



**NOAA**  
**FISHERIES**

# Electronic Monitoring & Research Priorities

Harbor Porpoise Take Reduction Team  
Virtual Webinar & Meeting  
May 12, 2023, 12 pm-3 pm

# Welcome and Introductions

## Academic/Scientific Groups

Bill McLellan, University of North Carolina-Wilmington  
Tara M. Cox, Savannah State University  
Sue Barco, Virginia Aquarium and Marine Science Center (Alt: Alex Costidis)  
Damon Gannon, University of Georgia Marine Institute

## Conservation/Environmental Groups

Kristen Monsell, Center for Biological Diversity (Alt: Sarah Uhlemann)  
Regina Asmutis-Silvia, Whale and Dolphin Conservation  
Jane Davenport, Defenders of Wildlife

## Federal Resource Managers

Kristy Long, NOAA Fisheries, Headquarters  
David Wiley, Stellwagen Bank NMS  
Dennis Heinemann, Marine Mammal Commission  
Colleen Coogan, Greater Atlantic Region

## Fishery Management Organizations

Robin Frede, New England Fishery Management Council  
Karson Coutre, Mid-Atlantic Fishery Management Council  
Toni Kerns, Atlantic States Marine Fisheries Commission

## Gear Research

Ron Smolowitz, Coonamessett Farm  
Pingguo He, University of Massachusetts-Dartmouth

## Gillnet Industry

Jamie Hayward, Elliot, ME (Alt: Dan Salerno)  
Todd Sutton, Newport, RI  
Jackie Odell, Gloucester, MA (Alt: Phil Lynch)  
Douglas Feeney, Chatham, MA  
William McCann, Wareham, MA  
Ernie Bowden, Jr., Chincoteague, VA  
Bill Van Druten, Frisco, NC  
Sonny Gwin, Berlin, MD  
Leonard Voss, Smyrna, DE  
Rick Marks, Arlington, VA (Alt: Chris Rainone)  
Greg DiDomenico, Fairfax, VA

## State Fishery Resource Managers

Somers Smott, VA Marine Resources Commission  
Meghan Rickard, NY Dept. of Environmental Conservation  
Cheri Patterson, NH Fish and Game Dept. (Alt: Renee Zobel)  
Erin Wilkinson, ME Dept. of Marine Resources (Alt: Meredith Mendelson)  
Scott Olszewski, RI Division of Marine Fisheries  
Michael Greco, DE Division of Fish and Wildlife  
Erin Burke, MA Division of Marine Fisheries  
Stacy VanMorter, NJ Division of Fish, Game, and Wildlife  
Angel Willey, MD Dept. of Natural Resources  
Barbie Byrd, NC Division of Marine Fisheries (Alt: Casey Knight)



# Today's Agenda

## 12:15 pm: Electronic monitoring development and strategy

Presenter: Brett Alger, Electronic Technologies Coordinator, Office of Science and Technology

## 12:30 pm: Observer programs and electronic monitoring in the Northeast

Presenters from the Fishery Monitoring and Research Division, Northeast Fisheries Science Center

- Katherine McArdle, Chief, Fisheries Monitoring Operations Branch
- Nichole Rossi, Electronic Monitoring Lead and Program Support
- Aaron Diauto, Incidental Take Lead

### Questions & Answers on EM and Observer Programs

## 1:10 pm: Data changes due to electronic monitoring

Presenter: Dr. Kristin Precoda, Protected Species Branch, Northeast Fisheries Science Center

## 1:40 pm: BREAK

## 1:50 pm: Discussion

## 2:30 pm: Review research priorities

## 2:40 pm: Public comment

## 2:50 pm: Next steps

## 3 pm: Adjourn



# Ground Rules for Team Members

## **Discussion protocols:**

- Contribute - need to build shared understanding
- Make room for others - need to hear from all
- Ask questions (including of one another)
- Make good faith effort to collaborate - patience, open ears and minds

## **To contribute to the discussion:**

- Primary members
  - Please turn on video if you can!
  - Raise hand function available to get in queue for discussion time
  - Chat to host only with tech issues; not for substantive input or discussion
- Alternates
  - Engage as public unless sitting in for primary
- Members of the public
  - Please keep video off except during public comment
  - Welcome observe and to make a comment during public comment time at end of meeting





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# Electronic Monitoring in U.S Fisheries

Brett Alger  
Electronic Technologies Coordinator  
Office of Science and Technology  
NOAA Fisheries



HPTRT

May 12, 2023





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# U.S. Electronic Monitoring Programs

Electronic monitoring (EM) is being piloted and implemented across the U.S. to expand and improve fisheries-dependent data collection, while reducing costs and increasing the timeliness of information. EM is used to audit logbook data, monitor compliance with discard requirements, and collect information on discards and bycatch. The programs on this map are listed in three categories: Operating under regulations; operating under an exempted fishing permit (EFP) and/or being developed by a Fishery Management Council (FMC); and operating as a pilot project.

For more information, visit [fisheries.noaa.gov/national/fisheries-observers/electronic-monitoring](https://fisheries.noaa.gov/national/fisheries-observers/electronic-monitoring).

## Alaska

### Under Regulation

- Bering Sea and Aleutian Island (BSAI) Non-Pollock Trawl Catcher/Processor (C/P)
- Bering Sea Pollock Trawl C/P and Motherships
- Central Gulf of Alaska Rockfish Trawl C/P
- BSAI Pacific Cod Longline C/P
- Small Boat Fixed Gear (Longline and Pot)
- Halibut Deck Sorting Trawl C/P

### Under FMC Development or EFP

- Pollock Trawl Catcher Vessels

## West Coast

### Under FMC Development or EFP

- Whiting Mid-Water Trawl
- Fixed Gear IFQ
- Non-Whiting Mid-Water Trawl
- Groundfish Bottom Trawl

### Pilot Project

- Nearshore Rockfish

## Pacific Islands

### Pilot Project

- Pelagic Longline—Hawaii Deep and Shallow Set

## Greater Atlantic

### Under FMC Development or EFP

- Northeast Multispecies
- Herring Mid-Water Trawl

### Pilot Project

- Northern Gulf of Maine Scallop
- Northeast Multispecies For-Hire

## Atlantic HMS

### Under Regulation

- Pelagic Longline

## Southeast

### Pilot Project

- Snapper-Grouper
- Gulf of Mexico Shrimp

# Applications of EM in the U.S.

**Scientific data collection** – support stock assessments, bycatch reporting, ecosystem research

**Management** – near real-time monitoring (individual quotas, catch limits), auditing logbook reporting

**Compliance monitoring** – verify catch retention, access to closed areas, increased accountability

## Additional Uses

- sustainability certifications
- improved traceability
- value-added products
- data monetization



# EM Programs in the U.S.

## Video Review

- EM used to validate logbooks, compliance, and direct observations
- Range from ~10% (Atlantic HMS) to 100% (several programs)
- Northeast groundfish audits 3<sup>rd</sup> party data quality (i.e., second video review)

## Data Quality

- Timely feedback reports to captains and EM service providers is critical
- Alaska Fixed Gear program sends letters to participants due to poor quality
- Northeast programs have a dynamic API for receiving and validating data

## Annotations and AI/ML Development

- Almost every program or project is annotating imagery for AI models
- Testing EM system configurations and chutes for discards
- Models for species ID, object detection (crew, fishing gear, catch on deck)
- Leveraging imagery from other programs (observers, dealers, survey vessels)
- National EM imagery library under development to support AI/ML



# Policy on Allocating EM Costs - 2019

- Sampling – Hardware, video review, and data storage
- Administrative – Program support, provider certification/auditing, data analysis, and storing Federal records

<b>Function</b>	<b>Cost Responsibility</b>
Sampling	<ul style="list-style-type: none"><li>• Industry</li><li>• NOAA Fisheries - fees collected from industry<ul style="list-style-type: none"><li>- EX: North Pacific landings fee</li></ul></li><li>• NOAA Fisheries for specific Federal programs<ul style="list-style-type: none"><li>- EX: ESA, MMPA, SBRM</li></ul></li></ul>
Administrative	<ul style="list-style-type: none"><li>• NOAA Fisheries</li><li>• NOAA Fisheries - fees collected from industry<ul style="list-style-type: none"><li>- EX: West Coast cost recovery program</li></ul></li></ul>

