Draft 2025 Annual Deployment Plan for Observers and Electronic Monitoring in the Groundfish and Halibut Fisheries off Alaska

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Contents

Executive Summary

This draft 2025 Annual Deployment Plan (ADP) describes how the National Marine Fisheries Service (NMFS) intends to assign at-sea and shoreside fishery observers and electronic monitoring (EM) to vessels and processing plants engaged in halibut and groundfish fishing operations in the North Pacific.

The North Pacific Observer Program (Observer Program) is the largest observer program in the country and is responsible for monitoring a fleet of nearly a thousand vessels that fish a combination of hook-and-line, pot, and trawl gear across the Alaska Exclusive Economic Zone (EEZ) area of roughly 3.77 M km^2. Fishing activities are classed as belonging to either partial or full coverage components of the program. In the full coverage component of the program, every trip is monitored by 1 or 2 observers and the vast majority of groundfish harvest is covered by this portion of the program. In the partial coverage component, a subset of trips are randomly selected for monitoring by an observer or EM system. In 2025, NMFS expects to monitor 2,590 trips, consisting of an estimated 16,058 days in the full coverage component of the program, and 715 trips and 4,638 days in the partial coverage component. Despite being a much smaller component of the overall monitoring, the ADP focuses on the partial coverage component of the program and outlines the science-driven method for deployment of observers and EM systems to support statistically reliable data collection. Specifically, the ADP describes the scientific deployment design and selection rate—the portion of trips that are sampled by observers and EM— for the partial coverage category.

Preliminary Budget & Cost Assumptions

The Observer Program has three monitoring models: 1) at-sea observers, 2) fixed-gear EM, and 3) at-sea compliance EM on vessels combined with shoreside observers to sample deliveries in the pollock trawl fishery.

In full coverage, every trip is monitored by 1 or 2 observers if monitoring is completed at sea, or by an EM system at sea and an observer at the processing plant receiving catch from the EM monitored vessel. For full coverage trips, vessel and processing plant owners/operators are responsible for procuring observer and EM hardware services directly through NMFS-authorized companies and EM service providers.

For partial coverage trips, vessel owners/operators declare each trip in a NMFS database and if the trip is selected for coverage, a NMFS-contracted observer provider company arranges for coverage. Funding for partial coverage is obtained from an ex-vessel fee on landings from the prior year and is used by NMFS to pay for observer and EM services. To estimate the costs of monitoring in the partial coverage category, cost models were constructed for each monitoring method. Each model incorporates: the best available information; assumptions about both fixed and variable costs; and known economy of scale. For this draft ADP, the NMFS set a preliminary budget of $4.4M to support monitoring of the partial coverage fisheries in 2025. Both the cost estimates and the budget are ***preliminary*** and will be updated in the final 2025 ADP to be presented to the NPFMC at their December 2024 meeting.

Deployment Design

The deployment design for the partial coverage component of the program involves three elements: 1) the selection method to accomplish complete or random sampling; 2) division of the full and partial populations into selection groups or strata; and 3) the allocation of deployment among strata.

Selection method
In full coverage, every trip is selected and monitored by 1 or 2 observers if monitoring is completed at sea, or by an EM system at sea and an observer at the processing plant receiving catch from the EM monitored vessel.

For 2025, NMFS will implement trip selection from all ports throughout Alaska to assign both at-sea observers and EM to fishing events for vessels in the partial coverage category. Trip-selection refers to the use of the fishing trip as the primary sampling unit, and is accomplished using the Observer Declare and Deploy System (ODDS). The rates at which trips are randomly selected by ODDS for monitoring are determined by the analysis in the ADP.

In the Gulf of Alaska (GOA), every EM Trawl trip is monitored by an EM system at sea and by an observer at the processing plant receiving catch from EM monitored vessels. NMFS will randomly select offloads for biological sampling by observers in shoreside processing plants. Because biological sampling occurs only from randomly selected trips, GOA EM Trawl trips are still considered "partial coverage," and are still subject to the observer fee, despite the fact they are fully monitored at sea by EM for catch and discard events.

Sampling strata
Fishing trips are broadly divided into groups, or selection pools, defined by whether monitoring is required on all trips (Full Coverage) or a subset of trips (Partial Coverage) as well as whether the trips will be monitored at sea by observers or EM. Selection pools may be further split into sampling strata, each with a specified monitoring rate. In 2025, NMFS will implement 6 selection pools and 10 sampling strata.

<u>Full Coverage Observer Pool</u>
Vessels and processors in the full observer coverage category must comply with observer and EM coverage requirements at all times when fish are harvested or processed. Every trip is monitored. Vessels and processing plants in full coverage include: Catcher/Processors (with limited exceptions); Motherships; Catcher Vessels participating in programs that have transferable Prohibited Species Catch (PSC) allocations as part of a catch share Limited Access Privilege Programs; and shoreside processors receiving or processing Bering Sea pollock.

<u>BSAI EM Trawl Gear Pool</u>
NMFS has issued a final rule to implement EM on pollock catcher vessels using pelagic trawl gear. Vessels must opt-in annually by November 1, and be approved by NMFS, to participate in the EM Trawl category for the upcoming fishing year. In the Bering Sea and Aleutian Islands (BSAI), these vessels are in full coverage and compliance monitoring with an EM system is required on every trip. In addition, processing plants are responsible for procuring observers to ensure that all EM Trawl deliveries by catcher vessels or tender vessels to shoreside processors are subject to required dockside monitoring.

<u>Partial Coverage Observer Trip-Selection Pool</u>
There are 4 observer trip-selection strata based on gear and Fisheries Management Plan area for 2025:
- *Observer Fixed-gear BSAI*
- *Observer Fixed-gear GOA*
- *Observer Trawl BSAI*
- *Observer Trawl GOA*

Partial Coverage EM Fixed-Gear Pool
The EM Fixed-gear selection pool consists of 2 sampling strata:

- *EM Fixed-gear BSAI*
- *EM Fixed-gear GOA*

Vessel owners/operators opt into the EM Fixed-gear selection pool and, if approved by NMFS, that vessel will remain in the EM selection pool for the duration of the calendar year. All requests to be in or out of the EM selection pool for 2025 must be received in ODDS by 1 November 2024. NMFS may approve or deny requests by vessels to be added to the EM Fixed-gear pool based on the priorities identified by NMFS and supported by the Council, including: vessel size, fishing effort, minimizing data gaps, and cost efficiency (e.g., the requesting vessels had either no fishing history or fished too few trips to indicate cost-effectiveness).

Each year, all vessels in the EM Fixed-gear selection pool — including those that were previously in the pool — are required to submit and follow an NMFS-approved Vessel Monitoring Plan (VMP). As part of the VMP approval, NMFS will assess a vessel's past adherence to their approved VMP. The quantity and severity of compliance issues that negatively impact data quality and collection will be used to assess vessel eligibility to participate in the EM Fixed-gear program.

GOA EM Trawl Gear Pool
NMFS has issued a final rule to implement EM on pollock catcher vessels using pelagic trawl gear. Vessels must opt-in annually by 1 November, and be approved by NMFS, to participate in the EM Trawl category for the upcoming fishing year. Once approved, all trips where the vessel targets pollock with only pelagic trawl gear will be subject to the EM Trawl regulations. Vessels must indicate prior to the trip whether they intend to deploy pelagic trawl gear during a trip and compliance monitoring with an EM system is required on every trip. In addition, observers will monitor EM deliveries by catcher vessels or tender vessels to shoreside processors.

No-selection Pool
The no-selection pool is composed of vessels that will have no probability of carrying an observer or EM system on any trips for the 2025 fishing year. This stratum includes vessels <40 feet length overall and/or fishing with jig gear

Allocation Strategy for Partial Coverage
Allocation strategy refers to the method of allocating monitoring among strata to sample units. In 2025, the NMFS proposes to implement the Proximity Allocation method to deploy fixed-gear EM and at-sea observers in the partial coverage category. This method is precautionary with respect to obtaining data from all types of fishing activity (decreasing data gaps) while protecting against high variance associated with low sample sizes. This allocation method applies to all sampled partial coverage strata (i.e., does not apply to no-selection stratum) except the EM Trawl GOA stratum.

For the EM Trawl strata in the GOA, NMFS will implement Dockside Monitoring and the allocation method will be set by NMFS based on maximizing observer sampling duties.

Dockside Monitoring
Dockside monitoring by observers will occur in shoreside processing plants to enable sampling of deliveries from pollock vessels fishing with pelagic trawl gear. The data collection objectives are to:

1) Enumerate salmon bycatch from EM deliveries and deliveries that were observed at sea;
2) Enumerate halibut bycatch from EM deliveries;
3) Collect salmon genetic information to determine bycaught salmon area of origin; and
4) Collect biological samples from non-salmon species from EM deliveries.

For EM Trawl vessels in the GOA that deliver pollock to shoreside processors or tenders, observers in the processing plant will complete objectives 1–3 (above) for every EM offload and will complete objective 4 (above) for a randomly selected subset of EM offloads.

For vessels in the GOA pollock fishery that do not participate in the EM Trawl program and deliver to shoreside processors, observers in the processing plant will complete objectives 1 and 3 for the offloads from trips that are randomly selected for at-sea observer coverage. Halibut PSC estimates will be based on sample data collected by at-sea observers using current CAS methods. Objective 4 will be completed at-sea by the vessel observer, as has been the norm in the past.

For observed trips in the GOA pollock fishery outside of the EM Trawl strata that are delivered to tender vessels (as well as trawl trips outside of the pollock fishery), data to meet objectives 1 through 4 will be obtained from observer at-sea samples of the total catch.

For trips in the BSAI trawl pollock fishery, for catcher vessels both in the EM Trawl pool and those not in EM Trawl, a census of salmon will be completed during the offload.

Selection Rates

The *preliminary* selection rates (rounded to the nearest whole number) for strata in 2025 are:

Component	Pool	Stratum	Selection Rate (%)	Number of Trips Expected to be Observed	Monitoring Location & Purpose
Partial Coverage	**Observer Trip Selection**	Fixed-gear BSAI	23	59	At-sea for discard & PSC estimation / biological sampling
		Fixed-gear GOA	7	136	
		Trawl BSAI	47	11	**Plus pollock trawl deliveries monitored dockside for salmon on selected trips**
		Trawl GOA	12	37	
	EM Fixed-gear Trip Selection	EM Fixed-gear BSAI	48	33	At-sea for discard & PSC estimation
		EM Fixed-gear GOA	13	111	
	EM Trawl GOA	EM Trawl GOA	100	984	At-sea EM compliance monitoring
			100	984	Dockside salmon & halibut PSC accounting
			33	328	Dockside biological sampling

Component	Pool	Stratum	Selection Rate (%)	Number of Trips Expected to be Observed	Monitoring Location & Purpose
	No-selection	No-selection	0	0	n/a
Full Coverage	**Full Coverage**	Full Coverage	100	918	At-sea for discard & PSC estimation / biological sampling Plus pollock trawl deliveries monitored dockside for salmon
	EM Trawl BSAI	EM Trawl BSAI	100	1,672	At-sea EM compliance monitoring
					Dockside salmon & halibut PSC accounting / biological sampling

Introduction

Purpose and Authority

This 2025 Annual Deployment Plan (ADP) describes how the National Marine Fisheries Service (NMFS) intends to assign at-sea and shoreside fishery observers and electronic monitoring (EM) to vessels and processing plants engaged in halibut and groundfish fishing operations in the North Pacific. This plan is developed under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1862), the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area (BSAI FMP), the Fishery Management Plan for Groundfish of the Gulf of Alaska (GOA FMP), and the Northern Pacific Halibut Act of 1982. The ADP outlines the science-driven method for deployment of observers and EM systems to support statistically reliable data collection. The ADP is a core element in implementation of section 313 of the Magnuson-Stevens Act, which authorizes the North Pacific Fishery Management Council (Council) to prepare a fishery research plan in consultation with NMFS.

The Council's role in the annual deployment plan process is described in the analysis that was developed to support the restructured observer program (NPFMC 2011) and in the preamble to the proposed rule to implement the restructured observer program (77 FR 23326). The preamble to the proposed rule notes that:

> *NMFS would consult with the Council each year on the deployment plan for the upcoming year. The Council would select a meeting for the annual report consultation that provides sufficient time for Council review and input to NMFS. The Council would likely need to schedule this review for its October meeting. The Council would not formally approve or disapprove the annual report, including the deployment plan, but NMFS would consult with the Council on the annual report to provide an opportunity for Council input. The final deployment plan would be developed per NMFS' discretion to meet data needs for conservation and management. (77 FR 23344 & 23345).*

The ADP follows the process envisioned by the Council and NFMS when the restructured observer program was developed and implemented. As a result, both the ADP development and the evaluation of data collected by observers and EM is an ongoing process. NMFS is committed to working with the Council throughout the annual review and deployment cycle to identify improved analytical methods and ensure Council and public input is considered.

More details on the legal authority and purpose of the ADP are found in the Final Rule for Amendment 86 to the BSAI FMP and Amendment 76 to the GOA FMP (77 FR 70062, 21 November 2012). Further details on the integration of EM deployment into the ADP process are found in the final rule to integrate EM into the Observer Program (82 FR 36991).

North Pacific Groundfish and Halibut Observer Program

NMFS implements the Council's fishery research plan through the North Pacific Groundfish and Halibut Observer Program (Observer Program). The Observer Program provides the regulatory framework and support infrastructure for stationing observers and EM systems to collect data necessary for the

conservation, management, and scientific understanding of the commercial groundfish and Pacific halibut fisheries of the BSAI and GOA management areas. Electronic monitoring is broadly defined as technological tools which collect fishing data to support stock assessment and fishery management. In the North Pacific, EM is usually more specifically referencing video imagery and sensors to provide catch and discard information and compliance monitoring after video review.

