set an appropriate audit rate to induce strong incentives for accurate logbook reporting, and we think this rate can and should be less than 100%. We understand that NMFS/PSMFC staff are working with EFP project participants to use catch/discard data in a simulation of audit rates to arrive at a rate that will meet compliance needs while not unduly adding more cost to the EM program. Until those results are ready, we ask the Council to direct the GEMPAC to develop a process by which review rates will decrease over time.

---

<sup>1</sup> Sylvia, G., Harte, M. and Cusack, C. 2016. Challenges, Opportunities, and Costs of U.S. Fisheries Electronic Monitoring. Unpublished report. 30pp. [URL](#)

<sup>2</sup> Data received from West Coast Region staff, August 2016.

**Pacific Halibut discard mortality rate (DMR): Set at less than 90% - a rate that more accurately reflects average DMR for this fleet.**

Over the last few months we've engaged a number of EFP fishermen operating out of Oregon ports to discuss their experiences and concerns in using and adopting EM. A significant number of year-round bottom trawl fishermen in this area do interact with P. halibut, especially during the summer months when working the prime grounds shoreward of the Rockfish Conservation Area (RCA). Many are concerned that if the DMR is set at 90% (Council's Preferred Alternative), they will not have enough halibut IBQ<sup>3</sup> to fish those areas. Currently, IBQ deductions are based on observer documented mortality as ascertained through viability assessments. According to a recent P. halibut bycatch report, the DMRs for the IFQ bottom trawl fleet between the years 2011-2015 range between 27% and 59%<sup>4</sup>. Thus, a 90% DMR rate overestimates halibut mortality by this fleet, and is likely to be a major dis-incentive for this group of fishermen to adopt EM for a significant portion of the year.

At the February 22, 2017 GEMPAC meeting, we discussed this challenge and possible solutions. One viable solution is to use a step-wise approach to adjust DMRs based on 2011-2016 at-sea observer data as well as fishing activity parameters known to influence survivorship and that can be documented via an EM program, such as the tow length and depth (as recorded by hydraulic sensors), and/or the fish's time on deck. Again, in the absence of a specific estimate, we ask the Council to choose a placeholder concept called 'Adjusted DMR' as their FPA and to direct the GEMPAC, Council staff, NMFS and the IPHC to collaborate and arrive at an adjusted DMR formula that accurately documents P. halibut mortality for this fleet. Such an innovation would likely encourage the fleet to adopt EM for the full suite of their operations.

**Shoreside Catch Monitors: remains outside of this FPA but needs your attention**

When using at-sea observers for monitoring, availability of a catch monitors (CMs) is not an issue because the observers will typically step off of the vessel and become the CM for the offload. If there is no longer an observer on the vessel, a CM is not readily available for offload events. In geographically dispersed, lower volume ports (such as in California), the ability to train and retain CMs has been challenging. We have heard from industry as well as CM contractors that filling and funding these positions has been challenging under an EM model. We encourage Council and NMFS to consider allowing cameras dockside, relaxing eligibility requirements for CMs or a combination of both to address this oncoming problem before it starts to prohibit participation in the fishery. Although this is outside the scope of specific EM regulations, it is important for Council to consider addressing this issue under other rulemaking amendment processes.

The availability of EM as a regulatory-based option for monitoring represents an important step forward for the catch share program. We commend NOAA, PSMFC, EFP participants and Council staff for the hard work it has taken to get to this stage. We strongly encourage NMFS to prioritize implementation of EM in all sectors this year to lower monitoring costs and relieve some of the financial burden fishermen are facing to participate in the IFQ program.

Sincerely,



Melissa M. Mahoney  
Pacific Fisheries Policy Manager  
Environmental Defense Fund

---

<sup>3</sup> Individual Bycatch Quota

<sup>4</sup> Jannot, J.E., Somers, K., Riley, N.B., Tuttle, V., McVeigh, J. 2016. Pacific halibut bycatch in the U.S. west coast fisheries (2002-2015). NOAA Fisheries, NWFSC Observer Program, 2725 Montlake Blvd E., Seattle, WA 98112.

Mr. Herb Pollard, Chairman  
Pacific Fishery Management Council  
7700 NE Ambassador Place, Suite 101  
Portland, Oregon 97220

March 29, 2017

RE: Agenda Item F.2 Electronic Monitoring (EM) Non-Whiting Midwater & Bottom Trawl EFP Update & Final Preferred Analysis (FPA)

Dear Mr. Chairman,

The signatories of this letter have worked in partnership with the Council, the National Marine Fisheries Service (NMFS), and the Pacific States Marine Fisheries Commission (PSMFC) since 2014 to implement Exempted Fishing Permits (EFPs) on 17 vessels allowing the use of electronic monitoring (EM) instead of human observers in the Pacific Coast groundfish IFQ fishery. The vessels operating with EFPs have delivered critical information that is still informing the development of electronic monitoring regulations, and we are very appreciative of the collaboration and attention that all parties have put into making the EFPs successful implementations of electronic monitoring for catch compliance.

