


# Halibut Industry Meeting

January 13, 2022




[www.maine.gov/dmr](http://www.maine.gov/dmr)

# Housekeeping/Ground Rules

- ▶ Public comment encouraged following presentations
    - If you have a question/comment, please raise hand in Teams
  - ▶ Please stay on mute until you are called upon to speak to minimize echo's
  - ▶ The chat box is to type a question or to let us know you have a technical issue; it is not for personal chats or comments
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# Overview

- ▶ Management Overview
    - Federal quotas
    - Accountability measures
    - State level mgmt.
  - ▶ Trends in Maine fishery
    - Participants, tags usage, landings
  - ▶ Discussion on Maine halibut fishery
  - ▶ Update on DMR Tagging work
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# Federal Halibut Mgmt.

- ▶ Halibut is managed by the New England Fishery Management Council
- ▶ Current quotas for FY2021 & FY2022
  - ABC = 101 mt
  - ACL = 97mt
    - Groundfish Sub-ACL = 73mt
    - Other sub-component = 3.5mt
    - State Waters Sub-component = 20mt
- ▶ Note: difference between ABC and ACL is 4mt

# Federal Accountability Measures

Severe accountability measures (AMs) if ABC is exceeded

- ▶ No vessel issued a federal permit for any fishery management plan may fish for, possess, or land Atlantic halibut for the fishing year in which the AM is implemented
  - This means if you have a federal permit (including lobster), you would not be able to possess halibut
- ▶ For federal NE multi-species permit holders, there are also area AMs which either require specific gear configurations or act as seasonal closures

# How has Maine been doing?

FY	State Waters Sub-Component	Catch (mt)
2016	25	47.8
2017	25	31.7
2018	21	31
2019	21	21.6
2020	21	12.8
2021	20	TBD

- With the exception of 2020, we have exceeded the state waters sub-component
- Catch has been decreasing
- What happened in 2020? Covid impacts?

# How has Maine + Federal fishery been doing?

FY	State Waters Sub-Component	State Waters Catch	Groundfish Sub-ACL	Groundfish Catch	ABC	Total Catch
2016	25	47.8	91	56.9	124	108
2017	25	31.7	91	68.3	124	107.4
2018	21	31	77	70.8	104	103.3
2019	21	21.6	75	79.8	104	102.9
2020	21	12.8	77	51.9	106	65.8

# Maine State Waters Regs

## ▶ Season

- May 18 – June 13

## ▶ Size Restriction

- 41” head on; 32” head off

## ▶ Tag Requirements:

- 25 tags per year for commercial and party/charter
- 5 tags per year for recreational

## ▶ Hook restrictions:

- Size 14/0, 15/0, 16/0 circle hooks only
- 100 hooks per angler for recreational and party/charter
- 250 circle hooks for commercial fishermen w/ endorsement

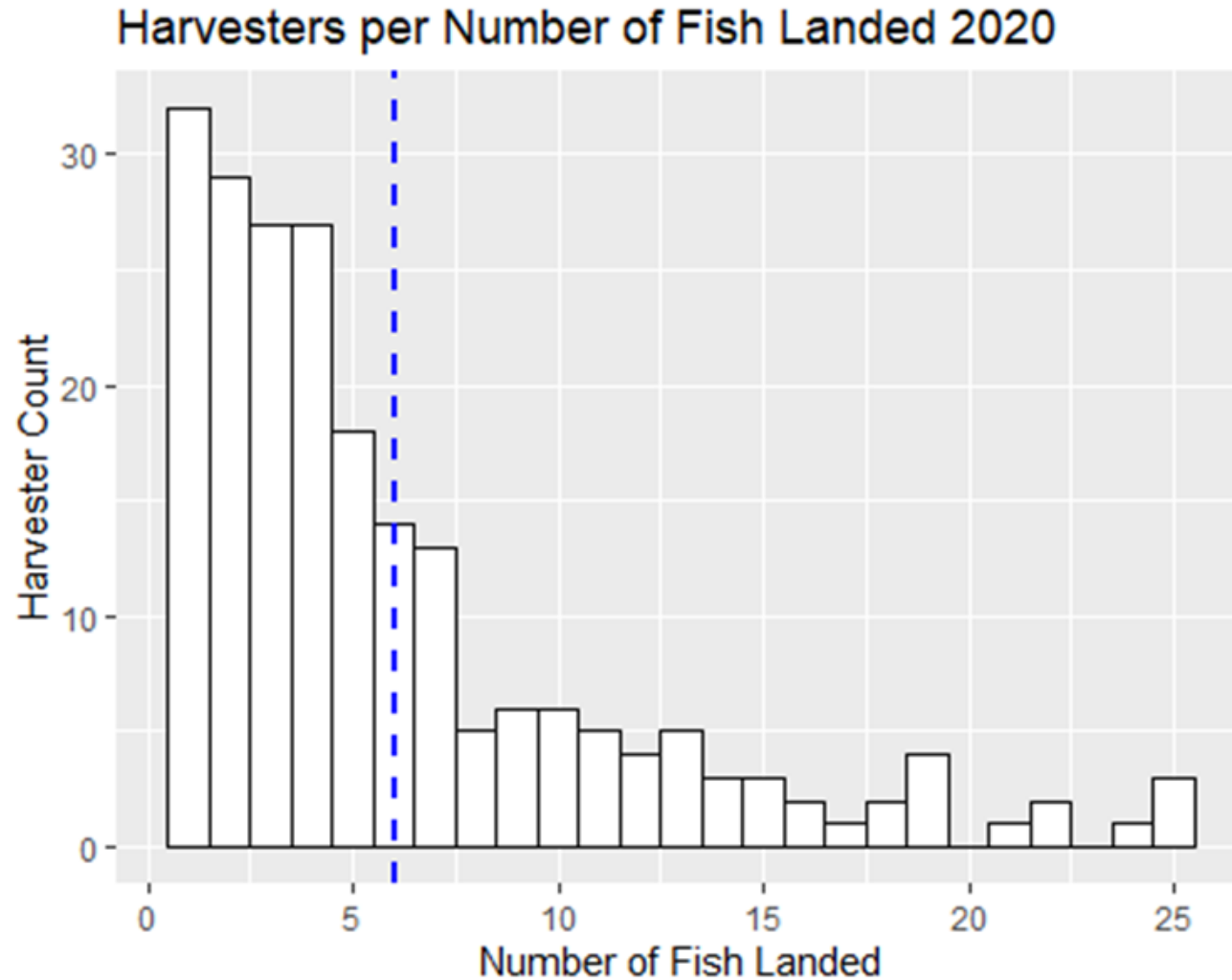


# Maine Participation Trends

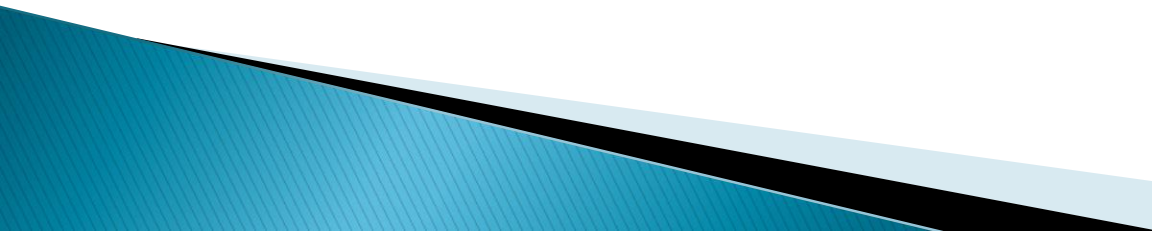
FY	# Endorsements Issued	# Active Harvesters	# Tags Issued	% Tags Used	If every tag was used
2016	933	334	23,325	11%	443 mt
2017	1121	292	28,025	6%	575 mt
2018	1062	258	26,550	5%	562 mt
2019	990	238	24,750	6%	492 mt
2020	1014	238	25,350	5%	546 mt

