

Draft Electronic Monitoring Program

Overview

(Last updated 9/1/2016)

NOAA Fisheries (NMFS) issued a proposed rule on September 2, 2016 that proposes to implement an electronic monitoring (EM) program in the Pacific Coast Groundfish limited entry trawl fishery. The proposed regulations would allow catcher vessels in the Pacific whiting fishery and fixed gear vessels in the shorebased Individual Fishing Quota (IFQ) fishery to use EM in place of observers to meet the requirements of the Trawl Rationalization Program for 100-percent at-sea observer coverage. Data from the EM program would be used to debit discards of IFQ species from IFQs and mothership cooperative allocations. The proposed rule describes the application process for interested vessel owners, performance standards for EM systems, requirements for vessel operators, and a permitting process and standards for EM service providers. This document provides additional information about how NMFS would collect catch information from the video data and use it to debit allocations, based on the procedures used in the 2015-2016 EM Exempted Fishing Permit (EFP) program.

What is EM?

EM consists of video cameras, an integrated GPS, and associated sensors, which are used to record fishing activity at sea. Video and sensor data is reviewed after the trip to determine fishing locations and quantify discards. This catch data is used along with captain-reported logbooks in place of observer data to debit IFQ and Individual Bycatch Quota (IBQ) from vessel accounts.

How does NMFS collect catch information from EM?

During an EM trip, the EM control box periodically logs location and sensor data (e.g. every 10 seconds). When the vessel engages its hydraulics, the sensors trigger cameras to record and, depending on the fishery sector, recording continues until the vessel enters port. The captains have specific rules about what species can be discarded and instructions in their vessel monitoring plans for catch handling and discarding to enable the video to record discards. Captains record piece counts and weights of discards from each haul in a logbook. Mothership catcher vessels also transmit discard estimates to the mothership to be included in the mothership observer data for each haul.

Following the trip, logbooks must be submitted to Pacific States Marine Fisheries Commission (PSMFC) within 24 hours of landing and hard drives every trip (mothership catcher vessels) and every 10 days (shorebased whiting and fixed gear). PSMFC enters the logbook data within one business day of receipt and logbook data is uploaded to the vessel account system nightly. Video

is generally reviewed within two business days for fixed gear and whiting trips. At this time, video review is occurring on 100-percent of hauls to check for compliance with EM rules and collect discard weights and piece counts for comparison to logbooks. Transit time is also reviewed on an ad-hoc basis when compliance issues are suspected.

NMFS uses a variety of methods to estimate the weight of discards from EM data, based on the type of trip and the species discarded. For example, on whiting trips discards are not discrete, selective events but rather occur when fish is vented or spilled from the codend during gear retrieval, or hosed from the deck through scuppers while crew are cleaning the gear and deck. This catch is not sorted and may contain a mix of species. This is in contrast to fixed gear trips, where crew retrieve hooks/pots one at a time and sort catch before discarding. Below is a summary of the weight estimation methods used on EM trips.

Whiting Trips

- Discards are initially estimated as total discard weight rather than by species (e.g., 1,000 lb total discard). Whiting catch is not sorted at sea but dumped directly into the hold in order to maintain the quality of the whiting, which otherwise degrades quickly. Because catch is not sorted at sea, video reviewers cannot estimate discards to individual species. Following the trip, PSMFC uses the species composition of the retained catch reported on the fish ticket or by the mothership to extrapolate a species composition of the discarded weight. Fish that are selectively discarded are identified to species.
- Video reviewers use the following methods to estimate the discarded weight:
 - Codend capacity – Captains report codend capacity for each haul on the logbook. The video reviewer divides the codend capacity by the number of straps on the net to obtain a per-strap weight estimate. The reviewer then estimates the fullness of each strap. When the codend is tied off, the reviewer counts the number of straps forward of the tie-off to estimate the weight of the catch to be discarded. If catch is vented from the codend, the reviewer recalculates the percent fullness of the codend to determine the amount of catch that was lost.
 - Visual estimate – For other discards that cannot be estimated using codend capacity (e.g., discards hosed from the deck or floating on the surface of the water), video reviewers make educated visual estimates. For fish on deck the reviewer may use deck measurements from the vessel monitoring plan to estimate the amount of fish visible. For fish on the deck or in the water, the reviewer may also visually estimate how many round baskets the fish would fill, based on a weight of approximately 80 lbs of whiting per basket.
 - For an entire net spill, reviewers assume the codend is slightly overfull causing the codend failure. If this trip contained full or overflowing hauls prior to this haul, reviewers use the average catch of the two most recent full or overflowing hauls to extrapolate a weight for the lost haul. If this trip did not contain full or overflowing hauls, the reviewer takes uses the known codend capacity of the vessel and adds 10 percent.

Example: Vessel has a codend capacity of 160,000 lbs, codend is spilled as it is pulled up to the vessel, record the discard as 176,000 lbs.

- Some large animals (e.g., sharks, marine mammals) that are easily sorted by the crew may be discarded and identified to species by the video reviewer. Currently only counts are collected for marine mammals, seabirds, turtles, and other protected species.

