



NOAA
FISHERIES

Marine Mammal Data in the Gulf of Maine



Sofie Van Parijs, Ph.D.

Passive acoustic program lead

Northeast Fisheries Science Center

Sofie Van Parijs

¹NOAA NMFS Northeast Fisheries Science Center

²Woods Hole Oceanographic Institution

MARINE MAMMAL VISUAL SIGHTINGS



- Effort in the GOM is limited.
- Focus is broad scale NOT small scale.
- Most effort directed specifically at NARWs.
- Presence & abundance


- Regular year round aerial NARW surveys covering the NE US.
- Opportunistic sightings for NARW (whale watch/fishing/leisure boat)
- Vessel based and aerial stock assessment surveys which are mostly focused on the summer (some data from other seasons in recent years).



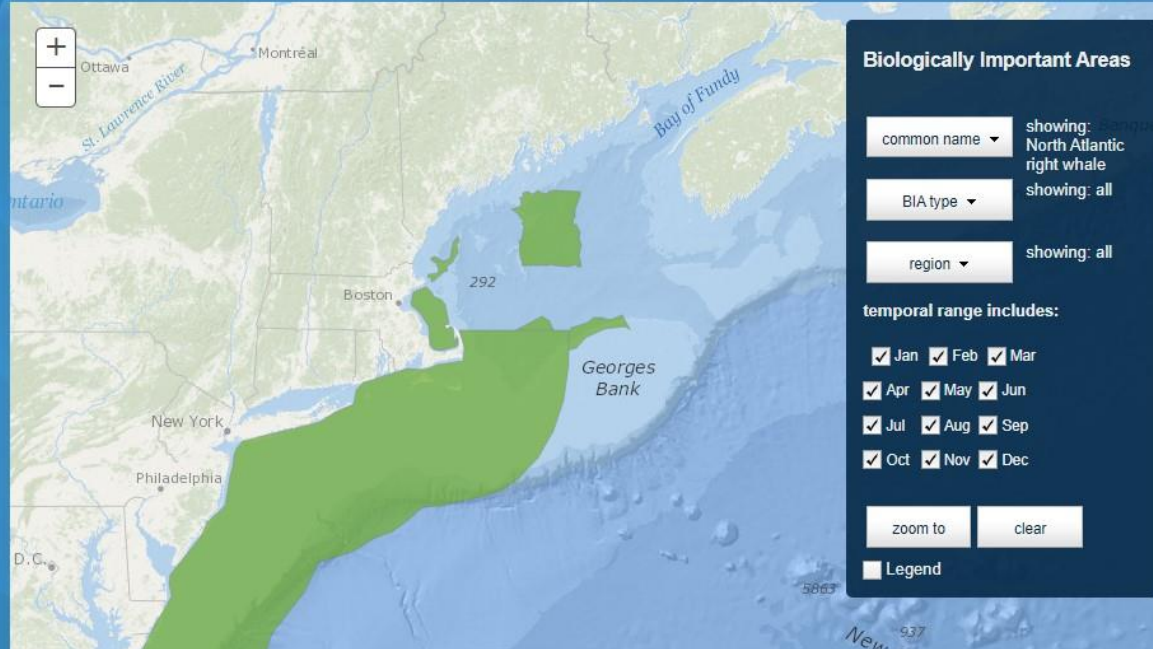
MARINE MAMMAL VISUAL SIGHTINGS

Biologically Important Areas

cetsound.noaa.gov/biologically-important-area-map



Home | CetSound | Ocean Noise Strategy | Partners | Contact



Biologically Important Areas

common name showing: North Atlantic right whale

BIA type showing: all

region showing: all

temporal range includes:

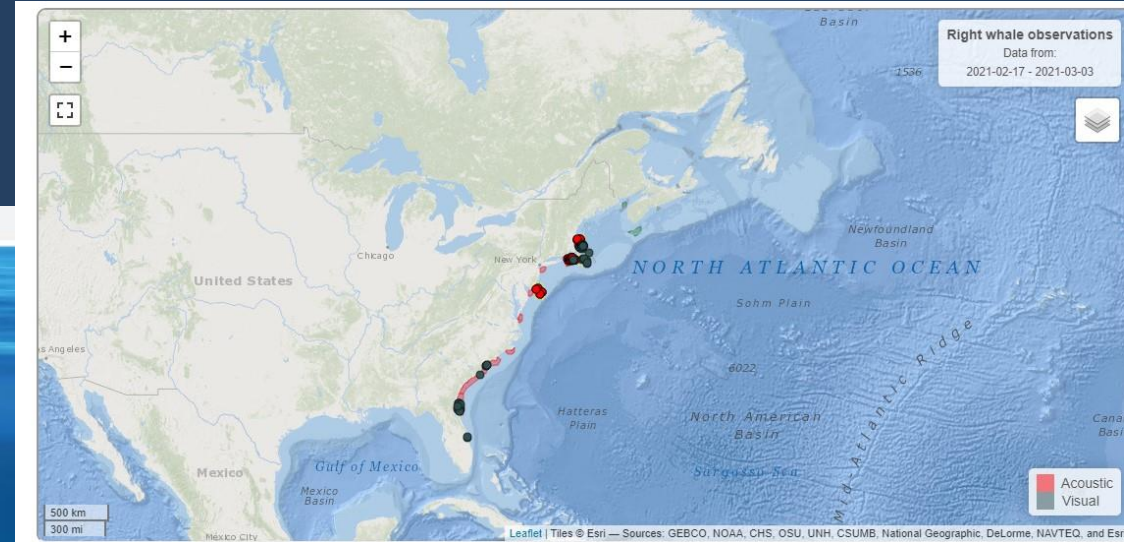
Jan Feb Mar

Apr May Jun

Jul Aug Sep

Oct Nov Dec

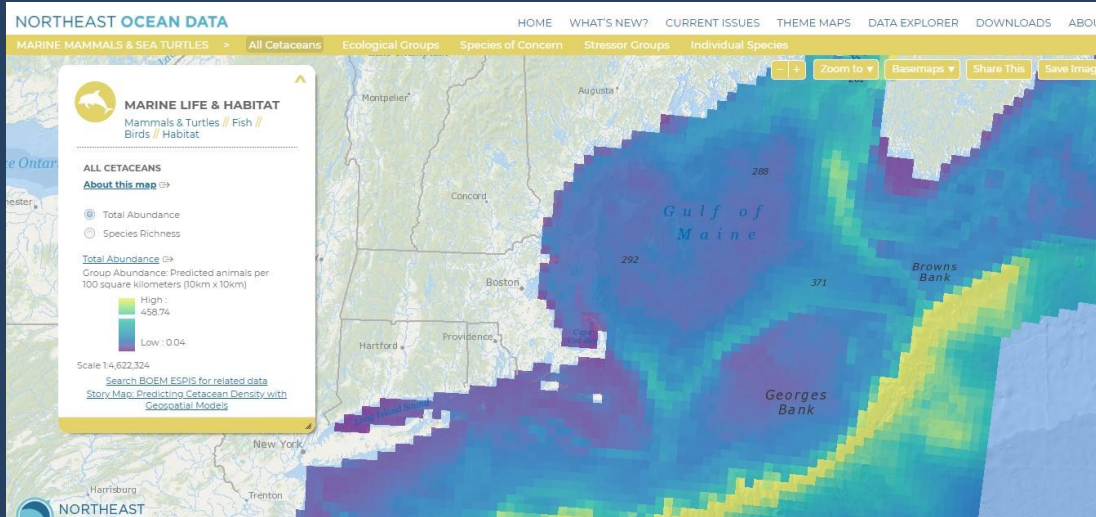
Legend



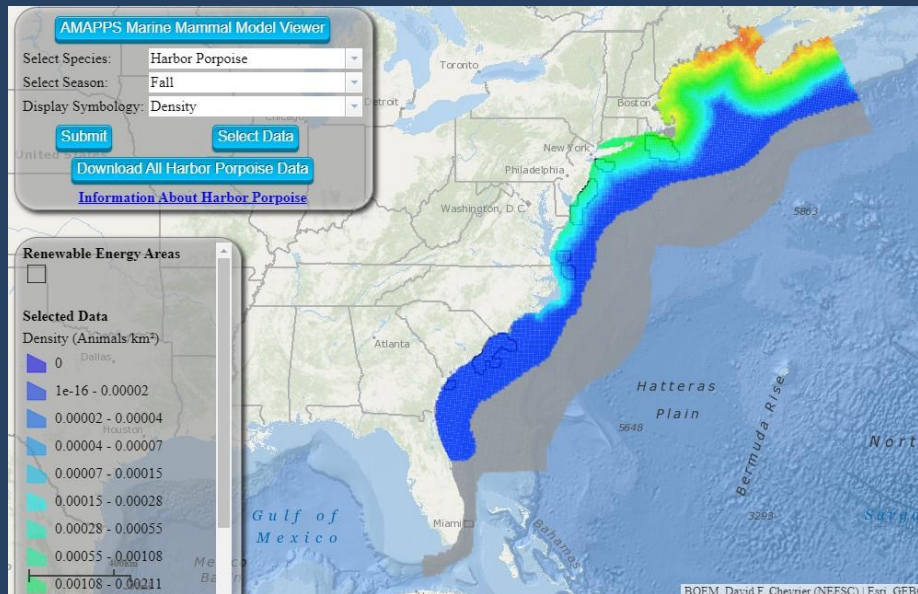
**NARW sightings - NARW Consortium data base
NARWSAS (sightings advisory system)**

