2027 Annual Deployment Plan for Observers and Electronic Monitoring in the Groundfish and Halibut Fisheries off Alaska

December 2026

Fisheries Monitoring and Analysis Division, Alaska Fisheries Science Center
National Marine Fisheries Service
7600 Sand Point Way NE
Seattle, WA 98115

National Marine Fisheries Service, Alaska Regional Office
P.O. Box 21668
709 W. 9th Street
Juneau, Alaska 99801

Accessibility of this Document: Every effort has been made to make this document accessible to individuals of all abilities and compliant with Section 508 of the Rehabilitation Act. The complexity of this document may make access difficult for some. If you encounter information that you cannot access or use, please email us at Alaska.webmaster@noaa.gov or call us at 907-586-7228 so that we may assist you.

Suggested Citation

National Marine Fisheries Service (NMFS). 2026. 2027 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.

Contents

Executive Summary **4**
Introduction **10**
Purpose and Authority 10
North Pacific Groundfish and Halibut Observer Program 11
Annual Deployment Plan Process 12
Recent updates to the Annual Deployment Plan 13
Partial Coverage Budget and Cost Assumptions **16**
2027 Deployment Methods **16**
Selection Method 16
Selection Pools and Stratification Scheme 17
Partial Coverage Allocation Strategy 21
Dockside Monitoring 22
Selection Rates 24
Observer Declare and Deploy System (ODDS) 25
Annual Coverage Category Requests 26
Vessels Participating in Halibut Deck Sorting 26
Voluntary Increase in Observer Coverage on Freezer Longline Vessels 27
EM Development Projects **27**
Communication and Outreach **27**
List of Preparers and Contributors **28**
References **28**
Appendix A: Council Motions on the ADP **30**
Appendix B: Calculation of the Selection Rates for the Partial Coverage Strata of the 2027 ADP **34**
Introduction 34
Methods 35
Results and Discussion 43
References 43

Executive Summary

This final 2027 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 Pacific halibut (*Hippoglossus stenolepis*) and groundfish fishing operations in the North Pacific.

The North Pacific Groundfish and Halibut Observer Program (Observer Program) is the largest observer program in the United States 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 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, every trip is monitored by 1 or 2 observers and covers the vast majority of groundfish harvest. In the partial coverage component, a subset of trips are randomly selected for monitoring by an observer or EM system, except for vessels in the trawl EM category which are subject to electronic monitoring on all fishing trips. In 2027, NMFS expects to monitor 2,764 trips, consisting of an estimated 16,760 days in the full coverage component of the program, and 1,316 trips and 4,285 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 rates—the portion of trips that are monitored by observers and/or EM—for the partial coverage category.

Budget & Cost Assumptions

For this ADP, NMFS set a budget of $5.7M to support monitoring of the partial coverage fisheries in 2027.

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 monitor and sample deliveries in the Gulf of Alaska (GOA) inshore pollock (*Gadus chalcogrammus*) trawl fishery (trawl EM).

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 primarily 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 functions 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.

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 shoreside processor receiving catch from the EM monitored vessel. For full coverage trips, vessel and shoreside processor owners/operators are responsible for procuring observer and EM hardware services directly through NMFS-authorized companies and EM service providers and there is no cost incurred by NMFS for full-coverage monitoring.

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. Appendix B details the decision points, calculations, and resulting values presented in this summary.

Selection method
For 2027 in the partial coverage category, NMFS will implement trip selection from all ports throughout Alaska to assign both at-sea observers and EM to fishing events for partial coverage vessels. 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 GOA, every trawl EM trip is monitored by an EM system at sea and by a partial coverage observer at the shoreside processor receiving catch from EM monitored vessels. NMFS will sample every offload for all salmon and Pacific halibut and randomly select offloads for biological sampling by observers assigned to the shoreside processing plants.

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.

Sampling strata
Fishing trips are broadly classified according to regulatory categories that establish monitoring requirements, including whether monitoring is required on all trips (Full Coverage) or a subset of trips (Partial Coverage), and whether trips are monitored at sea by observers or EM. These regulatory categories provide the basis for forming selection pools and, where applicable, the sampling strata within these pools. Each sampling stratum is assigned a specified monitoring rate.

In 2027, NMFS will implement 6 selection pools and 10 sampling strata:

1. Full Coverage Observer Pool/Stratum
   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 (C/P), with limited exceptions; Motherships; Catcher Vessels (CVs) participating in programs that have transferable Prohibited Species Catch (PSC) allocations as part of a catch share Limited Access Privilege Program; and shoreside processors receiving or processing Bering Sea pollock.

2. EM Trawl BSAI Pool/Stratum
   Pollock CVs using pelagic trawl gear must opt-in annually by 1 November, and subsequently be approved by NMFS, to participate in the full coverage trawl EM 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. Shoreside processors are responsible for maintaining two observers at minimum, and may need to procure additional observers to ensure management needs are met for trawl EM category deliveries. All trawl EM category deliveries in the BSAI are monitored by observers. Of the 105 vessels that applied and were approved by NMFS in the trawl EM category for 2026, 65 are expected to fish in the BSAI.

3. Partial Coverage Observer Trip-selection Pool

There are four observer trip-selection strata based on gear and Fisheries Management Plan area for 2027:

- *At-sea Observer Fixed-gear BSAI (Fixed-gear BSAI)*
- *At-sea Observer Fixed-gear GOA (Fixed-gear GOA)*
- *At-sea Observer Trawl BSAI (Trawl BSAI)*
- *At-sea Observer Trawl GOA (Trawl GOA)*

4. Partial Coverage EM Fixed-gear Pool

The EM Fixed-gear selection pool consists of two sampling strata:

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

All requests to be in or out of the EM Fixed-gear selection pool for 2027 must have been received in ODDS by 1 November 2026.

Vessel owners/operators opt into the EM Fixed-gear selection pool and, if approved by NMFS, a vessel will remain in the EM Fixed-gear selection pool for the duration of the following calendar year (1 January–31 December). To ensure cost-efficiency, 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 North Pacific Fishery Management Council, including: vessel size, fishing effort, and/or minimizing data gaps.

For the 2027 ADP year, 33 vessels within the EM Fixed-gear Pool that had not submitted a Vessel Monitoring Plan (VMP) in the prior three years were removed from the pool. This action was to improve the cost-efficiency of the monitoring program.

In 2028, vessels must meet minimum fishing effort requirements to remain in the EM Fixed-gear pool. The purpose of these requirements is to ensure that vessels participating in the EM Fixed-gear pool can be monitored more cost-efficiently than they would be in the At-sea Observer Fixed-gear pool. Vessels with at least three (3) years of membership in the EM Fixed-gear pool must complete at least nine (9) trips in the EM Fixed-gear pool over the most recent three year period (i.e., three trips per year on average) to remain in the EM Fixed-gear pool in 2028. Vessels that do not meet the minimum effort requirements while participating in the EM Fixed-gear pool will be automatically placed into the At-sea Observer Fixed-gear pool in the following calendar year. Vessels that do not meet the minimum fishing effort requirements will be notified of their removal from the EM Fixed-gear pool before the start of the 2028 calendar year. Vessels will be eligible for re-entry into the EM Fixed-gear pool after demonstrating they meet the fishing effort inclusion criteria while fishing in the At-sea Observer Fixed-gear pool. In 2027 the re-entry criterion is 15 trips in the most recent 3 years. NMFS will evaluate the eligibility of all EM fixed-gear vessels in the fall of each year for both inclusion and exclusion. The inclusion and exclusion criteria will be evaluated annually and could be revised and updated in future ADPs. In 2027, two new vessels were approved to join, three vessels were not approved to join because they did not meet eligibility criteria, one opted for removal, and 33 were removed from the pool, totaling 147 vessels that were approved to fish in the EM Fixed-gear pool.

Each year, all vessels in the EM Fixed-gear selection pool are required to submit and follow a NMFS-approved VMP. As part of the VMP approval, NMFS will assess a vessel's past adherence

to their approved VMP. To evaluate a vessel's ongoing eligibility for the EM Fixed-gear program, NMFS will review the volume and severity of compliance infractions that adversely affect data collection and quality. Vessels that fail to meet data collection and quality criteria are notified and placed in a Notice of Improvement Pool (NIP). Vessels with severe data quality issues or repeated failures to meet data collection and quality standards set out in the VMPs will be removed from the EM program.

5. EM Trawl GOA Pool/Stratum

Pollock CVs using pelagic trawl gear must opt-in annually by 1 November, and subsequently be approved by NMFS, to participate in the partial coverage trawl EM 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 trawl EM regulations. Vessels must indicate prior to the trip whether they intend to deploy non-pelagic trawl gear during a trip. If a vessel intends to deploy non-pelagic trawl gear, they are subject to the Partial Coverage Observer Trip-selection pool. Vessels only deploying pelagic trawl gear while targeting pollock must comply with EM system requirements for every trip. Observers monitor EM deliveries by CVs and tender vessels at shoreside processors. Of the 105 vessels that applied and were approved by NMFS in the trawl EM category for 2027, 40 are expected to fish in the GOA based on fishing effort within the last year.

Tender vessels are not subject to the annual opt-in deadline of 1 November and tender approvals are completed by NMFS, as needed. NMFS will cover the servicing costs of six tender vessel EM systems in 2027. These EM systems are portable and, as such, may be installed on multiple tender vessels throughout a given fishing year. Beyond the six systems that NMFS will pay for servicing, additional tender vessels could be approved for the trawl EM category, as long as they have a fully functional EM system and comply with their NMFS-approved VMP.

