North Pacific Observer Program
2022 Annual Report

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Executive Summary

This Annual Report provides information, analysis, and recommendations based on the deployment of observers and Electronic Monitoring (EM) systems by the North Pacific Observer Program (Observer Program) in the halibut and groundfish fisheries off Alaska during 2022.

Section 313 of the Magnuson-Stevens Act (16 U.S.C. 1862) authorizes the North Pacific Fishery Management Council (Council), in consultation with National Marine Fisheries Service (NMFS), to prepare a fishery research plan for the purpose of 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 Bering Sea and Aleutian Islands (BSAI) and Gulf of Alaska (GOA) management areas. Observers and EM systems collect fishery-dependent information used to estimate total catch and interactions with protected species. Managers use these data to manage groundfish and prohibited species catch within established limits and to document and reduce fishery interactions with protected resources. Scientists use fishery-dependent data to assess fish stocks, to provide scientific information for fisheries and ecosystem research and fishing fleet behavior, to assess marine mammal interactions with fishing gear, and to assess fishing interactions with habitat.

The Observer Program is the nation's largest observer program and covers vessels in both partial coverage and full coverage. In the full coverage component of the program, every trip is monitored by 1 or 2 observers and the vast majority of groundfish harvest is covered by this portion of the program. Each year, the Annual Deployment Plan (ADP) describes the science-driven method for deployment of observers and EM systems on vessels in the partial coverage component of the program (50 CFR 679.51(a)). The ADP specifies the scientific deployment design for the partial coverage fisheries and the selection rate—the portion of trips that are sampled by observers and EM. The following year, the agency provides an Annual Report with descriptive information and scientific evaluation of the deployment of observers and EM. The ADP and Annual Report process provides information to assess whether the objectives of the Observer Program have been met and a process to make recommendations to improve implementation of the program to further these objectives.

Program summary

- Overall, for all federal fisheries off Alaska, 3,536 trips (39.7%) and 441 vessels (45.3%) were monitored by either an observer or EM system in 2022.
- During the 2022 fishing year, approximately 375 individual observers were trained, briefed, and equipped for deployment to vessels and processing facilities operating in the BSAI and GOA groundfish and halibut fisheries. Of these, 152 trainings were for new observers and 223 were prior observers who attended a briefing of some type in 2022.

- In 2022, observers collected data on board 336 fixed gear and trawl vessels and at 11 processing facilities for a total of 32,497 observer days (29,169 full coverage days on vessels and in plants; and 3,328 partial coverage days on vessels and plants).[1]

- NMFS approved 172 vessels in the 2022 fixed-gear EM selection pool. Of these, 126 vessels fished at least 1 trip but not all vessels were randomly selected to turn on their EM system. In 2022 there were a total of 338 selected trips with 224 longline trips and 114 Pot trips.

- The timeliness of EM video review was impacted 2022 due to staffing shortages and challenges backfilling multiple positions. There was also a 27% increase in fixed-gear datasets in 2022 compared to 2021, which made it more difficult to catch-up with review. In addition, other EM programs/EFPs also expanded and competed for the limited video review resources. As of March 31, 2023, video review had not been completed for all selected trips in the fixed-gear EM pool; 230 EM trips from 83 unique vessels had been completed. Once video review data is available from fixed-gear EM vessels it can be incorporated into the Catch Accounting System.

- In 2022, fishing continued under an Exempted Fishing Permit (EFP) to evaluate the efficacy of EM and shoreside observers for pollock catcher vessels using pelagic trawl gear in both the Bering Sea and Gulf of Alaska. The goal for EM is compliance monitoring of maximized retention. Catch accounting for the vessel's catch and bycatch is done via eLandings reports and shoreside plant observers. There were 80 participating vessels in 2022 from both the partial and full coverage categories.

- The agency continues to find outreach to be a valuable way to share information with industry, to answer their questions, and to get their input on areas of concern and potential solutions. In the third year of the trawl EM EFP, there continued to be a considerable amount of effort allocated to coordination and collaboration between the FMA, AKRO, Office Of Law Enforcement, Alaska Groundfish Data Bank, United Catcher Boats, Aleutian East Borough (AEB), the Pacific States Marine Fisheries Commission, Archipelago Marine Research, and observer providers. Deploying observers in Alaskan fisheries continued to be challenging in 2022 not only due to observer shortages, but due to the lingering COVID-19 pandemic constraints within various fishing companies, vessels, and plants. The observer providers' efforts were critical for tracking and managing this and in 2022, FMA held two sets of meetings with providers in July and October. FMA staff also participated in assorted meetings focused on industry engagement: the AEB annual meeting, the Freezer Longline Coalition annual meeting, and the Kodiak Trawl fleet meetings.

Fees and Budget

- The expenditures for observer deployment in 2022 in the partial coverage category was $4,428,624 for 2968 observer days, resulting in an average cost per observer sea day in the partial coverage category of $1,492 The average cost per observer sea day is a combination of a daily rate, which is paid for the number of days the observer is on a

[1] Note that observer days are calculated differently from invoiced days. Observer days represent any amount of time an observer is on a vessel as part of their deployment which may be inclusive of non-fishing and standby days

vessel or at a shoreside processing plant, and reimbursable travel costs, including quarantine days which were still required in some cases for the safety of crews and observers in light of the COVID-19 pandemic.

- Fee billing statements for 2022 were mailed to 81 processors and registered buyers for a total of $4,313,661 in observer fees. The breakdown in contribution to the 2022 observer fees by species was: 42% Pacific halibut, 28% sablefish, 16% Pacific cod, 13% pollock, and 1% all other groundfish species.
- For 2022, the **preliminary** costs for the fixed-gear EM program was $896,635. At the time of compiling cost information for this report, EM review was still ongoing and the cost reflected here includes only imagery review through March 15, 2022. Additionally, because the EM Committee adopted different reporting categories for 2022, this cost does not yet include any "amortized" costs from past years that have not yet been reflected in earlier totals. The EM sea day cost will be calculated once the full suite of EM imagery from 2022 are reviewed and the amortization issue has been resolved.

Deployment Performance Review

Previous annual reports have a detailed review of the deployment of observers and EM relative to the intended sampling plan and goals of the Observer Program. This report provides an abbreviated summary of deployment performance in order to give analytical staff the time necessary to work on the Partial Coverage Cost Efficiencies Integrated Analysis that will inform changes to the Observer Program to be implemented in 2024.

Deployment Rates

A summary of the number of vessels and trips in each stratum and realized coverage rates in 2022 are:

Coverage category	Strata	Total vessels	Total trips	Sampled trips	Expected coverage rate	Realized coverage rate	Met expectations?*
Full coverage	Full	113	1,647	1,644	100	99.8	No
	Trawl EM EFP (BSAI)	50	897	897	100*	100.0 shoreside (plus 100% video at-sea)	Yes
Partial coverage EM	EM Hook & line	118	658	133	30	20.2	No - lower than expected because video review is not complete**

Coverage category	Strata	Total vessels	Total trips	Sampled trips	Expected coverage rate	Realized coverage rate	Met expectations?*
	EM Pot	50	349	85	30	24.4	No - lower than expected because video review is not complete**
	EM Trawl EFP (GOA)	40	526	160	33.3*	30.4 shoreside (plus 100% video at-sea)	Yes
Partial coverage Observer	Hook & Line	299	1,346	196	19	14.6	No - lower than expected
	Pot	172	1,163	211	17.5	18.1	Yes
	Trawl	72	725	210	29.7	29.0	Yes
No selection		310	1,559	0	0.0	0.0	Yes

*The trawl EM EFP requires cameras at-sea on 100% of trips for compliance monitoring of maximized retention requirements in addition to shoreside sampling by observers on all trips in the BSAI and a random selection of trips in the GOA. This table evaluates the goal of 100% and 33.3% coverage of shoreside monitoring to collect biological samples and census counts of salmon and halibut PSC in the BSAI and GOA, respectively.
** Sampled trips and realized coverage rates reflect video review through April 10, 2023.

Compliance and Enforcement

The Office of Law Enforcement, Alaska Division (AKD), works closely with the U.S. Coast Guard (USCG), Alaska Wildlife Troopers (AWT), industry, Observer Program, and observer providers to address incidents that affect observers and observer work environments, safety, and sampling. In 2022, 728 statements were received and reviewed by OLE. Chapter 4 provides an analysis of potential violations, which have been corrected for differences in fishery monitoring and fishery effort. These data enable comparisons and help focus and prioritize enforcement efforts, outreach, education, and compliance assistance.

NMFS Recommendations

NMFS recommends the following for the 2024 Annual Deployment Plan:

- **Deployment Design:**
  - Continue the development of an integrated evaluation of the partial coverage category to define the stratification and allocation scheme for the draft 2024 ADP. An integrated view of fixed gear would enable evaluation of each data collection method (observers and EM) and design sampling that combines both to be most effective. The analysis incorporates the goal of spending the limited, available funding more efficiently such that more coverage (both EM and observers) is achieved for the cost.

    - Continue evaluation of three stratification options and four allocation strategies to compare deployment designs in the draft ADP.
    - The 2024 ADP should account for upcoming changes to the trawl components of partial coverage with implementation of the BSAI Pacific cod Limited Access Program and continuation of trawl EM
    - NMFS recommends the agency continue to work with the PCFMAC on refining the definition of Zero coverage using criteria that are predictable from year to year. As a first step, NMFS recommends focusing on vessels in the fixed-gear EM pool that have not fished for groundfish or halibut in several years.
    - NMFS recommends further evaluation of the high cancellation rates in the hook-and-line observer strata. Options to explore include: reviewing the ability of vessels to log 3 trips at a time; masking the selection result until the current trip has been realized; or increasing the programmed selection rate in ODDS in order to achieve realized selection rates.
- NMFS recommends changes to the **Observer Declare and Deploy System (ODDS)** to address issues with full coverage:
    - Modify ODDS to ask operators of vessels greater than 56ft with a history of fishing for CDQ groundfish to alert them they are in full coverage.
    - Incorporate PCTC into ODDS to alert vessels that they are in full coverage.
- **Fixed Gear EM**
    - EM selection pool composed of up to 172 fixed gear vessels, which would maintain the size of the EM pool from 2023. As additional funds are available, the number of EM boats could increase up to the Council's recommendation of 200 fixed-gear EM vessels.
    - NMFS would prioritize placement in the EM selection pool based on vessel size, fishing effort, minimizing data gaps, and cost efficiency.
    - If a vessel operator had repeated problems with EM system reliability or video quality or has failed to comply with the requirements in their Vessel Monitoring Plan, NMFS may disapprove a Vessel Monitoring Plan and the vessel may be removed from the EM pool.
- **Trawl Electronic Monitoring EFP**
    - NMFS recommends continuing the pelagic trawl EM EFP in 2024.
    - NMFS supports increasing the number of participants and continuing efforts to improve processor participation.
    - NMFS supports a combination of federal funds and NFWF grant funding to cover the cost of trawl EM in 2024.
- **EM Development:** In addition to developing trawl EM, NMFS recommends collaborating with industry partners on the following EM development and cost efficiency projects:
    - Testing EM on trawl catcher vessels participating in the CGOA rockfish program;
    - Real time electronic logbook data collection and reporting in Alaska's groundfish and halibut fisheries; and
    - Improving and enhancing EM Data in Western GOA.

1 Introduction

This annual report provides information, analysis, and recommendations based on deployment of observers and Electronic Monitoring (EM) systems in the federal North Pacific commercial groundfish and Pacific halibut fisheries off Alaska during 2022. Section 313 of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1862) authorizes the North Pacific Fishery Management Council (Council), in consultation with National Marine Fisheries Service (NMFS), to prepare a fishery research plan. NMFS implemented the Council's fisheries research plan through the North Pacific Observer Program (Observer Program). The Observer Program provides the regulatory framework 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 Bering Sea and Aleutian Islands (BSAI) and Gulf of Alaska (GOA) management areas.

The Observer Program is the nation's largest observer program and is responsible for monitoring a fleet of nearly a thousand vessels that fish a combination of hook-and-line, pot, and trawl gear across the Alaska Exclusive Economic Zone (EEZ) area of roughly 3.77 M km^2. 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 and meet data collection mandates of the Magnuson-Stevens Act, Marine Mammal Protection Act, and Endangered Species Act. 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 within established limits and to document and reduce 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 interactions with fishing gear, characterize fishing impacts on habitat, and provide data for fisheries and ecosystem research and fishing fleet behavior.

All vessels and processors that participate in federally managed or parallel groundfish and halibut fisheries off Alaska (except catcher vessels delivering unsorted codends to a mothership) are assigned to one of two categories: 1) the full observer coverage category (full coverage), or 2) the partial observer coverage category (partial coverage). Vessels and processors in the full coverage category have at least one observer present during all fishing or processing activity. Vessels and processors in the partial coverage category are assigned observer or EM coverage according to the scientific sampling plan described in the Annual Deployment Plan (ADP) developed by NMFS in consultation with the Council. Since 2013, observers have been deployed in the partial coverage category using established random sampling methods to collect data on a statistically reliable sample of fishing vessels in the partial coverage category. Some vessels and processors may be in full coverage for some trips and partial coverage for other trips, depending on the observer coverage requirements for specific fisheries.

Observer coverage in the full coverage category is industry-funded through a pay-as-you-go

system whereby fishing vessels procure observer services through NMFS-permitted observer service providers. Observer coverage in the partial coverage category is funded through a system of fees collected under authority of Section 313 of the Magnuson-Stevens Act. The fee is based on the ex-vessel value of groundfish and Pacific halibut and is assessed on landings by vessels not included in the full coverage category. The system of fees fairly and equitably distributes the cost of observer coverage among all vessels and processors in the partial coverage category and is independent of the level of coverage each vessel incurs under the Annual Deployment Plan.

The current structure of the Observer Program, including the definition of full and partial coverage, random deployment methods, and the fee system has been in place since 2013 when the Observer Program was restructured and changes were implemented under Amendment 86 to the Fishery Management Plan (FMP) for Groundfish of the BSAI Management Area and Amendment 76 to the FMP for Groundfish of the GOA (Amendments 86/76)[2]. Since 2013, a series of regulatory and Fishery Management Plan (FMP) amendments have been implemented to amend the Council's fisheries research plan and make specific modifications to observer coverage requirements under the Observer Program:

- BSAI Amendment 112 and GOA Amendment 102 revised observer coverage requirements catcher/processors (81 FR 17403, 29 March 2016). This rule allowed small, non-trawl catcher/processor that met specific criteria to choose to be in the partial observer coverage category. Effective 29 March 2016.
- BSAI Amendment 109 revised observer coverage requirements and placed catcher vessels less than or equal to 46 ft LOA when groundfish fishing under a Community Development Quota (CDQ) into the partial coverage category (81 FR 26738, 4 May 2016). Effective 3 June 2016.
- A regulatory amendment (81 FR 67113, 30 September 2016) revised observer coverage requirements for BSAI trawl catcher vessels and allows the owner of a trawl catcher vessel to request, on an annual basis, placement in the full observer coverage category for all directed fishing for groundfish using trawl gear in the BSAI for one year. Effective 31 October 2016.
- BSAI Amendment 114 and GOA Amendment 104 integrated electronic monitoring (EM) into the North Pacific Observer Program (82 FR 36991, 7 September 2017). The rule established a process for owners or operators of vessels using non-trawl gear to request to participate in the EM selection pool and the requirements for vessel owners or operators while in the EM selection pool.
- A regulatory amendment (84 FR 55044, 15 October 2019) implemented regulations for catch handling and monitoring requirements to allow halibut bycatch to be sorted on the deck of trawl catcher/processors and motherships when operating in the non-pollock groundfish fisheries off Alaska. This rule allows halibut to be returned to the water faster

[2] The final rule for Amendments 86/76 was published in the Federal Register on November 21, 2012 (77 FR 70062).

while also ensuring that observer data continue to result in reliable estimates of halibut incidental catch rate and viability. This rule also changed observer sampling station inspection requirements in federal groundfish fisheries and made minor changes to bin monitoring requirements for the Amendment 80 fleet. Effective 14 November 2019. Implemented 1 January, 2020.

- NMFS published a final rule (85 FR 41424, 10 July 2020) to adjust the North Pacific Observer Program fee from 1.25 percent to 1.65 percent of the ex-vessel value of landings subject to the fee. This action increased the funds available to support observer and EM deployment in the partial coverage category of the Observer Program and increased the likelihood of meeting desired monitoring objectives. Effective 10 August 2020. Implemented 1 January, 2021.
- In October 2022, the Council took final action on Amendment 126 to the BSAI FMP and Amendment 114 to the GOA FMP, which would implement regulations for Trawl Electronic Monitoring. Fishing under the Exempted Fishing Permit (EFP) to test the efficacy of EM as a compliance monitoring tool in the pelagic pollock fishery is continuing in 2023. NMFS is developing regulations and anticipates implementation of a regulated program in 2025.
- NMFS published a proposed rule to implement the Pacific Cod Trawl Cooperative (PCTC) program on February 9, 2023 (88 FR 8592). The PCTC program would be a limited access privilege program (LAPP) for the harvest of Pacific cod in the BSAI trawl catcher vessel sector, and would allocate harvest quota to qualifying groundfish LLP license holders and qualifying processors. Cather vessels participating in the program will be in the full coverage component of the observer program. The final rule for the PCTC program is expected to be published in 2023 and implementation is expected in 2024.

1.1. Monitoring Coverage Categories and Coverage Levels

1.1.1 Full Coverage

Vessels and processors in the full observer coverage category must comply with observer coverage requirements at all times when fish are harvested or processed. Specific requirements are defined in regulation at 50 CFR § 679.51(a) (2). The full coverage category includes the following:

- Catcher/processors (with limited exceptions);
- Motherships;
- Catcher vessels that are participating in programs that have transferable prohibited species catch (PSC) allocations as part of a catch share program;
- Catcher vessels that are using trawl gear and have requested placement in the full coverage category for all fishing activity in the BSAI for one year; and
- Inshore processors receiving or processing Bering Sea pollock

Independent estimates of catch, at-sea discards, and PSC -- among other data -- are collected aboard all catcher/processors and motherships in the full observer coverage category. Requiring

at least one observer on every catcher/processor means that at-sea discards and PSC estimates are not based on self-reported data or extrapolated observer data from other vessels. Catcher vessels participating in programs with transferable PSC allocations as part of a catch share program also are included in the full coverage category. These programs include Bering Sea pollock (both American Fisheries Act and CDQ programs), the groundfish CDQ fisheries (CDQ fisheries other than Pacific halibut and fixed gear sablefish; only vessels greater than 46 ft LOA), and the Central GOA Rockfish Program.

