2022 Observer Program Annual Report

June 2023

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Overview

- FMA maintained remote and hybrid observer training and briefing; other COVID precautions waned throughout the year (e.g., pre-trip quarantine)
- **375** individual observers were trained, briefed, and equipped for deployment to vessels and processing facilities operating in the Bering Sea and Gulf of Alaska groundfish fisheries.
- Observers collected data onboard **336** fixed gear and trawl vessels and at **11** processing facilities for a total of **32,497** observer days.
- Observers and EM monitored **3,536** trips and **441** vessels

Amount of Catch Monitored – Trawl

- In the BSAI and GOA combined, 89.2% of pelagic trawl catch was on trips in the full coverage category and 10.8% was on trips in partial coverage
  - All partial coverage pelagic trawl trips were in the GOA
  - 30.6% of partial coverage pelagic trawl catch was monitored either by an at-sea or shoreside observer
  - Total monitoring of GOA pelagic trawl is higher if at-sea compliance EM is considered
- In the BSAI and GOA combined, 95.3% of non-pelagic trawl catch was on trips in the full coverage category and 4.7% was on trips in partial coverage
  - 67.3% of partial coverage non-pelagic trawl trips were in the GOA
  - 32.5% of partial coverage non-pelagic trawl catch was observed
  - The Pacific cod trawl CV cooperative program (PCTC) will move many partial coverage trips into full coverage in 2024

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Amount of Catch Monitored – Fixed Gear

- In the BSAI and GOA combined, 76.7% of hook-and-line catch was on trips in the full coverage category and 23.3% was on trips in partial coverage
  - 93.3% of partial coverage hook-and-line trips were in the GOA
  - 12.7% of partial coverage hook-and-line catch was monitored either by an at-sea observer or EM
- In the BSAI and GOA combined, 10.4% of pot catch was on trips in the full coverage category and 89.6% was on trips in partial coverage
  - 80.5% of partial coverage pot trips were in the GOA
  - 19.3% of partial coverage pot catch was monitored either by an at-sea observer or EM

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Observer Cost - Full Coverage

- The total invoiced amount for full coverage observer days in 2022 was $11,469,305 for 29,069 invoiced days
  - Invoiced days differ from deployment days – the latter includes days for which the observer provider did not charge yet the observer was deployed
  - Average cost per invoiced day was $395
  - Average invoiced cost includes daily rate per observer day, transportation, and all other billed expenses
  - Both total invoiced dollars and days decreased in 2022 from 2021
    - Invoiced cost decreased by 7%
    - Invoiced days decreased by 11%

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Electronic Monitoring - Full Coverage

- EM is used to supplement observer coverage in the following full coverage fisheries:
  - Bering Sea and Aleutian Islands non-pollock trawl catcher/processors
    - Additional EM required on these vessels if they are participating in deck sorting of Pacific halibut
  - Bering Sea pollock catcher/processors and motherships
  - Central Gulf of Alaska rockfish trawl catcher/processors
  - BSAI Pacific cod longline catcher/processors
- Vessels act as their own EM providers or arrange this service with a private company
- NMFS does not collect any cost information associated with these EM programs and costs incurred by the industry are not included in full coverage cost reports
- Pelagic Pollock Trawl EM Exempted Fishing Permit costs are also not included in full coverage cost reports

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Observer Cost – Partial Coverage

- Total expenditures for partial coverage observer deployments was $4,428,624 for 2,968 observer days
  - Average cost of $1,492 per observer day
  - Cost is inclusive of non-deployed day costs (training, debriefing, travel, quarantine days, and running the ODDS Help Desk for both observer and EM deployment)

Differences Between Full Coverage and Partial Coverage Costs

- Partial coverage observer salaries are subject to Federal Acquisition Regulations, Fair Labor Standards Act, and Service Contract Act requirements, and applicable Department of Labor Wage Rate Determination which establish minimum wage and benefits for observers, including overtime.
- Travel costs and expenses in partial coverage are reimbursed per the Government's Travel Regulations. These include specified *per diem* rates which are paid regardless of actual expenses.
- Partial coverage observers are deployed out of small, remote port locations which increases travel and lodging costs.
- Partial coverage travel costs are increased due to the 72 hour timeframe in which partial coverage vessels log trips.
- Partial coverage observers are often deployed on a vessel for one trip which is significantly shorter (one to five days) than the typical deployment for full coverage observers (60 to 90 days), requiring more travel between vessels.