6. No-selection Pool/Stratum

The No-selection pool is composed of vessels in the partial coverage category that will have no probability of carrying an observer or EM system on any trip for the 2027 fishing year. This stratum includes vessels <40 feet length overall and/or fishing with jig gear.

Allocation of Monitoring in Partial Coverage

In 2027, NMFS will continue to use 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. This allocation method applies to all sampled partial coverage strata (i.e., does not apply to the no-selection stratum) except the EM Trawl GOA stratum. The Proximity Allocation method was reviewed and vetted by a panel of external experts in June 2026[1].

For the EM trawl GOA stratum, NMFS will implement dockside monitoring and allocate funds for monitoring according to estimates of the number of plant observers required.

Dockside Monitoring

In 2027, dockside monitoring at shoreside processing plants by observers will enable sampling of deliveries from pollock vessels fishing with pelagic trawl gear. The data collection objectives are to 1) enumerate salmon bycatch from deliveries by EM vessels and deliveries by vessels that were observed at

[1] External Independent Peer Review of the NPOP Annual Deployment Plan and Annual Report

sea; 2) enumerate Pacific halibut bycatch from deliveries by EM vessels; 3) collect salmon genetic information to determine bycaught salmon area of origin; and 4) collect biological samples from non-salmon species from deliveries by EM vessels.

For partial coverage trawl EM category vessels in the GOA that deliver pollock to shoreside processors or tenders, observers will complete objectives 1–3 for every EM offload and will complete objective 4 for a randomly selected subset of EM offloads.

To plan for 2027 monitoring of trawl EM vessels delivering pollock to GOA plants, NMFS requested that processors communicate their expected shoreside observer needs by 1 November[2]. Based on requests and past deployment needs, the final 2027 ADP allocated:

- Five observers to monitor processing plants in Kodiak during both A and B seasons.
- Three observers during the pollock A season to monitor processing plants in the western GOA which are not operating under the American Fisheries Act (AFA) but are accepting pollock from trawl EM catcher vessels.
- Two observers during the pollock B season to monitor processing plants in the western GOA which are not operating under AFA but are accepting pollock from trawl EM catcher vessels.

Furthermore, we assume:

- All deliveries of EM Trawl GOA pollock to full coverage plants (e.g., Akutan) will be monitored by full coverage observers.
- Plant operations in 2027 will be similar to plant operations during the 2025–2026 period, i.e., the number of plant days that shoreside observers are needed in 2027 will be similar to the number used during the 2025–2026 period.

For vessels in the GOA pollock fishery that do not participate in the partial coverage trawl EM category and deliver to shoreside processors, observers at the shoreside processor will also complete objectives 1 and 3 for the offloads from trips that are randomly selected for at-sea observer coverage. Pacific halibut PSC estimates will be based on sample data collected by at-sea observers using current Catch Accounting System methods. Objective 4 will be completed *at-sea* by the vessel observer, as has been the norm in the past.

For monitored trips in the GOA pollock fishery outside of the partial coverage trawl EM category that deliver 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 all CV trips (observed and EM) in the BSAI trawl pollock fishery, a census of salmon will be completed during the offload.

[2] Processors can communicate their expected observer needs by emailing: nmfs.alaska.adp@noaa.gov.

Selection Rates

The *final* selection rates (rounded to the nearest whole number) for strata in 2027 are:

Component	Pool	Stratum	Selection Rate (%)	Number of Trips Expected to be Observed	Monitoring Location & Purpose
Partial Coverage	**Observer Trip Selection**	Fixed-gear BSAI	30	74	At-sea for discard & PSC estimation / biological sampling
		Fixed-gear GOA	8	158	
		Trawl BSAI	47	15	In addition to the above, pollock trawl deliveries are monitored dockside for salmon on selected trips
		Trawl GOA	15	44	
	EM Fixed-gear Trip Selection	EM Fixed-gear BSAI	39	35	At-sea for discard & PSC estimation
		EM Fixed-gear GOA	13	139	
	EM Trawl GOA	EM Trawl GOA	100	851	At-sea EM compliance monitoring
			100	851	Dockside salmon & Pacific halibut PSC accounting
			33	284	Dockside biological sampling
	No-selection	No-selection	0	0	n/a
Full Coverage	**Full Coverage**	Full Coverage	100	983	At-sea for discard & PSC estimation / biological sampling Plus pollock trawl deliveries monitored dockside for salmon
	EM Trawl BSAI	EM Trawl BSAI	100	1,781	At-sea EM compliance monitoring
					Dockside salmon & Pacific halibut PSC accounting / biological sampling

Introduction

Purpose and Authority

This 2027 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 Pacific halibut (*Hippoglossus stenolepis*) 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 the Groundfish Fisheries 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 ADP process is described in the analysis that was developed to support the restructured North Pacific Groundfish and Halibut Observer Program (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 NMFS 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. In June 2026, the science used to develop and evaluate the ADP was reviewed and vetted by a panel of international external experts who concluded that the science used in the ADP is sound, justified, and best available[3]. 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).

[3] External Independent Peer Review of the NPOP Annual Deployment Plan and Annual Report

North Pacific Groundfish and Halibut Observer Program

NMFS implements the Council's fishery research plan through the 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. EM is broadly defined as technological tools which collect fishing data to support stock assessment and fishery management. In the North Pacific, EM is usually 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 United States 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 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 categories.

In full coverage, every trip is 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-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 providers, two NMFS-approved EM hardware service providers, and one EM review service provider.

For partial coverage trips, vessel owners/operators declare each trip in a NMFS database before the vessel departs. If a trip is selected for monitoring, a NMFS-contracted observer provider company arranges for coverage if the vessel is in the observer selection pool, otherwise the vessel must turn on its EM system. Funding for partial coverage is primarily 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 monitored. 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 Pacific 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 monitoring 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 (VMP). 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, annual fishing effort, 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, 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.

Annual Deployment Plan 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 the 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 Pacific halibut fisheries off Alaska.

The Annual Report is presented to the Council at their second meeting of the year. The Annual Report 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 Pacific 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 for the 2027 fishing year was prepared and presented to the Council in October 2026. This document represents the final ADP for the 2027 fishing year. The ADP defines partial coverage strata, participation requirements, allocation methods, and selection rates each year. Strata define how trips will be monitored (for example, which vessels belong to at-sea 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; NMFS 2023). 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 Pacific halibut landings in the prior year and the anticipated future costs of monitoring and fishing effort.

Recent updates to the Annual Deployment Plan

The draft 2024 ADP incorporated changes to increase efficiency in the sampling design. In 2026, a review of this design was conducted by a panel of experts from the Center for Independent Experts (CIE). The CIE reviewers made no recommendations to change the core ADP in 2027[4]. Suggested research recommendations from the CIE review will be considered for inclusion in future ADPs.

Funding mechanisms remain roughly the same as in past ADPs with the exception of a change to sources of funding for EM. Since 2023, Congressional Directed Spending funds have been directly allocated to the Pacific States Marine Fisheries Commission (PSMFC) to support new installations of EM systems and EM equipment replacements. The Congressional Directed Spending funds will be expended by the end of 2026 and thus the costs of equipment installation and replacement are now included in the budget costs for the 2027 ADP.

[4] External Independent Peer Review of the NPOP Annual Deployment Plan and Annual Report

Table 1. Data collected by at-sea observers, trawl EM 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. The planned partial coverage selection rates (trips at-sea and deliveries shoreside) set through the Annual Deployment Plan for each stratum 2023–2027. GOA= Gulf of Alaska; BSAI = Bering Sea and Aleutian Islands; Fixed-gear = Hook and Line and/or Pot Gear; EM = Electronic Monitoring; Composition = Species Composition Sampling; Disposition = Retained or Discarded Catch; Tissues = Biological Tissue Sampling. Blank cells indicate strata that were not used in the Annual Deployment Plan for a particular year.

			Year				
Stratum Description	**Coverage Type**	**Data Focus**	**2023**	**2024**	**2025**	**2026**	**2027**
Fixed-gear BSAI	At-sea Observers	Composition, Disposition, and Tissues		43.97	19.83	29.15	29.63
Fixed-gear GOA				13.17	6.16	9.98	8.34
Hook-and-line			17.90				
Pot			17.10				
Trawl BSAI				72.28	40.39	53.28	47.28
Trawl GOA				20.58	15.45	20.03	15.14
Trawl			22.70				
EM Fixed-gear BSAI	At-sea EM	Composition and Disposition		74.29	47.91	39.21	39.42
EM Fixed-gear GOA				24.20	11.11	16.77	12.73
EM Hook-and-line			30.00				
EM Pot			30.00				
EM Trawl BSAI	At-sea EM	Compliance	100.00	100.00	100.00	100.00	100.00
	Shoreside Observers	Composition, Tissues, Pacific Halibut and Salmon Counts	100.00	100.00	100.00	100.00	100.00
EM Trawl GOA	At-sea EM	Compliance	100.00	100.00	100.00	100.00	100.00
	Shoreside Observers	Composition, Tissues, Pacific Halibut and Salmon Counts	33.33	33.33			
		Composition and Tissues			33.33	33.33	33.33
		Pacific Halibut and Salmon Counts			100.00	100.00	100.00
Vessels < 40’ LOA and Jig Gear	None	Design Efficiency (No data collected)	0.00	0.00	0.00	0.00	0.00

Partial Coverage Budget and Cost Assumptions

For this analysis, NMFS set a budget of $5.7M to support monitoring of the partial coverage fisheries in 2027. The budget includes revenues generated from ex-vessel fees collected from fishing in 2025, estimated ex-vessel fees that are expected to be collected from fishing in 2026, and federal funds that are able to be secured for monitoring.