Independent observer data are important under these catch share programs because quota share recipients are prohibited from exceeding any allocation, including, in many cases, transferable PSC allocations. Allocations of exclusive harvest privileges can create increased incentive to misreport as compared to open-access or limited-access fisheries. Transferable PSC allocations also present challenges for accurate accounting because these species are not retained for sale and they represent a potentially costly limitation on the full harvest of the target species. To enforce a prohibition against exceeding a transferable target species or PSC allocation, NMFS must demonstrate that the quota holder had catch amounts that exceeded the allocation. Supporting a quota overage case for target species or PSC that could be discarded at sea from an unobserved vessel requires NMFS to rely on either industry reports or estimated catch based on discard rates from other similar observed vessels. These indirect data sources create additional challenges to NMFS in an enforcement action. In addition, the smaller the pool from which to draw similar observed vessels and trips, the more difficult it is to construct representative at-sea discard and PSC rates for individual unobserved vessels.

Inshore processors receiving deliveries of Bering Sea pollock are in the full coverage category because of the need to monitor and count salmon under transferable PSC allocations.

1.1.2 Partial Coverage

The partial coverage category (50 CFR 679.51(a)) in the Pacific halibut and groundfish fisheries off Alaska includes the following:

- Catcher vessels designated on a Federal Fisheries Permit when directed fishing for groundfish in federally managed or parallel fisheries, except those in the full coverage category.
- Catcher vessels when fishing for halibut individual fishing quota (IFQ) or sablefish IFQ (there are no PSC limits for these fisheries).
- Catcher vessels when fishing for halibut CDQ, fixed-gear sablefish CDQ, or groundfish CDQ using pot or jig gear; or catcher vessels less than or equal to 46 ft LOA using hook-and-line gear fishing for groundfish.
- Catcher/processors that meet criteria that allows assignment to the partial coverage category.
- Shoreside or stationary floating processors, except those in the full coverage category.

Each year, NMFS prepares an Annual Deployment Plan (ADP) that describes the science-driven method for deployment of observers and EM systems to support statistically reliable data collection in the partial coverage category. Table 1-1 summarizes the partial observer coverage

sampling strata that have been implemented through the ADP process since 2013.

1.2 Annual Planning and Reporting Process

Amendments 86/76 established an annual process of 1) developing an Annual Deployment Plan (ADP) that describes plans and goals for observer and EM systems deployment in the partial coverage category in the upcoming year, and 2) preparing an annual report providing information and evaluating performance in the prior year.

The ADP describes how observer coverage and EM systems will be assigned to vessels and processors in the partial observer coverage category in the upcoming year. NMFS develops each ADP in consultation with the Council after reviewing an evaluation of deployment performance for the previous year. NMFS and the Council created the ADP process to provide flexibility in the deployment of observers and EM to gather reliable data for estimation of catch in the groundfish and halibut fisheries off Alaska. 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.

In general, the timing of the ADP process enables the Council and its Advisory Panel and Scientific and Statistical Committee to review the analysis used to prepare the draft ADP as well as Plan Teams and Fishery Monitoring Committees recommendations and any input from the public in September and October of each year. In December, NMFS finalizes the ADP for the upcoming year by determining the final deployment design and computing the selection rates for using a refined estimate of the total budget and expected fishing effort. NMFS also evaluates whether the Environmental Assessment (EA) prepared for Observer Program Restructuring (NPFMC and NMFS 2011) needs to be supplemented for the ADP. In 2014, NMFS prepared a Supplementary Information Report explaining why the EA did not need to be supplemented. In 2015, NMFS prepared a Supplemental Environmental Assessment (NMFS 2015) in response to a Court Order to consider whether the restructured Observer Program would yield reliable, high-quality data given likely variations in costs and revenues.

The annual report provides descriptive information, analysis, and recommendations based on observer deployment in the previous year. An important component of the annual report is to evaluate deployment performance including statistical evaluation of the deployment of observers and EM in the previous year. The purpose of the deployment performance review is to evaluate whether observer and EM deployment and monitoring goals detailed in regulation and the ADP were achieved and to identify recommendations for future observer and EM deployment in order to promote the collection of data necessary to conserve and manage the groundfish and halibut fisheries. The annual report is an important source of information in developing the proposed ADP for the next year and informing potential regulatory changes to the Observer Program. NMFS presents the annual report to the Council (including the Council's Monitoring Committees, Advisory Panel, and Scientific and Statistical Committee) and to the public in June of each year. The Council may recommend adjustments to observer deployment to prioritize data collection based on conservation and management needs. The Council and public provide input to NMFS on the annual report and ADP. This input may be factored into the evaluation of the

partial coverage sampling design, the next annual report, or other reports or analyses for the Council.

1.3 Summary of the 2022 and 2023 Annual Deployment Plans

In December, 2021, NMFS released the final 2022 ADP (NMFS 2021) with the following strata and deployment rates (rounded to the nearest whole number):

- No Selection – 0%
- Trawl vessels not participating in EFP– 30%
- Hook-and-line – 19%
- Pot – 17%
- Fixed-gear EM – 30%
- Trawl EM EFP–100% at-sea EM; plus: 33% shoreside monitoring in GOA or 100% shoreside monitoring in BS

In 2022, Fixed-gear EM was deployed according to trip-selection. The Trawl Electronic Monitoring Trip-Selection Pool was composed of all trips fished under an Exempted Fishing Permit (EFP) to evaluate the efficacy of EM on pollock catcher vessels using pelagic trawl gear in the Bering Sea and Gulf of Alaska. The goal for the trawl EM program is compliance monitoring of maximized retention to ensure that shoreside observers have access to complete, unsorted trip-level catch to account for PSC catch and to sample for biological data collection. Catch accounting for the vessel's catch and bycatch was done via eLandings reports and shoreside plant observers. Industry received National Fish and Wildlife Foundation (NFWF) funding to support the project which includes participating catcher vessels, tender vessels, and shoreside processors.

In response to a Council priority to improve cost efficiencies in the partial coverage category and to integrate upcoming changes into the observer program, including incorporating regulatory changes required by the Pacific Cod Trawl Cooperative (PCTC) and Trawl EM, NMFS initiated a holistic evaluation of partial coverage. Recognizing that the project would take more than one year to make meaningful progress, NMFS proposed to the Partial Coverage Fisheries Monitoring Committee (PCFMAC) and the Council that the 2022 ADP be kept in place for both 2022 and 2023. This would enable staff to have time to design a more integrated and cost-efficient program for implementation under a new partial coverage observer contract in 2024. That proposal was supported by the PCFMAC and Council and in December 2022, NMFS released the final 2023 ADP (NMFS 2022) that maintained the sampling strata and deployment methods deployed from 2022. Table 1-1 summarizes the partial observer coverage sampling strata and coverages rates in place for 2023.

Table 1-1 -- Sampling strata and selection pools in the partial coverage category from 2013 to the present. The partial coverage selection rates set through the Annual Deployment Plan are noted and the realized coverage rates evaluated in each Annual Report are noted in parentheses. PreIm = Pre-implementation, prior to a fully regulated program; CP = catcher/processor vessel; CV = catcher vessel; GOA= Gulf of Alaska; BS = Bering Sea; H&L = hook-and-line gear; LOA = vessel length overall.

<table>
<tr><th rowspan="2">Year</th><th colspan="6">Observer Trip Selection
Trip-selection across all ports
Observer coverage required on all randomly selected trips</th><th>Port-based Trip Selection*</th><th colspan="2">Fixed-Gear EM trip selection pool
EM required on randomly selected</th><th>Trawl EM</th><th>Observer vessel selection pool</th><th colspan="2">No selection pool
Observer coverage not required</th></tr>
<tr><td>2023</td><td colspan="2">Trawl: 23%</td><td colspan="2">H&L: 18%</td><td colspan="2">Pot: 17%</td><td>n/a</td><td colspan="2" rowspan="6">Fixed gear (H&L and Pot) EM: 30%</td><td rowspan="3">100% at-sea EM; 33% shoreside monitoring in GOA and 100% shoreside monitoring in BS</td><td rowspan="5">n/a</td><td colspan="2">Vessels <40’ LOA and Jig gear</td></tr>
<tr><td>2022</td><td colspan="2">Trawl: 29.7% (29)</td><td colspan="2">H&L: 19% (14.6)</td><td colspan="2">Pot: 17.5% (18.1)</td><td></td><td rowspan="4">Vessels <40’ LOA and Jig gear</td><td rowspan="4">EM Innovation Research 2-4 vessels</td></tr>
<tr><td rowspan="2">2021</td><td colspan="3">Sep. 1 - Dec. 31: Trawl: 21% (28.2)</td><td>H&L: 18% (17.2)</td><td colspan="2">Pot: 18% (20.5)</td><td>Deployment in all ports</td></tr>
<tr><td colspan="6">Jan. 1 - Aug. 31: Limited waivers due to COVID-19</td><td>Deployment in 13 ports</td></tr>
<tr><td>2020</td><td colspan="6">Jul. 1 – Dec. 31: Limited waivers due to COVID-19
Mar. 26 - Jun. 30: Waivers issued due to COVID-19</td><td>Deployment in 13 ports
Deployment in Kodiak only</td><td rowspan="2">100% at-sea EM; 33% shoreside monitoring in GOA and 100% shoreside monitoring in BS</td></tr>
<tr><td>2020</td><td colspan="3">Jan. 1 – Mar. 25: Trawl: 20% (22.4)</td><td>H&L: 15% (13.4)</td><td colspan="2">Pot: 15% (15.5)</td><td>Deployment in all ports</td></tr>
<tr><td>2019</td><td>Trawl: 24% (25.2)</td><td>Trawl Tender: 27% (35.7)</td><td>H&L: 18% (17.6)</td><td colspan="2">Pot: 15% (14.0)</td><td>Tender Pot: 16% (29.5)</td><td rowspan="3">n/a</td><td colspan="2" rowspan="3">n/a</td><td rowspan="3">n/a</td><td rowspan="3">Vessels <40’ LOA and Jig gear</td><td rowspan="2">EM Innovation Research 2-4 vessels</td></tr>
<tr><td>2018</td><td>Trawl: 20% (20.3)</td><td>Trawl Tender: 17% (35.0)</td><td>H&L: 17% (15.5)</td><td colspan="2">Pot: 16% (15.5)</td><td>Tender Pot: 17% (29.0)</td><td>H&L EM: 30%</td><td>Pot EM PreIm: 30% (not used in catch accounting)</td></tr>
<tr><td>2017</td><td>Trawl: 18% (20.7)</td><td>Trawl Tender:</td><td>H&L: 11% (12.0)</td><td>H&L Tender: 25% (0)</td><td>Pot: 4% (7.7)</td><td>Pot Tender: 4% (5.3)</td><td colspan="2">n/a</td><td>EM PreIm ~90 vessels</td></tr>
</table>

Year	Observer Trip Selection **Trip-selection across all ports** Observer coverage required on all randomly selected trips			**Port-based Trip Selection***	**Fixed-Gear EM trip selection pool** EM required on randomly selected	**Trawl EM**	**Observer vessel selection pool**	**No selection pool** Observer coverage not required
	14% (18.8)							
2016	Trawl: 28% (28.0)	H&L: 15% (15.0)	Pot: 15% (14.7)					EM PreIm 60 vessels
2015	Large Vessel: 24% (23.4) Trawl CVs, Small CPs, H&L/Pot CVs ≥ 57.5’		Small Vessel: 12% (11.2) H&L/Pot CVs >40’ and <57.5’					EM PreIm 12 vessels
2014	All Trawl CVs and H&L/Pot vessels ≥ 57.5’ LOA: 16% (15.1)						H&L/Pot CVs >40’ and <57.5’: 12% (15.6)	Voluntary EM
2013	All Trawl CVs and H&L/Pot vessels ≥ 57.5’ LOA: 14.5% (14.8)						H&L/Pot CVs >40’ and <57.5’: 11% (10.6)	Vessels <40’ LOA and Jig gear

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

2 Fees and Budget

2.1 Budget for Partial Coverage Category in 2022

Section 313(d) of the Magnuson-Stevens Act authorizes the creation of the North Pacific Fishery Observer Fund ("Observer Fund") within the U.S. Treasury. This was the tenth year that fees were collected from the partial coverage fleet. The following section provides information on the amount of fees that accrued on landings made in 2022 that are anticipated to be collected in 2023, as well as the amount of fees collected in 2021 that were obligated to the partial coverage contract to pay for sea days in 2022.

Fee billing statements for 2022 were mailed to 81 processors and registered buyers in January 2023. A total of $4,313,661 in observer fees were billed. At the time of this publication, four processors had not yet paid observer fees totaling $941. In order to collect delinquent fees, four 30-day notices were mailed in April. Additional notices will be mailed as needed. Processors submitting late fee payments were charged a one-time administrative fee of $25 plus interest on the observer fees with each notice.

The sequestration of funds initiated under the 2011 Budget Control Act continues to affect the Observer Fund. Each year, the Observer Fund is subject to sequestration, meaning a percentage of the fee revenue is held in the Fund. However, each Treasury also releases the sequestered funds from the previous year.

Table 2-1 describes the amounts from the Observer Fund used to support the observer deployment contract in each fishing year. Revenue from the Observer Fund is also used to support the partial coverage fixed-gear program consistent with the NMFS Policy Directive on Cost Allocation in Electronic Monitoring Programs.

2.2 Fees Collected from 2022, Summarized by Species, Gear, and Area

Observer coverage for the partial coverage category is funded through a system of fees based on the ex-vessel value of groundfish and Pacific halibut, with potential supplements from federal appropriations. The observer fee is assessed on landings accruing against a federal total allowable catch (TAC) for groundfish or a commercial halibut quota made by vessels that are subject to federal regulations and not included in the full coverage category. Therefore, a fee is only assessed on landings of groundfish from vessels designated on a Federal Fisheries Permit or from vessels landing IFQ or CDQ halibut or IFQ sablefish. Within the subset of vessels subject to the observer fee, only landings accruing against the federal TAC are included in the fee assessment.[3]

[3] A table with additional information about which landings are and are not subject to the observer fee is in NMFS regulations at 679.55(c) (CFR 679.55 Observer Fees) and shown on page 2 of an informational bulletin available online at: Observer Fee Collection

The observer fee equal to 1.65% of the ex-vessel value is assessed on the landings of groundfish and halibut subject to the fee.[4] Ex-vessel value is determined by multiplying the standard price for groundfish by the round weight equivalent for each species, gear, and port combination, and the standard price for halibut by the headed and gutted weight equivalent. The standard ex-vessel prices used for 2022 fee assessments were published in the *Federal Register* on December 15, 2021 (86 FR 71240).[5] Table 2-2, Table 2-3, and Table 2-4 summarize the observer fees that accrued for 2022.

2.3 Cost

2.3.1 Program Structure

The Fisheries Monitoring and Analysis Division (FMA) at the Alaska Fisheries Science Center (AFSC) oversees the Observer Program and is responsible for a suite of activities that support the overall observer data collection in the groundfish and halibut fisheries in Alaska. FMA has staff located in Seattle, Washington, and in Anchorage, Kodiak and Dutch Harbor, Alaska. The AFSC allocates a budget to FMA each fiscal year to support these activities. FMA staff are responsible for training, briefing, debriefing, and oversight of observers who collect catch data on board fishing vessels and at shoreside processing plants. FMA is also responsible for quality control/quality assurance of observer data and EM, conducting research and development of fishery monitoring technologies, and providing a host of fishery-dependent data products and services.

The FMA Division is organized into four programs: Observer Training and Curriculum Development; Debriefing and Data Quality Control; Application Development and Data Presentation; and Division Management and Analytic Services.

Observer Training and Curriculum Development ensures that observers are properly trained and equipped for their deployments. Observers are trained to follow FMA's established data collection procedures while deployed on commercial fishing vessels or stationed at processing facilities. Training materials are updated annually in response to changes in regulations and data needs for fishery management, stock assessment, and ecosystem-based fishery modeling efforts. Training methods are routinely updated to best convey the complex topics and concepts to the observer workforce. Program staff also manage FMA's extensive sampling gear inventory to ensure a sufficient supply for observers throughout the year at all FMA office locations and develop inventory control systems and policies to maintain safety equipment, provide sampling equipment readiness, and monitor equipment losses.

Debriefing and Quality Control assures observers are provided support throughout their deployment and that FMA's established data collection procedures were properly followed during observer deployments. Staff members assist at-sea observers through communications

[4] Final Rule: Fee Adjustment to 1.65% (85 FR 41424, July 10, 2020). Available online at: 85 FR 41424

[5] Available online at: 86 FR 71240

(referred to as in-season advising) through secure software for answering questions, correcting data errors, and ensuring safety concerns are addressed. Data quality control activities, both in-season and post-deployment include data entry, data validation, and observer support, as well as industry, interagency, and interdivisional support. Staff members install and maintain the custom software which is used to transmit observer information and data, ensure observers are trained on the use and configuration of software, and provide near real-time data quality control and guidance for observers using these systems. In addition, they document and evaluate each observer's data collection methodologies through interviews, electronic vessel surveys, and written descriptions submitted by the observer. Staff conduct data quality control checks on data collected by fishery observers by verifying the accuracy of recorded data, identifying errors, and ensuring observers make the necessary corrections.

Application Development and Data Presentation develops custom software that supports the recording of fishing effort, location, species composition and biological data collected by fishery observers from North Pacific commercial fisheries. This software enables the transmission, validation, and loading of those data, the editing and reporting of current and vetted data sets; observer logistics and contract management; and the recording of bird and marine mammal data collections for both internal and external use. Staff also support the ingestion of EM data into FMA's data structure and develop data quality control measures within these databases. In collaboration with FMA analysts, staff working under this activity developed and continue to support ODDS which allows vessel owners to register, edit, and close fishing trips. This application was developed with independent modules for FMA management, the partial coverage observer services provider - including the ODDS call center, EM service providers, and each vessel owner.

Analytic Services collaborates with scientists throughout the AFSC to ensure that observer data meet the needs of stock assessment and ecosystem-based fishery modeling efforts. In addition, analysts perform independent research aimed at identifying bias and variances associated with fishery-dependent sampling. Analysts work closely with the Alaska Regional Office and Council staff to ensure that FMA provides relevant, high-quality information for fisheries management and in support of requests from the Council and other stakeholders.

Division Management emphasizes coordinating and prioritizing resources across programs and activities, as well as managing links between the programs and overall costs. In addition, overall management and supervision of staff, budget, and contracting is required to ensure resources are appropriately allocated and staff understand their responsibilities and priorities. Staff provide advice to support policy development, decision-making, and regulatory and program development by NMFS and the Council. They also provide guidance and advice on policy issues, monitoring programs, and related topics at the regional, national, and international level.

Division Management also oversees the partial coverage deployment and funding to ensure the infrastructure and contracts are in place to meet the observer deployment requirements of BSAI Amendment 86 and GOA Amendment 76. FMA staff provide oversight of the fishery observer services provider contract, serving as the primary point of contact for the contract provider and FMA. The contract provider and FMA staff coordinate with industry, schedule vessel inspections

as needed, and participate in decision- making for partial coverage vessels that are selected for coverage but request a release from the requirement.