# Funding Mechanisms - Alaska EM Programs

## Pay as You Go:

- Catcher/Processor vessels
- Vessels arrange and pay for EM hardware directly
- Imagery retained onboard for 120 days
- NMFS can request imagery at any time for agency staff review



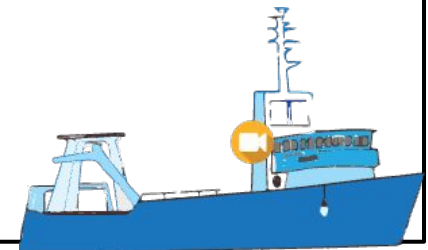
## Ex-Vessel Value Fee:

- Longline and pot catcher vessels and Gulf of Alaska pollock trawl catcher vessels
- Harvesters pay 1.65% fee on the value of landings
- Fee revenue supports observers, EM hardware, and imagery review costs



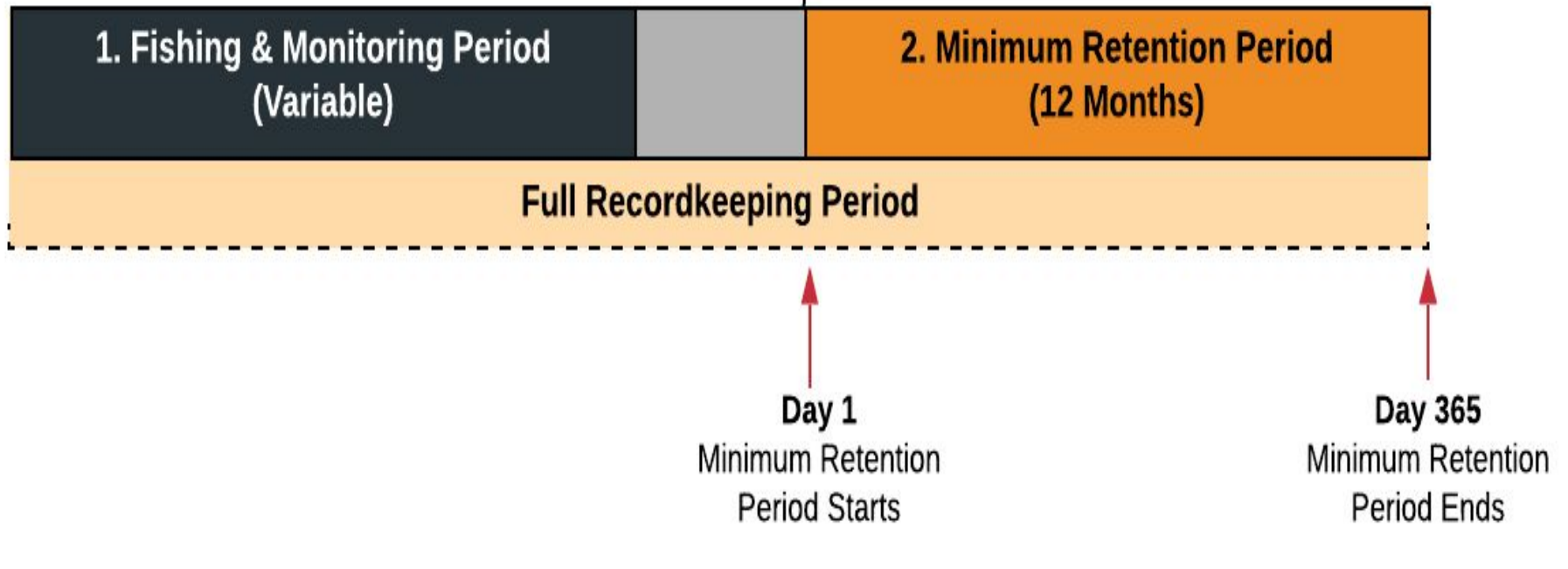
## Combination:

- Bering Sea pollock trawl catcher vessels
- Vessels arrange and pay for EM hardware directly
- Participants will pay a proportional annual fee based on landings
- Fee revenue supports EM review, data storage, and transmission



# Policy on Third-Party Data Retention - 2020

Review and analysis of EM data often extends beyond the close of a fishery as data are collected, processed, and analyzed



# Federal Records Retention Schedule - 2020

Fishing Season  
and Monitoring  
QA/QC Start

Fishing Season  
End

1. CREATION

Monitoring QA/QC  
Ends

3. DISPOSITION

FISHING YEAR

MONITORING PERIOD

5-YEAR RETENTION PERIOD

2. MAINTENANCE &  
USE

Day 1  
Retention Period Begins

Year 5  
Retention Period Ends

# Summary of Information Law Guidance - 2021

Party Maintaining Raw EM Data	FRA	MSA 402(b)	FOIA
NOAA Fisheries	Applies	Applies	Applies
NOAA Fisheries Contractor	Does Not Apply <sup>4,5</sup>	Applies <sup>1</sup>	Does Not Apply <sup>4</sup>
NOAA Fisheries Federal Financial Assistance Recipient <sup>2</sup>	Does Not Apply <sup>4,5</sup>	Applies <sup>1</sup>	Does Not Apply <sup>4</sup>
Fishing Industry Contractor/Service Agreements	Does Not Apply	Applies <sup>3</sup>	Does Not Apply

<sup>1</sup>NOAA Fisheries would include a requirement in any contract or financial assistance award to maintain the confidentiality of EM data.

<sup>2</sup>Entity is a recipient of a grant or is a party to a cooperative agreement.

<sup>3</sup>Given applicability of MSA §402(b), NOAA Fisheries expects regulations for an industry-funded EM program to require that third parties have a means to protect EM data.

<sup>4</sup>Does not apply if the EM data are stored on a non-NOAA system. Any EM data stored on a NOAA system would be subject to the FRA and FOIA.

<sup>5</sup>By default, NOAA Fisheries would not include a provision in a contract or federal financial assistance award to require that the EM data be stored on a NOAA system. However, Section III.1.A. provides clarity on when NOAA Fisheries would consider requiring that the EM data be maintained on a NOAA system.



# Available Resources on EM

## Electronic Technologies Policies

- National Electronic Technologies Policy Directive (04-115)
- EM Cost Allocation Procedural Directive (04-115-02)
- EM 3<sup>rd</sup>-Party Data Retention Procedural Directive (04-115-03)
- Procedural Directive on Applying Information Law to EM Data (04-115-04)

## National EM Workshops (2019 and 2020)

- Report and video recordings from workshops

## ICES Working Group to Integrate Technology in Fisheries (WGTIFD)

- Reports from 2019 - 2021; TORs approved 2022 - 2024

## Regional EM Programs

- Alaska
- West Coast
- Northeast

## Public Websites

- NOAAs ET Website and EM Story Map
- EM4Fish
- SAFET

**Brett Alger**  
**Electronic Technologies Coordinator**  
**NOAA Fisheries**  
**Brett.Alger@noaa.gov**

**Thank you!**





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# Fisheries Observing in the Northeast US Region

KB McArdle,  
Northeast Fisheries Science Center,  
Fishery Monitoring Research Division (FMRD),  
Fisheries Monitoring Operations (FMO) Branch Chief



# FMRD Observer Programs

## Northeast Fisheries Observer Program (NEFOP)

- ~ 40 Observers; deploy on all non-scallop, non-HMS (Highly Migratory Species) gear types
- Cover state (MMPA Cat I and II) & federally permitted vessels
  - Collection of protected species data & samples high priority

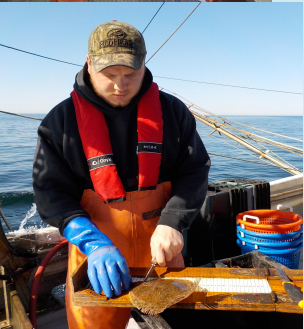


## At-Sea Monitors (ASM)

- ~ 85 ASM's; near real time quota monitoring groundfish sector vessels
- Cover gillnet, trawl and bottom longline gears
  - Minimal collection of protected species data



## Electronic Monitoring (EM)

- ~28 EM Reviewers (audit and MREM)
  - Cover gillnet, trawl and longline/handline gears
  - Minimal collection of protected species data
- 

# Northeast Fisheries Observer Program (NEFOP)

*Objective: Provide timely, high quality observer and at-sea monitoring data of commercial fisheries in the Northeastern US from Maine through North Carolina.*