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 (*Gadus chalcogrammus*) trawl fishery. Trawl EM 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 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. The cost function for plant observers monitoring the EM Trawl GOA stratum considered the shoreside observer cost per plant-day, including the number of guaranteed and optional days purchased, lodging, travel, and food costs.

This 2027 ADP assumes: five shoreside observers to monitor processing plants in Kodiak during A season and B season; two shoreside observers to monitor offloads during A season and one during B season at Sand Point; one shoreside observer stationed at False Pass during A season and B season; no partial coverage shoreside observers are stationed at Akutan or Dutch Harbor plants; all observers monitor on all calendar days while pollock fishing is open; and plant operations in 2027 are similar to the 2025–2026 period.

The trawl EM and EM fixed-gear cost functions also considered the annual cost for EM equipment maintenance by EM service providers (which is dependent on the number of vessels in the pool), EM system installation and replacement costs, and video review costs. The EM cost functions were updated for the 2027 ADP budget to include the costs of EM system installations and EM equipment replacements because those are no longer supported separately by external funding. The Congressional Directed Spending funds to pay for EM system installations and replacements that were administered through a grant with PSMFC in 2023 are expected to be fully expended by the end of 2026.

In total, trawl EM in the GOA was estimated to cost $1.1M which was deducted from the total $5.7M budget prior to allocation of the remaining funds (approximately $4.6M) to deploy at-sea observers and EM fixed-gear.

2027 Deployment Methods

Selection Method

For 2027, 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; Faunce et al. 2021).

In the EM trawl GOA stratum, every trip is monitored by an EM system at sea. Moreover, all offloads by catcher and tender vessels are monitored for salmon and Pacific halibut by observers at the processing plants. A subset of these deliveries will also be randomly selected by the shoreside observers for biological sampling.

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 trawl EM vessels.

Selection Pools and Stratification Scheme

Fishing trips are broadly classified according to regulatory categories that establish monitoring requirements, including whether monitoring is required on all trips (Full Coverage) or a subset of trips (Partial Coverage), and whether trips are monitored at sea by observers or EM. These regulatory categories provide the basis for forming selection pools and, where applicable, the sampling strata within these pools. Each sampling stratum is assigned a specified monitoring rate.

In 2027, NMFS will implement 6 selection pools and 10 sampling strata, discussed below.

Full Coverage

1. Full Coverage Observer Pool/Stratum

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 (C/Ps; with limited exceptions).
- Motherships.
- Catcher Vessels (CVs) participating in programs that have transferable PSC allocations as part of a catch share program, which includes: CVs harvesting Pacific Cod (*Gadus macrocephalus*) Trawl Cooperative (PCTC) quota; Bering Sea pollock (both American Fisheries Act [AFA] and Community Development Quota [CDQ] programs), the groundfish CDQ fisheries (CDQ fisheries other than Pacific halibut and fixed-gear sablefish [*Anoplopoma fimbria*]; only vessels greater than 46 ft length overall [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.

2. EM Trawl BSAI Pool/Stratum

Pollock CVs using pelagic trawl gear must opt-in annually by 1 November, and be approved by NMFS, to participate in the full coverage trawl EM 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 trawl EM deliveries

by CVs or tender vessels to shoreside processors are subject to required dockside monitoring (for more details, see section below on Dockside Monitoring).

Partial Coverage

3. Partial Coverage Observer Trip-Selection Pool

There are 4 observer trip-selection strata based on gear and FMP area for 2027.

- 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, are not approved to use EM, 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, are not approved to use EM, 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 trawl EM 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 trawl EM where the vessel declared in ODDS that they intend to harvest the majority of catch on the trip in the GOA.

4. 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 approved to be 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 approved to be 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.

In 2027, a total of 147 vessels were approved to participate in the EM Fixed-gear pool.

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 a NMFS-approved VMP[5]. 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 following calendar year (1 January–31 December).

All requests to be included or removed from the EM selection pool for 2027 must have been received in ODDS by 1 November 2026. NMFS may approve or deny requests by vessels to be added to the EM Fixed-gear pool based on the priorities identified by NMFS , criteria specified at 50 CFR 679.51(f)(1)(iv),

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

and supported by the Council (Appendix A) including: vessel size, fishing effort, and minimizing data gaps. New vessels requesting entry into the EM Fixed-gear pool must have completed at least 15 trips in the prior three year period (i.e., five [5] trips per year on average with at least 1 trip per year) to be included in the EM Fixed-gear pool for the 2027 calendar year.

Vessels in the EM Fixed-gear selection pool in 2026 remain eligible to be in the EM Fixed-gear selection pool for 2027 unless:

- the vessel owner/operator submitted a request to leave the EM Fixed-gear selection pool;
- NMFS has disapproved the vessel's VMP or the vessel failed to adhere to the requirements of their 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.

Minimum Fishing Effort Criteria for EM Fixed-gear

For the 2027 ADP year, 33 vessels within the EM Fixed-gear Pool that had not submitted a Vessel Monitoring Plan (VMP) in the prior three years were removed from the pool. This action was to improve the cost-efficiency of the monitoring program.

Beginning in 2028, vessels must meet minimum fishing effort requirements to remain in the EM Fixed-gear pool. The purpose of these requirements is to ensure that vessels participating in the EM Fixed-gear pool can be monitored more cost-efficiently than they would be in the At-sea Observer Fixed-gear pool. Vessels with at least three (3) years of membership in the EM Fixed-gear pool must complete at least nine (9) trips in the EM Fixed-gear pool over the most recent three year period (i.e., three trips per year on average) to remain in the EM Fixed-gear pool in 2028. Vessels that do not meet the minimum effort requirements while participating in the EM Fixed-gear pool will be automatically placed into the At-sea Observer Fixed-gear pool. Vessels that do not meet the minimum fishing effort requirements will be notified of their removal from the EM Fixed-gear pool before the start of the 2028 calendar year. Vessels could be eligible for re-entry into the EM pool after demonstrating they meet the inclusion criteria while fishing in the At-sea Observer Fixed-gear pool. In 2027 the inclusion criterion is 15 trips in the last 3 years (see above). NMFS will evaluate the eligibility of all EM vessels annually in the fall of each year for both inclusion and exclusion. NMFSwill also evaluate the inclusion and exclusion criteria annually and revise and update criteria as needed in future ADPs. Vessels that meet the fishing effort criteria described above could still be removed from the EM Fixed-gear pool if they have repeated noncompliance with VMPs or poor data quality as described below.

Five vessels requested to be added to the EM Fixed-gear pool for the 2027 fishing year. These vessels were evaluated using the criteria listed above, including: vessel size, their potential for increasing data gaps, and the average number of fishing trips taken per year. Two vessels were approved and the remaining three were denied because they did not meet the inclusion criteria specified above (i.e., insufficient fishing history). One vessel opted to remove their vessel from the EM Fixed-gear pool.

EM Data Quality and Notice of Improvement Pool

As part of the VMP approval process, NMFS will assess a vessel's past adherence to their approved VMP from the previous year. The type, quantity, and severity of compliance issues that negatively impact data collection or quality will be used to assess vessel eligibility to continue to participate in EM programs. For example, a vessel operator with recurring issues that have resulted in unusable or very poor quality EM data (e.g., obstructing the camera view) might be placed on probationary status or deemed ineligible for participation in an EM program. EM data collection and quality are analyzed both in-season and annually at the end of the calendar year. As soon as EM issues are identified by NMFS, NMFS reaches out to vessels to help the vessel come back into compliance with their VMP. When an issue is logged by an EM reviewer, which could be a month or more after the trip, an automatic email is sent to all email addresses listed on the VMP. In addition, NMFS requires the EM Service Provider to attempt to contact the vessel by phone and email to help address the issue. NMFS Office of Law Enforcement (OLE) will contact vessels if the issue is serious (significant data loss) or a continuous, repeated offense. NMFS makes every attempt to help the vessel rectify the issue as soon as it is identified. Vessel operators who voluntarily report issues with EM data collection or quality to the NMFS Fisheries Monitoring and Analysis Division (FMA) of the Alaska Fisheries Science Center (AFSC) and immediately take corrective actions upon discovery will not be placed into the Notice of Improvement Pool (NIP, see below).

If the EM data provided by an EM vessel is of consistently poor quality and improvements are required, "Notice of Improvement Needed" outreach letters are sent to the vessel. These letters notify the vessel that they are being placed into the NIP. Placement in the NIP is determined annually, after NMFS conducts an EM data quality analysis at the end of each calendar year once all EM data from the vessel has been reviewed. The NIP letter notifies the vessel owner/operator of specific issues that must be addressed to bring the vessel into compliance. NIP vessels have a disproportionate impact on overall data quality and timeliness because these vessels require long review times which adds expense and delays the review of hard drives from compliant vessels. Data from vessels in the NIP is of poor quality and is often missing or cannot be used for management or other purposes.

Vessels in the NIP must satisfactorily improve their performance within a year to continue to participate in an EM program. Vessels that do not improve or adhere to program responsibilities and guidelines may be deemed ineligible to participate in, and subsequently removed from, an EM program. Vessels which are removed from an EM program automatically revert to the at-sea observer pool. Vessels in the NIP that were not active (i.e., did not fish) or did not have an EM trip selected during the year, and therefore had no opportunity to improve, will remain in the NIP the following year. NMFS will notify the vessel operator of their EM/NIP status for the upcoming calendar year through a cover letter attached to the VMP.

5. EM Trawl GOA Pool/Stratum

Vessels using pelagic trawl gear[6] must opt-in annually by 1 November, are required to submit and follow a NMFS-approved VMP, and be approved by NMFS, to participate in the partial coverage trawl EM 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 trawl EM 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 EM deliveries by CVs or tender vessels to shoreside processors (for more details, see section below on Dockside Monitoring).