The Observer Program is the largest observer program in the country and is responsible for monitoring a fleet of nearly a thousand vessels that fish a combination of hook-and-line, pot, and trawl gear across the Alaska Exclusive Economic Zone (EEZ) area of roughly 3.77 M km^2. The deployment of monitoring assets (observers and/or EM) is the first stage of a hierarchical sampling design (Cahalan and Faunce 2020). Since 2013, the fishing trip has been the primary sampling unit. Fishing trips made by vessels are assigned to either full or partial coverage.

In full coverage, every trip is monitored by 1 or 2 observers if monitoring is completed at sea, or by an EM system at sea and an observer at the processing plant receiving catch from EM monitored vessels. For full coverage trips, vessel and processing plant owners/operators are responsible for procuring observer and EM hardware services directly through NMFS-authorized companies. There are currently three NMFS-permitted observer service provider companies, two NMFS-approved EM hardware companies, and one EM review organization.

For partial coverage trips, vessel owners/operators declare each trip in a NMFS database and if the trip is selected for coverage, a NMFS-contracted observer provider company arranges for coverage. Funding for partial coverage is obtained from an ex-vessel fee on landings from the prior year and is used by NMFS to pay for observer and EM services. In the partial coverage component, the ADP specifies the scientific sampling design and the selection rate—the portion of trips that are sampled. NMFS and the Council recognized that selection rates in partial coverage, for any given year, would be dependent on available revenue generated from fees on groundfish and halibut landings. The annual apportionment of the budgets for observer deployment and EM system deployment is also reflected in the ADP process. The ADP process allows NMFS to adjust deployment in each year so that sampling can be achieved within financial constraints. While fisher participation in observer monitoring is automatic, if a vessel wishes to participate in at-sea EM they must volunteer, be approved by NMFS, and follow a vessel monitoring plan. Cost efficiency of an EM vessel may change over time, but hardware infrastructure cannot be easily or cheaply modified to respond to different fishing effort patterns. As a result of these different rules of participation, NMFS evaluates each vessel volunteering for EM for cost efficiency, minimization of data gaps, and vessel size (as a proxy for ability to carry an observer) prior to accepting them into the EM strata.

Observer Program Data Collection

Data collection through the Observer Program provides a reliable and verifiable method for NMFS to gain fishery discard and biological information on fish, and data concerning seabird and marine mammal interactions with fisheries. These data contribute to the best available scientific information used to manage the fisheries in the North Pacific. The design of the holistic monitoring program that meets mandates of the Magnuson-Stevens Act, Marine Mammal Protection Act (MMPA), and Endangered Species Act (ESA) ensures that multiple monitoring programs are not required on the fleet. Observers and EM systems provide fishery-dependent information that is used to estimate total catch and interactions with protected species. Managers use these data to manage groundfish and Prohibited Species Catch

(PSC) within established limits and to document and quantify fishery interactions with protected species. Much of this information is expeditiously available (e.g., daily or at the end of a trip, depending on the type of vessel) to ensure effective management. Scientists also use fishery-dependent data to assess fish stocks, evaluate marine mammal and seabird interactions with fishing gear, characterize fishing impacts on habitat, and provide data for fisheries and ecosystem research and fishing fleet behavior. While both observers and EM systems provide fishery-dependent data, these monitoring methods provide different information on catch and interactions with protected species. Table 1 summarizes the broad suite of data collection through the different monitoring approaches under the Observer Program.

ADP Process

On an annual basis, NMFS develops an ADP to explain how observers and EM will be deployed for the upcoming calendar year, and prepares an Annual Report that evaluates the performance of the prior year's ADP implementation. NMFS and the Council created this ADP / Annual Report process to provide flexibility in the deployment of monitoring assets used to gather reliable data for estimation of catch in the groundfish and halibut fisheries off Alaska.

The Annual Report is presented to the Council in June each year and informs the Council and the public about how well various aspects of the program are working. The review highlights areas where improvements are recommended to: 1) collect the data necessary to manage the groundfish and halibut fisheries; 2) maintain the scientific goal of unbiased data collection, and; 3) accomplish the most effective and efficient use of the funds collected through the observer fees.

A draft ADP that outlines sampling for the upcoming year is prepared in October each year and a final ADP is completed in December. The ADP allows for partial coverage strata definitions, participation requirements, allocation methods, and selection rates to change each year. Strata help define how trips will be monitored (for example which vessels belong to observer or EM selection pools and the requirements necessary to participate in each) and may be based on factors such as gear type, vessel length, home or landing port, availability of EM systems, funding, and monitoring goals. Since 2013, aspects of deployment have been adjusted through the ADP (e.g., NMFS 2020; AFSC and AKR 2024). The modifications have included moving types of partial coverage trips between selection pools or strata, varying the selection unit from vessel to trip, and changes in selection rates used to deploy observers and EM in the partial coverage category (Table 2).

The flexibility offered by the ADP allows NMFS and the Council to achieve transparency, accountability, and efficiency from the Observer Program to meet its myriad objectives. The ADP process ensures that the best available information is used to evaluate deployment, including scientific review and Council input, to annually determine deployment methods. The Observer Program is accountable to operate within annual financial constraints that are dependent on the amount of fee revenue collected from groundfish and halibut landings in the prior year and the anticipated future costs of monitoring and fishing effort.

Summary of 2024 ADP

At the October 2019 Council meeting, the Council recommended an increase in the observer fee percentage from 1.25 percent to 1.65 percent for the Partial Coverage Observer Program and dovetailed that recommendation with continued development of mechanisms to improve cost efficiency in the

program as its highest priority. In response to a Council priority to improve cost efficiencies in the partial coverage category and to integrate upcoming changes into the observer program, including incorporating regulatory changes required by the Pacific Cod Trawl Cooperative (PCTC) and EM Trawl, NMFS initiated an evaluation of partial coverage to compare alternative scientifically robust, cost-effective sampling plans. The integrated evaluation of data collection methods (observers and EM) was presented in the draft 2024 ADP (NMFS 2023a) and incorporated the goal of spending the limited, available funding more efficiently such that the most coverage (both EM and observers) is achieved for a range of budgets. The analysis evaluated the trade-offs between different monitoring designs, including:

- Relative per unit cost efficiency of each design
- Statistical efficiency of each design
- Relative impact on data quality (e.g., timeliness, ability detect rare events)
- Relative scalability of each design

The evaluation in the draft 2024 ADP (NMFS 2023a), included several stratification methods (ways to divide the sample population of trips into groups, or strata) and allocation approaches (how much to sample in each stratum) and provided an appropriate sampling plan for deployment in 2024 and beyond.

The final 2024 ADP created a stratification definition based on monitoring method (Observer, EM Fixed-gear, EM Trawl), Fishery Management Plan (FMP) area (BSAI, GOA), and gear (Fixed, Trawl), where Fixed-gear combines hook-and-line and pot gear (Table 2).

In 2024, NMFS implemented the Proximity Allocation Method to deploy observers and EM (NMFS 2023a, NMFS 2023b). The Proximity Allocation Method is designed to spread sampled trips throughout the fisheries to increase the proportion of trips that are sampled or near a sampled neighbor and to be consistent between strata within a specified budget, while also protecting against small sample sizes within a stratum. As such, the Proximity Allocation Method is precautionary with respect to obtaining data from all types of fishing activity (decreasing data gaps) while protecting against high variance associated with low sample sizes. This allocation method was applied to all sampled strata except the no-selection stratum and the EM Trawl stratum. The no-selection stratum is not sampled and thus no allocation method is applied. Shoreside fishery observers will enumerate salmon and halibut and collect salmon genetics on all EM deliveries (100%) and will randomly select and sample 33% of all deliveries for other biological samples from vessels participating in the EM Trawl strata in the GOA. In the BSAI, all offloads from EM Trawl trips will be monitored.

Table 1. Data collected by at-sea observers, EM Trawl with shoreside observers, and EM Fixed-gear. A green checkmark (✓) indicates that the data are collected, a red ✕ indicates that the data are not collected, and blue arrows (⇔) indicate that compared to at-sea observers, some, but not all, data are collected.

Data Collected		At-sea Observers	EM Trawl + Shoreside Observers	EM Fixed-gear
Catch				
	Trip Characteristics (e.g., duration, total effort)	✓	✓	✓
	Haul Characteristics (e.g., location, effort, depth, gear performance)	✓	⇔	⇔
	Haul Level Species Composition - Counts	✓	✕	✓
	Haul Level Species Composition - Weights	✓	✕	✕
	Trip Level Species Composition - Counts	✓	✓	✓
	Trip Level Species Composition - Weights	✓	✓	✕
	Speciation of Similar Species (e.g., large red rockfish, king crabs)	✓	✓	✕
	Haul Specific Salmon PSC Enumeration	✓	✕	⇔
	Trip Specific Salmon PSC Enumeration	✓	✓	⇔
	USCG Marine Casualty Information	✓	⇔	⇔
Biologicals				
	Sex Length Data (fish and crab)	✓	✓	✕
	Pacific Halibut Size and Mortality Assessment	✓	✓	✕
	Trip Specific Age Structures (e.g., otoliths, scales, fin rays)	✓	✓	✕
	Trip Specific Tissue for Genetic Analyses	✓	✓	✕
	Tagged Organism Information	✓	✓	✕
	Stomach Samples (trophic interactions)	✓	⇔	✕
	Maturity Information	✓	⇔	✕
Protected Species				
	Marine Mammal Injury and Mortality	✓	⇔	⇔
	Marine Mammal Tissue (genetics, trophic information, contaminants)	✓	✕	✕
	Marine Mammal Interactions (non-lethal, non-injury)	✓	✕	⇔
	Marine Mammal Sightings	✓	✕	✕
	Verify Use of Seabird Avoidance Methods	✓	n/a	✓
	Seabird Mortality (catch by gear)	✓	✓	✓
	Seabird Mortality (vessel interactions)	✓	⇔	⇔
	ESA-Listed Seabird Carcass	✓	⇔	✕

Table 2. Sampling strata and selection pools in the partial coverage category from 2013 to the present. The partial coverage selection rates set through the Annual Deployment Plan are noted and the realized coverage rates evaluated in each Annual Report are noted in parentheses. PreIm = pre-implementation, prior to a fully regulated program; CP = catcher/processor vessel; CV = catcher vessel; GOA= Gulf of Alaska; BS = Bering Sea; H&L = hook-and-line gear; LOA = vessel length overall; EM = electronic monitoring.

<table>
<tr><th rowspan="2">Year</th><th colspan="5">Observer Trip Selection</th><th colspan="2">EM Fixed-gear trip selection pool
EM required on randomly selected</th><th colspan="2">EM Trawl</th><th>Observer vessel selection pool</th><th colspan="2">No-selection pool
Observer coverage not required</th></tr>
<tr><th colspan="4">Trip-selection across all ports
Observer coverage required on all randomly selected trips</th><th>Port-based Trip Selection*</th></tr>
<tr><td>2025 (preliminary)</td><td>Trawl BSAI: 47%</td><td>Trawl GOA: 12%</td><td>Fixed-gear BSAI: 23%</td><td>Fixed-gear GOA: 7%</td><td rowspan="4">n/a</td><td>EM Fixed-gear GOA: 13%</td><td>EM Fixed-gear BSAI: 48%</td><td>GOA: 100% at-sea EM + 100% shoreside salmon monitoring + 33% for biologicals</td><td rowspan="6">BSAI: 100% shoreside monitoring + 100% at-sea EM</td><td rowspan="8">n/a</td><td colspan="2" rowspan="3">Vessels < 40’ LOA and Jig gear</td></tr>
<tr><td>2024</td><td>Trawl BSAI: 72%</td><td>Trawl GOA: 21%</td><td>Fixed-gear BSAI: 44%</td><td>Fixed-gear GOA: 13%</td><td>EM Fixed-gear GOA: 24%</td><td>EM Fixed-gear BSAI: 74%</td><td rowspan="5">GOA: 33% shoreside monitoring + 100% at-sea EM</td></tr>
<tr><td>2023</td><td colspan="2">Trawl: 22.7% (32.3)</td><td>H&L: 17.9% (19.4)</td><td>Pot: 17.1% (17.8)</td><td colspan="2" rowspan="5">EM Fixed-gear (H&L and Pot): 30%</td></tr>
<tr><td>2022</td><td colspan="2">Trawl: 29.7% (29)</td><td>H&L: 19% (14.6)</td><td>Pot: 17.5% (18.1)</td></tr>
<tr><td rowspan="2">2021</td><td colspan="4">Sep. 1 – Dec. 31:
Trawl: 21% (28.2) H&L: 18% (17.2) Pot: 18% (20.5)</td><td>All ports</td><td rowspan="4">Vessels < 40’ LOA and Jig gear</td><td rowspan="4">EM Innovation Research 2–4 vessels</td></tr>
<tr><td colspan="4">Jan. 1 – Aug. 31: Limited waivers due to COVID-19</td><td>13 ports</td></tr>
<tr><td rowspan="3">2020</td><td colspan="4">Mar. 26 – Jun. 30: Waivers issued due to COVID-19</td><td>13 ports</td></tr>
<tr><td colspan="4">Mar. 26 – Jun. 30: Waivers issued due to COVID-19</td><td>Kodiak only</td></tr>
<tr><td colspan="4">Jan. 1 – Mar. 25:
Trawl: 20% (22.4) H&L: 15% (13.4) Pot: 15% (15.5)</td><td>Deployment in all ports</td></tr>
<tr><td>2019</td><td>Trawl: 24% (25.2)</td><td>Trawl Tender: 27% (35.7)</td><td>H&L: 18% (17.6)</td><td>Pot: 15% (14.0)</td><td>Pot Tender: 16% (29.5)</td><td>n/a</td><td colspan="3">n/a</td></tr>
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<tr><td>2018</td><td>Trawl: 20% (20.3)</td><td>Trawl Tender: 17% (35.0)</td><td>H&L: 17% (15.5)</td><td>Pot: 16% (15.5)</td><td>Pot Tender: 17% (29.0)</td><td rowspan="6">n/a</td><td>EM H&L: 30%</td><td>EM Pot PreIm: 30% (not used in catch accounting)</td><td rowspan="6">n/a</td><td rowspan="4">n/a</td><td rowspan="5">Vessels < 40’ LOA and Jig gear</td><td>EM Innovation Research 2–4 vessels</td></tr>
<tr><td>2017</td><td>Trawl: 18% (20.7)</td><td>Trawl Tender: 14% (18.8)</td><td>H&L: 11% (12.0)</td><td>H&L Tender: 25% (0)</td><td>Pot: 4% (7.7)</td><td>Pot Tender: 4% (5.3)</td><td colspan="2" rowspan="4">n/a</td><td>EM PreIm 60 vessels</td></tr>
<tr><td>2016</td><td colspan="2">Trawl: 28% (28.0)</td><td colspan="2">H&L: 15% (15.0)</td><td colspan="2">Pot: 15% (14.7)</td><td>EM PreIm 12 vessels</td></tr>
<tr><td>2015</td><td colspan="3">Large Vessel 24% (23.4)
Trawl CVs, Small CPs, H&L/Pot CVs ≥ 57.5’</td><td colspan="3">Small Vessel 12% (11.2)
H&L/Pot CVs > 40’ and < 57.5’</td><td>Voluntary EM</td></tr>
<tr><td>2014</td><td colspan="6">All Trawl CVs and H&L/Pot vessels ≥ 57.5’ LOA: 16% (15.1)</td><td>H&L/Pot CVs > 40’ and < 57.5’: 12% (15.6)</td><td colspan="2">Vessels < 40’ LOA and Jig gear</td></tr>
<tr><td>2013</td><td colspan="6">All Trawl CVs and H&L/Pot vessels ≥ 57.5’ LOA: 14.5% (14.8)</td><td>H&L/Pot CVs > 40’ and < 57.5’: 11% (10.6)</td><td colspan="2"></td></tr>
</table>