- Licensed effort exceeds quota
- Very high latent effort in Maine halibut fishery
  - ~60–75% of endorsements don't land fish
  - ~95% of tags don't get used


# Maine Tag Usage



# Key Points

- ▶ Have been very close to exceeding the halibut ABC in recent years
    - Is 2020 a one-off or representative of future trends?
  - ▶ The room of margin for an overage is slim and the penalties of an overage are severe
  - ▶ We have a lot of potential effort
  - ▶ We have high latent effort in the Maine fishery and this impacts which management tools we use
- 


# Successes

- ▶ Our landings are closer to the state waters sub-component than they were 5 years ago
  - ▶ DMR has placed a strong emphasis on enforcement in the halibut fishery
  - ▶ DMR and industry members collaborating on tagging work
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# Challenges

- ▶ There is significant latent effort in the Maine fishery which, if activated, could well exceed the ABC and activate AMs
- ▶ Latent effort also makes it harder to craft management measures
  - A short season has resulted in a short/derby style season which impacts market prices
- ▶ Harvest reporting
  - Currently have a monthly reporting requirement – but our season is less than one month
  - No in-season data
  - Pattern of late reporting in the Maine halibut fishery

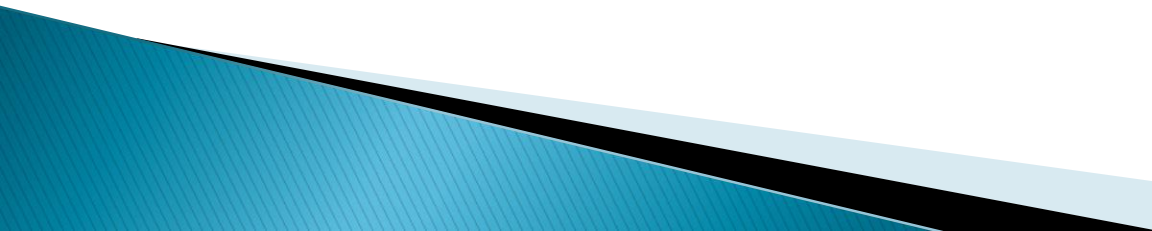
# FY2022 Measures

- ▶ DMR planning to maintain the same Chapter 34 measures we have had in place for 2020 and 2021
  - ▶ It is important to determine what 2021 catch looks like to better understand the lower catch number we saw in 2020
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# Reporting Frequency

- ▶ DMR considering moving halibut fishery to weekly reporting (proposed rule change)
  - More timely reporting
  - Allow for collection of some catch information in-season
- ▶ DMR reporting app – less work for fishermen and Landings Program

# Ideas on Latent Effort

- ▶ Can we incentivize people to buy the number of tags they need?
    - Right now, options are zero or 25 tags
    - Most harvesters are using less than 10 tags
  - ▶ Could create a halibut license with option to purchase tags in increments of five (law change)
    - Still open access
    - Differential pricing based on number of tags
  - ▶ Could create two halibut licenses, one with 10 tags and one with 25 tags (law change)
    - Still open access
    - Differential pricing
- 



# Questions & Discussion

- ▶ Clarifying Questions
  - ▶ Discussion
- 

# **Halibut Tagging Industry Update**

**January 2022**

**Bill DeVoe**

**Maine Department of Marine Resources**





# DMR Halibut Research

- Exp. Federal Fishery (2000-04)
- Longline Survey (2007-08)
- Mandatory Harvester Logbooks (2000 – On)
- **Conventional Tagging (2000-On)**
- **Electronic Tagging (2007-2009, 2017 – On)**
- Sea Sampling (2017 – On)
- Otolith Sampling (2000 On)
- Genetic Sampling (2018)





