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Rockfish Program (RP) - Electronic Monitoring (EM)
Approach 1 - Maximized Retention
AP Motions and Rationale (Motion 3)
RP EM Prep Document

Approach 1: Maximized retention for all trips

- **Gear:** Pelagic Trawl / Nonpelagic Trawl
- **EM:** 100%
- **At-Sea Observer:** Not applicable
- **Shoreside Sampling:** 100%
- **Purpose of EM:** Compliance monitoring
- **Fee structure:** Full coverage; Potential for vessel to pay applicable % of total EM system maintenance cost relative to their participation in the trawl EM category as a PC vessel.

For all trips, regardless of Pelagic Trawl / Nonpelagic Trawl usage, the EM system would be active from the time the vessel leaves the dock through completion of delivering all catch to a shoreside processor. Shoreside sampling will occur for 100% of deliveries and sampling will be determined by the Observer Program.

The required number of shoreside observers would be determined similar to trawl EM and would be based upon meeting sampling objectives as outlined in the Annual Deployment Plan.

Pros:

- Increased catch accounting by utilizing maximized retention in the same way as the trawl EM category.
- Rapid implementation timeline. These regulations already exist for the trawl EM category and could easily be expanded to the Rockfish Program.
- Fewest total number of observers to meet management needs.

Cons:

- No at-sea discard of any groundfish species. Allowable discards would be restricted to those needed to maintain the safety or stability of the vessel and organisms too large to be retained, and species.
- Unlike the trawl EM category, vessels would not indicate gear usage prior to departure and would be subject to EM coverage for all trips in the Rockfish Program for the duration of a fishing year in which they were approved.

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Rockfish Program (RP) - Electronic Monitoring (EM)
Approach 2 - Trip-by-Trip Discard
AP Motions and Rationale (Motion 3)
RP EM Prep Document

Approach 2: Trip-by-Trip Discard / No-Discard

- **Gear:** Pelagic Trawl / Nonpelagic Trawl
- **EM:** 100% on all trips
- **At-Sea Observer:** 100% on trips where discards occur
- **Shoreside Sampling:** 100% on EM trips, Undetermined for Discard Trips
- **Purpose of EM:** Compliance monitoring
- **Fee structure:** Full coverage; Potential for vessel to pay applicable % of total EM system maintenance cost relative to their participation in the trawl EM category as a PC vessel.

Prior to departing the dock, vessels must indicate whether they intend to discard any catch. Vessels that indicate the intent to discard catch would be required to carry an observer for that trip. Trips where the vessel indicates they are not going to discard would require full retention of all species and shoreside sampling by observers at the plant. Regardless of the intent to discard, all vessels would be subject to 100% EM coverage on all trips.

The required number of shoreside observers would be determined similar to trawl EM and would be based upon meeting sampling objectives as outlined in the Annual Deployment Plan.

Pros:

- Expedited implementation timeline. Most of the necessary regulations already exist for the trawl EM category and could easily be expanded to the Rockfish Program, but additional regulation writing would be needed.
- This approach would allow vessels to discard catch for some of their trips in a given fishing year, regardless of gear type.

Cons:

- Additional observers would be required when compared to approach 1.
- For trips where discards are allowed, catch accounting of discards would be based on extrapolation of at-sea samples.

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Rockfish Program (RP) - Electronic Monitoring (EM)
Approach 3 - Halibut Discard Chute
AP Motions and Rationale (Motion 3)
RP EM Prep Document

Approach 3: Halibut Enumeration and Lengthing

- **Gear:** Pelagic Trawl / Nonpelagic Trawl
- **EM:** 100%
- **At-Sea Observer:** Not applicable
- **Shoreside Sampling:** 100%
- **Purpose of EM:** Verify retention requirements (all species except halibut) and Partial catch accounting (for halibut discards)
- **Fee structure:** Full coverage; Potential for vessel to pay applicable % of total EM system maintenance cost relative to their participation in the trawl EM category as a PC vessel.

Vessels would be permitted to discard Pacific halibut (*Hippoglossus stenolepis*) on all trips in the Rockfish Program contingent on the usage of a halibut discard chute. The discard chute would need to allow for the collection of lengths of discarded halibut. Under this approach, no at-sea observers would be necessary.

The required number of shoreside observers would be determined similar to trawl EM and would be based upon meeting sampling objectives as outlined in the Annual Deployment Plan.