*Observer coverage on randomly selected trips in specific ports. This protocol was implemented in response to the COVID-19 pandemic when travel and lodging conditions in specific ports allowed observers to meet and maintain applicable health mandates for deployment into the commercial fisheries.

Partial Coverage Budget and Cost Assumptions

For this analysis, the NMFS set a **preliminary budget** of $4.4M to support monitoring of the partial coverage fisheries in 2025. The preliminary budget includes revenues generated from ex-vessel fees collected from fishing in 2023, estimated ex-vessel fees that are expected to be collected from fishing in 2024, and federal funds that are able to be secured for monitoring. However, there is still a lot of uncertainty in the 2024 annual budget, more so than in past years. This uncertainty is due to: (1) difficult predictions regarding the amount of revenue that will be generated from fees for landings in 2024; (2) integrating the costs of trawl EM into the annual budgets; (3) unknown costs associated with the competition of the partial coverage observer contract; and (4) ongoing delays in receiving funding associated with the transition in NOAA's financial systems. The estimated **budget presented here is preliminary** and will be updated in the final 2025 ADP that will be presented to the NPFMC at their December 2024 meeting.

The partial coverage monitoring program has three monitoring methods: 1) at-sea observers; 2) EM Fixed-gear; and 3) at-sea compliance EM on vessels combined with shoreside observers to sample deliveries in the GOA pollock trawl fishery (note that EM Trawl trips in the Bering Sea are full coverage and therefore monitoring costs for those trips are excluded from the partial coverage budget). To estimate the costs of monitoring, cost functions were constructed for each of the three monitoring methods. Each function incorporates: the best available information; assumptions about both fixed and variable costs; and known economy of scale. An in-depth description of how the cost functions were generated is provided in Appendix B.

The costs of monitoring by both at-sea and shoreside observers were based on the structure of the partial coverage observer contract. However, as of the publication of this document, the final Partial Coverage contract for 2025 was not yet awarded. Therefore, **the cost projections presented here are tentative and subject to change**. The final 2025 Partial Coverage budget and costs will be presented in the final 2025 ADP to be presented to the NPFMC at their December 2024 meeting.

For this draft ADP, the at-sea observer costs were a function of the number of sea days purchased, the price per guaranteed day and optional day, and travel costs. For EM Trawl, the cost function quantified shoreside observer cost per plant-day (including the number of guaranteed and optional days purchased, lodging, and food costs). The shoreside observer cost estimate assumed: five observers to monitor processing plants in Kodiak; all five Kodiak observers monitor on all calendar days while pollock fishing is open; Kodiak plant operations in 2025 are similar to the 2023–2024 period; and that there will be no deliveries at Sand Point and False Pass. These assumptions are subject to change in the final ADP.

For both EM Trawl and EM Fixed-gear, the cost function was a function of annual cost for EM equipment maintenance by EM service providers (which is dependent on the number of vessels in the pool) and video review costs. The cost models do not include new EM system installations and EM equipment replacements because those are supported separately from the Congressional Directed Spending funds that are administered through a grant with Pacific States Marine Fisheries Commission (PSMFC).

In total, EM Trawl was estimated to cost $794,726 which was deducted from the total $4.4M budget prior to allocation of the remaining funds (approximately $3.6M) to deploy at-sea observers and EM Fixed-gear. Again, this is a preliminary budget and these cost allocations are subject to change in the final ADP.

2025 Deployment Methods

Selection Method

For 2025, NMFS will implement trip selection from all ports throughout Alaska to assign both at-sea observers and EM to fishing events for vessels in the partial observer coverage category. Trip-selection refers to the use of the fishing trip as the primary sampling unit, and is accomplished using the Observer Declare and Deploy System (ODDS; Faunce et al. 2021).

In the Gulf of Alaska (GOA) EM Trawl stratum, every trip is monitored by an EM system at sea, and for salmon and halibut by an observer at the processing plant receiving catch from EM vessels. Electronically monitored vessel offloads will also be randomly selected by NMFS for biological sampling by observers in shoreside processing facilities.

In full coverage, every trip is selected and monitored by 1 or 2 observers if monitoring is conducted at sea, or by an EM system at sea and an observer at the processing plant receiving catch from EM vessels.

Selection Pools and Stratification Scheme

Fishing trips are broadly divided into groups, or selection pools, defined by whether monitoring is required on all trips (Full Coverage) or a subset of trips (Partial Coverage) as well as whether the trips will be monitored by observers or EM. Selection pools may be further split into sampling strata, each with a specified monitoring rate. In 2025, NMFS will implement 6 selection pools and 10 sampling strata.

Full Coverage

Full Coverage Observer Pool
Vessels and processors in the full observer coverage category must comply with observer coverage requirements at all times when fish are harvested or processed. Every trip is monitored by one or more observers. Specific requirements for the observer component of the full coverage stratum are defined in regulation at 50 CFR § 679.51(a)(2) and observers are required on every trip. Vessels and processing plants in full coverage includes the following:

- Catcher/processors (with limited exceptions).
- Motherships.
- Catcher vessels (CVs) participating in programs that have transferable PSC allocations as part of a catch share program, which includes: Catcher vessels harvesting PCTC quota; Bering Sea pollock (both American Fisheries Act and Community Development Quota (CDQ) programs), the groundfish CDQ fisheries (CDQ fisheries other than Pacific halibut and fixed-gear sablefish; only vessels greater than 46 ft LOA); and the Central GOA Rockfish Program.
- CVs using trawl gear that have requested placement in the full coverage category for all fishing activity in the BSAI for one year.

- Inshore processors receiving or processing Bering Sea pollock.

EM Trawl in the BSAI Pool
NMFS has issued a final rule to implement EM on pollock catcher vessels using pelagic trawl gear. Vessels must opt-in annually by 1 November, and be approved by NMFS, to participate in the EM Trawl category for the upcoming fishing year. In the BSAI, these vessels are in full coverage and compliance monitoring with an EM system is required on every trip. In addition, processing plants are responsible for procuring observers to ensure that all EM Trawl deliveries by catcher vessels or tender vessels to shoreside processors are subject to required dockside monitoring (for more details, see section below on Dockside Monitoring).

Partial Coverage

Partial Coverage Observer Trip-Selection Pool
There are 4 observer trip-selection strata based on gear and FMP area for 2025.

- The *At-sea Observer Fixed-gear in the BSAI* stratum is composed of trips in the partial coverage category on vessels that are greater than or equal to 40 ft LOA, fishing pot or hook-and-line gear, and where the vessel declared in ODDS that they intend to harvest the majority of catch on the trip in the BSAI.
- The *At-sea Observer Fixed-gear in the GOA* stratum is composed of trips in the partial coverage category on vessels that are greater than or equal to 40 ft LOA, fishing pot or hook-and-line gear, and where the vessel declared in ODDS that they intend to harvest the majority of catch on the trip in the GOA.
- The *At-sea Observer Trawl gear in the BSAI* stratum is composed of all trawl trips in the partial coverage category that are not in EM Trawl where the vessel declared in ODDS that they intend to harvest the majority of catch on the trip in the BSAI.
- The *At-sea Observer Trawl gear in the GOA* stratum is composed of all trawl trips in the partial coverage category that are not in EM Trawl where the vessel declared in ODDS that they intend to harvest the majority of catch on the trip in the GOA.

EM Fixed-Gear Trip-Selection Pool
The EM Fixed-gear selection pool consists of 2 sampling strata:

- The *EM Fixed-gear in the BSAI* stratum is composed of vessels in the EM Fixed-gear selection pool, fishing pot or hook-and-line gear, where the vessel declared in ODDS that they intend to harvest the majority of catch on the trip in the BSAI.
- The *EM Fixed-gear in the GOA* stratum is composed of vessels in the EM Fixed-gear selection pool, fishing pot or hook-and-line gear, where the vessel declared in ODDS that they intend to harvest the majority of catch on the trip in the GOA.

The vessel owner/operator receives notification of NMFS approval of their placement in the EM Fixed-gear pool by logging into ODDS. Once approved, that vessel will remain in the EM selection pool for the duration of the calendar year. Each year, all the vessels in the EM Fixed-gear selection pool— including

those that were previously in the pool —are required to submit and follow a NMFS-approved Vessel Monitoring Plan[1] (VMP).

As part of the VMP approval, NMFS will assess a vessel's past adherence to their approved VMP. The quantity and severity of compliance issues that negatively impact data quality and collection will be used to assess vessel eligibility to participate in the EM Fixed-gear program. For example, does a vessel operator have recurring issues that have resulted in unusable or very poor quality EM data (e.g., obstructing the camera view)? NMFS will notify the vessel operator of their status through a cover letter attached to the VMP approval on an annual basis. A vessel with poor standing will be placed into probationary status and the vessel owner/operator will be notified of specific issues they need to address to bring the vessel into compliance. Failure of a vessel operator to address issues or comply with conditions of the VMP could result in the vessel being ineligible to participate in the EM Fixed-gear pool the following year. Vessels which are removed from the EM Fixed-gear pool automatically revert to the observer pool.

Any vessel in the EM Fixed-gear selection pool in 2024 remains eligible to be in the EM selection pool for 2025 unless:

- the vessel owner/operator submitted a request to leave the EM selection pool;
- NMFS has disapproved the vessel's VMP; or
- the vessel owner/operator was placed into probationary status due to repeated problems with EM system reliability and/or video quality, were notified of specific issues needed to bring the vessel into compliance, and the vessel owner/operator failed to address the problems; or they failed to adhere to the requirements in their VMP.

All requests to be included or removed from the EM selection pool for 2025 must be received in ODDS by 1 November 2024. NMFS reserves the right to approve or deny requests by vessels to be added to the EM Fixed-gear pool based on the priorities identified in the 2023 Annual Report (NMFS 2024b) and supported by the Council (Appendix A) including vessel size, fishing effort, minimizing data gaps, and cost efficiency (e.g., the requesting vessels had either no fishing history or fished too few trips to indicate cost-effectiveness).

This draft report precedes the deadline to opt in or out of the EM Fixed-gear selection pool, so this analysis will assume the number of participants in 2025 will be the same as in 2024. The final report will account for any changes to the list of participants.

EM Trawl in the GOA Pool

NMFS has issued a final rule to implement EM on pollock catcher vessels using pelagic trawl gear[2]. Vessels must opt-in annually by 1 November, and be approved by NMFS, to participate in the EM Trawl category for the upcoming fishing year. Once approved, all trips where the vessel targets pollock with only pelagic trawl gear will be subject to the EM Trawl regulations, as specified at 50 CFR 679.51(g). Vessels must indicate in ODDS whether they intend to deploy pelagic trawl gear during a trip and compliance monitoring with an EM system is required on every trip. In addition, observers will monitor

[1] The VMP template is available at: https://alaskafisheries.noaa.gov/fisheries/electronic-monitoring

[2] If a vessel intends to deploy non-pelagic trawl gear, they will be subject to observer coverage as part of the Partial Coverage Observer Trip-Selection Pool.

EM deliveries by catcher vessels or tender vessels to shoreside processors (for more details, see section below on Dockside Monitoring).

No-selection pool
The no-selection pool is composed of vessels that will have no probability of carrying an observer or EM on any trips for the 2025 fishing season and represents a single stratum:

- The *No-selection* stratum is comprised of fixed-gear vessels less than 40 ft LOA, where length overall is defined in regulations at 50 CFR 679.2 and means the centerline longitudinal distance, rounded to the nearest foot; and vessels fishing with jig gear, which includes handline, jig, troll, and dinglebar troll gear.

