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Deployment Performance Review of the 2014 North Pacific Groundfish and Halibut Observer Program

North Pacific Fishery Management Council
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The Analytical Team

Analyses were performed by the Fisheries Monitoring and Analysis Division in consultation with experts with practical knowledge of observer data. The Division convenes its observer science committee annually. This years members included:

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This review is intended to inform the Council and the public of how well various aspects of the program are working and lead to recommendations for improvement (based on the data). OSC recommendations do not need to equate to official NMFS recommendations or actions for future ADPs.

Why so Random?

The observer program in Alaska is very large. However, the quantity of data provided must be useful.

To be useful, it must be unbiased.

To be unbiased, observers must collect information on all catch events, or must collect information on a subset of catch events.

To collect information on all catch events requires a lot of resources, and carries huge risk if not all catch is observed. On the other hand, sampling a subset of catch events is more efficient.

To be useful and unbiased, this sample data must be collected under randomization protocols. Random does not equal bad or haphazard.

For this reason, the observer program goes crazy trying to be random.

The Entire Program:

Observers were deployed onto vessels on a trip by trip basis (trip selection) or on every-trip on a vessel within a two-month period basis (vessel selection)

There were 11 of these strata in 2014

- ✓ All full coverage strata (2) were fully observed.
- ✓ The trip-selection stratum (1) was within expected ranges
- ✓ Vessel-selection strata were within expected ranges (4) or greater than expected amounts of coverage (2)
- ✓ No observed trips in the no-selection strata (2)

In its entirety, 417 vessels and 5,883 trips were observed in 2014. This represents 43% of total fishing effort (trips) in the Alaskan groundfish fleet. Full-coverage accounted for 83.2% of the total trips observed, trip-selection accounted for 11.3% and vessel-selection accounted for 5.5%.

Trip selection (>57.5 feet in length, 293 vessels, 4390 trips):

Vessel operators log trips into the Observer Declare and Deploy System (ODDS), and trips are randomly selected. Up to three trips can be logged in advance. Selected and non-selected trips can be cancelled. However, if an observed trip is cancelled, the next logged trip is automatically selected for observer coverage. This preserves the number of selected trips, but not the timing of selected trips.

- ✓ The ODDS was selecting trips at the programmed rate.
- ✗ Users of ODDS in 2014 cancelled trips selected for observer coverage at nearly four times the rate of unselected trips.

The disproportionate cancellation of selected trips is problematic because

- ✗ Temporal bias in trip-selection results (also in 2013).

The OSC recommends the flexible ODDS protocols be re-evaluated.

Trip selection (continued)

- ✓ There was no evidence of spatial bias in trip-selection.

Among non-tendered trip-selection trips, observed trips occurred on vessels that were 2.6% shorter and landed 9.1% less catch than unobserved vessels. However, these effects were confounded by gear type.

- ✗ When gear type was considered, evidence of an observer effect (observed trips different from unobserved trips) was found in:

Hook and line vessels. These vessels landed 14.4% less catch and 9.1% more species when observed compared to when unobserved.

Trawl vessels. These vessels fished in 4.4% fewer areas and took trips that were 8.4% shorter when observed.

The OSC recommended that FMP and Gear type be included as potential factors in defining 2016 stratum definitions.

Vessel selection (40-57.5 feet in length, 375 vessels, 2079 trips):

Vessels were selected by NMFS to be observed 100% within a two-month period. Selections were made based on past performance. Selections were inflated to account for 1) vessels that did fish but will not, 2) vessels that did not fish in the past but will fish, and 3) vessels selected that are granted a release from coverage.

Errors among the selection periods were nearly equal for #1 and #2 and were between 25- 50% (avg. 40%), while those for #3 ranged between 37- 67%.

- ✓ Being selected did not appear to affect the likelihood of a vessel fishing in Federal waters (different from 2013).
- ✓ Where there were more than ten trips in an area, conditional releases were not disproportionate among areas (did not result in spatial bias)
- ✗ Over half of the selected trips in this stratum were released and there were four NMFS areas with no observer data.

