On-Demand Gear Research & Development

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NEFSC Gear Team & The Gear Lending Library

Goals:

- Provide *fishermen* with technology experience
- Assist *manufacturers* in improving gear designs and durability
- Provide *policy makers* data and insight about the possibilities: benefits and constraints of fishing without vertical lines

Provide fishermen with tools to fish when persistent buoy lines are restricted.

On-Demand Fishing Explainer

- Provides options to fish in areas closed to gear using buoy lines (i.e., endlines or vertical lines)

- Removes the need for a persistent vertical buoy line in the water column
  - On-Demand units are deployed at the end(s) of a standard trap/pot trawl or gillnet set
  - The unit receives a signal (acoustic or pre-set timer) that triggers a release mechanism
  - The unit ascends to the surface using buoys and line, or an inflated lift bag
  - The fishermen hauls the unit to retrieve the gear

- On-Demand rigged gear is fished with fewer or no surface buoys. Neighboring vessels and law enforcement need to be able to “see” or detect sub-surface gear.

Two Components of On-Demand Fishing

On-Demand Retrieval Devices (replaces the end line)

Pop-up Buoy

Inflatable Lift Bag

Buoyant Spool

Timer

Digital Gear Marking and Sharing (replaces the surface markers)

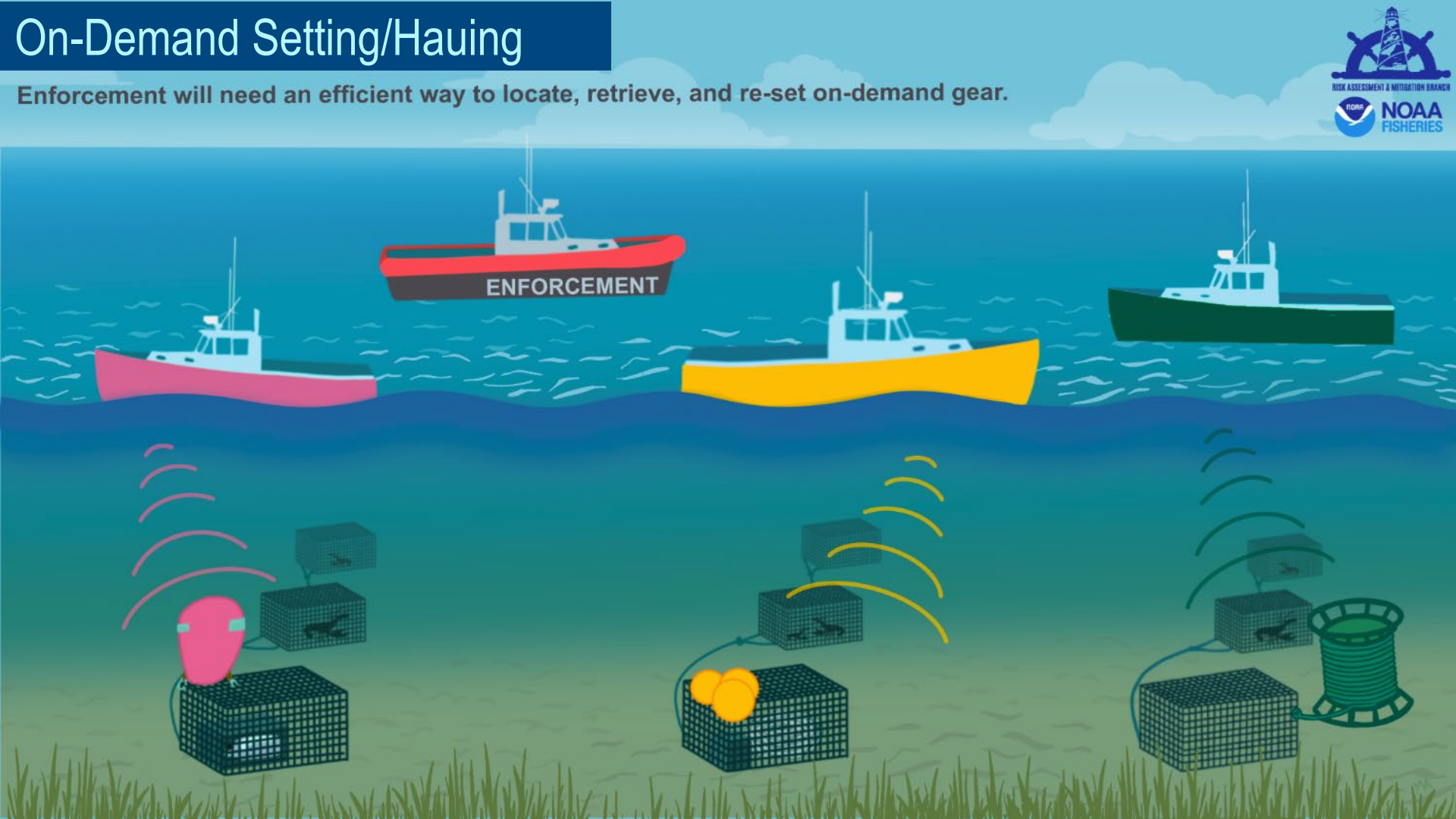
Trap Tracker App

EarthRanger

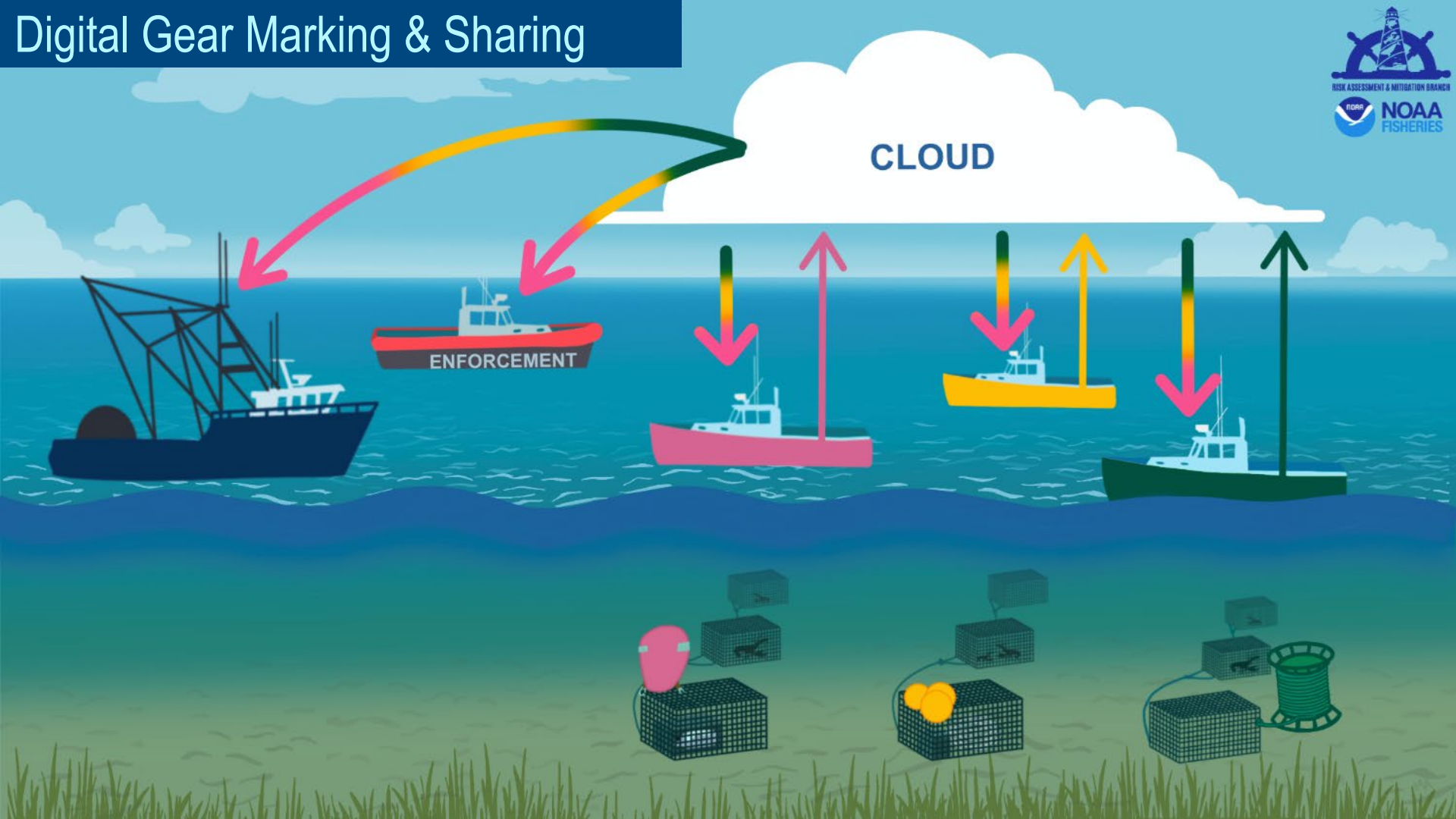
TimeZero Chart Plotter

On-Demand Setting/Hauling

Enforcement will need an efficient way to locate, retrieve, and re-set on-demand gear.



