

2020 *Draft* Annual Deployment Plan

for Observers and Electronic Monitoring in the Groundfish and Halibut Fisheries off Alaska

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Craig H. Faunce¹, Phil Ganz², and Geoff Mayhew³

1 National Marine Fisheries Service, Alaska Fisheries Science Center, Seattle

2 National Marine Fisheries Service, Alaska Regional Office, Juneau

3 Pacific States Marine Fisheries Commission, Seattle



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Draft 2020 Annual Deployment Plan

How the National Marine Fisheries Service intends to assign observer and electronic monitoring to vessels fishing partial coverage category in the North Pacific during 2020



2020 Draft ADP

Main decisions

How to divide the fleet

How many observer samples to put into each division



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No-Selection Pool

NMFS recommends the no-selection pool continue to be composed of:

1. fixed-gear vessels less than 40 ft LOA and vessels fishing with jig gear, which includes handline, jig, troll, and dinglebar troll gear
2. vessels voluntarily participating in EM innovation and research.



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NEW

Trawl Electronic Monitoring Trip-Selection Pool (EFP)

Pollock catcher vessels using pelagic trawl gear in the Bering Sea and Gulf of Alaska.

If NMFS approves the EFP application and fishing occurs in 2020, then vessels will carry EM systems in lieu of observers.

- EM would be compliance monitoring and the accounting for the vessel's catch and bycatch would be done via eLandings reports and shoreside plant observers.
- Biological tissue collections at the shoreside plant

The specific requirements for vessels in the trawl EM trip-selection pool would be determined through the permit approval process.



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Fixed Gear EM

New vessels may request to be in, and existing vessels may request to be out of the EM fixed gear pool until **Nov. 1, 2019**.

- NMFS anticipates a fleet size of less than or equal to 168 vessels if no extra funds made available.
 - If extra funds permit, NMFS will add an extra 30 vessels.
- If the number of EM vessels + those requesting EM is larger than funding permits, NMFS will prioritize
 - Vessels that are already equipped with EM systems
 - Vessels that are already wired for EM but not fully equipped
 - Vessels 40-57.5' LOA where carrying an observer is problematic due to bunk space or life raft limitations
 - **NEW** Vessels that are unlikely to introduce data gaps based on 3 years of past fishing activity



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Fixed Gear EM (continued)

- If a vessel operator has repeat problems with EM system reliability or video quality or has failed to comply with the requirements in their Vessel Monitoring Plan, NMFS may disapprove a Vessel Monitoring Plan for the following calendar year and the vessel may be removed from the EM pool the following calendar year.



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Observer trip-selection pool

NMFS recommends 3 sampling strata for the deployment of observers in 2020:

- Hook-and-line trips on vessels greater than or equal to 40 ft LOA,
- Pot trips on vessels greater than or equal to 40 ft LOA, and
- Trawl trips (non-EFP)
- **NEW** ~~Tendered Pot trips~~
- **NEW** ~~Tendered Trawl trips~~

Rationale in Appendix B



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Voluntary (trawl) full coverage:

- Owners of trawl catcher vessel in the partial observer coverage category may request placement in the full observer coverage category for all directed fishing for groundfish using trawl gear in the BSAI for the upcoming calendar year. Requests may be submitted in the Observer Declare and Deploy System (ODDS) and must be received by **October 15, 2019**, for the 2020 fishing year.



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Selection method

Trip-selection

Observer Declare and Deploy System

(Internet or phone)



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Allocation strategy

NMFS recommends an observer deployment allocation strategy of 15% plus optimization based on discarded groundfish and halibut PSC, and Chinook PSC.

This allocation strategy provides a balance between minimizing the variability of discard estimates, prioritization of PSC-limited fisheries, and the need to reduce gaps in observer coverage in the partial coverage category.