We believe that Electronic Monitoring as an option for compliance monitoring is critical for the groundfish IFQ program to achieve its goals and objectives. However, we are writing to express our serious concern with the current Proposed Rule published in the Federal Register September 6, 2016, regarding the electronic monitoring program for the fixed gear and whiting sectors – as well as certain options to be considered for the trawl and non-whiting mid-water trawl sectors under Agenda Item F.2. Specifically, we are concerned that NMFS's intention to transition all electronic monitoring data processing and video review to third parties by 2020 will result in significant costs to the industry that have not been properly evaluated, disclosed or analyzed. We are respectfully requesting that the Council recommends that all language regarding Third Party Data Processing and Video Review be removed from the final regulation package for fixed gear and whiting § 660.603(m) and from any final preferred alternatives for trawl regulation that will follow and that the Council and NMFS reserve action for a separate rulemaking.

One of the greatest threats to the success of the fishery is the high costs of participation. For some vessels, the cost of observer coverage for compliance monitoring are prohibitive, and the pending electronic monitoring regulations were developed to provide vessels an alternative for meeting accountability requirements that may be more cost effective.

Under the current EFP program, the electronic monitoring data processing and video review are conducted by PSMFC. This model is working well, and we believe it is the most efficient option for data processing and video review given PSMFC's central role in data management.

However, the Council and NMFS have decided to shift responsibility for data processing and video review to third party providers and shift the associated costs (including incremental costs to NMFS) to the fleet by 2020. While we have evidence from the EFPs that documents PSMFC's costs to deliver these services, there are no cost estimates for a third party model provided in the draft Environmental Assessment or draft Regulatory Impact Review and Initial Regulatory Flexibility Analysis (RIR/IRFA). Given that the draft regulations do not explicitly describe many of the requirements a third party provider has to meet (such as video review coverage level or sampling schemes), the current PSMFC costs cannot be assumed to be the same as third party provider costs. Additionally, it is not clear if NMFS will have additional costs under a third party provider model and what those costs are.

Without this critical information, the fleet cannot assess what it will be expected to pay in order to operate with electronic monitoring. We do not want to move forward with the proposed transition to third party providers by 2020 until a comprehensive cost analysis can be provided to compare options. We cannot risk losing access to an efficient and cost effective video review provider at PSFMC. It is in the best interest of the vessels we represent to maintain the lowest cost data processing and video review – which today is conducted by PSMFC.

We suggest that rather than spending additional energy and resources on creating a third party system that may not deliver cost savings, that focus is placed on providing clarity on unanswered questions such as data processing and submission requirements (e.g. whether imagery/video data is necessary versus extracted or summary data generated during video review), or on the level of video review necessary for compliance purposes.

If at some point in the future there is evidence that a third party review system can truly reduce costs to the fleet and agency, perhaps the issue could be revisited and addressed in a separate rulemaking. Until that time, we respectfully request that the Council recommends that all language regarding Third Party Data Processing and Video Review be removed from the final regulation package for fixed gear and whiting § 660.603(m) and from any final preferred alternatives for trawl regulations.

Thank you for your consideration,



Lisa Damrosch  
California Groundfish Collective



Brad Pettinger  
Oregon Trawl Commission



Michele Longo Eder  
Michele Longo Eder  
F/V Timmy Boy  
& EM Fixed Gear EFP



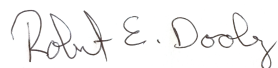
Michelle Norvell  
Fort Bragg Groundfish Association



Geoff Bettencourt  
Half Moon Bay Groundfish  
Marketing Association



Dwayne Oberhoff  
Morro Bay Community  
Community Quota Fund



Bob Dooley  
Commercial Fisherman

March 30<sup>th</sup>, 2017

Barry Thom  
Acting Regional Administrator  
West Coast Region, NMFS  
7600 Sandpoint Way NE.  
Seattle, WA 98115-0070  
Attn: Melissa Hooper

Re: Supplemental Public Comment for Docket #151116999-6759-01

Dear Mr. Thom:

Thank you for considering the following supplemental comments of The Nature Conservancy (the Conservancy) on the National Marine Fisheries Service (NMFS) Proposed Rule published in the Federal Register September 6, 2016 regarding the Electronic Monitoring (EM) Program for two sectors of the limited entry Pacific Coast groundfish trawl fishery.