MARINE MAMMAL VISUAL SIGHTINGS

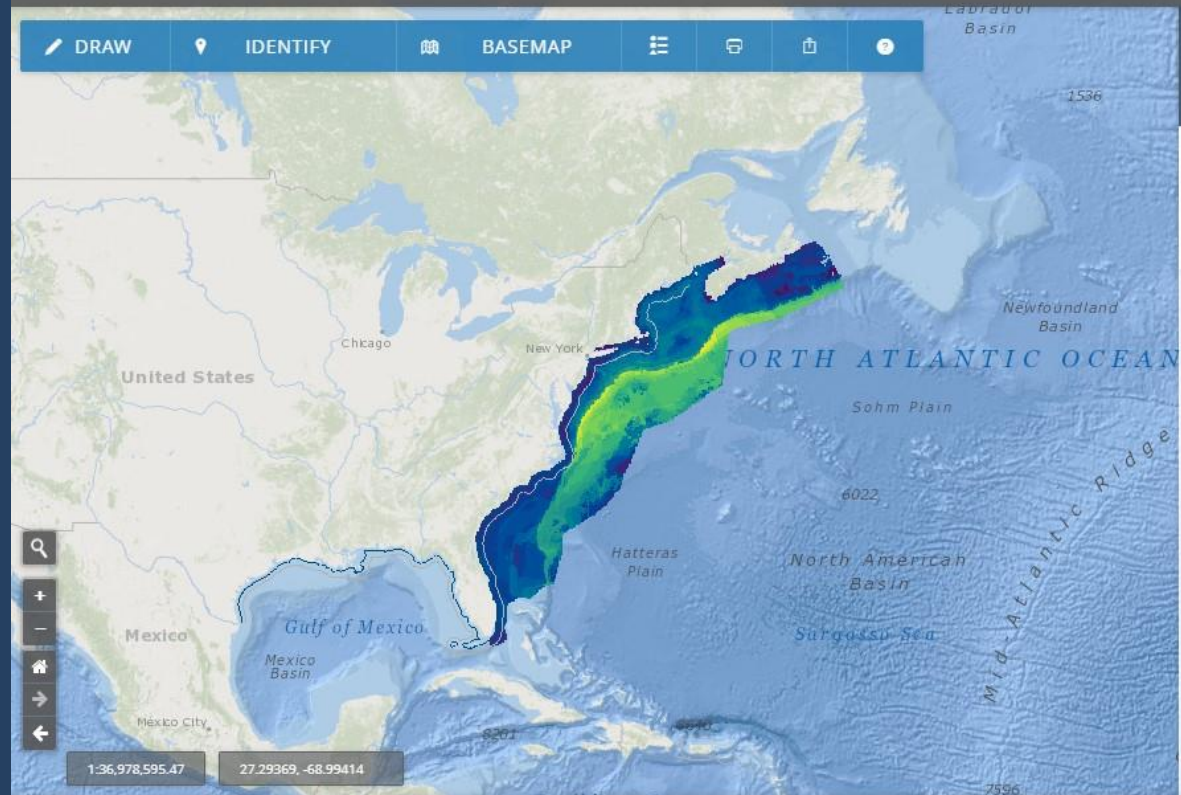
Northeast Ocean data



AMAPPS <https://apps-nefsc.fisheries.noaa.gov/AMAPPSviewer/>



Marine Cadastre National Viewer



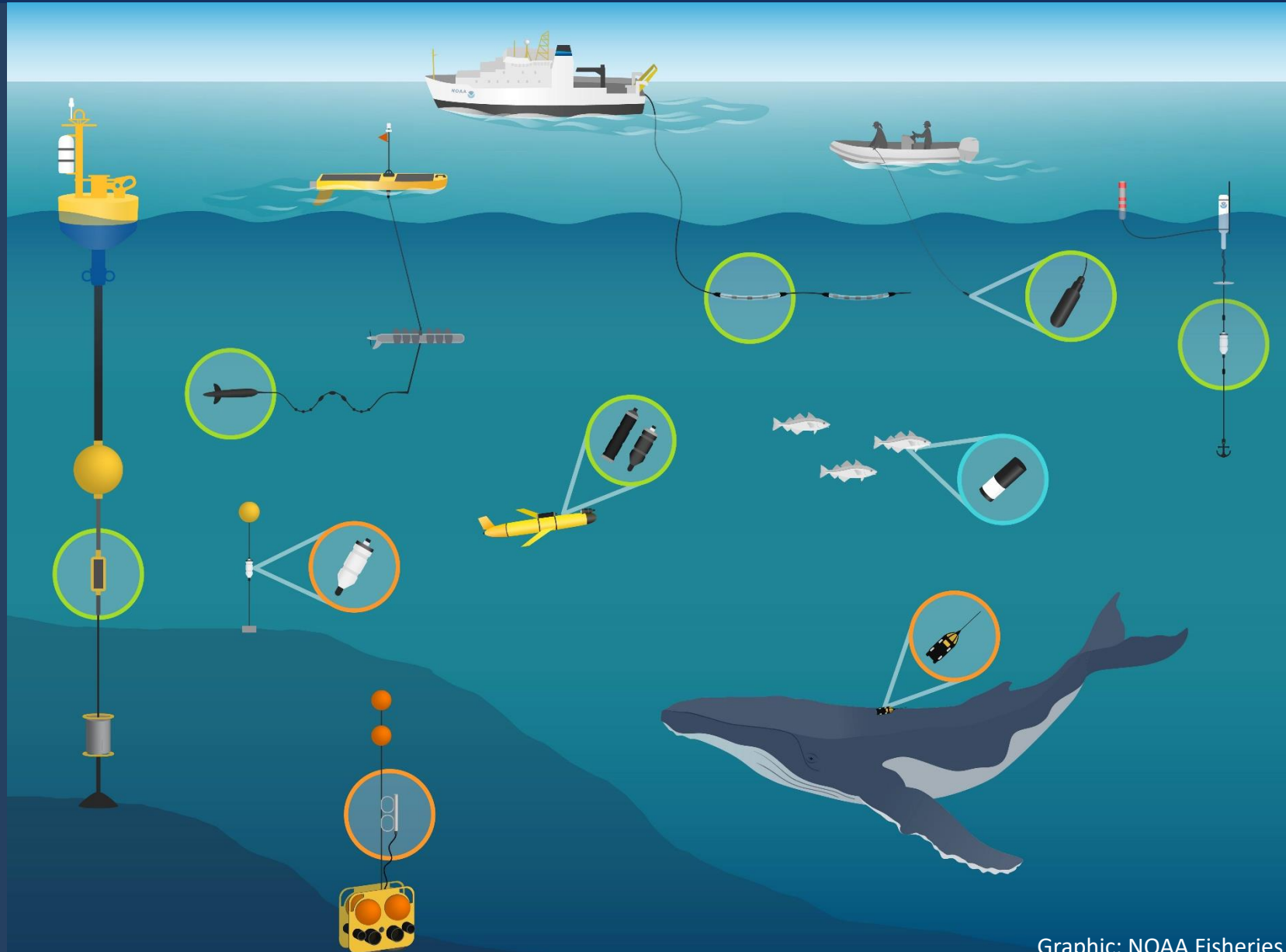
- Effort in the GOM is limited to stock assessment surveys which are mostly focused on the summer (not all).
- Focus is broad scale NOT small scale.
- Most effort directed specifically at NARWs.



ACOUSTIC DATA COLLECTION: TECHNOLOGIES

ARCHIVAL

- Bottom-mounted recorders
- Acoustic tags
- Telemetry tags (active)