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Appendix C:

Comparison of alternative designs



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Allocation schemes and scenarios

Allocation schemes

- Equal rates afforded
- Minimum (15%) plus optimized

Both allocation schemes were evaluated under each 2020 scenario

Scenarios

Pollock trawl EFP

(‘Trawl:No’ or ‘Trawl:Yes’ - EFP trip probability)

- TN : No pollock trawl EFP
- TY-1 : All pelagic pollock trips by listed vessels
- TY-0.5 : 50% of 620/630/640, all 610 in EFP

Fixed-gear EM expansion

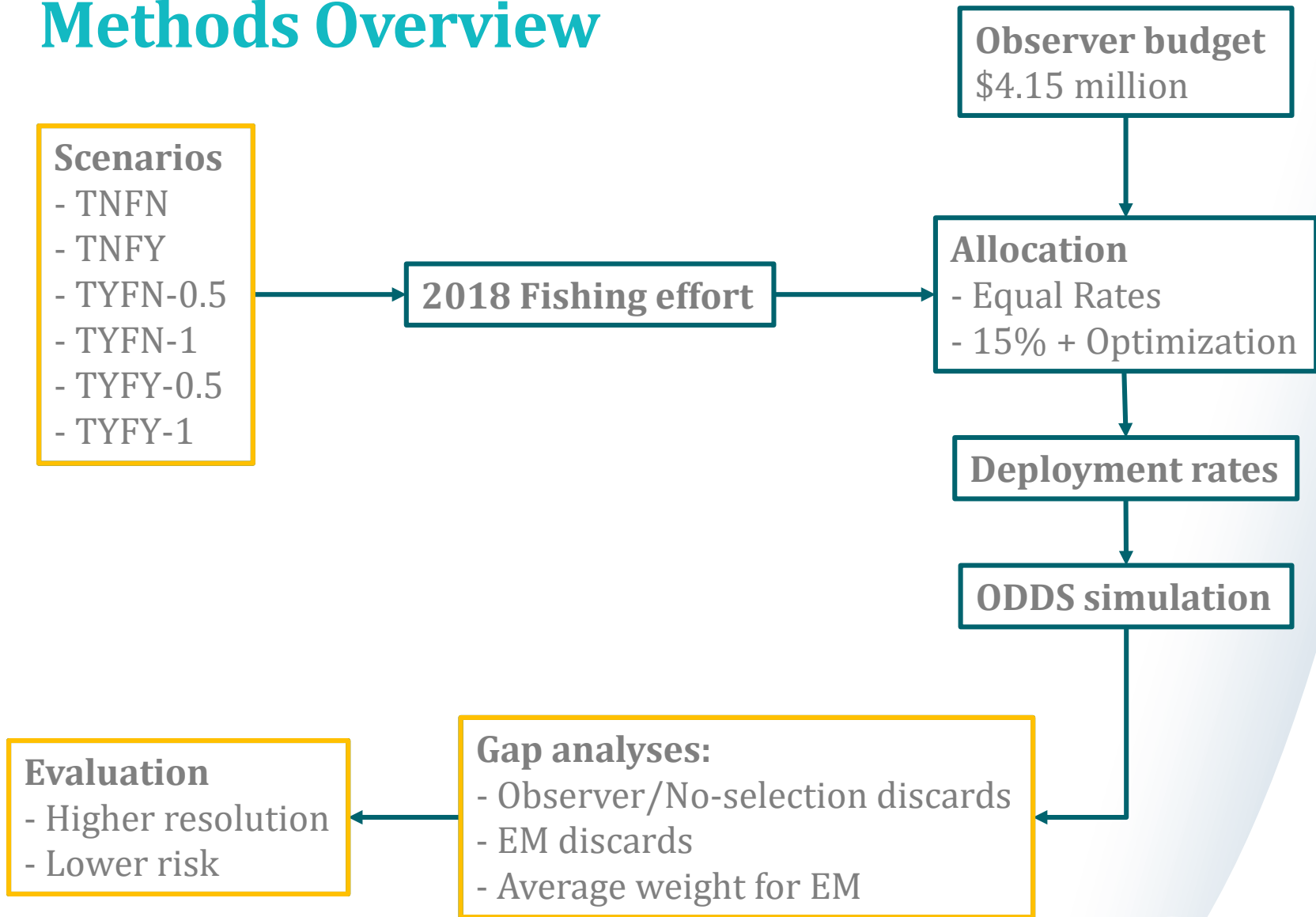
(‘Fixed-gear:No’ or ‘Fixed-gear:Yes’)

- FN : No vessels added to the fixed gear EM pool
- FY : Randomly add 30 fixed-gear vessels to EM Pool