- Federal contract with one observer provider company, AIS
- Collect a broad range of data (individual species and catch disposition, gear type/details, fishing effort and mesh size, haul level catch and discard, economic, biological - protected species data)
- Gear types; gillnet, trawl, longline, handline, pot/trap, dredge
- Coverage authority MSA (SBRM) and MMPA Cat I and II
  - SBRM - Sea days needed to achieve a precision-based performance standard and MMPA - seadays to improve precision of estimates of marine mammals within funding constraints
- Trip Selection
  - Pre-Trip Notification System (PTNS)
  - NEFOP Seaday Schedule



# 2022/2023 NEFOP Seaday Schedule *(2023/2024 not yet public)*

B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Ref #	Source	Fishery Description	Region	Geographic Area	Quarter 2 - 2022			Quarter 3 - 2022			Quarter 4 - 2022			Quarter 1 - 2023			Total Tasked
					APR 2022 Tasked	MAY 2022 Tasked	JUN 2022 Tasked	JUL 2022 Tasked	AUG 2022 Tasked	SEP 2022 Tasked	OCT 2022 Tasked	NOV 2022 Tasked	DEC 2022 Tasked	JAN 2023 Tasked	FEB 2023 Tasked	MAR 2023 Tasked	
0082	SBRM	Gillnet Small Mesh (<5.5") (complete), Mid-Atlantic Mix	MA	Mid-Atlantic		3			3			3			4		13
0037	SBRM	Gillnet Large Mesh (5.5-7.99") (complete), Mid-Atlantic Mix	MA	Mid-Atlantic		38			18			60			33		149
0031	SBRM	Gillnet Extra Large Mesh (>=8") (complete), Mid-Atlantic Mix	MA	Mid-Atlantic		92			6			57			36		191
0736	SBRM	Gillnet Small Mesh (<5.5") (complete), New England Mix*	NE	New England		0			3			0			0		3
0562	SBRM	Gillnet Large Mesh (5.5-7.99") (complete), New England Mix	NE	New England		0			5			0			0		5
0563	SBRM	Gillnet Extra Large Mesh (>=8") (complete), New England Mix	NE	New England		34			5			13			11		63
				<b>SBRM Gillnet Subtotal</b>		<b>167</b>			<b>40</b>			<b>133</b>			<b>84</b>		<b>424</b>
0509	MMPA	Gillnet Extra Large Mesh (>=8") (limited), New England Mix, S of Cape Cod	NE	New England	11	17	16	3	1	2	2	2	3	11	7	9	84
0517	MMPA	Gillnet Large Mesh (5-7.99") (limited), RI, S of Cape Cod	NE	New England	0	0	0	3	14	15	9	2	1	1	1	0	46
0717	MMPA	Gillnet (limited), Accomack County, VA, Bay	MA	Accomack County, VA	0	0	0	0	0	1	1	0	0	0	0	0	2
0744	MMPA	Gillnet (limited), Accomack County, VA, Ocean	MA	Accomack County, VA	1	1	1	1	2	5	5	0	1	0	0	1	18
0719	MMPA	Gillnet (limited), City of Hampton, VA, Bay	MA	City of Hampton, VA	1	1	1	1	1	1	2	1	0	0	0	1	10
0720	MMPA	Gillnet (limited), Mathews County, VA, Bay	MA	Mathews County, VA	0	1	1	0	1	4	4	0	0	0	0	0	11
0721	MMPA	Gillnet (limited), Northhampton County, VA, Bay	MA	Northhampton County, VA	0	1	0	0	1	2	1	0	0	0	0	0	5
0745	MMPA	Gillnet (limited), Northhampton County, VA, Ocean	MA	Northhampton County, VA	0	0	0	0	0	0	0	0	1	0	0	0	1
0737	MMPA	Gillnet (limited), Poquoson County, VA, Bay	MA	Poquoson County, VA	0	0	0	0	0	1	1	1	0	0	0	0	3
0723	MMPA	Gillnet (limited), City of Virginia Beach, VA, Bay	MA	City of Virginia Beach, VA	0	0	0	0	0	1	1	1	0	0	0	0	3
0746	MMPA	Gillnet (limited), City of Virginia Beach, Ocean	MA	City of Virginia Beach, VA	0	0	0	0	0	0	0	1	0	1	1	1	3
0747	MMPA	Gillnet (limited), York County, VA, Ocean	MA	York County, VA	0	0	0	0	0	0	0	1	0	0	0	0	1
0726	MMPA	Gillnet Large Mesh (>=5") (limited), Dare County, NC, Ocean 3-200nm	MA	Dare County, NC	0	0	0	0	0	0	0	0	0	1	1	1	3
0727	MMPA	Gillnet Large Mesh (>=5") (limited), Dare County, NC, Ocean 0-3nm	MA	Dare County, NC	0	0	0	0	0	0	0	1	1	1	1	1	5
0728	MMPA	Gillnet Small Mesh (<5") (limited), Dare County, NC, Ocean 3-200nm	MA	Dare County, NC	0	0	0	0	0	0	0	0	0	1	1	1	3
0729	MMPA	Gillnet Small Mesh (<5") (limited), Dare County, NC, Ocean 0-3nm	MA	Dare County, NC	1	1	2	1	1	1	3	1	1	0	1	0	13
0730	MMPA	Gillnet Small Mesh (<5") (limited), Hyde County, NC, Ocean 0-3nm	MA	Hyde County, NC	0	1	1	0	0	0	1	0	0	0	0	0	3
0742	MMPA	Gillnet Large Mesh (>=5") (limited), Carteret County, NC, Ocean 0-3nm	MA	Carteret County, NC	1	1	0	0	0	0	0	0	0	1	1	1	5
0743	MMPA	Gillnet Large Mesh (>=5") (limited), New Hanover County, NC, Ocean 0-3nm	MA	New Hanover County, NC	0	0	0	0	0	0	0	0	0	1	1	1	3

Gillnet fishery - 605 SBRM seadays; 350 MMPA seadays

# At-Sea Monitoring Program (ASM)

***Objective: Improve the reliability and accountability of catch reporting in the commercial groundfish fishery. Accurate catch data (landings and discards) are necessary to ensure catch limits are set at levels that prevent overfishing and to determine if catch limits are exceeded.***

- Industry Funded with 4 approved observer providers (AIS, EW, Fathom, NEMM)
- Collect a broad range of data with an emphasis on discarded catch (individual species and catch disposition, gear type/details, fishing effort and mesh size, haul level catch and discard, economic - No biological samples for protected species)
- Gear types: gillnet, trawl, longline, handline; Deploy observers from ports primarily in New England & New York
- Under Amendment 23 (implemented 01/09/23) target observer coverage increased to 100%
  - Per the Regional Administrator the target coverage was adjusted to 80% for FY 2022 and 90% for FY 2023, based on available funding
  - Pre-FY 2022, the coverage target was determined based on an analysis by GARFO
- Trip selection
  - Pre-Trip Notification System (PTNS)
- FY 2023, sector vessels may choose to use ASM, the audit model EM, or the maximized retention EM program to meet monitoring requirements

# Electronic Monitoring (EM) Overview

- Pared down data collection from ASM program.
- Focus on *allocated groundfish discards* only.
- 100% coverage requirement (EM system on all declared trips).
- Employ a third party model for EM services.
- All EM vessels are subject to NEFOP coverage.
- EM programs are open enrollment.
- Protected species interactions are not collected as part of operational EM programs by *EM service providers*.



# Electronic Monitoring Program Models:

- **Audit Model (May 2021):** Vessels fish as normal. Cameras collect information (species identification and length) on *discarded groundfish*.
  - EM validates captain's reported discarded groundfish.
  - 21 participating vessels (2 GG, 15 OT, 4 LL/HL).
- **Maximized Retention EM (MREM) Model (January 2023):** Vessels are required to retain and land all *allocated groundfish*, including fish below the minimum size limit.
  - EM used to verify vessel compliance with catch retention.
  - All MREM trips have 100% dockside monitoring coverage to collect information on landed groundfish.
  - 2 participating vessels (2 OT).

