2014 Annual Deployment Plan for Observers in the Groundfish and Halibut Fisheries off Alaska

December 2013

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Suggested Citation

NMFS (National Marine Fisheries Service). 2013. 2014 Annual Deployment Plan for Observers in the Groundfish and Halibut Fisheries off Alaska. National Oceanic and Atmospheric Administration, 709 West 9th Street. Juneau, Alaska 99802.

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Chapter 1 2014 Annual Deployment Plan

1.1 Purpose of the Deployment Plan

This 2014 Annual Deployment Plan (ADP) documents how the National Marine Fisheries Service (NMFS or Agency) intends to assign at-sea and shoreside observers to operations fishing in the North Pacific under the authority of the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area (BSAI FMP), the Fishery Management Plan for Groundfish of the Gulf of Alaska (GOA FMP), and the Northern Pacific Halibut Act of 1982. Data collection by observers is currently the only reliable and verifiable method available for NMFS to gain fishery discard information on fish and data concerning seabird and marine mammal interactions with fisheries. Onboard observers also perform the critically important task of collecting biological data such as species composition, weights, and tissue samples that are important for stock assessment scientists and researchers. 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.

Details on the legal authority and purpose of the ADP are found in the Final Rule for Amendment 86 to the BSAI FMP and Amendment 76 to the GOA FMP (77 FR 70062, November 21, 2012). This ADP follows section 313 of the Magnuson-Stevens Fishery Conservation and Management Act (MSA, 16 U.S.C 1862), which authorizes the North Pacific Fishery Management Council (Council) to prepare a fisheries research plan that requires observers to be deployed in the North Pacific fisheries and establishes a system of fees. The intent of the ADP is to focus on a science driven deployment of observers to reduce potential bias and meet NMFS's data needs. Some aspects of observer deployment can be adjusted through the ADP, including the assignment of vessels to the selection pools or the allocation strategy used to deploy observers in the partial coverage category.

The ADP describes observer deployment for the partial coverage category (50 CFR 679.51(a)). NMFS and the Council created the ADP process to provide flexibility in the deployment of observers to gather reliable data for estimation of catch in the groundfish and halibut fisheries off Alaska. NMFS and the Council recognized that the amount of observer coverage available for any given year would be dependent on available revenue generated from fees on groundfish landings. The flexibility of the ADP process allows NMFS to adjust deployment in each year so that sampling can be achieved within financial constraints.

In June 2013 the Observer Science Committee (OSC) released its Preliminary Annual Performance Review that provided a scientific evaluation of deployment for the first quarter of 2013. The 2014 ADP builds off the recommendations provided to NMFS by the OSC through the Annual Performance Review (Chapter 2 of this ADP), the June 2013 Council motion on the Annual Performance Review (Appendix A), and the Council's motion of the Draft 2014 ADP during its October 2013 meeting (Appendix A). Some items in the June 2013 and October 2013 Council motions were addressed by NMFS through letters provided to the Council during its October and December meetings.

This ADP proposes to deploy observers using sampling with randomization to perform their duties that include species identification, quantification and disposition of catch, documenting interactions between fishing gear and marine mammals and seabirds, and collection of biological specimens to support research and assessment of biological resources in the North Pacific.

1.2 ADP Process and Schedule

Analysis and evaluation of the data collected by observers is an on-going process. 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. Each year NMFS will develop an ADP to describe how observers will be deployed for the upcoming calendar year and prepare an annual report that evaluates the performance of the prior year's ADP implementation. The ADP process and schedule is as follows:

- October – November 2013: The Council and its Scientific and Statistical Committee (SSC) reviewed the Draft 2014 ADP and associated Plan Team and Observer Advisory Council (OAC) recommendations.

- December 2013: Upon final analysis of the Council recommendations from its October 2013 meeting, NMFS finalized the 2014 ADP and released it to the public prior to the December 2013 Council meeting.

- June 2014: NMFS will present an annual performance review that provides a comprehensive evaluation of observer activities, costs, sampling levels, issues in 2013, and potential changes for 2015. NMFS will evaluate data collected in prior years to identify areas where improvements are needed to (1) collect the data necessary to manage the groundfish and halibut fisheries, (2) maintain the scientific goals of unbiased data collection, and (3) accomplish the most effective and efficient use of the funds collected through the observer fees. This review is intended to inform the Council and the public of how well various aspects of the program are working, and consequently lead to recommendations that may adjust sampling methods and priorities for the upcoming year.

- June – September 2014: Using information from deployment and Council recommendations, NMFS will release the Draft 2015 ADP containing recommendations for deployment in the partial coverage category. NMFS will release the Draft 2015 ADP to allow review by the OAC and the Groundfish and Crab Plan Teams, as requested by these teams.

- October – November 2014: The Council and its SSC will review the Draft 2015 ADP and any associated Plan Team recommendations. Based on input from its advisory bodies and the public, the Council may choose to clarify objectives and provide recommendations for the final 2015 ADP. NMFS will review and consider these recommendations; however, extensive analysis and large scale revisions to the Draft 2015 ADP are not feasible. This constraint is due to the short time available to finalize the 2015 ADP prior to the December 2014 Council meeting, and practical limitations on planning for deployment (including contracting with an observer provider) and associated processes that need to be in place by January 1, 2015.

- December 2014: NMFS will make any necessary adjustments to finalize the 2015 ADP and release it to the public.

1.3 2013 Preliminary Annual Performance Review

The 2013 ADP described the deployment methodology for the first year of sampling under the restructured North Pacific Groundfish Observer Program (Observer Program). As outlined in the 2013 ADP, the 2014 ADP builds off of analysis and recommendations described in the 2013 Preliminary Annual Performance Review, which was presented to the Council during its June 2013 meeting. The Preliminary Annual Performance Review was the first report on the performance of the newly restructured program. However, because in June 2013 the new program was only several months old, the Preliminary Annual Performance Review could only evaluate the first 16 weeks of data under the restructured program.

The Preliminary Annual Performance Review highlighted deployment attributes from the first 16 weeks of 2013 that appear to be working well and are improvements in coverage, compared to 2012. The randomized deployment methodology, the electronic logging and reporting of trips, and notification to selected vessels were working as expected. There were also improvements in coverage in the hook-and-line fisheries in the Gulf of Alaska (GOA); specifically fisheries associated with GOA Pacific cod and Pacific halibut. For example, in the Pacific cod hook-and-line fishery in Federal reporting area 610, 9 out of 10 weeks with fishing effort had observer coverage in 2013, whereas 6 out of 11 weeks with fishing effort had coverage in 2012. In addition, the halibut hook-and-line fishery in area 640 had coverage in 2013. This same fishery had no coverage in 2012. Coverage improvements in some trawl fisheries were also observed. For example, coverage was more evenly distributed throughout the year in the Pacific cod trawl fishery in reporting area 620. The amount of coverage in the Bering Sea remained consistent with patterns observed in 2012, which was likely due to the full coverage compliance agreement for Bering Sea and Aleutian Islands (BSAI) trawl catcher vessels.

The Preliminary Annual Performance Review also noted a number of potential departures from the anticipated sampling design that could be sources of bias (Section 2.6); the effect of these changes will be better understood after a full year of information under the restructured program is available. NMFS and the Council will further investigate these items based on the information in the 2014 Annual Performance Review.

Following the conclusions of the Preliminary Annual Performance Review (Chapter 2), NMFS did not recommend major changes in the sampling design for the 2014 ADP.

1.4 2014 Deployment Methods

The 2014 ADP proposes to deploy observers into the partial coverage category using random sampling with equal probability specific to either the trip or vessel strata defined in section 1.4.1 and to allocate sampling effort between the trip and vessel strata in the same proportions as were used in the 2013 ADP (section 1.4.1). This allocation between vessel and trip selection is in alignment with the Council recommendation (Appendix A), and the anticipated deployment rate for trip selection is higher than vessel selection. This priority is intended to balance the need to provide inseason managers with information to monitor

prohibited species catch (PSC) on larger vessels while not severely compromising sampling rates in the vessel selection pool.

1.4.1 At-Sea Selection Pools (strata)

Deployment into the at-sea selection strata for 2014 will follow the same equal probability method described in the 2013 ADP. The at-sea selection strata applies to vessels in the partial coverage category (50 CFR 679.51(a)) and includes vessels exempted from full coverage requirements (50 CFR 679.51(a)(2)(iv)). For the purpose of observer deployment, deployment strata are defined as follows:

- No selection: Vessels less that 40 ft length overall (LOA) or fishing with jig gear, which includes handline, jig, troll, and dinglebar troll gear, are in the "no selection" pool. In addition, vessels participating in the Electronic Monitoring Pilot Study will be in the no selection pool. These vessels will not be selected for observer coverage in 2014.

- Vessel selection: Vessels that are fishing hook-and-line or pot gear and are greater than or equal to 40 ft, but less than 57.5 ft in LOA are in the vessel selection pool. NMFS intends to randomly select vessels in the vessel selection pool for mandatory observer coverage approximately 60 days prior to the start of each 2-month selection period. Selected vessels will be required to carry an observer for all trips taken within a selected 2-month period.

- Trip selection: This stratum comprises two classes of vessels: (1) all vessels fishing trawl gear and (2) vessels fishing hook-and-line or pot gear that are also greater than or equal to 57.5 ft LOA. NMFS developed a system, termed the Observer Declare and Deploy System (ODDS), to facilitate the random assignment of observers to trips.

A set of Frequently Asked Questions about trip and vessel selection pools can be found at http://alaskafisheries.noaa.gov/sustainablefisheries/observers/faq.htm.

1.4.2 Projected At-Sea Deployment (sample size)

In this 2014 ADP, NMFS estimates the projected number of days that will be observed and the deployment rate for the at-sea partial coverage fleet. Without 2014 data, NMFS cannot project with certainty the amount of observer coverage or sample size that can be achieved in 2014. However, sample sizes are required in order for NMFS to conduct vessel selections and determine trip selection rates for ODDS. Therefore, NMFS estimates the projected number of days that will be observed and the deployment rate through simulation using the best available information from the last full year of observer coverage (2012) and then adjusts the estimated coverage rate during the year, if necessary, based on the actual effort to date relative to the funds available. The actual (realized) coverage rates and actual numbers of days covered in 2014 will be included in the Annual Performance Review.

The basic components of the analysis necessary to estimate coverage levels in 2014 include (1) the amount of fishing effort projected for 2014, (2) estimates of observer costs, and (3) a target

budget for 2014. For these calculations, NMFS needs to make assumptions. These assumptions include the number of fishing activities (effort days) the partial coverage fleet will engage in during 2014 and the amount of travel funds expended by the contractor for deploying observers in 2014. The following describes the assumptions and how NMFS used them to determine sample sizes and anticipated rates of coverage for the 2014 ADP.

NMFS projects fishing effort for the upcoming year by using data from the most recent full year. For the 2013 ADP, NMFS used effort data from 2011 to project effort for 2013. Similarly, for this 2014 ADP, NMFS used data from *e*Landings to generate a list of vessel activity from 2012 to estimate the amount of fishing effort for 2014. This dataset was merged with data queries from the Catch Accounting System to define vessel activity (e.g., CP or CV, state GHL fishery). The landings made by catcher vessels and exempted catcher/processor vessels that would have constituted the partial coverage category under the 2013 ADP were identified from 2012 data, and assigned to either the trip-selection or vessel-selection stratum. Since the rules governing observer coverage in 2012 were not identical to those that will govern observer deployment in 2014, activities from 2012 were re-coded using the fields such as vessel length, target fishery, program management code (e.g., IFQ), vessel activity and GHL fishery into full, partial, or zero coverage categories. For partial coverage categories, NMFS placed activities into either the vessel- or trip-selection stratum using the criteria defined in this ADP. Activities in 2012 re-coded as belonging to the vessel-selection stratum were assigned a 2-month time period. Unique trips in 2012 were identified using the data fields titled report id, vessel id, and trip-start date, following the results of past analyses (see 2013 ADP Appendix 2). Using 2012 data, the estimated effort in the partial coverage fleet is 37,097 days. This is an increase from 31,803 days that was estimated for 2013 using 2011 data.

Cost estimates are based on the costs of an observer day and a “not-to-exceed” travel budget for 2014 derived from confidential contract information negotiated between NOAA's acquisition and grants office and the selected observer provider. NMFS assumed that the entire not-to-exceed amount of travel in the observer provider contract would be expended in 2014. Under this assumption, this not-to-exceed amount was deducted from the target budget available to deploy observers.

The actual budget available for 2014 will be based on revenue generated from an ex-vessel value-based fee, plus any additional Federal funding allocated to deploying observers in 2014. Revenue from the fees is generated by applying a standard ex-vessel price against landings of Federal groundfish species and Pacific halibut. NMFS publishes the standard ex-vessel prices each December in the Federal Register (http://www.alaskafisheries.noaa.gov/sustainablefisheries/observers/). Standard ex-vessel prices for groundfish are calculated by averaging the three most recent years’ volume and value from the State of Alaska Commercial Operators Annual Report, *e*Landings reports, and methods established by the Commercial Fisheries Entry Commission. Standard ex-vessel prices for halibut individual fishing quota (IFQ), halibut community development quota, and sablefish IFQ are calculated by averaging the previous year’s volume and value from the IFQ Buyer’s Report (submitted to NMFS by registered buyers). NMFS will know the actual amount of funds available for deploying observers in late December 2013.

At the time of releasing the 2014 ADP, fisheries were ongoing; therefore, NMFS did not know the actual budget available for deploying observers in 2014. Instead of projecting fee revenue for mid-July through December 2013, NMFS identified a target budget of $4.8 million to use for the simulations. This target budget aims to ensure that the coverage rate and number of days observed between 2013 and 2014 are comparable.