TNFN
TNFY
TYFN-1
TYFN-0.5
TYFY-1
TYFY-0.5



Methods Overview



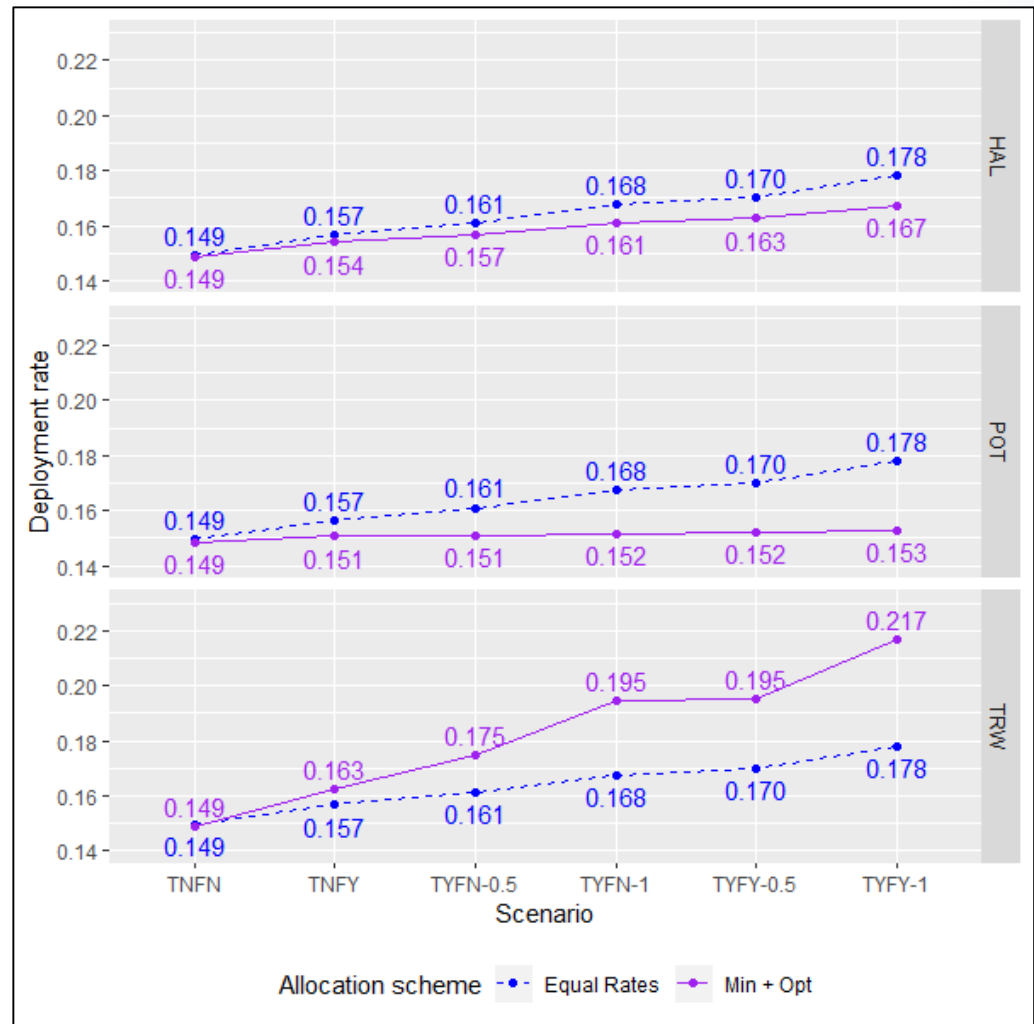
Results I – Estimated Rates and Cost

\$4.15 M to purchase 2,866 observer days

Scenarios with the pollock trawl EFP and/or fixed gear EM expansion reduce the total expected number of trips within the observer pool, resulting in higher deployment rates.

These rates will change for the final ADP as the effort prediction/budget changes.

See tables C-3 and C-4 for expected number of trips in each stratum and expected number of trips/days observed.



Methods (cont.)

Separate fishing into **domains**:

Strata/Gear	Post-strata	Trip Target	FMP
Hook-and-line	Tender	Halibut	GOA
POT	Non-tender	Sablefish	BSAI
Trawl		Pollock, etc.	