EM was formed as a unique activity within FMA under Division Management starting in 2013 and has continued to dedicate staff time to the development and integration of electronic technologies in Alaska fisheries. More information about the EM innovation results is provided in section 3.4.

Program Field Offices

The Anchorage Field Office ensures FMA's established data collection procedures were properly followed during observer deployments to commercial fishing vessels and processing facilities as well as provides observers with support in the field during their deployment. Staff assist at-sea observers through in-season advising and mid-cruise debriefings. In addition, they document and evaluate each observer's data collection methodologies through interviews, electronic vessel surveys, and written descriptions submitted by observers, as well as conduct data quality control checks to verify data accuracy by identifying errors and ensuring the observer makes the necessary corrections. Staff conduct one- and two-day briefings at this field office and maintain an inventory of complete sampling and safety gear sets for observers redeploying directly from the Anchorage office.

The Kodiak Field Office provides support to observers primarily assigned to vessels in the GOA. Support includes conducting pre-cruise briefings with vessel representatives and observers prior to the observer's first trip onboard, conducting mid-cruise debriefings with observers to address any safety concerns on their vessels, reviewing their data collection methodology and recorded data, providing in situ problem resolution, and issuing sampling and safety equipment. In addition, staff receive, track, and ship biological samples that are collected by observers in support of resource management, scientific research, and observer training. Staff also serve as the primary FMA contact for observed vessels and processing facilities in the GOA and therefore played a key role in coordinating on the GOA portion of the pelagic trawl EM exempted fishing permit beginning in 2020 and continuing through 2022.

The Dutch Harbor Field Office provides support primarily to observers assigned to vessels in the Bering Sea and Aleutian Islands. Support includes conducting pre-cruise briefings with vessel representatives and observers prior to the observer's first trip onboard, conducting mid-cruise debriefings with observers to address any safety concerns on their vessels, reviewing data collection methodology and recorded data, providing in situ problem resolutions, and issuing sampling and safety equipment. In addition, staff conduct observer sample station and scale inspections on board commercial fishing vessels to ensure the sample stations meet the standards required in federal regulations. . Staff also serve as the primary FMA contact for observed vessels and processing facilities in the Bering Sea and Aleutian Islands and have supported the BSAI portion of the pelagic trawl EM EFP beginning in 202 and continuing through 2022.

2.3.2 Contract Costs for Partial Coverage

NOAA's Acquisition and Grants Office (AGO) secures and administers contracts for NMFS.

FMA staff participate in contracting by initiating requirements documents, providing funding, and participating in the contract review and award process through formal source evaluation boards. The processes for federal contracts follow the Federal Acquisition Regulations (FAR) and Commerce Acquisition Regulations (CAR). NMFS receives legal guidance on the FAR and CAR through NOAA contract attorneys and AGO staff.

After NOAA awards a contract, FMA staff participate by assigning a Contracting Officer Representative (COR) to the contract. The COR provides direct technical oversight of the contract by monitoring contract performance, identifying and resolving operational issues, and reviewing and approving invoices. While FMA is directly involved in day-to-day contract management through its assigned COR, NOAA retains full authority over the contract through their appointed Contract Officer (CO). The NOAA CO can modify, extend, cancel, and award contracts.

Contracts for observer services are awarded through a competitive process, allowing any company that provides these services to bid. The observer coverage for the first 2 years (2013 and 2014) of the program was procured through a two-year contract awarded to AIS Inc. A second contract was awarded for the subsequent five years of the program to AIS, Inc. in April 2015. A third contract was competed and subsequently awarded for up to five years of the program to AIS, Inc. in July of 2019.

Table 2-1 provides a summary of funds expended and observer days used since 2017. Note that past Annual Reports used funds obligated instead of funds expended to calculate an average sea day cost. An obligation of funds is a legal liability to disburse funds upon receiving the service – in this case the provision of observer coverage. Obligations of funds therefore reflect the potential quantities of service, not the cost of the realized service. Expenditures are the disbursement of funds and are directly related to the service.

In 2022, the average cost per observer sea day in the partial coverage category was $1,492 (based on the cost of $4,428,624 for 2968 observer days). The average cost per observer sea day is a combination of a daily rate, which is paid for the number of days the observer is on a vessel or at a shoreside processing plant, and reimbursable travel costs, including quarantine days which were still required in some cases for the safety of crews and observers in light of the COVID-19 pandemic. The contractor also needs to recoup their total costs and profit through the daily sea day rate, which includes costs for days the observers are not on a boat. These days include training, travel, deployment in the field but not on a boat, and debriefing.

The average annual cost per sea day in partial coverage has ranged between $895 and $1,532 since 2014 (Table 2-5). Much of this variation is associated with the total number of sea days used, as the cost of "optional" sea days are less expensive than "guaranteed" sea days under the federal contract. Additionally, there is variation from year-to-year in travel costs which, for Alaska, tend to be higher per trip than other regions of the country.

2.3.3 Costs for Full Coverage

The costs associated with the full coverage category are paid by the commercial fishing industry directly to certified observer providers. This cost structure is sometimes referred to as "pay as

you go." The services carried out by observer providers include paying observers, deploying observers to vessels and shoreside processors, recruiting, training and debriefing. There are currently three active certified full-coverage providers in Alaska: Alaskan Observers Inc (AOI); Saltwater, Inc. (SWI); and AIS, Inc.

Since 2011, certified observer providers have been required to submit to NMFS copies of all of their invoices for observer coverage. The regulations require the submission of the following:

- vessel or processor name;
- dates of observer coverage;
- information about any dates billed that are not observer coverage days;
- rate charged for observer coverage in dollars per day (the daily rate);
- total amount charged (number of days multiplied by daily rate);
- the amount charged for air transportation; and
- the amount charged for any other observer expenses with each cost category separated and identified.

The invoices data were used to calculate the average cost of observer coverage in the full coverage category for 2022. The observer invoice data are confidential under section 402(b)(1) of the Magnuson-Stevens Act. Therefore, summarized information may be provided in this report only when the cost data used in the summary statistic derives from invoices submitted by at least three observer providers. This confidentiality requirement limits the detail of the average cost data that may be reported to the public, as noted below.

Table 2-6 shows total billed vessels/plants, total billed observer coverage days, total costs, and average costs in the full coverage sector for each year 2014-2022

In 2022:

- 121 vessels and processing facilities were billed for observer coverage in the full coverage category representing a 6.9% decrease from the 130 that were billed in 2021. This continues the trend wherein there has been decreases in the number of full coverage vessels participating in the Observer Program in 2019 and 2020 as well.
- The total invoiced amount was $11,469,305, down 7% from the 2021 total of $12,305,020.
- The total number of observer days represented by these invoices was 29,069[6], down 11% from 32,565 in 2021.

The continued decrease in billed vessels and the decreases in billed coverage days and total costs are in part due to expanded participation in the Electronic Monitoring (EM) EFP by AFA pollock catcher vessels in the BSAI. These full-coverage vessels were exempted from carrying an observer during the EFP. While additional observers were deployed to processors that

[6] This value is lower than the total full coverage deployment days calculated by FMA of 32,497 days (see Chapter 3) because FMA's method of counting total deployment days includes some non-fishing and non-delivery days when the observer was assigned to a vessel or plant that were not billed as days by the full coverage provider.

participated in the EM EFP to collect prohibited species and biological data from observer-exempted vessels participating in the EM EFP, the number of vessels that were exempted from carrying an observer greatly outnumbered these additional observers deployed to processing plants.

The average "fully-loaded" cost per day of observer coverage in the full coverage category in 2022 was $395, up 4.4% from 2021 when it was $378 and 4.11% higher than the 2014-2022 mean of $379. This 'fully-loaded' average combines invoiced amounts for the daily rate per observer day (variable cost) plus all other costs for transportation and other expenses (fixed costs). The overall average percentage of incidental costs per day to the total cost per day across all gear types and sectors was 12%[7] , up from 9% in 2021.

Previous annual reports have shown figures and data summarizing the average costs to fishing vessels and processing facilities for full coverage observers by vessel type and gear type. However, in 2022 only two observer provider companies provided full coverage observer services to all but one of the sectors. As a result, the cost-by-sector analysis does not pass the confidentiality requirements and has been removed from the report for 2022.

More information about the comparison of costs per observer day for full and partial coverage is described in Section 2.4.3.

2.3.4 Costs for Electronic Monitoring

NMFS implemented EM for the purposes of catch estimation on fixed gear vessels 40-57 ft in length. EM costs are dependent on the number of vessels participating in the EM program, the number of systems that need to be purchased and/or replaced on an annual or recurrent basis, deployment rates, field support services, video review, and other factors.

The **preliminary** cost of the fixed-gear EM program in 2022 is: $896,635. The preliminary cost includes $883,234 for ongoing costs (EM Service Provider Fees and Overhead; Equipment Maintenance and Upkeep; Data Transmission; Data Review and Storage) and $13,401 for one-time costs (Equipment Purchases and Installation). However, the EM video review is not done near-real time and imagery review from the 2022 fishing year was ongoing at the time the cost data for this report was compiled (March 15, 2022). Since these costs are incomplete, a total cost and a cost-per-day for EM has not been calculated for 2022 yet. Additionally, because the EM Committee adopted different reporting categories for 2022, this cost does not yet include any "amortized" costs from past years that have not yet been reflected in earlier totals.

2.4 Cost Savings and Efficiencies

2.4.1 Partial Coverage

The current observer service provider contract was awarded on 30 July 2019. The rates that NMFS currently pays the observer services contractor were established through a competitive bidding process. This contract has several components designed to improve efficiency and reduce costs. For example, the contract requires that a partially observed sea day (i.e., a day that

[7] Calculated as total incidental costs divided by the total cost of coverage.

begins after 1200 or returns to port before 1201) is paid at an amount equal to one-half the daily rate. The lower rate applies to all days completed by the contractor in which an observed vessel leaves or arrives in port before or after the designated times.

Similar to the last contract, NMFS included the provision for observers to participate in NMFS fishery-independent surveys using funds made available through AFSC. This allows AIS, Inc. to provide additional work to their employees during the summer season when observer opportunities as part of the ADP are more limited. This provides their employees continuity in employment, additional experience, and may help to reduce employee turnover, thereby increasing overall efficiency. NMFS benefits from trained observers with sea experience to help to conduct their survey fieldwork.

The current observer services contract expires 16 August 2024.

2.4.2 Full Coverage

NMFS has implemented regulations that govern the terms of observer deployment (e.g., limiting deployment duration, setting minimum qualifications, requiring specific experience for observers assigned to certain deployments, etc.). Efficiencies could potentially be gained by increasing competition, reducing constraints, or increasing efficiency of activities supported by NMFS.

The majority of full coverage business is conducted by two of the three NMFS-permitted observer providers. The number of observer providers operating in Alaska in 2022 decreased by one, as TechSea International ceased operation and their permit expired after 12 continuous months during which no observers were deployed.

2.4.3 Full Versus Partial Coverage Costs

There are several factors that impact how comparable the average observer coverage costs per day are between in the partial coverage category and the full coverage category.

- The partial coverage contract is a federal contract between NMFS and the observer provider company, whereas the full coverage observer providers do not operate under a federal contract. Instead, full coverage observer providers are permitted by NMFS and contract observer services directly with vessels and processing plants.
- Federal contracts are subject to Federal Acquisition Regulations, Fair Labor Standards Act, and Service Contract Act requirements, and applicable Department of Labor Wage Rate Determination which establish, among other things, minimum wage and benefits for observers, including overtime. Some of these same regulations and requirements may also apply to full coverage observer providers depending on the size of the companies.
- All travel costs and expenses incurred in partial coverage are reimbursed in accordance with the Government's Travel Regulations. These include specified per diem rates which are paid regardless of actual expenses. Full coverage providers have more flexibility as to how they invoice travel expenses, and can use non-invoiced travel options such as having observers ride a vessel to Alaska and/or be carried aboard a chartered flight paid for by a fishing vessel company.

- The costs associated with the partial coverage component are a daily fee NMFS pays for each sea day, and a reimbursable cost for travel as defined in the NOAA contract. Because NMFS only pays for sea days, the daily rate charged to NMFS must factor in an estimate for the contractor's fixed costs for unobserved days. Note that in 2020-2022, a "sea day" includes observer days at shoreside processing plants and quarantine days. Increasing the proportion of time spent at sea or at plants would increase the efficiency of the overall program since it would lower fixed costs to the contractor and allow for a newly negotiated lower daily rate charged to NMFS. Higher coverage rates equate to greater efficiency and lower costs per day, while lower coverage costs equate to lower efficiency and greater costs per day.
- Observers in the partial coverage category are often deployed out of many small, remote port locations which increases travel and lodging costs. Travel costs are also increased due to the short time frame in which partial coverage observers are required, due to the 72 hour timeframe in which partial coverage vessels log trips. This is markedly different than full coverage vessels which may have longer lead time for sailing schedules. Finally, the partial coverage contract still had to absorb quarantine costs as required in 2022.
- Observers in the partial coverage category are often only deployed on a vessel for one trip which is significantly shorter (one to five days) than the typical vessel deployment for full coverage observers (60 to 90 days), requiring more travel between vessels.
- Partial coverage by its very nature is less efficient on a cost per unit basis compared to full coverage. This is because partial coverage samples the fleet, such that partial coverage informs NMFS on the entirety of the fleet, whereas full coverage informs NMFS on the harvest aboard that vessel. Partial coverage requires a random selection model to ensure statistically reliable data and predicting where observers will be deployed and in what amount is difficult with random selection procedures. The risk and uncertainty regarding the number of observed days is borne solely by the partial coverage observer provider and increases costs on a per unit (daily rate) basis.

Despite the inherent differences between the full and partial coverage categories, NMFS is frequently requested to compare these costs. When doing this, the most salient comparison of costs is a "fully loaded" daily rate, which is calculated as the total funds expended divided by the number of observed days.

The fully loaded rate for each year of the partial coverage contract is shown in Table 2-5. For example, in 2022, the fully loaded rate was $4,428,624 ÷ 2968 days = $1492 per day. This calculation is appropriate for partial coverage since most trips in this category have a similar duration ranging between one and five days.

The average daily observer rate (variable costs only) for full coverage was similar across all gear and sector categories at approximately $395 per day (Table 2-6). Compared to a partial coverage observer that may be deployed onto multiple vessels for one to five days at a time, an observer deployed onto a full coverage vessel boards once and may stay on that vessel for a month or more (up to 90 days). Assuming the costs of paying an observer for a day and maintaining an

observer provider infrastructure are constant, the fixed costs are likely to be dominated by travel and temporary housing. These fixed costs as a proportion of the total cost for an observer deployment will decline with increased deployment duration. Therefore, the fully loaded rate of an observer day will also decline with an increase in the number of invoiced days for a given vessel in a given month. We can illustrate this phenomenon using the full coverage invoice database maintained by FMA (Figure 2-1). The per-day base rate for observer coverage per permitted provider is known. Therefore, this value multiplied by the total number of invoiced days yields the total base invoice cost. Since the total invoice amounts are known, a subtraction of the total base invoice from the total invoice amount will either yield a zero, or a positive value. Only those invoices that included travel costs and therefore "fully loaded" and were considered further. The fully loaded invoice value was divided by the number of days on the invoice, yielding a fully loaded daily rate for each invoice. The fully loaded rate as a function of the total number of observed days in the invoice does in fact decline as expected.

Table 2-1 -- Summary of the fees and federal funding for partial coverage observer sea days from 2013 to 2022

Calendar year	Funding category	Observer fees received	Funds sequestered	Prior year sequester funds received	Funds obligated to contract	Observer sea days at start of the year	Observer sea days purchased during year	Total observer sea days used during year
2013	Fees					4,535	1,913	3,533
	Federal Funds				$1,885,166			
2014	Fees	$4,251,452	($306,105)		$3,044,606	2,915	4,368	4,573
	Federal Funds				$1,892,808			
2015	Fees	$3,451,478	($251,958)	$306,105	$3,058,036	2,710	5,330	5,318
	Federal Funds				$2,700,000			
2016	Fees	$3,775,522	($256,735)	$251,958	$5,144,983	2,722	5,277	4,749
	Federal Funds				$390,800			
2017	Fees	$3,592,750	($247,900)	$256,735	$3,542,196	3,322	5,285	2,591
	Federal Funds				$1,398,531			
2018	Fees	$3,799,560	($250,771)	$247,900	$2,396,040	5,858	2,350	3,207
	Federal Funds				$0			
2019	Fees	$3,244,801	($201,178)	$250,771	$997,845	5,001	4,600	3,316
	Federal Funds				$412,307			
2020	Fees	$2,894,448	($170,772)	$201,178	$4,990,546	2,266	5,784	1,977[8]
	Federal Funds				$1,905,169			
2021	Fees	$3,043,516	($178,802)	$170,798	$1,841,346	3,680[9]	Confidential	3,193
	Federal Funds				$814,654			
2022	Fees	$3,073,779	($225,378)	$ 0[10]	$1,484,481	1,014		2,968
	Federal Funds				$905,000			

[8] Includes sea days, shoreside processing plant days, and quarantine days.

[9] For 2021, NMFS modified the contract to move funds from sea days to travel. This modification reduced available sea days for the start of the fishing year.

[10] Prior year sequestered funds were not yet made available at the time of this report. NMFS continues to track the status of these funds

Table 2-2 -- Observer fees[11] in 2022 by gear, vessel size category, and species or species group for all areas combined.

Gear	Vessel Length Category	Halibut	Sablefish	Pacific Cod	Pollock	All Other Species	Total All Species
Hook and Line	<40	$277,929	$4,516	$13,330	$2	$579	$296,356
	40 - 57.5	$691,632	$140,407	$30,361	$7	$5,949	$868,356
	>57.5	$830,032	$88,345	$6,909	$3	$4,363	$929,651
	Gear Subtotal	$1,799,592	$233,269	$50,600	$12	$10,890	$2,094,364
Jig	<40	$2,601	$0	$0	$0	$7	$2,608
	40 - 57.5	$1,377	$0	$3	$0	$222	$1,602
	>57.5	$7	$0	$0	$0	$0	$7
	Gear Subtotal	$3,985	$0	$3	$0	$229	$4,217
Pot	<40	$0	$14,133	$785	$0	$12	$14,929
	40 - 57.5	$1,082	$296,516	$14,185	$0	$842	$312,626
	>57.5	$4,813	$674,437	$352,412	$4	$1,820	$1,033,485
	Gear Subtotal	$5,895	$985,086	$367,382	$4	$2,674	$1,361,040
Trawl	40 - 57.5	$0	$0	$9	$5,787	$0	$5,796
	>57.5	$0	$1,305	$275,946	$561,989	$9,005	$848,245
	Gear Subtotal	$0	$1,305	$275,955	$567,775	$9,006	$854,041
Total All Gear		**$1,809,472**	**$1,219,659**	**$693,941**	**$567,791**	**$22,798**	**$4,313,661**
Percent by Species		**42%**	**28%**	**16%**	**13%**	**1%**	**100%**

Rounding error sometimes results in slight differences in row and column totals.

