

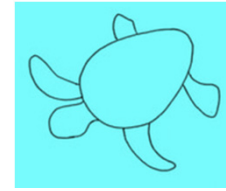
Turtle populations in the northwest Atlantic

Presented at the Wildlife and Offshore Wind Workshop
November 13, 2018

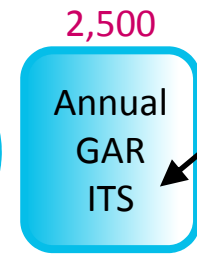
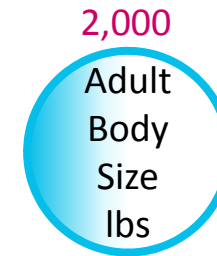
Heather Haas, Northeast Fisheries Science Center

Species

- ESA Status
 - Endangered
 - Threatened
- Population Listed
 - Throughout its range
 - Distinct Population segment



Unless otherwise noted, all turtle photographs are NOAA/CFF taken under ESA Permit 16556 or predecessors.



Includes non-lethal acoustic harassment takes.




250,000

Shading represents ballpark estimate.

Current (03/18) Wind ITS in GAR

Includes non-lethal
acoustic harassment
takes.



CONSULTATION ACTIVITY	ACTION AREA	INCIDENTAL TAKE STATEMENT			
		Loggerhead (NWA DPS)	Green (NA DPS)	Leather-back	Kemp's Ridley
NER-2012-9211 Commercial Wind Lease Issuance and Site Assessment Activities on the Atlantic Outer Continental Shelf in MA, RI, NY and NJ Wind Energy Areas	Designated wind energy areas off MA, RI, NY and NJ	5,015	363	363	363
<i>In all activities over 5 year period</i>					
NER-2015-12248 Deepwater Wind: Block Island Wind Farm and Transmission System	Block Island Wind Farm in Rhode Island state waters 3 miles SE of Block Island	576	64	64	64
<i>During pile driving over project period</i>					
NER-2015-12128 Virginia Offshore Wind Technology Advancement Project	Designated wind energy area off Virginia Beach, Virginia	630	328	210	1,064
<i>During pile driving over project period</i>					

Green



Alejandro Fallabrino
(<http://myd.as/p7229>)

Green Turtle

Chelonia mydas

ESA Threatened

North Atlantic DPS

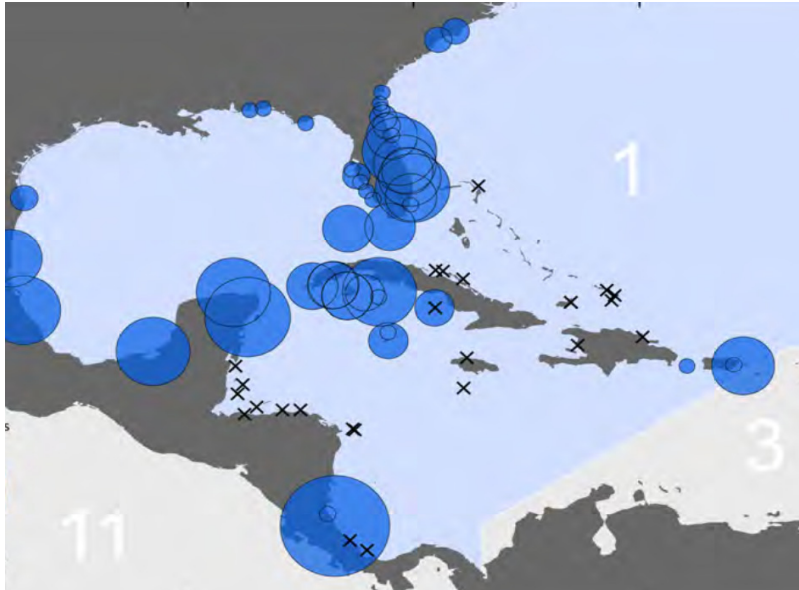
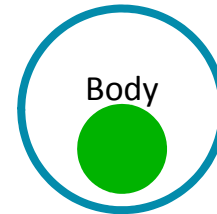