Vessel selection (continued):

In two selection periods (Jan-Feb and May-Jun) more vessels were observed than expected (12 v. 9 in one and 35 v. 24 in another)

- X The number of observed trips was higher than expected among NMFS Areas.
- X It appears that a poorly constructed list of vessels to select from resulted in spatial bias in vessel selection.

These results highlight the problems with selecting vessels for coverage based on past history and a high release from coverage.

For these and other reasons, the NPFMC and the NMFS discontinued the practice of vessel-selection in 2015. In addition, the OSC recommends that a list of vessels that cannot accommodate human observation be generated in lieu of the conditional release of vessels whereby a vessel is sometimes subject to human observation.

Vessel selection (continued):

Unlike trip selection where there is only one time period to evaluate, in vessel selection there are six. Since there are six trip metrics compared, this means that 36 tests for observer effects were performed. Under no difference and a p-value of 5%, we expect there to be $.05 * 36 = 1.8$ or 2 tests to have low p-values. Instead there were 18.

X Evidence of an observer effect was found in vessel selection.

Details about what factors are driving the observer effect in this stratum were not analyzed because we do not know which two of the 18 results are due to random chance, the reasons may change among time periods, and because this deployment method has been discontinued.

Dockside:

Dockside deployments in 2014 had two purposes: to provide a larger sample from which to draw inferences about the amount of salmon bycatch in the trawl pollock fishery, and to obtain genetic tissues for stock of origin analyses.

In the BSAI coverage rates are set in regulation at 100%. Processing facilities in the BSAI have Catch Monitoring and Control Plans to assist the observers detectability of salmon bycatch. In the GOA, the fishery is not under regulatory 100% coverage requirements and there are no CMCPs.

The pollock fishery is not a pre-defined stratum of the observer program. Instead, it is defined *in situ* by the observer and the captain.

- ✓ All full-coverage required deliveries of BSAI pollock were observed.
- ✗ The observer program did not achieve a 16% random selection of partial coverage pollock trips (13% was achieved. p 58).

This difference in partial coverage was greatly influenced by tender deliveries.

Tender vessels:

Vessels in trip-selection may choose to deliver to a tender for the entire season on one unselected trip. If tender vessels were not considered, the likelihood that the observer program achieved a 16% random selection in partial coverage trawl pollock fishery jumped two orders of magnitude from 0.1 to 10%.

- Vessels that delivered to tenders were 11.5% shorter* and fished 29.1% longer on a trip than vessels that did not deliver to tenders.
- The catch of tendered trips was slightly (1.3%) less “pure” than non tendered trips.

Tendered trips are different from non-tendered trips.

*these analyses contained vessels from both strata; interpret with caution.

Tender vessels (continued):

Vessels that delivered to tenders were 8.8% shorter* and delivered catch that was 6% less “pure” when observed than when unobserved.

Tender vessels are problematic for the observer program because:

- Regulatory definition of a trip facilitates avoidance of observer coverage with selection rates < 100% for an entire season.
- There are logistical and practical problems with stationing an observer on a tender vessel.
- Catch on tender vessels are not accessible, and delivered catch from a tendering vessel dockside cannot be efficiently attributed to the correct catcher vessel.

These have consequences to the monitoring of salmon bycatch and the at-sea deployment of observers.

Tendering vessels represent a gap in observer coverage.

*these analyses contained vessels from both strata; interpret with caution.

Adequacy of sample size:

The observer at sea is providing NMFS with at-sea discard rates on catcher vessels that are applied to landed catch to produce total catch. The goal is to apply discard rates from observed trips to unobserved trips with similar traits (you wouldn't want to apply discard from a BSAI trawler to a GOA trawler for example).