# Conventional Tags

**Yellow plastic-coated wire tags, threaded into second opercular plate.**

**Survey staff, volunteer fishermen tagged fish**

**Small rewards and fish info for returnees**

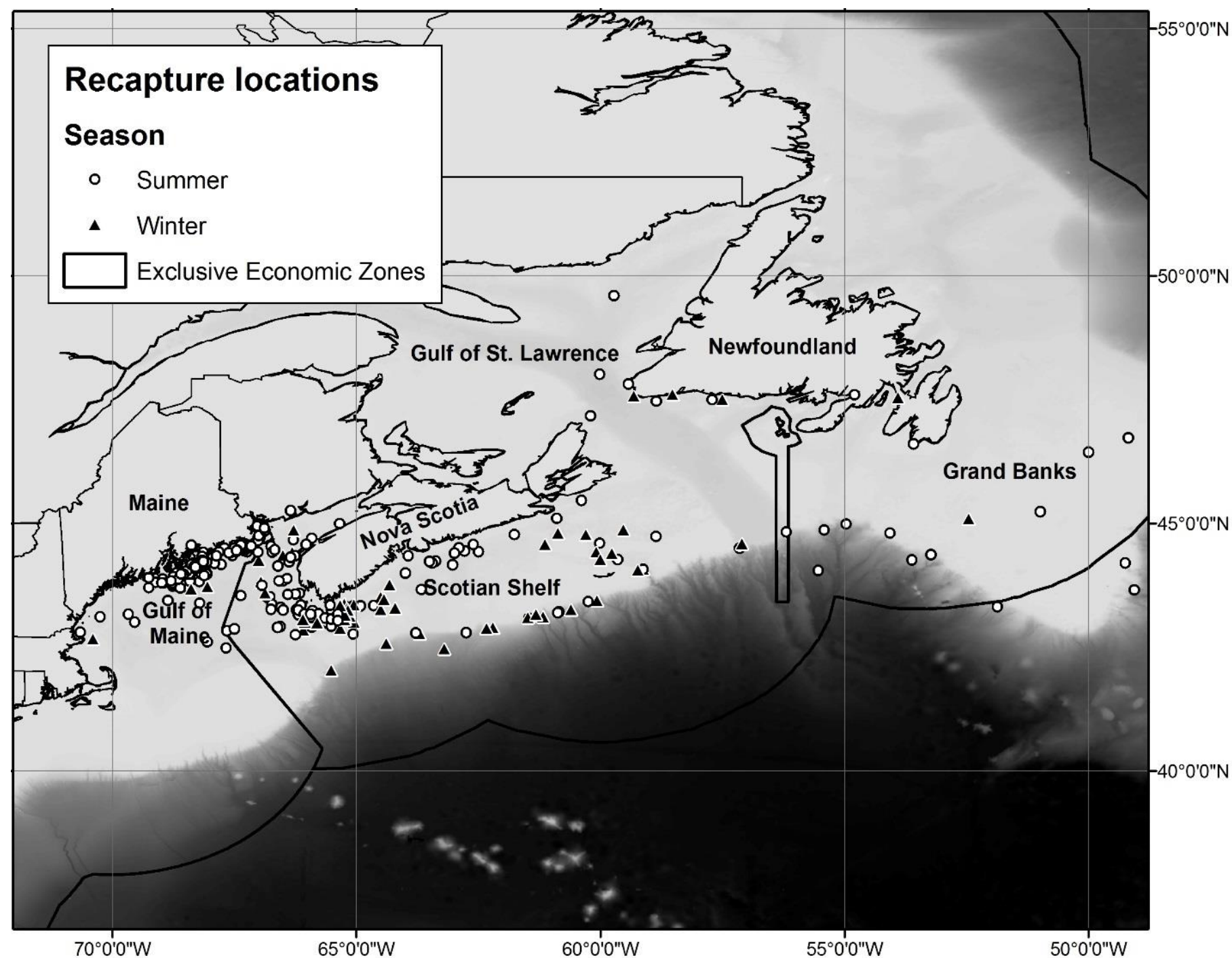


- Over 3000 tagged halibut released, mostly by Maine halibut fishermen
- ~450 recaptured
- > 40% returned from Canadian waters

Fishery	Number
Canadian	164
Maine State Fishery	136
Experimental	65
Commercial Trawl	13
Unknown	10
Maine Trawl Survey	1

## Different status, but are they separate?

- Can we answer with conventional tags?
- Is movement simply driven by time at liberty or is seasonal?
- How many fish released off Maine are recaptured off Canada?
- Do fish that go to Canada ever come back?





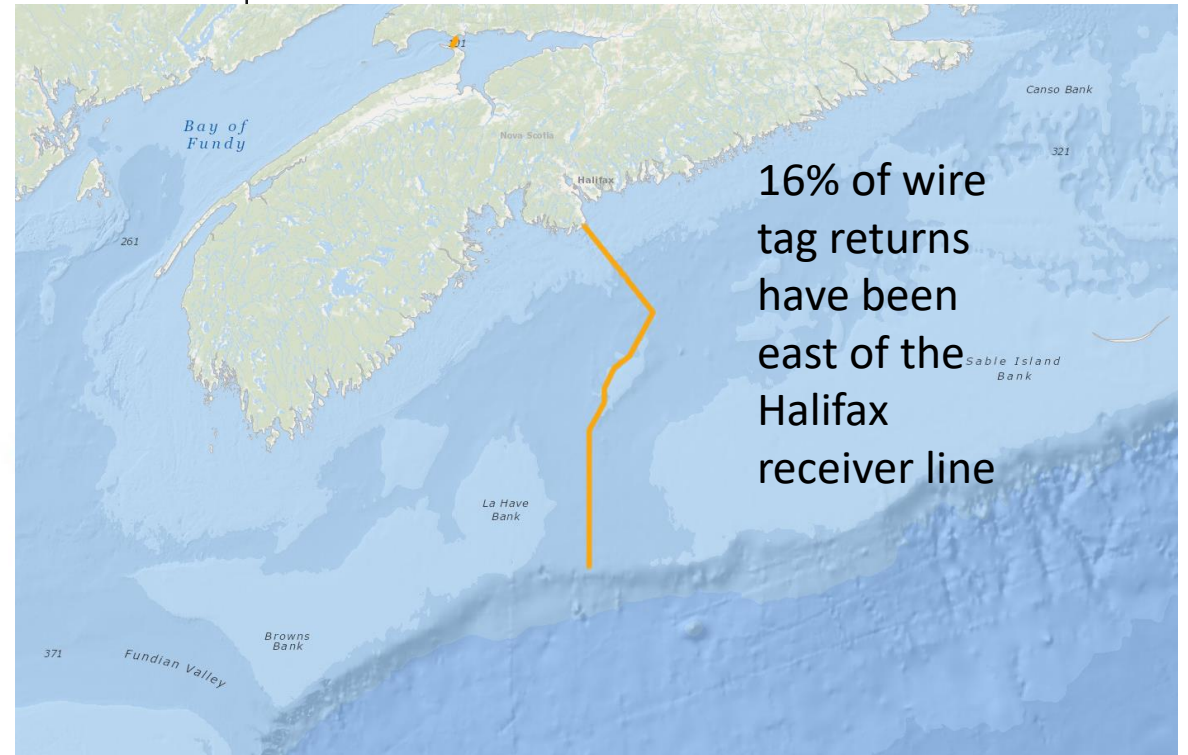
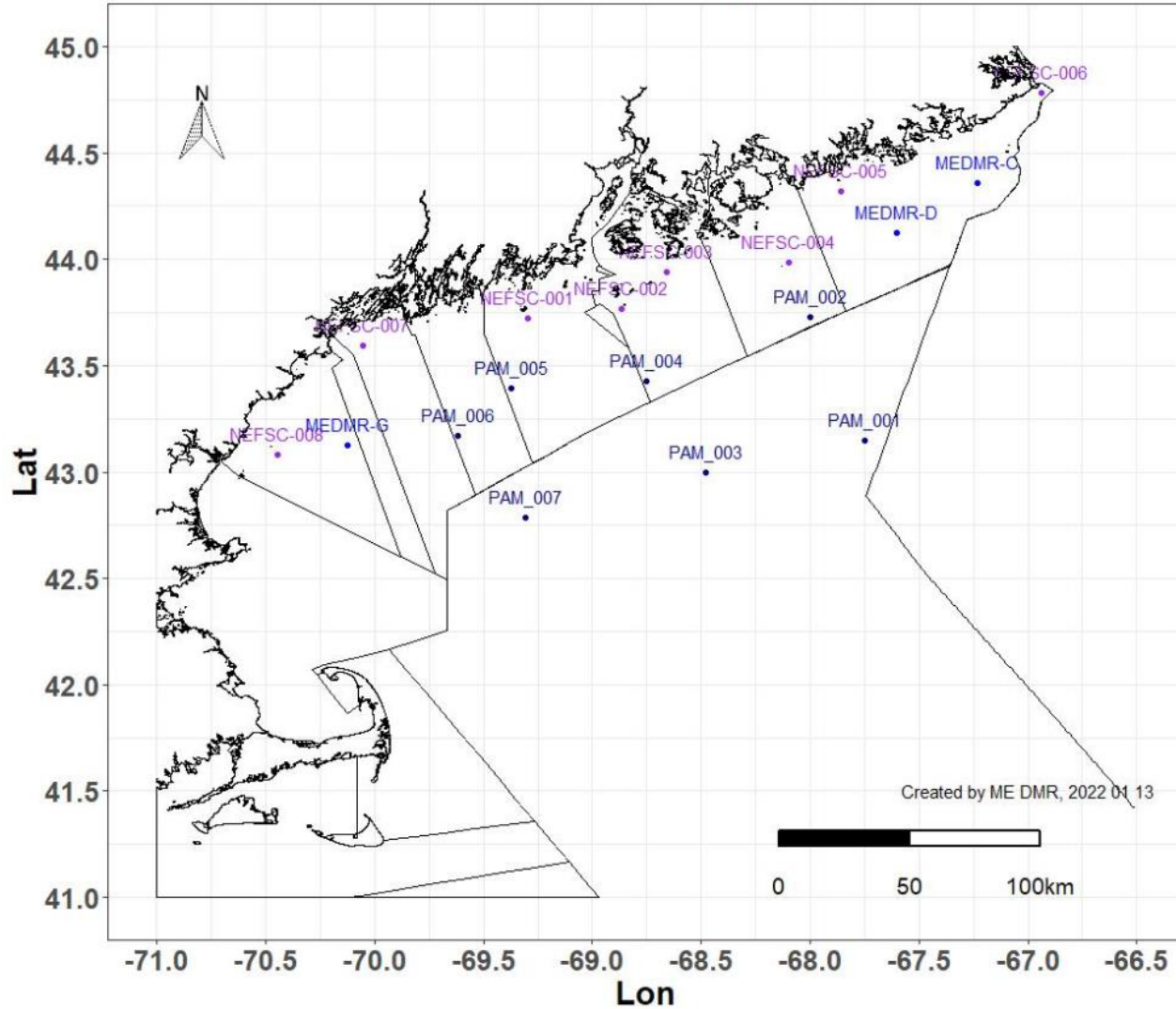
# Electronic Tags - Archival