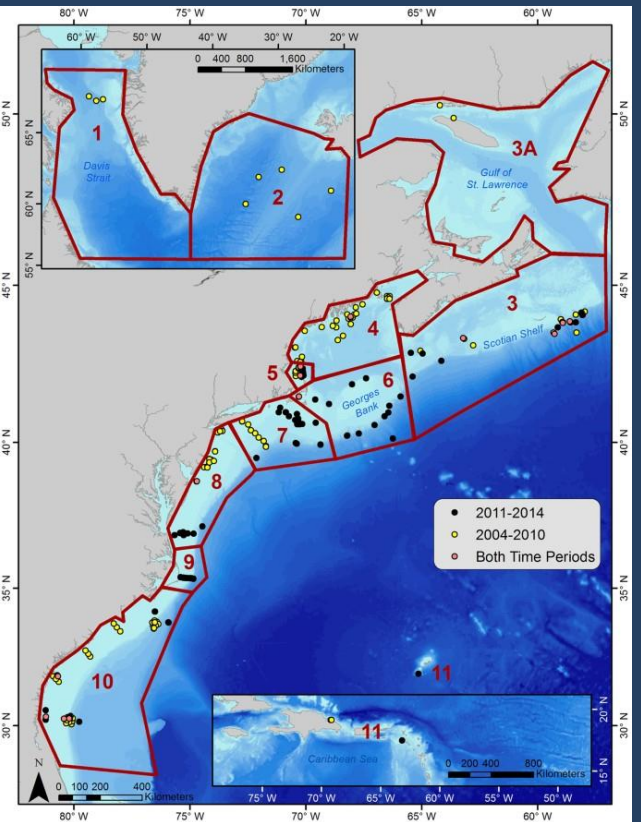


REAL TIME

- Moored buoys
- Gliders
- Towed Arrays
- Drop hydrophones
- Drifting buoys

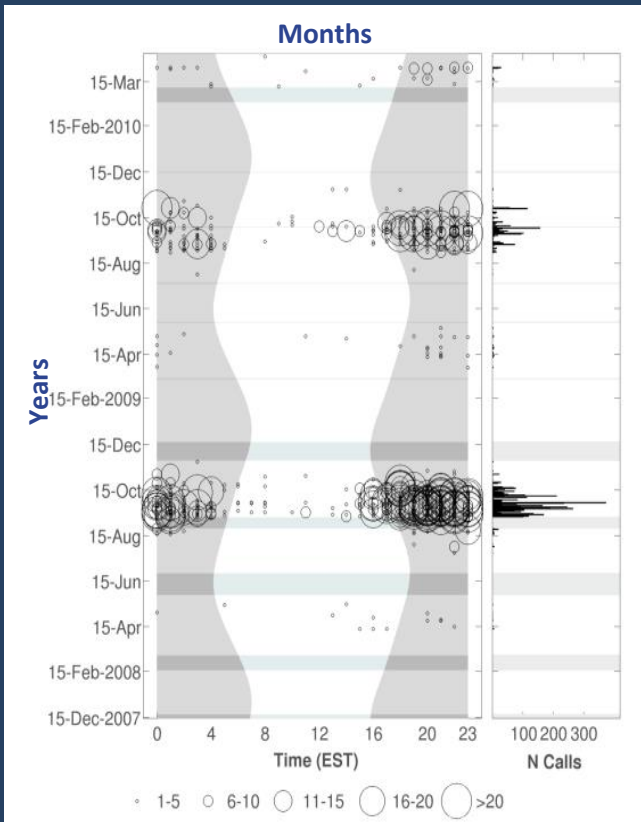
WHY PAM?

Spatial Coverage



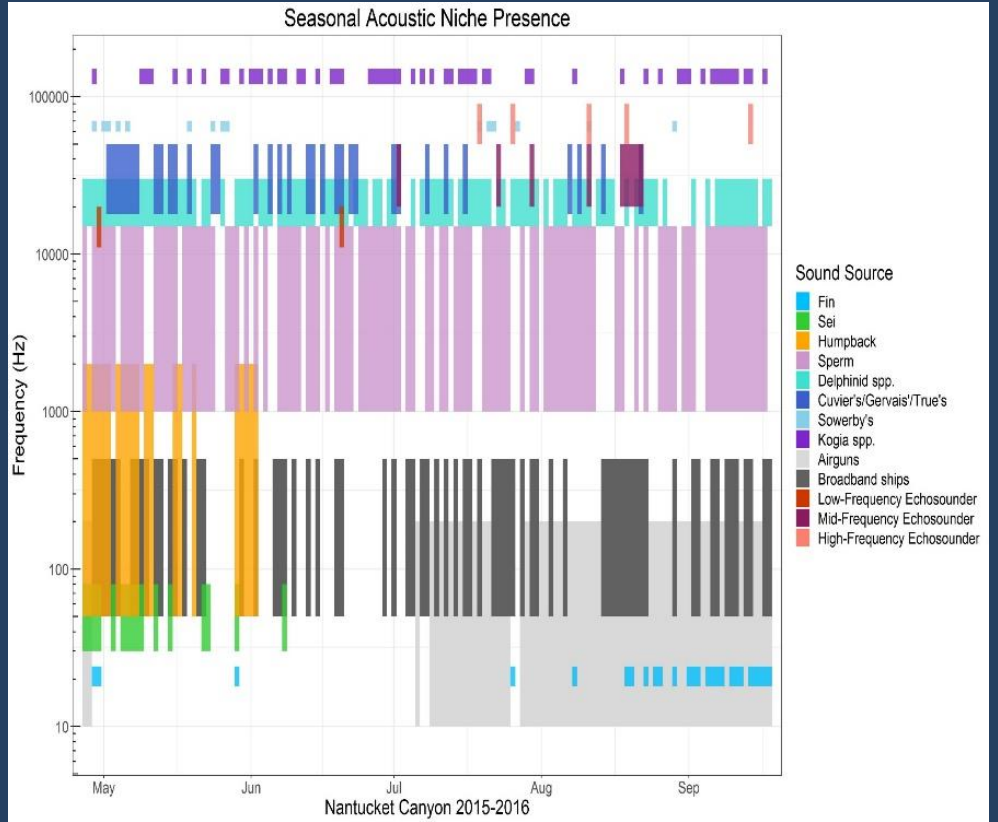
Davis et al. 2017

Long Time Periods



Risch et al. 2014

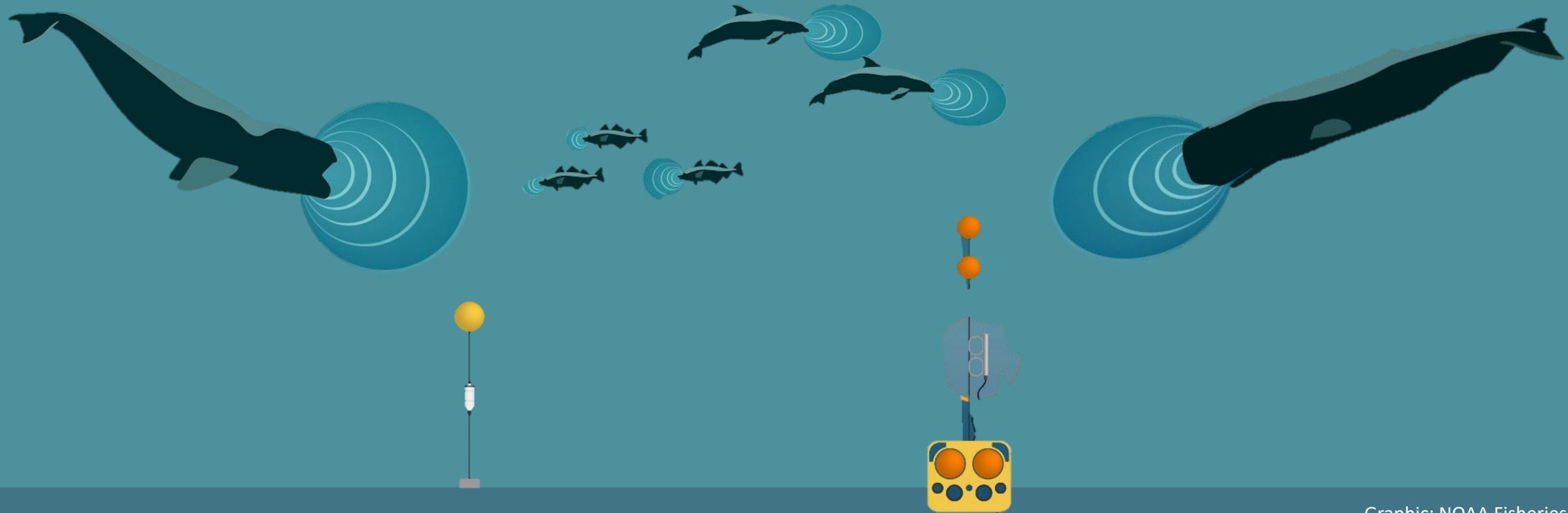
Species Ecology/Soundscape



Weiss et al. *submitted*



ARCHIVAL PASSIVE ACOUSTICS



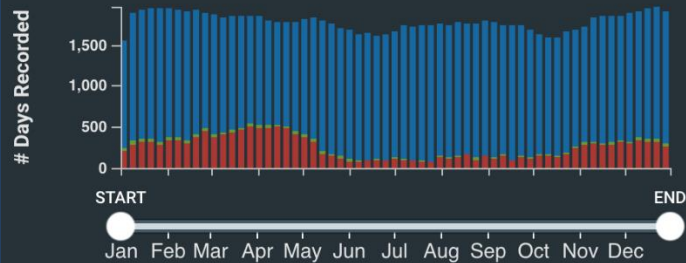


PUTTING IT ALL TOGETHER: PASSIVE ACOUSTIC CETACEAN MAP

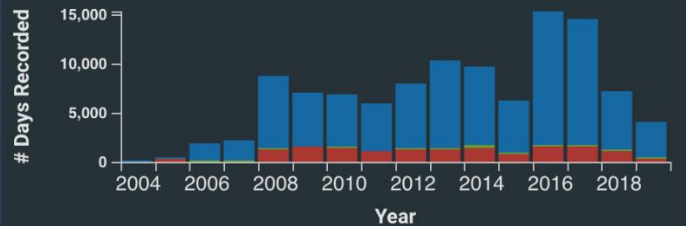
Select a species
 North Atlantic Right Whale