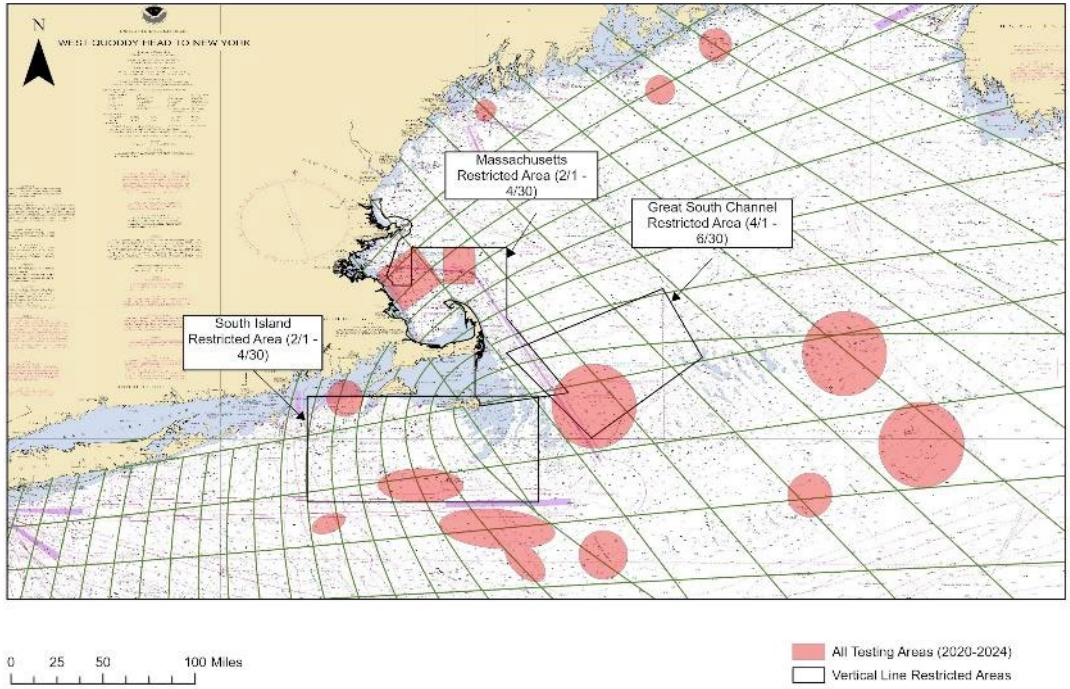
Digital Gear Marking & Sharing



The Research Fleet

- 70+ partner vessels
  - 4 fixed gear fisheries
  - 20 mobile gear vessels
  - 5 states
- Over 700 on-demand devices in the Gear Lending Library
- Over 14,500 hauls
  - Hybrid trawls in open areas
  - Fully “ropeless” in closed areas

Open Season On-Demand Gear Research Areas (subject to change)



Results: All Trials Annual Totals

2020	2021	2022	2023	2024	2025	Program Totals:
63%	85%	89%	86%	91%	91%	89%
3 Vessels	10 Vessels	22 Vessels	33 Vessels	39 Vessels	34 Vessels	56 Vessels
3 Manufacturers	7 Manufacturers	8 Manufacturers	7 Manufacturers	7 Manufacturers	8 Manufacturers	10 Manufacturers
79 Hauls	623 Hauls	1,851 Hauls	2,714 Hauls	6,796 Hauls	2,524 Hauls	14,588 Hauls
50 Successful	529 Successful	1,645 Successful	2,322 Successful	6,192 Successful	2,298 Successful	
29 Unsuccessful	94 Unsuccessful	206 Unsuccessful	392 Unsuccessful	604 Unsuccessful	226 Unsuccessful	
					As of 07/17/2025	*As of 07/17/2025*

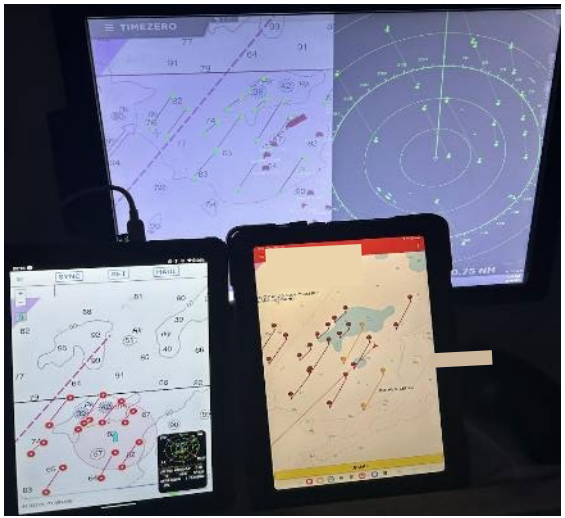
Completed Haul: when on-demand gear is hauled as intended.

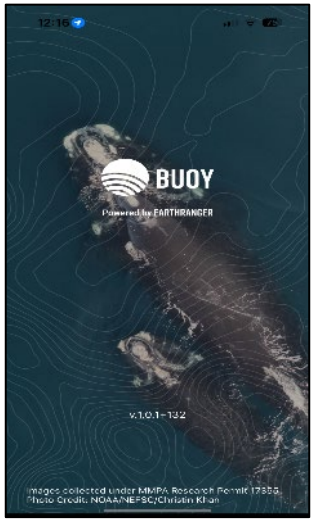
Incompleted Haul: all situations where the on-demand device did not surface as expected, but gear was recovered using alternative methods.

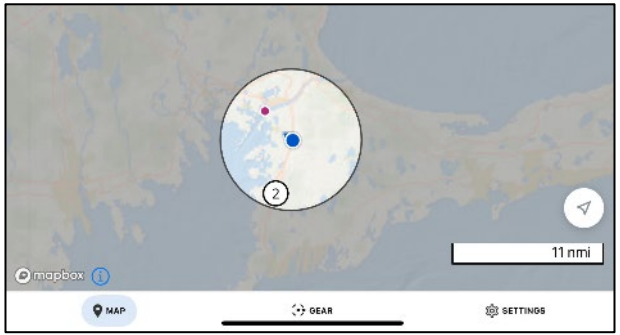
Gear Loss: 28 on-demand devices and 546 traps across 15,189 trawl sets. Fewer than 1 in 500 hauls led to the loss of a unit *(as of 07/17/2025).*