- Record depth and temperature at interval
- Data Storage Tags (DSTs) are attached externally or implanted surgically – need to get the tag back
- Pop-up Satellite Archival Tags (PSATs) – attached externally, release from fish and transmit location and some data over satellites
- DMR, The Nature Conservancy, and Uni of Mass Dartmouth have previously used PSATs and DSTs in the Gulf of Maine on halibut



# Electronic Tags - Acoustic

Gulf of Maine VEMCO Receiver Map





# Current electronic tags

- Orange plastic-coated wire tags, threaded into second opercular plate – “extra tag in guts reward\$ send to DMR...”
- Star Oddi DST in guts records depths/temp
- Tagged by DMR staff
- **\$300 reward** and fish info for returnees that provide DST and date, location, size, sex of fish





1 or 2  
orange  
wire tags  
on cheek  
– incision  
on eye  
side

Photo is not backwards, this is a  
rare left-eyed (sinistral) halibut!





Sometimes orange tags fall off, look for scar and stitches. This fish tagged 1 year before





DST embedded in gut lining

There may be a second electronic tag (acoustic tag) also in the guts.



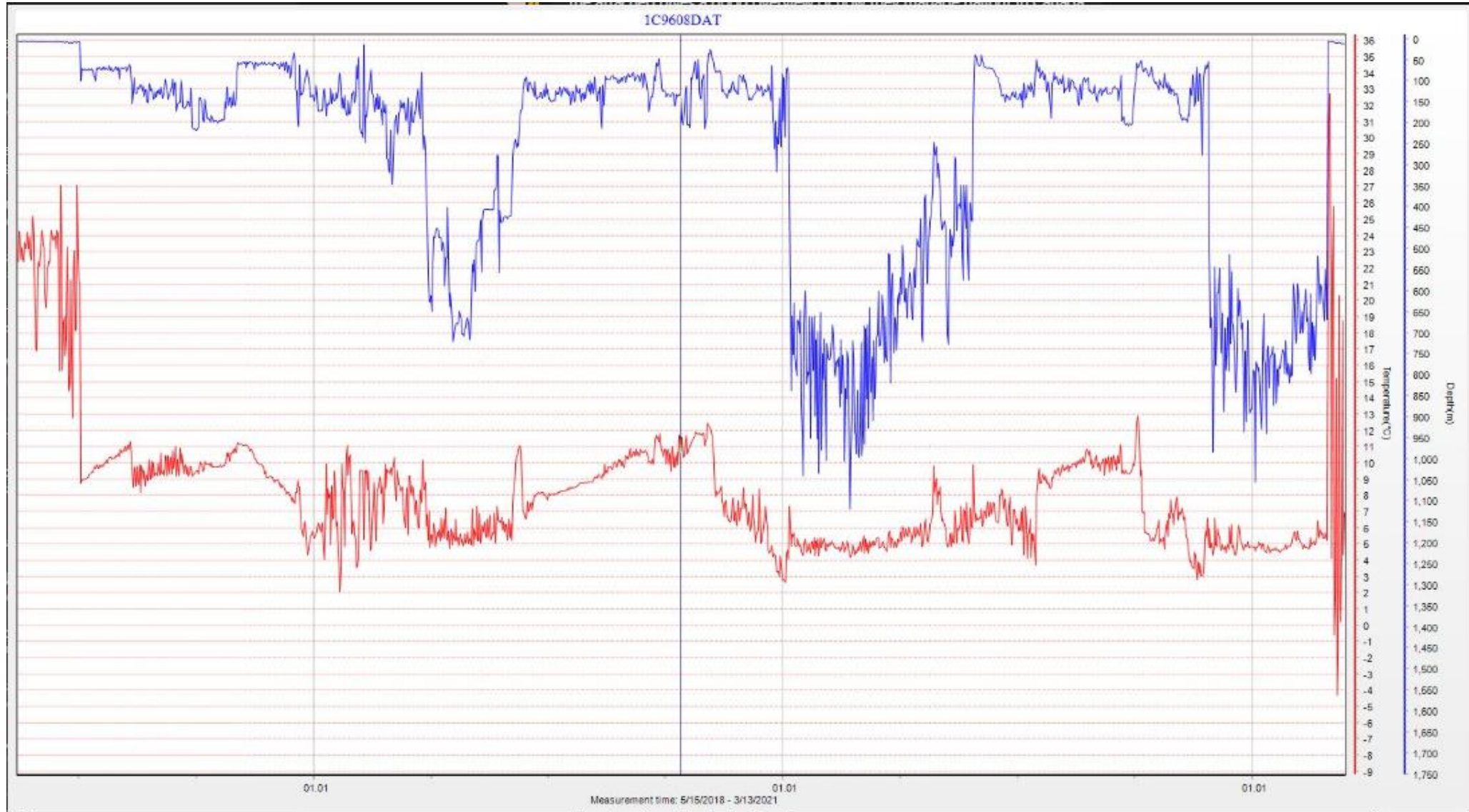




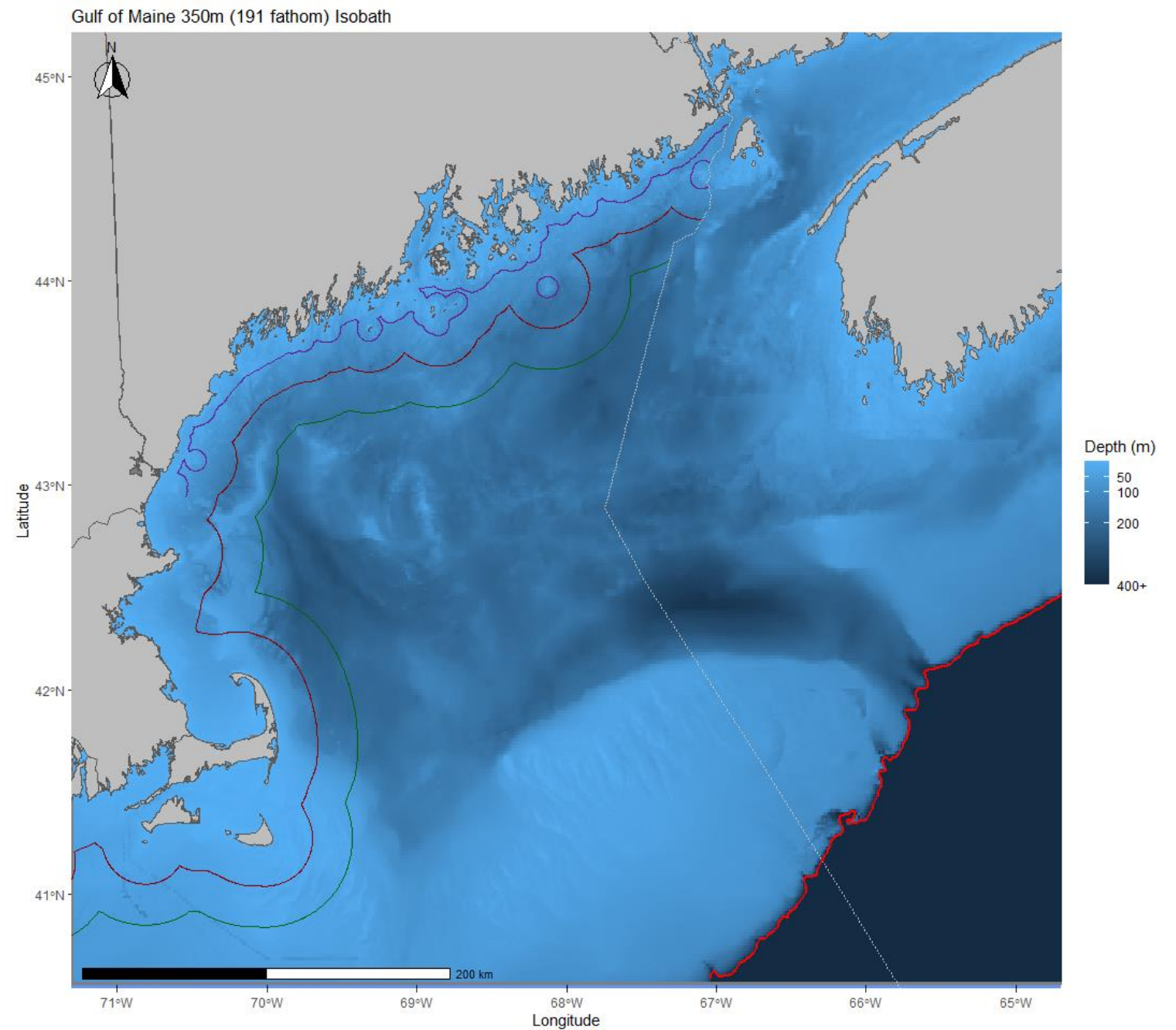
- 243 DST-tagged halibut released since 2017, 38 recaptured
- 49 acoustic tagged halibut released since 2021, 1 recaptured, no reported detections yet...



# Data from DST – depth and temperature

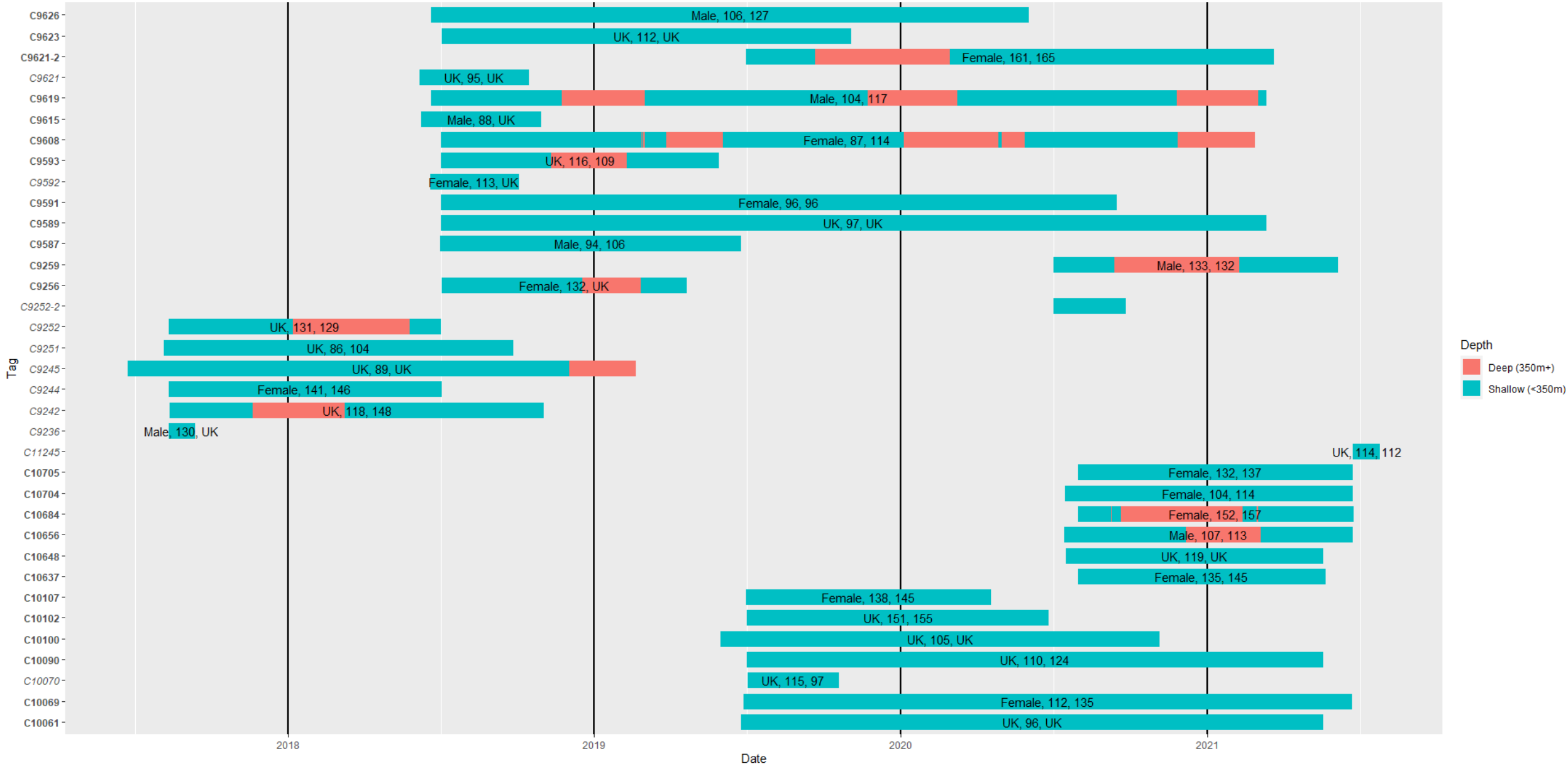


Any fish going deeper than 350 meters went over the continental shelf



Isobath from GEBCO bathymetry in red.  
Maine 3NM line in solid purple. US 12NM line in solid dark red. US 24NM line in solid green. US EEZ line in dashed grey.