Photo: NOAA



Line Transect Sightings in GAR

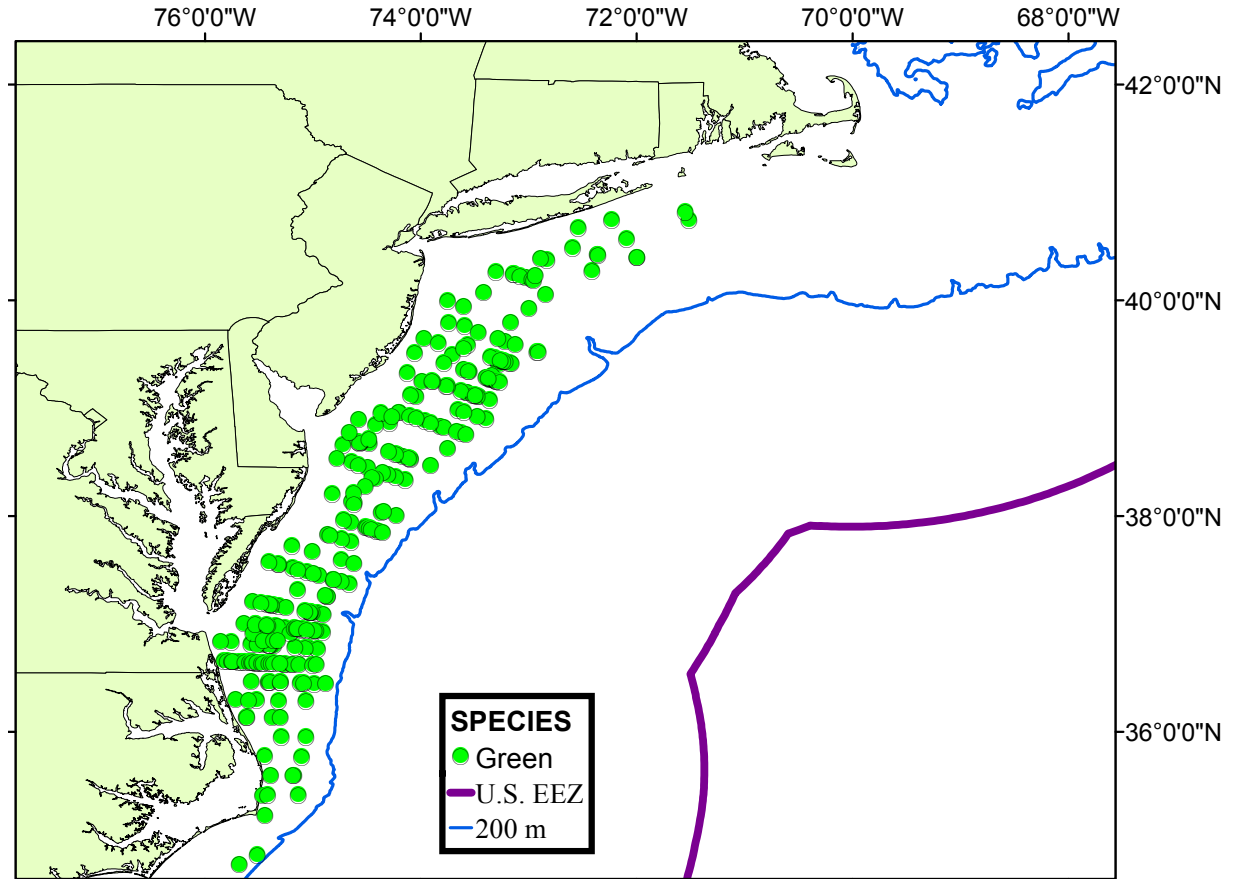
Alejandro Fallabrino
(<http://myd.as/p7229>)



Data collected by
AMAPPS 2010-2017.