[11] The unpaid portion of the observer fees are included. Administrative fees and interest charged for late fee payments are not included

Table 2-3. -- Observer fee[12] in 2022 by gear, vessel size category, and species or species group in the Gulf of Alaska.[13]

Gear	Vessel Length Category	Halibut	Sablefish	Pacific Cod	Pollock	All Other Species	Total All Species
Hook and Line	<40	$263,803	$4,457	$12,696	$2	$578	$281,535
	40 - 57.5	$594,446	$136,459	$29,800	$7	$5,917	$766,630
	>57.5	$628,581	$80,902	$6,774	$3	$4,279	$720,538
	Gear Subtotal	$1,485,829	$221,819	$49,271	$12	$10,774	$1,767,704
Jig	<40	$2,601	$0	$0	$0	$7	$2,608
	40 - 57.5	$1,377	$0	$3	$0	$222	$1,602
	>57.5	$7	$0	$0	$0	$0	$7
	Gear Subtotal	$3,985	$0	$3	$0	$229	$4,217
Pot	<40	$0	$8,973	$785	$0	$12	$9,769
	40 - 57.5	$1,037	$249,563	$5,386	$0	$509	$256,496
	>57.5	$4,566	$596,618	$78,867	$1	$999	$681,050
	Gear Subtotal	$5,603	$855,154	$85,037	$1	$1,520	$947,315
Trawl	40 - 57.5	$0	$0	$9	$5,787	$0	$5,796
	>57.5	$0	$1,291	$98,122	$561,667	$9,005	$670,085
	Gear Subtotal	$0	$1,291	$98,131	$567,454	$9,006	$675,880
Total All Gear		**$1,495,417**	**$1,078,264**	**$232,442**	**$567,466**	**$21,528**	**$3,395,131**
Percent by Species		**44%**	**32%**	**7%**	**17%**	**1%**	**100%**

Rounding error sometimes results in slight differences in row and column totals.

[12] The unpaid portion of the observer fees are included. Administrative fees and interest charged for late fee payment are not included.

[13] The Gulf of Alaska includes Pacific halibut regulatory areas 2C, 3A, and 3B; and sablefish regulatory areas Western GOA, Central GOA, West Yakutat, and Southeast Outside

Table 2-4. -- Observer fees[14] in 2022 by gear, vessel size category, and species or species group in the Bering Sea/Aleutian Islands.[15]

Gear	Vessel Length Category	Halibut	Sablefish	Pacific Cod	Pollock	All Other Species	Total All Species
Hook and Line	<40	$14,127	$59	$634	$0	$1	$14,821
	40 - 57.5	$98,186	$3,948	$561	$0	$32	$102,727
	>57.5	$201,451	$7,443	$135	$0	$84	$209,113
	Gear Subtotal	$313,764	$11,450	$1,330	$0	$117	$326,660
Jig	Gear Subtotal	$0	$0	$0	$0	$0	$0
Pot	<40	$0	$5,159	$0	$0	$0	$5,159
	40 - 57.5	$45	$46,953	$8,799	$0	$333	$56,130
	>57.5	$247	$77,819	$273,545	$3	$821	$352,435
	Gear Subtotal	$292	$129,932	$282,345	$3	$1,154	$413,725
Trawl	>57.5	$0	$14	$177,824	$322	$0	$178,160
	Gear Subtotal	$0	$14	$177,824	$322	$0	$178,160
Total All Gear		**$314,055**	**$141,396**	**$461,499**	**$325**	**$1,271**	**$918,545**
Percent by Species		**34%**	**15%**	**50%**	**<1%**	**<1%**	**100%**

[14] The unpaid portion of the observer fees are included. Administrative fees and interest charged for late fee payment are not included.

[15] The Bering Sea/Aleutian Islands includes Pacific halibut regulatory areas 4A, 4B, 4C, and 4D; and sablefish regulatory areas Bering Sea and Aleutian Islands

Table 2-5. -- Average annual observer partial coverage sea day costs from 2014 to 2022

Year	Funds expended	Number of observer sea days realized	Average sea day cost
2014	$4,937,414	4,573	$1,080
2015	$5,758,268	5,318	$1,083
2016	$4,186,303	4,677	$895
2017	$3,146,111	2,749	$1,144
2018	$4,425,144	3,207	$1,380
2019	$4,342,098	3,316	$1,309
2020	$2,729,486	1,977	$1,381
2021	$4,448,612	3,193	$,1393
2022	$4,428,624	2,968	$1,492

Table 2-6. -- Annual observer full coverage sea day costs from 2014 to 2022

Year	Sum Totals					Averages Per Coverage Day		
	Billed vessels and plants	Billed Full Coverage Days	Base daily cost	Incidental costs	Fully-loaded cost	Base daily cost	Incidental costs	Fully-loaded cost
2014	177	39,066	$13,028,325	$1,450,220	$14,478,545	$333	$37	$371
2015	177	39,963	$13,623,614	$1,335,407	$14,980,340	$341	$33	$375
2016	179	38,536	$13,242,003	$1,518,717	$14,760,720	$344	$39	$383
2017	171	37,620	$12,972,358	$1,435,974	$14,408,332	$345	$38	$383
2018	167	36,695	$12,674,251	$1,356,088	$14,030,339	$345	$37	$382
2019	170	36,376	$12,666,376	$1,337,931	$14,004,293	$348	$37	$385
2020	154	39,039	$13,639,974	$984,471	$14,624,445	$349	$25	$375
2021	130	32,565	$11,202,430	$1,102,590	$12,305,020	$344	$38	$382
2022	121	29,069	$10,121,828	$1,347,477	$11,469,305	$348	$46	$395

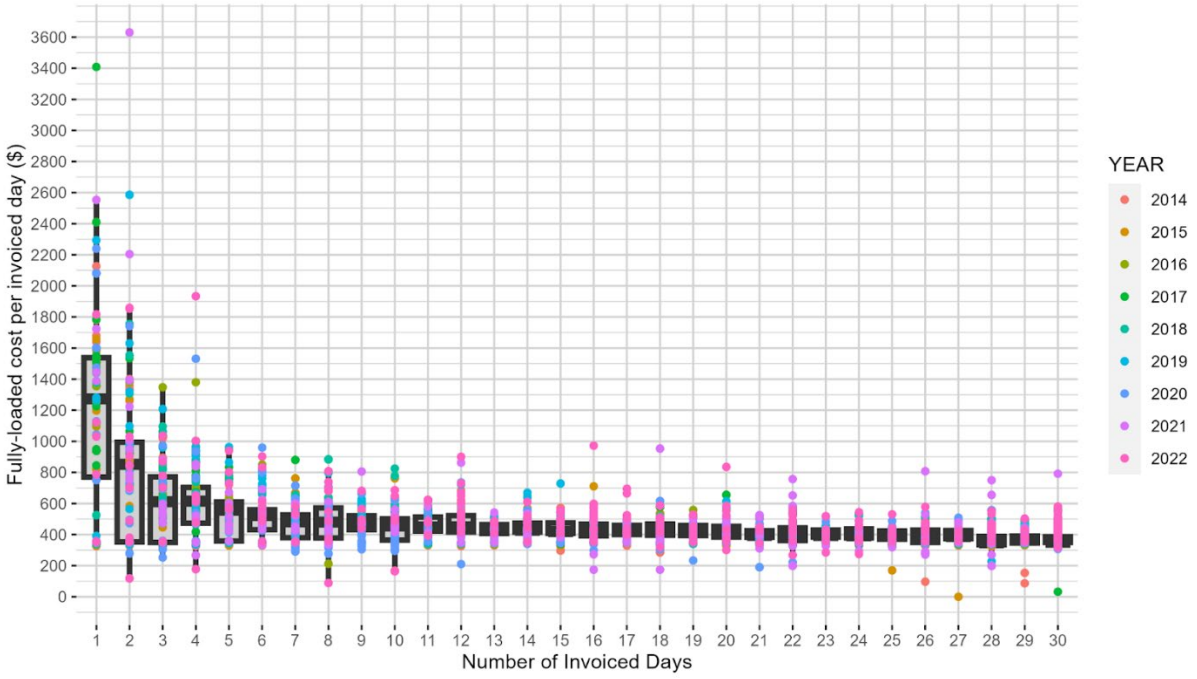

Figure 2-1. -- Relationship between the fully loaded cost per invoiced day for full observer coverage as a function of the number of days invoiced, which is a proxy for the duration of the deployment. The fully-loaded cost per day is calculated as teh invoice total divided by the number of days on the invoice. Include all vessel/gear types.

3 Descriptive Information

3.1 Deployment Summary

In December 2021, NMFS released the final 2022 ADP (NMFS 2021). The following deployment strata were in place for vessels in the partial coverage category for deployment of observers (50 CFR 679.51(a)) and electronic monitoring ((50 CFR 679.51(f)) in 2022:

- No-selection pool: The no-selection pool is composed of those vessels which had no probability of carrying an observer on any trips for the 2022 fishing season. These vessels are fixed-gear vessels less than 40 ft length overall (LOA) and vessels fishing with jig gear, which includes handline, jig, troll, and dinglebar troll gear.
- Observer trip-selection pool: Observers were deployed from all ports throughout Alaska in 3 sampling strata:
    - Hook-and-line: This stratum was composed of all vessels in the partial coverage category that were greater than or equal to 40 ft LOA and fishing hook-and-line gear.
    - Pot: This stratum was composed of all vessels in the partial coverage category that were greater than or equal to 40 ft LOA and fishing pot gear.
    - Trawl: This pool was composed of all vessels in the partial coverage category fishing trawl gear completing a trip while not participating in the Trawl EM EFP.
- Fixed gear EM selection pool: This stratum was composed of up to 172 fixed gear vessels which volunteered for, and were accepted by NMFS into, the EM pool.
- Trawl EM trip-selection pool: This pool was composed of trips completed by vessels in the partial coverage category fishing under the trawl EFP permit.

The deployment rates (rounded to the nearest whole number) for strata in partial coverage in 2022 were:

- No Selection – 0%
- Trawl vessels not participating in the EM EFP– 30%
- Hook-and-line – 19%
- Pot – 17%
- Fixed-Gear EM – 30%
- Trawl vessels participating in the EM EFP–100% at-sea EM; plus: 33% shoreside monitoring

In past years, Chapter 3 (the deployment performance review) was prepared by the Fishery Monitoring Science Committee (FMSC). The 2021 and 2022 Annual Reports have been abbreviated and a full evaluation of deployment (with FMSC review) was not completed for these years. However, a summary of anticipated and realized deployment is provided in this chapter (Table 3-1). Not including a full evaluation of deployment is a temporary situation to

facilitate work on evaluating sampling design and cost efficiencies that may be incorporated into the 2024 ADP.

3.1.1 At-Sea Deployments Rate Summary

This section compares the coverage rate achieved against the expected coverage rates. Data used in this evaluation are stored within the Catch Accounting System (CAS, managed by the AKRO), the Observer Program database (NORPAC, managed by the AFSC), and eLandings (under joint management by Alaska Department of Fish and Game - ADF&G; the International Pacific Halibut Commission - IPHC; and the NMFS).

The 2022 Observer Program had 9 different deployment strata to be evaluated (Table 3-1). The full coverage strata were:

1. The full coverage observed stratum (*Full*) composed of trips taken both by vessels that were required to have full coverage (e.g., American Fisheries Act, or AFA, vessels) and those fishing in the BSAI that opted into full coverage.
2. The full coverage trawl EM stratum (*EM TRW EFP*) consisted of trips taken by AFA vessels fishing for pollock and participating in the Pelagic Pollock Trawl EM Exempted Fishing Permit.

The partial coverage EM strata were:

3. *EM HAL* composed of trips taken by vessels which were accepted into the EM pool and fished with hook-and-line gear.
4. *EM POT* composed of trips taken by vessels which were accepted into the EM pool and fished with pot gear.
5. *EM TRW EFP* consisted of trips on pelagic pollock vessels which were participating in the EM EFP in the Gulf of Alaska.

The partial coverage observer strata were defined by gear type, and were:

6. The *HAL* strata composed of hook-and-line trips.
7. The *POT* strata composed of pot gear trips.
8. The *TRW* strata composed of trawl gear trips.

There was no zero coverage EM research stratum in 2022, and there was just one zero coverage stratum:

9. The zero coverage stratum consisted of jig vessels and vessels under 40 ft length overall.

Evaluations for the full coverage category and zero-selection pool are straightforward - either the coverage achieved was equal to 100% or 0%, respectively, or it was not. The program achieved 99.8% coverage in its full coverage observer category (Table 3-1). Three trips were not

monitored: one occurred on a vessel that had opted into full coverage for 2022 and two were on vessels fishing CDQ groundfish with hook and line gear that met the criteria for full coverage fishing. In each case they failed to obtain a full coverage observer. The program achieved 100% coverage in the full coverage *EM TRW EFP* stratum (Table 3-1). The program achieved perfect compliance with the zero coverage stratum (Table 3-1).

Under the assumption that deployment was randomized, a 95% confidence interval computed from the realized coverage rates (under the assumption of a binomial distribution for observed trips) will contain the actual deployment rate 95% of the time. If expected coverage levels were within the 95% confidence intervals, then we conclude that realized and expected coverage rates were equal. Coverage rates were consistent with expected values in three of the six partial coverage strata for which they were evaluated. Coverage rates were lower than expected for *EM HAL, EM POT,* and *HAL* strata. The lower rate in *EM HAL* and *EM POT* was caused by not all the video being reviewed at the time 2022 deployment was evaluated and this report compiled, however video continues to be reviewed and coverage levels may be achieved once video review is complete (Table 3-1). The lower rate in *HAL* was caused by a combination of operators cancelling selected trips and waivers issued by NMFS. Of the *HAL* trips selected for observer coverage in 2022, 41.5% were canceled by the operator. This is the highest cancellation rate for hook-and-line gear since gear-based strata were implemented in 2016. Cancellation rates for the hook-and-line based strata ranged from 21.6% to 26.7% between 2016 and 2021 (NMFS 2016-2021 APD) (NMFS 2013-2017; NMFS 2017, 2018, 2019, 2020). This cancellation rate is also markedly higher than what was seen for *HAL* trips not selected for observer coverage in 2022 which was 6.3%. The number of waivers (12; data not shown) in 2022, was comparable to other years not impacted by the COVID-19 pandemic, which ranged between 5 and 13 for 2016 through 2019. Of the waivers granted in 2022, half were for trips that were the third consecutive trip selected for observer coverage on a vessel and a third were so the observer provider could prioritize monitoring full coverage trips, as requested by NMFS. This request was made by NMFS because no other full coverage observer providers were opting to cover the rockfish fisheries in the Gulf of Alaska.

In the *EM TRW EFP* strata, monitoring occurs in two ways: 1) cameras are on for 100% of trips for compliance monitoring, and 2) there is shoreside sampling by observers for collecting biological samples and census counts of salmon and halibut PSC. This section of the Annual Report evaluates whether shoreside sampling goals were met for the full coverage *EM TRW EFP* stratum in the BSAI and for the partial coverage *EM TRW EFP* stratum in the GOA. Expected coverage rates for shoreside monitoring were met in both strata (Table 3-1). In order to evaluate shoreside monitoring, fishing trips in the TEM EFP were identified based on the North Pacific Observer Program regulatory definition of a fishing trip (50 CFR 679.2(Fishing trip)(3)(i and ii)). This is the same as how trips are identified for the *TRW* strata, and basically starts when a vessel leaves port and ends when the vessel returns to a port with a shoreside processor or stationary floating processor. These trips may reflect more than one offload, but aggregated in this way, represent when offloads were available for shoreside sampling. The trips in the *EM TRW EFP* strata reflect a total of 1,611 offloads, 930 in the BSAI and 681 in the GOA (data not

shown). For information on compliance monitoring in the *EM TRW EFP* strata, see Section 3.3.8.

In combination across all strata, coverage levels, and fishery monitoring tools, 3,536 trips (39.7%) and 441 vessels (45.3%) were successfully monitored among all fishing in federal fisheries of Alaska in 2022 (Table 3-1).

3.1.2 Number of Trips and Vessels by FMP Area, Strata, Gear and Vessel Length

Table 3-1 provides trip and vessel counts based on coverage type and strata. However, the Council has previously requested a summary of trip and vessel counts based on criteria which are not, or are no longer, considered when deploying observers on trips (e.g., FMP area and vessel length). Table 3-2 and Table 3-3 provide a summary of the number of vessels and trips by FMP area, strata, gear type, and vessel length category within the full and partial coverage categories. Trips are summarized as the number of monitored trips and the total number of trips. Monitored trips reflect either trips with an observer, EM fixed gear trips if at least some video was reviewed, or EM trawl trips where biological samples and census counts of salmon and Pacific halibut PSC were collected at shoreside plants. The EM trawl trips are also required to have cameras on for 100% of their trips for compliance monitoring, but this form of monitoring is not evaluated in tables 3-1, 3-2, and 3-3. See Table 3-7 for this evaluation.

Vessels and trips may be counted more than once in a vessel length category in Table 3-2 and Table 3-3 if a vessel is in more than one stratum, fishes in more than one FMP area, or utilizes more than one gear type on a trip or within the year. Vessels may also be counted more than once in the table if their reported length with NMFS is changed, it results in a different vessel length category, and fishing occurs during the year under both reported lengths. This occurred for a vessel in 2022. The table rows titled “BSAI Subtotal”, “GOA Subtotal”, and “Total Unique” include the number of unique vessels and unique trips in each vessel length category where each vessel or trip is counted only once, in each of the FMP areas or overall, respectively.

3.2 Total Catch and Discards and Amount of Catch Monitored

The ADP does not assign observers or EM coverage by fisheries (because the fishery is not able to be defined before fishing occurs), instead observers or EM are deployed to trips and vessels across all fisheries. However, there has been interest in comparing observer and EM coverage across resulting fisheries, so this section includes summaries of monitored and total catch by area, gear type, and sector. The total catch of groundfish and halibut (retained and discarded) was summarized from the NMFS Catch Accounting System (CAS) in Table 3-4 and Table 3-5 for 2022. These tables allow for comparisons of the metric of catch weight derived from CAS. Catch estimation methods are described in detail in Cahalan et al. (2014).

It is important to note that the proportion of catch weight monitored for a subset of fishing activity (i.e., a fishery) should not *a priori* be expected to equal the deployment rates (proportion of trips selected for observer or EM coverage) specified in the ADP. In particular, if there are

differences in fishing characteristics between the subsets of fishing activity, specifically differences in catch weights (or discard rates) per trip, those differences will be reflected in the relative proportions of catch monitored. For example, within the partial coverage trawl stratum, trips in the pollock fishery will have very different total catch weights and discard characteristics than trips in flatfish fisheries. In addition, there are several other factors that will contribute to the apparent inconsistencies between proportion of catch monitored, the proportion of trips monitored, and the deployment rate specified in the ADP. These include the actual number of trips selected (sample size), variability in deployment due to random chance, the ratio of number of trips in each of the fisheries, and lack of independence between the coverage rates within a sampling stratum[16].