For each domain, perform gap analyses and score performance under each allocation scheme and scenario.

MED = Median score of all ODDS outcomes

P25 = Proportion of ODDS outcomes with low resolution data

Evaluate allocation schemes and scenarios by evaluating the number of domains that had better/worse metrics relative to the status quo scenario

(Min + Opt / TNFN)



Results II

Performance of allocation schemes & scenarios relative to **Min + Opt / TNFN**

Greater than 0 = Better

Lesser than 0 = Worse

Pollock trawl EFP (**TY**) causes tender trawl pollock domain to shrink from 27 to 2-3 trips.

Fixed-gear EM expansion (**FY**) causes BSAI tender pot cod domain to shrink (worse P25), and also reduces availability of average weight data for EM Pot cod (worse MED).

EM_POT BSAI Pacific cod

TenP BSAI Pacific Cod

TenTR GOA Pollock

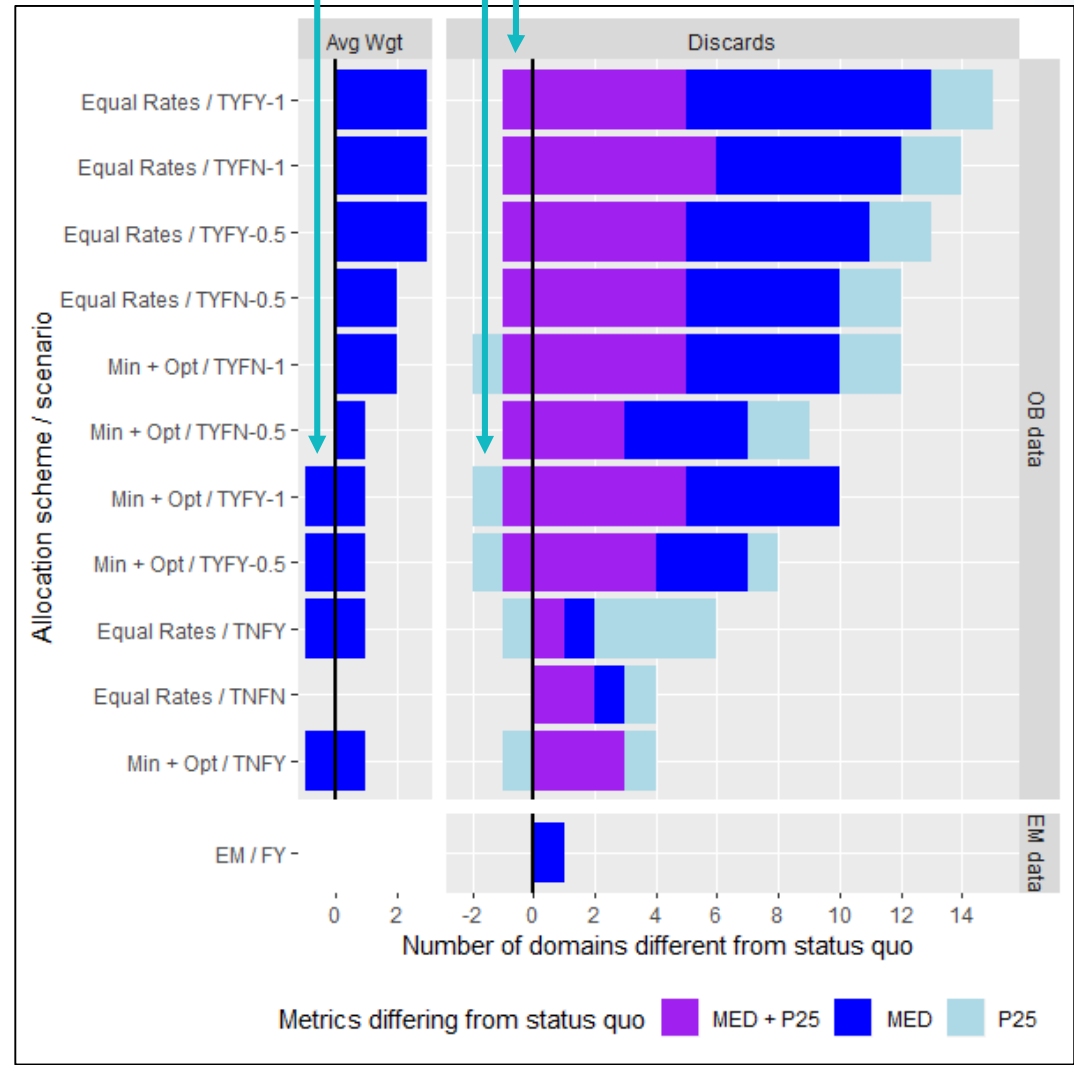


Figure C-7, page 45



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Summary:

- Three observer gear deployment groups
- Expand Fixed Gear EM if extra funding provided
- Minimum + Optimization method
- Dockside observers for tissue collections
- + 'potential to cause gaps' to EM approval process
- \$4.15 M (EM supported from external funds)



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Additional information

Strata specific gap analyses results



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Results

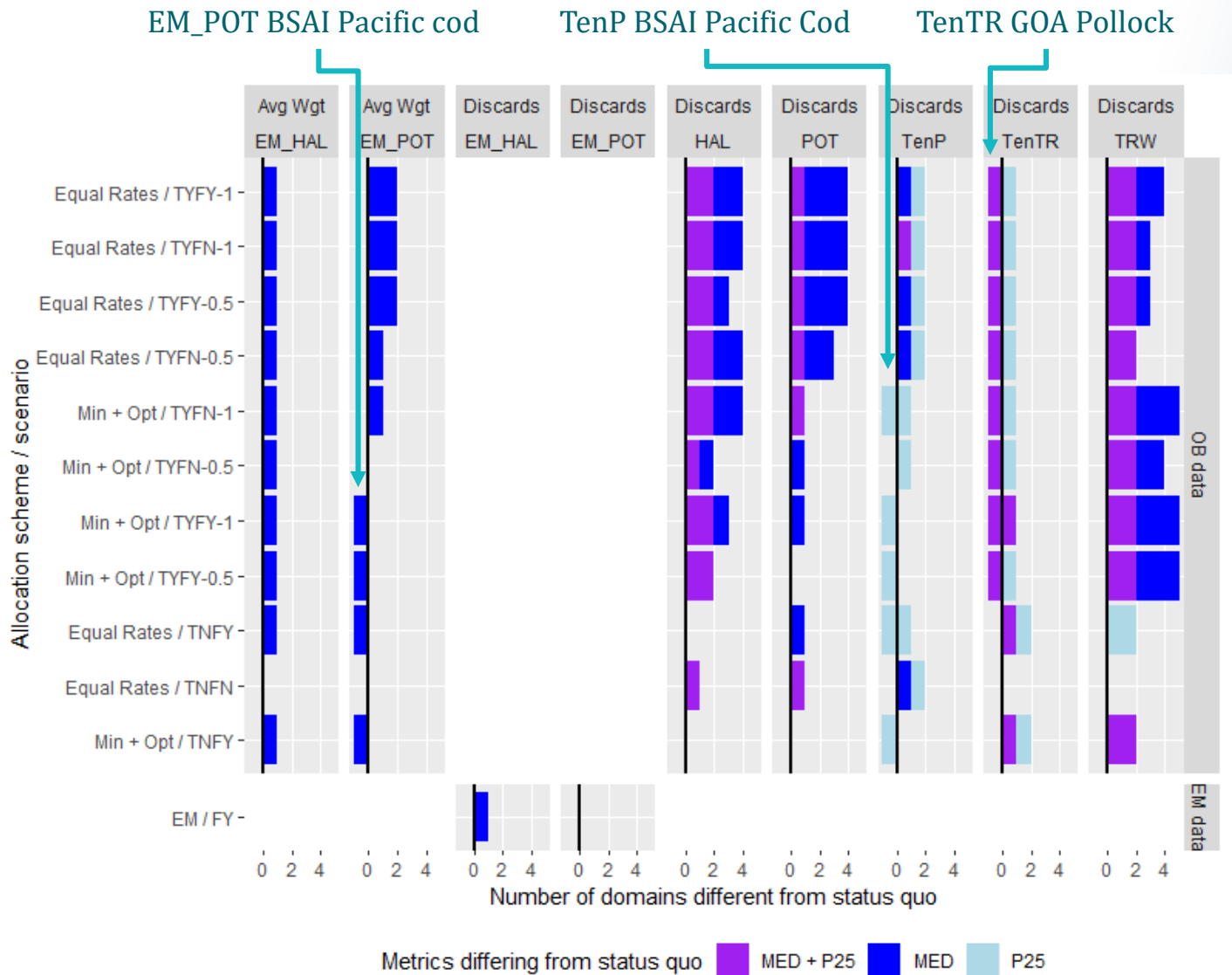


Figure C-6, page 44



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Appendix B:

Evaluating the Utility of Tender Strata



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Introduction

- The 2015 Annual Report showed that tendered trips differ from non-tendered trips in six metrics:
 - Number of NMFS Areas fished
 - Days fished
 - Vessel length
 - Species landed
 - Proportion of the catch that is the predominant species
 - Landed catch
- These differences were the rationale for evaluating tender strata in the Draft 2017 ADP
- The Draft 2017 ADP showed that gear-tender stratification performed worse than gear-only stratification, but better than creating a separate stratum for partial coverage CPs



This analysis asks:

- Does tendered catch differ from non-tendered catch in ways that are best addressed with stratification?
- Has the agency has been able to observe tendered trips at intended rates before and after tender strata were implemented?

Results

From 2015 Annual Report:

Table 3-10. Results of permutation tests between tendered and non-tendered trips in the 2015 trip-selection strata re-coded as 2016 trip-selection strata. OD: Observed Difference.

2016 Strata	NMFS Areas	Days Fished	Vessel Length	Species Landed	pMax Species	Landed Catch	Metric
<i>HAL</i>	0.056	1.142	0.121	-0.794	0.027	11.600	OD
<i>POT</i>	0.003	1.344	-6.635	0.411	0.000	14.240	OD
<i>TRW</i>	-0.101	1.432	-24.891	-0.701	0.048	0.538	OD
<i>HAL</i>	5.0	23.9	0.2	-21.4	3.1	149.4	OD (%)
<i>POT</i>	0.3	37.7	-9.5	22.8	0.0	43.9	OD (%)
<i>TRW</i>	-9.2	52.6	-30.0	-12.9	5.1	0.6	OD (%)
<i>HAL</i>	0.651	0.104	0.980	0.205	0.465	0.001	p-value
<i>POT</i>	1.000	0.000	0.000	0.000	0.905	0.000	p-value
<i>TRW</i>	0.000	0.000	0.000	0.002	0.000	0.901	p-value

* = p-value < 0.05

Results

Permutation test results from 2015 Annual Report:

- Tendered trips differ from non-tendered trips in duration, catch composition, and amount.
- However, these are not the same metrics we try to minimize variance for with stratification.

Results

Do tender trips differ from non-tender trips in variance and/or cost?

Strata	Weight	Rate
2017: Fully optimized on groundfish discards		
POT	0.04	3.88
TenP	0.01	3.92
TRW	0.55	17.57
TenTR	0.03	14.29
2018: 15% + optimized on groundfish discards, Chinook PSC, and halibut PSC		
POT	0.02	16.21
TenP	0.00	17.29
TRW	0.78	20.18
TenTR	0.01	16.67
2019: 15% + optimized on groundfish discards, Chinook PSC, and halibut PSC		
POT	0.01	15.43
TenP	0.00	16.11
TRW	0.70	23.70
TenTR	0.01	27.12

Non-tender trips consistently have higher weights than tender trips.

This means that more optimized trips go toward non-tender strata.



Results

Do tender trips differ from non-tender trips in variance and/or cost?

Strata	Variance	Average trip length (days)
Discard		
TRW	71.07	3
TenTR	27.09	5
POT	1.00	4
TenP	14.20	8
Chinook PSC		
TRW	196.40	3
TenTR	1582.40	5
POT	0.00	4
TenP	0.00	8
Halibut PSC		
TRW	3.36	3
TenTR	2.38	5
POT	0.02	4
TenP	0.03	8

High variance in one metric does not mean high weights.

Metrics are blended.

Tender trips are longer (more costly to observe).



Results

Do tender trips differ from non-tender in variance and/or cost?