One of the motivating factors for pursuing EM as an alternative monitoring option has been to maintain accountability measures while reducing the monitoring costs borne by participating vessels. Human observer coverage for compliance monitoring can be expensive, and the deployment of human observers results in significant inefficiencies due to the logistical and operational challenges of moving people between ports along the west coast. As the preamble to the Proposed Rule states, and as the analysis in the related draft Regulatory Impact Review and Initial Regulatory Flexibility Analysis (RIR/IRFA) reflects, fishing operations in the shorebased sector of the limited entry trawl Individual Fishing Quota (IFQ) fishery are marginally profitable, at best, and reducing the operational cost burden for that fleet is critical to achieving IFQ program success. EM is being implemented in an effort to provide a lower cost monitoring alternative to human observers.

We believe a comprehensive analysis of all associated costs related to EM should be undertaken at the individual fishery and gear group sector level to determine whether the true financial impact of EM under current program standards outlined in the Proposed Rule warrants integration for those sectors.

On October 6, 2016 we submitted public comments on the proposed rule published in the Federal Register regarding the EM Program for the whiting and fixed gear sectors of the groundfish IFQ

program. The day before our comments were submitted, the Northwest Fisheries Science Center issued its Economic Data Collection Program Report for the catcher vessel sector of the West Coast Groundfish Trawl Catch Share Program, covering the years 2009-2014 (the EDC Report). Because it was released a day before the proposed rule comment deadline, we did not have an opportunity to review the EDC Report data and use it in preparing our comment on the EM Program proposed rule. We have now reviewed the EDC Report data, and have prepared the following additional comments.

Under the Proposed Rule, harvesters choosing to participate in the EM program would be required to pay for EM equipment and for the services of third parties to assist with installing, operating and maintaining it, collecting, reviewing and storing EM data, and transmitting the results of EM data review to NMFS. EM Program Proposed Rule, 81 Fed. Reg. 61,162 (Sept. 6, 2016). The agency would initially pay for EM data review, but that responsibility would also eventually be shifted onto harvesters – by 2020 at the latest, or sooner if NMFS does not receive sufficient appropriations to cover that cost. *Id.* at 61,162-63. Besides paying those direct costs, harvesters will also be subject to reimbursing NMFS for the cost of certain activities the agency will continue to perform. NMFS will audit a portion of EM data and will supply human observers to collect biological information that will not be collected by the EM systems. The agency has indicated it may seek to recoup some or all of the cost of those activities from harvesters through cost recovery fees applicable to participants in limited access privilege programs. 81 Fed. Reg. at 61,162 (“NMFS’s incremental costs to administer the EM program would be recoverable through Trawl Program cost recovery fees.”).

The IRFA for the EM Program estimates savings for several groundfish sectors associated with switching from the currently required 100% human observer coverage to coverage provided by EM systems. Estimated savings range from \$4 per day and \$117 per year up to \$330 per day and \$23,832 per year, depending on the sector. IRFA, pp. 8-9.

While the estimated savings for some sectors may seem significant in absolute dollar amounts, those savings may not make EM affordable. The issue of affordability is better assessed by comparing the estimated cost of collecting information through EM against the vessel revenues that NMFS seemingly assumes will fund that coverage. That comparison is made in the tables below for vessels in each sector of the groundfish fishery that would be subject to the EM program. The estimated daily cost data are from the IRFA, while the vessel sea day and vessel annual revenue data are from a report by the Northwest Fisheries Science Center (NWFSC). Economic Data Collection Program, Catcher Vessel Report (2009-2014), NWFSC, October 5, 2016.<sup>1</sup> Annual cost estimates were calculated by multiplying the IRFA daily cost estimates by

<sup>1</sup> Available at [https://www.nwfsc.noaa.gov/research/divisions/fram/documents/Catcher\\_Processor\\_Report\\_October\\_2016.pdf](https://www.nwfsc.noaa.gov/research/divisions/fram/documents/Catcher_Processor_Report_October_2016.pdf).



the sea day data published by the NWFSC. The costs of human observer coverage are included for contrast.