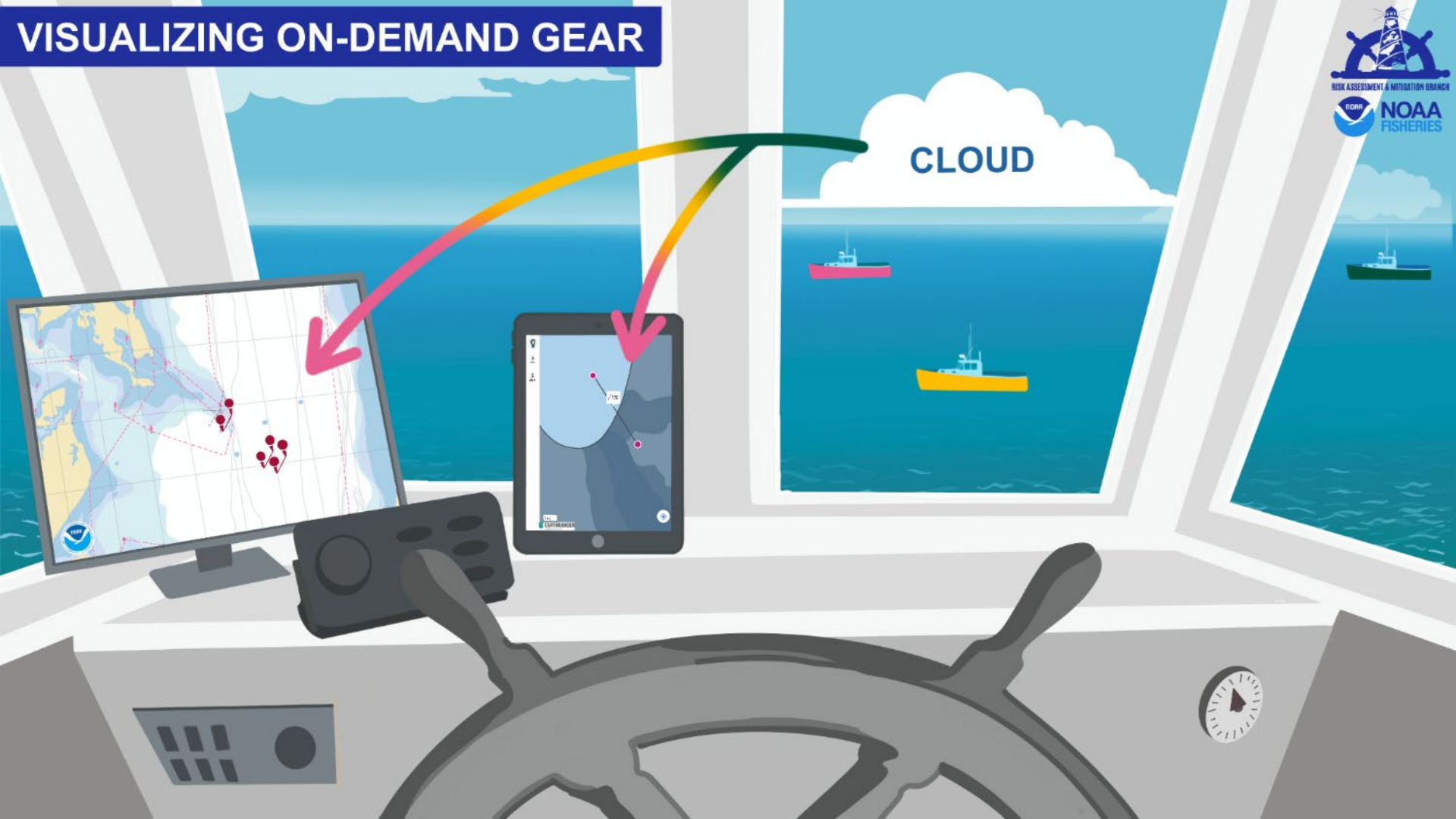
Digital Gear Marking Tech. Advances

- Data visualization is available across all on-demand manufacturers apps, TimeZero, and the ERBuoy app
- On-demand gear positions are, currently, visible within a 5-mile radius to all users
- Functionality largely relies on Internet connectivity, outfitting vessels with Starlink
- ABI Research assessed current and expected future satellite comms. market: hardware, service options, and pricing
- Working with mobile vessels across these efforts, feedback is positive








VISUALIZING ON-DEMAND GEAR
CLOUD
RISK ASSESSMENT & MITIGATION BRANCH
NOAA FISHERIES

Digital Gear Marking - Data Sharing

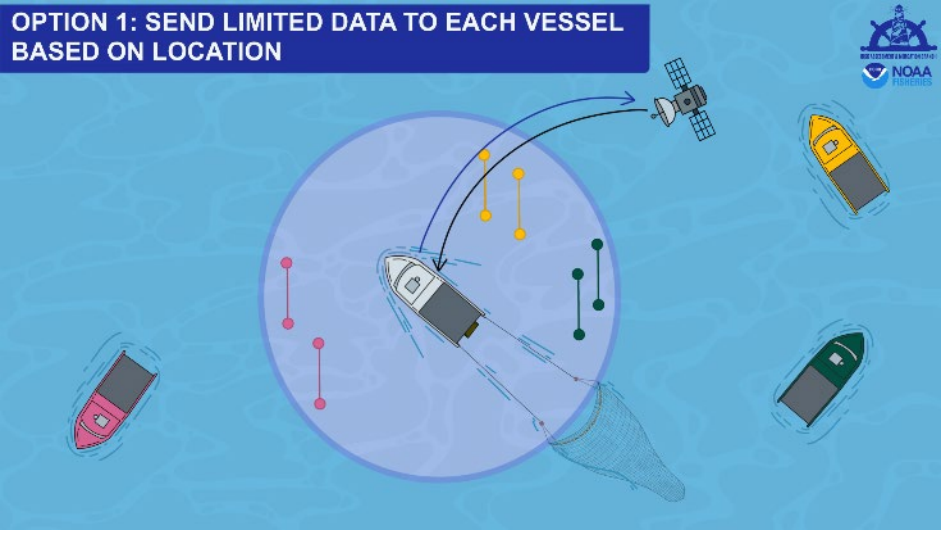
Options to send digital gear marks to other vessels:

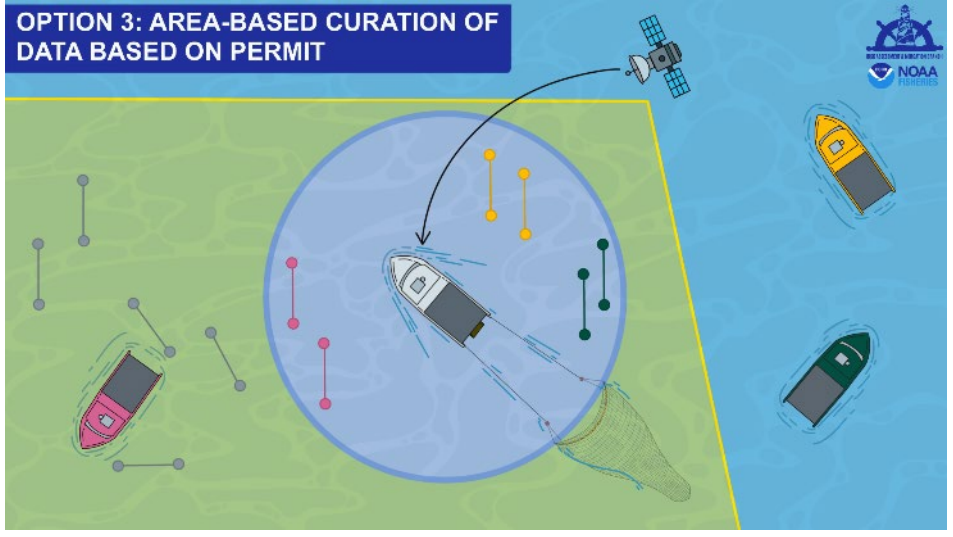
1. **Send limited data to each vessel based on location**
   a. Prioritizes gear location privacy and keeps data transmission costs low.
   b. But, need to know the location of all recipient vessels.

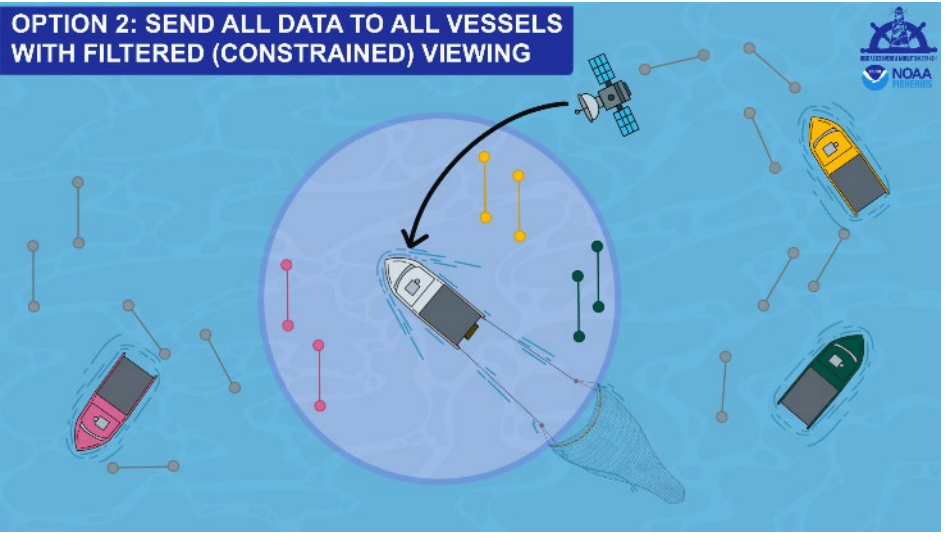
1. **Send all information to all vessels with filtered (constrained) viewing**
   a. Technologically simple and doesn't require knowledge of recipient vessels locations.
   b. Additional on-board filtering technology to only display gear within a smaller distance range.
   c. Data transmission costs could be higher.

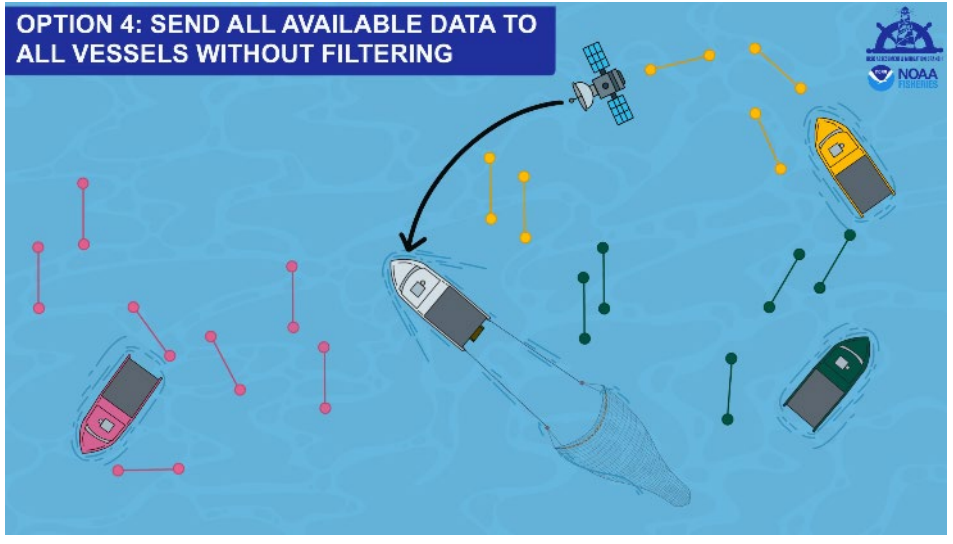
1. **Area-based curation of data based on permit**
   a. Send geographically specific information to vessels based on permits.
   b. Could use annual declarations or PTNS to do the same, but may require action by vessels.