Select platform type(s)
 Bottom Mooring Glider Surface Buoy
 Towed Array

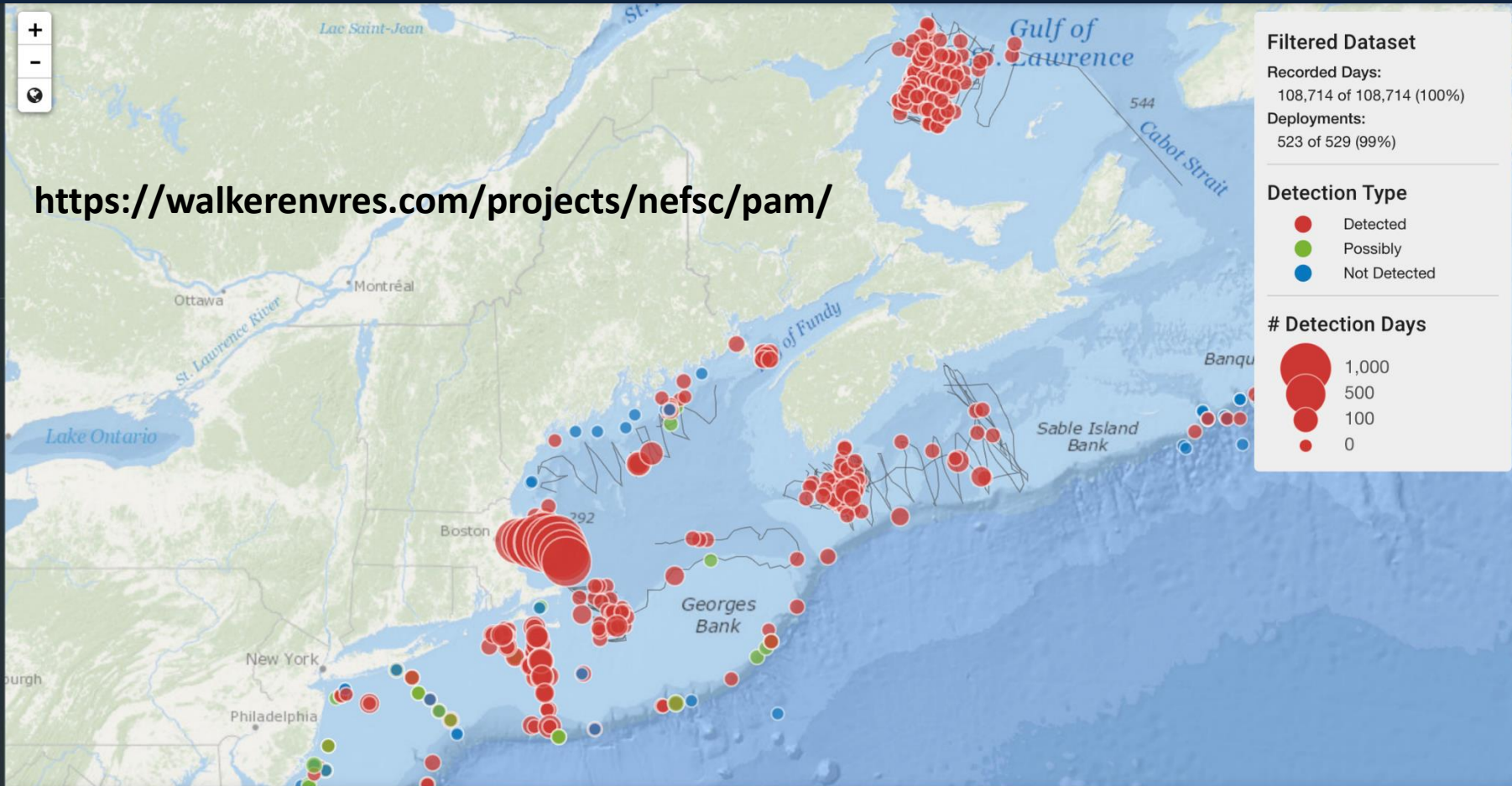
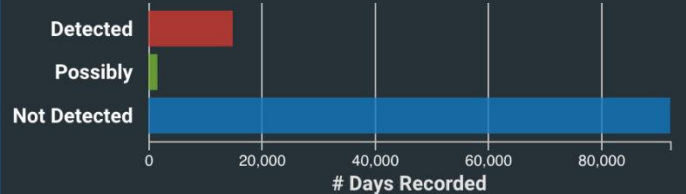
Season: Jan 1 to Dec 31



Years: 2004 to 2019



Total Detection Days



Filtered Dataset

Recorded Days:
108,714 of 108,714 (100%)

Deployments:
523 of 529 (99%)

Detection Type

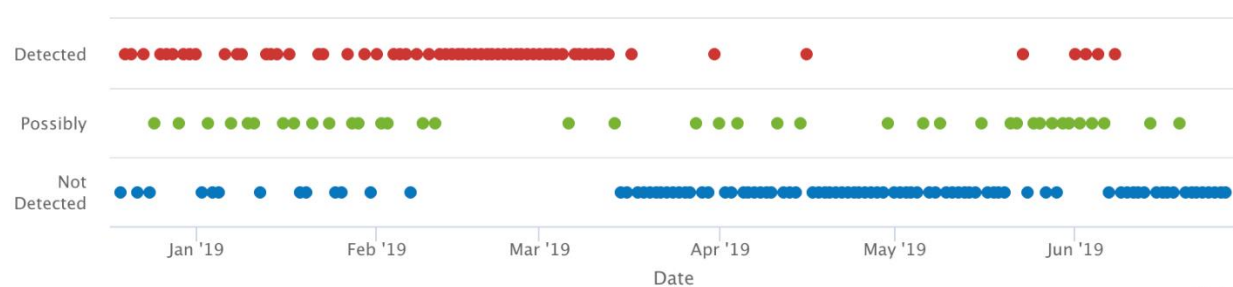
- Detected
- Possibly
- Not Detected

Detection Days

- 1,000
- 500
- 100
- 0

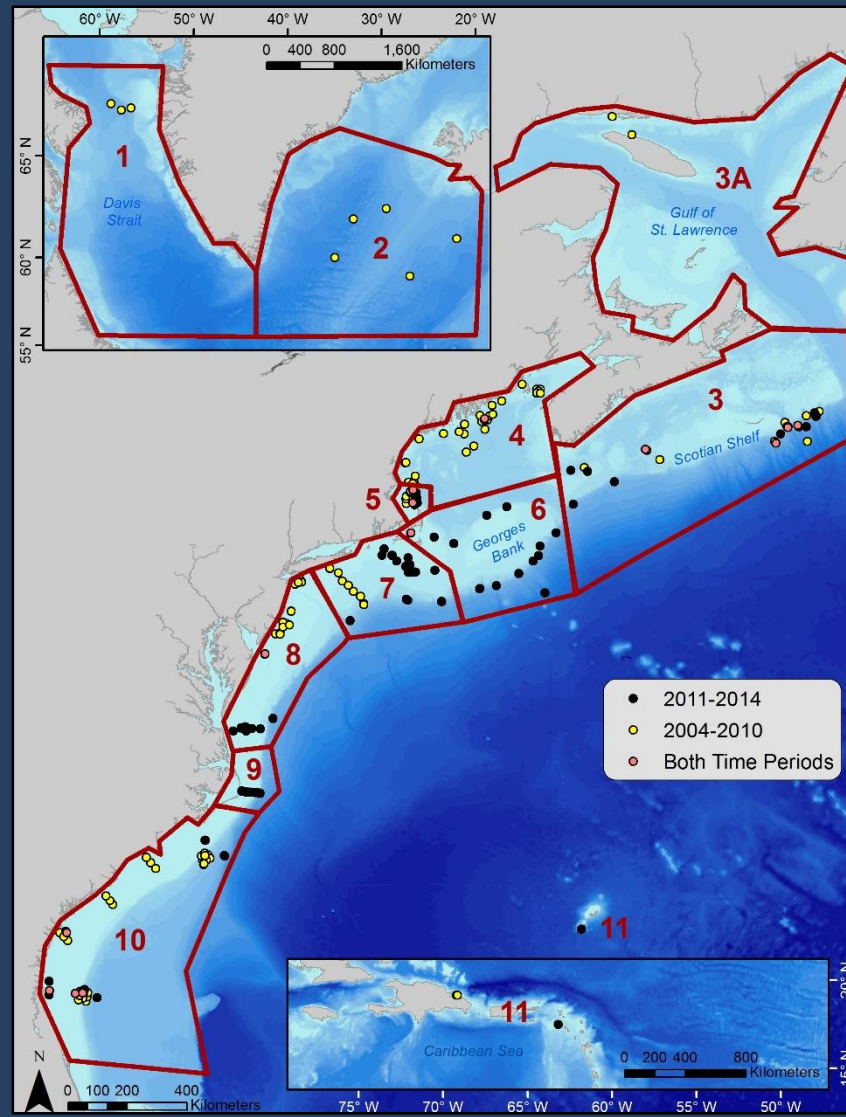
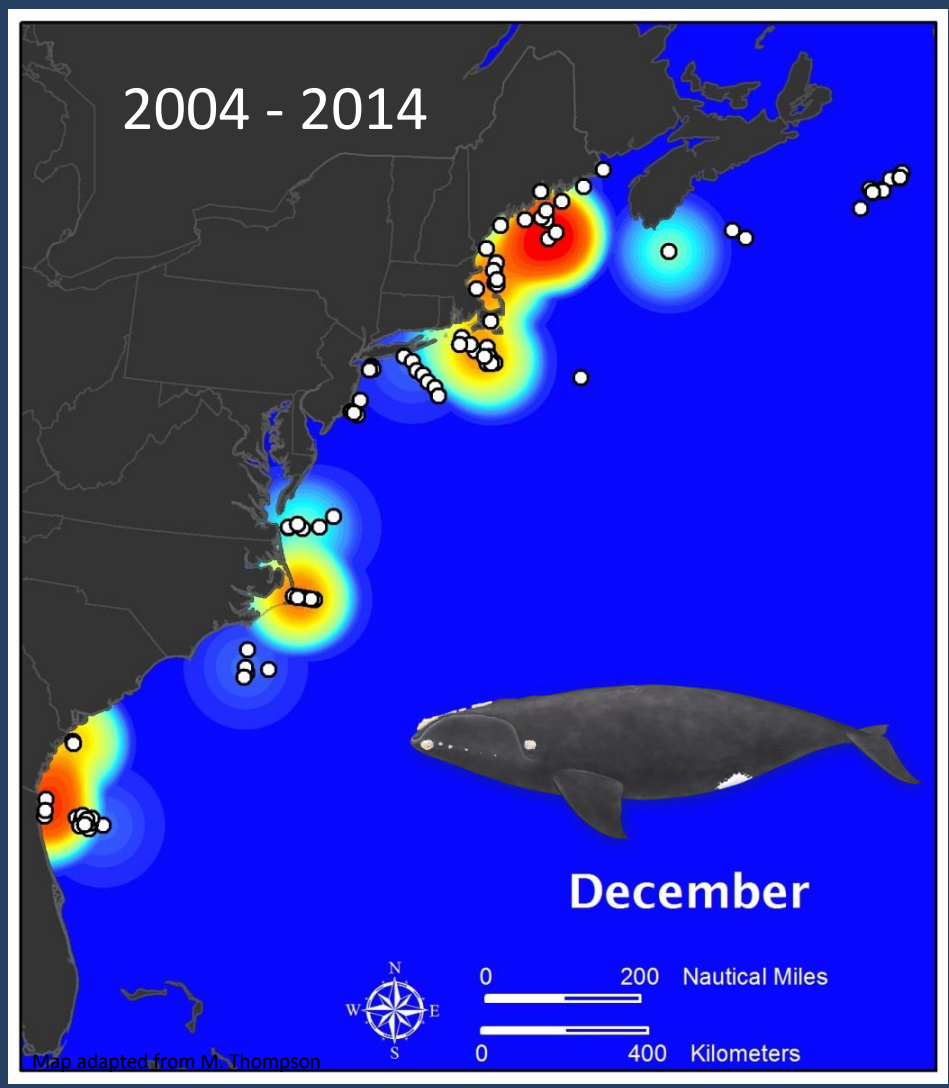
Project: NEFSC_MA-RI_201812_CH2