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Fixed Gear Electronic Monitoring - Partial Coverage

- Preliminary expenditures for **fixed gear** EM deployments was $896,635
- EM operational costs include project coordination by EM vendors and image reviewers; data review, processing and analysis; equipment services; and field technical services
- Fixed gear EM collected 1,196 sea days of imagery in 2022
- Costs reflect imagery review through March 15, 2023
- Using new EM Committee reporting categories, and amortized costs from past years which have not yet been accounted for are not yet included

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Chapter 3:

Deployment Performance Review

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2022 Deployment Strata

Full coverage:

1. FULL - Trips taken by vessels required to have, or opted into, full observer coverage;
2. EM TRW EFP - Trips in the full coverage trawl EM stratum;

Partial coverage EM:

1. EM HAL - Trips by vessels accepted into the EM pool and fished with hook-and-line gear
2. EM POT - Trips by vessels accepted into the EM pool and fished with pot gear
3. EM TRW EFP - Trips in the partial coverage trawl EM stratum

Partial observer coverage:

1. HAL - Trips using hook-and-line gear
2. POT - Trips using pot gear
3. TRW - Trips using trawl gear

Zero coverage:

1. ZERO - Trips by jig vessels and vessels under 40 ft LOA

Table 3-1. -- Number of total vessels (V), sampled vessels (*v*), total trips (N), and sampled trips (*n*) for each full coverage stratum in 2022.

					Coverage		
Strata	V	v	N	n	Expected	Realized	Meets expected?
Full	113	112	1,647	1,644	100.0	99.8	No - lower than expected*
EM TRW (EM Review)	50	34	917	437	100.0	47.7	Preliminary data**
EM TRW (Shoreside)	50	50	897	897	100.0		Yes

* Three trips were not monitored: one occurred on a vessel that had opted into full coverage and two were on vessels greater than 46 ft. in length fishing HAL CDQ groundfish, meeting the criteria for full coverage fishing. In each case they failed to obtain a full coverage observer.
** Realized coverage rates reflect video review through April 3, 2023.

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

					Coverage		95% Confidence		
Strata	V	v	N	n	Expected	Realized	Lower	Upper	Meets expected?
Partial coverage EM									
EM HAL	118	63	658	133	30	20.2	17.2	23.5	Preliminary data*
EM POT	50	34	349	85	30	24.4	19.9	29.2	Preliminary data*
EM TRW (EM Review)	40	37	635	416	100	65.5			Preliminary data*
Partial coverage observed									
HAL	299	122	1,346	196	19.0	14.6	12.7	16.6	No - lower than expected
POT	172	100	1,163	211	17.5	18.1	16.0	20.5	Yes
TRW	72	53	725	210	29.7	29	25.7	32.4	Yes
EM TRW (Shoreside)	40	33	526	160	33.3	30.4*	26.5	34.5	Yes
Zero coverage	310	0	1,599	0	0.0	0.0			Yes

* Realized coverage rates reflect fixed gear video review through April 10 and trawl EM video review through April 3, 2023.

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

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

[1] Monitored reflect either trips with an observer, EM fixed gear trips for which some video was reviewed, or EM trawl trips where observers sampled shoreside.

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

		Catcher/Processor			Mothership			Catcher Vessel			Gear Total		
Gear	Catch	Monitored	Total	%	Monitored	Total	%	Monitored	Total	%	Monitored	Total	%
Hook and Line	Retained	85,493	85,493	100%				249	1,915	13%	85,742	87,411	98%
	Discard	17,422	17,422	100%				160	1,201	13%	17,582	18,624	94%
Non Pelagic Trawl	Retained	342,512	342,512	100%	23,482	23,482	100%	9,111	18,070	50%	375,105	384,064	98%
	Discard	27,113	27,113	100%	1,220	1,220	100%	632	1,139	56%	28,965	29,471	98%
Pot	Retained	3,792	3,792	100%				3,926	20,816	19%	7,718	24,607	31%
	Discard	92	92	100%				84	644	13%	176	736	24%
Pelagic Trawl	Retained	494,511	494,511	100%	95,208	95,208	100%	475,561	475,561	100%	1,065,281	1,065,281	100%
	Discard	1,590	1,590	100%	286	286	100%	500	500	100%	2,376	2,376	100%

