

North Pacific Fishery Management Council

Progress Reports on Council Research and Management Priorities



June 7, 2017



Progress Reports on...

- 4a. GOA Observer Program update and discussion
- 4b. Bycatch and wastage accounting and calculation
- 4c. Deck Sorting
- 4d. EM Implementation
- 4e. Discard Mortality rates
- 4f. Annual Research Priorities Related to Halibut
- 4g. Social Science Planning Team



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**4A
GOA OBSERVER
PROGRAM UPDATE**

North Pacific Observer Program

- Current Observer Program structure implemented in 2013
- Restructured to address:
 - Sampling issues associated w non-random observer deployment
 - Cost inequality among fishery participants
- Restructuring expanded coverage
 - Included vessels previously unobserved (incl halibut fishery and <60)
 - Increased number of vessels in full coverage (which always carry an observer)



Major accomplishments of restructuring

- Scientific sampling plans for observer deployment
 - Well-established random sampling methods
 - Better spatial and temporal distribution of coverage across all fisheries
 - Improves data quality and NMFS' catch and bycatch estimation
 - Required under Magnuson-Stevens Act

2017 Annual Deployment Plan
for Observers in the Groundfish and
Halibut Fisheries off Alaska

December 2016



NOAA
FISHERIES

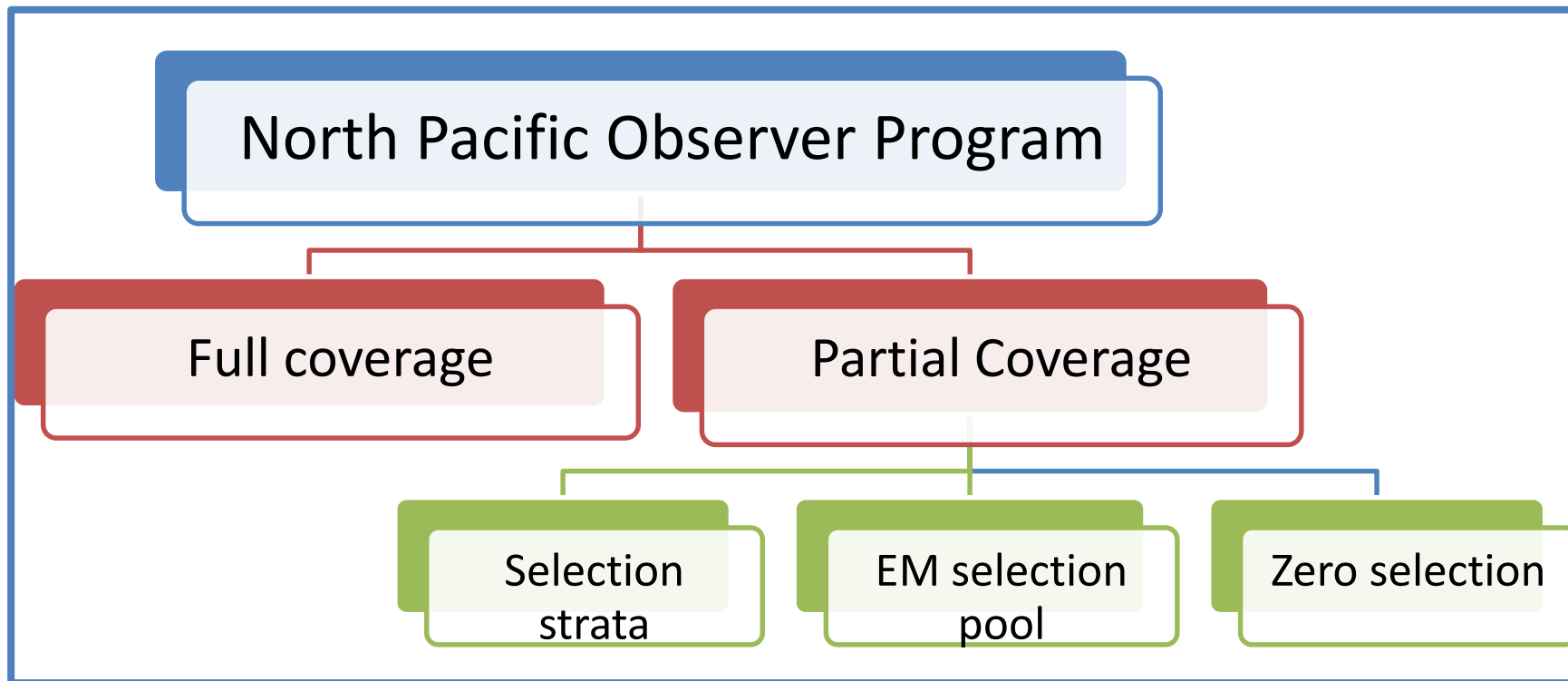
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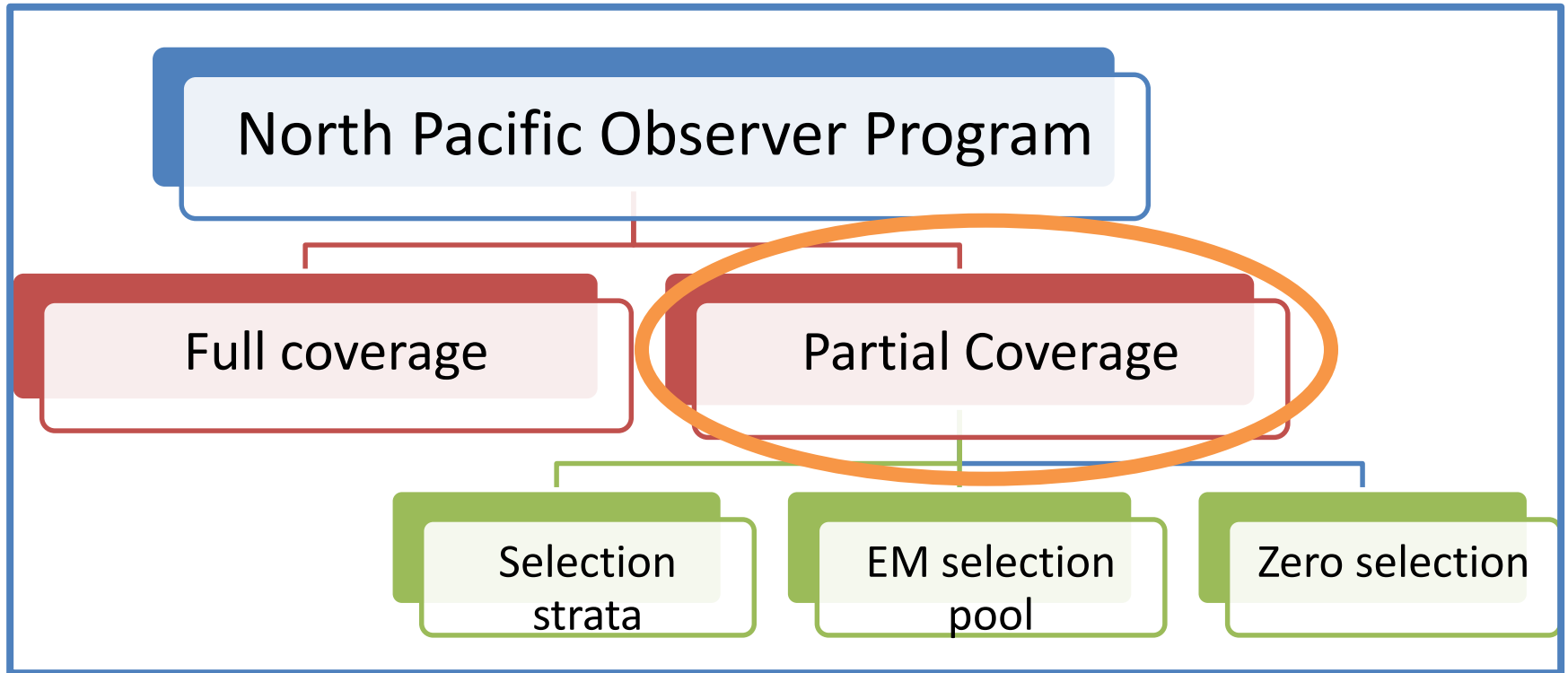
Two categories: full and partial



- 2016: 43,706 observer days in the BSAI and GOA on 500 fixed gear and trawl vessels and at 7 processing facilities
 - 39,029 full coverage days on vessels and in plants, 4,677 partial coverage days



In the GOA...