Partial Coverage Allocation Strategy

Allocation strategy refers to the method of allocating monitoring among strata to sample units. In 2025, the NMFS proposes to implement the Proximity Allocation method to deploy EM Fixed-gear and at-sea observers in the partial coverage category. This method is precautionary with respect to obtaining data from all types of fishing activity (decreasing data gaps) while protecting against high variance associated with low sample sizes.

NMFS first implemented the Proximity Allocation method in 2024 after presenting the Draft 2024 ADP (NMFS 2023a) that compared multiple allocation methods, including a "hurdle" allocation approach that had been implemented starting in 2018. The hurdle approach allocated a single, set level of monitoring across all strata, and placed additional monitoring as resources allowed to meet specific monitoring goals. When reviewing the draft 2024 ADP, the Council supported implementation of the Proximity Allocation method (Appendix A) and also requested that NMFS continue to explore the hurdle approach. Appendix C provides further discussion of these two allocation approaches.

The Proximity allocation method is designed to spread sampled trips throughout the fisheries to increase the proportion of trips that are sampled or near a sampled neighbor and to be consistent between strata within a specified budget, while also protecting against small sample sizes within a stratum. This allocation method applies to all sampled strata (i.e., does not apply to no-selection stratum) except the EM Trawl GOA stratum. In the EM Trawl GOA stratum, 33% of deliveries in this stratum will be randomly selected for biological data collection and all EM Trawl GOA offloads will be monitored for salmon and halibut by shoreside observers. Details on how selection rates were determined are provided in Appendix B.

Dockside Monitoring

Dockside sampling methods

Dockside monitoring by observers will occur in shoreside processing plants to enable sampling of deliveries from pollock vessels fishing with pelagic trawl gear (Table 3). The data collection objectives are to: 1) enumerate salmon bycatch from EM deliveries and deliveries that were observed at sea; 2) enumerate halibut bycatch from EM deliveries; 3) collect genetic information from salmon in EM and observed deliveries; and 4) collect biological samples from non-salmon species from EM deliveries.

For EM Trawl vessels in the GOA that deliver to shoreside processors or tenders, observers in the processing plant will complete an enumeration of salmon and halibut bycatch for every EM offload. Observers will collect salmon tissue samples for genetic analysis to determine the river of origin of bycaught salmon from all EM deliveries. In addition, for deliveries from trips with at-sea observer coverage, salmon enumeration and collection of salmon tissue samples for genetic analysis will be conducted at the shoreside processing plant. For 2025, NMFS proposes to collect genetic samples from 1 in 10 Chinook and 1 in 30 chum, which is the same sampling rate used in the full coverage fisheries. This would result in consistent sampling rates across all EM and observed trips and would spread genetic tissue collections over a larger number of offloads at a lower collection rate, decreasing the amount of time an observer spends on tissue collection for deliveries with large numbers of salmon.

For vessels in the GOA pollock fishery that do not participate in the EM Trawl and deliver to shoreside processors, the offloads from trips that are randomly selected for at-sea observer coverage will be monitored for salmon bycatch by an observer during offload of the catch at the shoreside processing plant.

For trips in the GOA pollock fishery outside of the trawl EM strata that are delivered to tender vessels (as well as trawl trips outside of the pollock fishery), salmon counts and tissue samples will be obtained from salmon found within observer at-sea samples of the total catch.

For trips in the BSAI trawl pollock fishery, for catcher vessels both in the EM Trawl pool and those not in EM Trawl, a census of salmon will be completed during the offload.

Dockside observer coverage and Catch Monitoring Control Plans

To ensure that shoreside processors are meeting dockside monitoring requirements they are required to submit and maintain Catch Monitoring Control Plans (CMCPs). Shoreside processors that receive landings from vessels in the EM Trawl category are required to have an approved CMCP, as specified at 50 CFR 679.28(g)(2). The CMCP is submitted by the owner and manager of a shoreside processing plant to NMFS for approval, and outlines how the processor will meet the applicable catch monitoring and control standards.

For processors receiving pelagic pollock deliveries in the BSAI full coverage fisheries, their CMCP indicates the specific number of observers that are necessary to meet program sampling objectives. NMFS may update the CMCP throughout the year to ensure that sufficient data can be collected, as processing effort may change seasonally. At a minimum, processors receiving AFA deliveries are required to have one observer per 12 hour period, as specified at 50 CFR 679.51(b)(2). Shoreside processors in the BSAI that receive AFA pollock trawl deliveries, both EM and non-EM, may be required to carry 4 observers per day (2 per 12 hour shift) to meet the observer program sampling requirements. Each shoreside processor has a unique operation and, as such, NMFS will work with each shoreside processor to determine the number of observers necessary to meet data collection needs and document the plant-specific requirements in the CMCP.

The deployment of observers, both at-sea and for dockside monitoring in the partial coverage program is determined through the ADP process, estimated costs, and anticipated budget. As such, the agency will determine the total number of observers needed in the GOA shoreside processors. Based on the agency data needs, and sampling duties outlined for shoreside observers, one observer will be necessary per pollock processing line at the shoreside plant. If a shoreside plant has two lines of operation for pollock

then two observers will be necessary. NMFS estimates that five observers will be needed to monitor processing plants in Kodiak while pollock fishing is open.

Table 3 summarizes the 2025 dockside sampling protocols for salmon and groundfish delivered by catcher vessels in the pelagic pollock fishery in the GOA and BS. Trips by non-pollock trawl vessels in the GOA fall under the partial coverage category and will be randomly selected for coverage by at-sea observers who will sample at-sea for salmon, salmon genetics, and groundfish biological samples.

Communication with observers

The CMCP also facilitates communication between the vessels, shoreside processors, and observers. This is achieved by requiring all necessary information be supplied to the observers. Catcher vessel and tender vessel operators will be required to follow landing notice procedures specified in their respective Vessel Monitoring Plans (VMPs), as specified at § 679.51(g)(3). The landing notice will be transmitted by the catcher vessel or tender vessel to the intended shoreside processor, as outlined in the VMP. Once the landing notice is received by the shoreside processor, that information will be provided to the shoreside observers. Beginning on January 1, 2025, Bering Sea shoreside processors will have an internal email account that allows observers to monitor daily schedules, and other communications. The Alaska Regional Office will be included on these emails. This process will give observers adequate information to perform their sampling duties, and gives the agency the ability to track communications. These emails will be listed in the communication section of the CMCP. A similar process will be put in place for the Gulf of Alaska shoreside processing plants.

Table 3. Summary of dockside sampling for catcher vessels in the pelagic trawl pollock fishery in 2025.

FMP Area	Strata	Offload location	Salmon and halibut PSC accounting	Salmon genetic samples	Biological sampling of groundfish in the plant
GOA	EM Trawl	Shoreside plant or tender	Enumeration of all salmon and halibut PSC on 100% of deliveries.	1 in 10 Chinook and 1 in 30 chum	33% of deliveries
	Partial Coverage At-sea Observer Trips	Shoreside plant	Enumeration of all salmon PSC on deliveries for selected trips. Estimates from halibut found within observer at-sea samples of the total catch on selected trips.	1 in 10 Chinook and 1 in 30 chum	Collected at-sea on random selection of trips
		Tender	Estimates from salmon and halibut found within observer at-sea samples of the total catch on selected trips.	Within observer at-sea samples	Collected at-sea on random selection of trips
BSAI	EM Trawl	Shoreside plant	Enumeration of all salmon and halibut PSC on 100% of deliveries.	1 in 10 Chinook and 1 in 30 chum	100% of deliveries
	Full coverage at-sea Observer Trips	Shoreside plant	Enumeration of all salmon PSC on 100% of deliveries Estimates from halibut found within observer at-sea samples of the total catch on selected trips.	1 in 10 Chinook and 1 in 30 chum	Collected at sea on 100% of trips

Selection Rates

The **preliminary** selection rates for deployment of observers (50 CFR 679.51(a)) and electronic monitoring (50 CFR 679.51(f)) in 2025 are summarized in Table 4. Using a combination of at-sea observers, dockside observer sampling, and EM, NMFS expects to monitor 2,590 trips in full coverage and 1,371 trips in partial coverage in 2025 (Table 4). Details on how selection rates were determined are provided in Appendix B. As noted above, both the budget for 2025 and the estimated costs presented in this draft ADP are preliminary. **Any change in the estimated 2025 budget or costs will affect the final selection rates in the final ADP.** The final ADP will be presented to the Council in December 2024.

Table 4. Summary of total trips, selection rates (rounded to the nearest whole number), the number of trips expected to be observed, and monitoring location and purpose, in each sampling stratum in 2025. Selection rates presented here are **preliminary** based on estimated budget and costs. Final selection rates will be provided in the final ADP in December 2024.

Component	Pool	Stratum	Total No. Expected Trips	Selection Rate (%)	No. Trips Expected to be Monitored	Monitoring Location	Monitoring Purpose
Partial Coverage	**At-sea Observer**	Fixed-gear BSAI	257	22.82	59	At-sea	Discard & PSC estimation/ biological sampling
		Fixed-gear GOA	1,855	7.31	136		
		Trawl BSAI	24	47.36	11		
		Trawl GOA	314	11.76	37		
	EM Fixed-gear	Fixed-gear BSAI	70	47.66	33	At-sea	Discard & PSC estimation/ biological sampling
		Fixed-gear GOA	883	12.59	111		
	EM Trawl	EM Trawl GOA	984	100	984	At-sea	EM Compliance
				100	984	Dockside	PSC accounting
				33	328	Dockside	Biological sampling
	No-selection	No-selection	1,389	0	0		
Full Coverage	**Full Observer**	Full observer coverage	918	100	918	At-sea	Discard & PSC estimation/biological sampling
	EM Trawl BSAI	EM Trawl BSAI	1,672	100	1,672	At-sea	EM Compliance
				100	1,672	Dockside	PSC accounting
				100	1,672	Dockside	Biological sampling

Observer Declare and Deploy System (ODDS)

Vessels in the partial coverage strata are required to notify NMFS and their fishery monitoring service provider with their intended fishing plans prior to departure. This is accomplished through phone or direct access to a web-application called the Observer Declare and Deploy System (ODDS). The strata and associated selection rates are programmed into ODDS for each ADP prior to the start of the year. For each logged trip, ODDS selects a four digit random number. If the random number is equal to or below the stratum-specific selection rate, the trip is selected for monitoring; otherwise the trip is not selected for monitoring. In this way, ODDS facilitates random selection of which trips will be monitored. In addition, owners or operators of vessels making trips in the EM Fixed-gear selection pool must also use ODDS to close each trip following the instructions in their Vessel Monitoring Plan (VMP).

Users of ODDS are given flexibility to accommodate their fishing operations; up to three trips may be logged in advance of fishing and trips can be canceled or changed to accommodate changing plans. In the 2023 Annual Report presented to the Council in June 2024, NMFS noted an increasing percentage of logged trips being canceled. The analysis showed that the current ODDS rules which govern how and when monitored trips are canceled are not enough to ensure unbiased data. As a result, NMFS recommended that the agency work with the Partial Coverage Fishery Monitoring Advisory Committee (PCFMAC) to develop an ODDS trip cancellation policy that will not significantly impede industry, affords the observer provider adequate time to deploy an observer, and reduces impacts to coverage rates and non-random monitoring.

A discussion paper will be presented to the PCFMAC[3] at their meeting in September. The document outlines three proposed solutions to improve the cancellation rates for observer strata. The solutions are technical fixes that would be programmed within ODDS and ideally one of these solutions would be outlined in the final 2025 ADP and implemented in 2025. However, implementation timing will depend on NMFS IT capacity.

Starting in 2025, an operator of a catcher vessel in the partial coverage EM Trawl category that has a NMFS-approved VMP must register anticipated trips in ODDS. Prior to embarking on each fishing trip, the owner or operator must specify the use of pelagic or non-pelagic trawl gear to determine EM Trawl category participation for the upcoming fishing trip.

For new partial coverage trip selection participants, vessel owners should contact NMFS at odds.help@noaa.gov requesting an ODDS account. NMFS will then create a user account for the new partial coverage trip-selection participant so that they may access the application at http://odds.afsc.noaa.gov/ and log eligible fishing trips electronically. Vessel owners can also log, change, or cancel trips through the ODDS call center (1-855-747-6377). Communication between users and NMFS is facilitated through odds.help@noaa.gov.

[3] Available at: https://meetings.npfmc.org/CommentReview/DownloadFile?p=64e0e69c-80fd-4cfd-ad92-62b90996488d.pdf&fileName=ODDS_Observer_Deploy_Declare_System_Trip_Cancellations_Inherits.pdf

Annual Coverage Category Requests

Partial coverage catcher/processors

Under Observer Program regulations at 50 CFR 679.51(a)(3), the owner of a non-trawl catcher/processor can request to be in the partial observer coverage category, on an annual basis, if the vessel processed less than 79,000 lb (35.8 mt) of groundfish on an average weekly basis in a particular prior year. The deadline to request placement in the partial observer coverage category for the following fishing year is 1 July and the request is accomplished by submitting a form[4] to NMFS. Two catcher/processors requested, and NMFS approved, their placement in the partial coverage category for the 2025 fishing year.

Full coverage catcher vessels

Under Observer Program regulations at 50 CFR 679.51(a)(4), the owner of a trawl catcher vessel may annually request the catcher vessel to be placed in the full observer coverage category for all directed fishing for groundfish using trawl gear in the BSAI management area for the upcoming year. Requests to be placed into the full observer coverage in lieu of partial observer coverage category must be made in ODDS[5] prior to 15 October 2024 for the 2025 fishing year. Each year, the list of catcher vessels that have been approved to be in the full coverage category is available on the NMFS website.[6]

Vessels Participating in Halibut Deck Sorting

On 24 October 2019, NMFS published a final rule to implement regulations allowing halibut to be sorted on deck of trawl catcher/processors in the non-pollock fisheries off Alaska. Fishing under the new regulations began on 20 January 2020. The final rule implementing this program does not specify the amount of time allowed for vessel crew to sort, and observers to discard, deck-sorted halibut. This flexibility enables NMFS to adjust sorting times in response to new information. In 2025, NMFS will continue to allow all vessels operating under these regulations 35 minutes to deck-sort and discard halibut. This uniform time allowance maintains the protocol from previous years and is consistent with the fact that there is no data to support vessel-specific deviations from the current time limit.