[6] 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.

There were 105 vessels that applied and were approved by NMFS to be in trawl EM in 2027, 40 are expected to fish in the GOA based on fishing effort by these vessels in the prior year.

Tender vessels are not subject to the annual opt-in deadline of 1 November, as the shoreside processors often do not know the availability of a specific tender vessel until closer to the time that fishing will occur. Tender approvals are completed by NMFS, as needed, and usually occur in February and August as shoreside processors identify their tender vessel needs.

NMFS will cover the servicing costs of six tender vessel EM systems in 2027. Tender EM systems are portable and, as such, may be installed on multiple tender vessels throughout a given fishing year. Beyond the six systems that NMFS will pay for servicing, additional tender vessels could be approved for the trawl EM category, as long as they have a fully functional EM system and comply with their NMFS-approved VMP.

EM Data Quality and Notice of Improvement Pool

As part of the VMP approval process, NMFS will assess a vessel's past adherence to their approved VMP from the previous year. The type, quantity, and severity of compliance issues that negatively impact data collection or quality will be used to assess vessel eligibility to continue to participate in EM programs. Similar to the procedures described above for the Fixed-gear EM pool, if the EM data provided by a trawl EM vessel is of consistently poor quality and improvements are required, "Notice of Improvement Needed" outreach letters are sent to the vessel. The NIP letter notifies the vessel owner/operator of specific issues that must be addressed to bring the vessel into compliance. Vessels in the NIP must satisfactorily improve their performance within a year to continue to participate in the trawl EM program. Vessels that do not improve or adhere to program responsibilities and guidelines may be deemed ineligible to participate in, and subsequently removed from, the trawl EM program. Vessels which are removed from an EM program automatically revert to the at-sea observer pool. Vessels in the NIP that were not active (i.e., did not fish) or did not have an EM trip selected during the year, and therefore had no opportunity to improve, will remain in the NIP the following year. NMFS will notify the vessel operator of their EM/NIP status for the upcoming calendar year through a cover letter attached to the VMP.

6. No-selection Pool/Stratum

The No-selection pool is composed of vessels in the partial coverage category that will have no probability of carrying an observer or EM on any trips for the 2027 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 2027, NMFS will 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 (NMFS 2023). The Council has supported implementation of the Proximity Allocation Method[7]. In June 2026, NMFS held a Center for Independent Experts review[8] of the methods used in the ADP, including the Proximity Allocation Method. The general consensus among the three external, independent reviewers was that the science is sound, appropriate, and best available.

The Proximity Allocation Method spreads monitored trips throughout the fisheries to increase the proportion of trips that are monitored or near a monitored 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 strata monitored at sea, but does not apply to the No-selection stratum or the EM trawl GOA stratum which is sampled shoreside. Details on how selection rates were determined are provided in Appendix B.

Dockside Monitoring

Dockside sampling methods

Dockside monitoring by observers will occur at 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 deliveries by EM vessels and deliveries from vessels that were observed at sea; 2) enumerate Pacific halibut bycatch from deliveries by EM vessels; 3) collect genetic information from salmon in deliveries by EM vessels and vessels that were observed at sea; and 4) collect biological samples from non-salmon species from deliveries by EM vessels.

For GOA trawl EM category vessels that deliver to shoreside processors or tenders, observers at the processing plant will complete an enumeration of salmon and Pacific 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 selected for at-sea observer coverage, salmon enumeration and collection of salmon tissue samples for genetic analysis will be conducted at the shoreside processing plant. For 2027, NMFS intends to continue to collect genetic samples from 1 in 10 Chinook (*Oncorhynchus tshawytscha*) and 1 in 30 chum (*Oncorhynchus keta*) salmon, 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 trawl EM category 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 all CV trips (observed and EM) in the BSAI trawl pollock fishery, a census of salmon will be completed during the offload.

[7] C-1 Council motion 2023 Observer Annual Report & 2025 Annual Deployment Plan June 8, 2024
[8] External Independent Peer Review of the North Pacific Observer Program Annual Deployment Plan and Annual Report

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 trawl EM 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 need 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, using estimated costs and anticipated budget. As such, the agency will determine the total number of observers needed in the GOA at 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 requests information from industry to ensure budget allocations are accurate in the ADP[9]. Through communication with processing plants, NMFS intends to deploy five shoreside observers at processing plants in Kodiak for both A season and B season, two shoreside observers during A season and one during B season at Sand Point, and one shoreside observer at False Pass for both A season and B season in 2027.

Table 3 summarizes the 2027 dockside sampling protocols for salmon and groundfish delivered by CVs in the pelagic pollock fishery in the GOA and Bering Sea. 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. CV and tender vessel operators will be required to follow landing notice procedures specified in their respective VMPs, as specified at § 679.51(g)(3). The landing notice is transmitted by the CV 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 is provided to the shoreside observers. Beginning on 1 January 2025, Bering Sea shoreside processors implemented an internal email account that allows observers to monitor daily schedules and other communications. The Alaska Regional Office (AKR) is included on these emails. This process gives observers adequate information to perform their sampling duties, and gives the agency

[9] Processors can communicate their expected observer needs by emailing: nmfs.alaska.adp@noaa.gov.

the ability to track communications. These emails are listed in the communication section of the CMCP. A similar process is in place for the GOA shoreside processing plants.

Table 3. Summary of dockside sampling for CVs in the pelagic pollock fishery in 2027. EM: Electronic Monitoring; GOA: Gulf of Alaska, BS: Bering Sea.

FMP area	Stratum	Fishery	Offload location	Salmon and Pacific halibut PSC accounting	Salmon genetic samples	Biological sampling of groundfish at the plant
GOA	EM Trawl	Pelagic pollock	Shoreside plant or tender	Enumeration of all salmon and Pacific halibut PSC on 100% of deliveries.	1 in 10 Chinook and 1 in 30 chum	33% of deliveries
	Partial Coverage At-sea Observer Trips	Pelagic pollock	Shoreside plant	Enumeration of all salmon PSC on deliveries for selected trips. Estimates from Pacific 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 Pacific 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
BS	EM Trawl	Pelagic pollock	Shoreside plant	Enumeration of all salmon and Pacific halibut PSC on 100% of deliveries.	1 in 10 Chinook and 1 in 30 chum	100% of deliveries
	Full Coverage At-sea Observer Trips	Pelagic pollock	Shoreside plant	Enumeration of all salmon PSC on 100% of deliveries Estimates from Pacific 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 final selection rates for deployment of observers (50 CFR 679.51(a)) and EM (50 CFR 679.51(f)) in 2027 are summarized in Table 4. Using a combination of at-sea observers, shoreside observer sampling, and EM, NMFS expects to monitor 2,764 trips in full coverage and 1,316 trips in partial coverage in 2027 (Table 4). Details on how selection rates were determined are provided in Appendix B.

Table 4. Summary of total trips, selection rates (rounded to the nearest whole number), the number of trips expected to be monitored, and monitoring location and purpose, in each sampling stratum in 2027.

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	252	29.63	74	At-sea	Discard & PSC estimation/ biological sampling
		Fixed-gear GOA	1,901	8.34	158		
		Trawl BSAI	31	47.28	15		
		Trawl GOA	291	15.14	44		
	EM Fixed-gear	Fixed-gear BSAI	88	39.42	35	At-sea	Discard & PSC estimation/ biological sampling
		Fixed-gear GOA	1,096	12.73	139		
	EM Trawl	EM Trawl GOA	851	100	851	At-sea	EM compliance
				100	851	Dockside	PSC accounting
				33	284	Dockside	Biological sampling
	No-selection	No-selection	1,523	0	0		
Full Coverage	**Full Observer**	Full Observer Coverage	983	100	983	At-sea	Discard & PSC estimation/biological sampling
	EM Trawl BSAI	EM Trawl BSAI	1,781	100	1,781	At-sea	EM compliance
				100	1,781	Dockside	PSC accounting
				100	1,781	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 the ODDS web-application. 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 VMP.

The NMFS is currently updating the ODDS to facilitate more timely and accurate data entry by vessel and call center users. Starting in 2027, when closing pending trips in ODDS, users will be presented a list of landing report identification numbers with fishing trip dates that closely match the trip's planned embarkation and disembarkation dates in ODDS. Users can then select one or more landing reports to close a trip. If no potential landing reports are listed, the trip's embark and disembark dates may need to be updated by the user in ODDS. If there are still no landing reports listed, the user may enter the landing report identification numbers or the landing date into ODDS, consistent with the current process for closing trips. This upgrade will improve ease of use, data quality, and data timeliness.

Operators of CVs in the partial coverage trawl EM category with 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 trawl EM 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.

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 C/P 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[10] to NMFS. Twelve vessels are in the partial coverage C/P category for the 2027 fishing year. However, only one of these vessels has a history of C/P activity within the Observer Program. The other eleven vessels have not fished as C/Ps, but have had C/P endorsements on their Federal Fisheries Permits, primarily for freezing rockfish in jig or troll fisheries. NMFS will be reevaluating 50 CFR 679.51(a)(3) as part of its deregulatory efforts under EO 14276.

Full coverage CVs

Under Observer Program regulations at 50 CFR 679.51(a)(4), the owner of a trawl CV operating in the BSAI may annually request the CV to be placed in the full observer coverage category for the upcoming year. Since implementation of the PCTC program in 2024, the only partial coverage trawl effort that this rule applies to is directed fishing for Pacific cod during C season. Requests to be placed into full observer coverage in lieu of partial observer coverage must have been made in ODDS[11] prior to 15 October 2026 for the 2027 fishing year. Each year, the list of CVs that have been approved to be in the full coverage category is available on the NMFS website.[12] No vessels opted into the full coverage category for 2027.