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

Chapter 4:

Enforcement and Compliance

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Data Analysis Methods

- A “statement” is a potential violation reported to FMA and OLE
  - Each statement submitted by an observer may contain multiple occurrences of potential violations.
- The frequency of potential violations is based on a rate of occurrences per 1,000 deployed days.
- OLE Priority: Inter-personal is calculated occurrences per assignment rather than deployed days.
  - OLE prioritizes any activity that may pose a threat to an observer and their data.
- OLE takes reporting trends into consideration when planning outreach, patrols, and other operations.
- Refer to page 56 of the Annual Report for more specifics on data preparation.

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Trends in Reporting

OLE Priority: Inter-personal (unwanted, unwelcome behavior)

Assault

- Rate of 0.33/assignment on C/P non-pelagic trawl in the Gulf of Alaska
- Rate of 0.02/ assignment on C/P A80 non-pelagic trawl in the BSAI
- There were no assaults reported in 2021

Sexual harassment

- C/P BSAI A80; C/P and mothership BSAI AFA; freezer longline BSAI open access fisheries; and catcher vessel longliners in open access longline GOA fisheries **each** had a rate of 0.07 per assignment
- C/P and mothership pelagic trawl CDQ fisheries and catcher vessel pot boats in the BSAI **each** had a rate of 0.05 per assignment
- Multiple incidents involve repeated unwelcome advances towards observers that persisted after requests for the behavior to cease.
- NOAA has recently released a Notice which reiterates that owners and operators may be charged jointly and severally liable for incidents involving sexual assault and sexual harassment of observers.
- Occurrences of Sexual Harassment per assignment declined from 2021 to 2022 by 33%.

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Trends in Reporting

OLE Priority: Inter-personal (unwanted, unwelcome behavior)

Intimidation, coercion, hostile work environment

- PLANT GOA OA: 1.03 occurrences per assignment
- PLANT BSAI OA: 0.84 occurrences per assignment
- C/P and mothership BSAI AFA: 0.75 occurrences per assignment
- Multiple reports in these sectors involved observers intimidating or creating a hostile environment for other observers.
- There were frequently attempts to resolve these situations while the observers were still deployed.
- There was a 243% increase of occurrences per assignment in Intimidation, Coercion, and Hostile Work Environment from 2021 to 2022.

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Trends in reporting

OLE Priority – Safety & Duties

- Interference/sample biasing
  - CP/MS NPT BSAI A80: 30.2 occurrences per 1,000 deployed days
  - CP/MS NPT BSAI CDQ: 25.9 occurrences per 1,000 deployed days
  - The vessels involved in both categories were the same. The allegations involved mechanical biasing of the observers' samples. The majority of the issues were resolved when the vessels made factory improvements during shipyard.

Protected Resources and Prohibited Species

- In the Gulf of Alaska, observers reported 54 occurrences involving salmon being inaccessible at shoreside plants and 20 occurrences when observer-reported salmon numbers didn't match the fish ticket
- Observers reported 27 occurrences of undersized halibut not being released properly aboard longline IFQ vessels
- Observers reported 64 occurrences of mishandling halibut during deck sorting and 65 occurrences of mishandling halibut in the factory aboard C/P non-pelagic trawl vessels
- Occurrences per 1,000 deployed days involving Prohibited Mishandling increased from 2021 to 2022 by 40%

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

- Compliance Assistance
  - 52 cases
  - 142 individual statements
- Written Warnings
  - 7 cases
  - 21 individual statements
- Summary Settlements
  - 17 cases
  - 29 individual statements
- Forwarded for Prosecution
  - 2 cases
  - 4 individual statements

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Outreach letters & Meetings with Industry

- Outreach letters
  - Observer Work Environment
  - Impacts to Observer Data
  - CP Operational Requirements
  - Amendment 80 Requirements
  - Halibut Deck Sorting Requirements
  - Catcher Vessel Requirements
- Voluntary Online Training – Ensuring a Safe Work Environment for Observers
- Meetings with vessel companies
  - 22 meetings in total – discussions focused on current issues detected in the fishing fleet in general and in specific sectors.