- Yes: tender trips receive a lower weight than non-tender trips, meaning that they are less variable and/or more expensive to observe.
- This suggests that the number of observed tender trips would not decrease if tender and non-tender strata are combined.
- However, given the few number of tender trips, their influence over the weight and rate is likely minimal.



Results

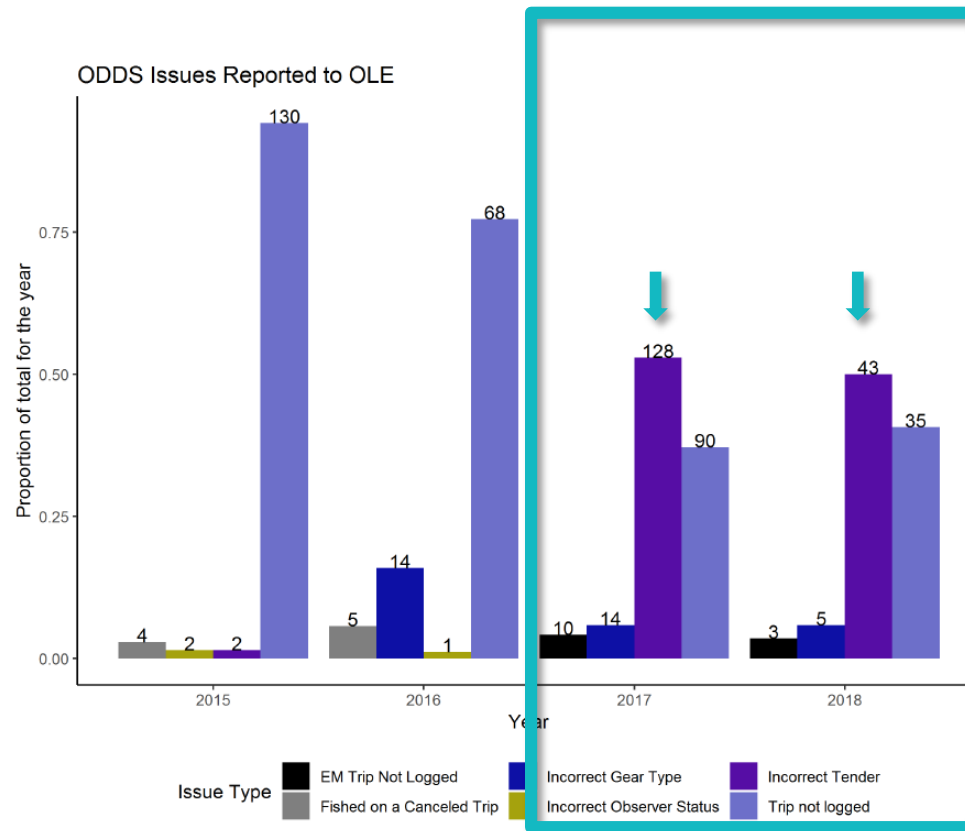
Was NMFS able to observe tendered trips at expected rates prior to tender strata?

Strata	Observed tender trips (n_{Tender})	Coverage above the minimum level expected?
2015		
T	44	No
t	15	Yes
2016		
POT	14	Yes
TRW	122	Yes
2017: Tender strata implemented		
TenP	4	Yes
TenTR	13	Yes
2018: Tender strata implemented		
TenP	9	Yes
TenTR	14	Yes

Results

Incorrect tender status is the most commonly reported ODDS issue to OLE (2018 Annual Report):

Appendix Figure D-7. -- The proportion (bars), and number of ODDS-related issues reported by FMA to OLE 2015-2018. Tendering strata were introduced in 2017.



Deployment might be incorrect.



Discussion

- Variance and cost differ between tender and non-tender strata.
- However:
 - Tender strata have lower weightings and few trips, meaning that the number of selected tender trips is unlikely to change.
 - NMFS did not have difficulty observing tender strata above minimum rates prior to the implementation of tender strata, meaning that the number of observed tender trips is unlikely to change.
- Differences between tender catch and non-tender catch can be addressed with post-stratification.
- Deployment into tender strata might be incorrect.



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Conclusion

NMFS evaluated one stratification design in the Draft 2020 ADP that does not create separate strata for tendered trips.