- Partial: almost all CVs and shoreside processors
- Full: almost all CPs, and CVs and processors in the Central GOA Rockfish program

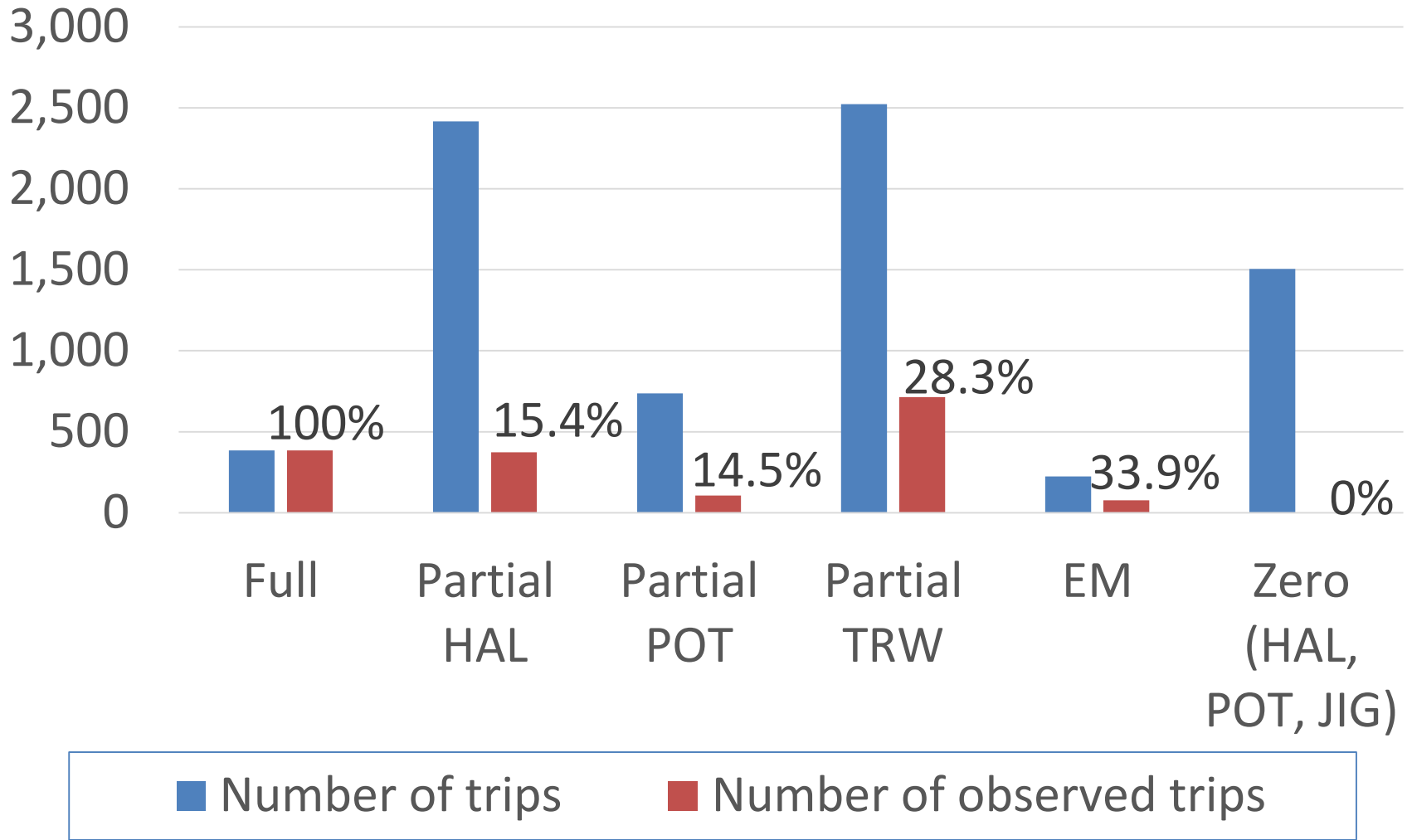


Partial coverage sampling strata in 2016 and 2017, and selection rates

	2016		2017	
Trip selection pool	Trawl	28%	Trawl	Shoreside – 18% Tender – 14%
	Hook-and-line	15%	Hook-and-line	Shoreside – 11% Tender – 25%
	Pot	15%	Pot	Shoreside – 4% Tender – 4%
EM pre-implementation	Vessel selection by calendar period – 30% (or sometimes 100%)		Trip selection – 30%	
Zero selection pool	0%		0%	
	<i>(vessels < 40 ft, jig gear, EM research)</i>			



2016 trips in the GOA



Funding for partial coverage

- Fee for all vessels in partial coverage equal to 1.25% of ex-vessel value of gfish/halibut landings
 - All vessels pay fee, regardless of their selection rate
- NMFS also contributed Federal funds to transition the program in 2013, and to supplement coverage in 2014 and 2015
 - some carryover to 2016
- BUT in 2016, NMFS announced national goal that all at-sea observer deployment should be paid by industry



Budget and observer days from 2013 to 2017

Year	Budget \$ million (fees + Federal funds)	Observer days
2013	\$3.9 (Federal funds)*	3,533 (used)
2014	\$4.9 (\$3.0 + \$1.9)	4,573 (used)
2015	\$5.7 (\$3.0 + \$2.7)	5,318 (used)
2016	\$5.5 (\$5.1 + \$390K)	4,677 (used)
2017	\$3.7 (fees)	3,121 (projected)