Sample size and resulting coverage rate estimates were generated through simulation using the identical approach used for the 2013 ADP. This approach is considered the best available science because each and every vessel in both pools of the partial-coverage fleet do not undertake identical numbers of trips and days in a year, and the approach provides NMFS with a full range of potential outcomes from random sampling (selections) of different vessels and trips.
The simulated deployment rate was determined from an evaluation of estimated annual program costs assessed against the risk of exceeding the Observer Program's available funds. Only 2012 data re-coded as belonging to the trip- or vessel-selection strata were used in simulations. One simulation consisted of a random draw of unique trips (i) within the trip-selection stratum, and unique vessel (v) and time period (p) combinations in the vessel-selection stratum. Total program costs from a single simulation trial (C_S) were determined by summing the number of simulated days in the trips that would have been sampled in the trip-selection stratum (d_{TS}), multiplying these by the cost per day (c), and adding these trip-selection costs to vessel-selection costs that were similarly determined by multiplying the cost per day by the sum days for all trips (d_{VS}) made by selected vessels (v) in each time period, or

$$\left(\sum \quad \sum\sum\sum \quad \right)$$

In this way each simulation trial mimics an ADP selection draw for the year. If NMFS applied the maximum rate possible with available budgets in simulations, the outcome would be a mean value among C_s that equals the total available budget. Thus, there would be equal probability that spending by the Observer Program during 2014 would be over-or under-budget. To reduce the likelihood of the latter outcome, simulations were performed in an iterative fashion until their outcomes reached a critical value. Specifically, an initial distribution set of 1,000 C_S with a high starting value for the deployment rate was evaluated against the desired outcome that the number of simulations whose total costs exceeded the available budget divided by 1,000 was below 0.12. If the desired outcome was not achieved, the initial rate of sampling was adjusted downward by 0.001, another set of simulations was generated, and the evaluation was conducted again. This entire process was repeated until a set of simulations achieved the desired outcome. In each simulation, the deployment rate for vessel-selection was set to 0.74 that of the rate in trip-selection preserving the weighting used in the 2013 ADP.

Based on the final set of simulation trials, NMFS estimates it can afford 4,718 observer days in 2014 in the partial coverage category. This is an increase of an additional 596 observer days relative to the projected number of observer days in 2013. Based on these calculations, NMFS projects a deployment rate of 0.1370 (13.7%) of trips for trip selection and 0.1019 (10.2 %) of vessels for vessel-selection when averaged across the year. The anticipated deployment rate is projected to decrease slightly in 2014 compared to 2013 (anticipated deployment rate in 2013 was approximately 14–15% in trip selection and 11% in vessel selection). This change is due to

the increase in anticipated effort from 2013 to 2014 since, as noted above, the effort calculations from 2011 (used in the 2013 ADP) to 2012 (used in this 2014 ADP) increased from 31,803 to 37,097.

The estimated deployment rates for 2014 work out to be equivalent to 3,662 days from 999 trips taken on 292 vessels in the trip selection pool and 1,056 days from 284 trips taken on 83 vessels in the vessel selection pool. NMFS will program a rate of 0.1370 into ODDS for the trip selection pool at the start of 2014. Table 1-1 gives the estimated sample size of the number of vessels for each 2-month time period in the vessel selection pool.

Table 1-1 The estimated number of vessels that NMFS anticipates to observe in the vessel selection pool in each time period in 2014. For reference, the total number of vessels that fished and the simulated number of trips and days anticipated to be observed are also provided.

Time Period	Total vessels	Vessels observed	Trips observed	Total days observed
January February	85	9	58	162
March April	154	16	40	151
May June	233	24	57	242
July August	177	18	45	198
September October	200	20	70	255
November December	48	5	14	49

The histogram of C_S (total cost or budget) values from the final set of simulated trials is depicted in Figure 1-1. Based on the final set of simulations, it is expected that on average NMFS will spend $172,500 less than the total available budget. Any cost savings realized will be used in the following year of deployment.

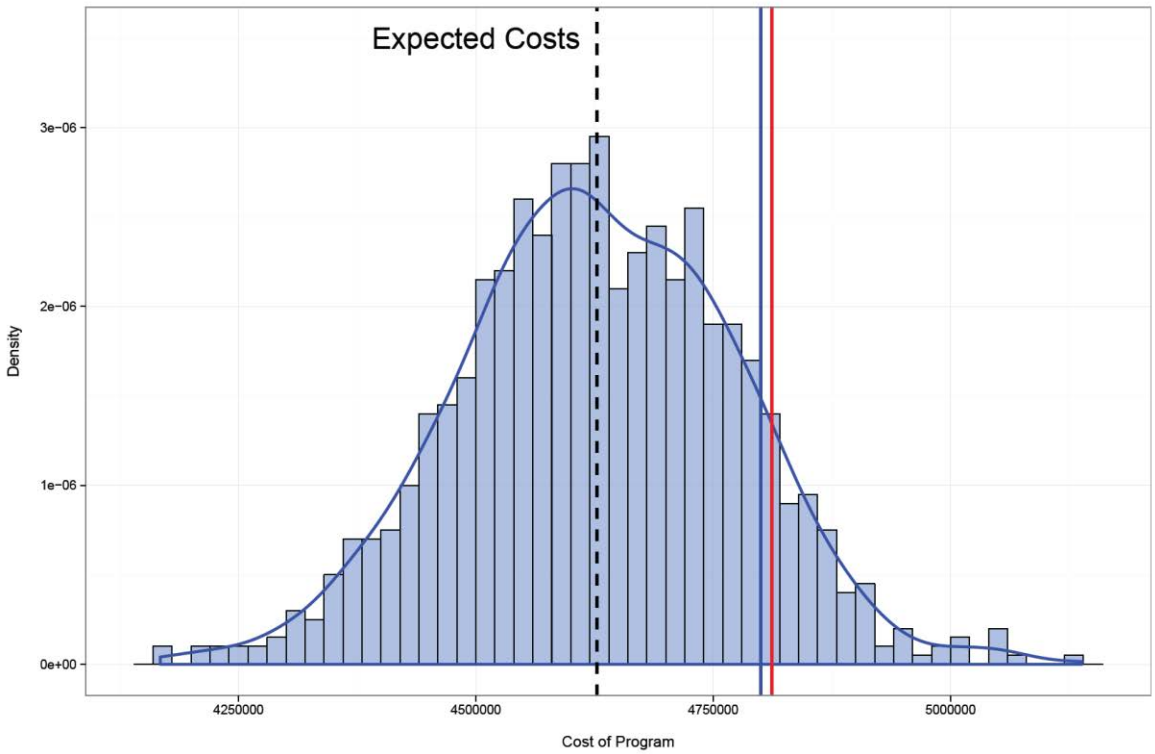

Figure 1-1 Anticipated cost distribution (in dollars) of observer deployment in the partial coverage category for 2014. The mean value is depicted in the vertical dashed line, while the budget at which 90% of the expected costs are below is depicted as the red vertical line, which is set close to the total budget (blue vertical line).

1.4.3 Tender Deliveries

Some issues associated with the complexity of sampling tender deliveries were raised in the Annual Performance Review (Chapter 2) and the Council's June 2013 motion (Appendix A). The Annual Performance Review indicated that vessels fished longer and made more deliveries when delivering to a tender unobserved than under the opposite conditions.

From a sampling perspective, defining sampling strata for catcher vessels delivering to a tender is complex due to the flexibility and unpredictability of the operation type. For example, throughout the course of a year, catcher vessels may deliver to tenders, shoreside processors, or even both during a single trip (split delivery). The quantity and identity of catcher vessels delivering to tenders will also change between years, depending on economic conditions. In addition to the complications from the diverse and potentially ephemeral fishing scenarios involving tenders, the types of adjustment NMFS may make to sampling through the ADP are constrained by regulations. In particular, tenders are not defined in current regulations in either the full or partial coverage category; therefore, certain regulations governing observer activities (e.g., observer safety, ODDS) are not extended to tender vessels. Modifying the definitions of the full and partial coverage categories to include tenders would require a regulatory amendment. Changing the definition of a trip for a catcher vessel delivering to a tender also constitutes a

regulatory change. For all of these reasons, it is not possible to create a new deployment stratum for tender deliveries in the ADP without a change in regulations.

NMFS recognizes that tender activity may represent an important source of variance and/or bias in catch data. We recommend assessing tender activity once a full year if information is available and, if warranted, evaluate regulatory strategies to address the issue.

1.4.4 BSAI Full Coverage Compliance Agreement

In 2013 NMFS implemented an industry proposal for trawl vessels fishing for Pacific cod to volunteer to carry an observer at all times when fishing in the BSAI (Section 2.2.2). The additional coverage benefited the management of that fishery and reduced the population of trips in the partial coverage category, thus increasing the coverage rates for the trips remaining in partial coverage. NMFS is extending voluntary full coverage through 2014, and recognizes this activity would be best addressed in the long-term through a regulatory change.

As was noted in the 2013 ADP, if full coverage is not implemented correctly it has the potential to undermine the catch estimation process. Deployment of observers under a voluntary coverage rate where vessels get to choose when they have full coverage would undermine the goal of the restructured Observer Program to obtain unbiased, independent information on the activities of the fleet. In addition, it is necessary to modify the stratification methods in the Catch Accounting System to match the change in the sampling stratification. A stratum has to be created that is specific to the voluntary full coverage vessels, and the criteria used to define the full coverage strata must programmable into the Catch Accounting System.

Entities participating in the BSAI Pacific cod trawl fishery that want full coverage in 2014 must submit a signed compliance agreement to NMFS on or before December 1, 2013 (Appendix C). Vessels operating under a full coverage compliance agreement would pay partial coverage observer fees as required in regulation, but would also need to contract directly with observer providers and also directly pay for those observer costs. In addition, vessels operating under the full coverage compliance agreement must comply with the partial coverage regulations, including logging trips into ODDS.

1.4.5 Chinook Salmon Sampling in the Gulf of Alaska

The sampling of Chinook salmon for genetics in the GOA is a priority for NMFS in 2014. This information is used to identify the origin of Chinook salmon caught as bycatch in groundfish fisheries and is important for the management of Chinook PSC. NMFS proposes to revise the 2013 methods for collecting Chinook salmon in the GOA to improve the representativeness of samples.

The 2013 ADP set a priority to monitor salmon in the GOA pollock fishery at the time of offload, including salmon offloaded from unobserved trips. This priority followed the implementation of Amendment 93 to the GOA FMP (77 FR 42629, July 20, 2012), which required all vessels fishing for pollock in the central and western GOA to retain salmon until delivery to a processing facility. While this facilitated dockside sampling by observers, it did not

provide an at-sea method to verify that all salmon were retained on unobserved trips. Unlike the Bering Sea pollock fishery, pollock trawl vessels delivering to shoreside plants in the GOA operate under partial coverage observer requirements. Since at-sea verification of full-retention requirements are not in place for the GOA pollock fishery, salmon bycatch sampling by observers represents an incomplete census that has the potential for bias.

To obtain the best possible information and make efficient use of funds in 2014, NMFS investigated alternative sampling of Chinook bycatch on observed GOA pollock trawl trips (Appendix B). The analysis showed that the number of genetic samples is anticipated to increase under the new method compared with the sampling methods used in 2013 (Appendix B).

Based on this analysis, in 2014 NMFS will sample Chinook salmon from randomly selected trips for both pollock and non-pollock trawl vessels fishing in the GOA. Under this sampling protocol, NMFS anticipates salmon bycatch genetic samples will be obtained from a census of Chinook salmon for observed trips on trawl vessels delivering pollock shoreside. For vessels in the full coverage category, including catcher/processors and vessels participating in the Rockfish Program, Chinook salmon genetic samples will be collected from the at-sea samples. At-sea sampling methods will also be used to collect salmon bycatch samples from vessels in the GOA non-pollock fisheries and vessels delivering to tenders. The number of genetic samples obtained from these fisheries is likely to be low; however, sampling at-sea will follow the sampling protocol that enables catch to be extrapolated to the fishery and will provide some information on Chinook bycatch from these operations. As described in Section 1.4.3 changes to deployment and sampling involving tender operations would require regulatory amendments. NMFS will continue to explore alternative sampling methods.

The change in the Chinook salmon genetic sampling protocol also changes the way funds are spent on observer coverage since dockside observers previously did genetic sampling. Under the 2014 ADP, NMFS will not deploy dockside observers and instead puts all funding towards at-sea coverage, which is anticipated to result in considerable cost savings for each salmon sampled (Appendix B).

1.4.6 Conditional Release Policy

The 2013 ADP provided conditional releases from observer coverage for vessel operators who provided reasonable information that accommodating an observer would displace crew members or additional IFQ permit holders. In 2014 NMFS plans to continue to implement this Council policy. Please note, however, that NMFS only intends to issue releases to vessels in the vessel selection stratum in 2014. NMFS's experience in 2013 was that vessels within the trip-selection stratum have been able to accommodate observers, with one exception when an IFQ holder was brought aboard one vessel on single trip, thereby displacing the observer. Within the vessel selection stratum, NMFS will continue to review accommodation issues on a case-by-case basis, recognizing that in some situations reasonable accommodations for an observer can be made with minor modifications to vessel operations (e.g., removing stored equipment from an existing bunk or augmenting existing sleeping areas similar to crew's). As noted in Chapter 2, conditional releases issued by NMFS have the potential to cause biased estimates of catch and

discard. Therefore on-going assessment of this policy will be needed as the program continues to mature.

1.5 Communication and Outreach

NMFS will continue to communicate the details of the ADP to affected participants though public meetings and posting information on the Internet. Information about the Observer Program is available at:
http://www.alaskafisheries.noaa.gov/sustainablefisheries/observers/default.htm
and Frequently Asked Questions are available at:
http://www.alaskafisheries.noaa.gov/sustainablefisheries/observers/faq.htm

NMFS will conduct a series of public outreach meetings to answer questions about the program and gain insight from vessel operators and processors about their experience with the first year of the program. Our goal is to reach a broad range of communities while operating within budget constraints. For economic efficiency some meetings may be conducted via phone and WebEx. We envision the outreach events occurring between the end of November 2013 and February 2014 and have proposed locations and timing based on feedback that we received from the Council and the OAC last year (Table 1-2).

Table 1-2 Proposed public outreach meeting locations and schedule.

Location	**Date**
Seattle, Fish Expo	Nov 20-22
Petersburg	Dec 3
Anchorage (evening session during the December Council meeting)	Dec 11
Homer	Dec 5
Kodiak	Jan
Newport	Jan
Sitka	Jan
Juneau	Jan

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Chapter 2 Preliminary 2013 Annual Performance Review

This is the Preliminary 2013 Annual Performance Review that NMFS presented to the Council in June 2013.