Voluntary Increase in Observer Coverage on Freezer Longline Vessels

The Freezer Longline Coalition (FLC) and Alaskan Observers (AOI) are intending to deploy two observers on select catcher/processor longliners to increase the number of non-trawl lead level 2 (LL2) endorsed observers. This unique approach combines the two monitoring options in 50 CFR 679.51(a)(2)(vi)(E) and § 679.100(b) by taking increased observer coverage and using a flow scale.

Combining the monitoring options provides increased opportunities for observers to gain a non-trawl LL2 endorsement; supports the collection of high quality data by increasing sampling on these select vessels and sharing the sampling workload; and uses a flow scale to determine the weight of all retained Pacific

[4] The form for small catcher/processors to request to be in partial coverage is available at: https://media.fisheries.noaa.gov/dam-migration/catcher-processor-observer-partial-coverage-request.pdf

[5] Instructions for catcher vessels to request to be in full coverage using ODDS are available at: https://www.fisheries.noaa.gov/resource/document/bsai-trawl-catcher-vessel-annual-full-observer-coverage-request

[6] List of BSAI trawl catcher vessels in full coverage available at https://www.fisheries.noaa.gov/resource/document/bsai-trawl-catcher-vessels-cvs-full-coverage

cod. Additionally, deploying two observers to a challenging sampling platform has the potential to increase observer retention by improving the inexperienced observer's experience through mentorship and minimizing burn-out for the experienced observer.

Communication and Outreach

NMFS will continue to communicate the details of the ADP to affected participants through letters, public meetings, NMFS Information Bulletins, and information on NMFS websites:

- Information about the Observer Program and Frequently Asked Questions on observer deployment are available at: https://www.fisheries.noaa.gov/alaska/fisheries-observers/north-pacific-observer-vessel-plant-operator-faq
- Frequently asked Questions about EM Fixed-gear are available at: https://www.fisheries.noaa.gov/alaska/resources-fishing/frequent-questions-electronic-monitoring-em-small-fixed-gear-vessels
- For technical information and Frequently Asked Questions regarding ODDS go to http://odds.afsc.noaa.gov/ and click the "ODDS login" button.
- NMFS will publish Frequently Asked Questions on Trawl EM in the near future.

NMFS continues to communicate with industry groups and past participants as we work to ensure a smooth launch of the regulated Trawl EM program in 2025. AKR Region Staff are available for outreach meetings upon request. To request a meeting, please contact Joel Kraski at joel.kraski@noaa.gov.

Observer Program staff are also available for outreach meetings upon request by teleconference and/or video conferencing pending staff availability and local interest. A community partner would be needed to organize a location and any necessary equipment to facilitate additional meetings. To request a meeting or suggest a topic for discussion, please contact Lisa Thompson at 1-206-526-4229 or Lisa.Thompson@noaa.gov.

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References

Alaska Fisheries Science Center and Alaska Regional Office (AFSC and AKRO). 2024. North Pacific Observer Program 2022 Annual Report. AFSC Processed Rep. 2024-06,66p. Alaska Fish. Sci. Cent., NOAA, Natl. Mar. Fish. Serv., 7600 Sand Point Way NE, Seattle WA 98115. Available at: https://repository.library.noaa.gov/view/noaa/61289

Faunce, C., M. Moon, P. Packer, G. Campbell, M. Park, G. Lockhart, and N. Butterworth. 2021. The Observer Declare and Deploy System of the Alaska Fisheries Science Center. U.S. Dep. Commer.,NOAA Tech. Memo. NMFS-AFSC-426, 86p. Available at: https://repository.library.noaa.gov/view/noaa/32909

NMFS (National Marine Fisheries Service). 2024. Final Environmental Assessment/Regulatory Impact Review for Proposed Amendment 126 to the Fishery Management Plans for Groundfish of the Bering Sea / Aleutian Islands Management Area and Proposed Amendment 114 to the Fishery Management Plan for Groundfish of the Gulf of Alaska Integrating Electronic Monitoring on Pollock Catcher Vessels using Pelagic Trawl Gear and Tender Vessels in the North Pacific Observer Program. March 2024. 225 p. Available at: https://www.fisheries.noaa.gov/s3/2024-01/0648-BM40-Trawl-EM-Analysis.pdf

NMFS. 2023a. Draft 2024 Annual Deployment Plan for Observers and Electronic Monitoring in the Partial Coverage Groundfish and Halibut Fisheries off Alaska. National Oceanic and Atmospheric Administration, 709 West 9th Street, Juneau, Alaska 99802. Available at: https://www.fisheries.noaa.gov/resource/document/draft-2024-annual-deployment-plan-and-partial-coverage-cost-efficiencies-analysis

NMFS. 2023b. 2024 Annual Deployment Plan for Observers and Electronic Monitoring in the Groundfish and Halibut Fisheries off Alaska. National Oceanic and Atmospheric Administration, 709 West 9th Street, Juneau, Alaska 99802. Available at: https://www.fisheries.noaa.gov/s3//2023-11/Final-2024-ADP.pdf

NMFS. 2020. 2021 Annual Deployment Plan for Observers in the Groundfish and Halibut Fisheries off Alaska. National Oceanic and Atmospheric Administration, 709 West 9th Street. Juneau, Alaska 99802. Available at: https://www.fisheries.noaa.gov/resource/document/2021-annual-deployment-plan-observers-and-electronic-monitoring-groundfish-and

NPFMC (North Pacific Fishery Management Council). 2011. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for Proposed Amendment 86 to the Fishery Management Plan for Groundfish of the Bering sea/Aleutian Islands Management Area and Amendment 76 to the Fishery Management Plan for Groundfish of the Gulf of Alaska: Restructuring the Program for Observer Procurement and Deployment in the North Pacific. March 2011. 239 p. plus appendices. Available at: https://www.fisheries.noaa.gov/resource/document/ea-rir-irfa-proposed-amendment-86-fmp-groundfish-bsai-and-amendment-76-fmp

Appendix A: Council motions on the ADP

C-1 Council motion
2023 Observer Annual Report & 2025 Annual Deployment Plan
June 8, 2024

2023 Annual Report

The Council appreciates the 2023 Annual Report on the observer program and recommends the following, in addition to SSC recommendations as practicable:

- Future annual reports should include the cost and number of full coverage observer days in the executive summary.
- Continue efforts to attempt to include data on the amount of catch monitored by electronic monitoring (EM) similarly to data on observed catch.
- Continue to provide a summary of issues highlighted in the previous year's annual report and how they were addressed. The 2023 annual report was informative regarding issues previously identified including EM image quality and EM video review timeliness.
- Given changes to the database used by observers to report potential violations in 2023, the Council supports OLE not including trends over time periods that are not comparable.

2025 Annual Deployment Plan (ADP)

The Council supports the following recommendations for the 2025 ADP:

- For the partial coverage program, use the 2024 proximity allocation method (except for pelagic trawl EM) and the following strata for deployment: (observer, EM Fixed-gear, EM Trawl), Fishery Management Plan areas (BSAI, GOA), and gear type (fixed, trawl)
- For pelagic trawl EM, maintain 100% EM at-sea monitoring and the 33% sampling rate of EM deliveries by shoreside observers
    - Continue to evaluate shoreside sampling priorities to balance observer workloads
    - Work with EM service providers and industry to budget for pelagic trawl EM
    - Modify the ODDS system to include pelagic trawl EM
- Maintain EM Fixed-gear selection pool of up to 177 vessels. As additional funds are available, increase the number of fixed-gear vessels in the EM selection pool up to 200. If needed, prioritize placement in the EM selection pool based on vessel size, fishing effort, minimizing data gaps, and cost efficiency. Remove vessels with repeated problems causing data loss from the EM pool.
- Improve EM video review times:
    - NMFS collaborate with PSMFC to establish a video review selection rate and review strategy to improve EM video review times to result in the most useful information for the most number of trips for a given cost
    - NMFS work with the Partial Coverage Fishery Monitoring Advisory Committee to develop prioritization rules that can be used to allocate review effort to the fisheries, gear types, times, and areas most dependent on EM data
    - NMFS conduct an assessment of any management impacts of delayed/missing EM Fixed-gear data
- To reduce temporal bias resulting from trip cancellations, NMFS work with the Partial Coverage Fishery Monitoring Advisory Committee to develop an ODDS trip cancellation policy that will not significantly impede industry, affords adequate time to deploy an observer, and reduces impacts to coverage rates and non-random monitoring

Funding delays

The Council recommends sending a letter to NOAA expressing concern with delays in the transfer of observer fee revenue, cost recovery funds, and pelagic trawl EM start-up funds to AFSC and NMFS due to the new Commerce Department financial system. The letter should also express concern with the 2022 and 2023 sequestered portion of the observer fees not yet being transferred and available for observer deployment.

C-2 Observer 2024 Annual Deployment Plan
Council Motion
October 6, 2023

2024 ADP

The Council supports the following for the 2024 draft Observer Annual Deployment Plan (ADP) for partial coverage fisheries. Observer coverage rates resulting from the selected design and the final budget are expected in the final ADP in December 2023. Fisheries with 100% and 200% coverage requirements in regulation are not covered under the ADP. For the 2024 ADP:

- Use combined fixed-gear-FMP stratification scheme: fixed-gear: hook-and-line/pot gear (combined); trawl gear - - Monitoring method: Observer; fixed-gear electronic monitoring (EM); pelagic trawl gear EM Exempted Fishing Permit (EFP): BSAI; GOA
- Use proximity allocation scheme with the exception of the pelagic trawl EM EFP.
- 100% EM on pelagic trawl vessels participating in the EFP, plus 33% observer shoreside sampling rate for partial coverage EM EFP trips.
- Remove fixed-gear vessels which have not fished nor used their EM systems for 3 or more years from the EM stratum. Place such vessels under 50 feet into the no-selection pool and larger vessels into the observer-selection pool.

The Council requests NMFS re-evaluate the cost estimates for both fixed-gear and trawl EM, which directly affect the cost efficiency analysis and the resulting coverage rates.

If the final ADP combines fixed-gear types for selection, the Council recommends NMFS make clear to fishermen, NMFS staff, and OLE that there is no prohibition on vessels fishing both FMP areas in one trip, despite needing to choose a predominant area when logging trips into ODDS.

The Council supports additional EM Fixed-gear vessels added to the EM pool in 2024 (up to 200 total vessels) provided they opt-in prior to November 1, 2023, funding is available, and they meet the criteria in the ADP.

Future work (2025 ADP)

For the 2025 ADP, the Council recommends exploration of a revised hurdle and an analysis of how to effectively deploy days in addition to that hurdle, per the PCFMAC recommendation. The intent is to base the hurdle on the appropriate time and proximity scale to meet biological data collection needs, and then deploy additional monitoring, using at-sea observers, shoreside observers, and/or EM, to be placed where they are most cost effective for catch accounting purposes and for targeting specific types of information deemed necessary to meet legal mandates or assessment purposes. This will require further evaluation of the needed time/space scale for biological samples.

The Council requests NMFS re-evaluate the cost estimates for both Fixed-gear and EM Trawl without including the cost of initially purchasing the EM hardware for both fixed and trawl gear, clearly separating ongoing costs from start-up costs.

Pilot project proposal

The Council encourages submittal of an industry cooperative research grant proposal and encourages NMFS to provide data to support the project: 1) the ports of departure and return for the partial coverage fleet (e.g., how many vessels/trips/catch are associated with smaller remote ports, aggregated as necessary to protect confidentiality); and 2) data on the amount of prior notice vessels are providing when registering trips in ODDS (e.g., is it the 72 hour minimum or are many vessels providing more notice). This project envisions a group of partial coverage fixed-gear vessels that continue to be selected for coverage through ODDS but procure observers through a private contract with an observer provider (remove the Federal contract component).

2024 NFWF proposals

The Council will provide written support for the proposals on p. 6 of the September 2023 PCFMAC report submitted for funding from the National Fish and Wildlife Foundation (NFWF) for the 2024 Electronic Monitoring and Reporting Grant Program. Funding for continuation of the pelagic trawl EM EFP is the highest priority, until NMFS completes regulations for the program (anticipated 2025).

Appendix B: Calculation of the Selection Rates for the Partial Coverage Strata of the 2025 ADP

Introduction

The Annual Deployment Plan (ADP) specifies how fishery monitoring assets (observers and electronic monitoring equipment [EM]) are deployed into fishing operations of the North Pacific by the North Pacific Groundfish and Halibut Observer Program (Observer Program). Fishery monitoring data is used for near real-time catch estimation for quota monitoring as well as in fish and marine mammal stock assessments as authorized through several statutes. The observer program is administered by the Fisheries Monitoring and Analysis Division (FMA) of the Alaska Fisheries Science Center (AFSC).

The sampling hierarchy used by FMA to obtain fishery dependent data has several levels, and the ADP is important because it affects the first, and top-most level of this hierarchy. The ADP is focused, although not exclusively, on fishing operations for which sampling rates will be less than 100% (i.e., the partial coverage fleet). The partial coverage fleet consists of catcher vessels and some catcher processors when not participating in a catch sharing or cooperative style management program and accounts for approximately 10% of the landed tonnage in the federal fishery. Changes to the composition of the partial coverage fleet have resulted from NMFS policy, Council actions, and regulations. Since the inception of the ADP process in 2012 (2013 ADP), trip-selection has been the preferred method to deploy fishery monitoring assets into the partial coverage fleet.