BOEM
BUREAU OF OCEAN ENERGY MANAGEMENT

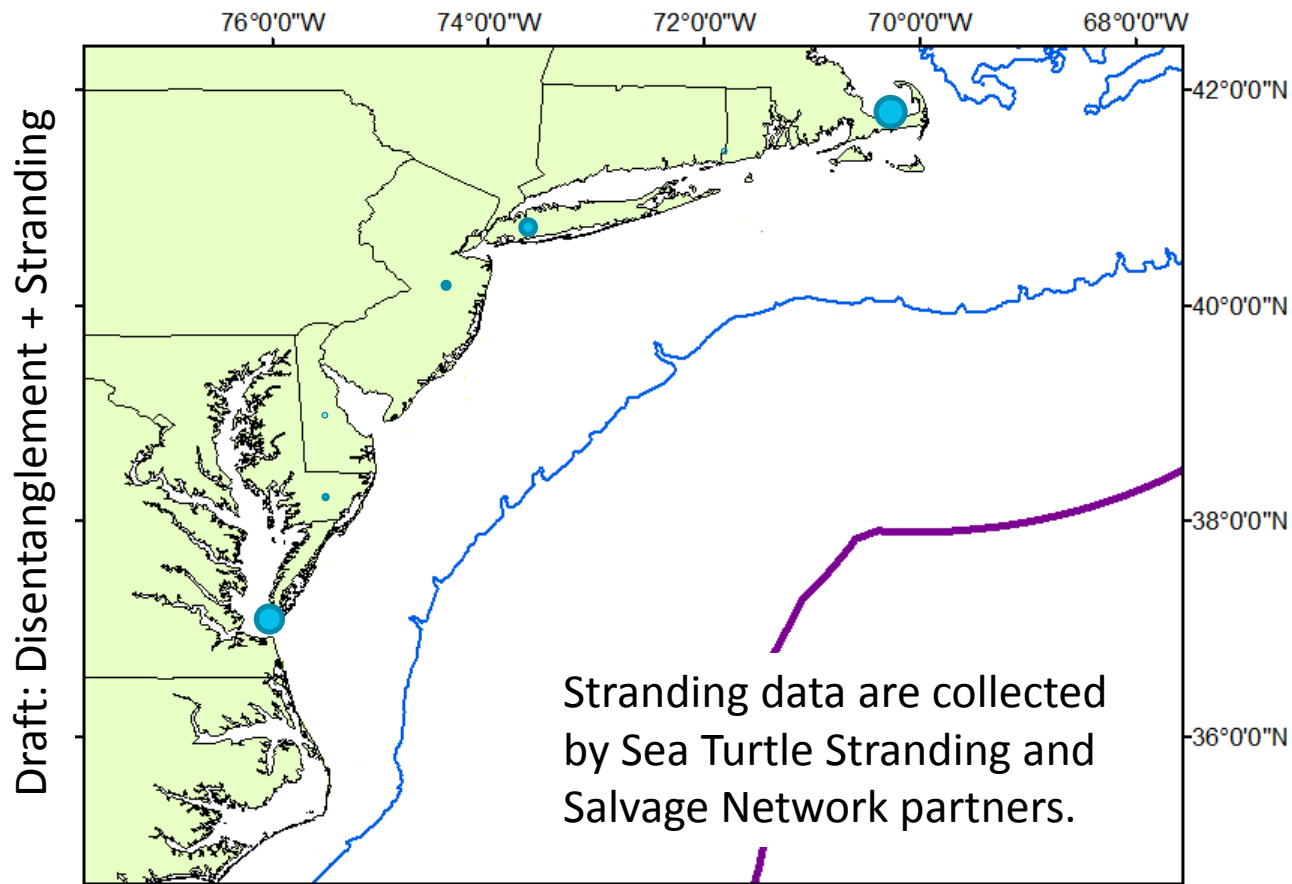


Green STSSN data in GAR 2008-2017

CT/RI	4
DE	7
MA	190
MD	3
ME	1
NJ	40
NY	119
VA	178



Alejandro Fallabrino
(<http://myd.as/p7229>)



Leatherback



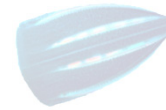
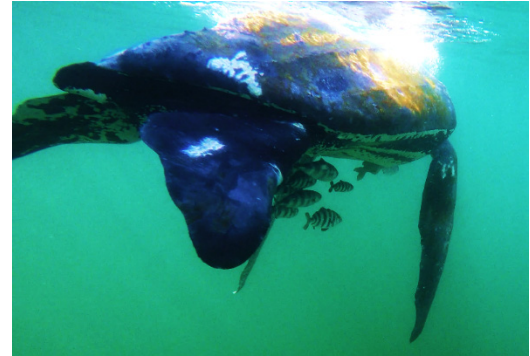
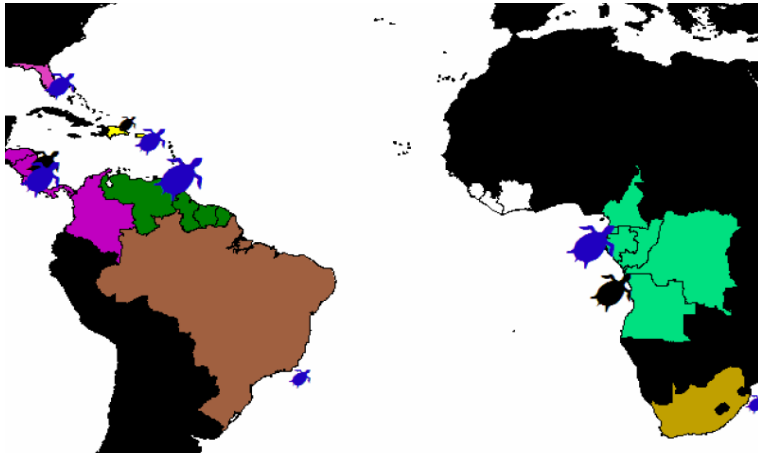
Leatherback

Dermochelys coriacea

ESA Endangered

Throughout its Range
(listed as a global species)

*Status Review underway
(2017 petition to list NWA DPS as threatened)