1. **Send all information to all vessels without filtering**
   a. Data transmission costs may be highest
   b. Limited privacy for on-demand fishing locations, but no tracking of vessel locations


OPTION 1: SEND LIMITED DATA TO EACH VESSEL BASED ON LOCATION
NOAA FISHERIES


OPTION 3: AREA-BASED CURATION OF DATA BASED ON PERMIT
NOAA FISHERIES


OPTION 2: SEND ALL DATA TO ALL VESSELS WITH FILTERED (CONSTRAINED) VIEWING
NOAA FISHERIES


OPTION 4: SEND ALL AVAILABLE DATA TO ALL VESSELS WITHOUT FILTERING
NOAA FISHERIES

Current Focus Areas

- Involve all interested fishermen
- Expand tests of digital gear marking & sharing technologies
- Trial new and emerging on-demand systems
- Analyze data from 2020-2024
  - Fishermen
    - Success of each crew over time (experience)
    - Success by depth, fishing area, and vessel length
    - Timing & success compared to traditional gear
  - On-Demand Systems
    - Hauls per individual device and disposition
    - Success of each brand and each model over time
    - Repair and maintenance frequency

Questions?

For More Information:

For more information on On-Demand research or other experimental fishing gear, please visit the Gear Research Team's website by going to https://www.fisheries.noaa.gov/ and searching *Protected Species Gear Research*.
For general inquiries, contact the Gear Research Team at nec.gearlibrary@noaa.gov

Joint Mid-Atlantic & New England Council Omnibus Alternative Gear-Marking Framework Adjustment

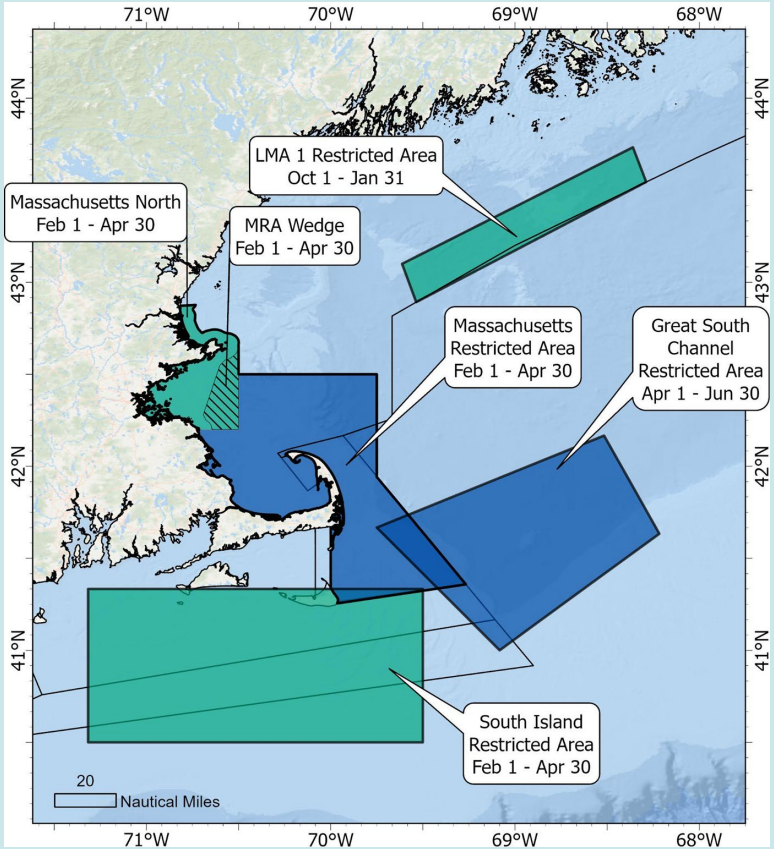
ASMFC Lobster Board Update

August 2025

Allison Murphy, Caroline Potter

Take Reduction Plan (TRP): Seasonal Closures to Buoy Lines

Current Northeast Lobster/Jonah crab Trap/Pot Restricted Areas



In 2021, TRP closures were expanded and modified from seasonal fishing closures to *persistent buoy line* closures