### Temporal Span and Shelf Transitions of DMR C-Series DSTs



Annotation text indicates sex, release length in CM, and return length in CM where known. Tag labels in bold face recorded data at a 2 minute interval between November and February necessary to capture spawning rises.



## Tag C9252

Release length 131 cm  
At liberty 324 days

# Geolocation

### Legend

- W 12 Aug 2017
- 📍 2 Jul 2018
- P Model end point
- 👤 Model path

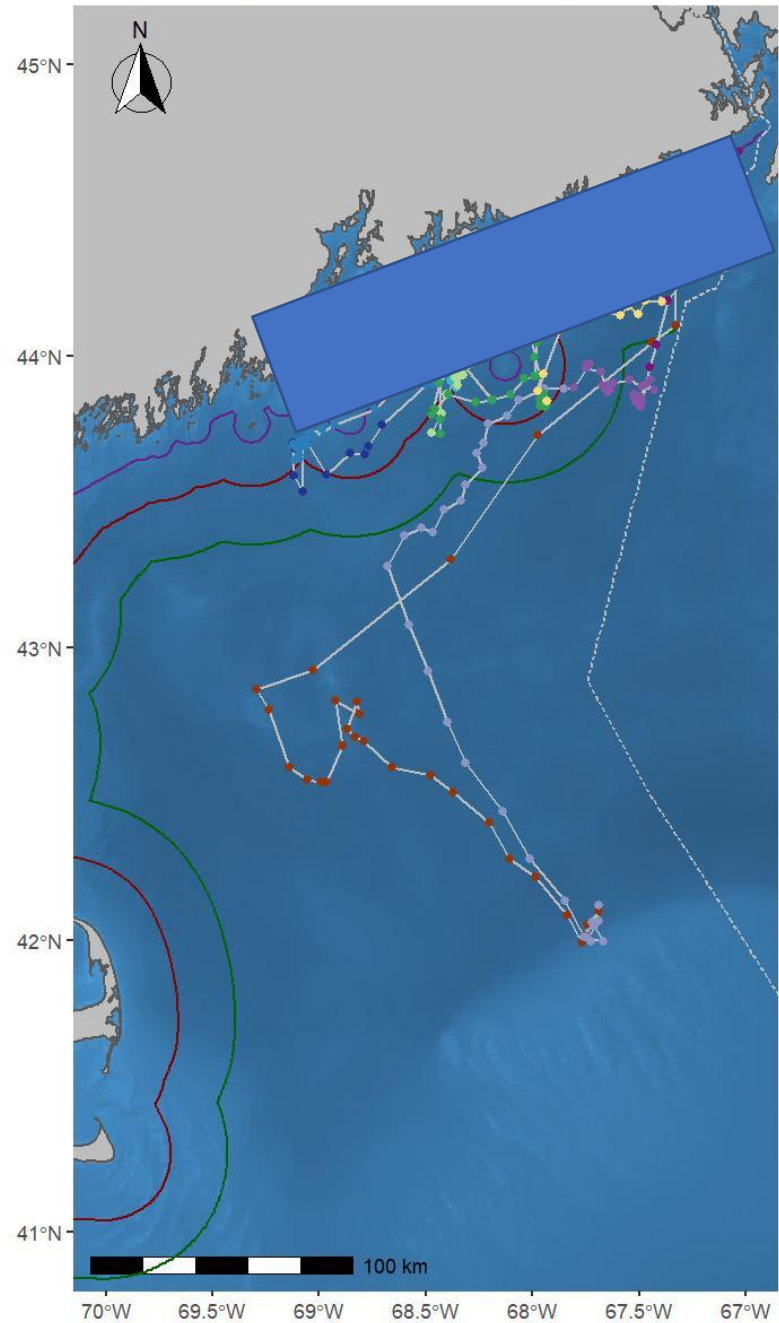
- Depth and temperature plotted against oceanographic model of depth and temp across the Gulf of Maine
- Model created at University of Massachusetts Dartmouth

Model end point

Reported recapture point



Daily Geolocation Points for Halibut DST C9244



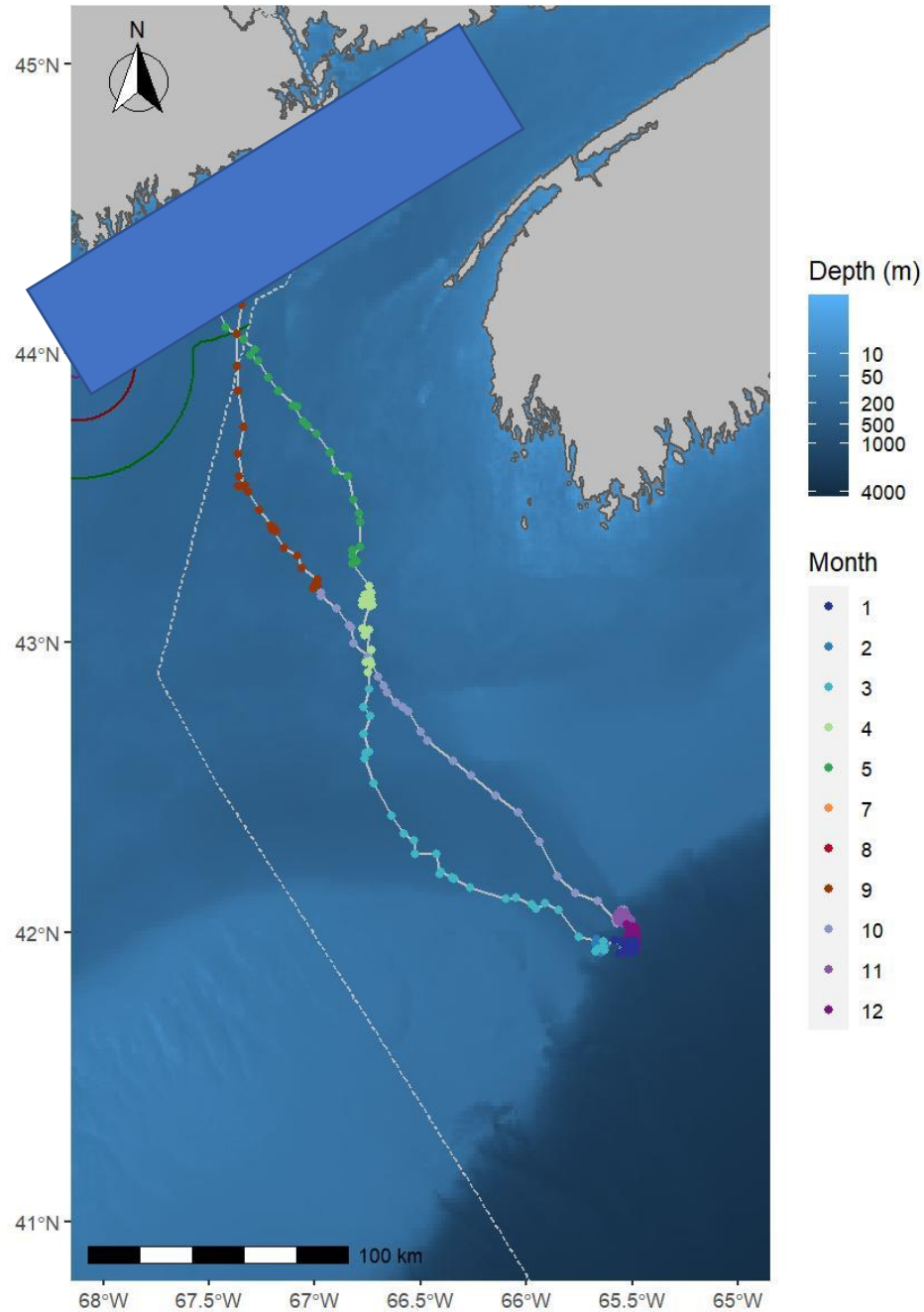
Geolocations occurred from 2017-08-12 to 2018-07-03.