Body

GAR
ITS

Nests

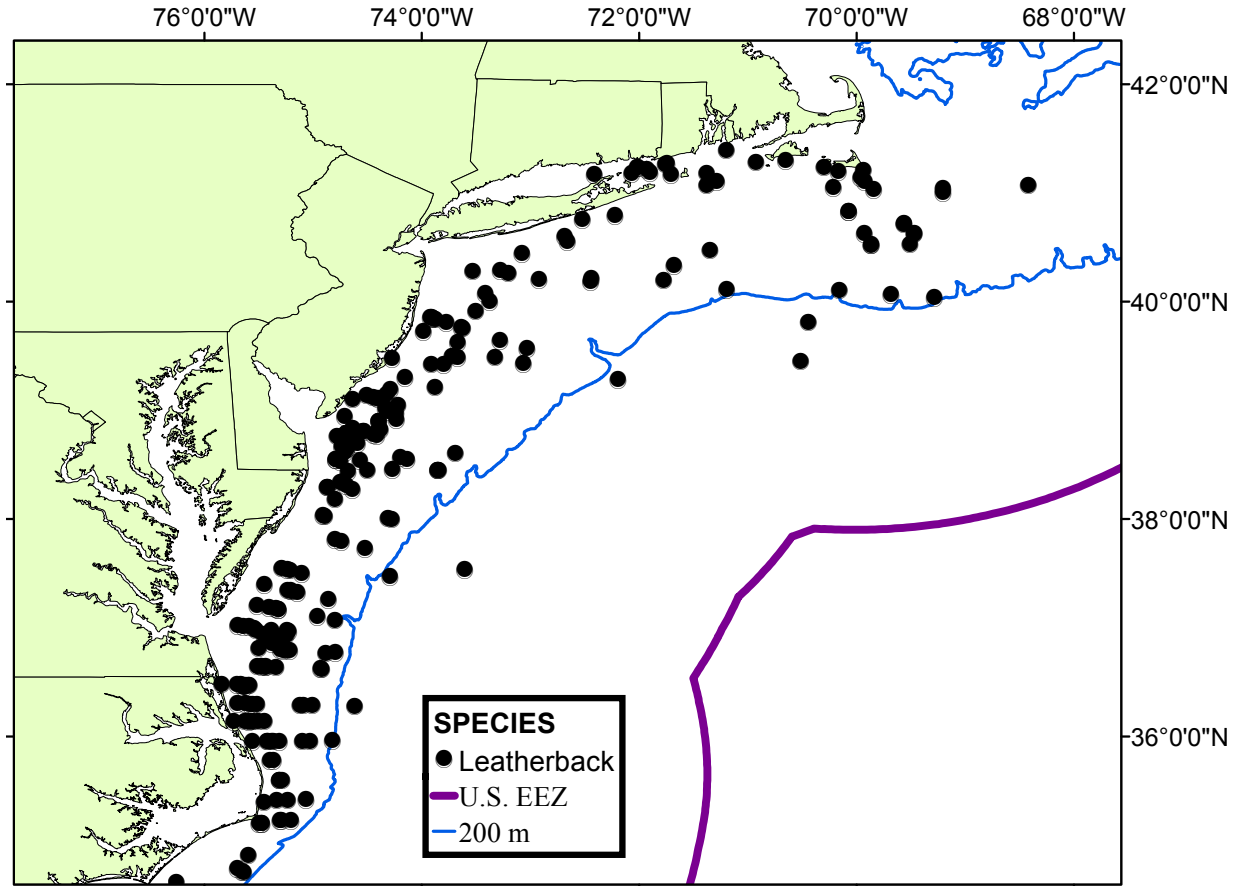
Line Transect Sightings in GAR



Data collected by
AMAPPS 2010-2017.