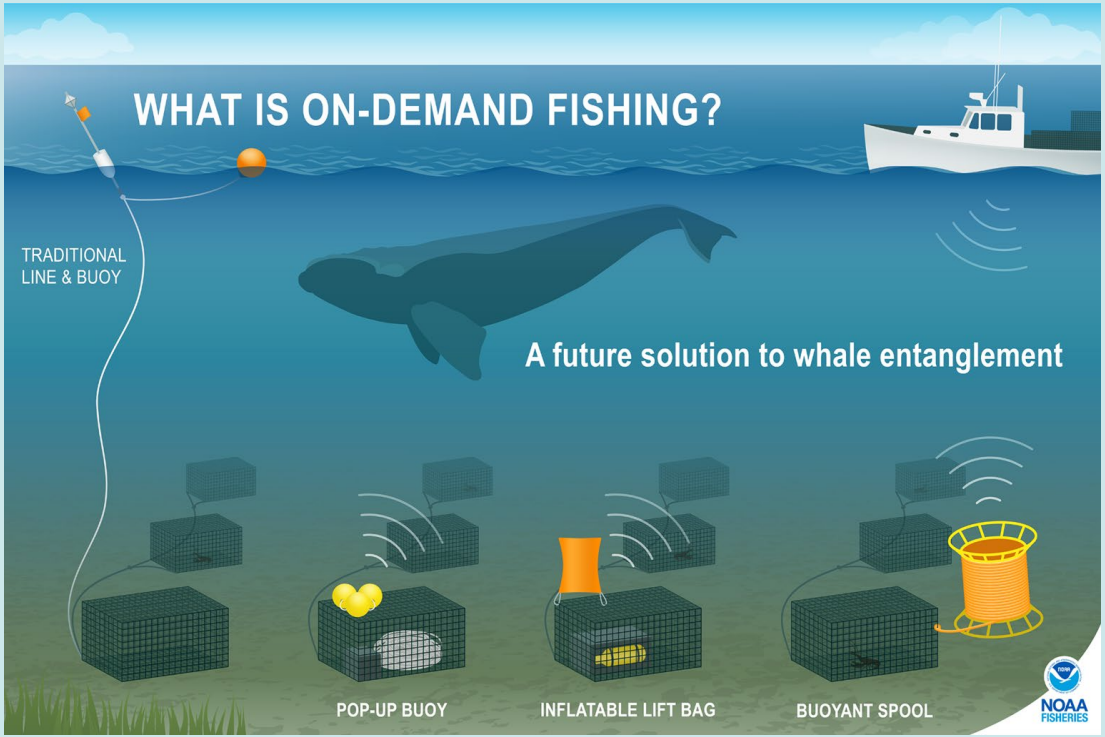
Federal fishery regulations in 50 CFR §648 and §697 require surface marking of fixed gear to enable other fishermen to see and avoid gear - preventing access to these areas

Action Summary & Current Requirements

- Current gear-marking regulations require radar reflectors, pennants, highflyers, buoys, etc.
- Joint Council Framework Adjustment considers allowing the use of fixed gear without persistent buoy lines and surface markers in Council FMPs
  - Provide input on functional equivalence to surface markers and approval process
- Rulemaking would consider changes to gear-marking requirements would apply to all fixed-gear fisheries in the Greater Atlantic Region
  - Plan to define functional equivalence and describe approval process

Solution

- Revise regulations to allow for alternative (digital) gear marking
- Regulations would require current gear marking requirements OR a functionally equivalent alternative



Alternative Set 1: Authorization of Approved Gear-Marking Alternatives

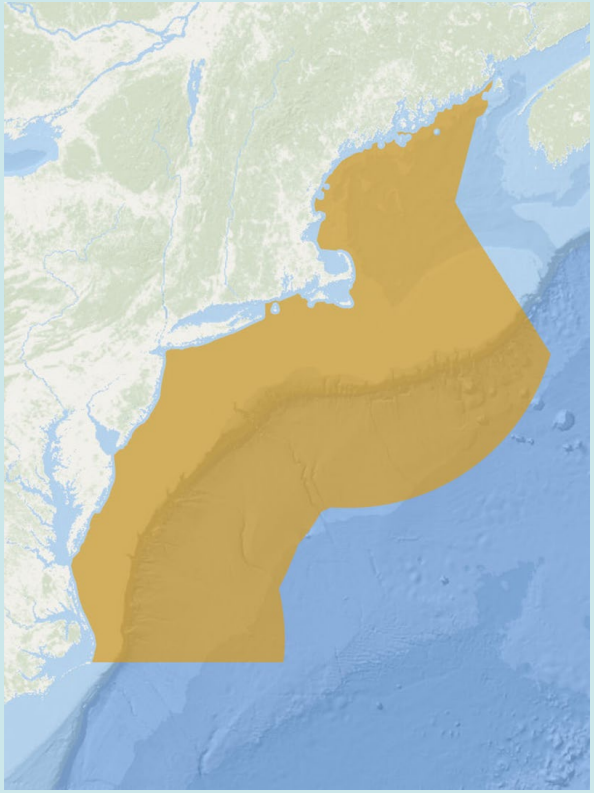
Alternative 1A: No Action. This alternative would not allow for alternative gear marking and would continue to require current surface markings (radar reflectors, highflyers, etc.).