Fixed Gear Trips

- Fixed gear vessels are required to sort discards by species before discarding. This allows video reviewers to directly estimate a weight by species for IFQ discards.
- Video reviewers use the following methods to estimate the weight of fixed gear discards.
 - Halibut – Fixed gear vessels are required to discard halibut. Crew hold the halibut up to a standardized measuring board in camera view that the video reviewer uses to estimate a length of each fish. PSMFC uses published length-weight relationships to convert the length to a weight for each fish. A discard mortality rate (18 percent for pots and 16 percent for longline) is then applied to pro-rate the amount of weight to debit from the vessel account to account for some survival.
 - Sablefish and other IFQ species –If the fish is whole, the crew holds each fish up to the measuring board and the video reviewer estimates a length. If the fish is not whole, the crew sort the fish into a tote one at a time before discarding to allow the video reviewer to get a piece count. The average retained weight for that species on the fish ticket is then used to extrapolate a total weight for the discarded pieces.
 - For species that are difficult to identify on camera, crew hold individual fish up to the camera and show all side of the fish and any other identifying markers (e.g., spread dorsal spines to identify as short or long spine thornyhead), to assist the video reviewer in identifying the fish.
 - Unidentified discards – Some small number of discards may not be identifiable to species because of incorrect catch handling or poor image quality. The video reviewer estimates the weight to the lowest taxonomic level possible (e.g., flatfish, thornyhead, rockfish). PSMFC then applies a species composition from the following sources to derive an estimated weight at the species level.
 1. Use the ratio of IFQ species for the group from the trip logbook.
 2. Use the ratio of IFQ species for the group from the vessel’s previous logbooks (ratio from all logbooks in the previous year within the same management area) if there are no fish from the group reported in the logbook from that trip.
 3. Use the ratio of IFQ species for the group from the fleet logbooks (ratio from all fleet logbooks in the previous year in the same management area) if there are no fish from the group reported in either the trip logbook or the vessel’s previous logbooks.
 4. Fish that cannot be identified to even a group level are not debited.

How does NMFS decide when to use logbook data and when to use EM data to debit vessel accounts?

NMFS uses the discard estimates generated from the video review to audit captains’ estimates reported on the logbooks. Logbook reports of discards are initially used to debit vessel accounts.

When EM data is available following the video review, NMFS compares the two datasets and decides which weight to use as the final weight to debit from the vessel account. NMFS has developed a set of business rules to use in deciding when to use the logbook data and when to use the EM data for the discard weight. If the logbook estimate falls within an acceptable range of the EM estimate, the logbook estimate remains the data source debited from the account.

In developing the business rules, NMFS reviewed the results of the EFPs and other EM programs and identified the following criteria for an appropriate standard.

- The standard should be based on a comparison of weights, rather than counts, because the IFQ fishery and cooperative allocations are managed by weight.
- The standard should allow for some difference between logbook and EM estimates. EM estimates are intended to be an independent, unbiased estimate of discards, but they are still estimates and have some inherent uncertainty. It is not reasonable to expect that logbook and EM estimates be exactly equal. In addition, a small allowable difference creates an incentive for captains to report correctly to have their own data used for management.
- The program data is being used to account for catch of IFQ species, so there is a need to minimize uncertainty in discard estimates and to consider different rules for overfished and non-overfished species.
- The standard should be rigorous enough to minimize uncertainty, but should not be so challenging as to be unattainable.

With these criteria in mind, NMFS developed the following standards for comparison of logbook and EM data. These business rules would be applied to comparisons of logbook and EM discards on fixed gear, bottom trawl, and non-whiting midwater trawl trips (Table 1), and whiting trips (Table 2) to determine which data would be used for debiting allocations of IFQ species.

Table 1. Business Rules for Fixed Gear IFQ Trips

Species/Group	Rule
All IFQ species/groups	If a discard is reported on EM, but not in the LB, use the EM estimate. If a discard is reported in the LB, but not by EM, use the LB estimate.
Canary rockfish, darkblotched rockfish, bocaccio rockfish South of 40°10'N, cowcod rockfish South of 40°10'N, and yelloweye rockfish, petrale sole, and pacific ocean perch North of 40°10'N (Overfished species*)	If the LB and EM estimate are not equal, use the larger of the two estimates.
All non-overfished IFQ species/groups	If the absolute difference between LB and EM is 10% or less of the EM estimate, use LB. If absolute difference is greater than 10%, use the larger of the two estimates.

All IFQ species/groups	If there is no EM estimate (e.g., due to EM system failure), use LB estimate.
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LB = logbook, EM = electronic monitoring

*Although canary rockfish and petrale sole have been declared rebuilt, they are being managed under rebuilding plans in the current specifications cycle through 2016.

Table 2. Business Rules for Pacific Whiting Trips

Species/Group	Rule
Total weight of discard	If a discard is reported on EM, but not in the LB, use the EM estimate. If a discard is reported in the LB, but not by EM, use the LB estimate.
Total weight of discard	If the absolute difference between LB and EM is 10% or less of the EM estimate, use LB. If absolute difference is greater than 10%, use the larger of the two estimates.
Total weight of discard	If there is no EM estimate (e.g., due to EM system failure), use LB estimate.

LB = logbook, EM = electronic monitoring

On whiting trips, the business rules would be applied to the total weight of the discard, before species composition is extrapolated from the fish ticket, because whiting discards are not reported to species. The comparison is made at the trip level for shorebased trips and at the haul level for MS/CV trips. A haul level comparison for shorebased trips would also be appropriate, but would require time-consuming matching of the hauls between the two datasets. Trip level is an appropriate level of comparison for shorebased trips, because video from 100 percent of the hauls are reviewed generating an EM trip total of IFQ discards by species/group to compare to the logbook trip total. MS/CV data must still be compared at the haul level because MS/CV discard data is incorporated into the mothership observer data at this level. We may revisit comparing shorebased trip data at the haul level in future years. As with shorebased whiting trips, data from fixed gear trips would be compared at the trip level. The business rules would be applied to the IFQ species or group level for all non-whiting trips.