North Pacific Groundfish and Halibut Observer Program

June 11, 2013

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Disclaimer: This document is intended to provide scientific data and where appropriate, advice in the areas of regulatory management, natural science, mathematics, and statistics as they relate to observer deployment and sampling in the groundfish and halibut fisheries of the North Pacific. Any opinions expressed in this document are those of the authors and do not necessarily represent the position of their representative organizations.

2.1 Introduction

In partnership with the North Pacific Fishery Management Council (Council), the National Marine Fisheries Service (NMFS) restructured the North Pacific Groundfish Observer Program (Observer Program). The new North Pacific Groundfish and Halibut Observer Program went into effect on January 1, 2013. The restructured program enables ongoing analysis and evaluation of the deployment of observers and the data collected in the program through an Annual Deployment Plan (ADP) and associated review process. The ADP process was developed to provide enough flexibility so that new scientific information could be incorporated, on annual basis, to adjust observer coverage to improve estimation, and maintain transparent public review of deployment.

As outlined in the 2013 ADP (NMFS, 2013). NMFS will present an annual report to the Council during its June meeting that provides an evaluation of observer activities, costs, sampling levels, issues, and proposed changes to the deployment plan for the following year. The annual report will inform NMFS, the Council, and the public about how well various aspects of the program are working, and consequently lead to recommendations through the ADP. This report is the first of the annual reviews and contains a scientific evaluation of the restructured program in early 2013. The report for 2013 is limited in the types of comparisons and inferences that can be made because only the first 16 weeks of data that had been collected under the restructured program is considered at the time of this writing to be quality controlled for this purpose. Thus, as stated in the 2013 ADP, this report is a progress report on implementation during the first 16 weeks of 2013. The first full annual review of the 2013 Observer Program will occur in June 2014.

As a first step towards developing a draft ADP for 2014, NMFS is providing recommendations and analysis from the Observer Science Committee (OSC) for Council comment. The final ADP will contain the NMFS analysis and recommendation on deployment using a synthesis of Council input and OSC recommendations on deployment methods. The OSC is an interagency working group enabled by the Observer Program that provides scientific advice to NMFS on deployment methods. Group members author this report.

Council recommendations will be considered by NMFS for incorporation into the draft ADP. The draft ADP will be available for review by the Council, the Scientific and Statistical Committee (SSC), the Plan Teams, and other Council advisory groups by September 1, 2013. NMFS will consider recommendations made by the Council during its October 2013 meeting to modify the draft ADP, recognizing limitations on the types of analysis that can be completed prior to finalizing the ADP in early December 2013.

This OSC report is broken into two sections: the Assessment of the Sampling Frame and the Proposed Deployment Plan. The assessment of the sampling frame provides an evaluation of observer activities, costs, sampling levels, and issues. As noted above, 2013 is the first year of the restructured program, so the assessment is a status report of implementation to-date in 2013. The Proposed Deployment Plan describes the proposed sampling design for 2014. In the future, the Proposed Deployment Plan will use information from the prior year's deployment to identify areas where improvements are needed 1) to collect the data necessary to manage the fisheries; 2) maintain the scientific goals of unbiased data collection; and 3) accomplish the most effective and efficient use of the funds collected through the observer fee. Since a full year of data has not yet been collected under the restructured program, the Proposed Deployment Plan for 2014 relies heavily on analysis conducted in the 2013 ADP.

2.2 Assessment of the Sampling Frames

The number of vessels, trips, observer coverage rates, and compliance with ADP assumptions were evaluated for each stratum. Here a stratum is defined as fishing operations subject to different observer coverage rules. Only those operations under the authority of NMFS to deploy observers under the 2013 ADP were considered in these evaluations.

These evaluations depend on identifying individual fishing trips. This can be accomplished for the partial coverage trip-selection stratum by combining information stored in the Alaska Fisheries Science Center's Fisheries Monitoring and Analysis Division observer databases (NORPAC and ODDS) and the Alaska interagency reporting system (eLandings). Since some observer deployment and at-sea data may not be immediately available to the Observer Program, only the first sixteen weeks of 2013 were included in analyses.

2.2.1 Dockside Deployments

Dockside observer duties vary between those observers that are deployed to monitor deliveries that occur in full-coverage operations and those that are deployed outside of full coverage operations. Full-coverage dockside operations include only those processors that take deliveries from American Fisheries Act vessels delivering pollock in the Bering Sea and Aleutian Islands. These processors are required by federal regulation to have observers available to sample shoreside deliveries while they are processing (accepting) deliveries of BSAI AFA pollock. In these full-coverage operations, an observer records delivery information, salmon bycatch information (e.g. total number of fish), collects specimens for genetic analysis from salmon, and collects otoliths and lengths from groundfish (to support stock assessments) Observers collect salmon genetic tissues according to the protocols of Pella and Geiger (2009), which requires a systematic sample of every n^{th} salmon to ensure a uniform random sample of the bycatch is obtained.

Observers in plants not receiving AFA pollock deliveries are in the partial coverage category. The 2013 ADP established the collection of tissue samples from Chinook salmon in the Gulf of Alaska pollock fishery as sampling priority for shoreside observers. Observers in this situation are supposed to be notified by industry of a pollock delivery- if this condition is not met the delivery will not be monitored. Once in the plant, the partial-coverage observer records delivery information, salmon bycatch information (e.g. total number of fish) and collect specimens for genetic analysis from salmon according to the protocols of Pella and Geiger (2009). Shoreside counts of salmon are used to estimate salmon bycatch in the Catch Accounting System (CAS) only when the trip is observed whereas genetic samples are collected from both observed and unobserved trips.

Since catch delivered by a tender is sorted at sea and may include the harvests of several vessels, the observer does not sample from or monitor these offloads. They record only the basic information on the tender vessel from information on the landing report: date, gear, area fished, delivered weight and program management code.

In the first sixteen weeks of 2013, a total of 748 deliveries of AFA pollock were made. True to expectations of the 2013 ADP, all of these deliveries were observed dockside and none of the observers were restructured observers (that is, employed by the observer provider company under contract by

NMFS to provide coverage for the partial coverage strata). During the same time period, 439 non-AFA pollock deliveries were made and eighty-eight percent of these were observed and sampled for salmon genetics (Table 2-1). In 2013, Kodiak was the principal port of deployment for partial coverage dockside observers since this port received the most Gulf of Alaska pollock deliveries and the port is relatively easy to reach. Kodiak had all but one delivery observed.

Table 2-1 Number of non-AFA pollock deliveries observed and unobserved.

Port	Unobserved	Observed	Total	Percent observed
Akutan	31	6	37	16.2
Inshore Floating- Dutch	2	6	8	75.0
King Cove	9	0	9	0.0
Kodiak	1	368	369	99.7
Seward	6	0	6	0.0
Sand Point	2	8	10	80.0
Total	51	388	439	88.4

2.2.2 BSAI Cod Voluntary 100% Fleet

Forty trawl vessels signed a compliance agreement with NMFS to carry full observer coverage when fishing Pacific cod in the BSAI. Of these vessels, 35 vessels ranging in size from 85 to 149 feet length-over-all (LOA) conducted 353 trips during the first sixteen weeks of 2013. The remaining 5 vessels that signed agreements did not land fish predominantly comprised of Pacific cod in the BSAI. NORPAC data confirms that all BSAI 100% Cod trips were observed. No restructured observers were used for voluntary deployments, in accordance with agreements specified in the 2013 ADP and letters of agreement sent to NMFS by participating parties.

2.2.3 Full Coverage Fleet

The catcher processor vessels Kruzof, Judi B, and Amber Nicole requested and were removed from the full coverage stratum using exemptions at 50 CFR 679.51(a)(2)(v). A total of 2,647 trips were made by 151 vessels ranging from 51 to 376 feet LOA in the full coverage stratum during the first sixteen weeks of 2013. NORPAC data used to identify which trips are observed show that 99.7% of these trips were observed. However other data sources in NORPAC (e.g. haul information) indicate that the three trips with missing records were in fact observed. No restructured observers were used in accordance with the 2013 ADP.

2.2.4 Partial Coverage Fleet

The Partial Coverage category includes vessels whose fishing operations are not required by federal regulation to always carry an observer. This category is divided into two sampling strata depending on the method used to deploy observers: trip-selection and vessel-selection.

- Trip selection vessels are those that are required to log trips into the Observer Declare and Deploy System (ODDS) using a NMFS supplied username and password. Each logged trip is assigned a random number that determines whether a trip is to be observed. The sampling frame for trip-selection is generated one trip at a time.

- Vessel-selection vessels are those that are selected to have every trip observed for a two-month period of the year. From the pool of vessels that fished in the same two-month period in 2012, a number of vessels are randomly chosen for observer coverage. Only those vessels selected for coverage are provided access to the Vessels Assessment Logging System (VALS) in which they may petition NMFS for a conditional release of observer coverage. A conditional release is a case where the NMFS has decided under certain conditions to release the vessel from the observer coverage requirement for a period of time. If a vessel requests a conditional release from coverage through the VALS, NMFS follows up by contacting the vessel, conducting a visit and inspection of the vessel, and recording the results of the vessel assessment to be used in future vessel selections.

2.2.5 Trip Selection

A total of 1,300 trips were made by 206 vessels ranging from 58 to 176 feet in length in this stratum during the first sixteen weeks of 2013. Observer (NORPAC) data indicates that 17.7% of these trips were observed.

ODDS Performance

Non-randomness in the random selection of trips for observer coverage can lead to bias in deployments of observers that could be reflected in the final catch estimates. When a trip is logged into the ODDS, it is assigned a random number. If the random number generated for that trip is below a pre-programmed critical value, the trip is selected for observer coverage. After the launch of the 2013 Observer Program, a feature was added to ODDS to permanently store the random number assigned to a trip to allow tracking and evaluation of the generation and assignment of random numbers. Between February 14th and May 22nd, 1,272 trips were logged into the ODDS. From these records, there appears to be no pattern in the random number over time (Figure 2-1). Selection of trips for observer coverage based solely on the assigned random number is at 15.8 %, which is very similar to the anticipated rate of 14-15% in the 2013 ADP.

The rate of selected trips from the ODDS random number is not the same as the rate of observed trips. The differences are due to the fact that not all trips that are entered into ODDS are actually realized by the vessel. There is an opportunity for an ODDS user to cancel every trip that has been selected for coverage. However, ODDS automatically selects the operators next logged trip to be observed if the vessel operator had cancelled a “to-be observed” trip.

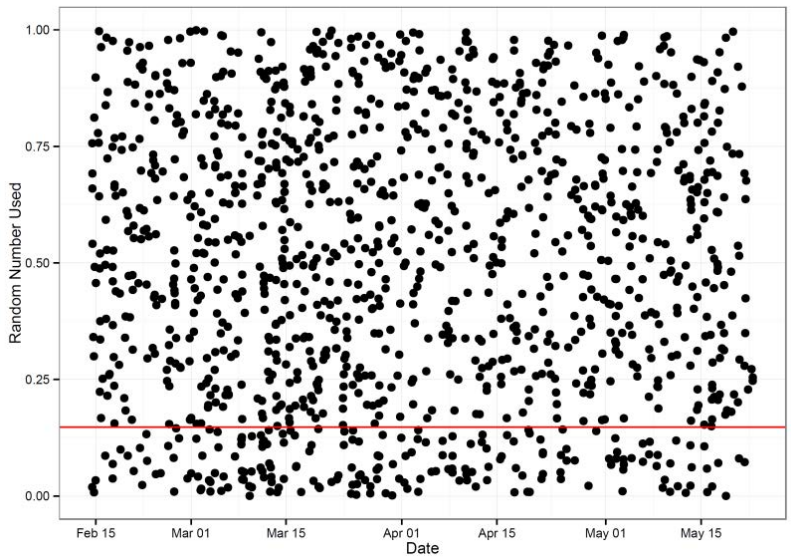

Figure 2-1. Random number used in ODDS organized by logged trip date. Each number is tied to a logged trip. Trips below the red line were selected for observer coverage based on the random number.

2.2.6 Vessel Selection

A total of 141 vessels ranging from 40 to 57 feet LOA in length made 507 deliveries in this stratum during the first sixteen weeks of 2013. Over both two-month sample periods, 11.8% of trips in this stratum were observed.

Two vessel-selections were conducted during the first 16 weeks of 2013. The NMFS targeted a fixed sample size based on the 2013 ADP. The targeted number of observed vessels for each two-month period (sample size) was equivalent to 11% of the number of vessels that fished in each selection period during 2011.

In each selection, a list of vessels identified as likely vessels to fish in the desired time period based on past activity were generated. Each vessel was assigned a random number. Vessels were then put into ascending order according to their random number, and the first *n* vessels were selected for observer coverage where *n* is the number of vessels to be selected.

The Agency over-sampled (that is, selected more vessels to carry observers than was necessary) in each selection to allow for changes in the vessels anticipated to fish in the upcoming two month-period. To evaluate how much over-sampling was necessary, the similarity between the list of vessels in this stratum that fished between 2009 & 2010, 2010 & 2011, and 2011 & 2012 were evaluated prior to the selection.

The weighted average across the three years indicated that the NMFS should expect that 77% of the vessels that fished in the first two months of 2012 would also fish in the first two months of 2013. For this first selection period, 74 vessels were identified as potential candidates for selection and assigned random numbers (fished in the same two months in 2012). The NMFS targeted sample size was seven vessels to carry observers during January and February of 2013. Therefore the NMFS selected nine vessels to carry observers during the first two months of 2013 (Table 2-2). Three of these selected vessels did not have valid Federal Fisheries Permits, reducing the number of valid selected vessels to six. Of the

74 vessels that were identified as potential candidates from 2012, only 28 actually fished in the first period of 2013 (a smaller set of vessels fished in both years than expected) and six new vessels fished as well. Only two of 34 vessels that fished in the first two months of 2013 were observed in this stratum. This equates to a coverage rate of 5.8% of the vessels that fished in the January – February period (Table 2).