* Only \$2.1m was spent in 2013, the remainder was carried over to future years



Addressing lower coverage rates

- Council has asked NMFS and the Observer Advisory Committee to consider options
- Under Magnuson-Stevens Act, Council has authority to raise observer fee to a max of 2%
- Also looking at:
 - Efficiencies in the sampling design (especially with zero selection pool)
 - Efficiencies in rebidding the observer provider contract (incentives to reduce travel costs)
 - regulatory change, such as designing a hybrid program combining observer fee with pay-as-you-go





**4B
BYCATCH AND
WASTAGE**

Discussion Today

- Bycatch & wastage estimation methods in Catch Accounting System
 - Estimates of bycatch by IPHC area
 - Ongoing evaluation of methods & preliminary results of variance estimates
- Wastage estimation issues
 - Average size of discards
 - Estimates from vessels less than 40 ft



Catch Accounting System - purpose

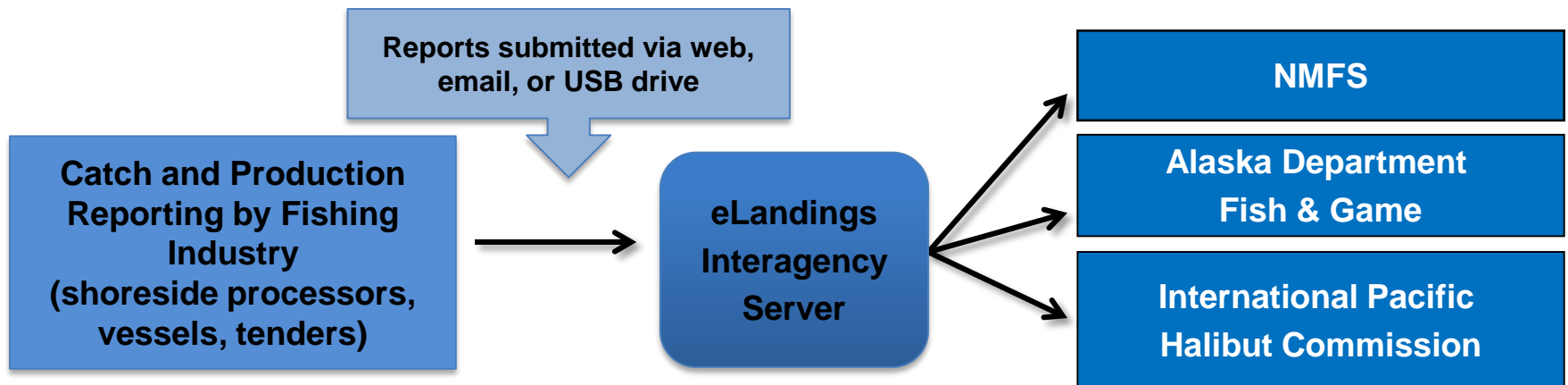
- Total catch estimates for groundfish fisheries:
 - Retained groundfish catch
 - At-sea discards
 - Groundfish
 - Prohibited Species Catch (e.g. halibut, crab, salmon)
 - Non-groundfish species (e.g. inverts, birds, etc.)
- Designed for timely estimates to support effective in-season management
 - Enable fisheries to stay within annual catch limits (“Accounts”) set by Annual Harvest Specifications
- Support policy development, analysis, & stock assessment