For the sampling design employed by the observer program to be successful, it must include several key elements. These include randomized data collections over spatial and temporal scales (a probability sample), the collection of sufficient data, and the use of stratification and prespecification of sampling intensity to control precision of estimates, while also making efficient use of available funding (Cahalan and Faunce, 2020). The sampling design for the deployment of fishery monitoring assets (i.e., the deployment design) involves two elements; how the population of partial coverage trips is subdivided (*stratification*), and what proportion of the total observer deployments are to occur within these subdivisions (*allocation*).

The ADP process includes a draft and final version. The draft ADP is focused on presenting alternative deployment designs for consideration for the year ahead, while the final ADP is focused on predicting the most likely coverage rate that available budgets can afford given the selected design from the draft ADP. In this way, the ADP provides an annual process for the NMFS and the North Pacific Fisheries Management Council (Council) to evaluate and recommend improvements to fisheries monitoring in response to changing needs.

This appendix contains the analyses used to define the deployment design for fishery monitoring in 2025 and presents **preliminary selection rates based on preliminary budgets** that will most likely differ from those presented in the final ADP. The final version may incorporate updates to the partial coverage monitoring budget, predicted fishing effort, EM participation, and monitoring costs — all of which may influence prescribed selection rates.

Methods

Data Preparation: Defining the partial coverage fleet

A dedicated dataset developed by the staff of the Sustainable Fisheries Division of the Alaska Regional Office (AKRO) and the FMA of the AFSC was used in this analysis. Briefly, these data consist of species-specific catch amounts, fishing dates, locations, catch disposition, observation status, and associated ADP strata and are available from 1 January 2013 to 5 August 2024. For this analysis, the expected fishing effort for 2025 was assumed to be similar to all partial coverage fishing effort for the most recent 12 month period (between 6 August 2023 through 5 August 5 2024).

As in past ADPs, trip data were altered to reflect fishing effort in the partial coverage fleet for the upcoming year. These alterations included: 1) using Observer Declare and Deploy System (ODDS) data to more accurately model the duration that observers are assigned to selected fishing trips (NMFS 2019, Appendix C); 2) labeling fishing activity by three 'historically low volume' Catcher-Processors as belonging to the partial coverage category; 3) labeling fishing by American Fisheries Act (AFA) eligible trawl vessels targeting Pacific cod in the Bering Sea and Aleutian Islands Fisheries Management Plan Area (BSAI FMP) as belonging to the full coverage fleet if they opted into full coverage for 2024; and 4) removing vessels with no probability of selection from the analysis (i.e., all trips corresponding to the no-selection pool). Vessel lists for the EM Fixed-gear pool and EM Trawl pool were assumed to be the same as those in the 2024 final ADP (NMFS 2023) and will be updated following deadlines to opt in/out of various programs for the 2025 final ADP.

The 2025 partial coverage sampling design includes the following strata, which are defined by gear type, monitoring method (observers or EM or none), and FMP (BSAI or Gulf of Alaska [GOA]) are as follows:

1. At-sea Observer Fixed-gear BSAI: Observer monitoring of trips using hook-and-line, pot, or both gears on vessels that are greater than or equal to 40 ft LOA and are not in EM Fixed-gear predominantly fishing in the BSAI.

2. At-sea Observer Fixed-gear GOA: Observer monitoring of trips using hook-and-line, pot, or both gears on vessels that are greater than or equal to 40 ft LOA and are not in EM Fixed-gear predominantly fishing in the GOA.

3. At-sea Observer Trawl BSAI: Observer monitoring of trips by vessels using trawl gear predominantly fishing in the BSAI, excluding trips where vessels are participating in EM Trawl.

4. At-sea Observer Trawl GOA: Observer monitoring of trips by vessels using trawl gear predominantly fishing in the GOA, excluding trips where vessels are participating in EM Trawl.

5. EM Fixed-gear BSAI: EM of trips using hook-and-line, pot, or both gears on vessels that are greater than or equal to 40 ft. LOA and have been approved to carry EM predominantly fishing in the BSAI.

6. EM Fixed-gear GOA: EM of trips using hook-and-line, pot, or both gears on vessels that are greater than or equal to 40 ft. LOA and have been approved to carry EM predominantly fishing in the GOA.

7. EM Trawl GOA: Compliance monitoring of trips by vessels participating in the Pollock Trawl EM in the GOA and shoreside monitoring of a subset of offloads.

8. No-selection: No monitoring, including vessels less than 40 ft LOA, for trips fishing exclusively with jig gear, or vessels that have been temporarily removed from the EM Fixed-gear vessel pool.

Accounting for uncertainties

Uncertainty in monitoring costs due to random trip selection

The ADP prescribes monitoring rates such that the predicted monitoring costs incurred in 2025 will be roughly equal to the budget available to deploy observers and EM into partial coverage (i.e., the monitoring budget). However, costs are more variable and thus more uncertain.

The random process of trip selection in ODDS may impact the realized costs in several ways. Firstly, although ODDS is programmed to select trips for monitoring at a specified rate, some degree of variation in each stratum's realized sampling rate is to be expected, and this affects the total number of trips monitored. Secondly, trips have varying durations and longer trips are generally more expensive to monitor than shorter trips, so monitoring costs may vary depending on which trips are randomly selected. In addition, at-sea observer monitoring costs may vary depending on the time of year (which contract is active). All of this variability was accounted for by incorporating randomization into the simulated trip selection in ODDS at the prescribed trip selection rates 10,000 times. However, unpredictable processes, such as whether trips logged into ODDS are canceled, inherited, or waived, are not easily modeled and were assumed to not have occurred.

Uncertainties to be included in the final draft analysis

Some uncertainties that were not included in this draft analysis, but are planned to be addressed in the final draft, include:

1. EM Vessel Participants: The current analysis assumes the vessels participating in EM in 2025 are the same as those that participated in 2024. The application deadline for opting in or out of the EM pools is November 1st, so the final analysis will include an updated list of EM participants.

2. Partial Coverage Fishing Effort: In this analysis, fishing effort in 2025 was assumed to be equal to the number of trips that fished between 6 August 2023 and 5 August 2024. The final analysis will include a prediction of future fishing effort as well as the variability around these predictions.

3. Number of EM Trawl deliveries: The dataset used in this analysis only includes landing reports from catcher vessels and the actual count of shoreside deliveries was not available. Tender vessels receive multiple deliveries at sea from catcher vessels, but the analysis did not account for tendering activity. The number of catcher vessel deliveries was used as a proxy for shoreside deliveries, but because tenders lump deliveries together, the number of shoreside deliveries is likely to be overestimated. The final analysis will provide a more accurate estimate of the number of EM Trawl deliveries by accounting for tendering activity.

Budget and Monitoring Costs

The preliminary budget for monitoring the partial coverage fisheries was set at $4.4 million and includes revenues generated from ex-vessel fees in 2023 and 2024 and federal funds. It does not include the Congressional Directed Spending funds which were allocated to Pacific States Marine Fisheries Commission to support new installations for EM vessels and EM equipment replacements. Distinct from new EM system installation and replacements costs, the monitoring budget does account for the annual cost for EM equipment maintenance by EM service providers.

Cost Assumptions

The partial coverage monitoring program has three monitoring methods: 1) at-sea observers; 2) fixed-gear EM; and 3) at-sea compliance EM with shoreside observers to sample pollock deliveries. To estimate the costs of monitoring, cost models were constructed for each monitoring method. Each model incorporates: the best information available; assumptions about both fixed and variable costs; and known economy of scale. All of the cost models estimate the cost of the partial coverage monitoring program based on the available budget and monitoring costs paid by other funded sources. Costs for EM Trawl trips in the Bering Sea are full coverage and therefore those trips are excluded from these analyses. The cost subtotals are explained in as much detail as possible while maintaining the confidentiality of estimated prices included in the partial coverage observer contract.

EM Trawl in the GOA

Vessels in the partial coverage EM Trawl program in the GOA (EM Trawl GOA) carry EM systems for at-sea compliance and are sampled shoreside by observers for Prohibited Species Catch (PSC), catch, and biological samples. The 2025 cost estimate for EM Trawl is the sum of: 1) estimated shoreside observer plant day costs; 2) estimated shoreside observer travel costs; 3) estimated EM data and video review costs; and 4) estimated vessel equipment costs.

In 2025, 144 days are estimated to occur in the GOA pollock season. The shoreside observer cost estimate assumes: 5 observers are required to monitor processing plants in Kodiak; all 5 Kodiak observers monitor on all calendar days while pollock fishing is open; Kodiak plant operations in 2025 are similar to the 2023–2024 years; and that there will be no deliveries at the ports of Sand Point and False Pass. Under these assumptions, the total plant observer days in the GOA will be 5 observers $\times$ 144 days = 720 observer plant days.

The cost of a shoreside plant day is a function of total plant days, which contract year the days occur on, and the number and type of days purchased (guaranteed or optional) according to the partial coverage observer contract. Based on 2023–2024 fishery data, approximately 75% of the GOA pollock fishery will occur during the base year of the partial coverage contract and 25% during the first option year. The total plant day costs were estimated by combining the estimated number of guaranteed and optional days with independent government estimates of day prices for the upcoming observer partial coverage contract.

The travel costs include estimates of the total lodging costs and total per diem costs. Air travel costs were assumed to be negligible because, unlike at-sea observers, shoreside observers are not expected to travel while deployed at a plant. Lodging costs were assumed at the Federal Government rate, which differ during peak and off seasons. Multiplying the cost per night in each season (peak vs. off) by the number of

days in each season and the number of rooms needed for each day (2.5, assuming two observers per room) yielded the estimated cost of lodging in each season. The sum of lodging costs in each season yielded the total lodging cost for 2025. Assuming the partial coverage provider cannot obtain a meal plan for the observers at their plants, per diem must be paid to observers at the Federal Government rate. The sum of the total lodging costs and the total per diem costs yielded the total GOA travel costs.

The costs of EM were separated by data and video review costs and vessel equipment maintenance costs. Data and video review costs for 2025 were calculated using inflation adjusted values from previously published estimates (Table E-1-2 in NMFS 2024). The review cost per day was determined by dividing the sum of the transmittal, review, processing and storage costs by the total number of reviewed days. This review cost per day multiplied by the assumed fishing effort resulted in the estimate for data and video review costs for 2025. Vessel equipment maintenance costs were determined by multiplying estimates for the annual EM equipment upkeep fee per vessel in a year ($5,000) by the number of GOA-only EM Trawl vessels, assumed to be 39 vessels based on participation during 2024, giving an estimate of $195,000. Any vessels participating in EM Trawl that fish in the Bering Sea are responsible for the costs of their equipment and upkeep. Distinct from equipment maintenance costs, new EM system installation and replacement costs were assumed to be funded externally by the Congressionally Directed Spending funds, which are administered through a grant with the Pacific States Marine Fisheries Commission (PSMFC).

In total, EM Trawl was estimated to cost $794,726 which was deducted from the total $4.4M budget prior to allocation of the remaining funds to deploy at-sea observers and EM Fixed-gear.

At-sea Observers

At-sea observer costs were estimated as a function of sea day costs and travel costs. Like the previous contract, a number of ‘guaranteed’ sea days are purchased before ‘optional’ sea days are purchased. The current analysis uses independent Federal Government estimates of day prices for the upcoming observer partial coverage contract.

Estimating sea day costs for the 2025 calendar year involves two steps: 1) calculation of the number of days under the base contract that will have already been spent from 1 October to 31 December 2024; and 2) an estimate of the total number of days to be monitored 1 January to 31 December 2025. We first estimated the number of days monitored between 1 October and 31 December 2024 using fishing effort data from the same period in 2023 and the sampling rate for each stratum from the 2024 ADP. The values were then summed for each stratum to estimate starting days on the new contract as of 31 December 2024. Next, the total number of days that could be monitored by at-sea observers in 2025 was determined using the Proximity Allocation algorithm (described in the Allocation Method section), the costs of which accounted for the previously calculated number of days already on the base contract, the additional number of guaranteed and/or optional days afforded on the base contract, and additional days expected to occur during option year 1. To estimate the total costs of partial coverage at-sea observer monitoring for 2025, an estimate of travel cost per sea day was calculated using detailed monitoring expenses that were compiled from internal reports for years 2017–2023. Annual totals of travel costs were divided by the number of sea days monitored and resulted in yearly estimates of travel cost per monitored day that were then inflation-adjusted to 2025 dollars. The average travel day cost from 2022 and 2023 was assumed to be the value for travel day costs in the 2025 draft ADP. The combination of sea day costs and travel costs represented the total cost of at-sea observers.

Fixed-Gear Electronic Monitoring

The 2025 cost estimate function for EM Fixed-gear includes the recurring costs for EM system maintenance and estimates of video review. Similar to EM Trawl, equipment installation or replacement costs for EM Fixed-gear were not included in the partial coverage budget and the equipment replacement costs were assumed to be covered through funds from Congress and administered through a grant with PSMFC.

The costs of EM service provider management and equipment maintenance that recur each year for EM Fixed-gear are assumed to scale with the number of vessels in the EM Fixed-gear pool. Equivalent 2025 costs were compiled for each year 2017–2021 by calculating the estimated inflation adjusted review costs from the product of the number of reviewed days and the inflation adjusted unamortized costs. The recurring costs from each year were derived by subtracting review costs from unamortized costs. The yearly total recurring costs divided by the sum of the number of vessels in the at-sea EM Fixed-gear pool in each year yielded the recurring cost per vessel. In this draft analysis, the recurring cost per vessel was estimated as $4,770.95.