Vessels Participating in Halibut Deck Sorting

On 24 October 2019, NMFS published a final rule to implement regulations allowing Pacific halibut to be sorted on the decks of trawl C/Ps 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 Pacific halibut. This flexibility enables NMFS to adjust sorting times in response to new information. In 2027, NMFS will continue to allow all vessels operating under these regulations 35 minutes to deck-sort and discard Pacific

[10] 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
[11] 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
[12] 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

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 and Alaskan Observers, Inc., are intending to deploy two observers on select C/P 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 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.

EM Development Projects

In addition to the regulatory EM programs, NMFS supports ongoing innovation of EM and collaborating with industry partners on EM development projects when funding and staff resources are available. Industry members frequently apply for funding through non-governmental organizations to support these projects and the Council often provides letters of support and NMFS is committed to collaborating to the extent possible when funding decisions are announced.

Pending availability of staff resources, known and ongoing projects that NMFS intends to support in 2027 include:

- Central Gulf of Alaska Rockfish Program EM Pilot Project;
- Freezer-longline Coalition EM Pilot Project;
- RealTime Data/Deckhand Electronic Logbook Development;
- North Pacific Fisherman's Association & Under Sixty Cod Harvester's proposal with Saltwater, Inc., to evaluate pot cod EM catch handling protocols; and
- Advancing Fisheries Monitoring: Scaling AI tools to Modernize Data Collections and Analytical Practices of Electronic Monitoring Videos.

Communication and Outreach

In an effort to enhance communication and collaboration between Alaska commercial fisheries shoreside processors and NMFS, an email and letter were sent from the AFSC Fisheries Monitoring and Analysis Division to shoreside processors on 19 August 2026. A copy of the email and the letter are attached in Appendix F of the Draft 2027 ADP (NMFS 2026). For questions or concerns related to the ADP, or to inform NMFS of 2027 monitoring needs, please contact: nmfs.alaska.adp@noaa.gov.

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

- Frequently Asked Questions about trawl EM are available at: https://www.fisheries.noaa.gov/s3//2025-01/Common-Questions-Trawl-Electronic-Monitoring-EM-Category.pdf

- For technical information and Frequently Asked Questions regarding ODDS go to http://odds.afsc.noaa.gov/ and click the "ODDS login" button.

NMFS continues to communicate with industry groups and past participants as we work to ensure smooth monitoring of fisheries. AKR 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. To request a meeting or suggest a topic for discussion, please contact Sean Lucey at 1-206-900-5565 or Sean.Lucey@noaa.gov.

List of Preparers and Contributors

ADP Analysis Team (in alphabetical order):
Phil Ganz, Alaska Regional Office (AKR)
Christian Gredzens, Alaska Fisheries Science Center (AFSC)
Geoff Mayhew, AFSC

Other contributions from:
Craig Faunce, AFSC
Jason Gasper, AKR
Jason Jannot, AFSC
Joel Kraski, AKR
Sean Lucey, AFSC
Melanie Rickett, AKR
Lisa Thompson, AFSC
Mike Vechter, AFSC

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.

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

National Marine Fisheries Service (NMFS). 2026. *Draft* 2027 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/resource/document/draft-2027-annual-deployment-plan-observers-and-electronic-monitoring-groundfish

NMFS. 2023. *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. 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

North Pacific Fishery Management Council (NPFMC). 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

C1 Observer 2027 Annual Deployment Plan
Council Motion
October 9, 2026

Annual Deployment Plan (ADP)
Regulations requiring 100% and 200% observer coverage requirements are unchanged. The Council supports the draft 2027 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 2026. The Council also supports the following:

- Removing vessels from the fixed gear electronic monitoring (EM) pool in 2027 who have not complied with requirements to update and submit EM Vessel Monitoring Plans for the past 3 years.
- A yearly evaluation by NMFS to remove vessels from the fixed gear EM pool if they average <3 trips per year over the prior 3 years. These vessels will be placed in the at-sea observer pool and return their EM equipment to be used on active vessels.
    - Vessels requesting to rejoin the fixed gear EM pool need at least 5 trips per year over the prior 3 years
    - The Council requests NMFS continue to explore criteria for vessels joining for the first time
    - The Council requests NMFS provide consideration for active vessels that are proposed to be removed from the fixed gear EM pool (>0 - <3 trips) if they can prove they do not have bunk space for an observer

The Council appreciates the analysis of moving additional fixed gear vessels with few annual trips to the zero selection pool (i.e., no observer coverage requirements) and recognizes the conclusion there were no cost efficiency or monitoring gains identified.

CIE Review
The Council commends NOAA on the positive results of the Center for Independent Experts' peer review of the annual deployment plan methodologies and annual monitoring report. The Council supports further dissemination of the results to the SSC, IPHC, and other bodies, where appropriate.

C-1 Council motion
2025 Observer Program Annual Report & 2027 Annual Deployment Plan
June 6, 2026

2025 Annual Report
Given changes to the Council's future meeting schedule, the Council supports NOAA's proposal to provide relevant data to the Council at the May Council meeting to support recommendations on the following year's annual deployment plan, with the final annual report released prior to September. Overall, the Council recommends an abbreviated annual report, with a focus on:

- Clear, plain language results on the projected and achieved observer or electronic monitoring (EM) coverage by sector and whether spatial and temporal distribution were achieved
- Statistics on the percentage of actual catch observed by gear type in the GOA and BSAI, as indicated on p. 6 and Tables 4-3 and 4-4 of the 2025 annual report

- Identification in the executive summary of any notable changes from the previous year's deployment scheme and resulting changes in trends or conclusions as to their effectiveness
- An addition to the enforcement section to identify whether the vessel or processor was able to resolve the issue inseason

2027 Annual Deployment Plan (ADP)
The Council supports the following recommendations for the 2027 ADP:

- For the partial coverage program, use the proximity allocation method (except for pelagic trawl EM) and the following strata for deployment: (observer, EM fixed gear, EM pelagic 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
- Maintain fixed gear EM selection pool of up to 181 vessels. If needed, prioritize placement in the EM selection pool based on vessel size, fishing effort, minimizing data gaps, and cost efficiency
- Provide a process to remove or deny vessels in the EM programs if they are inactive or have repeated issues causing data loss from the EM pool
- Continue to improve EM video review times with Pacific States Marine Fisheries Commission and use prioritization rules to better allocate review effort to the fisheries, gear types, times, and areas most dependent on EM data for management
- Present revisions to the zero selection pool (currently <40' fixed-gear catcher vessels and jig gear) for cost efficiency purposes
- For pelagic trawl EM, ensure logbook explanations are available to EM reviewers to provide additional context for discard of pollock events; develop a secondary blind review process for pollock discard events that may advance to enforcement actions; and support an OLE focus on compliance assistance given early implementation of the program, similar to the fixed gear EM approach

The Council recommends sending a letter to the Department of Commerce on the planned transition to login.gov multi-factor authentication for all public-facing systems (such as Observer Declare and Deploy System, or ODDS) beginning as early as mid-2026. The letter should highlight the challenges for Alaska fisheries participants given unreliable internet and cell service in some areas of rural Alaska, and request reconsideration or accommodations.

C-2 Council motion
Observer 2026 Annual Deployment Plan
October 3, 2025

2026 Annual Deployment Plan (ADP)
The Council supports the draft 2026 ADP for partial coverage fisheries with the additions outlined below. Observer coverage rates resulting from the selected design and the final budget are expected in the final ADP in December 2025. Regulations requiring 100% and 200% observer coverage requirements are unchanged.

- Confirmation that vessels operating in partial coverage can deliver to and have their harvest observed by a full coverage observer at an AFA shoreplant. No partial coverage shoreside observers need to be stationed at full coverage AFA plants.
- Continued outreach to the fleets on 1) the deadlines to opt in or opt out of the EM pool for 2026, and 2) any changes to, or potential disruptions with, the ODDS system to log trips for coverage.

- Consistent with the Trawl EM Council action, the cost of housing and feeding observers was not to be directly paid for by processors and should be included in the ADP. There may be specific cases where processors can continue to house and feed observers, and these can be excluded.

The Council reiterates its support for agency efforts to revise the zero selection pool (currently <40' fixed gear catcher vessels and jig gear) for cost efficiency purposes to evaluate including fixed gear catcher vessels with 1-2 annual trips and/or low annual quota/volume.

NFWF Proposals

The Council supports the following proposals submitted for funding from the National Fish and Wildlife Foundation (NFWF):

- Freezer Longline Coalition project proposal with FlyWire to test using EM on longline catcher processors for catch composition and consider real-time data reporting options for EM monitored vessels
- Real Time Data proposal to expand use of electronic logbooks in the halibut and sablefish fleets through evolved integration with eLandings, testing broader platform support, and enhanced features for fishermen

---

C-1 Council motion
2024 Observer Annual Report & 2026 Annual Deployment Plan
June 6, 2025

2024 Annual Report

The Council appreciates the 2024 Annual Report on the observer program and recommends the following for future reports, in addition to SSC recommendations as practicable:

- The executive summary should include program summary statistics, such as the percentage of catch observed as indicated on p. 85:
    - In the Bering Sea/Aleutian Islands (BSAI), all pelagic trawl catch was on trips with 100% or 200% coverage. In the BSAI and Gulf of Alaska combined, **91.2% of pelagic trawl catch was on trips with 100% or 200% coverage and 8.8% was on trips in partial coverage.** All partial coverage trips were in the Gulf of Alaska and 34% of the catch was monitored. This percentage is higher if trawl trips covered by electronic monitoring (EM) are considered.
    - In the BSAI and Gulf of Alaska combined, **95.6% of non-pelagic trawl catch was on trips with 100% or 200% coverage and 4.4% was on trips in partial coverage.** Partial coverage trips occurred in both the BSAI and GOA, with 79.1% and 16.4% of their catch monitored, respectively.
- The executive summary should include identification of any notable changes from the previous year's deployment scheme and resulting changes in trends or conclusions as to their effectiveness. • Include the amount and timeliness of EM data review for the pelagic gear EM program similar to the fixed gear EM program.
- Highlight the results of the ODDS trip cancellation policy change in 2025 (i.e., ability to edit not cancel selected trips) and its effect on reducing temporal bias.