**Table 1. NMFS estimated costs of human observers and EM**

<b>Sector</b>	<b>Cost - daily human</b>	<b>Cost – daily EM</b>	<b>Days-at- Sea – annual</b>	<b>Cost – annual human</b>	<b>Cost – annual EM</b>	<b>Savings – annual</b>
Shoreside whiting	\$500	\$170	65.3	\$32,650	\$11,101	\$21,549
Mothership catcher vessel	\$500	\$341	45.2	\$22,600	\$15,413	\$7,187
Fixed gear	\$500	\$402	31.4	\$15,700	\$12,623	\$3,077
Trawl - dover sole, thornyheads, sablefish (DTS)	\$500	\$496	37.5	\$18,750	\$18,600	\$150
Trawl - non-DTS, non-whiting	\$500	\$496	23	\$11,500	\$11,408	\$92



**Table 2. Cost as a percentage of gross vessel revenues**

<b>Sector</b>	<b>Cost - annual human</b>	<b>Cost - annual EM</b>	<b>Savings - annual</b>	<b>Gross Revenues</b>	<b>Human cost as % of Gross</b>	<b>EM cost as % of Gross</b>
Shoreside whiting	\$32,650	\$11,101	\$21,549	\$973,000	3.36%	1.14%
Mothership catcher vessel	\$22,600	\$15,413	\$7,187	\$651,000	3.47%	2.37%
Fixed gear	\$15,700	\$12,623	\$3,077	\$193,000	8.13%	6.54%
Trawl - dover sole, thornyheads, sablefish (DTS)	\$18,750	\$18,600	\$150	\$299,000	6.27%	6.22%
Trawl - non-DTS, non-whiting	\$11,500	\$11,408	\$92	\$159,000	7.23%	7.17%

**Table 3. Cost as a percentage of net vessel revenues (less variable costs)**

<b>Sector</b>	<b>Cost - annual human</b>	<b>Cost - annual EM</b>	<b>Savings - annual</b>	<b>Net revenues (variable)</b>	<b>Human cost as % of Net (variable)</b>	<b>EM cost as % of Net (variable)</b>
Shoreside whiting	\$32,650	\$11,101	\$21,549	\$373,000	8.75%	2.98%
Mothership catcher vessel	\$22,600	\$15,413	\$7,187	\$237,000	9.54%	6.50%
Fixed gear	\$15,700	\$12,623	\$3,077	\$67,500	23.26%	18.70%
Trawl - dover sole, thornyheads, sablefish (DTS)	\$18,750	\$18,600	\$150	\$107,000	17.52%	17.38%
Trawl - non-DTS, non-whiting	\$11,500	\$11,408	\$92	\$55,500	20.72%	20.55%

**Table 4. Cost as a percentage of net vessel revenues (less total costs)**

<b>Sector</b>	<b>Cost - annual human</b>	<b>Cost - annual EM</b>	<b>Savings - annual</b>	<b>Net revenues (total)</b>	<b>Human cost as % of Net (total)</b>	<b>EM cost as % of Net (total)</b>
Shoreside whiting	\$32,650	\$11,101	\$21,549	\$134,000	24.37%	8.28%
Mothership catcher vessel	\$22,600	\$15,413	\$7,187	\$84,000	26.90%	18.35%
Fixed gear	\$15,700	\$12,623	\$3,077	\$20,800	75.48%	60.69%
Trawl - dover sole, thornyheads, sablefish (DTS)	\$18,750	\$18,600	\$150	\$60,000	31.25%	31.00%
Trawl - non-DTS, non-whiting	\$11,500	\$11,408	\$92	\$37,200	30.91%	30.67%

Tables 1 – 4 show that the sectors for which human observer costs are most burdensome may see only minimal relief under EM. For example, trawl vessels using fixed gear currently pay around \$15,700 per year for human observers, which is 8.13% of their \$193,000 in annual gross revenues and 75.5% of their \$20,800 in annual net revenues. Although that sector is expected to realize \$3,077 per year in savings from EM, the estimated \$12,623 annual cost of EM would still be 6.54% of annual gross revenues and 60.69% of *annual net revenues*. Considering the risk to life and property that commercial fishing entails, it is questionable whether it makes sense to operate a vessel in a fishery where an amount equal to 60% of net revenues is necessary to pay for EM.

The disparate cost burden across sectors does not appear to have been addressed by NMFS in either the Proposed Rule or the IRFA. Instead, the agency focuses on an annual gross revenue figure – \$646,000 – that is the combined average of all vessels from all 5 sectors subject to the EM program. 81 Fed. Reg. at 61,167. As shown in Table 2 above, that figure is far higher than the average gross revenues for vessels in 3 of the 5 sectors. It could give the inaccurate impression that observer costs are not a substantial percentage of revenues, when in fact they are.