Data Sources – Industry Reports

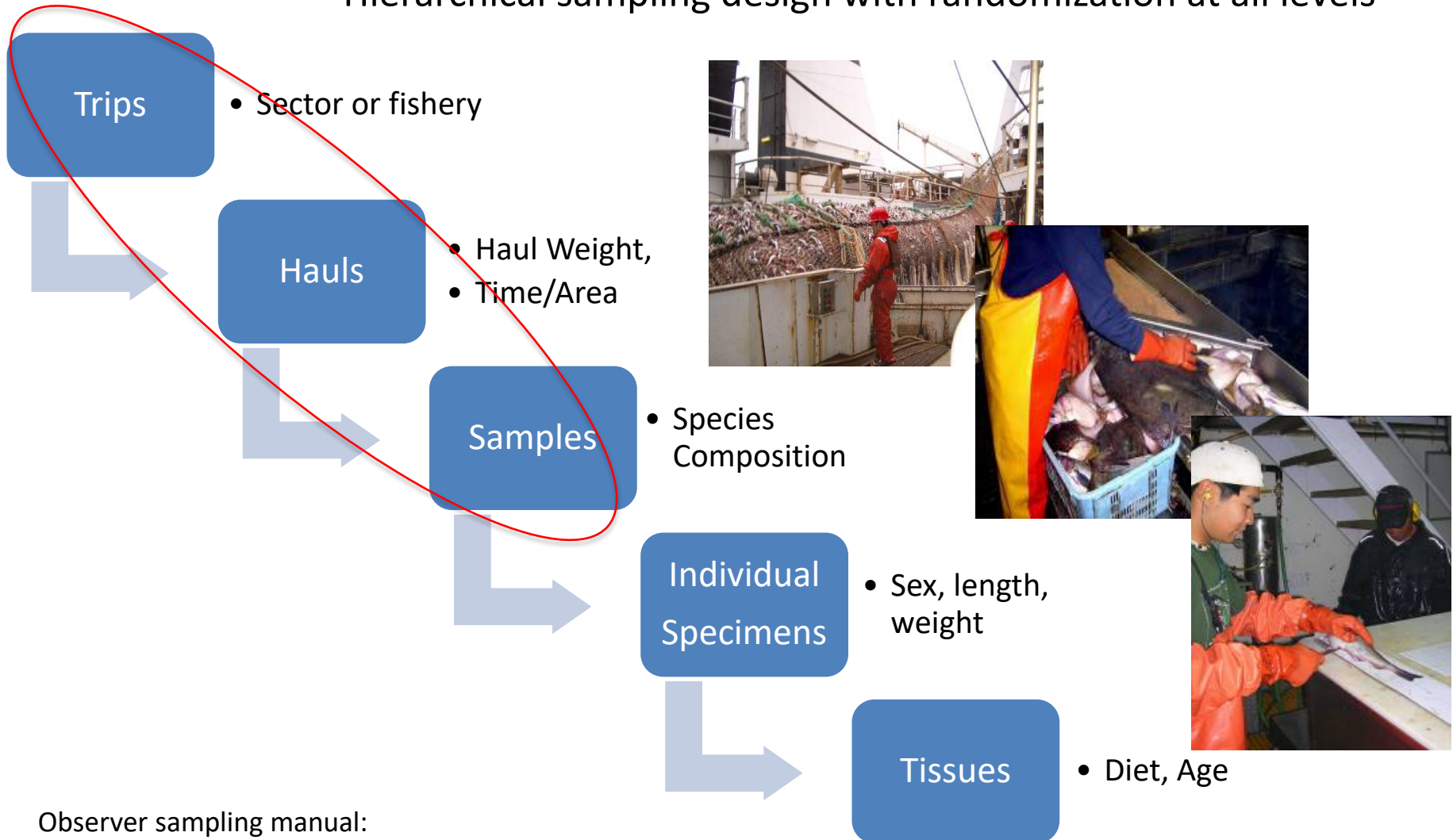
Alaska Interagency Electronic Reporting System:

- One-stop reporting to all 3 fishery management agencies in Alaska
- Increases timeliness and accuracy of fisheries data
- Electronic reporting required for all groundfish fisheries, IFQ halibut, & rationalized crab fisheries. Expanding to salmon fisheries.
- Electronic submission of landing reports (mandatory), production reports (mandatory), logbooks (not yet required for all vessels)



Data Sources – Observer Data

Hierarchical sampling design with randomization at all levels



Observer sampling manual:

<http://www.afsc.noaa.gov/FMA/document.htm>

Bycatch & wastage estimation

CP and Motherships

- Discard estimates come from vessel / trip-specific onboard observer information

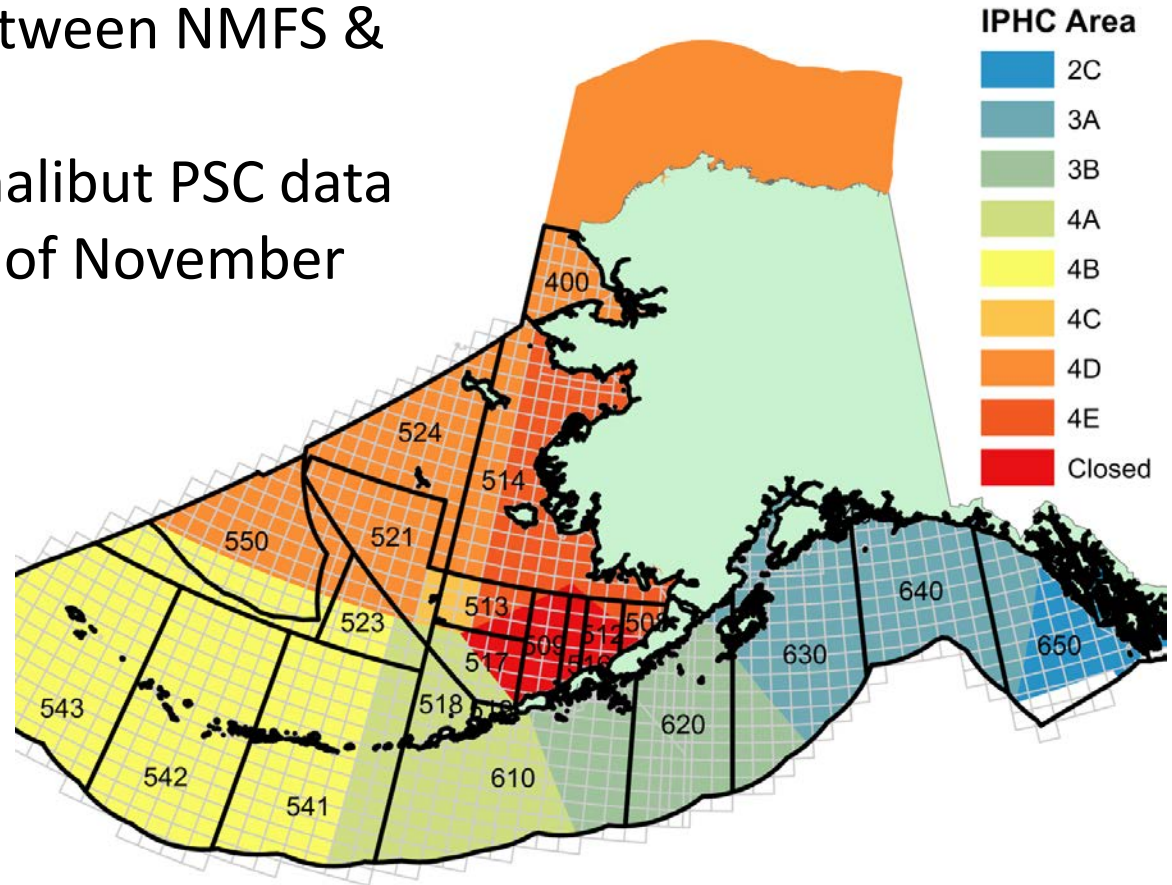
Catcher Vessels

- Observer data used to generate at-sea discard rate
- At-sea discard rate applied to landings data using post-strata:
 - NMFS Reporting Area, time, gear, trip 'target' (predominant retained species)