2026 Annual Deployment Plan (ADP)

The Council supports the following recommendations for the 2026 ADP:

- For the partial coverage program, similar to 2025, use the proximity allocation method (except for pelagic trawl EM) and the following strata for deployment: (observer, EM fixed-gear, trawl EM), 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
- Maintain fixed-gear EM selection pool of up to 178 vessels. 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 with Pacific States Marine Fisheries Commission and use prioritization rules to better allocate review effort to the fisheries, gear types, times, and areas most dependent on EM data for management.
- As practicable for this or future ADPs, consider revisions to the zero selection pool (currently <40' fixed-gear catcher vessels and jig gear) for cost efficiency purposes to potentially include fixed-gear catcher vessels with: 1-2 annual trips and/or low quota/catch volume.

Appendix B: Calculation of the Selection Rates for the Partial Coverage Strata of the 2027 ADP

Introduction

The Annual Deployment Plan (ADP) specifies how fishery monitoring assets (observers and electronic monitoring [EM] equipment) are deployed into federal fisheries off Alaska by the North Pacific Groundfish and Halibut Observer Program (Observer Program). Fishery monitoring data are 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 (Cahalan and Faunce, 2020). The ADP is focused predominantly on fishing operations for which monitoring rates will be less than 100% (i.e., the partial coverage fleet). The partial coverage fleet consists of catcher vessels (CVs) and some catcher/processors (C/Ps, when they are not participating in a catch sharing or cooperative style management program) and accounts for approximately 10% of the landed tonnage in the Federal fisheries off Alaska. Changes to the composition of the partial coverage fleet have resulted from National Marine Fisheries Service (NMFS) policy, North Pacific Fishery Management Council (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 (NMFS 2013).

For the sampling design employed by the Observer Program to be statistically defensible, it must include several key elements. These elements include randomized data collections over spatial and temporal scales (a probability sample) coupled with 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). Therefore, the sampling design for the deployment of fishery monitoring assets (i.e., the deployment design) in the partial coverage fleet involves two components; 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 Observer Declare and Deploy System (ODDS) is used to identify the strata of fishing trips and to randomly select trips in partial coverage fisheries for monitoring at the selection rates defined by this ADP.

The ADP process includes a draft and final version. The draft ADP is focused on presenting the best deployment design for consideration for the year ahead, while the final ADP is focused on refining the design presented in the draft ADP and providing the most likely monitoring rates that available budgets can afford. In this way, the ADP provides an annual process for NMFS and the 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 2027 and presents final selection rates based on available budgets.

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 and FMA was used in this analysis. Briefly, these data consist of gear types used, fishing dates, locations, monitoring status, and associated ADP strata that occurred on partial coverage fishing trips between 1 January 2013 to 21 October 2026. For this analysis, the expected fishing effort for 2027 was assumed to be similar to all partial coverage fishing effort for the most recent 12 month period (between 22 October 2025 through 21 October 2026).

As in past ADPs, trip data were adjusted to reflect fishing effort in the partial coverage fleet for the upcoming year. These adjustments included: 1) using deployment data to more accurately model the duration that observers are assigned to selected fishing trips; 2) labeling fishing activity by two 'historically low volume' C/Ps as belonging to the partial coverage category (i.e., those exempted from full coverage through regulatory flexibility); 3) labeling fishing by American Fisheries Act (AFA) eligible trawl vessels targeting Pacific cod (*Gadus macrocephalus*) 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 2027; and 4) removing vessels with no probability of selection (i.e., all trips corresponding to the no-selection pool) from the analysis. Vessel lists for the EM Fixed-gear pool and trawl EM category were updated to reflect the approvals, denials, removals, and opt-outs of vessels. Compared to 2026, the 2027 EM Fixed-gear pool decreased by 34 vessels to a total of 147 vessels (two requests approved, three requests denied, one vessel opted-out, and 33 were removed for not having Vessel Monitoring Plans [VMPs] for the last three consecutive years). The total number of trawl EM vessels is 105. The number of trawl EM vessels expected to fish in the Gulf of Alaska (GOA; i.e., partial coverage) is 40, with the number of GOA-only vessels estimated to be 35.

The 2027 partial coverage sampling design includes the following strata, defined by gear type, monitoring method (observers, EM, or none), and FMP (BSAI or GOA):

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

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

3. At-sea Observer Trawl BSAI: Observer monitoring of trips that occur primarily in the BSAI by vessels using trawl gear, excluding trips where vessels participate in trawl EM.

4. At-sea Observer Trawl GOA: Observer monitoring of trips that occur primarily in the GOA by vessels using trawl gear, excluding trips where vessels participate in trawl EM.

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

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

7. EM Trawl GOA: EM compliance monitoring of trips that occur primarily in the GOA by vessels participating in the partial coverage trawl EM category that have been approved to carry EM with shoreside monitoring of offloads by observers.

8. No-selection: No monitoring, includes vessels in the partial coverage category less than 40 ft LOA and trips fishing exclusively with jig gear.

Accounting for Uncertainties

Uncertainty in Fishing Effort

The methods for estimating fishing effort, or the number of trips to occur in each stratum in 2027, are detailed in Appendix C of the Final 2025 ADP (NMFS, 2024a). In short, the number of trips to occur in 2027 was assumed to be the same as in 2026, but because fishing in 2026 has not yet completed at the time of writing of this analysis, a statistical model was used to predict the expected number of fishing trips in each stratum based on the number of fishing trips that occurred in 2026 to date.

Following recent research (Faunce, in review), a five-year Simple Exponential Smoothing (SES) model was evaluated against status quo Generalized Linear Models (GLMs) for the large EM_FIXED-GOA and OB_FIXED-GOA strata. Although initial testing showed substantial improvements with SES in both strata, removing vessels without a Vessel Monitoring Plan (VMP) resulted in SES outperformance of GLMs solely in the OB_FIXED-GOA stratum (yielding a 26% reduction in Root Mean Square Error). The automated model selection script selected the GLM model for all strata with the exception of OB_FIXED-GOA, which selected the 5-year SES model.

Confidence intervals around the fishing effort estimates were calculated from the GLM statistical model and the SES projection model so that variability could be incorporated in the expected number of fishing trips in each stratum in 2027. The uncertainties from both models are conservative underestimates—the GLM model does not include year to year projection uncertainty and the SES model does not include data fitting error in the GLM model used to predict end of year trips for 2026. This variability served two purposes. Firstly, the allocation algorithm is affected by the number of trips in each stratum and their distribution in time and space. Future populations of partial coverage fishing effort (1,000 iterations) were generated by resampling fishing trips from the prior year, where the number of trips sampled in each stratum varied according to each stratum's confidence intervals. By running differing populations of future fishing effort that vary in the total number of trips and when and where they occur, the sensitivity of the algorithm to different assumptions of future fishing effort can be evaluated. More importantly, the uncertainty in fishing effort can be reflected in the variability of the expected costs of monitoring deployment, as resampled populations that contain a greater number of fishing trips will result in a greater number of monitored trips and therefore greater costs, and vice versa.

Uncertainty in Monitoring Costs Due to Random Trip Selection

The ADP prescribes monitoring rates such that the predicted monitoring costs incurred in 2027 will be roughly equal to the budget available to deploy observers and EM into partial coverage (i.e., the monitoring budget). However, in practice, random processes in trip selection introduce uncertainty in the realized costs.

The random process of trip selection in ODDS may impact the realized costs in several ways. First, although ODDS is programmed to select trips for monitoring at a specified rate, some degree of variation in each stratum's realized selection rate is to be expected, and this affects the total number of trips monitored. Second, trip durations vary, with longer trips being generally more expensive to monitor than shorter trips, causing monitoring costs to vary depending on which trips are randomly selected. In addition, at-sea observer monitoring costs may vary depending on the number and timing of sea days purchased. To account for these sources of variability, randomization was incorporated by simulating trip selection in ODDS at the prescribed trip selection rates. This simulated trip selection in ODDS was repeated 100 times for each of the 1,000 resampled fishing populations for a total of 100,000 iterations. Finally, unpredictable processes, such as whether trips logged into ODDS are canceled, inherited, waived, or if trips are not logged at all are not accounted for.

Budget and Monitoring Costs

The available budget for monitoring the partial coverage fisheries was set at $5.7M and includes revenues generated from ex-vessel fees in 2025 and 2026 and Federal funds. Beginning in 2023, Congressional Directed Spending funds allocated to the Pacific States Marine Fisheries Commission (PSMFC) supported new installations of EM systems and EM equipment replacements. These costs were not included in budget considerations in those prior years. The Congressional Directed Spending funds are expected to be expended by the end of 2026 and thus the costs of equipment installation and replacement are now included in the budget for 2027. The final monitoring budget used in this document ($5.7 M) is higher from the budget used in the Draft 2027 ADP (NMFS, 2026).