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Additional Resources Available for Industry

NOAA's Workplace Violence Prevention and Response (WVPR) works to establish a culture of professionalism and respect through violence prevention and response; education and training; victim support; reporting procedures and appropriate accountability that enhances the safety and well-being of all NOAA employees, affiliates, and visitors.

NOAA's Workplace Violence Prevention and Response Program can provide training in your workplace:

Contact Lori Newell (lori.newell@noaa.gov)

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Chapter 5:

NMFS Recommendations

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NMFS Recommendations for the Partial Coverage Cost Efficiencies Analysis

- Continue analysis to **integrate** monitoring methods.

Data Collected - Catch	At-Sea Observers	Trawl EM + Shoreside	Fixed Gear EM
Trip Characteristics (E.g., Duration, Total Effort)	✓	✓	✓
Haul Characteristics (E.g., Location, Effort, Depth, Gear Performance)	✓	⊘	⊘
Haul Level Species Composition - Counts	✓	✗	✓
Haul Level Species Composition - Weights	✓	✗	✗
Trip Level Species Composition - Counts	✓	✓	✓
Trip Level Species Composition - Weights	✓	✓	✗
Speciation of Similar Species (e.g., large red rockfishes, king crabs)	✓	✓	✗
Haul Specific Salmon Enumeration	✓	✗	⊘
Trip Specific Salmon Enumeration	✓	✓	⊘
USCG Marine Casualty Information	✓	⊘	⊘

NMFS Recommendations for the Partial Coverage Cost Efficiencies Analysis

- Continue analysis to **integrate** monitoring methods.

Data Collected - Biologicals	At-Sea Observers	Trawl EM + Shoreside	Fixed Gear EM
Sexed Length Data (fish and crab)	✓	✓	✗
Pacific Halibut Size and Mortality Assessment	✓	✓	✗
Trip Specific Age Structures (e.g., otoliths, scales, fin rays)	✓	✓	✗
Trip Specific Tissues for Genetic Analyses	✓	✓	✗
Tagged Organism Information	✓	✓	✗
Stomach Samples (Trophic Interactions)	✓	⊘	✗
Maturity Information	✓	⊘	✗

NMFS Recommendations for the Partial Coverage Cost Efficiencies Analysis

- Continue analysis to **integrate** monitoring methods.

Data Collected - Protected Species	At-Sea Observers	Trawl EM + Shoreside	Fixed Gear EM
Marine Mammal Injury and Mortality	✓	⊘	⊘
Marine Mammal Tissue (genetics, trophic Information, contaminants)	✓	✗	✗
Marine Mammal Interaction (non-lethal; non-injury)	✓	✗	⊘
Marine Mammal Sighting	✓	✗	✗
Verify Seabird Avoidance	✓	N.A.	✓
Seabird Mortality (catch by gear)	✓	✓	✓
Seabird Mortality (vessel interaction)	✓	⊘	⊘
ESA-Listed Seabird Carcass	✓	⊘	✗

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NMFS Recommendations for the Partial Coverage Cost Efficiencies Analysis

Deployment Design:

- Continue analysis to **integrate** monitoring methods.
  - Evaluate 3 stratification options and 4 allocation methods
  - Account for PCTC implementation and trawl EM
- Continue evaluation of Zero Coverage using criteria that are predictable from year to year
  - Look at fixed-gear EM vessels that have not fished for groundfish in multiple years
- Evaluate high cancellation rates in HAL stratum

NMFS Recommendations for the Partial Coverage Cost Efficiencies Analysis

Changes to ODDS:

- Modify ODDS to ask operators of vessels greater than 46 ft with a history of fishing for CDQ groundfish to alert them they are in full coverage.
- Incorporate PCTC into ODDS to alert vessels that they are in full coverage.

NMFS Recommendations for the Partial Coverage Cost Efficiencies Analysis

Fixed Gear EM:

- Maintain the size of the 2023 fixed gear pool (172 vessels)
  - As funds are available, expand up to Council's recommendation of 200 vessels.
- Prioritize placement in EM pool by:
  - Vessels size; fishing effort; vessels unlikely to introduce data gaps; and cost efficiency
- Continue to notify operators of VMP non-compliance.
  - NMFS may remove vessels with repeated problems.