Estimates of halibut bycatch by IPHC area

- Collaboration between NMFS & IPHC staff
- NMFS provides halibut PSC data at the beginning of November updates



Ongoing evaluation of CAS methods

Methods

- Cahalan, J.A., J. Gasper, and J. Mondragon. 2014. Catch Sampling and Estimation in the Federal Groundfish Fisheries off Alaska: 2015 Edition. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-286, 41 p.
- Gasper, J, J. Mondragon, C. Tide, G. Harrington. 2015. Chapter 3 to the supplement to the Environmental Assessment for the Restructuring of the North Pacific Observer Program. Pages 39-100.
https://alaskafisheries.noaa.gov/sites/default/files/analyses/finalea_restructuring0915.pdf

Evaluation of Estimators

- Cahalan, J. A., J. Gasper, J. Mondragon. 2015. Catch estimation in the Federal trawl fisheries off Alaska: A simulation approach to compare the statistical properties of three trip-specific catch estimators. *Can. J. Fish. Aquat. Sci.* **72**: 1024–1036 (2015)
dx.doi.org/10.1139/cjfas-2014-0347

Variance Estimates for Full Coverage Fleets

- Cahalan, J., J. Gasper, and J. Mondragon. 2015. Evaluation of Design-Based Estimators in Federal Groundfish Fisheries off Alaska. In: G.H. Kruse, H.C. An, J. DiCosimo, C.A. Eischens, G.S. Gislason, D.N. McBride, C.S. Rose, and C.E. Siddon (eds.), *Fisheries Bycatch: Global Issues and Creative Solutions*. Alaska Sea Grant, University of Alaska Fairbanks. <http://doi.org/10.4027/fbgics.2015.09>

Evaluation of Post-strata

- Gasper, J. and J. Keaton. 2011. Analysis of fishing strategies by trawl vessels in the Gulf of Alaska: A temporal and spatial comparison of trip vs. haul-specific targeting. American Fisheries Society 141st Annual Meeting, Seattle, Wa. September 4-11.
- Work ongoing – with priority on definitions of trip target

Variance Estimates for Partial Coverage Fleets

- Work ongoing – preliminary results presented in June, 2016.
- Next Step – programming in CAS



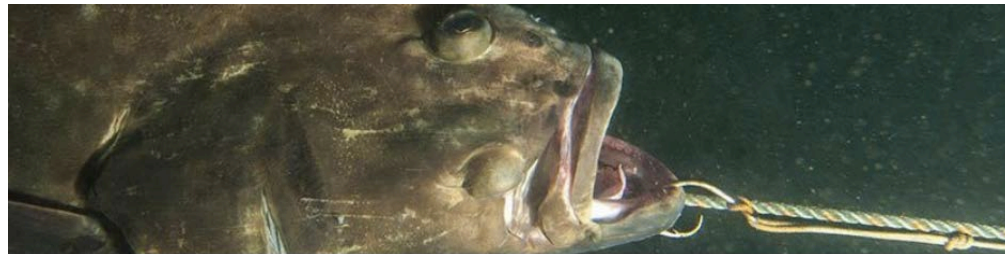
Next steps

- Preliminary results from 2015 presented to SSC
- Majority of Percent Standard Error (PSE) of discard – including halibut — are relatively small, less than 30% PSE
 - Species rarity, availability of sampling tools
 - Generally small where most effort occurs
- Incorporate into CAS programming
 - Improved testing environment
 - Better integration of observer and landings data
 - Allows leverage of existing CAS procedures
- Clearly defined domains of interest
 - Work with assessment authors
 - Crab, salmon estimation
- Evaluation of post strata definitions
 - Targeting, spatial, and temporal
- Incorporation of full, zero, and EM coverage strata