Pros:

- This approach would allow vessels to discard halibut for all trips in a given fishing year, regardless of gear type.
- Avoids estimates of halibut PSC being derived from extrapolation of at-sea samples

Cons:

- Slower implementation timeline. While some of the necessary regulations already exist for the trawl EM category and could easily be expanded to the Rockfish Program, additional regulations would be needed to ensure the halibut discard chute meets management needs.
- Would create more complicated catch accounting and require programming changes to enable 2 streams of data per trip (offload data from observers and halibut data from EM reviewers, after the fact)
- There would be a time-lag before halibut PSC data was available, which could create a problem if participants ever got close to halibut PSC limit.

- Less robust catch accounting than approach 1, but still an increase in comparison to Status Quo. Lengths estimated using the discard chute would likely be less precise than those collected by a shoreside observer.
- Increased EM review costs associated with verification of halibut lengths whether the lengths are collected by Artificial Intelligence or human review staff.

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Rockfish Program (RP) - Electronic Monitoring (EM)
Approach 4 - Expanded Discard Chute
AP Motions and Rationale (Motion 3)
RP EM Prep Document

Approach 4: Expanded Discard Chute

- **Gear:** Pelagic Trawl / Nonpelagic Trawl
- **EM:** 100%
- **At-Sea Observer:** Yes (something less than 100%)
- **Shoreside Sampling:** No
- **Purpose of EM:** Increased (Full?) catch accounting
- **Fee structure:** Full coverage; Potential for vessel to pay applicable % of total EM system maintenance cost relative to their participation in the trawl EM category as a PC vessel.

Vessels would be permitted to discard Pacific halibut (*Hippoglossus stenolepis*) and other groundfish species, such as Giant Grenadier (*Albatrossia pectoralis*), on all trips in the Rockfish Program contingent on the usage of a discard chute. The discard chute would need to allow for the collection of lengths of discarded halibut and speciation of other groundfish species. Additional length data may also need to be collected. Under this approach, no at-sea observers would be necessary.

The required number of shoreside observers would be determined similar to trawl EM and would be based upon meeting sampling objectives as outlined in the Annual Deployment Plan.

Pros:

- This approach would allow vessels to discard halibut and other groundfish for all trips in a given fishing year, regardless of gear type.

Cons:

- Slowest implementation timeline.
    - While some of the necessary regulations already exist for the trawl EM category and could easily be expanded to the Rockfish Program, additional regulations would be needed to ensure the halibut discard chute meets management needs.
    - Additional analysis would be needed to examine the impact linked to the loss of additional biological data. This approach would be combined with some level of at-sea observer coverage to obtain biological samples.
- Less robust catch accounting than all approaches and Status Quo and increased EM review costs associated with catch accounting. NMFS would have to develop

methods to obtain estimated lengths and weights for multiple species or methods to convert species counts to estimated weights. Pre-implementation work would be required to demonstrate that species identification and weight conversion is possible.

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Rockfish Program EM Approaches

Approach	Components	Description	Pros	Cons
Approach 1: Maximized Retention for all trips	**Gear:** Pelagic Trawl / Nonpelagic Trawl **EM:** 100% **At-Sea Observer:** Not applicable **Shoreside Sampling:** 100% **Purpose of EM:** Compliance monitoring **Fee structure:** Full coverage; Potential for vessel to pay applicable % of total EM system maintenance cost relative to their participation in the trawl EM category as a PC vessel.	For all trips, regardless of Pelagic Trawl / Nonpelagic Trawl usage, the EM system would be active from the time the vessel leaves the dock through completion of delivering all catch to a shoreside processor. Shoreside sampling will occur for 100% of deliveries and sampling will be determined by the Observer Program. The required number of shoreside observers would be determined similar to trawl EM and would be based upon meeting sampling objectives as outlined in the Annual Deployment Plan.	Increased catch accounting by utilizing maximized retention in the same way as the trawl EM category. **Rapid implementation timeline.** These regulations already exist for the trawl EM category and could easily be expanded to the Rockfish Program. Fewest total number of observers to meet management needs.	No at-sea discard of any groundfish species. Allowable discards would be restricted to those needed to maintain the safety or stability of the vessel and organisms too large to be retained, and species. Unlike the trawl EM category, vessels would not indicate gear usage prior to departure and would be subject to EM coverage for all trips in the Rockfish Program for the duration of a fishing year in which they were approved.