In the second two-month period (March-April), 181 vessels were identified as potential candidates to carry observers and assigned random numbers. Making the same comparisons as for the Jan-Feb period, the NMFS expected that only 73% of the vessels identified from 2012 activity would fish in 2013. Based on the Jan-Feb randomization process, the NMFS anticipated that 14% of selected vessels would surrender their FFPs and 28% would be granted conditional releases. Hence, although the NMFS targeted 17 vessels to carry observers during March and April of 2013, twenty-nine were selected for coverage (Table 2-2). One hundred and nine (61%) of the 181 potential candidate vessels from 2012 actually fished in the third and fourth months of 2013. A total of 135 vessels fished during March and April of 2013, and of these 13 carried observers. Based on vessels, this equates to a coverage rate of 9.6% (Table 2-2).

Table 2-2 Vessel-selection metrics from the first and second selection draws of 2013. The first vessel-selection draw was for January-February and the second was for March-April.

	First Draw	Second Draw
Targeted Sample Size (# of vessels to carry observers in 2013)*	7	17
Vessels selected to carry observers	9	29
Vessels from 2012 anticipated to fish in 2013 (Sampling Frame)	74	181
Vessels that fished in 2013	34	135
Vessels that fished in 2013 but did not do so in 2012 (new vessels**)	6	26
Vessels in 2013 actually observed	2	13
Vessels coverage rate in 2013	5.8%	9.6%
Draw efficiency (vessels selected that actually carried observers)	22%	44%

*equivalent to 11% of the number of vessels that fished in 2011. ** these vessels had no chance of being selected for coverage.

2.3 Special conditions

2.3.1 Conditional releases

Requested by the Vessel Operators

Trips were conditionally released when vessels provided a robust argument that either crew or an IFQ holder would be displaced by an observer. Of the 32 conditional release requests by vessel operators, 21 were granted (66%). Most release requests (28 requests) originated from vessels in the vessel selection stratum. Of the granted releases, 14 were crew releases (67%), 6 were IFQ holder releases (29%), and one was due to a life raft having inadequate capacity to accommodate an observer (5%). The

duration of released periods (during which an observer is not required) ranged from a minimum of 4 days to several months (max 109 days), with the median duration being 38 days. The size of vessels requesting releases ranged from 41 feet to 58 feet LOA.

To evaluate the distribution of trip outcomes, all trips occurring within a calendar week that were observed, not-observed, and those that were released from coverage were summarized across both vessel and trip selection strata (Table 2-3).

Table 2-3 The total number of trips taken in the first sixteen weeks of 2013 by vessels in the partial coverage category. Trip totals will not sum to totals in other tables because some trips contain deliveries that span multiple weeks and are "double-counted" in this table.

Week	Total # Trips: Trip Selection	Total # Trips: Vessel Selection
1	54	2
2	86	4
3	97	6
4	146	28
5	164	18
6	133	21
7	92	5
8	60	19
9	71	27
10	58	23
11	147	51
12	104	62
13	63	54
14	79	57
15	60	43
16	104	93

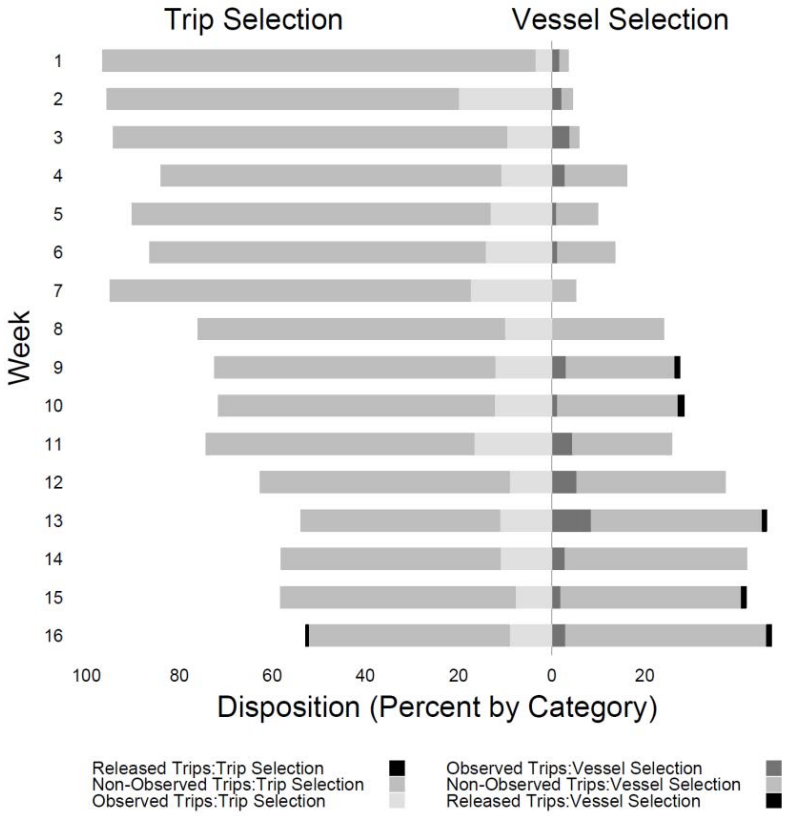

Figure 2-2. The relative percentages of trip dispositions for trip and vessel selection strata as a function of calendar week. Trip totals for each week are provided in Table 2-3.

Requested by Observer Provider

A total of 20 trips were not observed that should have been due to the failure of an observer to appear at the scheduled time of departure. These NMFS-issued releases were almost all during the first month of the program when a larger than expected number of "selected to be observed" trips resulted in a shortage of trained observers to deploy (Table 2-4).

Table 2-4 NMFS issued trip releases due to a lack of an observer.

Port	Jan	Feb	Mar	Apr	May	Totals
Adak	0	0	1	0	0	1
Akutan	3	0	0	0	0	3
Dutch Harbor	7	0	0	0	0	7
Kodiak	5	0	0	0	0	5
Sand Point	3	0	0	0	1	4
Totals	18	0	1	0	1	20

2.3.2 Deliveries to a Tender vessel

New definitions of a trip for the purposes of observer coverage requirements differ depending on the type of activity a vessel is engaged in. For a catcher vessel delivering to a shoreside processor or

stationary floating processor, a trip is defined as the period of time that begins when a catcher vessel departs a port to harvest fish until the offload or transfer of all fish from that vessel. In contrast, for a catcher vessel delivering to a tender vessel, a trip is defined as the period of time that begins when a catcher vessel departs from port to harvest fish until the vessel returns to a port in which a shoreside processor or stationary floating processor with a valid FPP is located (§679.2). The definition of a tender trip allows a vessel to stay at-sea fishing and make multiple deliveries without ending the trip. There may be incentive to preferentially fish and make deliveries to a tender when unobserved. This situation should only occur in the trip-selection stratum; since in vessel-selection boats are observed for all activities during a two-month period. For comparison, trips were tallied by observed status, tender delivery status, and deployment stratum (Table 2-5). Methods used to identify tender trips are described in the next section.

Trips tallied by fishery, defined as a combination of gear, location, and predominant species (target), observer status, tender status and deployment strata are also provided (Table 2-6).

For those trips (in the partial coverage trip-selection stratum) that included at least one delivery to a tender, the number of deliveries per trip tended to be greater in unobserved trips compared to observed trips (Figure 2-3). Note that few trips with tender deliveries were observed and only a few observations are available for comparisons.

Similarly, distributions of trip duration (number of days per trip) showed evidence that observed trips were typically shorter than unobserved trips (Figure 2-4) in the trip-selection stratum. This trend was less evident in the vessel selection stratum. Again, note that there are limited data presented here from which inferences can be drawn.

Table 2-5 Number of deliveries made in each stratum, by observation status, whether a delivery was made to a tender vessel (offload type) and the sampling unit used (Rate Type). *: Observer data confirms that all trips were observed. This number is less than 100% because a field in NORPAC had not yet been updated in observer debriefing at the time of this writing.

Sampling Frame	Observed	Count	Observed	Offoad Type	Rate Type
Vessel-Selection	43	440	9.8%	NonTender	Trip
Trip-Selection	220	1196	18.4%	NonTender	Trip
Full-Coverage	2,627	2,635	99.7%*	NonTender	Trip
No-Coverage	0	236	0.0%	NonTender	Trip
Vessel-Selection	17	67	25.4%	Tender	Trip
Trip-Selection	16	134	11.9%	Tender	Trip
Full-Coverage	12	12	100.0%	Tender	Trip
No-Coverage	0	39	0.0%	Tender	Trip
Vessel-Selection	60	507	11.8%	All	Trip
Trip-Selection	236	1330	17.7%	All	Trip
Full-Coverage	2,639	2,647	99.7%*	All	Trip
No-Coverage	0	275	0.0%	All	Trip
Vessel-Selection	15	172	8.7%	All Non Tender	Vessel
Vessel-Selection	5	27	18.5%	At Least One Tender	Vessel
Vessel-Selection	15	149	10.1%	All	Vessel

Table 2-6 Number of deliveries to a tender vessel organized by gear, NMFS area_Target species, observation status and partial coverage selection pool. Gear codes: HAL=Hook and Line, POT=Pot, TRW=Trawl. Target codes: COD=Pacific cod, POL=walleye pollock. Since all deliveries are labeled as belonging to a tender trip if one delivery in that trip were made to a tender, some gear, areas, and target species combinations in this table do not represent activities typically associated with tender deliveries.

Gear_Area_Target	**Total Deliveries**	**Deliveries Observed**	**Selection Pool**
HAL_620_COD	**1**	**0**	**Vessel**
HAL_630_COD	**48**	**7**	**Vessel**
POT_610_COD	**9**	**8**	**Vessel**
POT_620_COD	**1**	**0**	**Vessel**
POT_630_COD	**6**	**0**	**Vessel**
POT_BS_COD	**2**	**2**	**Vessel**
HAL_620_COD	**7**	**1**	**Trip**
HAL_620_HBT	**1**	**0**	**Trip**
HAL_620_POL	**1**	**0**	**Trip**
HAL_630_COD	**5**	**0**	**Trip**
POT_610_COD	**15**	**1**	**Trip**
POT_620_COD	**4**	**0**	**Trip**
POT_630_COD	**13**	**1**	**Trip**
POT_BS_COD	**13**	**0**	**Trip**
TRW_610_COD	**31**	**1**	**Trip**
TRW_610_POL	**8**	**1**	**Trip**
TRW_620_COD	**34**	**7**	**Trip**
TRW_620_POL	**20**	**4**	**Trip**
TRW_630_ATH	**2**	**0**	**Trip**
TRW_630_COD	**2**	**0**	**Trip**

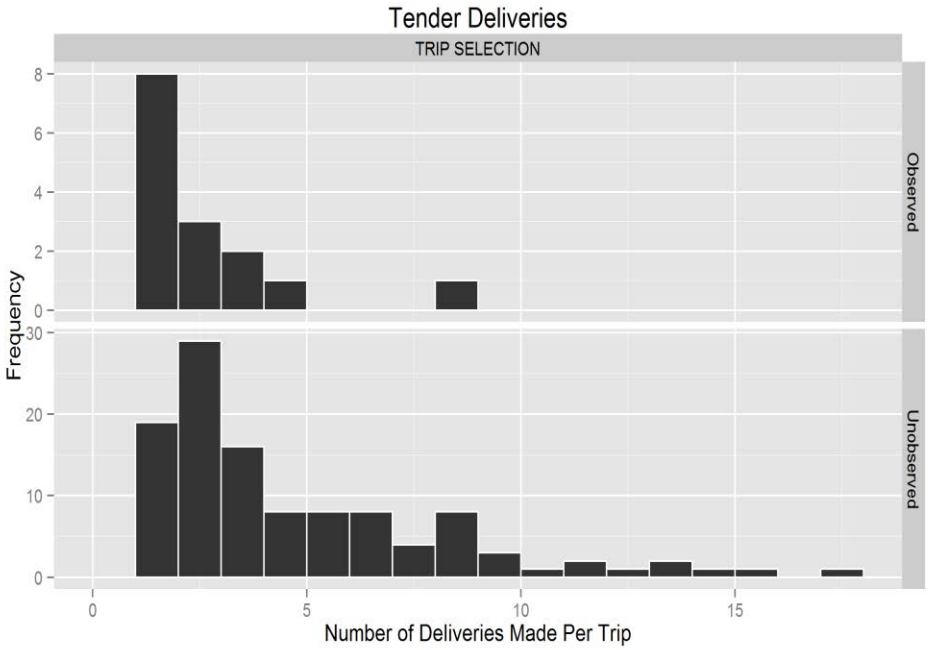

Figure 2-3. Distribution of the number of deliveries made in a trip in which at least one delivery was made to a tender vessel presented by observation status. Distinguishing individual trips (groups of tender deliveries) for vessel-selection operations is not possible with available data.

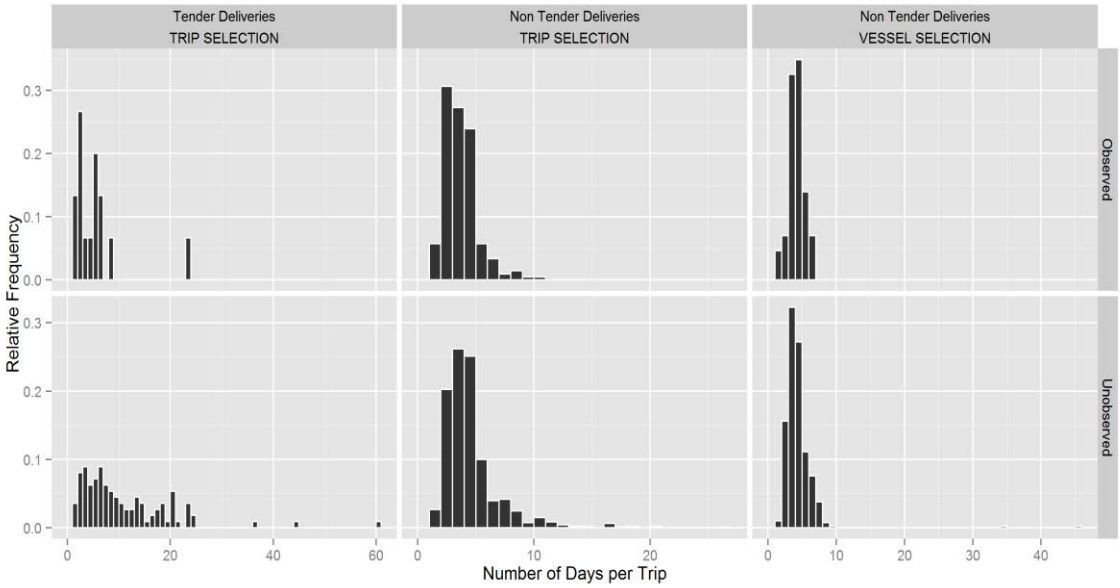

Figure 2-4. Distribution of the number of days fished in a trip by vessels in the partial coverage pool organized by observation status and whether or not the delivery was made to a tender. Separating deliveries from trips for vessel-selection operations is not possible with available data. The relative frequencies (vertical axis) in each plot sum to one.