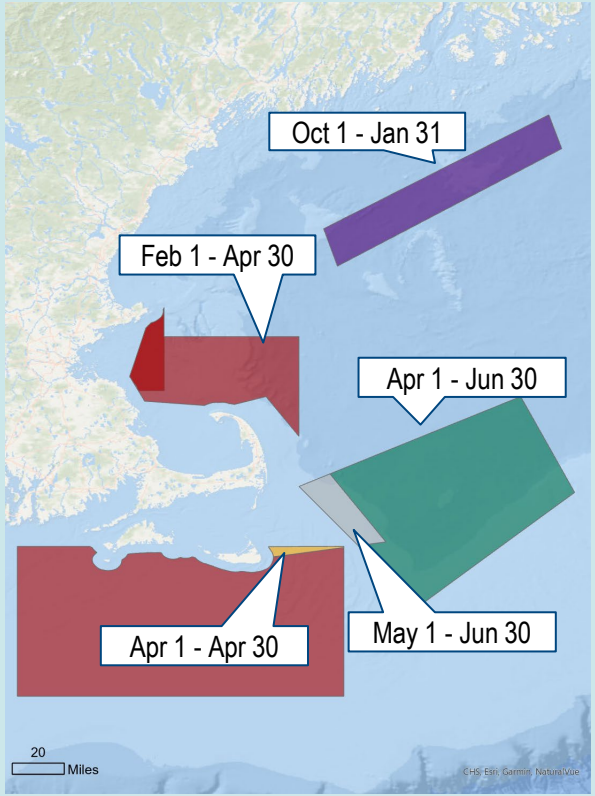
Alternative 1B: Region-wide alternative gear marking. would allow the use of alternative gear marking in all Federal waters within the Greater Atlantic Region.

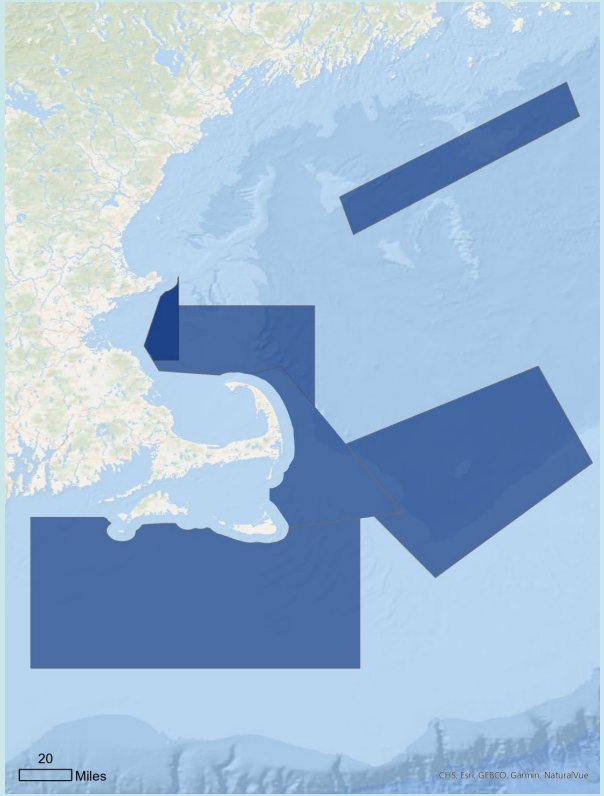
Alternative 1C: Spatially and temporally limited alternative gear marking. would allow alternative gear marking during and within persistent buoy line seasonal restricted areas established by the Atlantic Large Whale Take Reduction Plan.

Alternative 1D: Spatially limited alternative gear marking. would allow alternative gear marking within persistent buoy line seasonal restricted areas established by the Atlantic Large Whale Take Reduction Plan during seasonal closures and in the same geographical areas when closures are not in place.

Alternative Set 1: Authorization of Approved Gear-Marking Alternatives







1B: Region-wide

1C: Spatially & temporally limited

1D: Spatially limited*

Alternative Set 2: Requirements to Use Approved Gear-Marking Alternatives

Alternative 2A: No Action. This alternative would not require a person to demonstrate knowledge of any approved gear-marking alternatives.

Alternative 2B: Educational Requirement. This alternative would require a person to demonstrate knowledge of an approved gear-marking alternative.

Functional Equivalence

Gear-marking alternatives would be approved based on functional equivalence to current gear marking

Essential Elements of a Functional Equivalent

- **Detectability**: ocean users are able to locate gear
- **Retrievability**: gear must have an identified means of retrieval
- **Identification**: gear is marked with identifying information
- **Enforceability**: enforcement can locate, retrieve, and redeploy gear

Beneficial Elements of a Functional Equivalent

- **Viewing distance**: gear can be detected from a similar minimum distance as current surface markings
- **Set direction**: gear's set direction is identifiable
- **Timing**: gear location info is accessible by others at the time of deployment and while it persists in the water

Action Timeline

April 2025	NEFMC & MAFMC initiated action
May 2025	ASMFC received updates
June 2025	NEFMC & MAFMC received updates
August 2025	**ASMFC receives updates**
September 2025	NEFMC takes final action
October 2025	MAFMC takes final action; ASMFC receives updates on final action
2026	Rulemaking

Even after rulemaking, gear-marking alternatives would need to be approved before use

Next Steps and Opportunities for Input

- Research
  - Participate in NEFSC research and testing
- Regulatory Changes
  - Council AP meetings, August NEFMC ODWG Meeting, September NEFMC and October MAFMC meetings
  - Rulemaking
- Data Standards and Governance
  - Request for Information

Questions?

Atlantic States Marine Fisheries COMMISSION

Stock Assessment Update

August 5, 2025

Atlantic States Marine Fisheries COMMISSION

Timeline

- Report went to Peer Reviewers late last week
- Preliminary call with the Peer Review Panel later in Aug
- Peer Review Workshop: Sept 2 – 5
  - Woods Hole, MA
- Present Assessment and Peer Review Reports to the Board: October 2025

Questions?