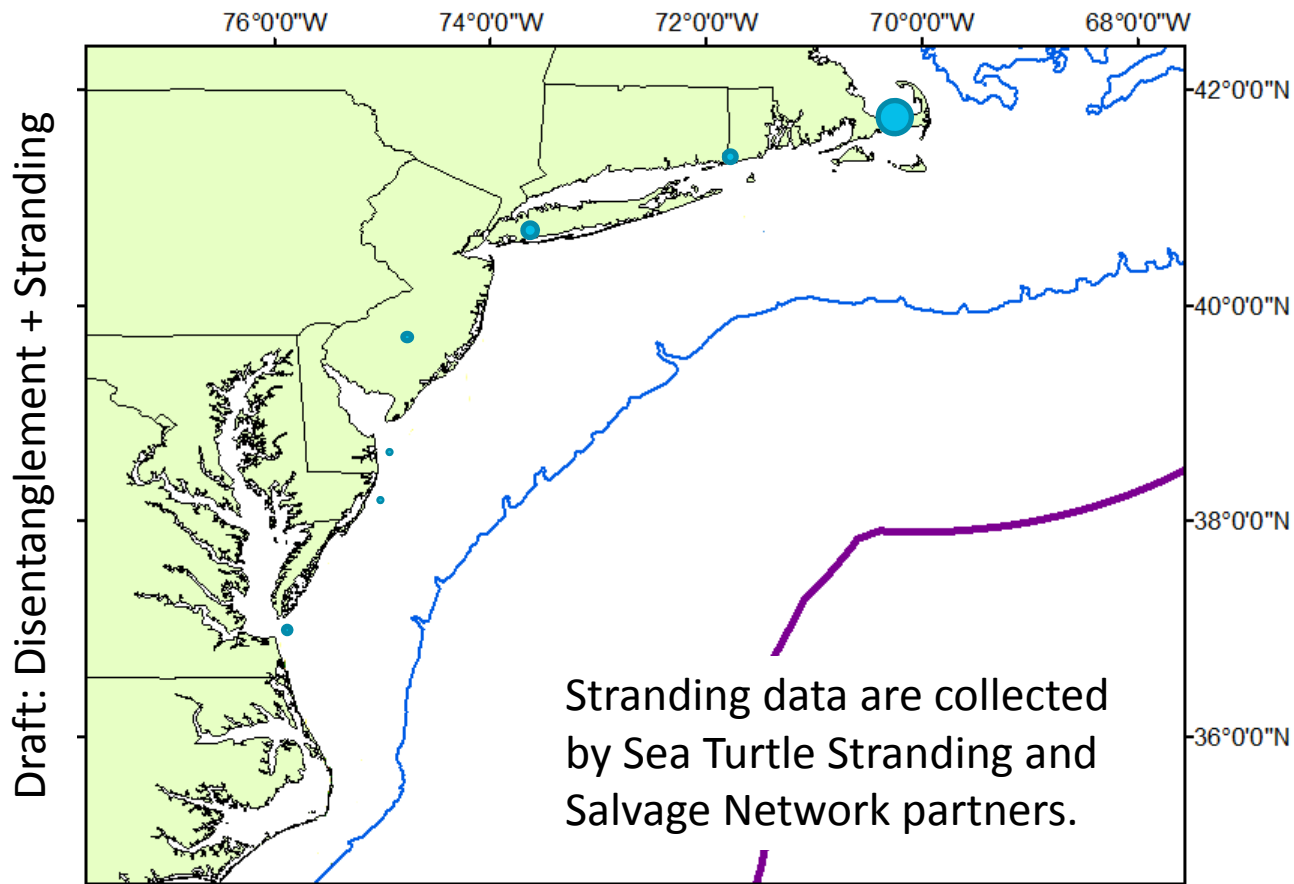


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Leatherback STSSN data in GAR 2008-2017

CT/RI	83
DE	13
MA	233
MD	20
ME	20
NJ	39
NY	101
VA	41



Kemp's Ridley



K.Hull - Sarasota Dolphin Research Program,
Mote Marine Laboratory, cropped.

Kemp's Ridley

Lepidochelys kempii

ESA Endangered

Throughout its Range
(listed as a global species)