2.4 Between Year and Strata Comparisons

2.4.1 Identification of Individual Fishing Trips in Landings Data

This section includes data collected from January 1, 2012 to May 23, 2013. To accurately assess deployment patterns and observer coverage rates under the restructured observer program, it was necessary to identify individual fishing trips, both observed and unobserved in the landings data. In the partial trip-selection stratum, individual fishing trips are the sampling unit and form the basis for observer coverage selection. Currently, landings data do not identify fishing trips, but instead individual deliveries are recorded based on management program (IFQ, CDQ, etc.), NMFS reporting areas, and other variables. When deliveries are made to two different processing plants or to tenders, determining which landings correspond to individual fishing trips can be difficult. For the partial coverage trip-selection stratum however, the ODDS data can be used to group most landings to the appropriate trip, although currently there is no explicit linkage between the two data sources. Therefore the following routine was used in an attempt to match trips logged into ODDS and the associated landings data.

The landings data (from eLandings database) had 35,091 landings records. These represent one record for each delivery, NMFS reporting area, and management program with trip targets, gear types, and dates also identified. Based on this information, the landings that occurred under the partial coverage stratum of the restructured (2013) observer program were identified.

Data from the ODDS trip log system contained records for 2,122 logged trips in 2013. Trips were required to be logged if the vessel was in the partial-coverage-trips stratum or part of the BSAI voluntary Pacific cod cooperative. Cancelled trips and BSAI cod trips were removed from the data. All remaining trips were ordered within each vessel and the date range between when a trip's logged start date (planned trip start) and the next trip's logged start date was identified. This date range was used to identify landings records (based on landing date) that were probably made on that logged trip; all landings that fell within this date range were attributed to that logged trip. For each logged trip, there may be several landings

since deliveries may be split, be associated with multiple management programs, or from several NMFS reporting areas. In addition, multiple deliveries to tenders are grouped to a single fishing (logged) trip. There were 23 landings where the appropriate logged ODDS trips could not be identified. This may be because the trip started in December 2012, the logged fishing dates were inaccurate (changed before the trip began and the new dates not updated in ODDS), or the trip was not logged. Where possible, we attempted to identify and appropriately process these cases, however, this was not always possible given time and information constraints.

For landings made outside of the partial coverage trip-selection stratum, the landing report number was assigned as their trip identifier (this assumes one report ID for each trip). In contrast, trip identifiers were assigned to landings in the trip-selection coverage stratum to include all landings associated with that fishing trip based on ODDS records.

2.4.2 Achieved Coverage Rates in Early 2013

To assess the distribution of observer coverage in the various fisheries, graphs depicting the intensity of coverage by week of the year and gear-area-target species combination were constructed (Figure 2-5). Only the first 16 weeks of data were included from each year. Each cell in the plot depicts a specific type of fishing (vertical axis) for a given week (horizontal axis); e.g. Bering Sea yellowfin sole trawl fishing in week 3 of 2012. Note that in the Gulf and Aleutian Islands, area is defined as the NMFS reporting area while all the reporting areas in the Bering Sea are pooled.

Each cell is labeled with the number of trips (as defined above) that fall within the cell while the color of the cell label indicates the number of trips that were in the zero-coverage stratum, noting that there is a difference between a cell with no observed trips when none were required and having no coverage where all trips were subject to at least some observer coverage requirement. A cell where none of the trips required any coverage (zero coverage stratum, e.g. 2012 halibut target in any area) has a black label. A cell where some of the trips did not have observer requirements has a brown label (mix of zero coverage trips and partial or full coverage trips occurred), and cells where all trips would have been subject to coverage requirements have a white label (all trips were in either partial or full coverage strata). In addition, the cell (background) color indicates the proportion of trips in a cell that were observed; if none of the trips in a cell are observed the label is bold and italicized hence differentiating two close shades of grey (little coverage and no coverage; Figure 2-5).

Some trips can occur in multiple cells, for example if fishing occurred in two different NMFS areas or the trip spanned multiple weeks. Hence the total number of 'trips' in these cells is greater than the actual number of fishing trips (leave port, go fishing, return to port) that occurred. In addition, the number of trips in each cell includes trips that fall into different sampling strata (e.g. full and partial coverage).

Using the same type of graph in Figure 2-5 but focusing only on the 2013 observer deployments, trips were separated into the same cells (weeks and gear-area-target species) according to the sampling strata (Figure 2-6). Cells in which no trips were observed have white labels (number of trips), while cells with some trips observed have black labels. As expected, no fishing was observed in the zero-observer coverage required stratum, and there are only two cells in the full observer coverage stratum that did not have all trips observed (Figure 2-6). These full coverage trips were probably observed; however, all the data from these trips are not yet available.

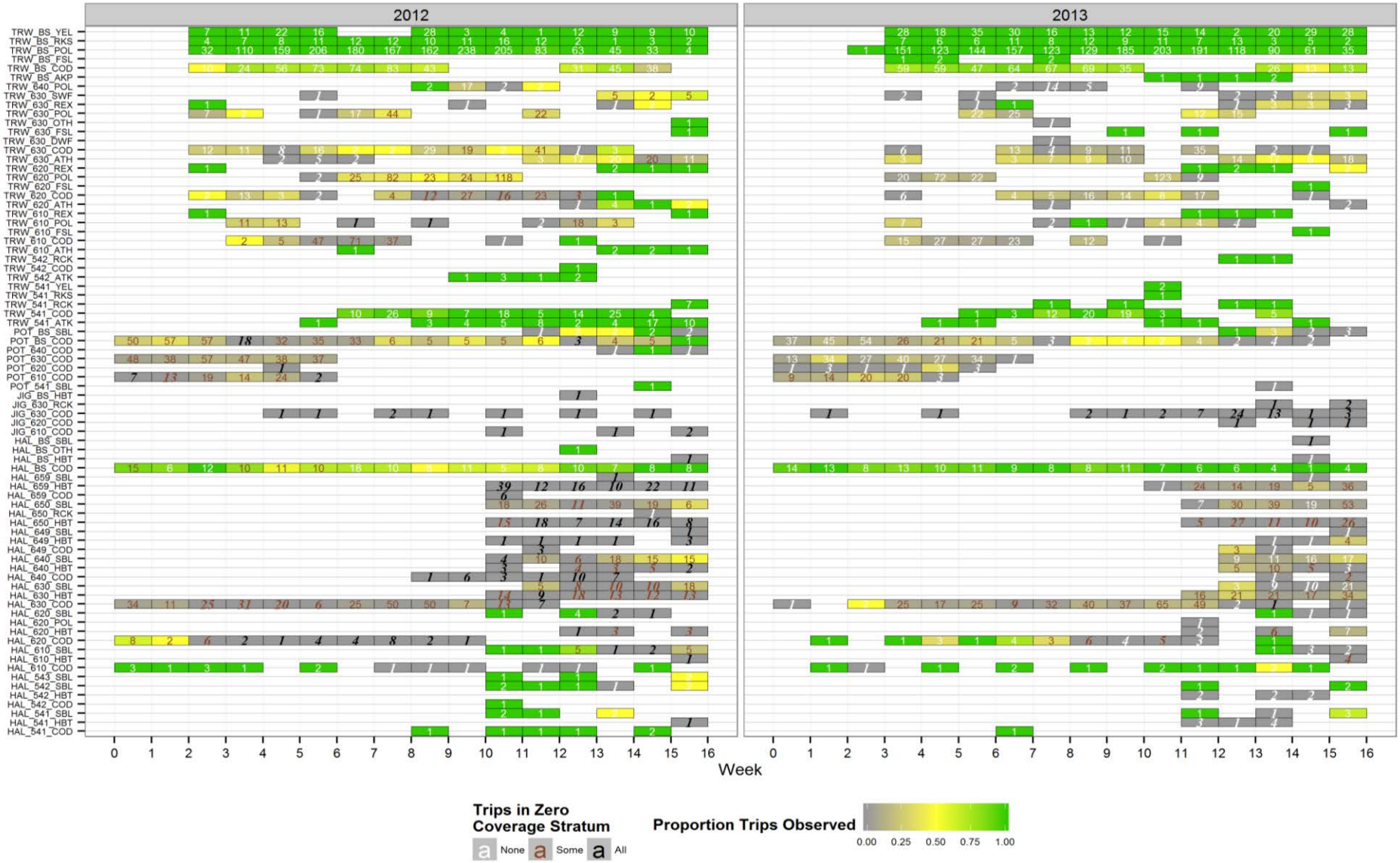

Figure 2-5 Distribution of fishing trips by gear-area-target species (vertical axis) for each week (horizontal axis). The cell label (text in the cell) indicates the number of fishing trips that occurred. The color of the text indicates which sample strata are represented in the cell, e.g. if all trips that occurred in the cell were in the zero-coverage stratum (e.g. <40ft) the label is black. Cell color indicates the proportion of trips that were observed. Cells with no observed trips have a bold, italicized label. Gear codes: HAL=Hook and Line, POT=Pot, TRW=Trawl. NMFS Areas were aggregated and coded as BS for those that occur in the Bering Sea, but not for those in the Aleutian Islands or Gulf of Alaska. Trip Target Codes follow those in Appendix E.

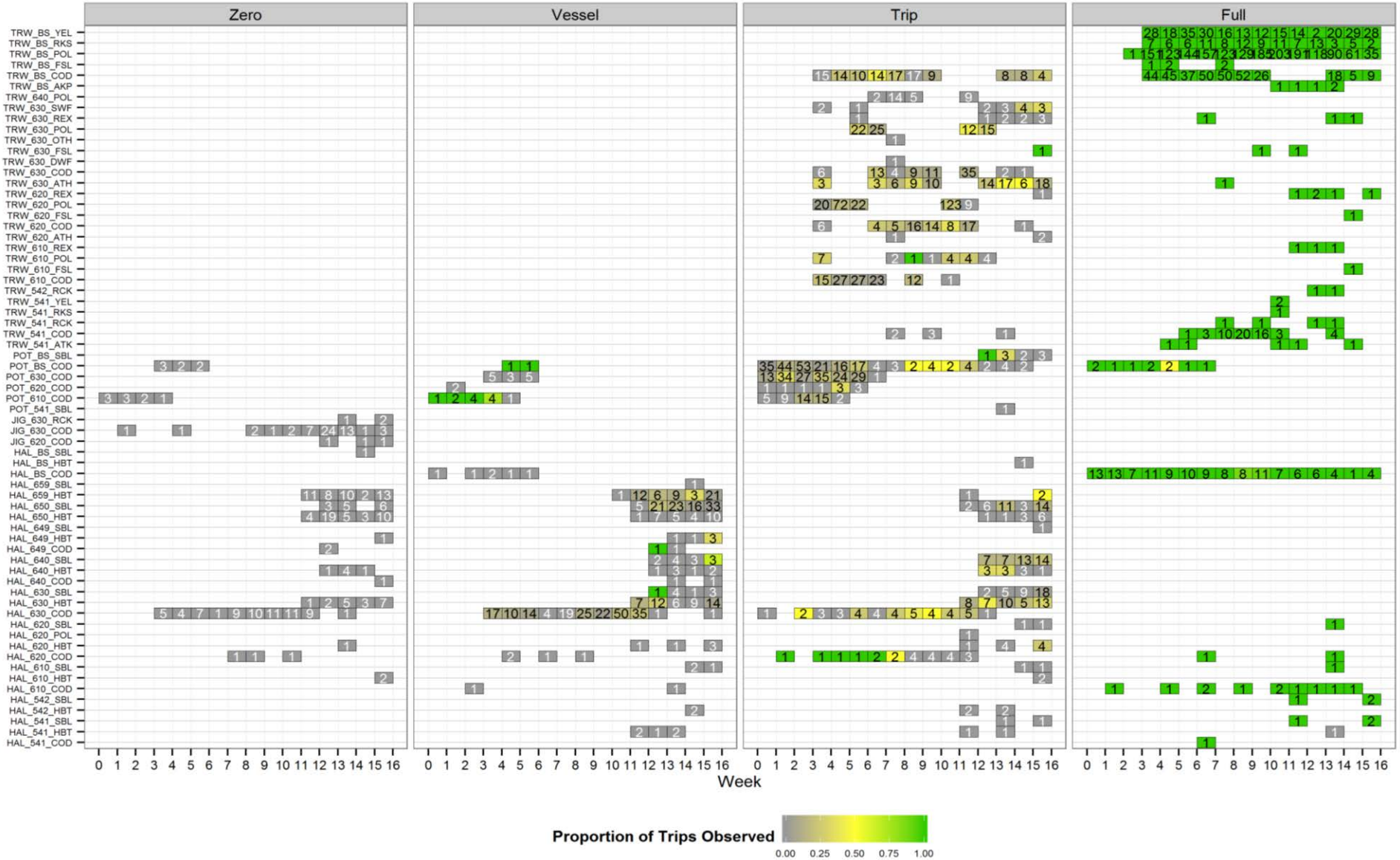

Figure 2-6 Distribution of fishing trips within each sampling stratum by gear-area-target species (vertical axis) for each week (horizontal axis). The cell label indicates the number of fishing trips that occurred. The color of the cell indicates the proportion of trips that were observed; cells with no observed trips have a white cell label (number of trips).