Halibut wastage – average weights

- Observers collect fish weights from unsorted catch of both retained and discarded fish
- 32” size limit in halibut fishery - could result in difference in average weight for retained vs discarded fish
- Estimates of wastage in halibut fishery could be overestimate
- Changes to observer data collection starting in 2016
 - likely facilitate evaluation & enable better estimation method



Halibut wastage – vessels <40ft

- Due to logistics, no observer coverage on vessels <40ft
- Use observer data from vessels >40ft to estimate wastage on small boats.
- 53% of trips in the halibut fleet and 17% of catch occurred on vessels <40 ft
- No direct observation been highlighted as gap
- Electronic Monitoring potential solution
 - Council discussion paper to look at options





4C
DECK SORTING

Deck sorting in the BSAI

- For non-pelagic trawl catcher processor vessels, monitoring regulations currently prohibit sorting of catch on deck
 - BUT deck sorting can reduce halibut mortality when fish are released into the water quickly (after sampling for length and condition)
- Program is being developed through exempted fishing permits
 - Testing monitoring protocols that can then be implemented through regulation



Vessels participating in the deck sorting EFPs

- 2015 and 2016: deck sorting in May-Dec only
 - 2015: 8 vessels; 2016: 12 vessels; A80 only
- 2017: first deck sorting in winter fisheries
 - 27 vessels to date; all modes, A80, TLA, CVs & CDQ

Month	Catcher-Processors	Catcher Vessels
January	8	12
February	13	12
March	15	12
April	15	12
May	15	12



Performance Data 2015-2017

	Gfish Catch (mt)	Halibut Catch (mt)	Mortality (mt)	Mortality Rate	Mortality at 85% Rate (mt)	Net Savings** (mt)
2015 (May-Dec)	38,561	481.7	233.8	49%	409.4	175.6
2016 (May-Dec)	79,905	729.9	330.5	45%	620.4	289.9
2017 (Jan-May 23)	120,985	879.7	495.2	56%	747.7	252.6

**Mortality Savings are calculated using the flat 85% rate that would have been applied to vessels had they not participated in the EFP





**4D
EM
IMPLEMENTATION**

EM fixed gear implementation

- **2015-2017**: Cooperative Research and Pre-implementation
 - Initial focus on small longline vessels that cannot carry an observer; expanded now to all size longline and pot vessels
- **Expected later in 2017**: approval and implementation of regulatory change to establish EM as part of the Observer Program
 - Council/NMFS will consider EM deployment in 2018 ADP
- **2018**: first year of implemented EM program.
 - NMFS will use data from longline fleet for catch accounting.
 - Pot methodology still being developed, likely 2019
- **2019**: first year that we will use the observer fee to fund EM as well as observer deployment



EM vessels and costs

Year	Number of Vessels Participating in EM	Milestones/Progress
2014	2	Council EM Workgroup established
2015	10	Cooperative research
2016	60	First year of EM pre-implementation
2017	120 <i>90 longline, 30 pot</i>	Second year of EM pre-implementation
2018	165 (<i>proposed</i>) <i>120 longline, 45 pot</i>	First year of implemented EM program

- 2016 costs, including video review:
 - \$1,381/day including all EM capital purchases, or
 - \$677/day with equipment amortized over 5 years



Estimating halibut mortality through EM

- EM video reviewers collect data on halibut release
 - Method of release: reasonable data
 - Release condition: difficult for EM to assess
- Current methods for DMRs based on halibut viability; EM data is insufficient
- Council's EM Workgroup supports IPHC field project to evaluate viabilities in relation to release method and size of fish



Future directions for EM: <40 ft vessels

- <40 ft vessels currently in zero selection
- Data shows that some <40 vessels have high effort
- Discussion paper will consider:
 - Information needs from <40 fleet (incl IPHC needs)
 - Types of monitoring technology that could help (e.g. complete EM, EM lite (sensors no camera), VMS)
 - How to design an appropriate sampling plan for <40
 - How to evaluate whether data from larger vessels is likely to be representative of <40