Maine 3NM line in solid dark red. US 24NM line in solid green. US EEZ line in dashed grey.

Conventional vs electronic tagging – female at left was at liberty for almost 11 months and was caught only ¼ km from where released – but geolocation shows quite a trip.

At right, depth data alone shows halibut went over the shelf

Daily Geolocation Points for Halibut DST C9593

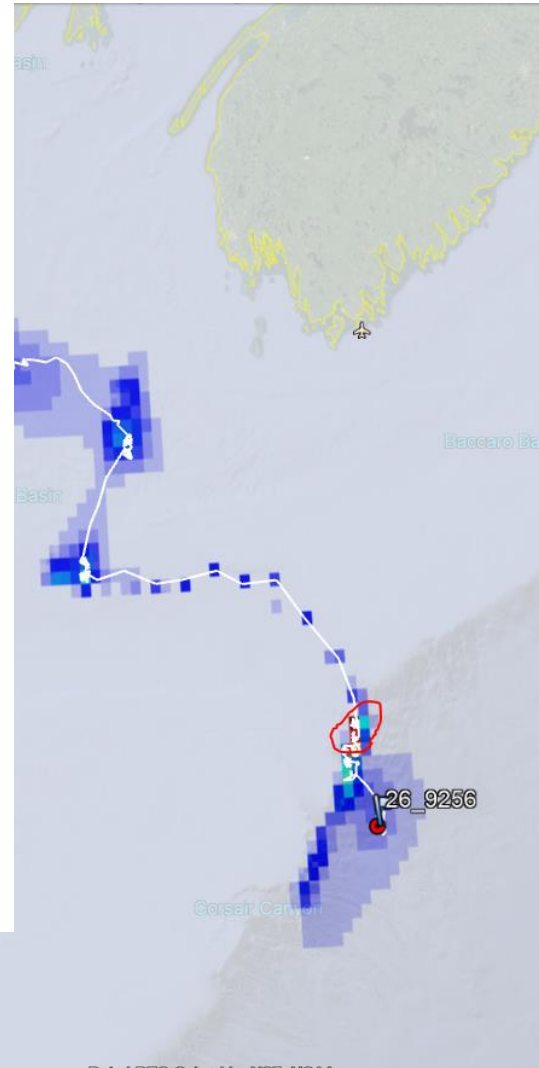
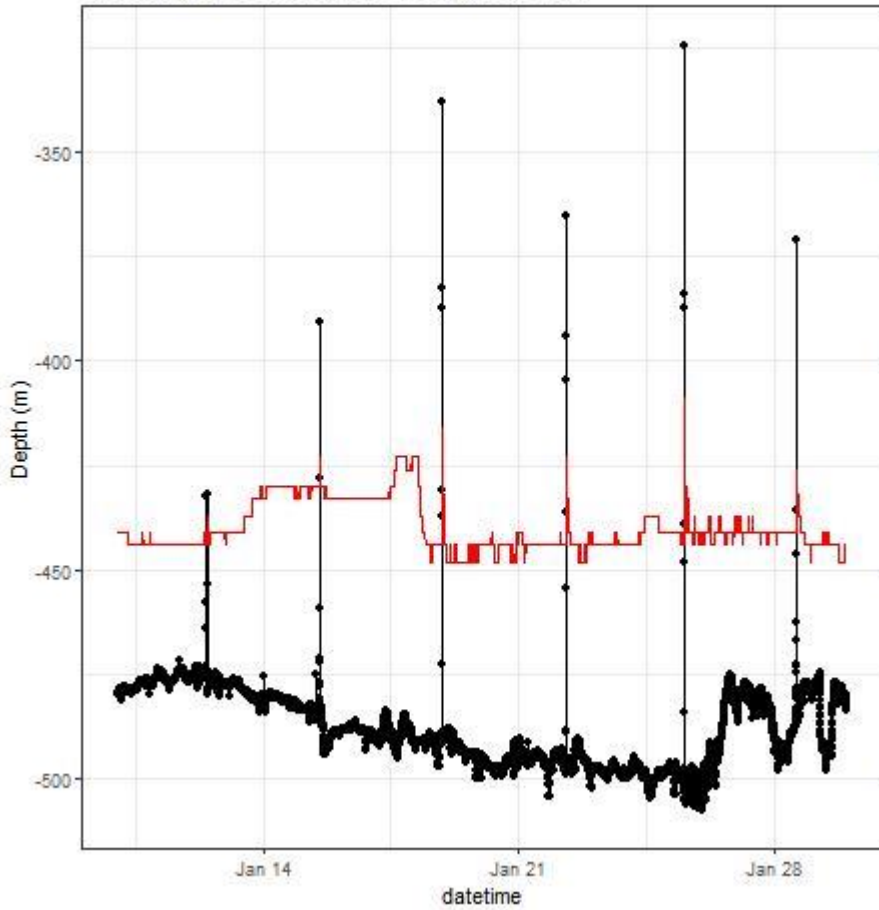


Geolocations occurred from 2018-07-02 to 2019-05-29.