2.5 *Billable Days*

It is important to realize that while most discussion about observer deployment in this preliminary review has been focused on coverage *rates* planned vs. those achieved; NMFS budgets determine coverage *amounts* (sample size). The amount of observer days billable under contract divided by the number of fishing days is the rate of observer deployment in days. The days billable represents a finite budget while the amount of fishing effort is variable. Consequently, the observer deployment rates are variable, and these rates may need to change during the year. The planned coverage rate used in the 2013 ADP was calculated from budget, cost per unit (days), and fishing effort data from two years prior. As already stated, realized coverage rates are based on the intersection between current budget, fishing effort and projected (deployment) rates of coverage.

The amount of billable days was aggregated by week and compared to the projections used in the 2013 ADP. While these values are continuously compared and updated by the Observer Program, here we limit data to the first 16 weeks of 2013 (Figure 2-7). The actual billable days has continually exceeded projections in the Trip Selection stratum.

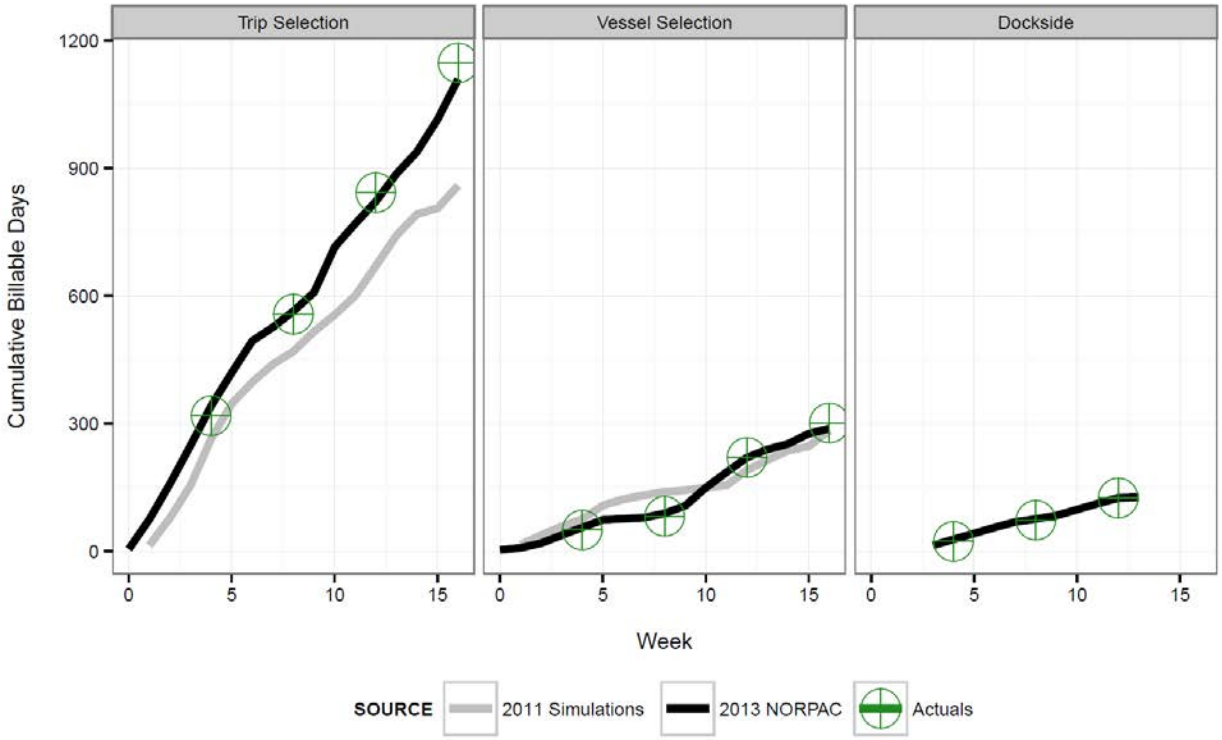

Figure 2-7 Trajectories of the cumulative number of billable days projected from simulations (2013 ADP) and 2013 actual monthly costs.

2.6 Departures from Intended Sampling Design

These are preliminary results and only represent the first few months of 2013; hence caution should be used when trying to interpret the importance of these findings.

- Contrary to the belief that all Pollock offloads were monitored dockside, only 88% of Pollock deliveries outside of the AFA actually were observed.

- Conditional releases issued by NMFS have the potential to cause biased estimates of catch and discard if these vessels behave in a different manner (locations, catch, discard rates and species) than those vessels that are not released.

- The lack of a definitive list of vessels from which to make selections for observer coverage in the vessel-selection portion of the partial coverage stratum also makes for inefficient selection draws. Reasons for this include:
    - Many vessels that were identified as potential vessels for observer coverage from 2012 data did not fish in the following year.
    - Vessels that did not fish in the previous year are not included in the selection process (new vessels are not subject to being observed).
    - Since each vessel-selection draw is conducted 60 days in advance of the first day of the scheduled period to carry an observer, those draws are not as efficient as possible since they cannot be informed from the results of the draw immediately prior.

- There are data issues that make analyses of observer deployment difficult. For example:
    - For trip-selection, while the ODDS data can be used to group most landings to the appropriate trip, currently there is no explicit linkage between the two data sources.
    - Identifying trips in vessel-selection and no-selection pools is difficult to accomplish if there are multiple landing reports submitted for a trip.

- There are many factors that impact the ability of NMFS to accurately predict what budgets and selection rates are appropriate. These include:
    - Trip length may be different when observed compared to when unobserved,
    - Fleet size and fishing effort may be different from past years,
    - The realized selection rate may not equal the programmed selection rate.

2.7 Proposed Deployment Plan for 2014

Given the preliminary nature of the available data, our group does not recommend major changes to the 2013 ADP at this time. However, we see that the definition of a trip currently allows for differences in vessel behavior when delivering to a tender. For example, in the limited data collected so far in 2013, trips in trip-selection made to a tender have more deliveries when unobserved and also tend to be longer in duration.

2.8 References

NMFS (National Marine Fisheries Service). 2013. 2013 Annual Deployment Plan for Observers in the Groundfish and Halibut Fisheries off Alaska. 39 pages plus appendices. Accessed on May 27th, 2013 at http://alaskafisheries.noaa.gov/sustainablefisheries/observers/ADP_Final_2013.pdf.

Pella, J.J. and H.J. Geiger. 2009. Sampling considerations for estimating geographic origins of Chinook salmon bycatch in the Bering Sea Pollock fishery. Alaska Department of Fish and Game, Special Publication No. 09-08, Anchorage.

Appendix A. Council motions on the Annual Performance Review and ADP

June 2013 Council Motion

June 7, 2013 Observer Program
Council motion
The Council makes the following recommendations and requests in development of the 2014 Annual Deployment Plan:

1. The 2014 ADP should continue to reflect a priority for monitoring vessels managed under PSC limits in the trip selection pool. The Council recognizes that this necessarily modifies an equal probability sampling design such that higher observer coverage rates are provided in the trip selection pool, and lower rates in the vessel selection pool, consistent with the 2013 ADP.

2. Maintain the policy that observers should not displace crew members or IFQ holders, nor should vessel modifications be required to accommodate an observer.

3. Request NMFS provide information that would help inform a decision as to whether to create a new criterion for receiving a conditional release from observer coverage in 2014 based on a de-minimus amount of halibut or sablefish IFQ in an IFQ holder's account.

4. Request NMFS assess whether the 2014 ADP can address the observer effect associated with tender deliveries (disproportionately high numbers of deliveries to tenders when vessels unobserved, or longer trips when unobserved and delivering to tenders), or whether a regulatory change is necessary.

5. Include available information that shows, within the vessel selection pool in 2013: 1) the average number of trips taken within each 2 month deployment period; and 2) the average length of trips within the 2 month period.

6. Include information as to the tradeoffs and considerations that should be taken into account in evaluating whether the 2 month deployment period for those in the vessel selection pool should remain, or be reduced (e.g., one month). Include consideration of a provision that if a vessel is selected for a coverage period and chooses not to fish during that period, the vessel is automatically selected for the next coverage period.

The Council also requests NMFS provide additional information for review in October, separate from the ADP:

1. Provide more detailed information on program costs, recommendations for ways to modify

deployment to achieve cost savings, and fishery data resulting from the 2013 deployment.

2. Revisions to the heat maps and other descriptive or graphical approaches that provide the ability for the Council and public to better understand coverage changes by fisheries from 2012 to 2013 with the most recent information available to NMFS. One example: include a comparison (in the partial coverage category) of trawl coverage in 2012 vs 2013 and fixed gear coverage in 2012 vs 2013.

3. Assess current observer coverage to provide an evaluation of the reliability of indices of Chinook salmon genetic stock identification information for GOA pollock trawl and rockfish trawl fisheries.

The Council makes the following recommendations for the annual performance review (June 2014):

1. Include information on the volume of catch observed in both vessel and trip selection pools.

2. Include information on achieved coverage rates by gear type.(trawl vs fixed gear).

3. Include information on trip length by observed and unobserved vessels in both the trip and vessel selection pools. Within the vessel selection pool, break out the IFQ fleet.

4. A review of the trip selected and vessel selected pools in consideration of whether vessels should have an option to choose either one, or whether the deployment plan should place every vessel in the partial coverage category in the trip selection pool (Dec. 2012 request).

5. An evaluation of the difference between observer coverage in the vessel and trip selection pools (a review of the sampling method) (Dec. 2012 request).

6. An evaluation of ways to insert cost effective measures into the deployment plan (Dec. 2012 request).

7. An evaluation of detailed programmatic costs (Dec. 2012 request).

October 2013 Council Motion

C-1 Observer Program motion
North Pacific Fishery Management Council
October 3, 2013

The Council supports the overall provisions for observer coverage described in the 2014 Draft Annual Deployment Plan and the specific Observer Advisory Committee (OAC) recommendations on pages 3-5 of the September OAC report. The Council also recommends continuing the policies that allow vessels to make an annual selection for 100% coverage in the BSAI Pacific cod fishery, not displacing IFQ crew members, and conditional release of vessels to address space and safety concerns.

The Council requests NMFS consider the suggestions provided on page 6 of the OAC report regarding how to prioritize deployment of the 14 cameras available in the NMFS electronic monitoring pilot project in 2014.

The Council requests NMFS explore whether allowing clean up IFQ trips in multiple regulatory areas is best addressed through a regulatory amendment to the observer program or the IFQ program.

The Council requests that the tables showing preliminary catch data and data on observer coverage from the B-2 supplemental be updated with the entire 2013 data set and included in the June 2014 program performance review. In addition, these tables should show the percentage of catch observed using these same categories. The methods used to calculate total mortalities of halibut in metric tons should also be reviewed and refined in these tables.
The Council requests that the agency incorporate the SSC comments and recommendations on the 2014 Annual Deployment Plan and the annual performance review scheduled for June 2014.

Appendix B. An evaluation of current and alternative methods to sample Chinook salmon bycatch in the Gulf of Alaska (Walleye pollock fishery)

Purpose

The purpose of this evaluation is for the Observer Program is to obtain an unbiased and cost-effective genetic sample set to produce stock composition estimates of the Chinook bycatch from the Gulf of Alaska pollock fishery.

History of salmon bycatch sampling

Recent requests to obtain salmon bycatch samples for genetic stock composition analysis were made to the Observer Program by Auke Bay Laboratories in 2005 with the stated goal of analyzing approximately 3600 chinook and 2700 chum salmon from the 2005 B and 2006 A pollock fisheries operating in the Bering Sea. The sampling demands of the "salmon genetic project" (as originally termed by the Observer Program) have incrementally increased over time. In 2005, the project originally instructed observers to obtain 25-30 samples per cruise[1]. In 2006 and 2007, this number was increased to $60 \cdot \text{cruise}^{-1}$. In 2008, this number was again increased to $120 \cdot \text{cruise}^{-1}$, with the additional instructions to 'spread out' sampling in time during the observer's cruise.

In 2009 the Observer Program began incorporating the collection of salmon tissues for stock of origin genetic analysis into the regular duties of observers. Observers were instructed to obtain genetic samples from any salmon that were contained within their species composition samples taken at sea. These species composition and genetic samples were collected as part of a hierarchical nested design with randomization at each level. In 2010, observers were additionally instructed to sample every pollock offload from catcher vessels for salmon bycatch. They did this by employing a random temporal design that achieved ~8% sample fraction of the total offload (random five minutes of every hour).

In 2009, a report was commissioned by the Alaska Department of Fish and Game to instruct how the Federal Groundfish Observer Program should implement a sampling design to meet the data requirements of geographic stock origins based on genetic markers (Pella and Geiger, 2009). The authors proposed a systematic random sampling regimen for the collection of both Chinook and chum bycatch samples, whereby observers would sample every n^{th} fish from the available (presumed census) of salmon. Because all Chinook salmon stocks are not randomly distributed in the ocean, systematic random sampling of the bycatch (so that each fish caught in the bycatch had an equal probability of being included in the sample set), was deemed as the best method for producing unbiased stock composition estimates of the salmon bycatch. In addition, the sample set must be large enough to facilitate analysis of stock identification at pre-determined time and space domains.

[1] A cruise is defined by the Fisheries Monitoring and Analysis Division, who administers the NPGOP, as an observer deployment lasting up to 90 days.

That same year, the North Pacific Fishery Management Council (NPFMC) passed Amendment 91 to the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area that specified a cap regarding the number of Chinook salmon that can be taken as bycatch in the groundfish fishery. Federal Regulations currently requires that all vessels participating in the Bering Sea trawl fishery retain all Chinook salmon from the bycatch and provide unobstructed physical access for the observer to count each fish and collect any scientific data or biological samples (50 CFR 679.21). Amendment 91 provided a suite of tools that allow observers the ability to access the entire population of salmon encountered in the BS pollock fishery. The tools include but are not limited to:

- 100% observer coverage on all pollock vessels. This allows the observer to monitor for and ensure no salmon are discarded at sea, and all salmon are delivered to the plant.
- Plant specific performance measures. All plants were required to alter their sorting lines to facilitate complete and accurate sorting of the offload. This included requiring that all salmon be sorted from the catch at the designated sorting area. All salmon must be retained in a secure location until sampled by an observer. An offload can not start until the previous offloads salmon catch is removed from the area.
- 200% (2 observers simultaneously) coverage at the plants. This ensures that an observer is present at all times during an offload. Additionally, the plant observer is better positioned to track potential after scale salmon and enter data in a timely manner.