NMFS Recommendations for the Partial Coverage Cost Efficiencies Analysis

Trawl EM EFP:

- Continue the pelagic trawl EM EFP
- Support increasing the number of participants and continuing efforts to improve processor participation and support.
- Support combination of federal and NFWF funds to cover costs in 2024.

Collaborate with industry on EM development Projects:

- Testing EM on trawl catcher vessels participating in the CGOA rockfish program;
- Real time electronic logbook data collection and reporting in Alaska's groundfish and halibut fisheries;
- Using AI to identify image quality concerns *in situ* and alert operator; and
- Improving and enhancing EM Data in Western GOA.

Partial Coverage Cost Efficiencies Report

June 2023

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Summary of Priorities

- Design a monitoring program that collects credible, statistically rigorous scientific data
- Collect the best and most data for a given budget
- Collect data for a wide range of analytic needs (multi-objective program)

Challenge is to…

- Meet the data needs of data users with a wide range of analytic objectives (MSA)
- Collect data that reflects the full range of fishing activities

Stratification

- How fishing trips are grouped for sampling
- Groups are defined by trip characteristics known *before* random selection

Can be used to:

- Focus sampling on a particular objective
- Control costs

Can be defined by:

- Monitoring method
- Gear
- FMP
  - Bering Sea / Aleutian Islands / Gulf of Alaska

Stratification

Status quo: 7 strata defined by monitoring method and gear

		Monitoring Method			
		At-sea Observer	At-sea EM	EM Compliance + Shoreside OB	None (Zero)
Gear Type	HAL	1,352	722		1,601
	POT	1,086	353		
	TRW	631		620	

Under Consideration for Observer and EM:

Split by FMP	Mixed-gear Trips (fishing both HAL and POT)
● BSAI/GOA	● Combine fixed-gear trips into a single stratum OR ● Create mixed-gear strata separate from HAL and POT

Allocation

Distributing samples to different strata

Equal Rates

Goal: Representative sample with equal burden of monitoring

- commonly used when don't know about population

Status Quo - current standard

Goal: *Equal Rates* to 15% plus variance minimization

- Add sample to decrease between-trip variance of discards
  - salmon, halibut, & total groundfish
- Observed strata only
- EM fixed gear strata 30% sample rate and EM trawl at 33.3%

Allocation

Distributing samples to different strata

Novel approaches: Representative sample without data gaps

Cost-weighted boxes

Goal: maximize the proportion of "boxes" monitored (or near), penalizing strata with high monitoring costs

- Stratum specific monitoring costs
- Minimize areas and times without data

Proximity

Goal: maximize proportion of trips near monitored trips while guarding against low sample sizes

- Create index, constant index for all strata
- Weight by inverse of sample size

Both rely on a reasonable box definition

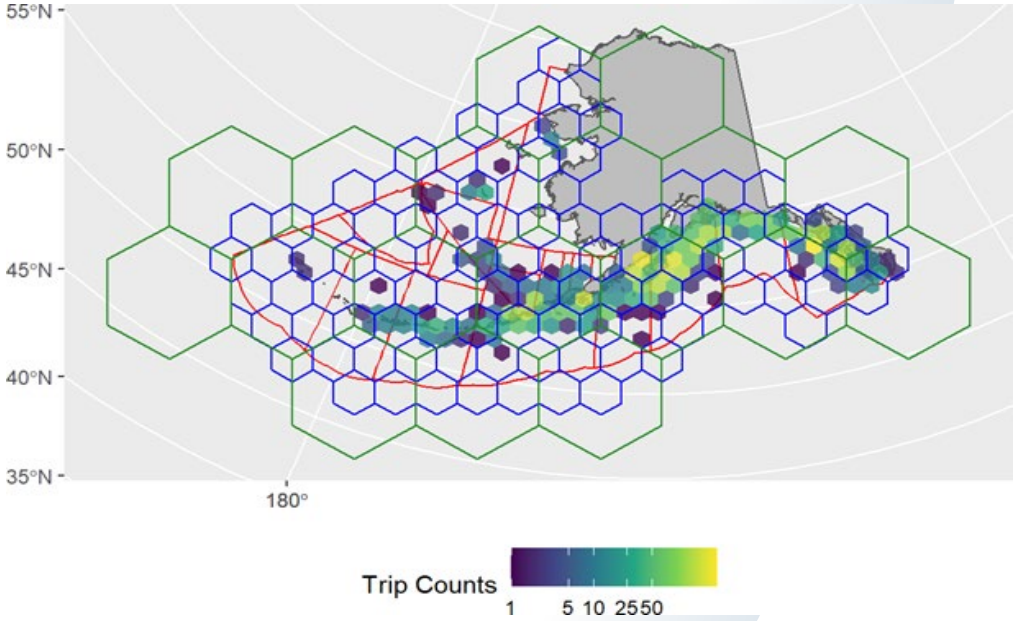
Defining appropriate "box'