Site: **N4**
 Platform: **Bottom Mooring**
 Unit: **MARU**
 Position: **40.6112, -70.2600**
 Deployed: **Dec 20, 2018 to Jun 27, 2019**
 Duration: **190 days**





NARW LONG TERM CHANGES: SPATIAL



Davis et al. 2017. Long-term passive acoustic recordings track the changing distribution of North Atlantic right whales. Scientific Reports 7: 13460.

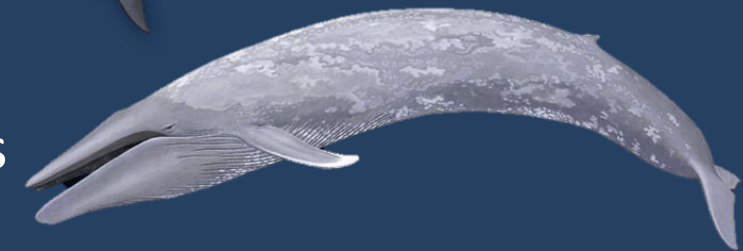
OTHER BALEEN WHALE SPECIES

With the same data set and methods, we looked at the acoustic distribution for:



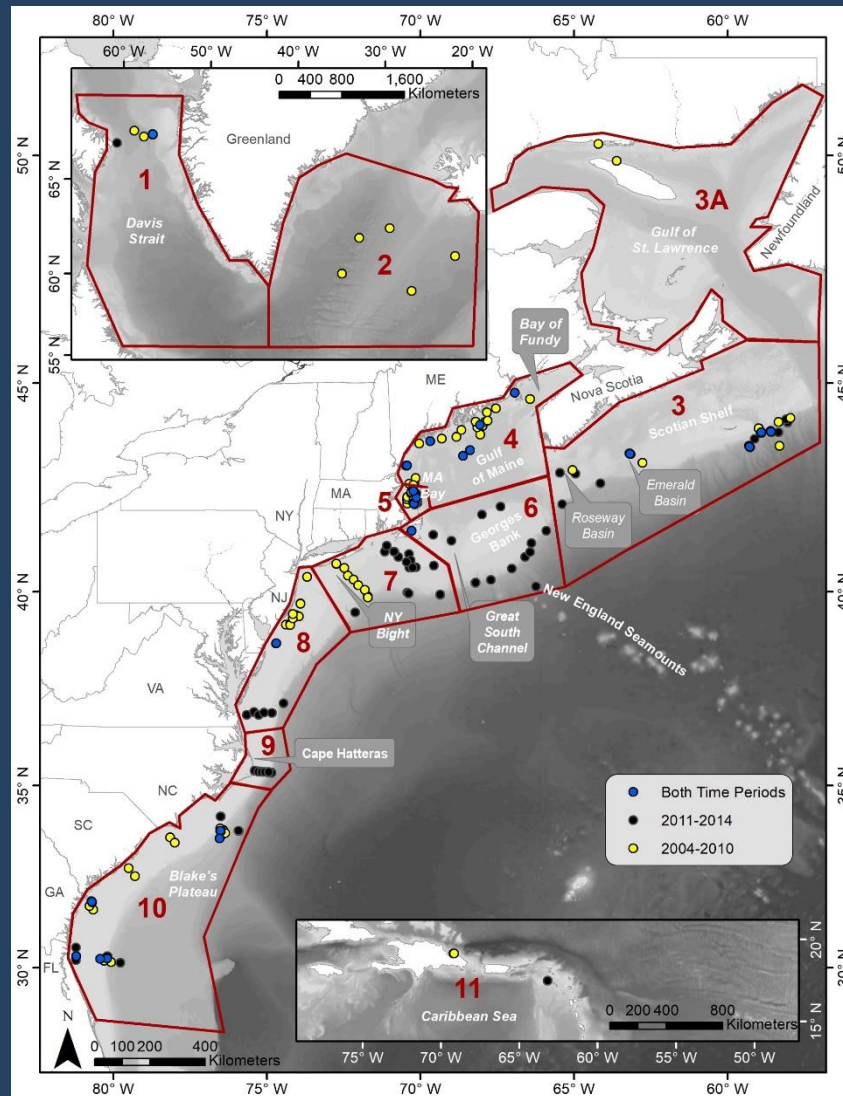