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 monitor and sample deliveries in the GOA inshore pollock (*Gadus chalcogrammus*) trawl fishery (trawl EM). To estimate the costs of monitoring, cost functions were constructed for each monitoring method. Each model incorporates the best information available on monitoring costs paid by contracted sources and available budgets, assumptions about both fixed and variable costs, and known economies of scale.

What follows are the most detailed descriptions of costs for each deployment stratum possible while maintaining the confidentiality of estimated prices included in the partial coverage observer contract.

EM Trawl GOA

Vessels in the partial coverage trawl EM in the GOA carry EM systems for at-sea compliance and are monitored shoreside by observers for prohibited species catch (PSC), total catch, and collection of biological samples. The 2027 cost estimate for EM trawl GOA 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; 4) estimated vessel EM equipment maintenance costs; and 5) estimated EM system installation and replacement costs.

In 2027 the shoreside observer cost estimate assumes: 5 observers are required to monitor processing plants in Kodiak in both A and B season; 2 observers in A season and 1 observer in B season are anticipated at Sand Point; 1 observer during both A season and B season at False Pass; no partial coverage shoreside observers are required at processing plants in Akutan or Dutch Harbor; the duration of A season is similar to that of 2026; and the duration of B season is similar to that of 2025. Under these assumptions, 777 plant observer days are predicted in the GOA for 2027.

According to the partial coverage observer contract, the cost of a shoreside plant day is a function of total plant days, which contract year the days occur in, and the number and type of days purchased (guaranteed or optional). Based on the assumptions above, approximately 77% of the 2027 GOA pollock fishery will occur during the first contract period (1 Jan 2027–30 September 2027) of the partial coverage contract and 23% during the second contract period (1 October–31 December 2027). 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, total airfare costs, and total per diem costs. Lodging costs were assumed to be similar to those reported to NMFS during A season of 2026 and B season of 2025. These costs take into account lodging and food for observers stationed at processing plants that do not provide these amenities. The sum of the total lodging, airfare, and per diem costs yielded the total GOA travel costs.

The 2027 cost estimate function for trawl EM also includes the recurring costs for EM system maintenance, new system installations, system replacements, EM service provider management, and estimates of video review. Previously, new system installations and replacements were covered through funds from Congress and administered through a grant with PSMFC. However, these funds are expected to be fully expended in 2026 with none remaining for 2027 and beyond.

The costs of EM equipment maintenance that recur each year were assumed to scale with the number of active vessels in the trawl EM pool that fish exclusively in the GOA (vessels that fish in the BSAI are responsible for their own EM costs). Annual maintenance cost per vessel was calculated by dividing total maintenance expenditures by the number of vessels active during the previous 12 months. System installation and replacement costs were annualized by dividing the total expenditures for new installations and replacement systems during the most recent full calendar year by an estimated 5-year lifespan. Total recurring equipment cost per active vessel was then calculated as the sum of the mean annual maintenance cost and annualized system cost. For this analysis, the recurring annual equipment cost per vessel was estimated at $5,633.39.

Average video review costs per trip were calculated by dividing the total video review expenses by the number of trips reviewed. The total cost of the trawl EM program was then estimated as a function of 1) total shoreside observer day costs, 2) total shoreside observer travel costs, 3) overhead and project management costs, 4) the number of active GOA-only vessels in the pool and associated EM service provider management and equipment costs, 5) the estimated number of trips requiring review multiplied by the estimated average review cost per trip, and 6) an estimated $5,000 of equipment expenses per tender vessel (set at six vessels for 2027).

In total, EM Trawl GOA was estimated to cost $1.1M which was deducted from the total $5.7M budget prior to allocation of the remaining funds to the At-sea Observer and EM Fixed-gear strata. Because this cost is known, the costs for the remaining portions of the partial coverage fleet are estimated from cost rates and predicted effort.

At-sea Observers

At-sea observer costs were estimated as a function of sea day costs and travel costs. Twelve hundred ‘guaranteed’ sea days are purchased before ‘optional’ sea days are purchased. Estimating sea day costs for the 2027 calendar year involved two steps: 1) calculation of the number of days under the base contract that will have already been used from 1 October to 31 December 2026; and 2) an estimate of the total

number of days to be monitored 1 January to 31 December 2027. We first estimated the number of days monitored between 1 October and 31 December 2026 using fishing effort data from the same period in 2025 and the sampling rate for each stratum from the 2026 ADP. The values were then summed for each stratum to estimate the number of guaranteed/optional days remaining on the base contract as of 31 December 2026. Next, the total number of days that could be monitored by at-sea observers in 2027 was determined using the Proximity Allocation algorithm (described in the Allocation Method section later), which accounted for the number of days already used on the base contract, the additional number of guaranteed and/or optional days afforded on the base contract through 30 September 2027, and additional days expected to occur during the next contract year beginning 1 October 2027. An estimate of travel cost per sea day was calculated using detailed monitoring expenses compiled from internal reports for years 2017–2026. Annual totals of travel costs were divided by the number of sea days monitored in each year and resulted in annual estimates of travel cost per monitored day that were then inflation-adjusted to 2027 dollars. Based on cost trends, the inflation-adjusted average travel day cost from 2025 through 2026 was then used as the value for travel day costs in 2027. The sum of sea day costs and travel costs represented the total cost of at-sea observers.

EM Fixed-gear

The 2027 cost estimate function for EM Fixed-gear includes the recurring costs for EM system maintenance, new system installations, system replacements, EM service provider management, and estimates of video review. Previously, new system installations and replacements were covered through funds from Congress and administered through a grant with PSMFC. However, these funds are expected to be fully expended in 2026 with none remaining for 2027 and beyond.

The costs of EM equipment maintenance that recur each year were assumed to scale with the number of active vessels in the EM Fixed-gear pool. Annual maintenance cost per vessel was calculated by dividing total maintenance expenditures by the number of vessels active during the previous 12 months. System installation and replacement costs were annualized by dividing the total expenditures for new installations and replacement systems during the most recent full calendar year by an estimated 5-year lifespan. Total recurring equipment cost per active vessel was then calculated as the sum of the mean annual maintenance cost and annualized system cost. For this analysis, the recurring annual equipment cost per vessel was estimated at $6,296.62.

Average video review costs were calculated by dividing total video review expenditures during the most recent full calendar year by the number of hard drives reviewed during that period. The total cost of the EM Fixed-gear program was estimated as a function of 1) overhead and project management costs, 2) the number of active vessels in the pool and associated EM service provider management and equipment costs and 3) the estimated number of hard drives requiring review under the sampling rates prescribed by the proximity allocation algorithm multiplied by the estimated average review cost per hard drive.

Allocation Method

The allocation method involves several steps that are depicted in Figure B-1. The sample allocation method, Proximity Allocation, was introduced in the 2024 draft ADP (NMFS 2023) and reviewed by a panel of external, independent experts in June 2026[13]. Proximity Allocation 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 (weighing both objectives equally), and

[13] External Independent Peer Review of the North Pacific Observer Program Annual Deployment Plan and Annual Report

maximizes the sample rates to the extent that the budget supports. This method is designed to distribute sampled trips throughout the strata 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 Spatiotemporal Boxes

Expected fishing effort was categorized based on each trip's stratum, gear type used, and the 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 spatiotemporal units, or "boxes". A sensitivity analysis showed that choice of box size and time period had negligible impact on allocation and final selection rates (Mayhew & Cahalan manuscript in preparation). Trips could belong to multiple 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 directly 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 hexagonal 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 monitored trips 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 a particular 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. Equation 1 was used to generate the probability that there were no monitored trips in the neighborhood of box b, $\hat{A}_b$.

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

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

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 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 strata (years, gear types, etc.). The variance of a parameter, x, is given by

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

Note that in Equation 3 we are summing not only over those sample units that were sampled, but all sample units in the population (i.e., $i = 1, \ldots, N\}$ where N is the total number of units in the population, rather than the number of sampled units in the population ($i = 1, \ldots, n$). 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 (FPC, (*N*-*n*)/*N,* equal to 1 minus the proportion of the population sampled) and the inverse of the sample size (1/*n*):

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

As the sample size *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*:

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

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 decreases as stratum size, *N*, increases. In addition, when used in combination with the proximity index, *F* 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*, $\hat{D}_h$, 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:

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

The expanded version of Equation 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:

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

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:

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

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, $\hat{D}_h$, for the budget were identified.

Determining Selection Rates for 2027

The selection rates of the EM Trawl GOA and No-selection strata were specified by policy. In EM Trawl GOA, 100% of trips are to be monitored by EM at sea for compliance of discard retention, 100% of shoreside deliveries are to be monitored by observers for PSC enumeration and salmon genetic tissue sampling, 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 total cost for the EM Trawl GOA stratum (~$1.1M) was deducted from the total available budget, and the selection rates of the remaining partial coverage strata were determined using the proximity allocation algorithm.

Results and Discussion

Table B-1 summarizes how the $5.7M 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 20% increase from the $4.75M monitoring budget set in the 2026 ADP. The expected difference between the available budget and the predicted expended cost is depicted as a risk-profile in Figure B-2. The allocation indices and selection rates resulting from the partial coverage allocation algorithm are provided in Table B-2. 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 0.7883. This represents a decrease from the value afforded in the 2026 ADP of 0.8170, indicating a higher potential for data gaps.

The selection rates, estimated number of trips, and estimated number of days to be monitored are summarized in Table B-3 for all partial and full coverage strata. Note that the EM Trawl GOA stratum's monitoring rate of 33.33% strictly represents the subset of deliveries that will be monitored shoreside by observers for biological and specimen collection. All trips will be monitored at sea by EM systems for compliance with regulations and all associated EM deliveries will be monitored shoreside by observers for salmon and Pacific halibut (*Hippoglossus stenolepis*) enumeration as well as the collection of tissues from salmon to determine genetic stock of origin.