Video review costs were made using summaries from years with complete EM cost information (2018–2021). For each year, the total review cost was adjusted for inflation and totalled. This total divided by the total number of reviewed days resulted in the 2025 estimate of review cost per day.

The total cost of the EM Fixed-gear program was estimated as a function of the number of vessels in the pool (177 based on the 2024 EM Fixed-gear vessel pool), the per-vessel EM service provider management and equipment maintenance costs, and the estimated number of video review days determined by the sampling rates prescribed by the proximity allocation algorithm multiplied by the estimated cost per review day.

Allocation Method

The entire allocation method involves several steps that are depicted in Figure B- 1. The sample allocation method used here, named Proximity allocation, was introduced in the 2024 Draft ADP (NMFS 2023) and has two primary objectives: 1) minimize data gaps and 2) guard against low stratum-specific sample sizes. The algorithm evaluates the extent to which a stratum's sample rate achieves these objectives, maximizing the sample rates to the extent that the budget supports and such that all strata achieve these objectives to the same extent (weighing both objectives equally). This method is designed to distribute sampled trips throughout the fisheries by increasing the proportion of trips that are sampled or near a sampled neighbor in space and time while also protecting against high variance resulting from small sample sizes (and remaining within budget). This allocation method was applied to the at-sea observer and EM Fixed-gear strata only because sample rates in the EM Trawl GOA and no-selection strata were predetermined.

Defining Spatio-temporal Boxes

Expected fishing effort was categorized based on each trip's stratum, gear type used, and Alaska Department of Fish and Game (ADF&G) statistical areas fished. The spatial positions of each trip were categorized by overlaying a hexagonal grid with cells 200 km wide and identifying which cells contained the centroids of the ADF&G statistical areas. Trips were also assigned to temporal categories 1-week in

duration based on each trip's start and end date. The spatial and temporal categorizations together created spatio-temporal units, or "boxes". Trips could belong to different weeks and hexagons but their weighting was set to total to one trip (e.g., a trip that crossed three boxes was counted as 0.33 trips in each box). The "neighborhood" of a box was defined as the number of trips in immediately adjacent spatial or temporal boxes. Hence, the overall extent of the neighborhood of a box is 600 km across and 3 consecutive weeks. The use of neighborhoods allows the boxes to be defined with finer resolution and reduces the impacts of the arbitrarily placed boundaries of each box (i.e., how the hexagon grid is placed or which day each 7-day block begins), including edge effects.

Data gaps were quantified as the proportion of trips that are in boxes without any samples in their neighborhoods. For any given monitoring rate, boxes containing a greater number of fishing trips have a higher probability of being monitored, and the neighborhood of the box will also have a higher probability of containing a monitored trip. Therefore, strata with fishing trips that are distributed widely in space and time (e.g., many boxes and each with few trips) are more likely to have a greater proportion of boxes with unmonitored neighborhoods and vice versa. Strata with diffuse fishing effort require a higher monitoring rate to achieve the same proportion of data gaps as a stratum with concentrated fishing effort.

The probability that there are no sampled trips in a neighborhood, $\hat{A}_b$, was estimated using the binomial approximation of the hypergeometric distribution:

$$\hat{A}_b = (1 - r)^{t_{G_b}} \qquad \text{Eq. 1}$$

where b is defined as the box of interest. G_b defines the neighborhood of box b (i.e., includes the adjacent 20 boxes - 6 spatial cells in the same week and 7 cells in the week prior and 7 in the week after), t_G is the number of trips t in a neighborhood G, and r is the initial (assumed) sample rate of each fishing trip. Hence, t_{G_b} is the number of fishing trips t in the neighborhood G of box b.

Proximity Index

The proximity index is the expected proportion of trips in a stratum's boxes that are in monitored neighborhoods and is therefore the opposite of our measure for data gaps — as sampling rate increases, the proximity index also increases. The proximity index is a function of the available budget, each stratum's monitoring cost and size (total number of trips), spatiotemporal distribution of fishing effort, and sample rate. Strata with clustered fishing effort will achieve a specified proximity index at a lower sample rate than strata with more diffuse fishing effort.

A binomial approximation to the hypergeometric distribution was used to generate the probability that there were no monitored trips in the neighborhood of box b, $\widehat{A_b}$, Eq. 1. The expected number of trips in sampled neighborhoods is the sum of the number of trips in the neighborhood, w_b, multiplied by the probability that one or more of those trips are sampled, $(1 - \widehat{A_b})$.

The proximity index, $\hat{T}$, is the average of the expected proportion of trips in monitored neighborhoods averaged over the $b = 1, \ldots..B$ boxes in the stratum.

$$\hat{T} = \frac{\sum_{b=1}^{B} w_b (1 - \hat{A}_b)}{B} \qquad \text{Eq. 2}$$

The proximity index is useful for prioritizing the allocation of samples to highly spatiotemporally dispersed strata. For a given budget, we could maximize the proximity index, increasing sample rates until reaching the budget cap. However, strata with highly concentrated fishing effort and relatively small stratum sizes would be allocated a small portion of the total sample amount (i.e. few monitored trips). For these strata, virtually all unmonitored trips are located near monitored trips even at low sample rates, and allocation based solely on this index can result in small sample sizes for these strata. Since variance is a function of sample size, these small sample sizes can lead to catch estimates with high variability. In addition, estimated length and age composition data that drive some stock assessments will be sparse, leading to stock assessment harvest recommendations with higher uncertainty. For these reasons, the proximity allocation also includes a variance scaling factor.

Variance Scaling Factor

To control for high uncertainty associated with estimates (e.g., buffer against low sample sizes (numbers of monitored trips)), the mathematical relationship between sample size and the variance of an estimated parameter (such as the sample mean) was incorporated into the allocation algorithm. By quantifying how the level of uncertainty around a stratum-level estimate changes based on its sample size and the proportion of the population sampled, this variance scaling factor causes the allocation algorithm to allocate more samples (monitored trips) to strata prone to higher uncertainty.

All populations have a base variance; the variability in a measured parameter (e.g., length) between all sample units (both in the sampled and unsampled). For the ADP, the population base variance is the between trip variance of a parameter over all trips in a stratum and will be different for different species (years, gear types, etc.). The variance of a parameter, *x*, is given in Eq. 3.

$$Var(x) = \frac{\sum_{i=1}^{N} (x_i - \bar{x})^2}{N-1} \qquad \text{Eq. 3}$$

Note that in Eq. 3 we are not summing only over those sample units that were sampled, but all sample units in the population (i.e., i = 1 to N where *N* is the total number of units in the population, rather than i = 1 to *n*, the number of sampled units in the population). Note that this variance does not change with sampling intensity (sample rate).

The estimated variance of the sample mean (or other parameter of interest) has two terms in addition to the population variance: the finite population correction factor (FPC, (*N*-*n*)/*N,* equal to 1 minus the proportion of the population sampled) and the inverse of the sample size (1/*n*)

$$\widehat{Var}(\bar{x}) = \frac{(N-n)}{N} \frac{1}{n} \frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1} \qquad \text{Eq. 4}$$

As the sample size increases (*n* increases*)*, we know more about the population, and hence estimates will have less variance. The estimated variance of the sample mean will decrease with increasing sample rates until all sample units are included in the sample (sample rate = 100%), at which point we have a census of the population and there is no variance. In addition, as a larger and larger portion of the population is sampled (smaller FPC), we know more about the population, and the uncertainty about the estimate decreases.

The FPC and sample size combine to form a single variance scaling factor, *F*.

$$F = \frac{(N-n)}{N}\frac{1}{n} \qquad \text{Eq. 5}$$

F was incorporated into the proximity allocation algorithm such that a higher sample rate is assigned to strata with fewer total trips, and its influence lessens rapidly as stratum size (*N*) increases. In addition, when used in combination with the proximity index, it acts as a strong buffer against small stratum-specific sample sizes that would otherwise occur if allocation was strictly based on the proximity index.

Proximity Allocation Index

The final *proximity allocation index* used to allocate sampling effort to strata (*h)*, $\widehat{D}_h$, is the product of $\hat{T}_h$ (the average of the expected proportion of trips with monitored neighbors) and $(1 - F_h)$ (the variance scaling factor), where all terms are as previously defined:

$$\widehat{D}_h = (1 - F_h)\,\hat{T}_h \qquad \text{Eq. 6}$$

The expanded version of Eq. 6 highlights the estimation process, noting that the stratum-specific sample size, n_h, is an estimated parameter that is the product of stratum size, N_h, and the stratum monitoring rate, r_h:

$$\widehat{D}_h = \left[1 - \frac{N_h}{(N_h - N_h r_h)}\frac{N_h r_h}{1}\right]\frac{\sum_{b=1}^{B} w_{bh}(1-\hat{A}_{bh})}{B_h} = \left[1 - \frac{N_h}{(N_h - n_h)}\right]\frac{\sum_{b=1}^{B} w_{bh}(1-\hat{A}_{bh})}{B_h} \qquad \text{Eq. 7}$$

Equation 7 cannot be solved for stratum sample sizes or monitoring rates because $\hat{T}$, *F*, and costs are functions of sample size. Therefore, iterative numerical methods were used to determine the strata sample sizes that maximize the proximity allocation index while not exceeding the predetermined budget. The overall cost is the product of the number of trips in the stratum, the stratum-specific sampling rate, and the cost per trip for that stratum:

$$Cost = \sum_{h=1}^{H} N_h r_h c_h \qquad \text{Eq. 8}$$

where r_h is the stratum specific rate for the final proximity allocation index value, c_h is the cost per trip for stratum *h*, and N_h is the total number of trips for stratum *h*.

Proximity allocation index values were calculated for each stratum over a range of sampling rates 0.0001 to 0.9950, as well as the associated monitoring costs. From these estimates, the sample rates for each stratum that were associated with the maximal proximity allocation index value $\widehat{D}_h$ for the budget were identified.

Determining selection rates for 2025

The selection rates of the EM Trawl GOA stratum and no-selection stratum were specified by policy. In EM Trawl GOA, 100% of trips are to be monitored at-sea for compliance of discard retention, 100% of shoreside deliveries are to be monitored for PSC enumeration and salmon genetic tissue sampling by observers, and 33.33% (one in three) of shoreside deliveries are monitored by observers for biological and specimen data collection. The no-selection stratum is not monitored.

The selection rates of the remaining partial coverage strata were determined by the proximity allocation algorithm. The estimated costs of monitoring the EM Trawl GOA stratum were deducted from the budget first.

Results and Discussion

Table B- 1 summarizes how the $4.4M partial coverage monitoring budget was allocated to each monitoring method and the expected number of vessels participating in each stratum. Note that the overall budget is a 24.4% decrease from the $5.819M monitoring budget set in the 2024 ADP. In addition, these funds must also support the EM Trawl GOA stratum. In combination, the preliminary budget available to allocate to at-sea observers and EM Fixed-gear in 2025 is 38% less than the budget available for these purposes in 2024 with only an 8.7% reduction in fishing effort. The allocation indices and selection rates resulting from the partial coverage allocation algorithm are provided in Table B- 2. These indices are provided with the caveat that they will change and be updated in the final draft to reflect updates to the fishing effort predictions, cost estimates, and/or budgets. The proximity allocation index, a general measure of the degree of monitoring coverage allocated to the at-sea observer and EM Fixed-gear strata, was 0.7748. This represents a reduction from the value afforded in the 2024 ADP of 0.8846, indicating a higher potential for data gaps.

The selection rates and estimated number of trips, and days monitored are summarized in Table B- 3 for partial and full coverage strata. For the EM Trawl strata, the estimated number of monitored shoreside deliveries is currently assumed to be the same as the number of monitored fishing trips. This is an overestimation as it does not account for tendering activity. Note that the EM Trawl GOA stratum's monitoring rate of 33.33% strictly represents the portion of deliveries that will be monitored shoreside by observers for biological and specimen collection. All trips at sea will be monitored by EM systems for compliance with regulations and all associated EM deliveries will be monitored shoreside by observers for salmon and halibut enumeration as well as the collection of tissues from salmon to determine genetic stock of origin.

The At-sea Observer Trawl BSAI stratum contained only 24 trips in the year prior to this analysis (Table B- 2) from 2 vessels (Table B- 1). By design, the proximity allocation algorithm assigned a higher monitoring rate to this stratum to prevent low stratum-specific sample sizes. However, pending the updated fishing effort predictions in the final analysis, further reductions in stratum size may result in a further increase in allocation. It may be more cost effective to monitor this stratum with full coverage observers (i.e., remove this stratum from partial coverage and add it to the full coverage stratum).

References

Cahalan, J. and C. Faunce. 2020. Development and implementation of a fully randomized sampling design for a fishery monitoring program. Fish. Bull (U.S). 118:87–99. doi: 10.7755/FB.118.1.8.

NMFS (National Marine Fisheries Service). 2019. *Draft* 2020 Annual Deployment Plan for Observers and Electronic Monitoring in the Groundfish and Halibut Fisheries off Alaska. National Oceanic and Atmospheric Administration, 709 West 9th Street, Juneau, Alaska 99802. Available at: https://www.fisheries.noaa.gov/s3//dam-migration/annual-deployment-plan-draft-2020.pdf

NMFS. 2023. 2024 Annual Deployment Plan for Observers and Electronic Monitoring in the Groundfish and Halibut Fisheries off Alaska. National Oceanic and Atmospheric Administration, 709 West

9th Street, Juneau, Alaska 99802. Available at: https://www.fisheries.noaa.gov/s3//2023-11/Final-2024-ADP.pdf

NMFS. 2024. FINAL Environmental Assessment/Regulatory Impact Review for Proposed Amendment 126 to the Fishery Management Plans for Groundfish of the Bering Sea / Aleutian Islands Management Area and Proposed Amendment 114 to the Fishery Management Plan for Groundfish of the Gulf of Alaska Integrating Electronic Monitoring on Pollock Catcher Vessels using Pelagic Trawl Gear and Tender Vessels in the North Pacific Observer Program March 28, 2024 National Marine Fisheries Service, Alaska Region National Oceanic and Atmospheric Administration. https://www.fisheries.noaa.gov/s3/2024-01/0648-BM40-Trawl-EM-Analysis.pdf

Table B- 1. Budget allocation and vessel participation. The preliminary budget through the observer fee and NMFS funds for monitoring (both observer and EM) is $4.4 million. The number of vessels participating is estimated as the number of unique vessels that fished within each stratum within 365 days prior to the completion of the analyses. Some vessels may fish in multiple strata (e.g., a fixed-gear vessel may fish within the at-sea observer Fixed-gear GOA and BSAI strata.)