# Electronic Monitoring Coverage and Review Editing Rates

**EM System  
Active**  
(Cameras on)  
*100% of total trips*



**Primary  
Review**  
(EM Service  
Provider)  
*A subset  
of total trips*

**Data Audits**  
(Agency)  
*100% of  
primary trips*

**Video Review**  
(Agency)  
*50% of primary  
trips*

**Federal Records**



**EM Data QA/QC  
Procedures**



# EM Protected Species Data Collection

- **Exempted Fishing Program (EFP) Data Collection:** Protected species interactions documented as discarded catch items and classified at a generic species category (pinniped, cetacean, turtle, bird).
- **Operational Audit Program:** (May 2021- April 2022) EM providers documented protected species interactions as “presence/absence” and indicated in dataset with video timestamps. The agency collected detailed information of all interactions during review.

# EM Protected Species Data Collection

- ***Decision Point:*** Given the narrow focus of the Multispecies Fishery Management Plan, the agency determined we do not currently have the authority to require the collection of protected species data under EM programs.
- The Northeast Fisheries Science Center documented the potential impact of data loss on the region's ability to meet protected species mandates.

# EM Protected Species Data Collection

- **Current Operational Programs:** (May 2022 - current) EM service providers are not required to document protected species interactions.
  - Trips selected for an EM QA/QC procedures by the agency where data are verified or corrected are considered federal records.
  - The agency collects protected species interactions (*if documented*) on all federal records.

# Observer Program- Incidental Take

## Same But Different....

### Observer

- Collect full set of data
- Whole body samples encouraged
- Submit hard copies of data (paper logs)
- Protected species documentation is highest priority
- Must have college degree

- Held to individual program standards
- Must submit required photos
- Must tag dead marine mammals
- Must obtain at least an 85% on species ID test to complete training

### At-Sea Monitor

- Collect limited amount of data on protected species
- Whole body samples are not a requirement
- Submit data only electronically (no paper logs)
- Collecting fisheries based data is highest priority
- No degree required

# Observer Program- Incidental Take

## EM and ASM

- EM does not share common protocol with the NEFOP program
- Both ASM and EM:
  - Collect limited amount of data on protected species
  - Submit data only electronically (no paper logs)
  - Collecting fisheries based data is highest priority
  - No degree required

# Active Deterrent Devices → NEFOP vs ASM vs EM

## NEFOP

- Limited (MMPA) vs Complete trips (MSA)
  - MMPA Trips: Gathers pinger data on **all** trips with pingers present on gear
  - MSA Trips: Gathers pinger data **only when a marine mammal take occurs** (starting from pinger prior to take through rest of trip)
- Data Collected:
  - Number on Gear
  - Condition (Audible? Absent/Lost?)
  - Brand
  - Lights (Yes/No/Unk.)
  - Reasons for Unk. Values
  - Photos of Pingers

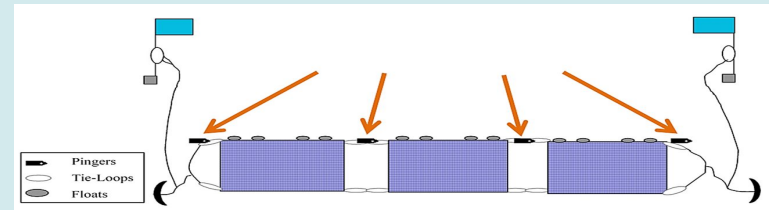
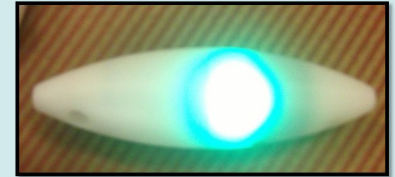
## ASM

- Only gathers information from the captain regarding the presence of, number present, and number of pingers lost from gear.



## EM

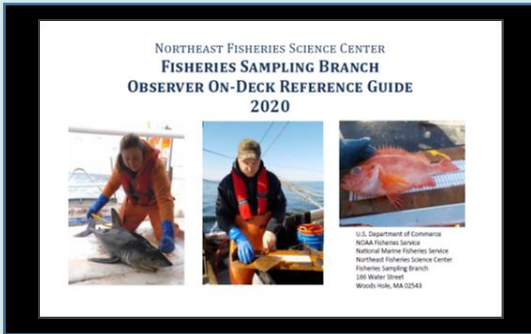
- Presence/absence





# Observer Program- Incidental Take

Once the porpoise is out of the gear, an observer uses their 'On Deck Reference Guide' as reference and follows sampling protocols for marine mammals



## INCIDENTAL TAKE DUTIES OVERVIEW

INCIDENTAL TAKE DUTIES OVERVIEW	
	<b>Marine Mammals (pages 47-54)</b>
Live Animals	<ul style="list-style-type: none"><li>*1. Photograph and video.</li><li>*2. Describe ID, condition, story.</li><li>*3. Release, comment on behavior and any gear remaining on animal.</li></ul> <b>DO NOT tag live marine mammals</b>
Dead Animals	<ul style="list-style-type: none"><li>1. Collect DNA sample.</li><li>*2. Tag using yellow marine mammal tag. Record and photograph any existing tags.</li><li>*3. Photograph.</li><li>*4. Describe ID, condition, story.</li><li>5. Collect body measurements.</li><li>6. Collect body temperature.</li><li>7. Determine sex.</li><li>*8. Release, comment on behavior and any gear remaining on animal.</li></ul>

\*ASM trips (groundfish and HVF): follow only starred steps.

\*ASM trips (groundfish and HVF): follow only starred steps.

# Observer Program- Incidental Take

Sampling  
begins



1. Get DNA  
sample from  
trailing edge of  
dorsal fin  
(NEFOP)



2. Put dead marine  
mammal carcass  
tag around hind  
flipper base  
(NEFOP + ASM)



3. Take all  
required photos  
(NEFOP + ASM)

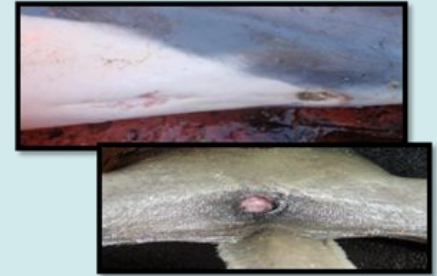
## ALL ANIMALS

Always include something for scale!

- Entire animal on all sides seen
  - Mammals: left/right
  - Birds/Turtles: dorsal/ventral
  - *Reminder: never flip a leatherback*
- Close-ups of head:
  - Each side (left/right with each eye visible)
- Close-up of gear entanglement
- Any wounds, marks, scars, or damages
- Any tags/bands, new or existing

## Marine Mammals (Takes)

- Teeth
- Genital area



# Observer Program- Incidental Take

## 4. Describe ID, condition, and story (**NEFOP + ASM +EM**)

- 3 ID characteristics
- 3 comments describing the animal condition
  - Always a comment on **odor**
  - Other comments we typically see are: colors true to life, body firm to touch, no skin sloughing from body, blood bright red
  - This also includes size estimates and description of any wounds/damage seen, fluid estimates, and description of left and right eye
- “Story”
  - This includes details about entanglement  how was net on body? Loose vs. tight?
  - How did you move animal around on deck? Any challenges? Any reason you couldn't completely sample?
  - Condition at Release  How was the animal put overboard? Any gear remaining? Did the animal sink or float?