The Observer Program aims to maintain similar, if not identical at-sea and dockside sampling duties by observers throughout the North Pacific. Therefore in 2011, the Observer Program adopted a systematic sampling of salmon bycatch from the Gulf of Alaska pollock fishery. However, whereby in the Bering Sea pollock fishery vessels were prohibited from discarding salmon bycatch at sea due to Amendment 91, no such restriction was in place within the Gulf of Alaska pollock fishery. Consequently, observers were given a suite of instructions to attempt to maintain a 1 in every n^{th} salmon from the bycatch at sea and dockside (Figure B-1).

In 2012, Amendment 93 to the Gulf of Alaska Fishery Monitoring Plan was codified in the Federal Register. Under this Amendment, full-retention requirements for Chinook salmon bycatch were enacted for trawl operations in the Gulf of Alaska. This allowed the Observer Program in 2013 to use dockside observers to sample salmon bycatch in this fishery (Figure B-2) according to the protocols outlined in Pella and Geiger (2009).

Issues related to the current protocol

The systematic method of sampling genetic tissues recommended by Pella and Geiger (2009) require that observers have access to all salmon bycatch within a fishery. However the provisions made for observers to obtain quality data collection greatly differ between Amendment 91 in the BSAI and Amendment 93 in the GOA. Although Amendment 93 requires that vessels retain all salmon, without 100% observer coverage only observed vessels are monitored for compliance of this rule. Additionally, the sorting facilities at most plants that receive GOA pollock (AFA plants excluded) are insufficient to achieve accurate sorting of catch. Salmon are often found inside the factory and may or may not be given to the observer.

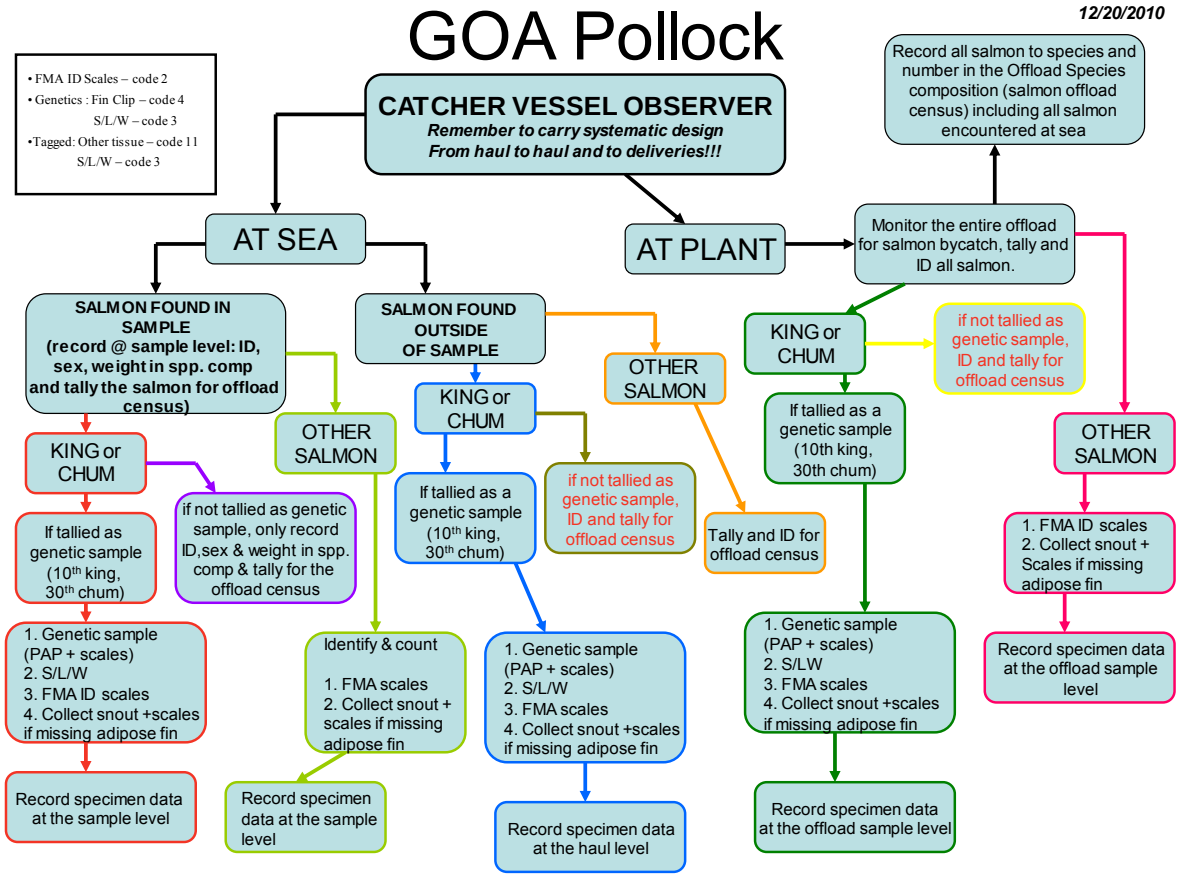

Figure B-1. Decision flow chart for the observer identifying the duties associated with salmon bycatch tissue collection for the identification of stock of origin that was in place in 2011. It is an example of the complexities of sampling salmon genetics at a constant rate where full-retention requirements of bycatch are not in place.

For the aforementioned reasons there exists concern within the Observer Program that observers in the Gulf of Alaska may not be able to (1) obtain a true unbiased census from which to enumerate salmon and obtain genetic samples, (2) coordinate the rate at which those samples are obtained, and (3) have the available financial resources to conduct the analysis of the resulting genetic tissues.

The data to substantiate these concerns differ between Fishery Management Plan Areas. A preliminary analysis of the efficacy of the implementation of the Pella and Geiger (2009) protocol by the Observer program has revealed that in the Bering Sea sampling rates have been very close to target rates (Guthrie et al. 2013; Kondzela et al. 2013). Since observer coverage is mandated by law and paid for by industry in the BSAI under A91, there are not cost concerns on the part of the Agency. However, this situation is different in the Gulf of Alaska, where a preliminary review of the 2013 Observer Program revealed that less than 90% of the pollock deliveries in the Gulf of Alaska were observed (Chapter 2, section 2.6). In addition, dockside observers in the Gulf of Alaska are paid for by direct contract between the Agency and an

Observer Provider from fees collected from industry. There is a direct tradeoff between observer days paid for in the Gulf of Alaska processing plant and observer days paid for sampling at-sea since both are paid for out of NMFS funds collected from landings in the partial coverage category of the fleet. In addition, observers stationed in processing plants that receive pollock deliveries and process every n^{th} salmon bycatch means that the cost per sample is inversely proportional to the amount of bycatch in the fishery (the more salmon collected, the lower the cost per-sample).

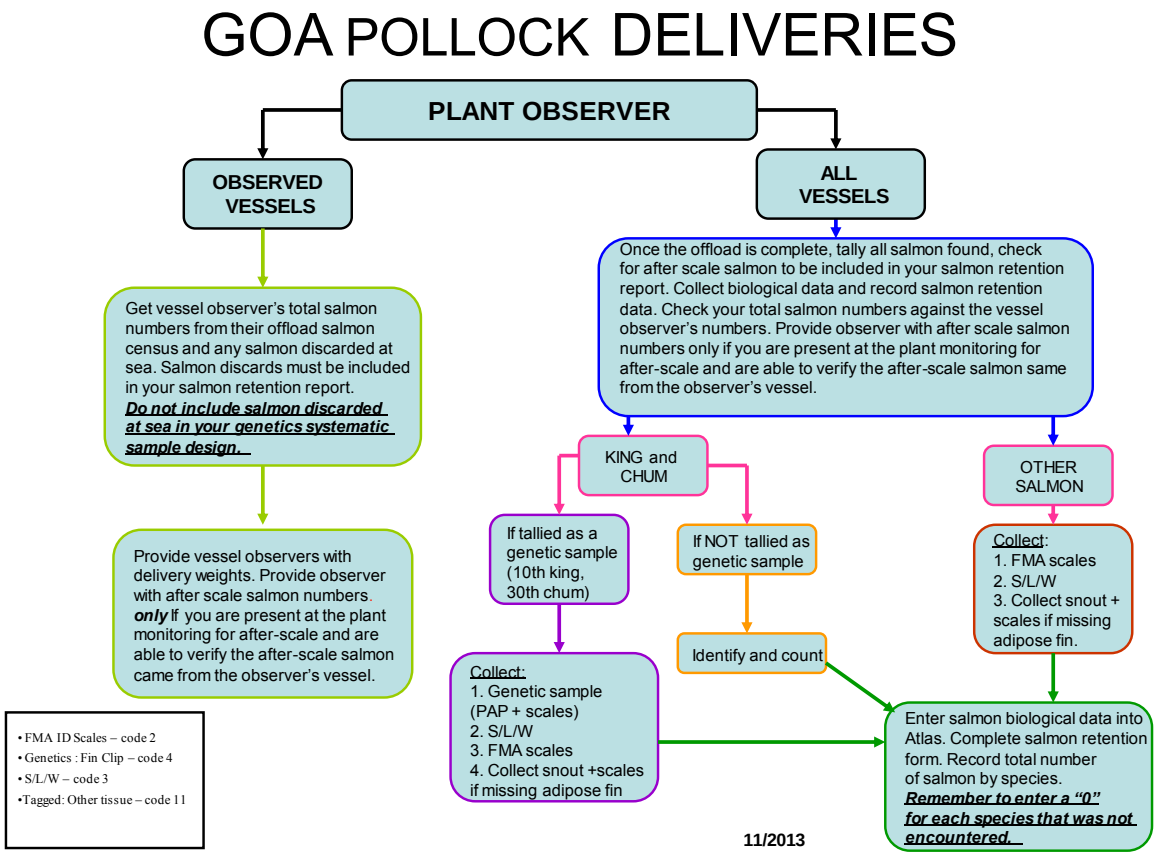

Figure B-2. Salmon bycatch sampling duties for plant observers in the Gulf of Alaska pollock fishery for 2013. The methods are facilitated by full-retention requirements enabled by Amendment 93 to the GOA FMP.

Evaluating Different Protocols: Sample size and cost

Continued collaboration between the AFSC Observer Program and the Alaska Regional Office with the implementation of the 2013 Observer Program has facilitated the development of an integrated data set whereby data in the Catch Accounting System can be linked to the interagency database *e*Landings and the Observer Program database NORPAC. The result is a dataset containing observed and unobserved trips, as well as the number of Chinook salmon estimated in the delivery and the number of Chinook salmon genetic samples obtained by observers dockside in the Gulf of Alaska pollock fishery. We evaluated this data from 2012 and 2013 to ask the question: *What genetic samples could we have expected if the at-sea "vessel*

observer" had followed the fish during the offload at the plant and taken a genetic sample from every Chinook they encountered? This question is asked because this alternative method reflects the sampling design that was in place in the Gulf of Alaska prior to 2013 (Figure B-1, with the exception that all Chinook salmon are sampled on observed trips) and represents a tradeoff between efficiency of observer days and sample size that is counter to current methods. In the Pella and Geiger (2009) method all deliveries are to be observed and a subset of all bycatch salmon is removed for genetic tissues. This method carries high cost and demands for monitoring and compliance, however sampling every n^{th} fish ensures a constant sampling rate with respect to the genetic samples and limits the sample variance for the genetic analysis. In the alternative method a random subset of deliveries is observed and every bycatch salmon within the delivery is sampled for genetic tissues. This alternative method has a lower cost but carries increased analytic burdens for generating salmon stock of origin estimates. While the amount of uncertainty for each method is unknown, comparisons of the costs and sample yield between the two methods can be made. Making comparisons between methods over multiple years and seasons is warranted since the number of Chinook salmon caught as bycatch in the Gulf of Alaska pollock fishery is not constant throughout the year or between years Figure B-3. Here we define seasons by the first and second half of the year.

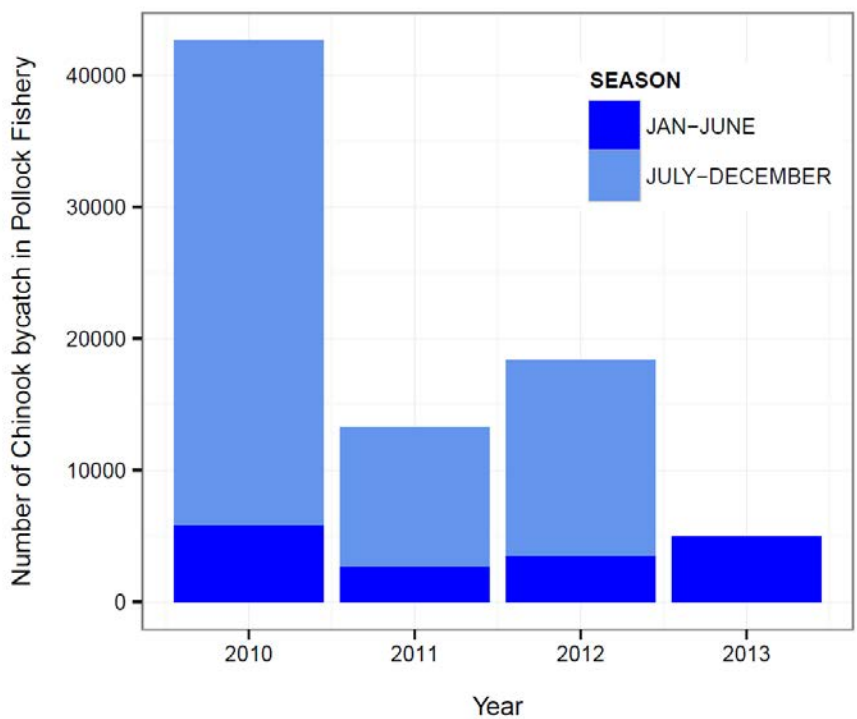

Figure B-3. Number of Chinook bycatch in the Gulf of Alaska Pollock Fishery by year and season.