As significant as the cost of EM may seem from currently available data, present cost estimates may prove to be low, for at least two reasons. First, “the track record of [EM] cost analyses is relatively short,” as the NMFS Alaska Region recently noted in “express[ing] great reservation about estimating the cost of” an EM program under consideration for certain vessels in the North Pacific. EM Integration Analysis, Initial Review, September 2016 (NMFS AKR), p. 131.<sup>2</sup> The Alaska Region’s perspective may be informed by its own difficulty estimating the cost of human observers. In 2011, that region estimated a daily cost of \$467 to the agency for a human observer program then under development. IRFA, Restructuring the Program for Observer Procurement and Deployment in the North Pacific, March 2011, p. 112.<sup>3</sup> The actual daily cost was much higher once that program began operating in 2013, and in 2015 the region more than doubled its initial estimate to \$1,040 for upcoming years. Observer Program Supplemental Environmental Assessment, September 2015, p. 15.<sup>4</sup>

The tables included above reflect only direct costs of EM to harvesters. They do not include the costs of activities the agency will continue to perform, which NMFS has estimated will total “approximately \$286,000 per year” and which may be passed on to harvesters through cost recovery fees. 81 Fed. Reg. at 61,168. NMFS has also indicated it will supply human observers to collect biological information not gathered by EM systems. Neither the EM program proposed rule nor the IRFA appears to estimate or include the cost of that activity.

<sup>2</sup> Available at <http://www.npfmc.org/observer-program/>.

<sup>3</sup> Available at [https://alaskafisheries.noaa.gov/sites/default/files/analyses/amd86\\_amd76\\_eairirifa\\_0311.pdf](https://alaskafisheries.noaa.gov/sites/default/files/analyses/amd86_amd76_eairirifa_0311.pdf).

<sup>4</sup> Available at [https://alaskafisheries.noaa.gov/sites/default/files/analyses/finalea\\_restructuring\\_0915.pdf](https://alaskafisheries.noaa.gov/sites/default/files/analyses/finalea_restructuring_0915.pdf).

The issue is not just the cost of an EM program, but the program's "cost effectiveness" – what the program costs in terms of what the program provides. Cost effectiveness is an issue for the Pacific Coast groundfish EM program because it is not intended to fully replace humans, who serve what NMFS describes as "dual purposes." One purpose is to assist with enforcement of the groundfish IFQ program by collecting information regarding at-sea discards of IFQ species. The other purpose is to collect biological information for stock assessments and bycatch estimates. 81 Fed. Reg. at 61,163. EM systems would only be used for the first purpose, i.e., monitoring discards of IFQ species. The second purpose would be met using human observers from the West Coast Groundfish Observer Program. That program was initially suspended for vessels subject to 100% human observer coverage but would be reinstituted for vessels opting in to the EM program. A cost effectiveness analysis would therefore need to compare the cost of the current system of 100% human observer coverage against the total cost of all types of coverage required under the proposed EM program. The total cost to harvesters would equal the sum of (1) the direct cost of EM plus (2) agency costs associated with EM *and* the partial human observer coverage that will remain necessary to collect biological information, to the extent those costs are recouped from harvesters through cost recovery fees. Neither the IRFA nor the proposed rule for the EM program appears to estimate the sum of direct costs to harvesters and agency costs to be recouped from harvesters.

**We believe a comprehensive analysis of all costs associated with EM should be undertaken at the individual fishery and gear group sector level to determine whether the true financial impact of EM under current program standards outlined in the Proposed Rule warrants integration for those sectors.** An accurate cost effectiveness analysis would need to compare the cost of the current system of 100% human observer coverage against the total cost of all types of coverage required under the proposed EM program. Total costs to harvesters would equal the sum of the direct cost of EM, plus agency costs associated with EM and with the partial human observer coverage for biological info, to the extent those costs are recouped from harvesters through cost recovery fees.

**In light of the information above, we do not believe NMFS is in a position to determine that there are no significant alternatives to the proposed action that would accomplish the stated objectives and minimize any significant economic impact of the proposed rule on small entities, as the Regulatory Flexibility Act requires. As referenced in our previous public comment, certain EM program standards – such as the data processing, reporting, and record retention requirements of EM video data reviewers – could be structured to reduce costs and maintain compliance. Additionally, the level of EM video review required by NMFS for compliance purposes can significantly affect program costs. These alternatives should be more fully incorporated into cost analyses to disclose the economic impact of the proposed rule on small entities.**

Thank you for considering the views of The Nature Conservancy. Please do not hesitate to contact me if you have questions regarding these comments.

Sincerely,

A handwritten signature in dark ink, appearing to read "Kate Kauer", with a stylized, flowing script.

---

Kate Kauer  
Fisheries Project Director  
The Nature Conservancy

Cc:  
Pacific Fishery Management Council