# Observer Program- Incidental Take

## 5. Collect body measurements

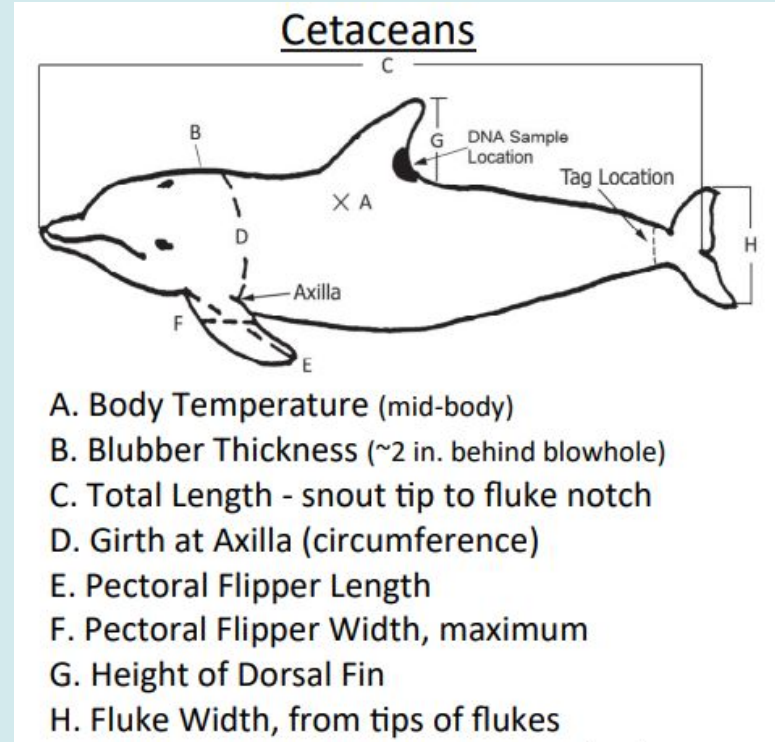
**(NEFOP)**



## 6. Collect body temperature

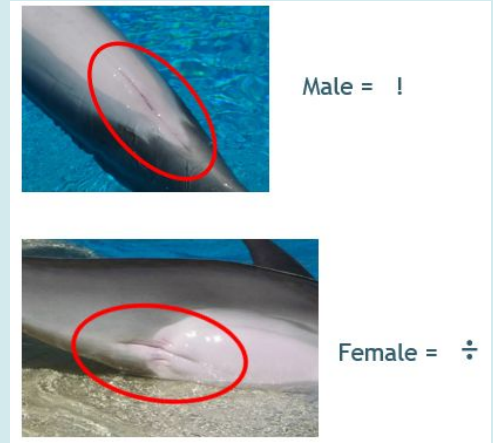
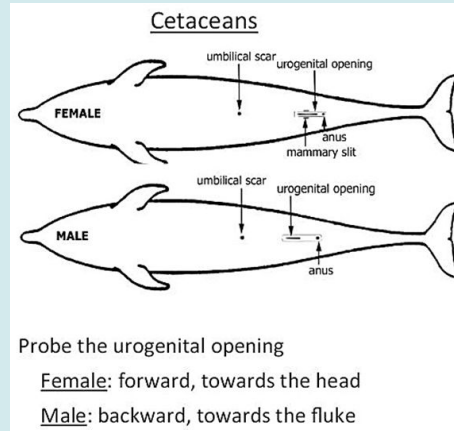


**(NEFOP)**



# Observer Program- Incidental Take

## 7. Determine Sex (NEFOP)



## 8. Release (NEFOP + ASM)

- If feasible to be brought in as a whole sample  placed in a safe location on deck for remainder of trip
- If the circumstances do not allow the animal to be safely kept on deck
  - if there is additional time extra samples like blubber and/or whiskers can be collected by NEFOP Observers only
  - The animal is then placed overboard

# Observer Program- Incidental Take

## After the event...

- Any media, basic data, and comments are uploaded once observer has landed for review
  - \*Final step for At-Sea Monitors as they are paperless
- NEFOP observers fill out paper log fields and record detailed comments on event (story, ID, condition)
  - ↪ Logs are sent to Tech Park and reviewed (with upload) by Incidental Take Leads
  - ↪ DNA samples are sent in cooler, checked in by TP staff, and then processed/stored by Incidental Take Leads



# Observer Program- Incidental Take

## 2016-2023 NEFOP, ASM, EM

### # of H.P. Takes

NEFOP + ASM

161

20,387 trips  
(2016-2023)

EM

12\*

2,234 trips  
(\*2020-2023)

### # of H.P. Samples

NEFOP

Fin Clip = 48

Whole = 8

# Clarifying Questions





**NOAA**  
**FISHERIES**

# Impact of Bycatch Data Quantity on Estimates & PBR

Kristin Precoda

Northeast Fisheries Science Center  
Protected Species Branch

# Context

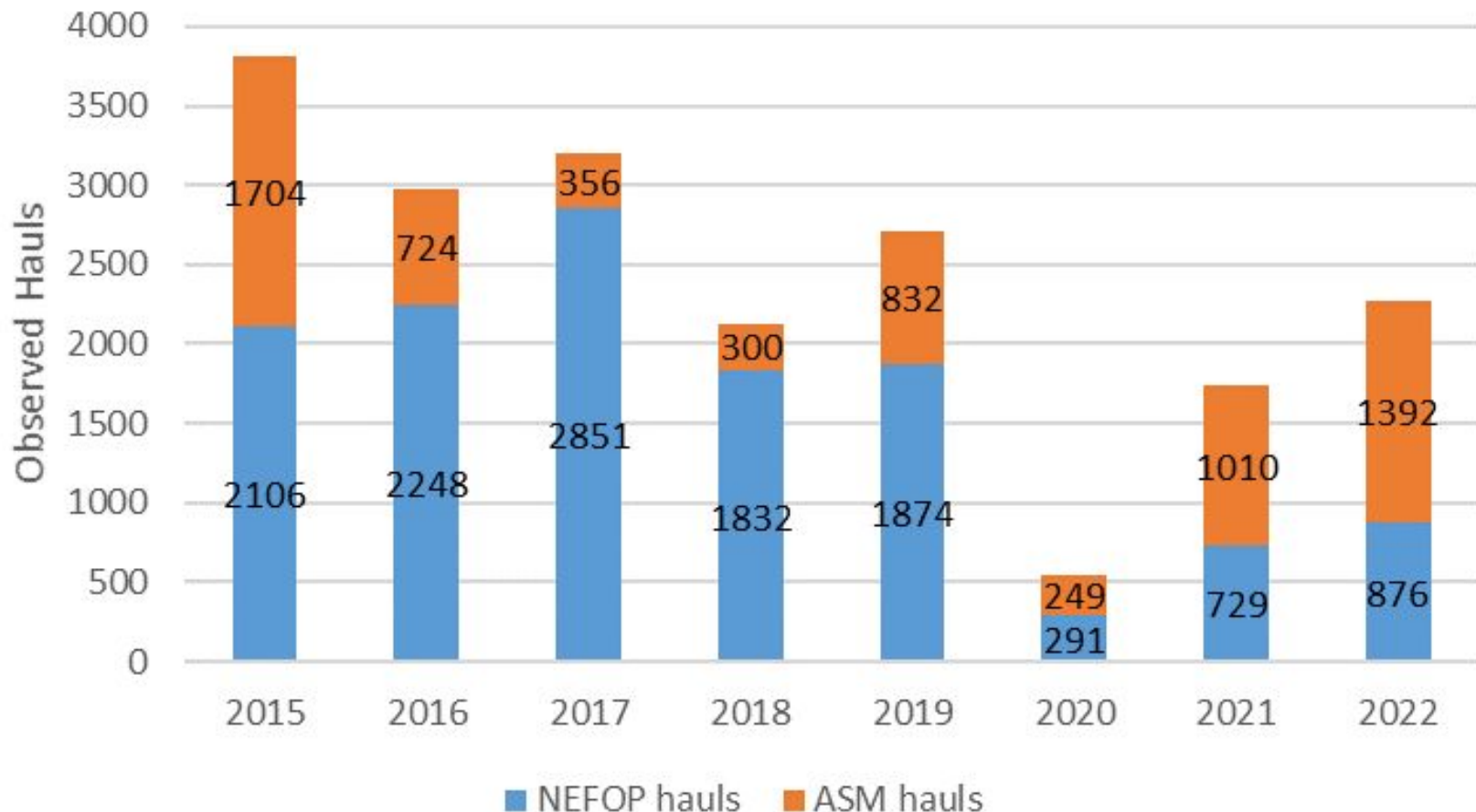
- Amendment 23 to the Northeast Multispecies Fishery Management Plan sets the at-sea monitoring coverage target at 40-100% of groundfish trips
- Vessels can opt to have video electronic monitoring (EM) instead of human at-sea monitoring
- Currently a fraction of EM videos become federal records, on which FMRD can collect incidental take information
  - Gathering of incidental take information from EM videos is evolving
  - Need to determine if/how EM information can be used in a statistically defensible manner
- Under Amendment 23, amount of data for marine mammal bycatch estimation could increase (high ASM coverage target) or decrease (if EM not usable or EM uptake increases and review rates fall)
- Pool of trips subject to NEFOP observation is not affected

# Preview: Conclusions

- The more data we have, the more accurate and precise the bycatch estimates are
- The more data we have, the better informed PBR can be
- What happens with EM could affect the data available for bycatch estimates
- Could be more important if bycatch gets close to PBR, there's a large decrease in available data, or EM leads to unrepresentative sampling