In Table 3-4 and Table 3-5, the table columns titled "Monitored" indicate catch that occurred on trips where an observer was present, on EM fixed gear trips for which some video was reviewed, or on EM trawl trips where biological samples and census counts of salmon or Pacific halibut PSC were observed at shoreside plants. The EM trawl trips are also required to have cameras on for 100% of their trips for compliance monitoring of maximized retention requirements, but this monitoring strategy is not used to define "Monitored" for Table 3-4 and Table 3-5. The columns titled "Total" represents estimates of all catch from all trips regardless of whether it was monitored. The rows title "Retained" indicate catch that was offloaded (minus dockside discard). The rows titled "Discard" are estimated at-sea discard.

All catch and discard information, including halibut, summarized in these tables are in round weight metric tons. If species were landed in a condition other than round weight, then standard product recovery rates (PRRs) were used to obtain round weight. Halibut that were landed in ice and slime were additionally corrected for ice and slime using a standard 2% correction.

These tables can also be used to compare the proportion of catch that occurred in full coverage or the partial coverage categories or the proportion of catch that was monitored for trips in partial coverage. For example:

- in the BSAI and GOA combined, 89.2% of pelagic trawl catch was on trips in the full coverage category and 10.8% was on trips in partial coverage. All partial coverage trips were in the GOA and 30.6% of their catch was monitored. This percentage is higher if compliance monitoring for maximized retention requirements on trawl EM trips is considered;
- in the BSAI and GOA combined, 94.0% of non-pelagic trawl catch was on trips in full coverage category and 6.0% was on trips in partial coverage. Partial coverage trips occurred in both the BSAI and GOA with 50.7% and 34.7% of their catch monitored, respectively.

Additional retained and discard catch information, broken down by species for the Gulf of Alaska (GOA) and Bering Sea/Aleutian Islands (BSAI), are available online for 2022 as well as

[16] More trips monitored in one subpopulation (fishery) equates to fewer monitored trips in the other subpopulations since all the trips across the different subpopulations must add to the total number of trips selected.

prior years[17].

3.3 Electronic Monitoring Video Review

This section provides metrics on the results of the EM video review, including information on reliability and image quality. Similar to recent years, video that was collected in 2022 from vessels participating in the fixed-gear, regulated EM program was sent to the Pacific States Marine Fisheries Commission (PSMFC) for review and then incorporated into the CAS for catch estimation to support inseason management of the fisheries and for use in fishing mortality estimates in stock assessments. Video collected from pollock trawl vessels participating in the EM Exempted Fishing Permit was sent to either PSMFC or Saltwater, Inc., for review for compliance purposes with discard limitations and to verify logbook reports.

3.3.1 EM Data from fixed gear vessels

NMFS approved 172 vessels in the 2022 EM selection pool. Of these, 126 vessels fished at least 1 trip but not all vessels were randomly selected to turn on their EM system. In 2022 there were a total of 338 selected trips with 224 longline trips and 114 pot trips. This compared to fixed-gear EM in 2021 when there were 279 trips were selected or inherited and 125 active vessels. So the sized of the EM pool increased by 1 vessels but there were 59 more trips compared to the preceding year, and that resulted in more review/work/effort. Looking ahead, the increasing growth of EM continues and NMFS approved 179 vessels for the 2023 EM selection pool.

Video review data reported here is what is available up to the time of the report as reviewed by or on 3/31/2023. As of that date, PSMFC reviewed 230 total EM trips from 83 unique vessels for selected trips from 2022. PSMFC completed reviews of hard drives for 2022 that contained 16,047 hauls (e.g., sensor and video completeness) as compared to 12,882 total reviewed hauls in 2021. Of the 16,047 hauls in 2022, 5,226 hauls were further reviewed for catch. Catch was defined as anything seen by an EM reviewer, excluding free-moving marine birds and mammals alongside the vessel.

Video reviewers were trained by a PSMFC staffer working with the North Pacific Observer Program on Alaska species reporting conventions. The reviewers were instructed to record species to the lowest identifiable taxonomic level or grouping as required by the Alaska Region.

Video review was slowed down in 2022 due to severe staffing issues and challenges backfilling multiple video reviewer positions. In addition, the PSMFC EM team saw a 27% increase in datasets in 2022 vs. 2021, which made it more difficult to catch-up with review. There was also an expansion of other EM programs/EFPs that competed for limited reviewer resources.

[17] Available online at: Monitored Catch Tables.

Video and Sensor Completeness

During an EM trip there can be times when either the sensors or video data are not captured and there are gaps in the EM information. As the fixed gear EM program has expanded each year since its inception the video review success has decreased slightly each year. This is likely due to aging equipment, more effort by the participating vessels, and new entrants requiring training and support, as well as many other issues. Video reviewers at PSMFC assessed the completeness of the video and sensor data during each trip and haul.

Image Quality

Of the 5,226 hauls reviewed in 2022, 57% had high Image quality, 17% was medium video quality, and 26% was low or unusable video quality. In 2021 the results were 51% of video was high-quality, 25.9% was medium- quality, and 23.2% was low-quality or unusable. Common reasons for medium- and low-quality video were water spots, poor camera angles, night lighting, dirty cameras, glare, and intermittent gaps in the video. Condensation, Dirty Cameras, Glare, and water spots were by far the most common though with over 1,935 hauls impacted. All of these issues could be mitigated in real time by actual monitoring of the EM systems as required by the Vessel Monitoring Plans. These issues are within the control of the participating vessels to correct.

Video Review Rates

The time needed for video review varies among Pacific halibut, sablefish, and Pacific cod fisheries and also depends on the fishing gear.

- Video review rates for trips targeting Pacific halibut and sablefish ranged from .55 to .84 minutes as compared to 2021 rates of 0.51 to 0.75 minutes of review per minute of video. Review rates for fixed longline and snap gear in the halibut fishery are similar (0.66 and 0.81 minutes of review per minutes of video). Sablefish longline review rates for snap and fixed longline are somewhat similar (.61 and .65) while sablefish slinky pot review is faster (0.55). The most time intensive gear for EM review is single pot-rigid sablefish at .84 for the various IFQ fisheries.
- Video review rates in the Pacific cod target fisheries are slower, but effort/opportunity overall was low in 2022. The review rates for longline was about a minute (1.045), and Pots were at 1.18.

Types of EM Problems Logged

If problems exist during video review, they are logged in an EM ODDS Service Provider application (EMSP ODDS application) as well as in the data review program used by PSMFC on a trip and haul basis. Every logged issue in the EMSP ODDS application results in an automated email to the associated vessel with instructions on how to fix the problem. For every logged issue, the EM Service Provider contacts the vessel to resolve the issue, including phone calls or site visits if needed. Logged issues may result in trip logging limitations, a waiting period of 72

hours if appropriate, notifications by email, contact by the EM Service Provider, OLE contact or actions, and/or removal from the EM program.

- Issues logged by video reviewers decreased again in 2022 from 2021/20 from the data that has been reviewed. In 2022 there were 129 EM Fixed Gear trips that had logged problems. This compares to 2021 where 136 EM selected trips had associated problems logged by a video reviewer in 2021 and 155 EM selected trips in 2020 that had logged problems. This decrease is a notable trend, and is a hopeful sign that continued improvements are effective. Given the full year has not yet been reviewed and different years had varying percentages of all data reviewed for that year the rates may change as more data is reviewed, but it is still a hopeful development.

- In 2022 there were 85 selected longline trips and 44 pot trips that had associated logged problems during video review.

EM Video Review - Logged Problems: In 2022, there were 20 total issue types that could be logged for an EM trip by video reviewers. Issue types are at the trip level, not haul level. One trip issue may impact all or some hauls in a trip. Logged issues range from equipment problems to not following Vessel Monitoring Plans (VMP). Logged issues often cause data loss or data degradation due to lower quality data.

- The most commonly logged issue was 'Catch handling inconsistent with VMP' and occurred on 32 trips. Pot gear had this occur at a higher rate than Longline gear in 2022 as of the 114 EM selected Pot Gear trips this issue was recorded a total of 24 times. (21% of all EM selected Pot Gear trips). The second most logged issues are Camera inactive, Camera lens dirty, Camera repositions required, and camera obstructed. All of these should be caught while fishing is occurring by utilizing the onboard monitor as required by the VMP. These issues combined for possibly 56 total trips impacted (A vessel may have multiple problems per trip).
- Other issues that had ≥ 10 issues logged included: logbook not submitted, hard drive data is incomplete, Prohibited species mishandling, and streamer line camera issues.

EM Service Providers Logged Issues: These issues are not associated with specific trips as they occur prior to a trip or on non-selected EM trips. Logged issues by the EM Service Provider are equipment issues identified by the EM Service Provider or vessel operator and are expected to be resolved prior to the start of an EM selected trip. Such issues must be self-reported to the EMSP, and may allow for repairs prior to data loss. Additionally, the EM Service Provider is required to serve as the primary point of contact to a vessel when a video review problem is logged.

In 2022, there were 51 total trips with issues that were logged by the EM Service Providers. Logged issues included deck/discard camera, hauling camera, bird streamer line camera, camera out of focus, GPS unit malfunction, hard drive data is incomplete, hydraulic sensor, and other system problems. This was increased each year from the previous for the last 3 years from 21 to 42 to 51 reported by the vessel operator/EMSP. This increase is a positive step to improve overall program success.

Logged issues by the EM Service Provider and/or vessels are an important step to make sure issues are addressed before or during the fishing trip and are a critical step to ensuring data quality. Self-reporting also allows subsequent trips to be successful EM trips as any outstanding issues are addressed. As the EM program continues to mature, it is expected that rates of logged issues by the EM Service Provider and/or vessels will increase as vessels gain familiarity with EM systems.

3.3.2 EM Issues Specific to Pot Vessels

Species and counts of catch were recorded for a subset of hauls for single pot gear and longline gear. For single pot gear, catch was reviewed for every third haul (each pot is a haul for single pots). The pot gear type involving longline/slinky/string pots was reviewed in its entirety for an individual string. The review rate in the pot fishery was close to real time (e.g., 1 hour of catch handling could be reviewed in just under an hour) or longer and the following observations were made:

- Review is time consuming when large amounts of bycatch exist.
- Crab identification to species was identified as an issue. Crab on EM vessels are never in hand, and must be assigned a group code such as King Crab unidentified, or Tanner Crab unidentified. This is particularly an issue in Pot Gear trips. CAS estimates crab using rates derived from at-sea observer data in these situations.
- Longline/slinky/string pot gear is being used more frequently and has impacted review. This type of pot gear is not considered a separate gear type in Alaska. In the fixed gear EM program, longline/slinky/string pots are considered pot gear. Work is ongoing to create new gear codes, and have discrete reporting by the various gear types.
- New entrants to pot fishery due to longline/slinky/string pots caused data loss and degradation as they were not fully aware of how catch handling differed from previous longline experience and that another VMP is required for pot fishing. The addition of pot gear likely requires another camera and following different catch handling rules. This resulted in a time lag of pot data review.
- More negative data quality impacts are possible in higher bycatch pot fisheries (e.g., Pacific cod) as it is harder to count high numbers of items quickly. This can result in lower ratings for data quality, image quality, and video completeness.
- Catch handling that is inconsistent with VMP is a common problem with pot gear. Crew catch handling is impacted as crew must clear each pot and process catch prior to the next pot coming onboard. Organisms also must be handled in such a way that allows a view and/or count by the video reviewer. This may slow fishing efforts but must be done to comply with VMP.
- Bias might exist towards pots with lower catch if reviewers move past pots where organisms cannot be counted and only review pots that can be counted. Once a pot is successfully counted, the intended sample frame is resumed. NMFS is working to support additional reviewers to decrease the review time lag and to allow for longer review time needed by pot gear as well as working on review options that might reduce review times for pot gear.

3.3.3 Ways to Improve Fixed Gear EM Data Quality

NMFS and OLE are using the information from the logged issues and data quality impacts to find ways to work with the industry to improve EM data. Some of these activities were started in 2020 and will continue in the future:

- Develop and utilize outreach letters, called notice of improvement needed letters, for vessels with most issues and/or highest rates of issues. This process is a notification of improvements for the current calendar year. This was added to the VMP approval process, starting in 2021, and continued in 2022. These issues involve a small number of vessels but have a large impact on data quality. These trips are also very time consuming for reviewers, which is expensive and takes their time away from reviewing other hard drives. The previous year is reviewed for logged issues by total number of issues per vessel, and total number of logged issues per trip, and if hard drives were not submitted. The vessels noted in these searches that have the highest rate of issues per trip and/or the largest amount of issues overall, and/or have not submitted all EM selected trips are placed in this group. In 2023, 16 vessels were placed in this group for 2022 concerns, and so far 7 of them have received letters when the vessel 2023 VMP was approved. The rest have not yet submitted VMPs for this year.
- Remove vessels that will not comply with Program responsibilities that were in the notice of improvement group if they did not improve performance in the preceding year.
- Resolving issues with set-up of the EM system (e.g., bad camera angles) and improved crew behaviors, such as wiping water spots and cleaning dirty cameras could lower the percentage of hauls with reduced image quality.
- OLE will increase compliance assistance and fleet outreach in local ports.
- Potentially focus EM eligibility on vessels with more fishing effort. Vessels that do very few trips tend to have outstanding issues that are not addressed, and the same issues can persist to the next year. EM systems on boats that did not fish were not available to other vessels that might want to join the EM pool.
- Continue to increase outreach for vessels with new gear types (longline/slinky/string pots).
- Continue keypunching logbooks and incorporate the information into NMFS data systems to make the data available for data stock assessments and other needs.

3.3.4 Trawl EM

An Exempted Fishing Permit (EFP) was issued in January 2020 to evaluate the efficacy of electronic monitoring systems and shoreside observers for pollock catcher vessels (CVs) using pelagic trawl gear in the eastern Bering Sea (BS) and Gulf of Alaska (GOA). The goal for EM is compliance monitoring of maximized retention. Catch accounting for the vessel's catch and bycatch is done via eLandings reports and shoreside plant observers. There were 41 participating catcher vessels in 2020, 71 vessels in 2021, and 80 vessels in 2022. The EFP includes catcher vessels in the partial and full coverage categories. See Section 3.1 for specifics on monitoring and shoreside observer coverage for participating vessels in the EFP. At the October 2022 meeting, the NPFMC took final action to implement the trawl EM program. In January 2023, the EFP was extended through 2024, with expected regulatory implementation of the Trawl EM program by 2025.

Pacific States Marine Fisheries Commission (PSMFC) and Saltwater Inc. have conducted the video review during the EFP. Table 3-7 provides a summary of video review data for the trawl EM program for 2022. Due to unforeseen staffing challenges at PSMFC, there are 2022 trawl EM trips still awaiting video review (as of April 3, 2023). PSMFC has begun 2023 trawl EM video review while simultaneously addressing the 2022 backlog. This is due to the need to provide timely feedback to allow vessels the opportunity to improve their performance in the program for 2023. PSMFC has prioritized review of all trips for vessels new to the trawl EM program for 2023 and the first 2023 trips for returning trawl EM vessels. PSMFC has hired and trained new staff and expects these issues to be resolved for video review of 2023 data.

3.4 EM Development Projects

In addition to on-going pre-implementation of trawl EM, work on a variety of EM development projects was conducted in 2022:

- Developing Artificial Intelligence (AI) Tools for Electronic Monitoring (EM) Applications: This is an ongoing project, spearheaded by the AFSC FMA Division, with the goal of automating some EM monitoring processes. The first project focused on using camera chutes for discard monitoring. The chutes are enclosures that control lighting and background to collect consistent images of fish that have been used to develop algorithms that count, classify and measure fish to account for discards. The second project is a collaboration with industry to test whether EM can validate handling and reporting of salmon bycatch in trawl deliveries to plants. The goal would be to reduce the need for constant observer monitoring of the sorting process throughout deliveries. This concept uses cameras and AI to detect salmon entering the sorting line. Plant sorting crew activate a "check-in," either a switch or by displaying salmon to cameras when sorting salmon off the line (this system is plant specific). The salmon detector performance was promising on training runs but continued improvements are ongoing to fix or accommodate the many false positive detections that occur when applying the detector to the volume of normal deliveries.
- Evaluation of a more cost-effective and mobile EM systems: Work by the North Pacific Fisheries Association and Alaska Longline Association (ALFA) and funded through a grant from the National Fish and Wildlife Foundation (NFWF). The goals of the project was to test lower cost EM hardware that could be moved between vessels, which could increase the cost effectiveness of the fixed-gear EM program.
- Test Trawl EM systems on fixed gear vessels: Aleutians East Borough received funding from the NFWF for this project with the goal of testing EM configurations on vessels that fish multiple gear types. This project involves working with NMFS to develop VMPs and system configurations that can be used for trawl and fixed gear EM, testing modified catch handling and review protocols for fixed gear data and comparing EM data to observer data for a proof of concept.

The Council's Trawl EM committee discussed the status of EM development projects as well as potential future projects at their meeting in January 2023. More information is available in the committee report.

3.5 Observer Training and Debriefing

Impacts of the COVID-19 pandemic lingered in 2022 for observers, observer providers, the commercial fishing industry, and NMFS. In spite of those operational challenges, the Observer Program was able to resume normal observer coverage rules to enable the execution of federal commercial fishing in waters off Alaska, supporting the fishing communities and the U.S. economy. In 2022, observers collected data on board 336 fixed gear and trawl vessels and at 11 processing facilities for a total of 32,497 observer days (29,169 full coverage days on vessels and in plants; and 3,328 partial coverage days on vessels and plants).[18]

During the 2022 fishing year, approximately 375 individual observers were trained, briefed, and equipped for deployment to vessels and processing facilities operating in the BSAI and GOA groundfish and halibut fisheries. Thanks to the framework established the previous year, the Program continued to use a virtual environment for most training and briefing operations.

New observer candidates are typically required to complete a 3-week training class with 120 hours of scheduled class time and additional training by FMA staff as necessary. The FMA Division conducted training for 152 new observers for 2022 deployments in addition to the 223 prior observers who attended a briefing of some type (Table 3-6). Portions of FMA's 3-week observer training class were attended by observer providers, FMA staff, NOAA Fisheries Office of Law Enforcement and General Counsel, and NOAA Workplace Violence Prevention and Response staff.

During their first two deployments, observers are required to complete a mid-cruise debriefing while still in the field. This mid-cruise debriefing provides the opportunity for both the observer and FMA staff to assess the data collected up to that point, methods used, challenges encountered, and discuss future vessel assignments. After successfully completing two contracts, mid-cruise debriefings are only required on an individual basis if recommended by FMA staff.