	Draft 2025 ADP
Partial Coverage Monitoring Budget ($)	
At-sea Observer	$2,628,000
EM Fixed-gear	$977,000
EM Trawl GOA	$795,000
Total	**$4,400,000**
Vessels Participating (Partial Coverage)	
At-sea Observer Fixed-gear BSAI	52
At-sea Observer Fixed-gear GOA	290
At-sea Observer Trawl BSAI	2
At-sea Observer Trawl GOA	46
EM Fixed-gear BSAI	11
EM Fixed-gear GOA	121
EM Trawl GOA	47
No-selection	291
Vessels Participating (Full Coverage)	
Full Coverage	75
EM Trawl BSAI	67

Table B- 2. Partial coverage allocation indices, including the estimated numbers of trips in a stratum (N_h), monitoring rates (r_h), number of observed or monitored trips (n_h), the proximity index ($\hat{T}_h$), variance scaling factor (F_h), and proximity allocation index ($\hat{D}_h$).

Stratum (h)	N_h	r_h	n_h	$\hat{T}_h$	F_h	$\hat{D}_h$
Draft 2025 ADP						
At-sea Observer Fixed-gear BSAI	257	22.82	58.65	0.8752	0.1147	0.7748
At-sea Observer Fixed-gear GOA	1,855	7.31	135.60	0.8445	0.0827	0.7748
At-sea Observer Trawl BSAI	24	47.36	11.37	0.9873	0.2152	0.7748
At-sea Observer Trawl GOA	314	11.76	36.93	0.9165	0.1546	0.7748
EM Fixed-gear BSAI	70	47.66	33.36	0.8858	0.1253	0.7748
EM Fixed-gear GOA	883	12.59	111.17	0.8501	0.0887	0.7748

Table B- 3. Estimated numbers of trips in a stratum (N_h), number of observed or monitored trips/deliveries (n_h), observed or monitored days (d_h), and coverage rates (r_h) resulting from the deployment sampling design described in the text for 2025.

Stratum (h)	N_h	n_h	d_h	r_h (%)
Draft 2025 ADP				
At-sea Observer Fixed-gear BSAI	257	59	418	22.82
At-sea Observer Fixed-gear GOA	1,855	136	775	7.31
At-sea Observer Trawl BSAI	24	11	33	47.36
At-sea Observer Trawl GOA	314	37	117	11.76
Total	**2,450**	**243**	**1,343**	**9.92**
EM Fixed-gear BSAI	70	33	239	47.66
EM Fixed-gear GOA	883	111	610	12.59
Total	**953**	**144**	**849**	**15.11**
EM Trawl GOA	**984**	**328†***	**2,446**	**33.33***
No-selection	**1,389**	**0**	**0**	**0.00**
Full Coverage	918	918	10,284	100.00
EM Trawl BSAI	1,672	1,672†	5,774	100.00
Total	**2,590**	**2,590**	**16,058**	**100.00**

* The sample rate and estimated number of monitored deliveries for the EM Trawl GOA stratum is for biological and specimen data collection by shoreside observers.
† The estimated number of deliveries monitored shoreside for EM Trawl strata is an approximation based on the total number of fishing trips.

Figure B- 1. Process diagram for the analyses contained in this appendix. Green boxes indicate inputs and and blue boxes indicate iterative and random processes.

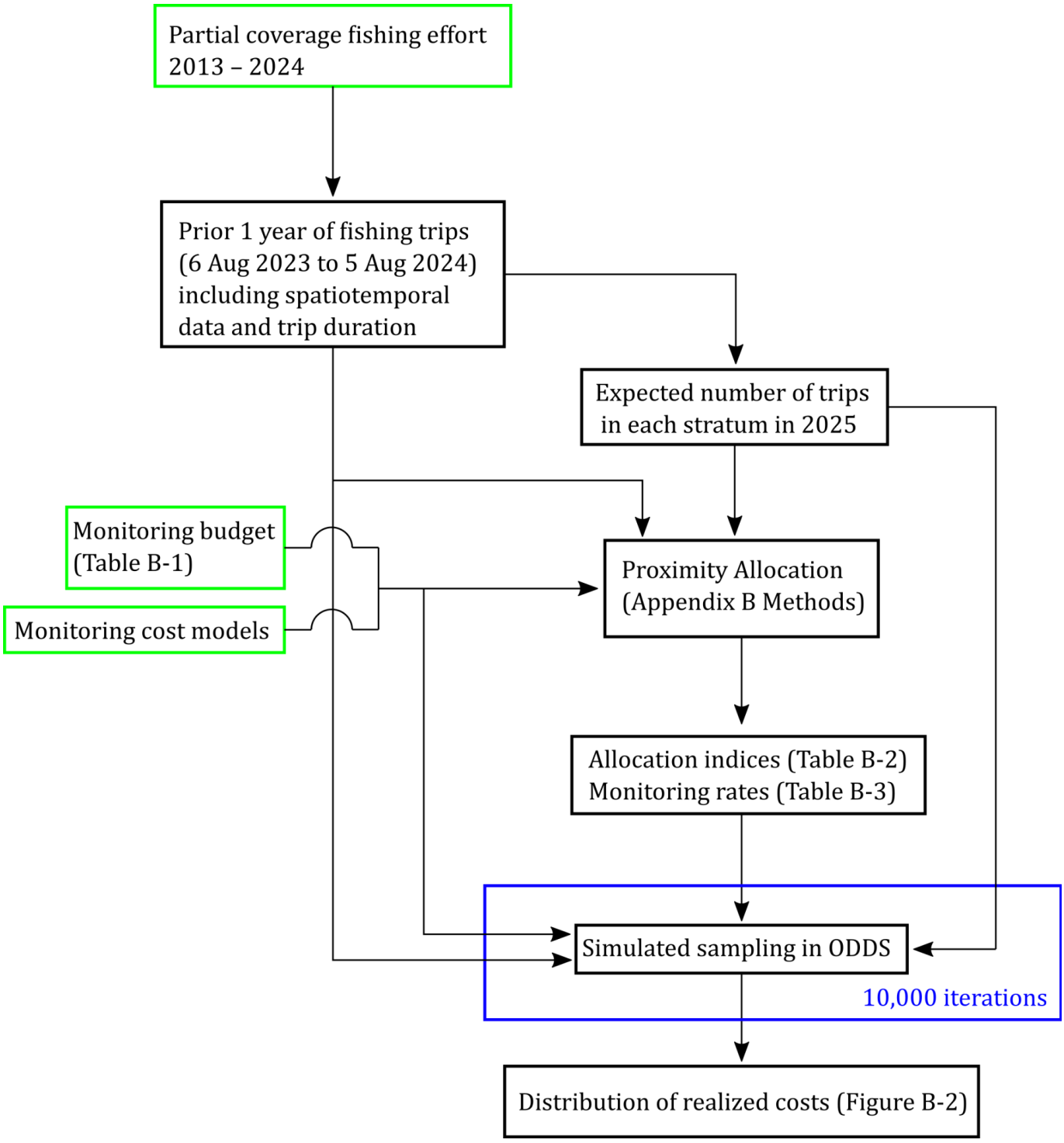
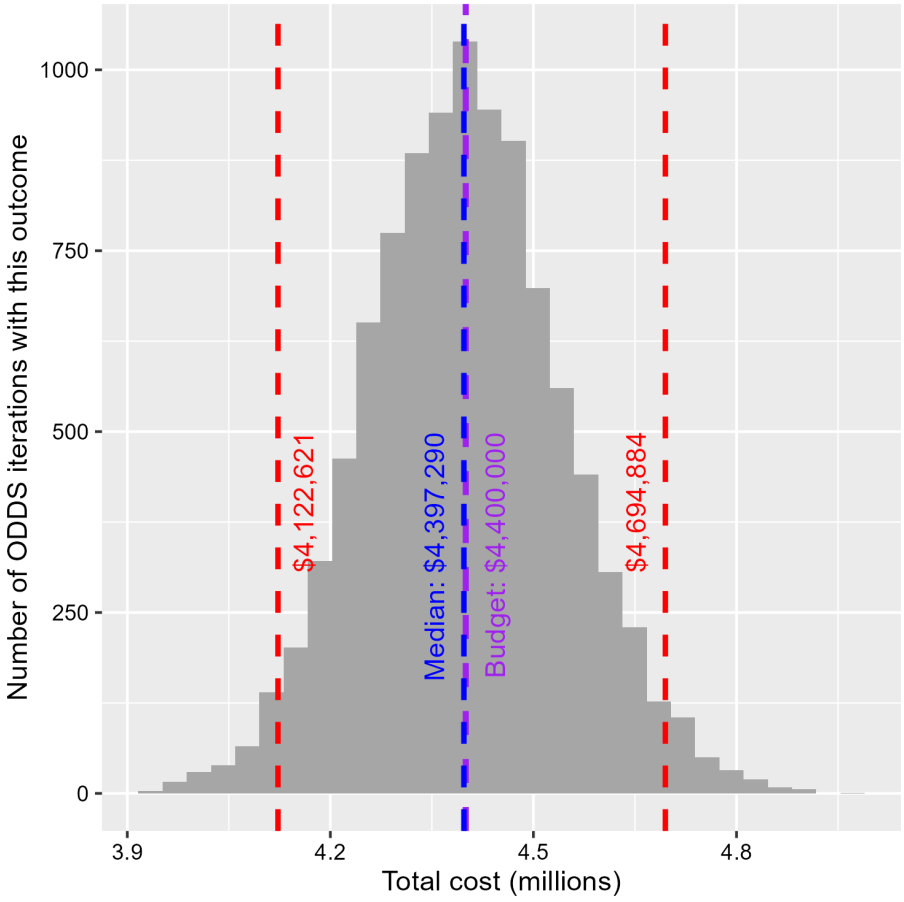


Figure B- 2. Summary of 10,000 outcomes of simulated sampling in ODDS showing the total costs of the partial coverage monitoring program expected for 2025 from this analysis. Vertical lines depict the available budget (purple line), median expected cost (blue line), and 95% confidence limits (red lines).



Appendix C. Discussion of hurdle allocation method

Allocation strategy refers to the method of allocating funds among strata to sample units. The allocation strategy determines the deployment rates that can be afforded in each sampling strata. Starting in 2018, NMFS implemented the observer allocation strategy of 15% threshold plus optimization, where observer sea days are first allocated equally up to a 15% threshold coverage rate and the remaining sea-days were allocated to maximize precision for chosen metrics (e.g., halibut Prohibited Species Catch) for the least cost. This became known as 'the hurdle approach.' The Draft 2024 ADP (NMFS 2023) evaluated new allocation approaches, including the Proximity Allocation method where the allocation of available monitoring resources is based on maximizing the proportion of trips near monitored trips while guarding against low sample sizes. The Draft 2024 ADP compared the original threshold optimization method to the proximity method and deemed the proximity method to be more suitable for meeting the objectives of representative sampling in space and time while maintaining cost-efficiency. Based on this analysis, NMFS recommended implementation of the Proximity Allocation method in the 2024 ADP.

When the Council reviewed the draft 2024 ADP they agreed with the NMFS recommendation to implement the Proximity Allocation (Appendix A). At the same time, the Council also recommended that NMFS continue to explore the hurdle approach, which had been discussed by the Council's Partial Coverage Fisheries Monitoring Advisory Committee. Under the hurdle approach, the allocation of trips to be monitored would be distributed among strata until a baseline coverage rate was achieved and any additional days afforded beyond would be allocated to times and areas where it is most cost effective for catch-accounting purposes and to target specific types of information needed by the Council, for legal mandates, or for stock assessment.

There are several benefits of the Proximity Allocation method over the hurdle approach. Under the hurdle approach, all strata are sampled at an equal rate up to a threshold minimum. This is inefficient from both scientific and cost perspectives because it requires the Observer Program to accrue the cost of sampling all strata equally even though some strata might require fewer samples whereas other strata might require more samples. In contrast, the Proximity Allocation method allows sampling to shift from areas where fewer samples are needed to areas where more samples are needed based on variance scaling and how fishing trips are distributed in space and time. Unlike the hurdle approach that allocates samples equally among strata at low budgets, the Proximity Allocation method guards against small sample sizes and avoids wasteful sampling within individual stratum at any budget. The Proximity Allocation method serves the same purpose as the hurdle approach, with the added benefit that samples are representative for each stratum without over- or under-sampling any particular stratum. NMFS continues to recommend the Proximity Allocation method as an improvement over the hurdle approach.

Additional details on the Proximity Allocation method are provided in Appendix B.

Reference

NMFS (National Marine Fisheries Service). 2023. 2024 Annual Deployment Plan for Observers and Electronic Monitoring in the Groundfish and Halibut Fisheries off Alaska. National Oceanic and Atmospheric Administration, 709 West 9th Street, Juneau, Alaska 99802. Available at: https://www.fisheries.noaa.gov/s3//2023-11/Final-2024-ADP.pdf