# NEFOP & ASM Observed Hauls Over Time

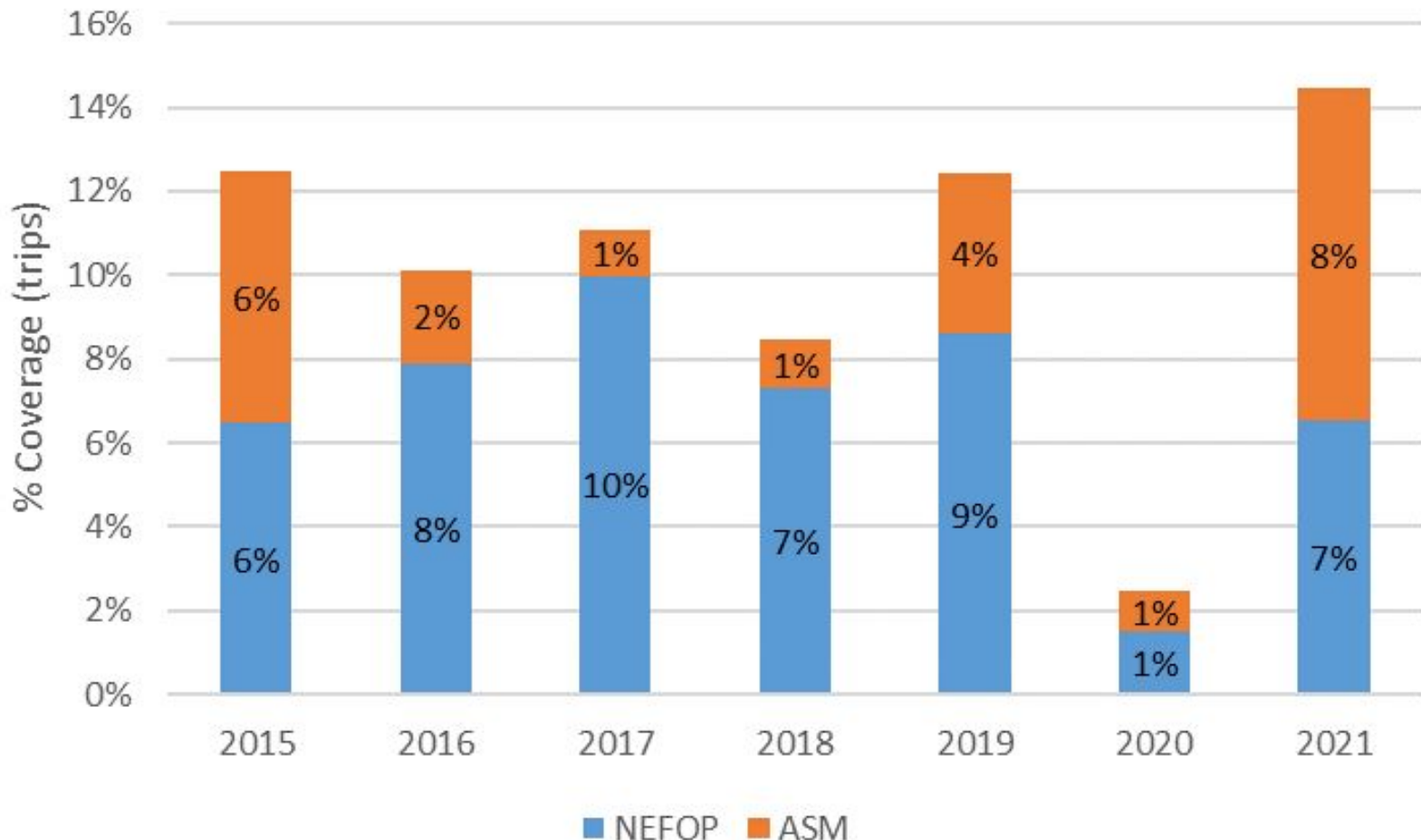
- On average, 35% of observed trips are ASM





# NEFOP & ASM % Coverage

- Mean trip coverage: NEFOP 7%, ASM 3%



# What happens to bycatch estimates if more or less incidental take data is available?

# It Depends... Several Moving Parts

- Bycatch rate, harbor porpoise abundance
- Fishing effort
- Level of NEFOP coverage
- Target ASM coverage
- Uptake of EM by vessels
  - How EM uptake affects representative sampling
  - If EM data can be used for mammal bycatch estimation
    - EM review rates are expected to fall over time
    - Animals can be difficult to see or accurately identify

# How to Determine Impacts of Observer Data Quantity?

- Approach 1: Simulate different scenarios. Set parameters to reasonable levels based on past history, vary the amounts of observer coverage, and perform estimates
- Approach 2: Subset actual past data, then perform estimates

## Approach 1: Simulation

Assume everything stays similar to recent years  
except level of ASM coverage changes

# Simulating Impact of Data Quantity on Bycatch Estimates: 8% NEFOP + Varying ASM

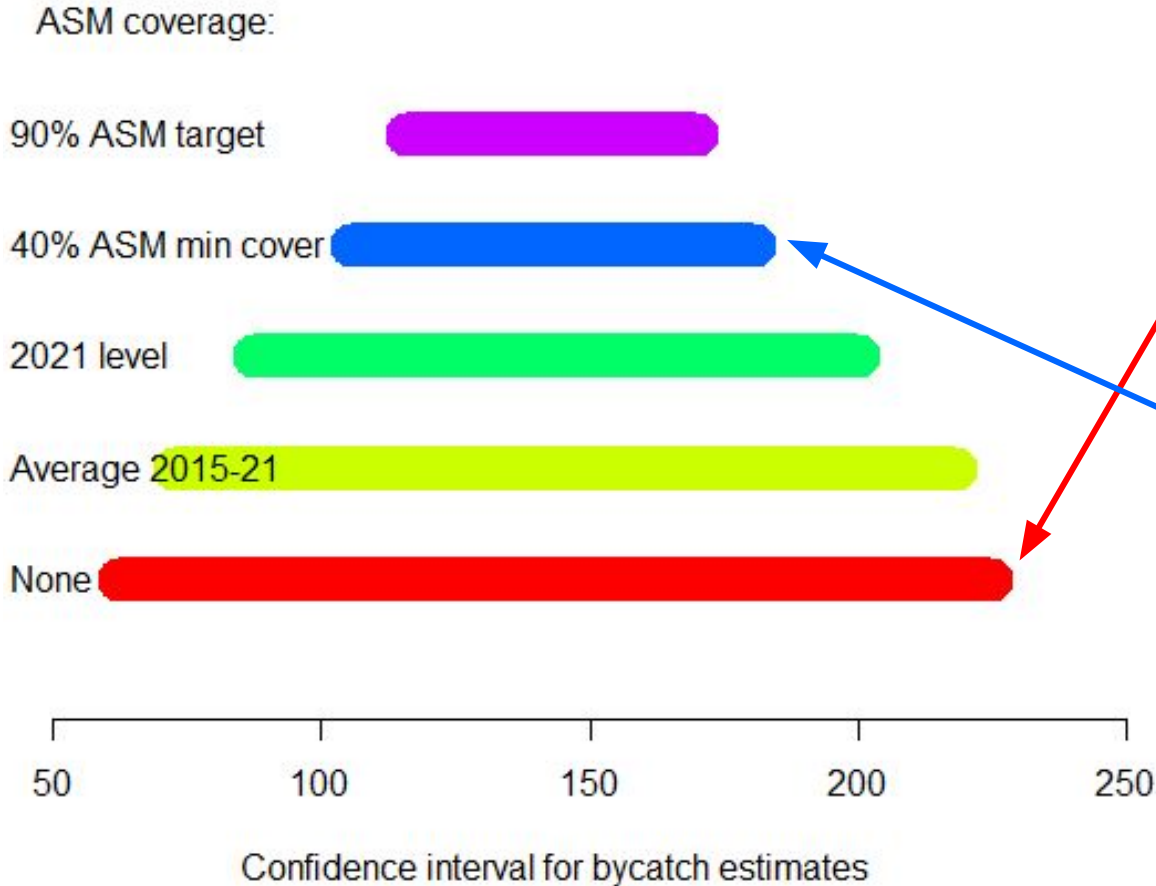
Simulated

Actual simulated bycatch: 142

If no ASM coverage (e.g., 100% EM & EM not usable), estimate likely between 62 and 225

If ASM coverage is at min ASM target with no EM, estimate likely between 106 and 181

Nutshell: The more data, the less the bycatch estimate depends on which exact trips were observed