Photo: NOAA



Body



GAR
ITS



Number of Nests / Year

Line Transect Sightings in GAR

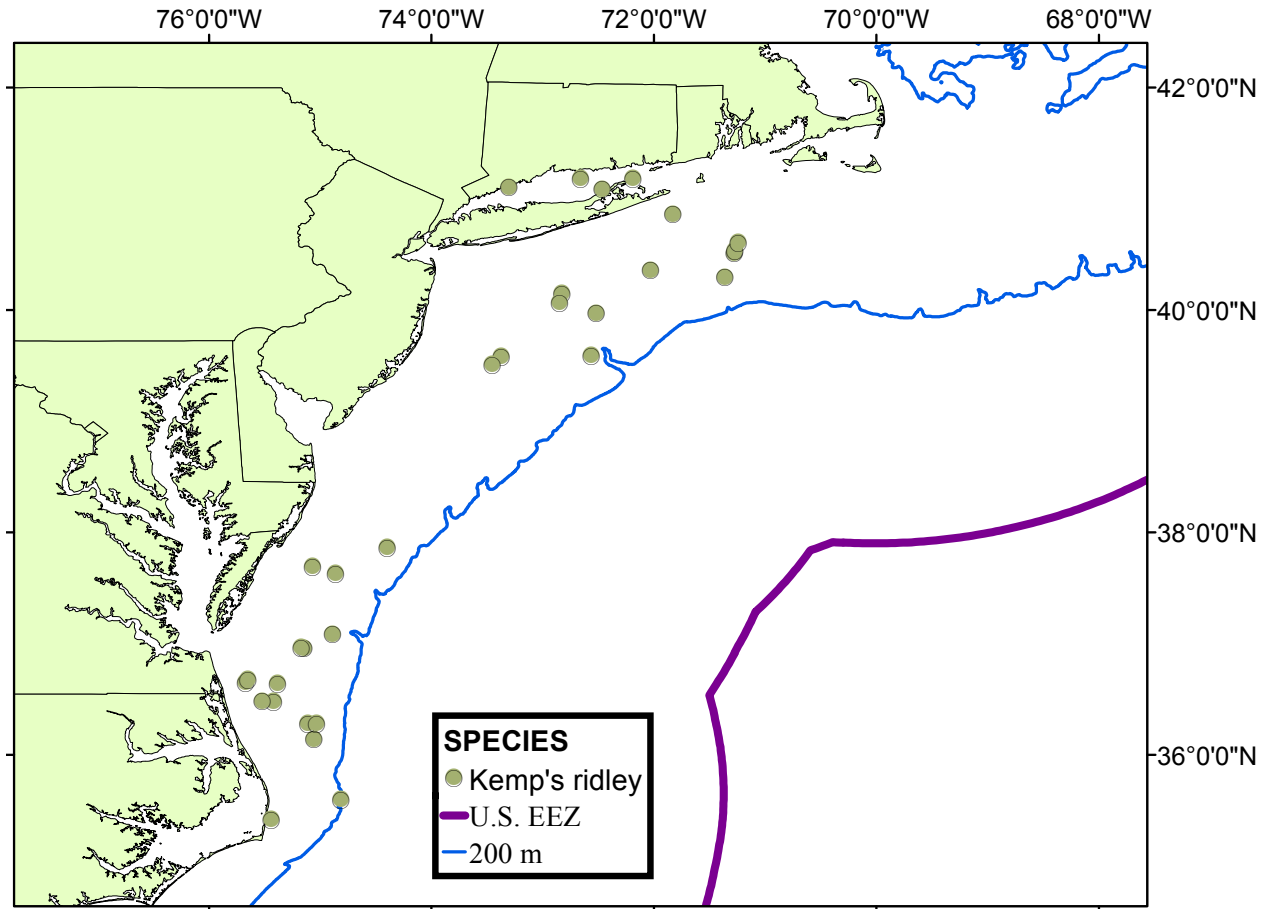
Photo: NOAA



Data collected by
AMAPPS 2010-2017.



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Kemp's STSSN data in GAR 2008-2017