Boxes defined by a unit of **space** and a unit of **time**

- Pick of scale of time and space that is useful
  - Spatial cells are all equal in size (vs. NMFS areas)
- Allow boxes to rely on **neighboring** boxes

Final Definition

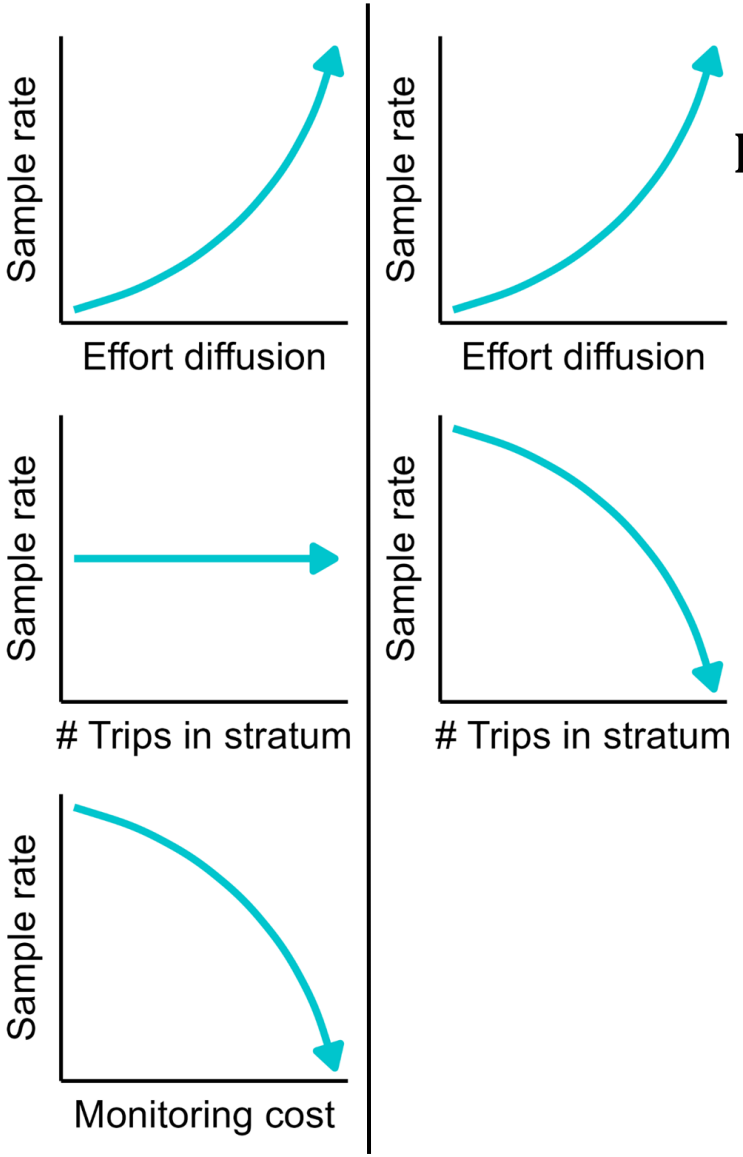
- Each box : **200km-wide** hexagon cell and **1-week**
- Neighboring trips : Include **adjacent cells** and **+/- 1 week**



Red: NMFS Reporting Area Boundaries
Filled hexagons: 125 km across; Blue hexagons: 200 km across; Green hexagons: 750 km across