Traditionally, mid-cruise debriefings can be completed in person, over the phone, electronically, or via fax, or a combination of methods. The hybridized model for mid-cruise protocols developed the previous year continued to be utilized in 2022 with some vessels due to limitations on observer movements on and off vessels and in and out of processing plants. By September 2022, the majority of all mid-cruises were performed in person. This year there were 13 mid-cruise debriefings in Anchorage, 148 in Dutch Harbor, nine in Kodiak, and 24 in Seattle. Completing these mid-cruises required extensive coordination and communication between field staff, observers, observer providers, and industry members to ensure the observers received the valuable feedback the mid-cruise debriefings provided.

After each deployment, observers must meet with an FMA staff member for a debriefing interview. During the debriefing process, sampling and data recording methods are reviewed and, after a thorough data quality check, the data are finalized. In 2022, all 540 debriefings were

[18] Note that observer days are calculated differently from invoiced days. Observer days represent any amount of time an observer is on a vessel as part of their deployment which may be inclusive of non-fishing and standby days

completed virtually by 19 FMA staff located in the Seattle and Anchorage offices and one was completed in-person in Seattle.

Depending on their performance and assessment during debriefing, observers must attend a 1-day, a focused training (FCT), an annual briefing, or a fish and crab identification briefing. In rare cases when an observer has demonstrated major deficiencies in meeting program expectations, they may be required to retake the 3-week training. Regardless of their required training as the result of debriefing, all returning observers must attend an annual briefing class prior to their first deployment each calendar year. These briefings provide observers with annual reminders on safe practices on fishing vessels and at processing plants, updates regarding their responsibilities for the current fishing season inclusive of programmatic and sampling updates, office of law enforcement training, seabird data collection, and USCG Guard safety lectures and discussions. Additionally, observers are required to demonstrate their understanding and proficiency by passing the annual briefing exam, a seabird identification test, and successfully completing various in-class activities. In addition to all these updates, in 2022 specifically, the curriculum focused on the pollock trawl EM EFP, and an in-person hands-on marine safety training component intended to fulfill the National Observer Program standards of safety refresher training for all active observers. This intensive refresher training reviews and builds on the skills learned during the 3-week initial training. During the safety refresher training, observers had the opportunity to don their immersion suits and practice survival skills in the water such as entering the water from a height, boarding a life raft from the water, climbing a Jacobs ladder, and in-water life-saving skills such as swimming in an immersion suit and methods to stay together to facilitate rescue.

To support the success of observers and the trawl EM/EFP, specialized briefings, upon request by the observer providers, were held for observers deploying to plants participating in the trawl EM/EFP.

To limit the potential for COVID-19 transmissions, we continued to hold all briefings and specialized trainings virtually and limited in-person interactions to confined solely to the last week of the three-week trainings and the marine safety training for returning observers. It was recognized that hands-on safety training for trainees and priors and Fish and Crab Identification for new observer trainees are vital, justifying these important hands-on interactions. FMA's strategy allowed for the continuity of observer deployments and safeguarding those deploying to Alaska fishing communities.

In addition to the training provided to observers, FMA Training team members also provided marine safety, back care and marine mammal identification trainings to AFSC sea-going staff. As part of the Marine Instructor Safety Training (MSIT) cross-training requirement, several FMA training team members assisted the At-Sea Hake Observer Program (Northwest Fisheries Science Center) with their annual safety trainings for their program. Fully operating in the third year of the COVID-19 pandemic, 2022 still proved productive for the FMA Division

3.6 Outreach

While regular communication is a standard component of our operations between the AFSC, AKR, OLE, the NPFMC, and industry constituents, this section highlights noteworthy situations with elevated communications.

In the third year of the Exempted Fishing Permit for electronic monitoring in the Bering Sea and Gulf of Alaska pollock fisheries for catcher vessels using pelagic trawl gear, there continued to be a considerable amount of effort allocated to coordination and collaboration between the FMA, AKRO, Office Of Law Enforcement, Alaska Groundfish Data Bank, United Catcher Boats, Aleutian East Borough (AEB), the Pacific States Marine Fisheries Commission, Archipelago Marine Research, and observer providers. Bi-monthly meetings were held with all entities to discuss issues or complications that occurred providing input to inform the regulatory development process. In addition to the bi-monthly meetings, there were observer pre-cruises and processing plant tours with industry members, AKR staff, and FMA staff. These tours focused on observer needs for sampling, what access they will need, elements that will make their jobs easier/more possible, and what features would be required for the CMCPs. This project has continued to require extensive staff time and effort to oversee the communication with observers, observer data collections, data management, and flow of data processing. It is anticipated that this will become a regulated program in 2024 and more extensive details for this project are outlined in the Trawl EM section of this document (section 3.3.3).

The role observer providers play is fundamental to the management and successful deployment of observers in Alaska fisheries. Deploying observers in Alaskan fisheries continued to be challenging in 2022 not only due to observer shortages, but due to the lingering COVID-19 pandemic constraints within various fishing companies, vessels, and plants. The observer providers' efforts were critical for tracking and managing this. On an annual basis, FMA generally meets with the observer providers one to two times per year. Historically these meetings have focused on program policies, OLE matters, recruitment and retention of observers, etc. In 2022, FMA held two sets of meetings with providers in July and October. At the set of meetings in July, FMA staff met individually with providers to specifically review the future state of debriefings and the hybridized model integrating in-person and remote debriefings. The October meeting's focus was directed specifically on the 2023 transition to in-person operations and COVID safety protocols, 2023 training operations (logistics for the in-person three-week trainings and annual briefings, updates to training policies, monitoring of observer requirements and endorsements, and registration updates), the debriefing strategy for in-person operations starting in January 2023, OLE updates, and gear policies and practices. These meetings are beneficial to keep lines of communication open, discuss solutions to the challenges, and supporting them to provide continuous and safe observer coverage to Alaskan fishing fleets.

As restrictions due to COVID-19 were lessened, we saw a mix of meeting frameworks ranging from virtual, hybrid and in-person. Participation focused on disseminating information about the Observer Program and its ongoing objective for quality data collection and management. Staff have participated in assorted meetings focused on industry engagement: the AEB annual meeting, the Freezer Longline Coalition annual meeting, and the Kodiak Trawl fleet meetings.

Engagement with our industry constituents proves to be valuable and necessary for NMFS staff and the fishing communities.

Table 3-1. -- Number of total vessels (V), sampled vessels (v), total trips (N), and sampled trips (n) for each stratum in 2022. The coverage and 95% confidence interval columns are expressed as percentages of the total number of trips taken within each stratum.

					Coverage		95% Confidence		
Strata	***V***	***v***	***N***	***n***	**Expected**	**Realized**	**Lower**	**Upper**	**Meets expected?**
Full coverage									
Full	113	112	1,647	1,644	100.0	99.8			No – lower than expected
EM TRW EFP	50	50	897	897	100.0	100.0*			Yes
Full Coverage Total	145	144	2,544	2,541		99.9			
Partial coverage EM									
EM HAL	118	63	658	133	30.0	20.2	17.2	23.5	No – lower than expected**
*EM POT***	50	34	349	85	30.0	24.4	19.9	29.2	No – lower than expected**
EM TRW EFP	40	33	526	160	33.3	30.4*	26.5	34.5	Yes
Partial coverage observed									
HAL	299	122	1,346	196	19.0	14.6	12.7	16.6	No – lower than expected
POT	172	100	1,163	211	17.5	18.1	16.0	20.5	Yes
TRW	72	53	725	210	29.7	29.0	25.7	32.4	Yes
Partial Coverage Total	562	336	4,767	995		20.8			
Zero coverage									
Zero Coverage	310	0	1,599	0	0.0	0.0			Yes
Total	**974**	**441**	**8,910**	**3,536**		**39.7% Trips; 45.3% Vessels**			

* The trawl EM EFP requires cameras at-sea on 100% of trips for compliance monitoring of maximized retention requirements in addition to shoreside sampling by observers on all trips in the BSAI and a random selection of trips in the GOA. This table evaluates the goal of 100% and 33.3% coverage of shoreside monitoring to collect biological samples and census counts of salmon and halibut PSC in the BSAI and GOA, respectively.

** Sampled trips and realized coverage rates reflect video review through April 10, 2023.

Table 3-2. -- Number of vessels (V), total trips (N), monitored trips (n)[1], and percent of trips monitored (%) in 2022 in the BSAI by strata, gear type (hook-and-line (HAL), non-pelagic trawl (NPT), pelagic trawl (PTR), pot, and jig), and vessel length category (based on length overall, in feet) for the full and partial coverage categories.

			Vessel length category											
			<40'				40-57.4'				>=57.5'			
Area	Strata	Gear	V	N	n	%	V	N	n	%	V	N	n	%
BSAI	Full[2]	HAL					2	3	1	33.3	19	182	182	100.0
	Full	NPT									36	466	465	99.8
	Full	POT									7	34	34	100.0
	Full	PTR									41	747	747	100.0
	EM TRW EFP (Full)	PTR									50	897	897	100.0
	EM HAL	HAL					6	14	0	0.0	5	11	3	27.3
	EM HAL	POT					1	1	0	0.0				
	EM POT	HAL					3	6	0	0.0				
	EM POT	POT					3	9	1	11.1	7	43	14	32.6
	HAL	HAL					17	66	13	19.7	21	62	11	17.7
	HAL	POT									1	1	0	0.0
	POT	HAL					3	7	1	14.3	1	1	0	0.0
	POT	POT					7	66	12	18.2	45	204	55	27.0
	TRW	NPT									31	118	41	34.7
	TRW	PTR									1	1	0	0.0
	Zero	HAL	25	130	0	0.0								
	Zero	POT	2	7	0	0.0								
	BSAI Subtotal		25	136	0	0.0	25	159	27	17.0	212	2,765	2,449	88.6

[1] Monitored reflects either trips with an observer, EM fixed gear trips for which some video was reviewed, or EM trawl trips where observers sampled shoreside to collect biological samples and census counts of salmon and halibut PSC. EM trawl trips also require 100% at-sea video monitoring for compliance with maximized retention requirements, but that monitoring is not reflected in this table.

[2] Full coverage in this table includes vessels in both the Regulatory and Voluntary Full Coverage strata.

Table 3-3. -- Number of vessels (V), total trips (N), monitored trips (n)[1], and percent of trips monitored (%) in 2022 in the GOA and overall, by strata, gear type (hook-and-line (HAL), non-pelagic trawl (NPT), pelagic trawl (PTR), pot, and jig), and vessel length category (based on length overall, in feet) for the full and partial coverage categories.

			Vessel length category											
			<40'				40-57.4'				>=57.5'			
Area	Strata	Gear	V	N	n	%	V	N	n	%	V	N	n	%
	Full	HAL									8	13	13	100.0
	Full	NPT									28	133	133	100.0
	Full	POT									5	10	10	100.0
	Full	PTR									20	113	113	100.0
	EM HAL	HAL					83	481	95	19.8	35	165	36	21.8
	EM HAL	POT					11	23	5	21.7	6	10	5	50.0
	EM POT	HAL					15	37	7	18.9	9	24	4	16.7
	EM POT	POT					25	129	20	15.5	22	170	50	29.4
	EM TRW EFP (Partial)	PTR									40	526	160	30.4
GOA	HAL	HAL					188	845	120	14.2	105	400	56	14.0
	HAL	POT					12	28	6	21.4	20	43	4	9.3
	POT	HAL					20	40	3	7.5	38	109	16	14.7
	POT	POT					54	332	50	15.1	87	566	94	16.6
	TRW	NPT									51	230	76	33.0
	TRW	PTR					1	13	1	7.7	34	529	138	26.1
	Zero	HAL	287	1,408	0	0.0								
	Zero	JIG	5	24	0	0.0	4	4	0	0.0				
	Zero	POT	7	37	0	0.0								
	GOA Subtotal		290	1,465	0	0.0	295	1,806	286	15.8	242	2,652	790	29.8
Total Unique[2]			306	1,595	0	0.0	298	1,936	312	16.1	371	5,379	3,224	59.9

[1] Monitored reflect either trips with an observer, EM fixed gear trips for which some video was reviewed, or EM trawl trips where observers sampled shoreside to collect biological samples and census counts of salmon and halibut PSC. EM trawl trips also require 100% at-sea video monitoring for compliance with maximized retention requirements, but that monitoring is not reflected in this table.

[2] The sum of total unique vessels in the three vessel length categories is one greater than is seen in Table 3-1. This is due to a fishing vessel changing its length on file with NMFS mid-year and having landings under the two different lengths and vessel length categories.

Table 3-4. – Monitored catch[1] (metric tons), total catch, and percent monitored (%) of groundfish and halibut retained and discarded in the groundfish and halibut fisheries in 2022 in the Gulf of Alaska. Empty cells indicate that no catch occurred.

		Catcher/Processor			Catcher vessel			Catcher vessel: Rockfish program			Gear total		
Gear	Catch	Monitored	Total	%	Monitored	Total	%	Monitored	Total	%	Monitored	Total	%
Hook and Line	Retained	2,533	2,626	**96%**	2,041	16,095	**13%**				4,574	18,721	**24%**
	Discard	770	807	**95%**	1,451	11,462	**13%**				2,221	12,269	**18%**
Jig	Retained				0	37	**0%**				0	37	**0%**
	Discard												
Non-Pelagic Trawl	Retained	30,935	30,935	**100%**	2,634	7,673	**34%**	4,295	4,295	**100%**	37,864	42,903	**88%**
	Discard	3,889	3,889	**100%**	245	628	**39%**	363	363	**100%**	4,496	4,879	**92%**
Pot	Retained	692	771	**90%**	3,584	17,712	**20%**				4,276	18,483	**23%**
	Discard	9	12	**81%**	105	596	**18%**				114	607	**19%**
Pelagic Trawl	Retained	2,327	2,327	**100%**	39,648	129,701	**31%**	10,393	10,393	**100%**	52,368	142,421	**37%**
	Discard	167	167	**100%**	341	996	**34%**	174	174	**100%**	682	1,337	**51%**

[1] Monitored reflects either trips with an observer, EM fixed gear trips for which some video was reviewed, or EM trawl trips where observers sampled shoreside. EM trawl trips also require 100% at-sea video monitoring for compliance with maximized retention requirements, but that monitoring is not reflected in this table.

Table 3-5. – Monitored catch[1] (metric tons), total catch, and percent monitored (%) of groundfish and halibut retained and discarded in the groundfish and halibut fisheries in 2022 in the Bering Sea/Aleutian Islands. Empty cells indicate that no catch occurred.

		Catcher/Processor			Mothership			Catcher vessel			Gear total		
Gear	Catch	Monitored	Total	%	Monitored	Total	%	Monitored	Total	%	Monitored	Total	%
Hook and Line	Retained	85,493	85,493	100%				249	1,918	13%	85,742	87,411	98%
	Discard	17,422	17,422	100%				160	1,201	13%	17,582	18,624	94%
Jig	Retained												
	Discard												
Non-Pelagic Trawl	Retained	342,512	342,512	100%	23,482	23,482	100%	9,111	18,070	50%	375,105	384,064	98%
	Discard	27,113	27,113	100%	1,220	1,220	100%	632	1,139	56%	28,965	29,471	98%
Pot	Retained	3,792	3,792	100%				3,926	20,816	19%	7,718	24,607	31%
	Discard	92	92	100%				84	644	13%	176	736	24%
Pelagic Trawl	Retained	494,511	494,511	100%	95,208	95,208	100%	475,561	475,578	100%	1,065,281	1,065,297	100%
	Discard	1,590	1,590	100%	286	286	100%	500	500	100%	2,376	2,376	100%

[1] Monitored reflects either trips with an observer, EM fixed gear trips for which some video was reviewed, or EM trawl trips where observers sampled shoreside. EM trawl trips also require 100% at-sea video monitoring for compliance with maximized retention requirements, but that monitoring is not reflected in this table.

Table 3-6. -- Number of observer training classes and number of observers trained/briefed from 24 November 2021 to 18 November 2022.

Training classes	**Number of classes**	**Number of observers trained/briefed**
3 week training	10	169
Annual briefing	17	215
Focused briefing	3	3
1-day briefing	37	239
Lead Level 2	7	51
Cold Water Training	20	214
Fish and Crab ID Training	21	148
Total	**115**	**820**

Table 3-7. -- Video review information for the trawl EM program for 2022 as reported by the video review entities. Note that in 2022, Pacific States Marine Fishery Commission did not conduct video review for GOA tenders and Saltwater Inc. did not conduct video review for BS CVs. CV trips for the purposes of trawl EM video review end at the delivery of catch to a tender vessel or shoreside processor. There are no partial deliveries in the trawl EM program.

Pacific States Marine Fishery Commission	**BS CV**	**GOA CV**	**GOA tender**
Trips not yet reviewed (as of April 3, 2023)	480	219	NA
Trips Reviewed	437	218	NA
Hauls Reviewed	1198	541	NA
Unique Vessels Reviewed	34	17	NA
Of reviewed trips, video was incomplete	18	3	NA
Of reviewed trips, EM review was affected by incomplete video	7	1	NA

Saltwater Inc.	**BS CV**	**GOA CV**	**GOA tender**
Trips not yet reviewed (as of April 3, 2023)	NA	NA	NA
Trips Reviewed	NA	198	47
Hauls Reviewed	NA	358	91
Unique Vessels Reviewed	NA	20	15
Of reviewed trips, video was incomplete	NA	12	0
Of reviewed trips, EM review was affected by incomplete video	NA	8	0

4 Compliance and Enforcement

This chapter provides a review of the collaborative efforts between NOAA's Office of Law Enforcement Alaska Division (OLE), the Fisheries Monitoring and Analysis Division of the Alaska Fisheries Science Center (FMA), the fishing industry, and other partners in 2021. It is concerned with reports of potential and prosecuted law violations associated with fishing under federal jurisdiction in the Alaska Exclusive Economic Zone.

4.1 Terminology

Assignment: Sometimes referred to as an observer assignment. A combination of observer and a unique vessel or plant. It is the unit of measure for analysis of some statement types.

Complaint: A report of a potential violation. Complaints can be reported to enforcement at any time. Complaints might come from observers, the FMA, industry, or members of the community. When a complaint is reported by an observer, it is typically documented in a statement.

Statement: A document where an observer will report potential violations to the FMA, typically during debriefing. There are multiple statement headings used to categorize potential violations. A single statement may report one or multiple occurrences of the same potential violation, or it may report occurrences of different violation types falling under the same category. A statement was previously referred to as an observer affidavit.

Occurrence: A specific instance of a potential violation within a statement. A statement may consist of one or many occurrences.

Incident: OLE logs enforcement responses as incidents into an electronic case management database. Multiple statements may be investigated under a single incident number. Not all statements result in incidents and not all incidents are forwarded for investigation (some incidents contain no violation and many are recorded for information only). An incident that is forwarded for investigation is referred to as an "investigation" or a "case".