The number of Chinook salmon bycatch (s) estimated by the Catch Accounting System for each trip (i), the number of genetic tissues actually obtained (g_{act}), and the number of genetic tissues that would have been obtained if observers deployed on observed trips at-sea had sampled every s (i.e., the alternative method; g_{alt}) were summed across all trips each season and are presented in Table B-1. To be conservative in our estimate for the alternative method, trips where a delivery was made to a tender were given a number of zero genetic tissues obtained. The alternative

method would have resulted in between 1.8 and 4.3 times more genetic tissues than current methods among seasons (g_{alt}/g_{act}) and over 3 times more genetic tissues across all seasons.

Table B-1. Number of Chinook salmon bycatch (S), the number of genetic tissues actually obtained using current methods (g_{act}) and the number of tissues that are anticipated to be obtained on the trips that observers were actually deployed on at-sea using the alternative method (g_{alt}).

	JANUARY JUNE 2012			JULY DEC. 2012			JANUARY JUNE 2013			Totals		
Port Code	**S**	g_{act}	g_{alt}	**S**	g_{act}	g_{alt}	**S**	g_{act}	g_{alt}	**S**	g_{act}	g_{alt}
Akutan	73	0	3	24	1	0	118	2	3	**215**	**3**	**6**
Inshore Floating Processor	5	0	0	311	0	0	33	2	8	**349**	**2**	**8**
King Cove	177	0	0	2,263	0	8	96	0	0	**2536**	**0**	**8**
Kodiak	2,614	251	997	6,732	342	2,177	4,587	446	811	**13,933**	**1,039**	**3,985**
Seward	28	2	0	44	0	0	57	0	0	**129**	**2**	**0**
Sand Point	619	71	256	5,407	282	511	77	8	4	**6,102**	**361**	**770**
Total	**3,516**	**324**	**1,256**	**14,781**	**625**	**2,695**	**4,969**	**458**	**826**	**23,265**	**1,407**	**4,777**
Observed Portion		**9%**	**36%**		**4%**	**18%**		**9%**	**17%**		**6%**	**21%**

The values for g_{alt} represent only one possible outcome from the alternative method (the salmon genetics samples expected from the actual trips observed at-sea). Since in the 2013 ADP observers are deployed randomly, we needed to explore the likely outcomes of sampling from different sets of trips because not all trips catch the same amount of Chinook salmon bycatch. Therefore we carried out further comparisons between methods using simulations. The total number of observed trips (n) was used to yield the sample size to use in simulations each season. From the database of available trips and the estimated number of salmon bycatch in each, we made a random selection of n trips and summed the number of salmon genetics among all n trips (g_{sim}). Since every trip does not contain the same number of salmon bycatch, this process was done 1000 times, to create a distribution of g_{sim} that encompasses the range of possible outcomes. As an analogy, this process resembles repeated lottery draws, where there are a bunch of ping pong balls (trips), each with a number (salmon), and only a few of those balls are selected and the sum of the numbers is equal to the expected number of salmon genetic tissues obtained. To be conservative in our estimate in simulations, trips where a delivery was made to a tender were given a number of zero genetic tissues obtained.

The results of our simulations allows us to further explore the expected number of observer days required to conduct Chinook salmon bycatch genetics sampling and to compare that to the number of days actually used to conduct these activities in each season. Observer Program staff with a history of conducting this activity were polled to answer the question of how long a Gulf of Alaska pollock delivery takes to monitor. A value of 4 hours was the most common response. In addition, it was assumed based on past experience of FMA staff that a conservative estimate to sample each fish was five minutes. Therefore, for each trip in each simulation, g_{sim} was multiplied by 0.08 hours and the value of four was added to the total. To calculate the number of observer days, it was assumed that an observer day would equal a 12 hour shift. Therefore the hourly total workloads each simulated trip were divided by 12 and rounded up to the nearest whole number to yield a number of observer days per simulated trip. Summing this value by

each simulation yielded the total number of expected observer days. This value was compared to the actual number of dockside observer days from NORPAC.

With the number of expected genetics tissues and the number of days required to sample them for each trip, we were able to multiply the number of days by the cost of an observer day to yield a total cost for dockside sampling for each sampled trip. The cost of an observer day under both actual and alternative methods was given the value under the 2013 ADP Contract to compare the efficiency of the methods under the same cost per unit basis (day). The value of g_{sim} divided by the cost in days yields the cost per g_{sim}. Summing g_{sim} across trips for each simulation resulted in the expected distribution of g_{sim} to compare against the actual costs performed with the same calculations (with actual day and sample number values).

The result of these comparisons are presented in Figure B-4 and summarized in Table B-2. The alternative method would have resulted in more genetic tissues collected over fewer days resulting in substantial gains in economic efficiency in all three seasons. The current method cost per sample estimates are between 3 and 10 times more expensive compared to those estimated from the alternative method across seasons. If the actual sampling effort and results were conducted under the existing observer contract, the results from table 2 can be used to sum the total costs of the actual and alternative method across seasons. While the actual cost of an observer day cannot be revealed, the alternative method represents a comparative total savings of almost a third of a million dollars across the three seasons examined here (~ $310,000).

Table B-2. Comparative results of dockside sampling for Chinook salmon bycatch in the Gulf of Alaska pollock fishery. For clarity the median value from simulations is given for the Alternative method.

	JANUARY JUNE 2012		JULY DEC. 2012		JANUARY JUNE 2013	
Port Code	***Actual***	***Alternative***	***Actual***	***Alternative***	***Actual***	***Alternative***
Sampled Chinook salmon (g)	324	1,079	625	2,244	458	913
Observer days	318	148	304	107	127	92
Cost per sample ($)	763	107	378	37	216	78

For these reasons, it is recommended that the 2014 ADP adopt the alternative method with respect to genetic sampling for Chinook salmon with the recognition that the analyses performed here are limited in scope to economic efficiency on a cost per datum basis.

In summary, the alternative sampling approach is expected to reduce dockside observer costs and increase the amount of information available for genetic analysis. As shown in Table B-2, relying on vessel observers to collect information will substantially reduce observer costs associated with genetic sampling. In non-tender situations, vessel observers will attempt a census of Chinook bycatch on all observed trips, which eliminates the need to use systematic sampling to gain a consistent sampling rate (everything is counted). Genetic samples will also be obtained from pollock vessels delivering to tenders through at-sea sampling. At-sea sampling will provide some information on Chinook bycatch from these operations. However, the number of genetic samples obtained from these fisheries is likely to be low. There currently is not a feasible protocol that would improve sampling tender operations, but the NMFS recognizes the

importance of capturing fishing activity from these operations and will continue to explore alternative sampling methods.

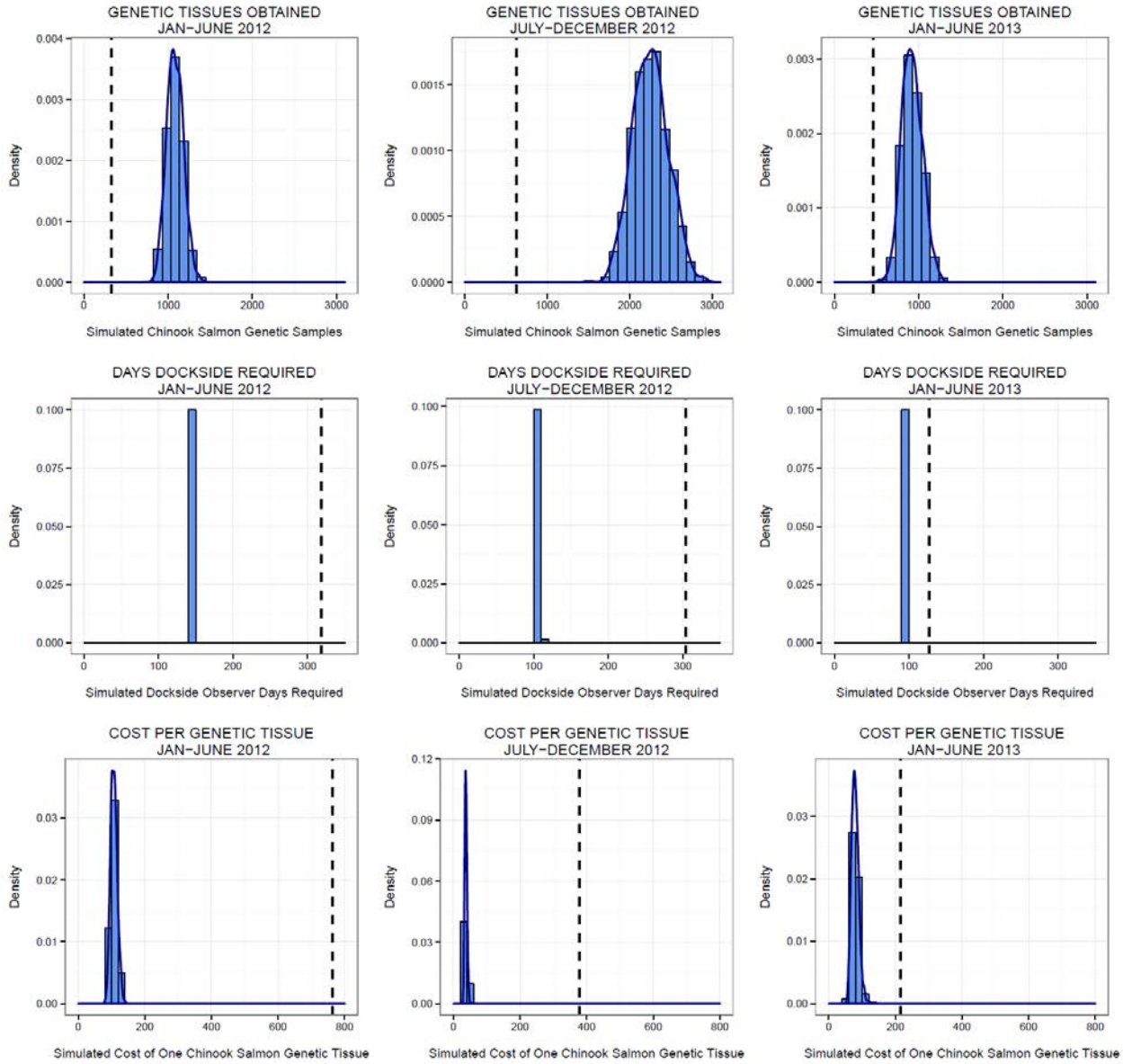

Figure B-4. Simulated values (blue histograms representing the alternative sampling method) and actual values (dashed vertical lines representing the current sampling method) for the number of genetic samples obtained (top row), the number of dockside observer days to collect those samples (middle row), and the cost of each genetic sample (bottom row). Columns represent each season. The y-axis "density" may be thought of as equivalent to likelihood for simulated values (larger values are more likely). In all cases the alternative method resulted in more genetic tissue samples at a lower cost than current methods.

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Kondzela, C. M., C. T. Marvin, S. C. Vulstek, H. T. Nguyen, and J. R. Guyon. 2013. Genetic stock composition analysis of chum salmon bycatch samples from the 2011 Bering Sea walleye pollock trawl fishery. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-243, 39 p.

Pella, J., and Geiger, H.J. (2009). Sampling considerations for estimating geographic origins of Chinook salmon bycatch in the Bering Sea pollock fishery. ADFG Special Publication No SP 09-08.

Appendix C. Full Coverage Compliance Agreement Letter for the BSAI Pacific Cod Fleet

EXAMPLE LETTER REQUESTING FULL COVERAGE IN BSAI PACIFIC COD FISHERY

(Include your return mailing address)

(Date your letter)

James W. Balsiger
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99801

Dear Dr. Balsiger:

We are writing to request that the National Marine Fisheries Service assign the attached list of vessels with 100% observer coverage for 2014 any time these boats are fishing in the Bearing Sea Aleutian Islands (BSAI) in 2014. This will enable trawl catcher vessels in the BSAI Pacific cod fishery to take observer coverage in addition to that required for the partial observer coverage category.

We understand that we will be required to comply with all applicable regulations, including logging all fishing trips that are not AFA pollock prior to the start of a trip. Trips will be logged in the Observer Declare and Deploy System (ODDS).

Once the trips are logged, we understand that we will procure an observer through one of the five certified observer providers and pay for this observer coverage directly to the observer providers. In addition, we understand that the observer fee liability under §679.55 would continue to apply.

We agree to, and understand, the following:

1. individuals taken over and above existing observer coverage requirements are observers as defined at §679.2;
2. vessel owners and operators will comply with the prohibitions protecting observers that are at §679.7(g) and will meet the vessel responsibilities described at §679.51(e);
3. vessel owners and operators are subject to general requirements applicable to observers described at §600.746;
4. vessel owners or operators must log all fishing trips and follow applicable regulations when they are in the partial coverage category; and
5. landings will be subject to the observer fee under §679.55.

Sincerely,

Vessel Name: _____

Federal Fisheries Permit Number:_____

ADF&G Vessel Number:_____

Printed Name of the vessel owner: _____

Signature of the vessel owner: _____

Vessel Name: _____

Federal Fisheries Permit Number:_____

ADF&G Vessel Number:_____

Printed Name of the vessel owner: _____

Signature of the vessel owner: _____

Vessel Name: _____

Federal Fisheries Permit Number:_____

ADF&G Vessel Number:_____

Printed Name of the vessel owner: _____

Signature of the vessel owner: _____

Vessel Name: _____

Federal Fisheries Permit Number:_____

ADF&G Vessel Number:_____

Printed Name of the vessel owner: _____

Signature of the vessel owner: _____

Appendix D. List of abbreviations

Abbreviation	Species (common name) or complex
POL	Walleye pollock
COD	Pacific cod
DWF	Deep water flatfish
SWF	Shallow water flatfish
HBT	Pacific halibut
RCK	Rockfish
FSL	Flathead sole
SBL	Sablefish
ATH	Arrowtooth flounder
REX	Rex sole
ATK	Atka mackerel
RKS	Rock sole
GRT	Greenland turbot
AKP	Alaska plaice
KAM	Kamchatka flounder
YEL	Yellowfin sole
OTH	Other