Approach 2: Trip-by-Trip Discard / No-Discard	**Gear:** Pelagic Trawl / Nonpelagic Trawl **EM:** 100% on all trips **At-Sea Observer:** 100% on trips where discards occur **Shoreside Sampling:** 100% on EM trips, Undetermined for Discard Trips **Purpose of EM:** Compliance monitoring **Fee structure:** Full coverage; Potential for vessel to pay applicable % of total EM system maintenance cost relative to their participation in the trawl EM category as a PC vessel.	Prior to departing the dock, vessels must indicate whether they intend to discard any catch. Vessels that indicate the intent to discard catch would be required to carry an observer for that trip. Trips where the vessel indicates they are not going to discard would require full retention of all species and shoreside sampling by observers at the plant. Regardless of the intent to discard, all vessels would be subject to 100% EM coverage on all trips. The required number of shoreside observers would be determined similar to trawl EM and would be based upon meeting sampling objectives as outlined in the Annual Deployment Plan.	**Expedited implementation timeline.** Most of the necessary regulations already exist for the trawl EM category and could easily be expanded to the Rockfish Program, but additional regulation writing would be needed. This approach would allow vessels to discard catch for some of their trips in a given fishing year, regardless of gear type.	Additional observers would be required when compared to approach 1. For trips where discards are allowed, catch accounting of discards would be based on extrapolation of at-sea samples.

Approach 3: Halibut Enumeration and Length Collection	**Gear:** Pelagic Trawl / Nonpelagic Trawl **EM:** 100% **At-Sea Observer:** Not applicable **Shoreside Sampling:** 100% **Purpose of EM:** Verify retention requirements (all species except halibut) and Partial catch accounting (for halibut discards) **Fee structure:** Full coverage; Potential for vessel to pay applicable % of total EM system maintenance cost relative to their participation in the trawl EM category as a PC vessel.	Vessels would be permitted to discard Pacific halibut (*Hippoglossus stenolepis*) on all trips in the Rockfish Program contingent on the usage of a halibut discard chute. The discard chute would need to allow for the collection of lengths of discarded halibut. Under this approach, no at-sea observers would be necessary. The required number of shoreside observers would be determined similar to trawl EM and would be based upon meeting sampling objectives as outlined in the Annual Deployment Plan.	This approach would allow vessels to discard halibut for all trips in a given fishing year, regardless of gear type. Avoids estimates of halibut PSC being derived from extrapolation of at-sea samples	**Slower implementation timeline.** While some of the necessary regulations already exist for the trawl EM category and could easily be expanded to the Rockfish Program, additional regulations would be needed to ensure the halibut discard chute meets management needs. Would create more complicated catch accounting and require programming changes to enable 2 streams of data per trip (offload data from observers and halibut data from EM reviewers, after the fact) There would be a time-lag before halibut PSC data was available, which could create a problem if participants ever got close to halibut PSC limit. Lengths estimated using the discard chute would likely be less precise than those collected by a shoreside observer. Increased EM review costs associated with verification of halibut lengths whether the lengths are collected by Artificial Intelligence or human review staff.

Approach 4: Expanded Discard Chute	**Gear:** Pelagic Trawl / Nonpelagic Trawl **EM:** 100% **At-Sea Observer:** N/A **Shoreside Sampling:** No **Purpose of EM:** Increased (Full?) catch accounting **Fee structure:** Full coverage; Potential for vessel to pay applicable % of total EM system maintenance cost relative to their participation in the trawl EM category as a PC vessel.	Vessels would be permitted to discard Pacific halibut (*Hippoglossus stenolepis*) and other groundfish species, such as Giant Grenadier (*Albatrossia pectoralis*), on all trips in the Rockfish Program contingent on the usage of a discard chute. The discard chute would need to allow for the collection of lengths of discarded halibut and speciation of other groundfish species. Additional length data may also need to be collected. Under this approach, no at-sea observers would be necessary. The required number of shoreside observers would be determined similar to trawl EM and would be based upon meeting sampling objectives as outlined in the Annual Deployment Plan.	This approach would allow vessels to discard halibut and other groundfish for all trips in a given fishing year, regardless of gear type.	**Slowest implementation timeline.** ● While some of the necessary regulations already exist for the trawl EM category and could easily be expanded to the Rockfish Program, additional regulations would be needed to ensure the halibut discard chute meets management needs. ● Additional analysis would be needed to examine the impact linked to the loss of additional biological data. This approach would be combined with some level of at-sea observer coverage to obtain biological samples. Less robust catch accounting than all approaches and Status Quo and increased EM review costs associated with catch accounting. ● NMFS would have to develop methods to obtain estimated lengths and weights for multiple species or methods to convert species counts to estimated weights. ● Pre-implementation work would be required to demonstrate that species identification and weight conversion is possible.