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

Faunce, C. H. In Review. Comparative model performance for forecasting North Pacific fishing effort. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-XXX.

National Marine Fisheries Service (NMFS). 2013. 2013 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://media.fisheries.noaa.gov/dam-migration/final2013adp.pdf

NMFS. 2023. *Draft* 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://media.fisheries.noaa.gov/2023-11/Draft-2024-ADP.pdf

NMFS. 2024a. 2025 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/resource/document/2025-annual-deployment-plan-observers-and-electronic-monitoring-groundfish-and

NMFS. 2024b. 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

NMFS. 2026. *Draft* 2027 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/resource/document/draft-2027-annual-deployment-plan-observers-and-electronic-monitoring-groundfish

Table B-1. Budget allocation and vessel participation. The available budget through the observer fee and NMFS funds for monitoring (both observer and EM) is $5.7 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 2027 ADP	Final 2027 ADP
Partial Coverage Monitoring Budget		
At-sea Observer	$3,227,000	$3,088,000
EM Fixed-Gear	$1,479,000	$1,520,000
EM Trawl GOA	$732,000	$1,091,000
Total	$5,438,000	$5,699,000
Vessels Participating (Partial Coverage)		
At-sea Observer Fixed-gear BSAI	49	53
At-sea Observer Fixed-gear GOA	292	295
At-sea Observer Trawl BSAI	2	3
At-sea Observer Trawl GOA	44	46
EM Fixed-gear BSAI	12	12
EM Fixed-gear GOA	119	120
EM Trawl GOA	39	40
No-selection	272	273
Vessels Participating (Full Coverage)		
Full Coverage	92	92
EM Trawl BSAI	64	65

Table B-2. Partial coverage allocation indices, including the estimated numbers of trips in a stratum (N_h), monitoring rates (r_h), number of monitored trips (n_h), 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	$\hat{D}_h$
Final 2027 ADP						
At-sea Observer Fixed-gear BSAI	251.75	29.63	74.49	0.8732	0.9028	0.7883
At-sea Observer Fixed-gear GOA	1,900.61	8.34	158.40	0.8532	0.9239	0.7883
At-sea Observer Trawl BSAI	31.04	47.28	14.58	0.9734	0.8099	0.7883
At-sea Observer Trawl GOA	290.78	15.14	43.97	0.9155	0.8611	0.7883
EM Fixed-gear BSAI	88.34	39.42	34.73	0.9083	0.8679	0.7883
EM Fixed-gear GOA	1,096.21	12.73	139.30	0.8561	0.9208	0.7883

Table B-3. Estimated number of trips in a stratum (N_h), number of monitored trips/deliveries (n_h), monitored days (d_h), and selection rates (r_h) resulting from the deployment sampling design for the 2027 Annual Deployment Plan (ADP). Estimated total number of shoreside deliveries observed for salmon and Pacific halibut Prohibited Species Catch (o_h) and the estimated number of shoreside deliveries selected for groundfish biological sampling (b_h) are also given for the trawl electronic monitoring (EM) strata.

Stratum (h)	N_h	n_h	d_h	r_h (%)	o_h	b_h
Draft 2027 ADP						
At-sea Observer Fixed-gear BSAI	253	79	408	31.35		
At-sea Observer Fixed-gear GOA	1,868	174	723	9.31		
At-sea Observer Trawl BSAI	35	16	40	46.54		
At-sea Observer Trawl GOA	305	47	119	15.34		
Total	**2,461**	**316**	**1,290**	**12.84**		
EM Fixed-gear BSAI	92	40	199	42.99		
EM Fixed-gear GOA	1,010	154	774	15.24		
Total	**1,102**	**194**	**973**	**17.60**		
EM Trawl GOA	**894**	**894**	**2,145**	**100.00**	894	298
No-selection	**1,427**	**0**	**0**	**0.00**		
Full	968	968	9,740	100.00		
EM Trawl BSAI	1,774	1,774	6,634	100.00	1,774	1,774
Total	**2,742**	**2,742**	**16,374**	**100.00**		
Final 2027 ADP						
At-sea Observer Fixed-gear BSAI	252	74	465	29.63		
At-sea Observer Fixed-gear GOA	1,901	158	685	8.34		
At-sea Observer Trawl BSAI	31	15	39	47.28		
At-sea Observer Trawl GOA	291	44	108	15.14		
Total	**2,475**	**291**	**1,297**	**11.76**		
EM Fixed-gear BSAI	88	35	178	39.42		
EM Fixed-gear GOA	1,096	139	691	12.73		
Total	**1,184**	**174**	**869**	**14.70**		
EM Trawl GOA	**851**	**851**	**2,119**	**100.00**	853	284
No-selection	**1,523**	**0**	**0**	**0.00**		
Full	983	983	9,928	100.00		
EM Trawl BSAI	1,781	1,781	6,832	100.00	1,781	1,781
Total	**2,764**	**2,764**	**16,760**	**100.00**		

* The selection rate and estimated number of monitored deliveries for the EM Trawl GOA stratum is for salmon and Pacific halibut enumeration. Biological and specimen data collection by shoreside observers will occur in every one out of three deliveries, or an estimated 284 deliveries.

Figure B-1. Process diagram illustrating the inputs, analytical workflow, and outputs used to determine Annual Deployment Plan (ADP) selection rates and expected monitoring costs. Green boxes indicate inputs and blue boxes indicate iterative and random processes.

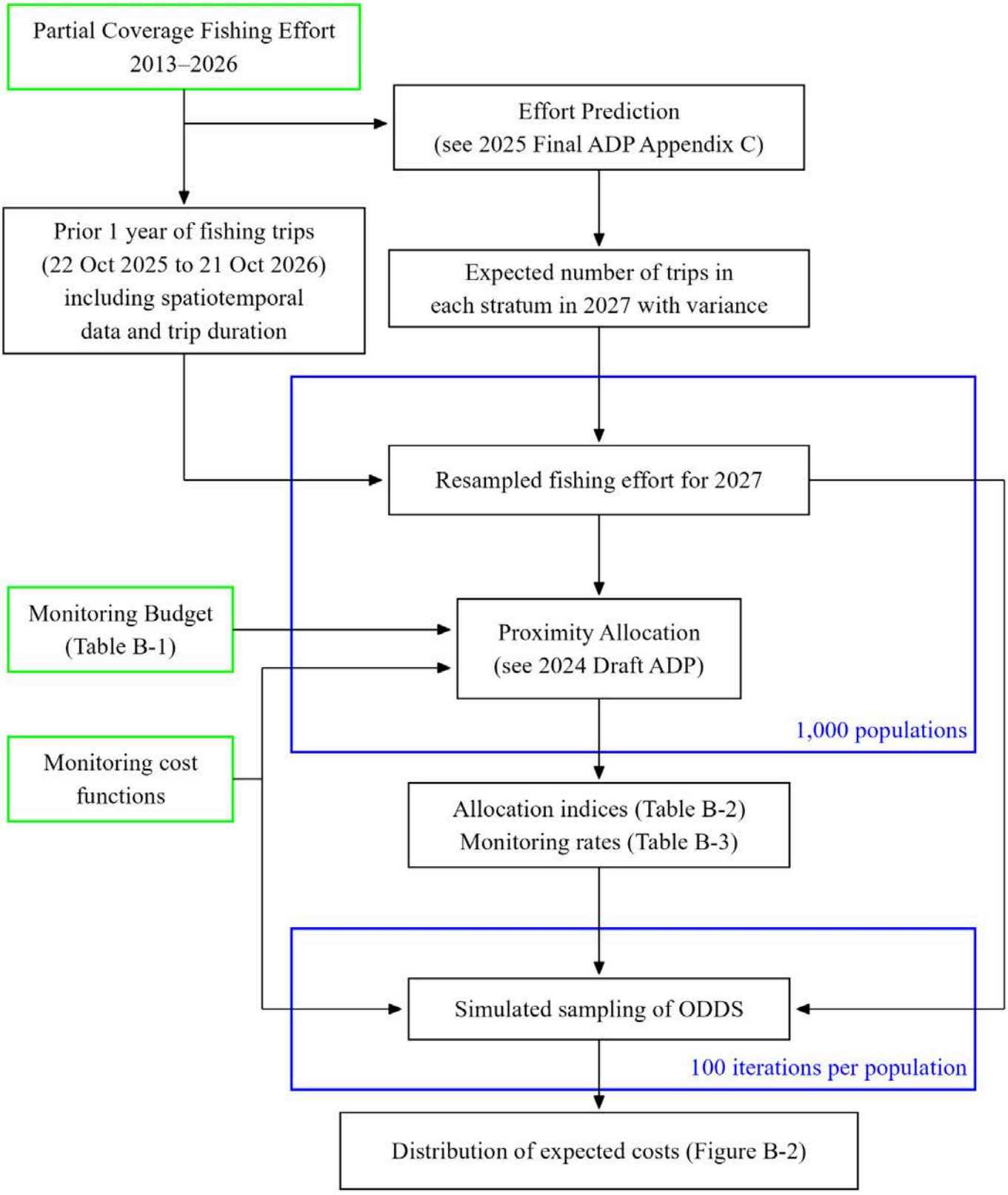


Figure B-2. Summary of 100,000 outcomes of simulated sampling in ODDS (1,000 resampled populations of partial coverage fishing effort, each with 100 iterations of random trip selection) showing the total costs of the partial coverage monitoring program expected for 2027. Vertical lines depict the available budget (purple line), median expected cost (blue line), and 95% confidence limits (red lines).