fin whales

blue whales

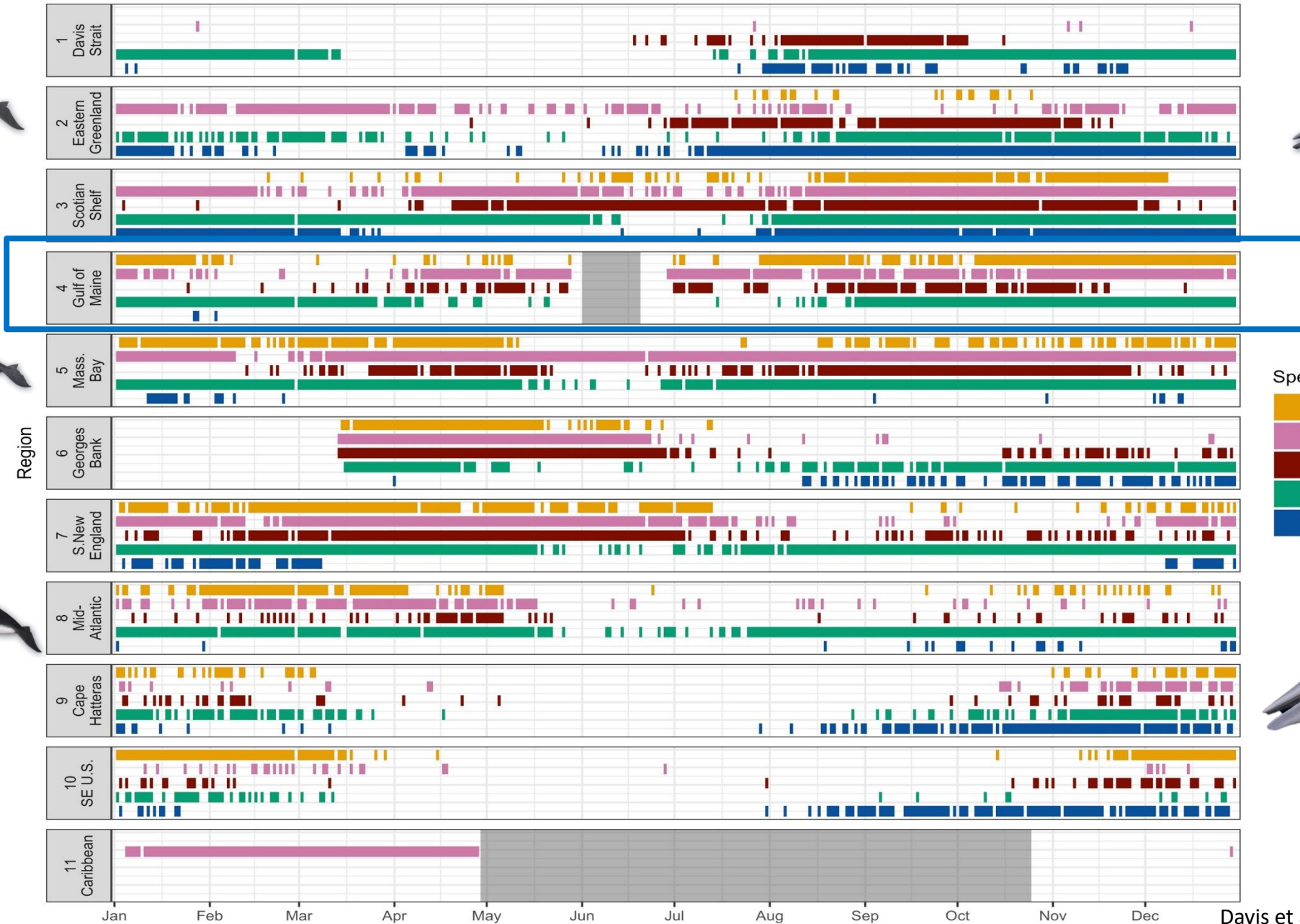


humpback whales

sei whales

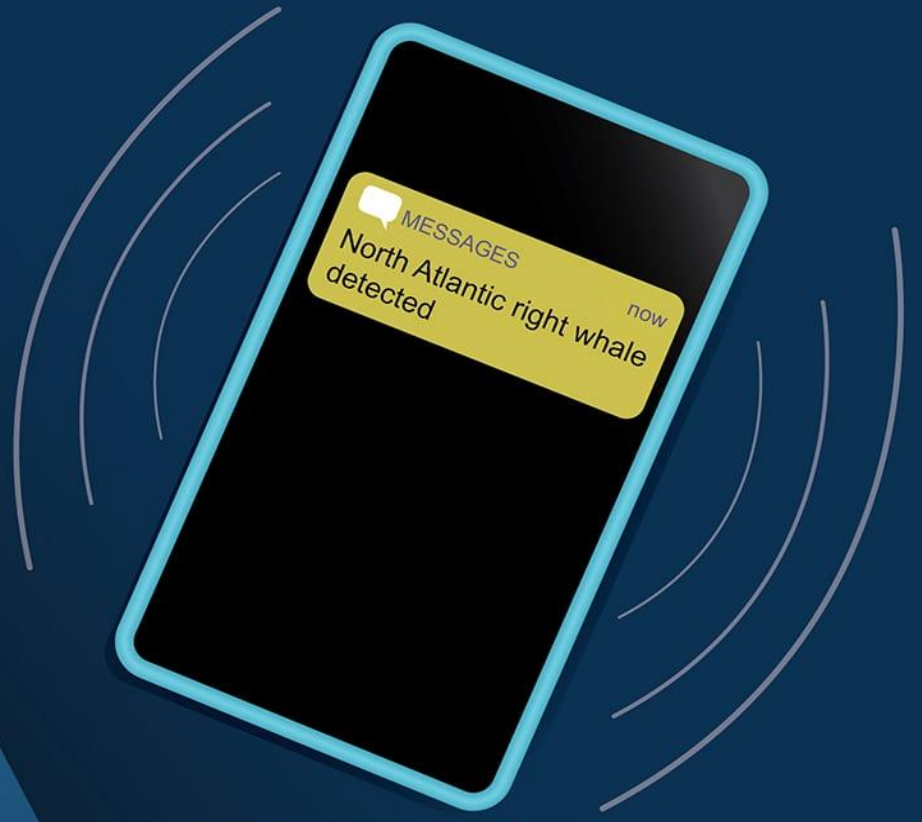
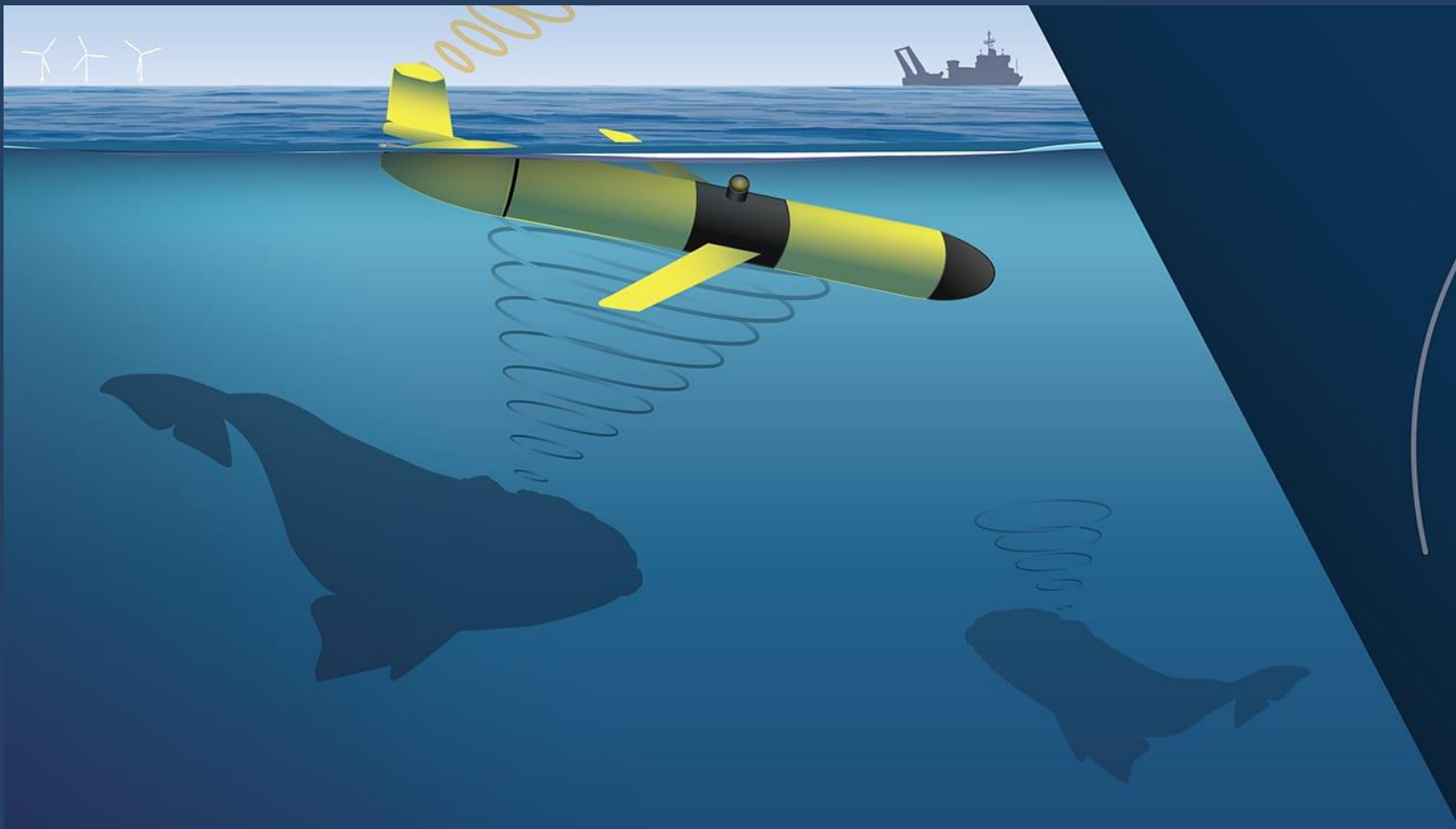


5 SPECIES ACOUSTIC PRESENCE (2004-2014)



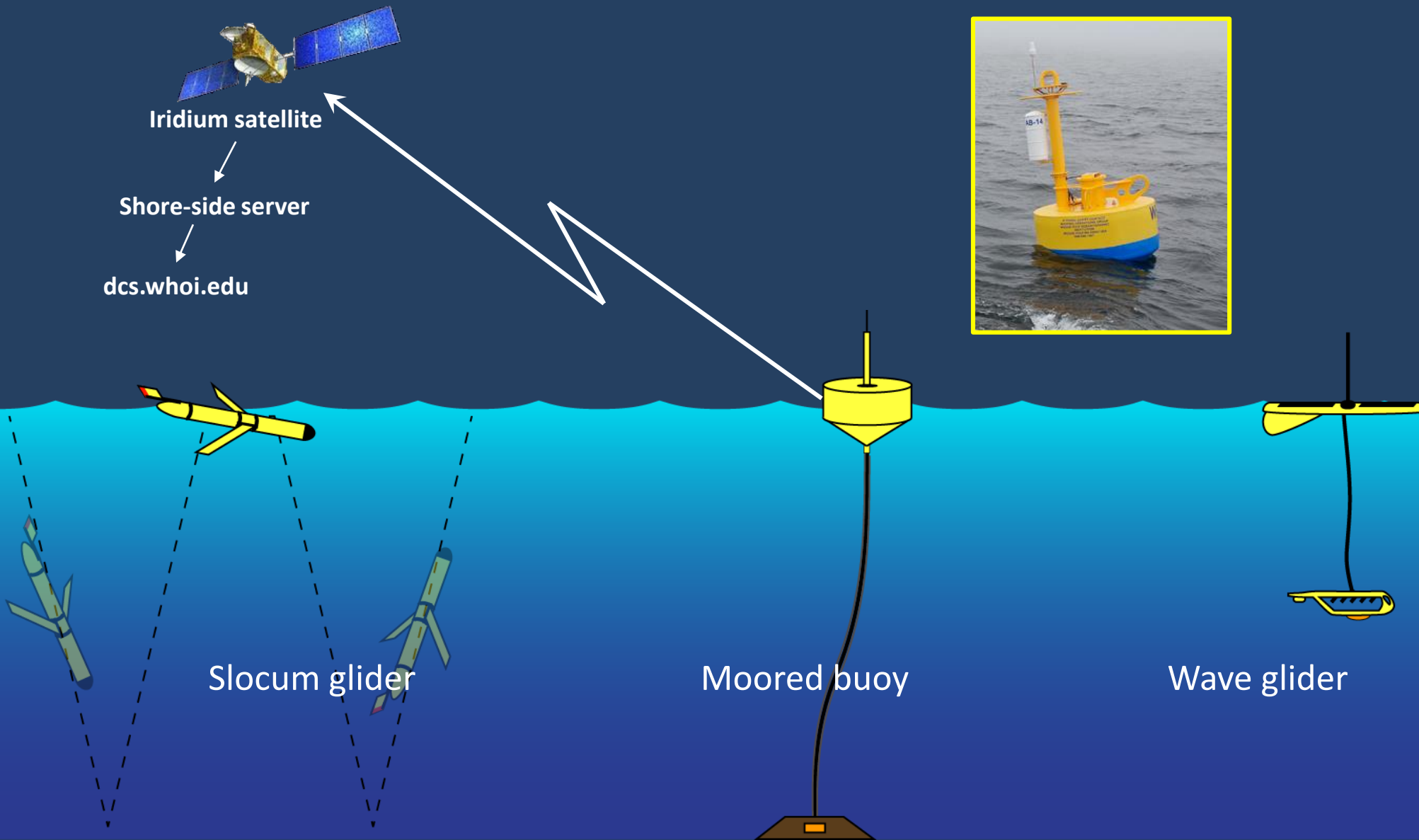


REAL-TIME PASSIVE ACOUSTICS



Graphic: Woods Hole Oceanographic Institution

REAL-TIME MONITORING & MITIGATION





REAL-TIME MONITORING & MITIGATION

Distribution of Information



Web Platforms

robots4whales.who.edu

Daily analyst review:

Date	Sei whale	Fin whale	Right whale	Humpback whale
09/04/2015	Red	Red	Red	Red
09/03/2015	Yellow	Red	Red	Red
09/02/2015	Yellow	Red	Red	Red
09/01/2015	Yellow	Red	Yellow	Red
08/31/2015	Yellow	Red	Red	Red
08/30/2015	Yellow	Red	Red	Red
08/29/2015	Red	Red	Red	Red
08/28/2015	Red	Red	Red	Red

WHALEMAP(DFO/Dalhousie)

WHALEMAP: LATEST RIGHT WHALE OBSERVATIONS

Last 14 days of sightings, effort, and acoustic detections

SUMMARY MAP

MAP KEY

ABOUT

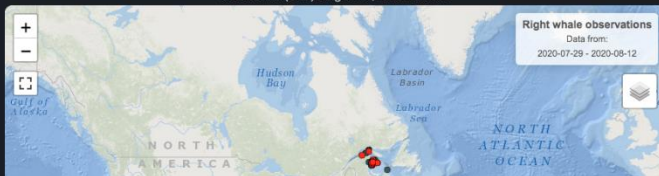
INTERACTIVE MAP

FISHERIES NOTICES

REPORT SIGHTING

REPORT DEAD/DISTRESSED WHALE

Current time (UTC): August 12, 2020 21:36:02



Notifications

Email message

Mark Baumgartner

To: undisclosed-recipients;

Fin whales detected on the Nomans Land buoy

Time now: 12/13/16 12:00 EST

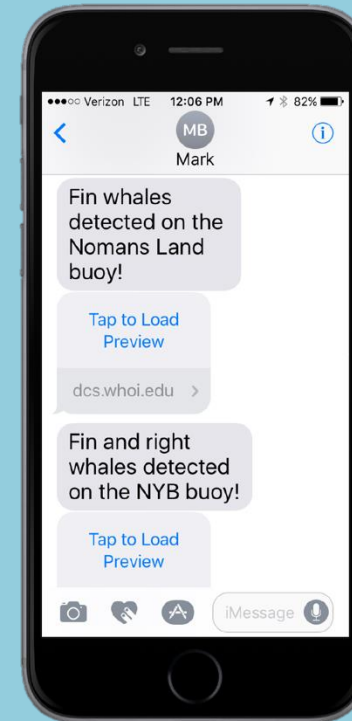
Fin whales detected on the Nomans Land buoy! Latest detections: 2.8 hours ago.

Fin whale detections:

- 12/12/16 18:09 EST (17.8 hr ago)
- 12/12/16 19:09 EST (16.8 hr ago)
- 12/12/16 20:09 EST (15.8 hr ago)
- 12/12/16 21:09 EST (14.8 hr ago)
- 12/12/16 23:09 EST (12.8 hr ago)
- 12/13/16 00:09 EST (11.8 hr ago)
- 12/13/16 01:09 EST (10.8 hr ago)
- 12/13/16 02:09 EST (9.8 hr ago)
- 12/13/16 02:24 EST (9.6 hr ago)
- 12/13/16 03:09 EST (8.8 hr ago)
- 12/13/16 05:09 EST (6.8 hr ago)
- 12/13/16 06:09 EST (5.8 hr ago)
- 12/13/16 07:09 EST (4.8 hr ago)
- 12/13/16 08:09 EST (3.8 hr ago)
- 12/13/16 09:09 EST (2.8 hr ago)

See <http://dcs.who.edu/nomans0916/nomans0916.shtml> for more information

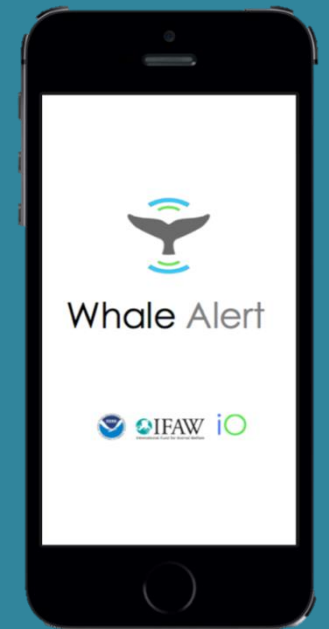
Text message



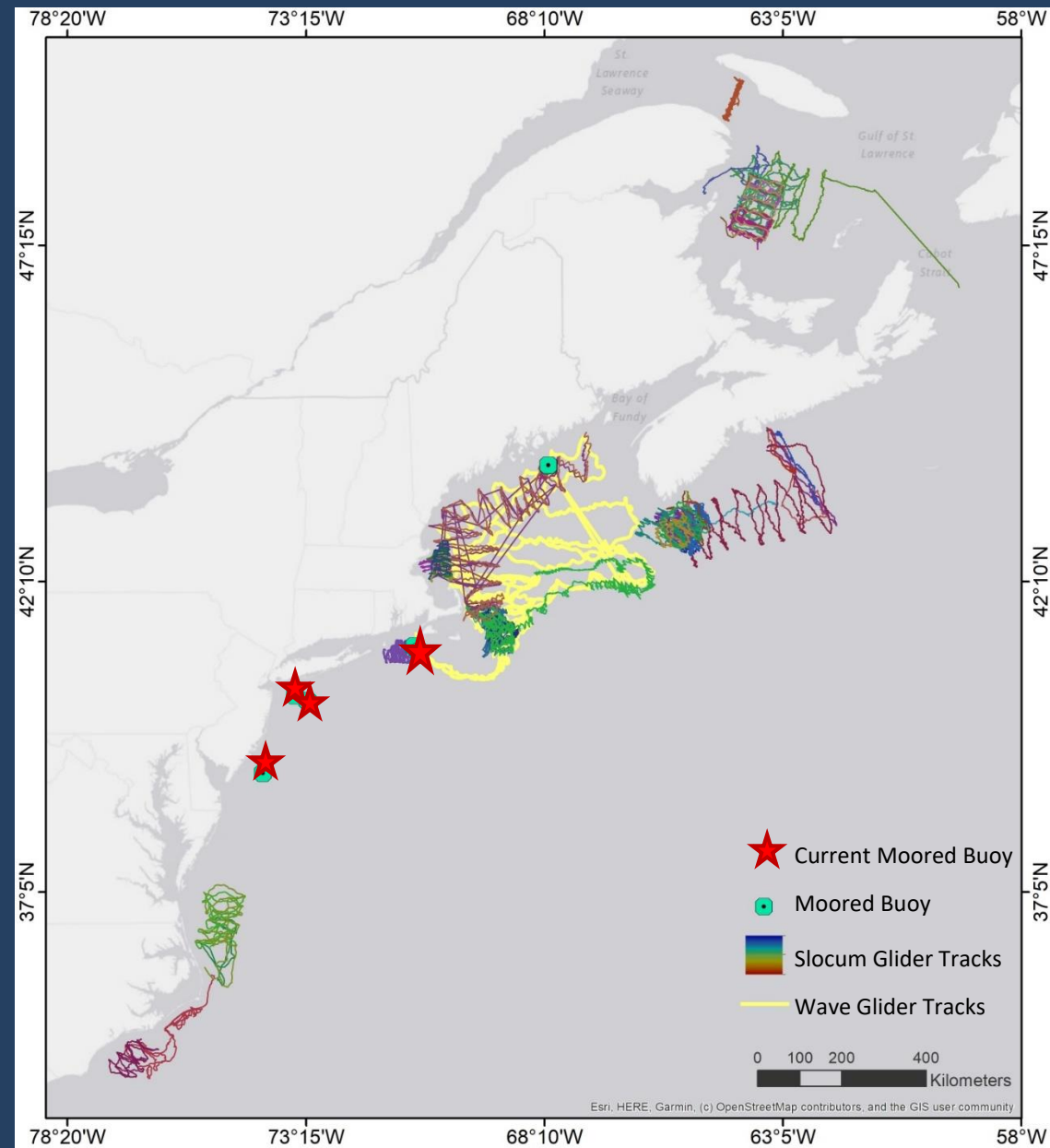
Applications

CG1View

Whale Alert app

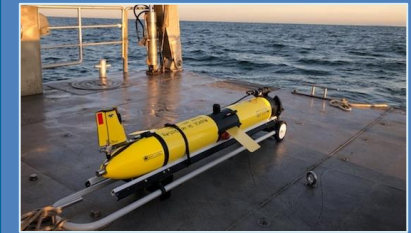


GLIDER DATA



U.S. & Canada Real-Time deployments since 2012

Platform	Total # deployments	Total # of days monitored
Slocum Glider	55	2436
Moored Buoy	12	2461
Wave Glider	3	326