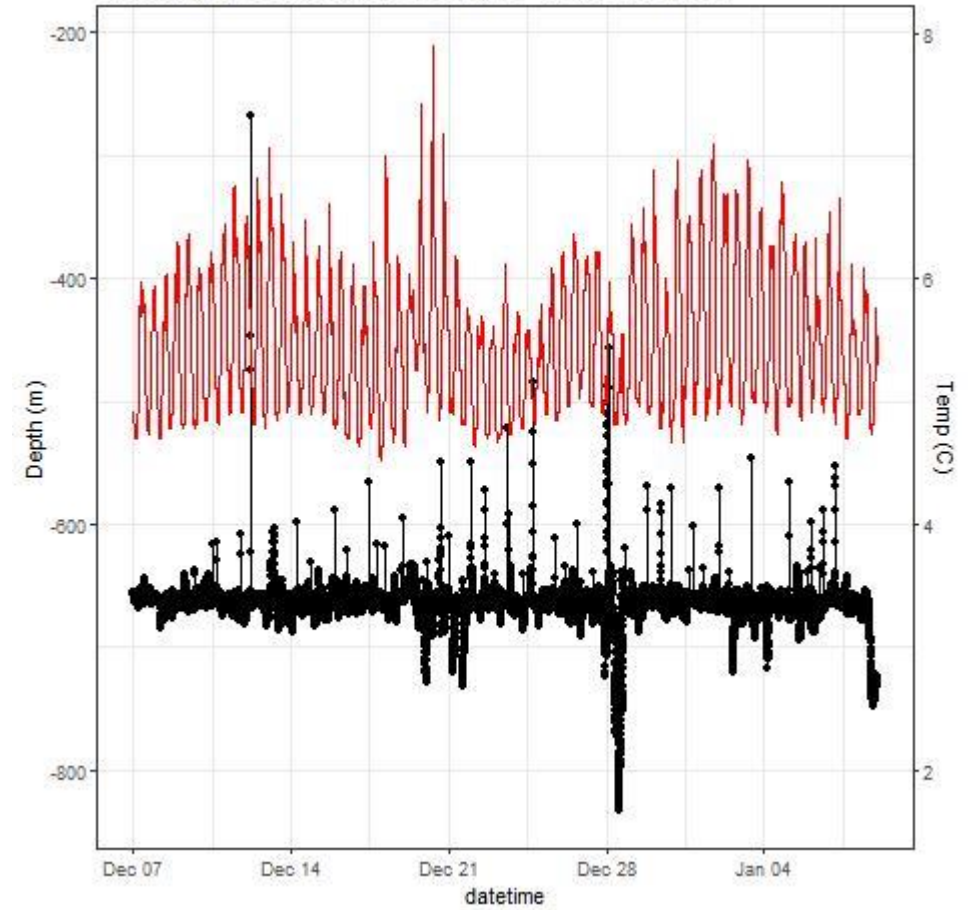
Maine 3NM line in solid purple. US 12NM line in solid dark red. US 24NM line in solid green. US EEZ line in dashed grey.

# Spawning Rises in Depth Data

Spawning Rises in Halibut C9256, Jan 2019



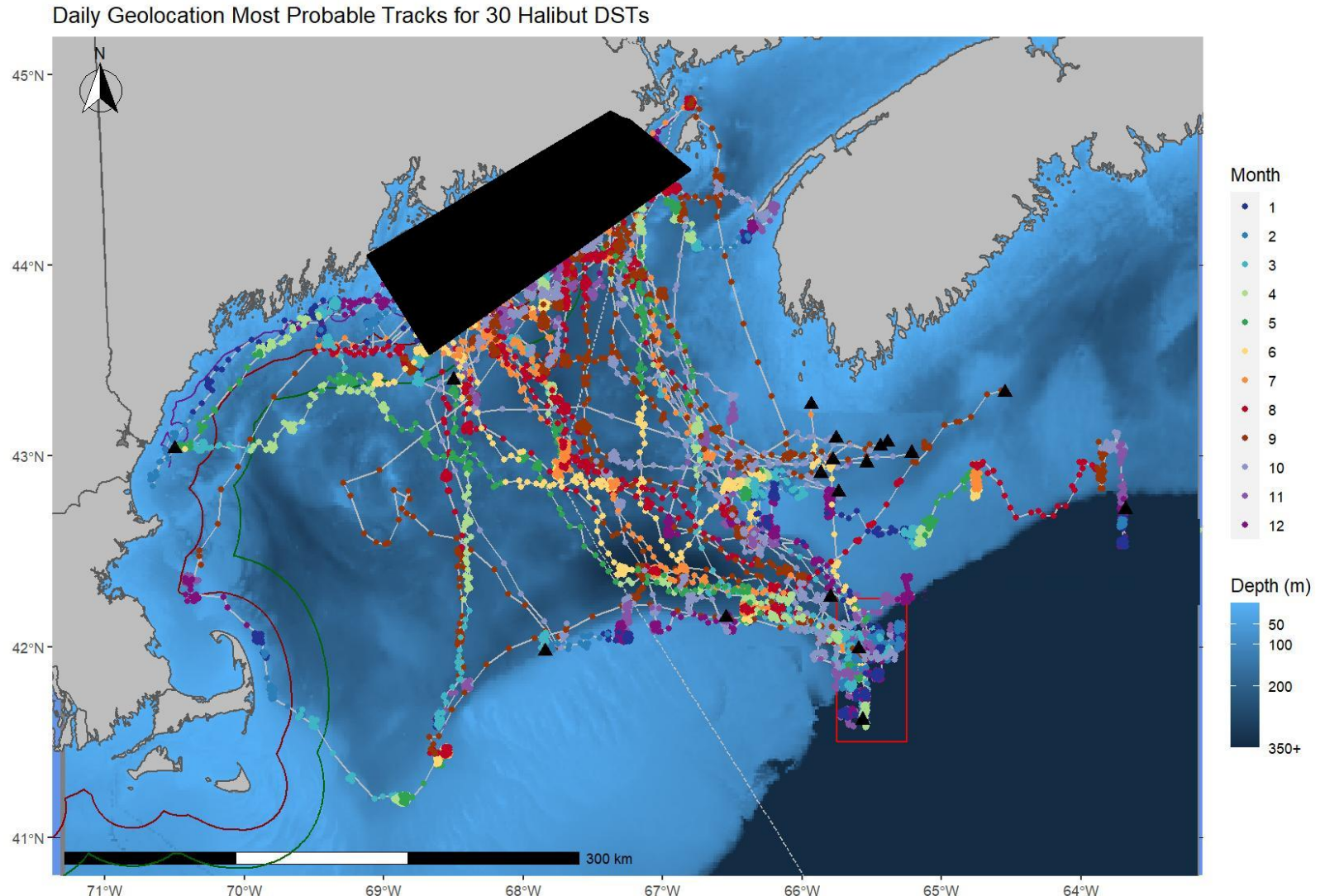
Spawning Rises in Halibut C9259, 52" male, Dec 2020





# Electronic Tagging: Putting it all together

- 37 DSTs recaptured, data recovered off 35
- Longest at liberty was 971 days (32 months)
- Longest distance was to The Gully (east of Sable Island)
- Strong evidence of site fidelity
- Spawning ground in mouth of NE channel (10 DMR and 1 TNC tag visited) – halibut were tagged throughout Maine
- 11 fish went over the continental shelf



# Conclusions – 2000 - 2021

- Halibut in the Gulf of Maine display diverse migratory patterns, including both seasonal migration with site fidelity and long-range emigration.
- Halibut undertake large changes in depth during movement, remaining in a fairly constant temperature range.
- Combining wire tagging with electronic tagging is ideal to track both short range movements and long range dispersal.
- There is a general movement of halibut in a northeasterly direction
- No evidence of fish tagged in Canadian waters (Scotian Shelf/Southern Grand Banks) being recaptured in the Gulf of Maine