CT/RI	7
DE	31
MA	3416
MD	28
ME	0
NJ	74
NY	193
VA	636

Draft: Disentanglement + Stranding

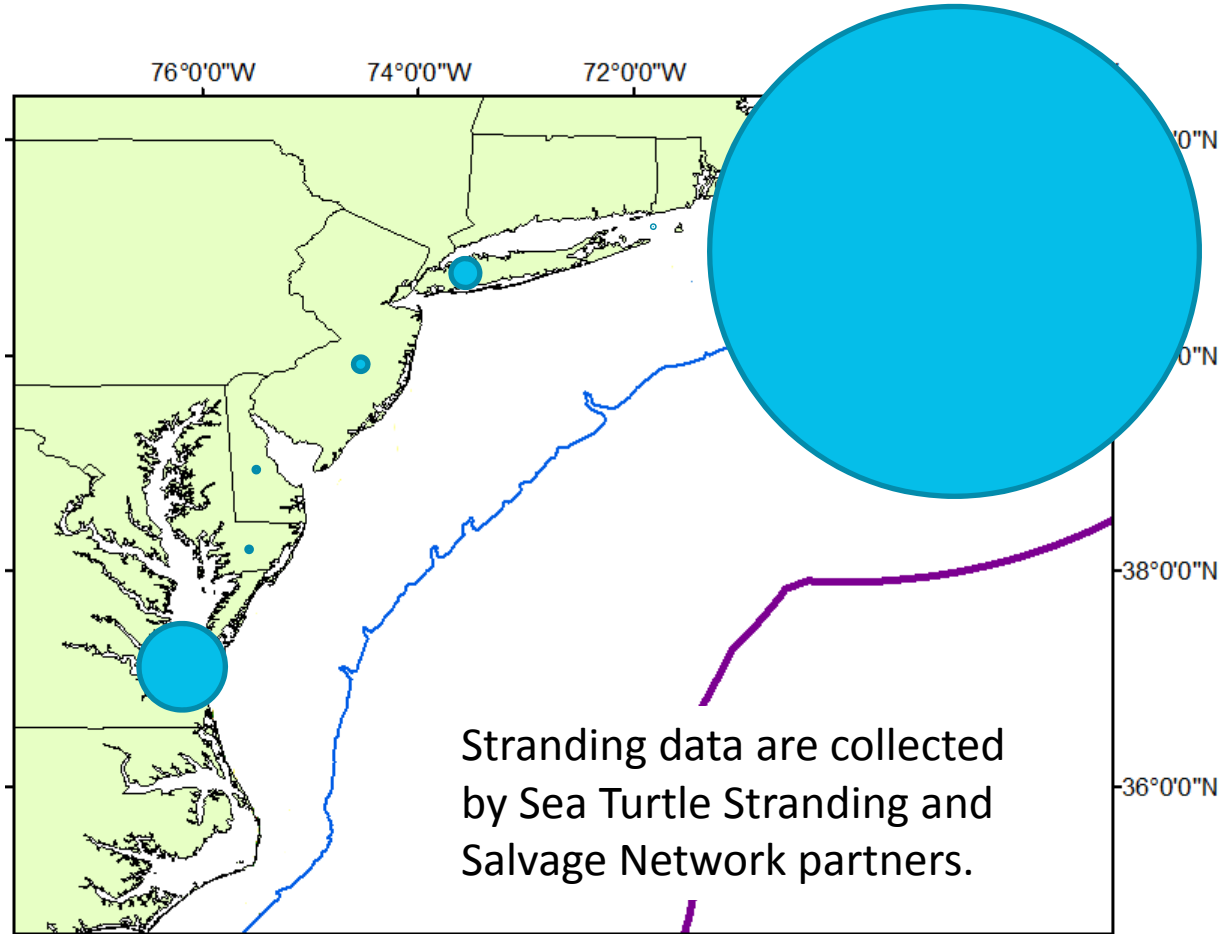


Photo: NOAA





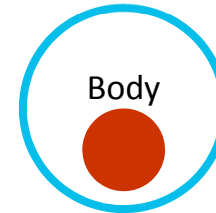
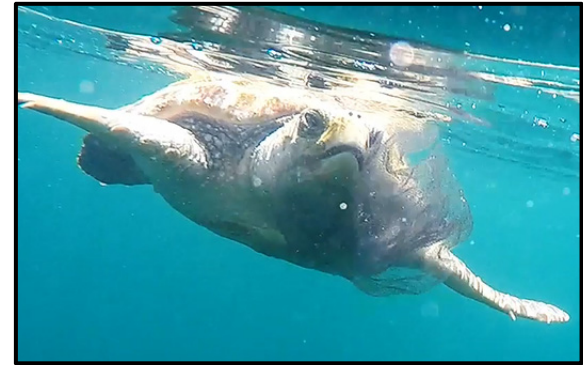
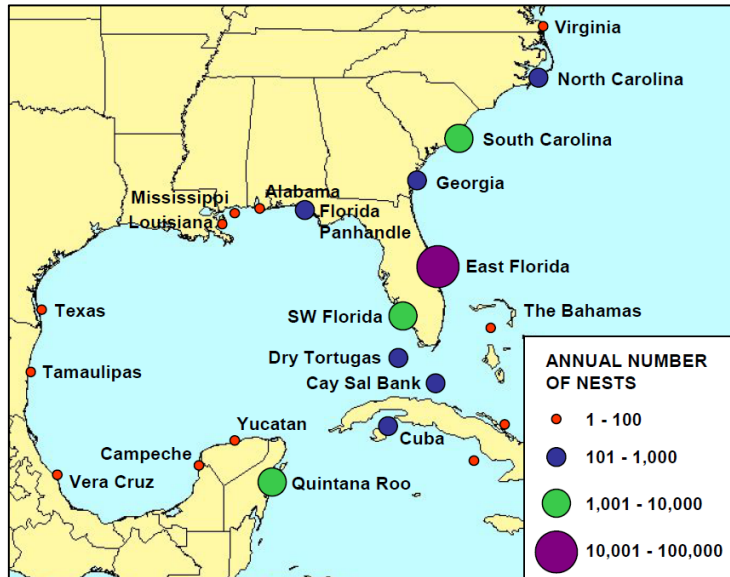
Loggerhead