Photos: Mark Baumgartner



REAL-TIME ACOUSTICS

Live now at: robots4whales.who.edu

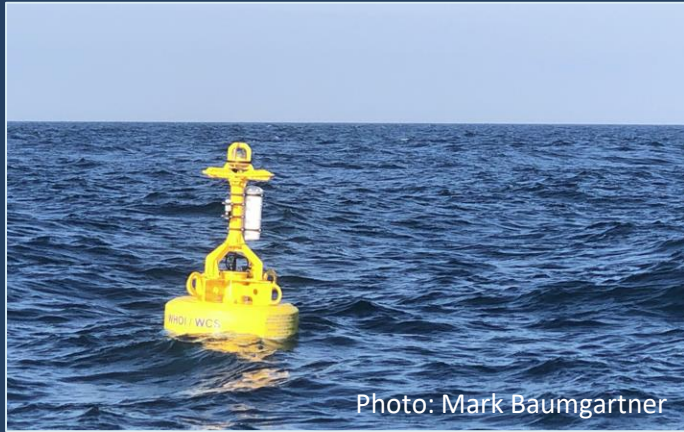


Photo: Mark Baumgartner

Monitoring:

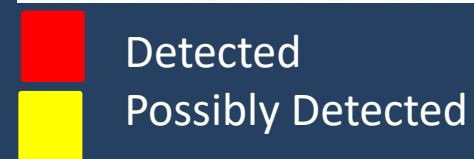
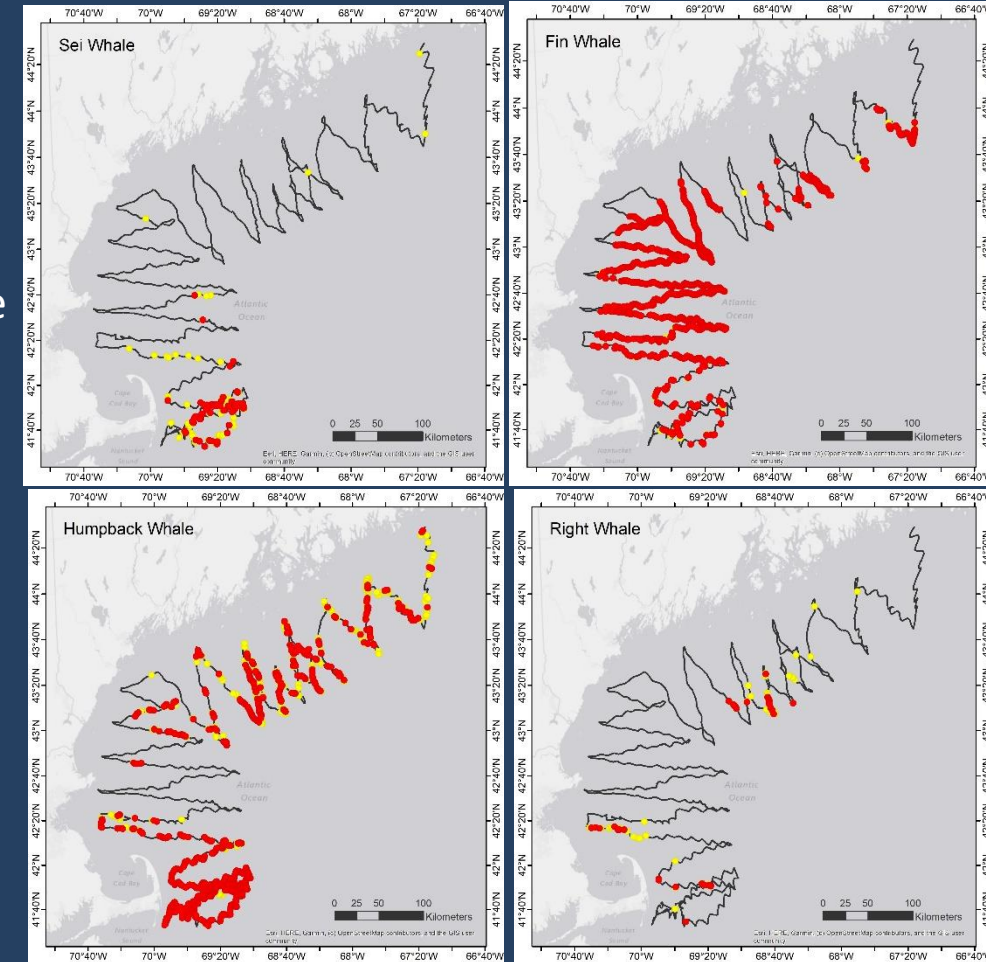
- When and where are they?
- Reduce aerial/vessel survey time spent looking for whales

Mitigation:

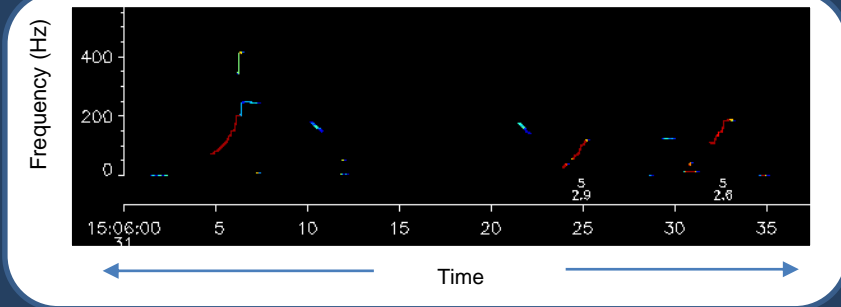
- Reduce ship strike risk
- Creation of NMFS 'Slow Zones'
- Inform operations e.g. wind



Photo: Mark Baumgartner




RIGHT WHALE SLOW ZONES

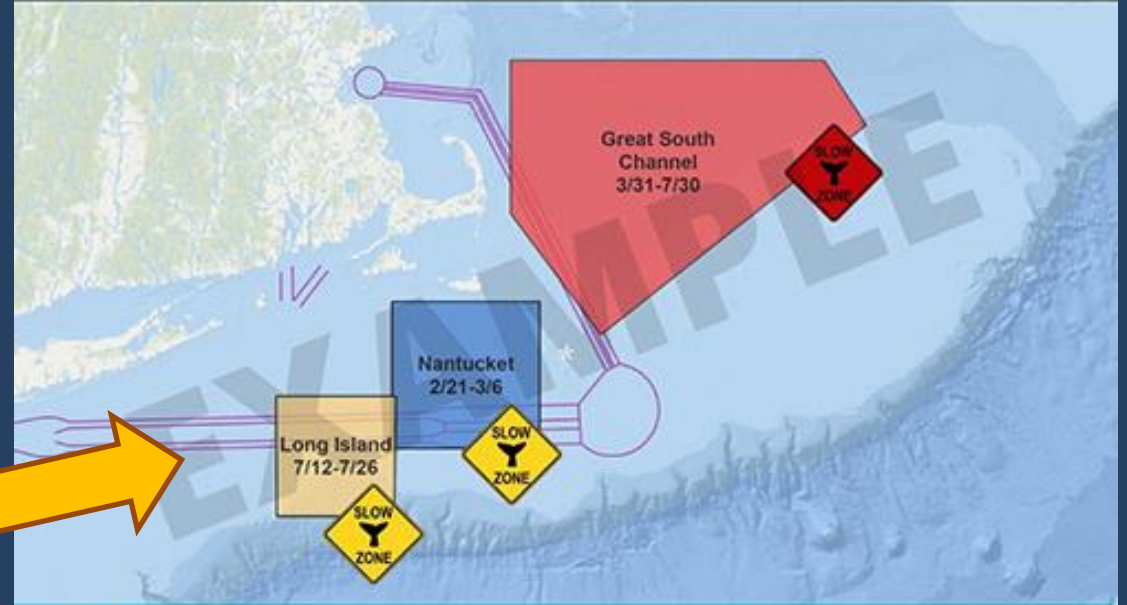



Date	Right whale
04/01/2015	Detected


robots4whales.who.edu




**ATTENTION ALL BOATERS:
SLOW DOWN TO 10 KNOTS
OR LESS FOR RIGHT WHALES**



 Annual seasonal slow down zones. **REQUIRED** for boats 65 feet and bigger. Recommended for smaller boats.

 Areas where right whales have been sighted (Dynamic Management Area ^{*}) or heard. Recommended slow down zones for **ALL** vessels.



**NOAA
FISHERIES**

CURRENT GOM PAM



Current:

**8 recorders out in inshore
Maine since Jan 2020**

**Further expansion planned
through many projects**

Table 1: Table summarizing number of days with NARW presence/number of total recording days for the given month

Site	RecordingDates	03-2020	04-2020	05-2020	06-2020	07-2020	08-2020
York	06/18/20 - 06/19/20	-/-	-/-	-/-	0/2	-/-	-/-
Portland	06/18/20 - 08/05/20	-/-	-/-	-/-	0/13	0/31	0/5
Monhegan	03/09/20 - 06/17/20	0/23	0/30	0/31	0/17	-/-	-/-
Matinicus	03/09/20 - 06/28/20	0/23	0/30	0/31	0/28	-/-	-/-
Seal Island	03/09/20 - 04/08/20	0/23	0/8	-/-	-/-	-/-	-/-
Petit Manan	03/12/20 - 06/29/20	0/20	0/30	0/31	0/29	-/-	-/-
Lubec	05/14/20 - 07/21/20	-/-	-/-	0/18	1/30	0/21	-/-