# Simulating Impact of Data Quantity on Bycatch Estimates

- Over the next hundred years, bycatch estimates would average out to the same no matter how much data there is
- ...but in any one year, the estimate will bounce around, and bounce more if there's less data
- This means there's a greater chance of the estimate not being very close to the true bycatch if there's less data

Nutshell: Less data means more variability in estimates

# What Does “More Variable Estimates” Mean?

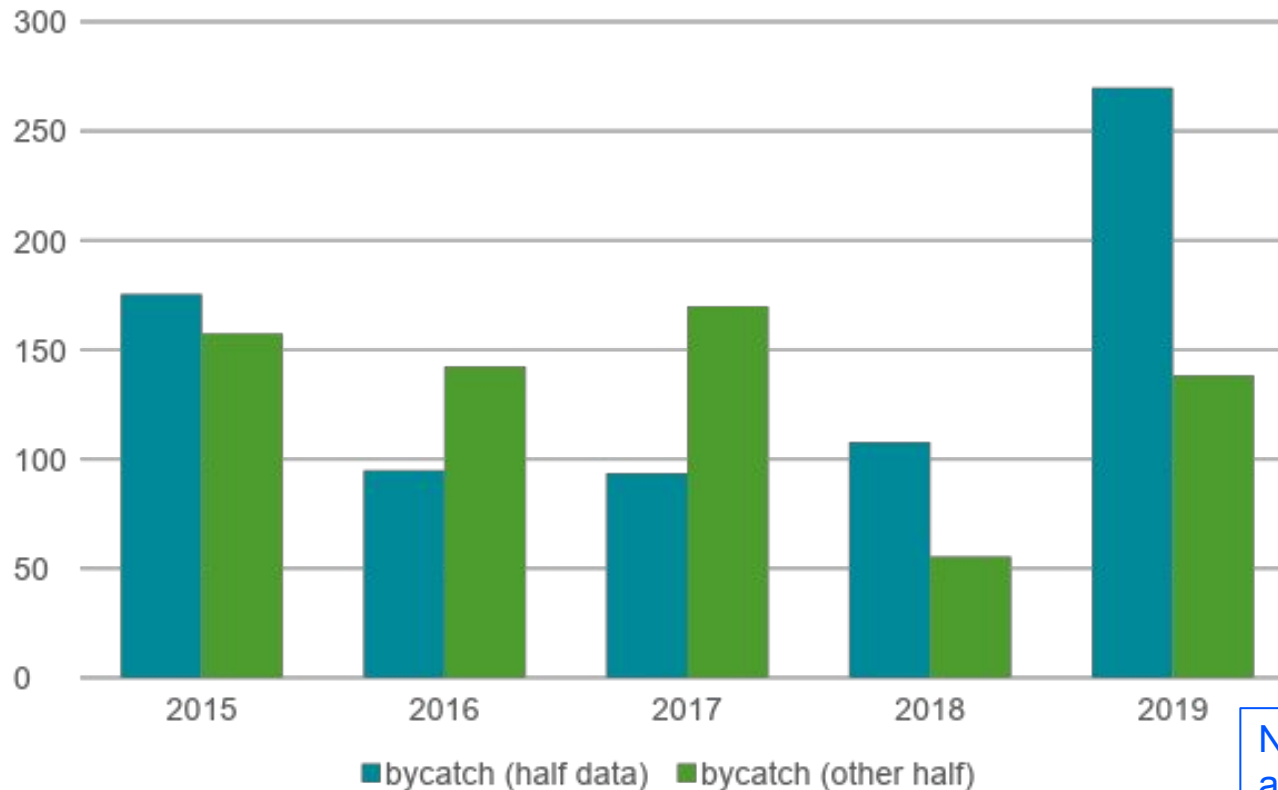
- What you see might or might not be representative of the whole picture, and you just don't know how representative it is



Photo Credit: Michelle Gadd, USFWS

# What Does “More Variable Estimates” Mean? <sup>IRL</sup>

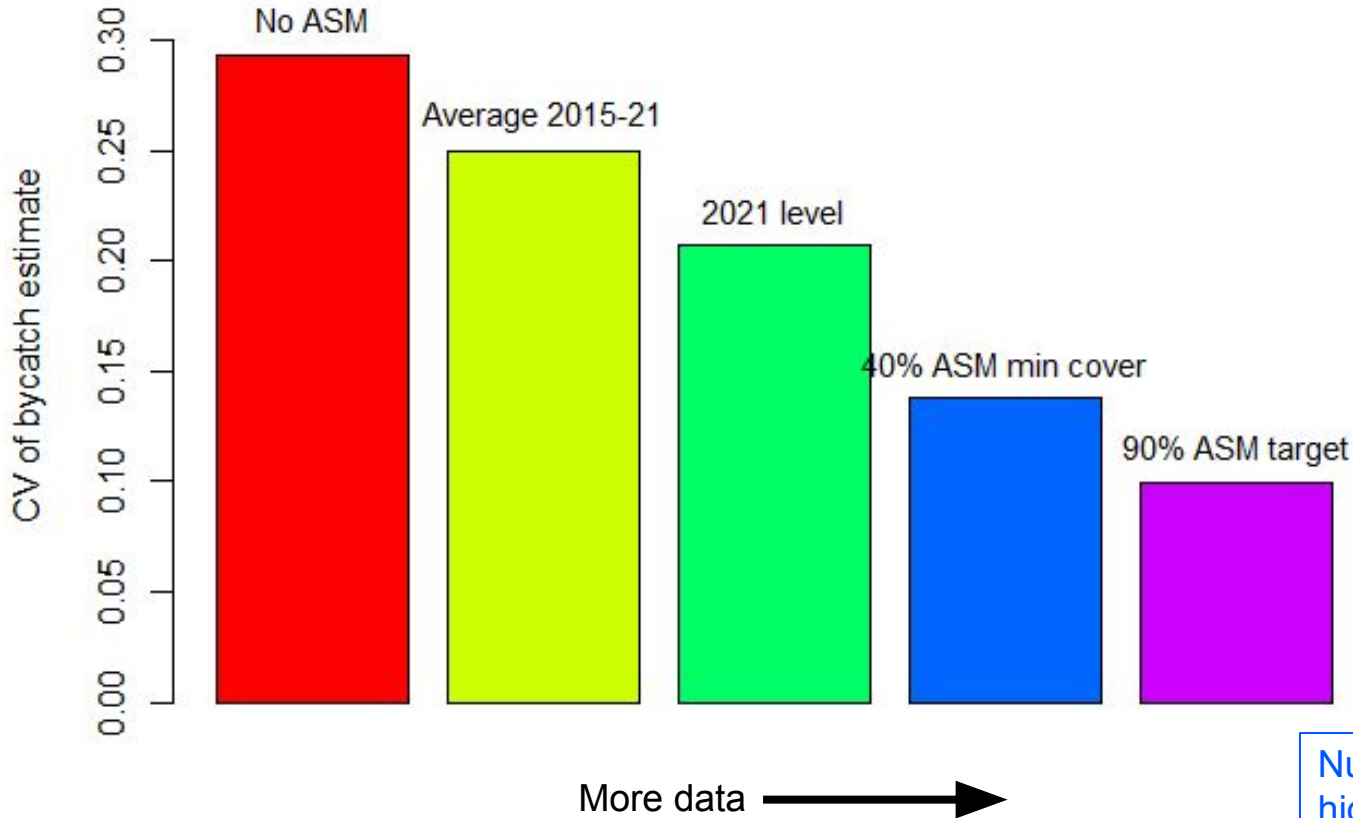
- Example: randomly split the observer data in half and estimate with each half



Nutshell: With a fixed amount of data, bycatch estimate depends on which trips have observers

# Simulating Impact of Data Quantity on Uncertainty of Bycatch Estimates

8% NEFOP coverage



These coefficients of variation (CVs) are for all of NE treated as one stratum, and are lower than the stratified CVs in the annual bycatch reports

CVs with real data will be higher

Nutshell: Less data means higher CV

# Impact of Reduced Observer Data on Bycatch Estimation

- Uncertainty in bycatch estimates can lead to a precautionary reduction in PBR
- PBR = (min population estimate)
  - \* (half the max net productivity rate)
  - \* (recovery factor)
$$= N_{\min} * R_{\max} / 2 * F_r$$
- Recovery factor  $F_r$  can decrease when uncertainty of bycatch estimates increases