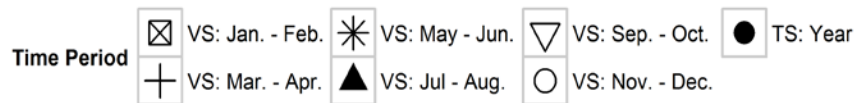
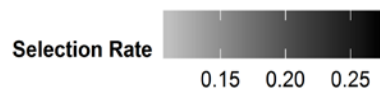
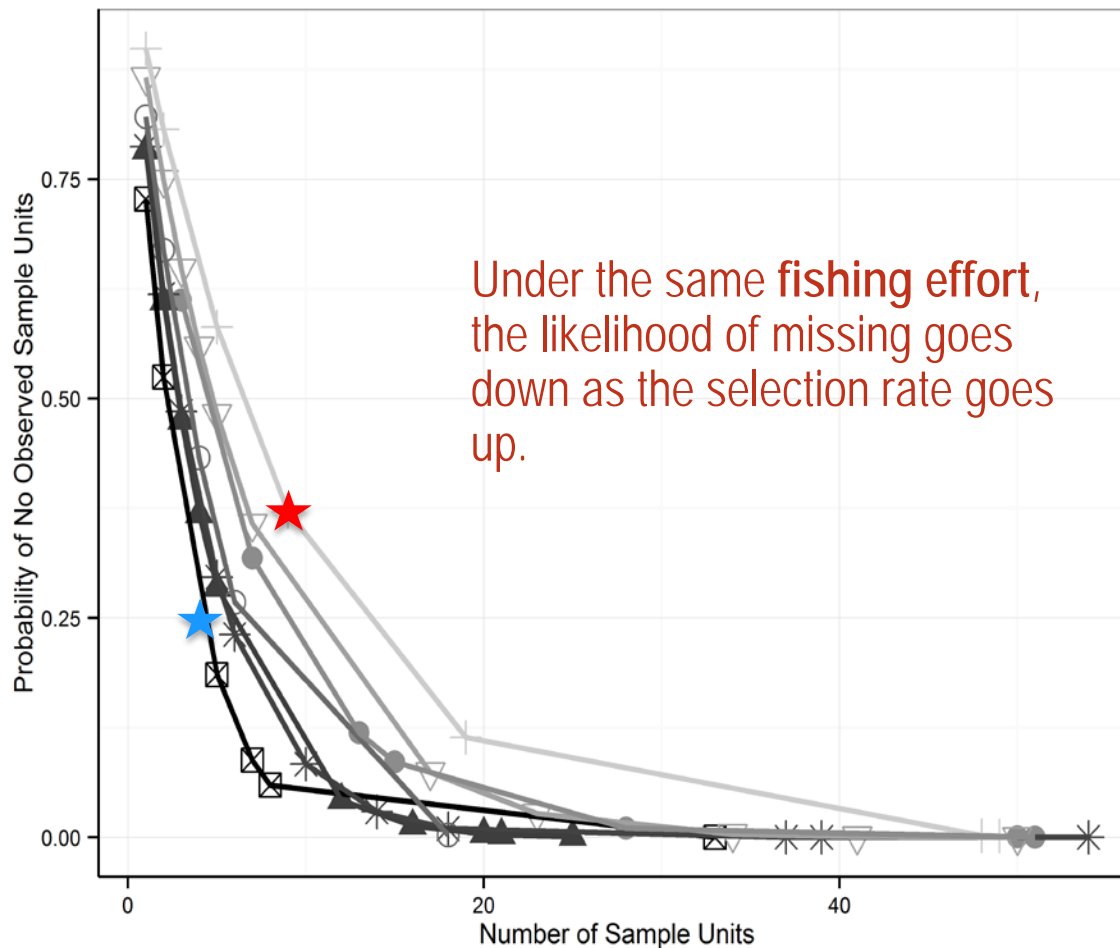
For this reason, it is important that for each NMFS Area there is at the very least one observed trip. We can evaluate the likelihood of “missing” an area from 2014 data.

The likelihood of missing goes down as you:

- Increase the number of trips in an area
- Increase the sampling rate

Areas and gears with low amounts of effort activity will require higher selection rates to observe than areas and gears with large amounts of effort.

Small deployment “boxes” require higher rates of selection.



For more information:

<http://alaskafisheries.noaa.gov/sustainablefisheries/observers/default.htm>