Allocation - Drivers

Cost-Weighted Boxes



Proximity

Summary of Designs

Considering 12 designs

3 stratification options X **4** allocation methods

Gear & monitoring method

Status Quo, Equal Rates, Cost-weighted boxes, Proximity

*Gear & monitoring method by FMP (**BSAI** & **GOA**)*

Status Quo, Equal Rates, Cost-weighted boxes, Proximity

*Split or Combine Gear & monitoring method by FMP (**BSAI** & **GOA**)*

Status Quo, Equal Rates, Cost-weighted boxes, Proximity

Evaluation Metrics

- Data collection opportunities
  - Trips sampled (observers)
  - Trips monitored (observers or EM)
- Variance in *expenses*
- Burden share
- Power to detect
  - Rare events (Short-tailed albatross, Steller sea lion)
  - Observer effects
- Data timeliness
- Variance between trips
  - Salmon PSC
  - Halibut PSC
  - Groundfish discards
  - Crab PSC
- Interspersion (monitored trips near unmonitored trips)

Evaluations of Designs

- It is unlikely that one design will be the best across all metrics
- Scores and rankings will change with different budgets
- We want the best design that will work on small and large budgets.

Metric	Design			
	A	B	C	D
Trips sampled (observers, all data)	**291**	126	221	237
Trips monitored (observers or EM)	**20**	37	60	43
Variance in expenses	**3115**	3028	3017	2979
Short-tailed albatross	**0.03**	0.07	0.25	0.15
Steller sea lion	**0.01**	0.04	0.04	0.01
Observer effects …	**0.45**	0.47	0.39	0.56
Burden share	**0.42**	0.85	1	0.49
Data timeliness	**164**	164	200	159
Salmon PSC (#)	**3940**	4444	3892	4602
Halibut PSC (t)	**60**	180	98	181
Crab PSC	**51**	111	70	38
Groundfish discards (t)	**651**	735	1198	338
Interspersion …	**0.16**	0.11	0.54	0.5

*Random numbers for illustration only. Not actual results.

Other Cost Efficiency Ideas Separate From Deployment Design

- Program elements that provide flexibility to fishery participants but increase cost
  - E.g. vessels pick up observers in specific ports; increase time for observer provider to get observers to selected vessels, etc
  - Not supported by PCFMAC/FMAC. No further work planned
- EM Improvements - might also bring some cost efficiency
  - E.g. Utilize trawl EM equipment on vessels that also fish fixed gear; Change catch handling on pot boats to focus data collection on discards only
  - Ongoing work occurring, could be implemented under any of the deployment designs

Replace with Fishery-Independent Data?

Use fishery-independent longline survey data for weights to inform EM?

- Problematic for the growing EM sablefish pot fishery because of gear selectivity differences
- Current commercial pots are not standardized (e.g., escape rings will further change selectivity)
- Average weights in fishery may be higher than survey because the fishery is targeting larger fish at ideal depths, rather than mirroring the survey

Weight data is only one component of observer data used in assessments

- Loss of catch-at-age data will add more uncertainty to the assessment, especially for fisheries which are rapidly changing (e.g., sablefish)
- Observer data is highly influential data source in the assessment to inform age class strength
- Assessment is attempting to estimate contemporary selectivity differently from the historic, single gear (H&L) fishery

If full retention requirements were to be removed, the assessment would have no data to understand discard information

Federally hire observers - preliminary look

At-Sea

- Assumptions
  - 2 supervisors for up to 30 at-sea observers
- Cost estimates compared to current PC contract
  - Federal observers (estimate): ~$1,130 per day for 3,000 days
  - Current contract: ~$1,492 per day for 2,938 days

Shoreside

- Assumptions
  - 6 observers + 1 supervisor
  - Kodiak only
- Costs estimates compared to future PC contract
  - Federal observers (estimate): ~$700 per day for 1,306 days
  - Future contract (estimate): $500-$1,050 per day

Acknowledgments

- Thank you to the observers, observer providers, captains, crew members, EM providers, video reviewers, and agency staff who made fishery-dependent data collection possible in 2022.
- Thank you to the AFSC, AKR, and PSMFC staff who have developed new deployment models to evaluate for 2024.
- Thank you to the members of the FMAC, PCFMAC, and Trawl EM Committee for their input, feedback, and dedication to sustainable fisheries management.

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Discussion