Nutshell: PBR partly depends on uncertainty

# Impact of Bycatch Uncertainty on PBR

- Example PBR results for harbor porpoise:

$N_{\min}$	$R_{\max}$	Bycatch CV	$F_r$	PBR	
74,034	0.046	$\leq 0.30$	0.50	851	Conditions in 2020 stock assessment (Hayes et al. 2021)
		Between 0.30 and 0.60	0.48	817	
		Between 0.60 and 0.80	0.45	766	

Nutshell: Less data  $\Rightarrow$   
higher CV  $\Rightarrow$  lower PBR

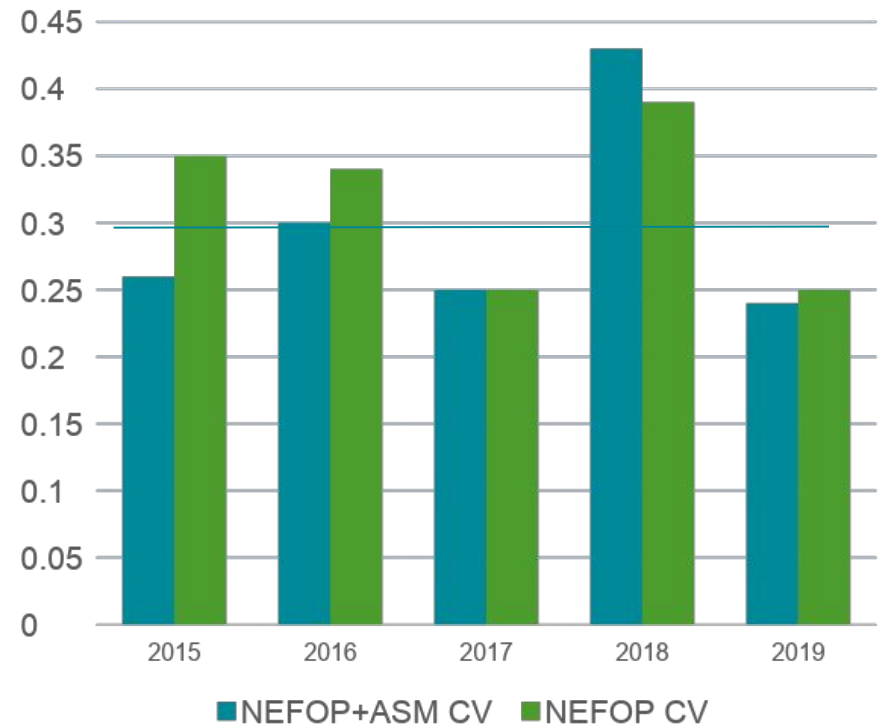
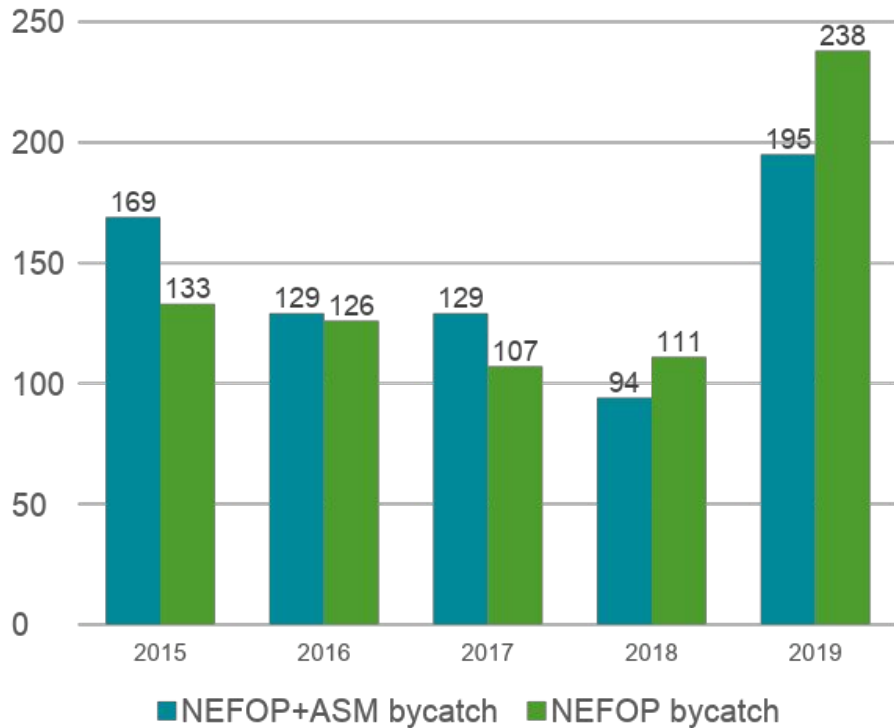


# Approach 2: Historical data

# Actual Data from Past Years

IRL

- Estimating bycatch with NEFOP + ASM or NEFOP data only



Nutshell: Less data ⇒  
bycatch estimate can go up or  
down; CV generally goes up

# Summary

# Example Numbers Based on Simulation

- If everything but observer data quantity remains approximately as in the past:

ASM coverage achieved	EM uptake	Number of trips with human observers	Bycatch estimate depends on which trips are observed. Estimate likely to be in the range...	(Somewhat underestimated) CV
40% (min target)	10% (current)	1895	104-183	0.14
40%	90%	621	74-214	0.25
90% (2023-4 target)	10%	3687	114-172	0.10
90%	90%	820	84-204	0.22

All these CVs are somewhat underestimated; some could exceed 0.30 (as we saw with real data, including or omitting ASM)

# Summary

- Amendment 23 might increase or decrease the number of trips with at-sea monitors
- If data quantity decreases, estimates will be more variable and have a higher chance of being far from the true bycatch
- Estimate too high  $\Rightarrow$  additional regulation
- Estimate too low  $\Rightarrow$  unsustainable impact on the protected species
- Greater uncertainty could lead to a lower PBR

Thank you

# Clarifying Questions





# Break!

Meeting will resume at 1:55 PM



# Discussion

- Open reflection and discussion on issues raised in presentations
- Opportunity to put forward ideas or generate proposals for the Team to consider

*If proposals are raised for formal consideration:*

- *After an opportunity to discuss and refine, we may formally test for support.*
- *We can adopt this process for more than one idea.*



# Research Priorities

# Current Research Priorities - Fishery Bycatch

Priority	Research Needs
1	Evaluate bycatch reduction using higher frequency pingers (50-100 kHz)
1	Test the effectiveness of different gear modifications (e.g., thicker twine, barium sulfate gillnets) for reducing the bycatch of harbor porpoises.
1	Development of a low-cost device or technology that would allow industry to test the functionality of their pingers in the field. This could include making modifications to pingers themselves to demonstrate whether or not the pinger is operating (e.g., incorporate a blinking light).
2	Development and evaluation of a device to document and monitor soak times of gillnet gear.
3	Test the use of and effectiveness of pingers in HPTRP management areas in the Mid-Atlantic versus the current gear modification requirements.

# Current Research Priorities - Biological Info

Priority	Research Needs
2	Analyze harbor porpoise behavior and use of sonar around gillnets (e.g., pingered, not pingered, gear modifications being used) in the Gulf of Maine and/or Mid-Atlantic using underwater video cameras and/or passive acoustics.
3	Conduct research into the visual capacity of harbor porpoises that may be utilized in the development of potential deterrent and exclusion measures
4	Evaluating changes in distribution of herring resulting from herring fishery (mid-water trawlers) pressure. Analyze the effect this may or may not have on the distribution of harbor porpoises

# Discussion

1. Changes/additions to priorities
2. Any priorities to remove?

# Opportunity for Public Comment

Public comments on issues related to the agenda are welcome

- Raise hand to indicate interest to comment
- May need to adjust length of comments if many speakers
- Please keep all comments...
  - *on-point*
  - *respectful*
  - *focused on issues within the HPTRT's purview*
- Facilitators will intervene if ground rules are not honored, and members of the public may be asked to leave the meeting

For follow-up, email: [jennifer.Goebel@noaa.gov](mailto:jennifer.Goebel@noaa.gov)







**NOAA**  
**FISHERIES**

Thank you for joining us!

Questions? Contact Team Coordinator  
Jennifer Goebel @ [jennifer.goebel@noaa.gov](mailto:jennifer.goebel@noaa.gov)