Investigation: An inquiry conducted by OLE agents and officers to determine if a violation has occurred.

Case: The conclusion of an investigation that may result in enforcement action.

Enforcement action: The enforcement result of a case that holds the violator accountable. Levels of enforcement action include Compliance Assistance, Written Warning, Summary Settlement (monetary penalty), Notice of Violation and Assessment by NOAA General Counsel Enforcement Section, or criminal prosecution.

4.2 What are potential maritime law violations?

The unit of measurement of suspected violations is the statement, and this report is concerned with those arising from Fisheries Observers. Fisheries Observer monitoring and compliance roles are identified in the Magnuson-Stevens Act and implemented in regulations. Prior to deployment, observers are trained in compliance monitoring. Observers are required to accurately record sampling data, write complete reports, and report any suspected violations relevant to the conservation of marine resources. The FMA forwards reports of suspected violations (termed 'statements') to OLE for investigation. Statements are unique to the observer and vessel or processing plant they were deployed to and are assigned a category and target fishery. Statements contain a record of the number of occurrences for each potential violation that happened during a period of time. The number of occurrences can be the same or far exceed the number of violations. For example, a failure to conduct safety drills potential violation may be recorded once during a 90-day period the observer was on a large catcher processor vessel, resulting in one statement with one occurrence. Conversely, a potential violation of failure to notify the observer prior to bringing fish on board may be recorded for each haul during a three-day period the observer was on a partial coverage vessel, resulting in several occurrences for the one statement.

OLE works closely with the FMA and observer providers to address incidents that affect observer safety, sampling, and work environments. Observers record statements regarding potential resource or workplace violations. These statements are typically written during the debriefing process after an observer cruise[19] is completed. Statements are forwarded to OLE and/or the USCG, and some become "cases" that are pursued further by OLE. Every statement received from the FMA division is evaluated and prioritized. Then, OLE Officers and Agents investigate the most egregious complaints to identify if violations have occurred and to determine the appropriate level of response. OLE also utilizes observer compliance data to track compliance trends and makes subsequent adjustments to training, outreach, and operations.

4.3 Types of Statements

The descriptions of each statement type have not changed since the last version of this report (https://repository.library.noaa.gov/view/noaa/47114 section 4.3 - 4.4).

4.4 Data Analysis Methods

Methods for data analysis have not changed since the last version of this report

[19] A cruise is actually a cruise number, and is assigned to an observer upon completion of their pre-deployment briefing and becomes archived when they are debriefed. The term 'cruise' is thus used to define this deployment period for an observer. A cruise deployment period can last up to 90 days (not including debriefing) and may contain many individual vessel/plant assignments, but is generally limited to four assignments unless an additional-boat waiver has been requested by the provider and approved by NMFS.

(https://repository.library.noaa.gov/view/noaa/47114 section 4.3 - 4.4). Databases containing observer statements were queried to include only those statements that occurred during 2022 using the "first occurrence date" field. The number of statements (written documentation), occurrences (number of times something happened), and the resulting rates per individual or 1000 deployed days (derived from observer logistics data) were calculated for a variety of factors (Table 4-1) to enable fair comparisons between fishing sectors and years. These rates can be converted to the number of individuals or 1000 deployed days it takes to get one statement or occurrence by dividing one by the rate. For example, if a rate is reported at 0.5 statements per individual, then one statement occurred for every 1/0.5 = 2 individuals. Efforts were made to protect the identity of individual observers or vessels. In cases where there were fewer than three observer vessel/plant assignments deployed for a factor combination in 2022, that data was excluded from the analyses and data summaries. Comparisons between the results of this analysis from last year are compared to 2022 to determine short-term trends.

4.5 Discussion and Considerations to Improve Compliance

4.5.1 Trends in Reporting

OLE Priority - Inter-Personal

The investigation of unwanted unwelcome behavior toward observers continues to be OLE's highest priority. Any form of assault or harassment has the potential to have lasting impacts on individual observers, observers as a whole, and the work they are contracted to perform, which in effect, can be detrimental to the management of the fisheries. All reports under this category are forwarded to Special Agents and Enforcement Officers for investigation.

The highest rate of reports involving Assault in 2022 occurred in the CP/MS NPT GOA OA sector, with a rate of 0.33 occurrences per vessel/assignment (or roughly one occurrence for every three vessels/assignments; Figure 4-1). This involved behavior towards an observer that made the observer fear for their safety. The second highest rate of assault occurred in the CP/MS NPT BSAI A80 sector with a rate of 0.02 occurrences per vessel/plant assignment. Several of the incidents in this category were assaults of a sexual nature, including a delayed disclosure by an observer who came forward after another observer reported being victimized. Other incidents included activity that made an observer fear for their safety and the safety of others on the vessel.

According to Figure 4-1, in 2022, the following sectors had a rate of 0.07 occurrences of Sexual Harassment reports per Vessel/Plant assignment: CP/MS NPT BSAI A80, MS/CP PTR BSAI AFA, CP/MS HAL BSAI OA, and CV HAL GOA OA. The CP/MS PTR BSAI CDQ and CV POT BSAI OA sectors each had a rate of 0.05 occurrences per vessel/plant assignment. These rates are completely unacceptable, especially with the outreach conducted by OLE and NOAA and the training made available to all companies by OLE. Multiple incidents involve repeated unwelcome advances towards observers that persisted after requests for the behavior to cease. NOAA has recently released a Notice regarding the sexual assault and sexual harassment of

observers which serves as a reminder that owners and operators may be charged jointly and severally liable for incidents involving sexual assault and sexual harassment.

The highest rate of reports involving Intimidation, Coercion, and Hostile Work Environment in 2022 occurred in the PLANT GOA OA sector at a rate of 1.03 occurrences per Vessel/Plant assignment (Figure 4-1). This was followed closely by PLANT BSAI OA at a rate of 0.84, and CP/MS PTR BSAI AFA at a rate of 0.75. Multiple reports in these sectors involved observer-on-observer harassment. Observer-on-observer harassment is particularly unfortunate because observers are encouraged during training to support one another and to look out for each other in the field. Other alleged perpetrators include pursers/data managers and factory foremen. On a positive note, there were attempts to resolve several of these incidents while the observers were still deployed.

OLE Priority - Safety and Duties

In addition to complaints involving the assault and harassment of observers, OLE prioritizes investigating activities that impact the safety of observers or interfere with their ability to complete their duties as assigned.

According to Figure 4-2, there was a rate of 30.2 occurrences of Interference/Sample Biasing per 1,000 deployed days in the CP/MS NPT BSAI A80 sector and 25.9 occurrences per 1,000 deployed days in the CP/MS NPT BSAI CDQ sector. The vessels in these two categories are the same. Multiple incidents involved some sort of mechanical biasing, where the equipment itself or the manipulation of equipment resulted in the biasing of the observers' samples. The majority of these occurrences were brought to vessel management's attention. Many of the issues were resolved when the vessels made improvements to their factories during shipyard. As part of the investigations into these reports, OLE boarded the vessels to verify that the issues in the factories were resolved and to have open discussions with vessel management about factory operations.

The highest rate of reports involving Safety occurred in the CP/MS POT BSAI OA sector at a rate of 89.6 occurrences per 1,000 deployed days, followed by the CV POT BSAI CDQ sector at 52.6 occurrences per 1,000 deployed days. Multiple reports about safety involved the alleged use of alcohol or other illicit substances while the vessels were underway. Additional safety concerns throughout the fleet and at shoreside processing facilities included the lack of an appropriate lookout as required under Coast Guard Rule #5, drinking water unfit for consumption, unsafe workstations, sleeping accommodations infested with bugs, and ammonia leaks. Some reports involving safety were forwarded to other state or federal agencies for investigation.

Coast Guard

Table 4-2 summarizes the number of reports received in the Coast Guard statement categories in 2022. The highest rates of occurrences were Mar-Pol reports coming from the CP/MS POT sectors, with the BSAI-CDQ component having the highest rates of 106.8 per 1,000 deployed days. These reports included fishing gear being lost at sea with no attempts to recover it, garbage

being discarded at sea by crew, and oil leaks. Marine Casualty statements made up the greatest volume of statements in this group, but overall rates were lower than in the Mar-Pol category on port vessels. These reports included personnel requiring medical care and crew going overboard.

Limited Access Programs

Table 4-2 summarizes the number of reports received by sector in the Limited Access Program Statement Category Group in 2022. Reports under the IFQ retention statement category warrant further discussion.

In the CV HAL IFQ sector, there were multiple reports of rockfish and Pacific cod not being retained as required. Additionally, there were multiple reports of legal-sized IFQ halibut and sablefish being discarded when the permit holder had valid quota available for the species, area, and gear type. There were a total of 72 occurrences of these failures to retain catch as required.

In the CV POT IFQ sector, there was a total of 77 occurrences of vessels failing to retain catch as required. The majority of these 67 occurrences involved sablefish being discarded when the permit holder had a valid quota for the species, area, and gear type.

Protected Resources and Prohibited Species

Table 4-2 summarizes the number of reports received in the Protected Resources and Prohibited Species Statement Category Group in 2022. There are several categories that warrant discussion.

With reports involving GOA Salmon, there were 54 occurrences involving salmon being inaccessible to observers at shoreside processing facilities. There were 20 occurrences of the salmon numbers reported on fish tickets not matching the number of salmon reported by an observer.

For reports involving Amendment 91 salmon, there were 17 occurrences of salmon passing the last point of sorting. In these instances, the salmon were brought back to the observer for data collection. There were 8 occurrences of a CP running a new haul in the factory before the observer had the opportunity to finish their counts and collection of the salmon from the previous haul.

For vessels in the HAL IFQ sector, there were multiple reports involving Prohibited Species Mishandling. There were 27 total occurrences of undersized halibut not being released properly. There were multiple Prohibited Species Mishandling statements for vessels in the CP NPT sector. There were 64 occurrences of halibut being mishandled during halibut deck sorting and 65 occurrences of halibut being mishandled in the factory.

The use of seabird avoidance gear is important for vessels using hook and line gear. For the CP sector, there were 116 occurrences of seabird avoidance gear not being used as required. In the CV sector, there were 22 occurrences of seabird avoidance gear not being used as required.

4.5.2 Comparison of 2021 to 2022

Table 4-3 summarizes the observer statements, occurrences, and occurrence rates by type from 2022, and compares these values to those from 2021. Here we highlight five widespread statement categories and discuss their trends from 2021-2022.

In the Assault statement category, there was an increase of 100%. This is because no assaults were reported in 2021. It is important to note that this does not necessarily indicate that assaults increased by 100%, rather occurrences were reported in 2022 as opposed to 2021. Occurrences of Sexual Harassment per assignment declined from 2022 to 2021 by 33%. There was a 243% increase of occurrences per assignment in Intimidation, Coercion, and Hostile Work Environment from 2021 to 2022.

Occurrences per 1,000 deployed days involving Prohibited Mishandling increased from 2021 to 2022 by 40%. These occurrences involve regulatory requirements that have been in place for years. There is no excuse for the continued mishandling of prohibited species, and enforcement action will be coming.

Occurrences per 1,000 deployed days involving Record Keeping and Reporting increased by 53%. Some of these occurrences involved timeliness of logbook entry while others involved inaccuracies that were often rectified through the assistance of the observers. It is also important to note that 83% of factor groups had at least one occurrence of record-keeping and reporting issues indicating this is a fleet-wide problem. Owners, operators, and managers should feel free to stop by any OLE field office to ask questions regarding regulatory requirements.

4.6 Outreach and Compliance Assistance

In January 2022, multiple outreach letters were sent to the vessel company representatives, coop managers, and plant managers to remind them of the regulatory requirements applicable in general and to their specific sector. They are as follows:

- All sectors received the following outreach letters:
    - "Observer Work Environment" which emphasized the importance of ensuring observers were able to work in a safe environment free from rape, sexual assault, sexual harassment, or any other form of harassment; and
    - "Impacts to Observer Data" which emphasized the requirements for vessels and plants to not interfere with an observer's duties or bias their samples and to provide reasonable assistance as needed.
- All catcher processors received an outreach letter titled "CP Operational Requirements" which discussed the requirements applicable to catcher processors such as at-sea scale requirements, sampling station requirements, and video monitoring system requirements.

- Catcher processors engaged in the Amendment 80 fishery received an outreach letter reminding them of the catch monitoring requirements when fishing in both the BSAI and the GOA.
- Catcher processors authorized to engage in the halibut deck sorting program received an outreach letter reminding them of the requirements that need to be met to deck sort halibut such as having video monitoring, contacting NMFS to arrange a pre-cruise meeting, and having an approved deck safety plan. This letter also emphasized the specific prohibitions applicable to the halibut deck sorting program.
- Catcher vessels, through the applicable coop managers, were issued outreach letters covering general catcher vessel requirements such as marine mammal interactions, prohibited species catch handling, IR/IU retention requirements, vessel monitoring system requirements, and general responsibilities when carrying observers.

Multiple meetings were held between OLE and vessel company representatives or coop managers. These meetings were strictly voluntary and provided an opportunity for industry and OLE to collaborate to address current issues detected in the fishing fleets in general and in specific sectors. A total of 22 meetings were held throughout the year; some companies choose to have two meetings to address issues every six months.

OLE hosted several virtual training sections titled “Ensuring a Safe Work Environment for Observers”. Six of these virtual trainings were held and open to whomever was interested in joining. Multiple companies had their vessel management and general crew attend these trainings. These trainings can be requested and held for individual companies and additional trainings are planned for the future.

4.7 Enforcement Operations and Actions

4.7.1 Enforcement Operations

During the month of February, OLE personnel traveled to Dutch Harbor to conduct the annual A-season Observer Operation. The operation started with approximately 35 cases with 104 individual complaints. During the operation, several new cases were also initiated involving unsafe work conditions, sexual harassment, interference with sampling, and creating a hostile work environment. Due to the increased attempts by the industry to remain in compliance and fix potential violations immediately when notified by an observer, many incidents were resolved without the need for enforcement action. More egregious cases involving any form of harassment or interference remain open and ongoing.

In July and August, OLE personnel traveled to Dutch Harbor for the annual B-season Observer Operation. The operation started with 24 open cases initiated through 136 individual observer statements. Several new complaints were received during the operation including. Eleven complaints were furthered and are pending enforcement action, 64 were closed and 61 remain

open (occurring on nine separate vessels). Personnel from OLE, Sustainable Fisheries, FMA, and NOAA's Workplace Violence Prevention and Response held several outreach workshops during the operation at Alyeska Seafoods, Unisea, and the Grand Aleutian hotel.

4.7.2 Compliance Assistance, Written Warnings, Summary Settlements, Cases Forwarded for Prosecution

Table 4-4 details the status of statements and the incidents created from the statements. Each statement may document multiple occurrences of a particular violation. The majority of statements, approximately 93%, were forwarded to a Special Agent or Officer for investigation. Approximately 96% of the statements forwarded to the field resulted in the creation of a new investigation, while only 4% were added to ongoing investigations. Out of the 270 investigations from 2022, 77 remain open and ongoing. Twenty-four investigations were resolved through the issuance of a Written Warning or Summary Settlement, while two were forwarded for prosecution. Fifty-two investigations were resolved through compliance assistance as mitigating circumstances were present that made the investigating agent or officer decide that a formal enforcement action was not necessary. One hundred and fifteen investigations were closed with no OLE action taken; this includes investigations referred to another Agency, closed due to a lack of sufficient evidence, or closed to a lack of personnel available to conduct the investigation.

Table 4-1. – Description o f factors used in rate calculations. Each factor is used in unique combinations to calculate rates.

Factor	Values	Description
Coverage Type	FULL	Full Coverage
	PARTIAL	Partial Coverage
Vessel Type	CP/MS	Catcher-Processor/Mothership vessel
	CV	Catcher Vessel
	PLANT	Shorebased Processor (floating or land)
NMFS Region	BSAI	Bering Sea/Aleutian Islands
	GOA	Gulf of Alaska
Gear Type	HAL	Hook-and-Line
	NPT	Non-Pelagic Trawl
	POT	Pot (single, strung, or slinky)
	PTR	Pelagic Trawl
Management Program	A80	Amendment-80
	AFA	American Fisheries Act
	CDQ	Community Development Quota
	IFQ	Individual Fishing Quota
	OA	Open Access
	RPP	Central GOA Rockfish Program (formerly Rockfish Pilot Program)

Table 4-2. -- Deployment days and statement occurrence rates for the unique fishery factor combinations in 2022. Abbreviations follow Table 4.1. Bars indicate relative value compared to other values within that statement category group (column) only. The highest value in each column within each statement category group is highlighted in yellow/red, for easy reference.

Factor Combinations					Sum Totals				Statement Category Group and Incident Occurrence Rate						
									OLE Proirity: Inter-Personal		OLE Priority: Safety and Duties	Coast Guard	Limited Access Programs	Protected Resource & Prohibited Species	All Other Statement Types
Coverage Type	Vessel Type	Gear Type	Manag-ment Program	NMFS Region	Vessel/Plant Assignments	Deployed Days	Statements (all categories)	Occurrences (all categories)	Occurrences per Vessel/Plant Assignment	Occurrences per 1000 Deployed Days					
FULL	CP/MS	HAL	CDQ	BSAI	31	652	11.0	58.0	0.032	1.5	0	13.5	5.9	56.3	11.7
			IFQ	BSAI	3	22	0.7	1.3	0	0	0	30.6	0	21.6	7.2
			OA	BSAI	67	3629	48.5	291.7	0.164	3.0	0.8	8.7	9.7	25.9	32.2
				GOA	8	108	1.9	3.7	0	0	0	8.0	3.9	22.5	0
		NPT	A80	BSAI	227	9556	273.4	1635.1	0.319	7.6	34.1	16.9	36.4	23.3	52.8
			CDQ	BSAI	90	1289	37.5	146.7	0.164	11.4	27.8	6.4	14.6	7.0	46.6
			OA	BSAI	74	1374	46.5	147.8	0.190	10.2	3.0	15.9	18.3	26.5	33.6
			OA	GOA	30	631	17.3	55.5	0.709	33.7	4.8	13.1	5.2	26.7	4.5
			RPP	GOA	18	401	7.1	24.5	0.024	1.1	1.4	13.6	7.0	1.4	36.5
		POT	CDQ	BSAI	9	205	11.6	50.5	0	0	45.9	128.5	6.2	0	65.6
			IFQ	BSAI	10	181	9.3	24.2	0.865	47.8	2.0	43.2	11.6	2.1	27.1
				GOA	5	117	3.3	14.3	0.271	11.6	0	87.5	0	9.6	13.6
			OA	BSAI	7	173	14.9	74.3	0.571	23.1	93.8	119.0	0	0	193.3
		PTR	AFA	BSAI	74	3463	70.3	617.6	0.848	18.1	1.5	15.2	25.7	39.4	78.4
			CDQ	BSAI	54	980	17.7	147.4	0.467	25.7	1.7	9.7	31.5	26.0	55.7
			RPP	GOA	5	93	1.2	11.4	0	0	5.9	15.9	0	0	101.1
	CV	NPT	OA	BSAI	20	171	7.1	21.7	0.768	89.8	6.0	13.5	0	5.8	11.7
			RPP	GOA	34	366	12.0	29.5	0	0	2.7	16.8	8.3	6.4	46.3
		PTR	AFA	BSAI	71	2464	29.9	58.3	0.291	8.4	2.0	3.1	0.8	1.2	8.1
			RPP	GOA	31	370	11.0	16.5	0.032	2.7	0	15.8	2.6	9.9	13.7
	PLANT		AFA	BSAI	93	3128	72.0	320.7	0.507	15.1	11.3	3.5	16.4	3.4	52.9
			OA	BSAI	24	171	4.4	39.7	0.844	118.4	21.0	5.3	25.2	1.4	60.9
				GOA	51	1457	36.7	156.6	1.070	37.4	8.3	0.1	2.4	19.3	40.0
PARTIAL	CV	HAL	CDQ	BSAI	3	23	0	0	0	0	0	0	0	0	0
			IFQ	BSAI	19	184	8.9	91.9	0.053	5.4	0	5.4	194.0	173.9	120.8
				GOA	160	932	47.1	185.3	0.025	4.3	6.9	8.6	30.3	18.2	130.4
			OA	GOA	14	52	7.3	49.3	0.071	19.2	19.2	5.9	0	0	903.8
		NPT	OA	BSAI	32	164	8.0	15.0	0	0	6.1	12.2	0	6.1	67.1
				GOA	49	186	12.0	27.1	0	0	7.4	0	0	54.7	83.4
		POT	CDQ	BSAI	3	19	1.0	1.0	0	0	52.6	0	0	0	0
			IFQ	BSAI	14	85	10.0	74.0	0	0	11.8	11.8	376.5	0	470.6
				GOA	124	882	42.9	234.8	0.016	2.3	30.1	17.0	60.1	1.1	155.6
			OA	BSAI	20	216	16.0	36.0	0.100	9.3	4.6	69.4	0	0	83.3
				GOA	15	73	4.0	4.0	0	0	27.4	13.7	0	0	13.7
		PTR	OA	GOA	88	489	33.0	70.9	0.045	8.2	5.4	2.0	0	83.5	46.0

Table 4-3. -- Summary of observer statements, occurrences, and occurrence rates by type from 2022, with year-over-year percent change from 2021 (YOY). Abbreviations follow Table 4.1. Bars as per Table 4.2. Maximum values in each column are highlighted in yellow and red for easy reference.

OLE Category	Statement Type	Total Statements		Total Occurrences		Occurrences per Vessel/Plant Assignment		Occurrences per 1000 Days		% of factor groups with at least 1 occurrence	
		n	% change YOY	n	% change YOY	Rate	% change YOY	Rate	% change YOY	Value	change YOY
OLE PRIORITY: INTER-PERSONAL	Disruptive/Bothersome Behavior - Conflict Resolved	30	-3%	58	-26%	0.049	-26%	1.8	-18%	43%	-9%
	Harassment-Assault	7	100%	17	100%	0.014	100%	0.5	100%	17%	100%
	Harassment - Sexual	16	-11%	37	-33%	0.032	-33%	1.1	-26%	29%	0%
	Intimidation, coercion, hostile work environment	40	11%	298	243%	0.254	243%	9.2	277%	57%	-3%
OLE PRIORITY: SAFETY AND DUTIES	Interference/Sample Biasing	21	5%	362	258%	0.309	258%	11.1	294%	51%	-3%
	Safety-NMFS	77	20%	146	-43%	0.124	-43%	4.5	-38%	63%	0%
COAST GUARD	MARPOL/Oil Spill	46	24%	162	51%	0.138	51%	5.0	66%	63%	6%
	Safety-USCG-Equipment	8	14%	12	71%	0.010	71%	0.4	88%	29%	14%
	Safety-USCG-Fail to Conduct Drills	49	32%	70	15%	0.060	15%	2.2	26%	46%	11%
	Safety-USCG-Marine Casualty	134	7%	211	1%	0.180	1%	6.5	12%	74%	6%
LIMITED ACCESS PROGRAMS	AFA	16	-27%	181	269%	0.154	269%	5.6	306%	23%	-3%
	Amendment 80	66	25%	398	82%	0.339	82%	12.3	100%	17%	-3%
	Catcher Processer Longline	11	450%	41	64%	0.035	64%	1.3	80%	11%	6%
	IFQ Retention	22	-8%	151	-6%	0.129	-6%	4.6	4%	17%	3%
	Rockfish Program	3	200%	4	300%	0.003	300%	0.1	340%	6%	-3%
PROTECTED RESOURCE & PROHIBITED SPECIES	Amendment 91 salmon	25	-26%	174	-9%	0.148	-9%	5.4	0%	17%	-3%
	Gulf of Alaska Salmon	27	23%	83	-39%	0.071	-39%	2.6	-33%	14%	-3%
	Halibut Deck Sorting	26	73%	117	102%	0.100	102%	3.6	122%	11%	-3%
	Marine Mammal-Feeding	9	-55%	32	-95%	0.027	-95%	1.0	-95%	11%	-14%
	Marine Mammal-Harassment	1	-67%	2	-60%	0.002	-60%	0.1	-56%	6%	-11%
	Prohibited Species - Mishandling	47	74%	187	27%	0.159	27%	5.8	40%	57%	0%
	Prohibited Species - Retaining	0	-100%	0	-100%	0.000	-100%	0.0	-100%	0%	-100%
	Sample Bias-Marine Mammals	0	-100%	0	-100%	0.000	-100%	0.0	-100%	0%	-100%
	Seabird-Avoidance Measures	2	0%	138	360%	0.118	360%	4.2	406%	9%	3%
	Seabird-Harassment	0	-100%	0	-100%	0.000	-100%	0.0	-100%	0%	-100%
ALL OTHER STATEMENT TYPES	Contractor Problems	14	-44%	17	-55%	0.014	-55%	0.5	-51%	29%	-17%
	Failure to Notify	51	96%	187	-39%	0.159	-39%	5.8	-33%	57%	29%
	Inadequate Accomodations	26	44%	201	183%	0.171	183%	6.2	211%	43%	11%
	IR/IU	7	-13%	163	147%	0.139	147%	5.0	172%	23%	6%
	Miscellaneous Violations	10	-17%	27	-10%	0.023	-10%	0.8	-1%	34%	9%
	Reasonable Assistance	31	19%	136	-26%	0.116	-26%	4.2	-19%	49%	-3%
	Record Keeping and Reporting	110	24%	1100	39%	0.938	39%	33.9	53%	83%	0%
	Restricted Access	4	-50%	25	-65%	0.021	-65%	0.8	-61%	11%	-23%

Table 4-4. -- Status of Statements and Incidents. The status 'Ongoing' typically involves complex investigations while 'No OLE Action' includes incidents forwarded to another agency, incidents determined not to be a violation after an investigation, incidents that were closed due to a lack of personnel to conduct an investigation, and incidents closed as 'info only'. A statement may be closed as 'info only' if the observer and vessel operator's communication about a potential violation results in voluntary compliance at sea or if the potential was self-reported.

Statements	Incidents	Statuses
728 Statements received and reviewed in 2022 54 statements did not document an actual violation 674 statements were forwarded to agents and officers	263 new incidents created (646 statements) 28 statements were added to 7 open incidents	77 Ongoing (291 statements)
		2 Forwarded for prosecution (4 statements)
		7 Written Warnings issued (21 statements)
		17 Summary Settlements issued (29 statements)
		52 Compliance assistance provided (142 statements)
		115 Closed - No OLE Action (187 statements)
Excludes 80 Observer Coverage potential violations reported by Agency Staff.	*Multiple statements are often combined into a single incident if the same vessel, operator, or company is involved.*	

*As of 4/17/2023

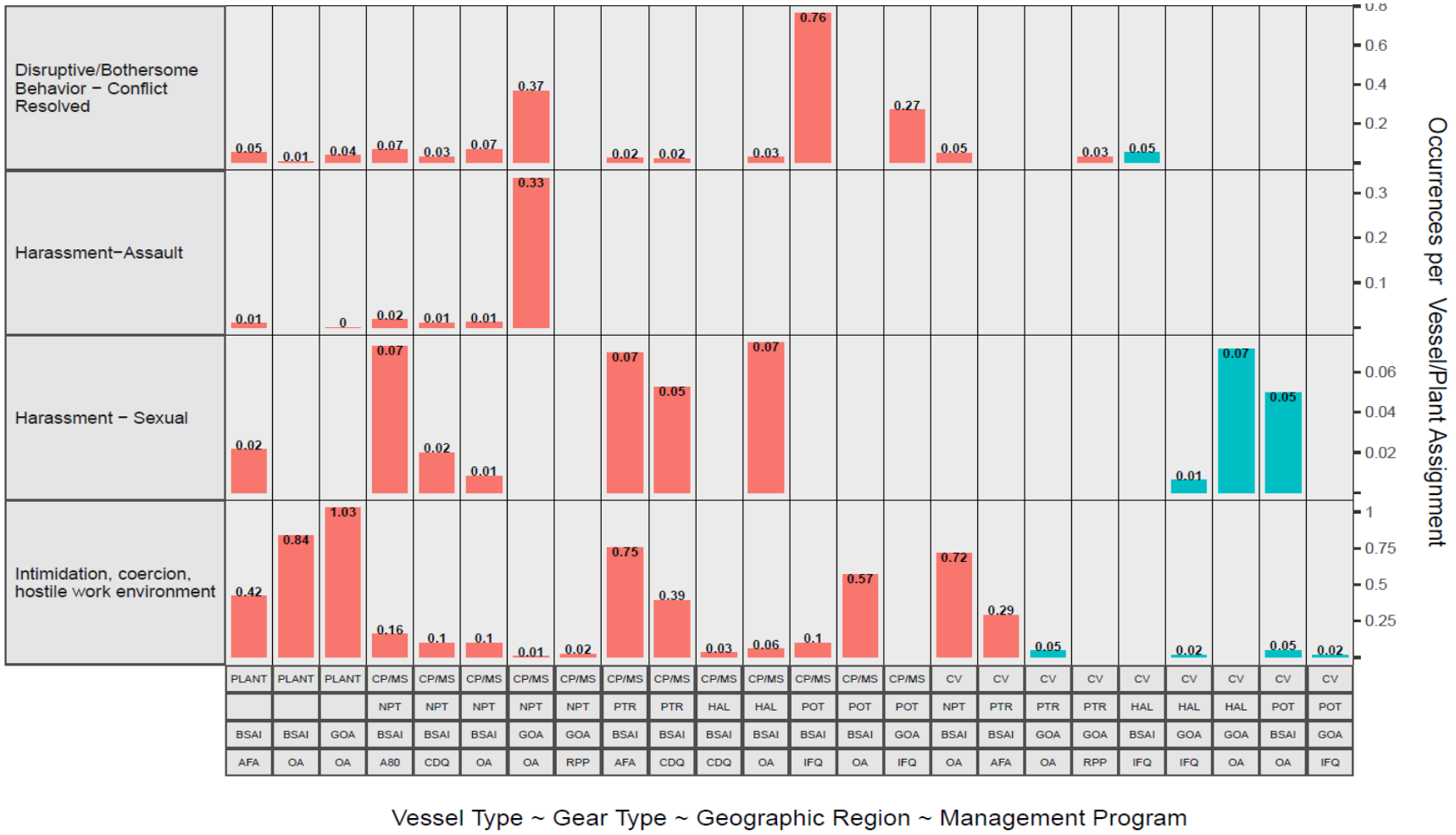

Figure 4-1. -- Rate of occurrences per vessel/plant assignment of statement types within the "OLE Priority: Inter-Personal" category group, by each factor combination where they occurred. All charts start at zero. Red = Full Coverage. Blue = Partial Coverage.

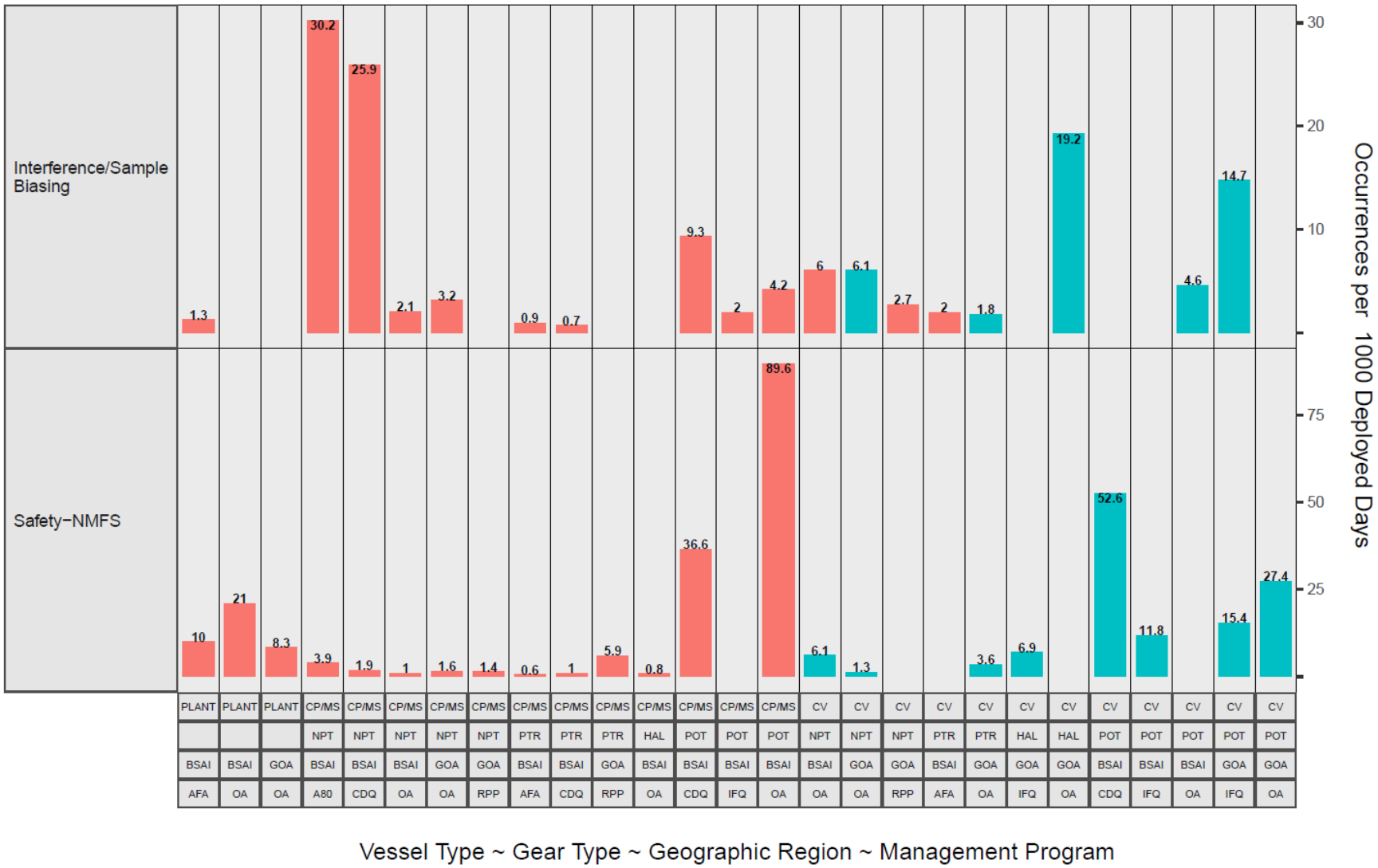

Figure 4-2. – Rate of occurrences per 1,000 deployed days of statement types within the "OLE Priority: Safety and Duties" category group, by each factor combination where they occurred. All charts start at zero. Red = Full Coverage. Blue = Partial Coverage

5 NFMS Recommendations

NMFS recommends the following for the 2024 Annual Deployment Plan:

- **Deployment Design:**
  - Continue the development of an integrated evaluation of the partial coverage category to define the stratification and allocation scheme for the draft 2024 ADP. An integrated view of fixed gear would enable evaluation of each data collection method (observers and EM) and design sampling that combines both to be most effective. The analysis incorporates the goal of spending the limited, available funding more efficiently such that more coverage (both EM and observers) is achieved for the cost.
  - Continue evaluation of three stratification options and four allocation strategies to compare deployment designs in the draft ADP.
  - The 2024 ADP should account for upcoming changes to the trawl components of partial coverage with implementation of the BSAI Pacific cod Limited Access Program and continuation of trawl EM
  - NMFS recommends the agency continue to work with the PCFMAC on refining the definition of Zero coverage using criteria that are predictable from year to year. As a first step, NMFS recommends focusing on vessels in the fixed-gear EM pool that have not fished for groundfish or halibut in several years.
  - NMFS recommends further evaluation of the high cancellation rates in the hook-and-line observer strata. Options to explore include: reviewing the ability of vessels to log 3 trips at a time; masking the selection result until the current trip has been realized; or increasing the programmed selection rate in ODDS in order to achieve realized selection rates.

- NMFS recommends changes to the **Observer Declare and Deploy System (ODDS)** to address issues with full coverage:
  - Modify ODDS to ask operators of vessels greater than 56ft with a history of fishing for CDQ groundfish to alert them they are in full coverage.
  - Incorporate PCTC into ODDS to alert vessels that they are in full coverage.

- **Fixed Gear EM**
  - EM selection pool composed of up to 172 fixed gear vessels, which would maintain the size of the EM pool from 2023. As additional funds are available, the number of EM boats could increase up to the Council's recommendation of 200 fixed-gear EM vessels.
  - NMFS would prioritize placement in the EM selection pool based on vessel size, fishing effort, minimizing data gaps, and cost efficiency.
  - If a vessel operator had repeated problems with EM system reliability or video quality or has failed to comply with the requirements in their Vessel Monitoring Plan, NMFS may disapprove a Vessel Monitoring Plan and the vessel may be removed from the EM pool.

- **Trawl Electronic Monitoring EFP**
  - NMFS recommends continuing the pelagic trawl EM EFP in 2024.

- NMFS supports increasing the number of participants and continuing efforts to improve processor participation.
- NMFS supports a combination of federal funds and NFWF grant funding to cover the cost of trawl EM in 2024.

- **EM Development:** In addition to developing trawl EM, NMFS recommends collaborating with industry partners on the following EM development and cost efficiency projects:
  - Testing EM on trawl catcher vessels participating in the CGOA rockfish program;
  - Real time electronic logbook data collection and reporting in Alaska's groundfish and halibut fisheries; and
  - Improving and enhancing EM Data in Western GOA.

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