Loggerhead

Caretta caretta

ESA Threatened

Northwest Atlantic DPS



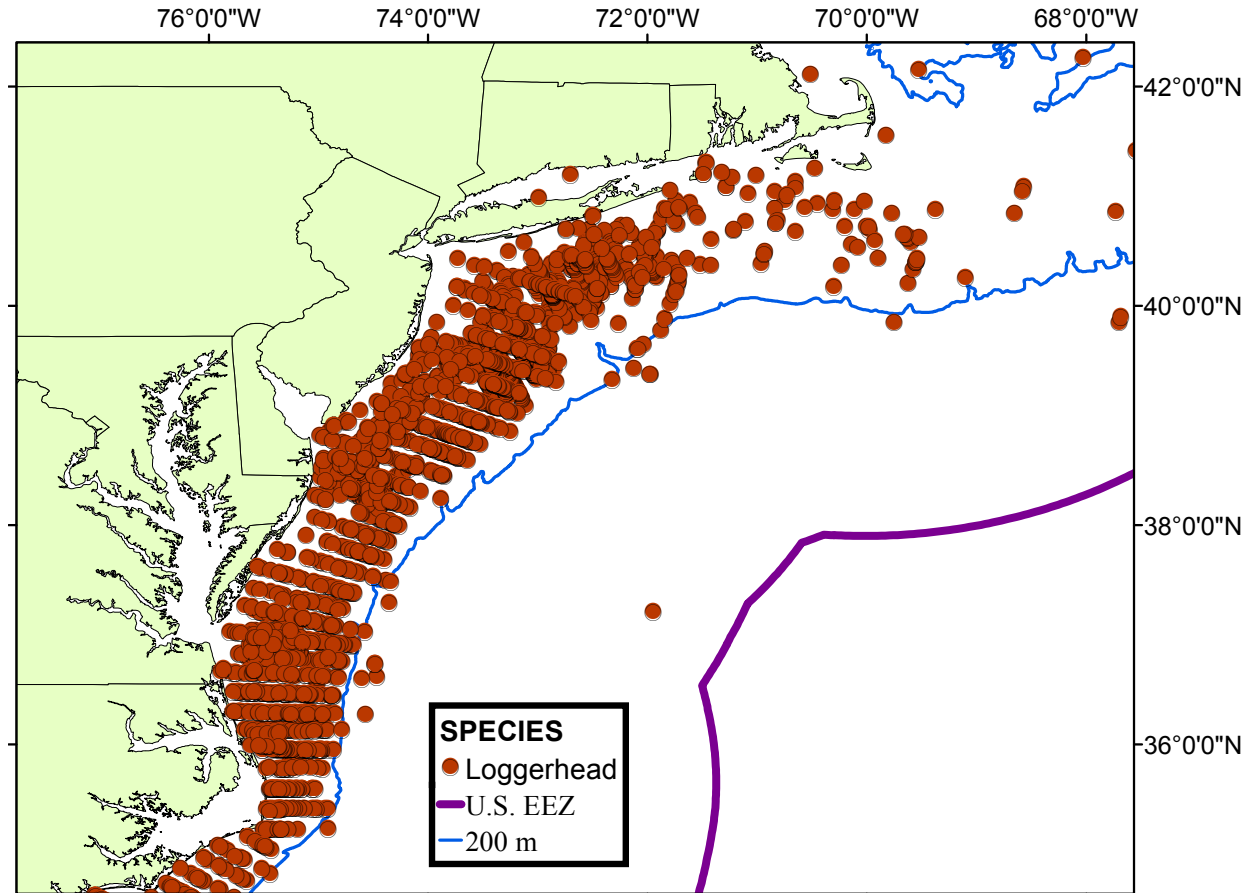
Line Transect Sightings in GAR



Data collected by
AMAPPS 2010-2017.

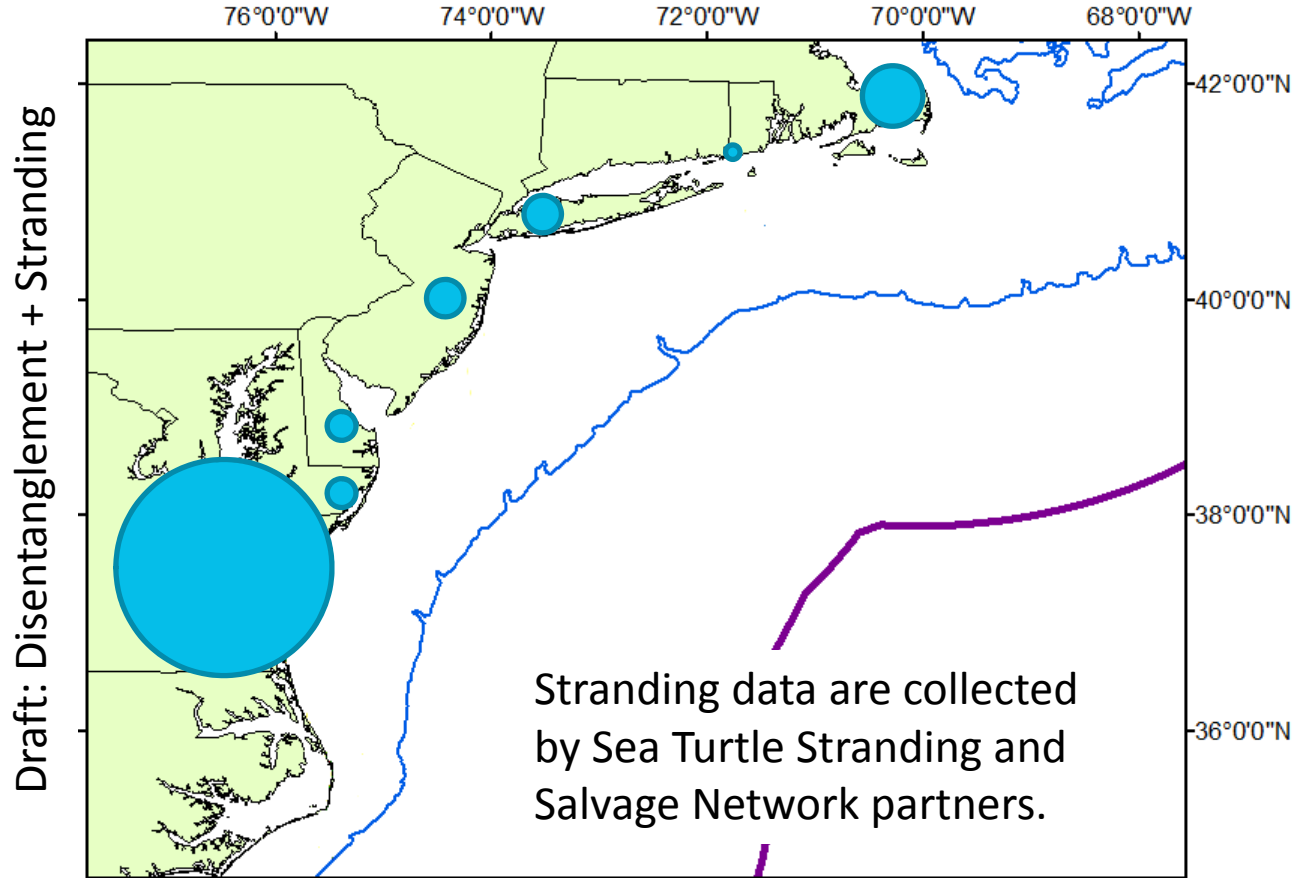


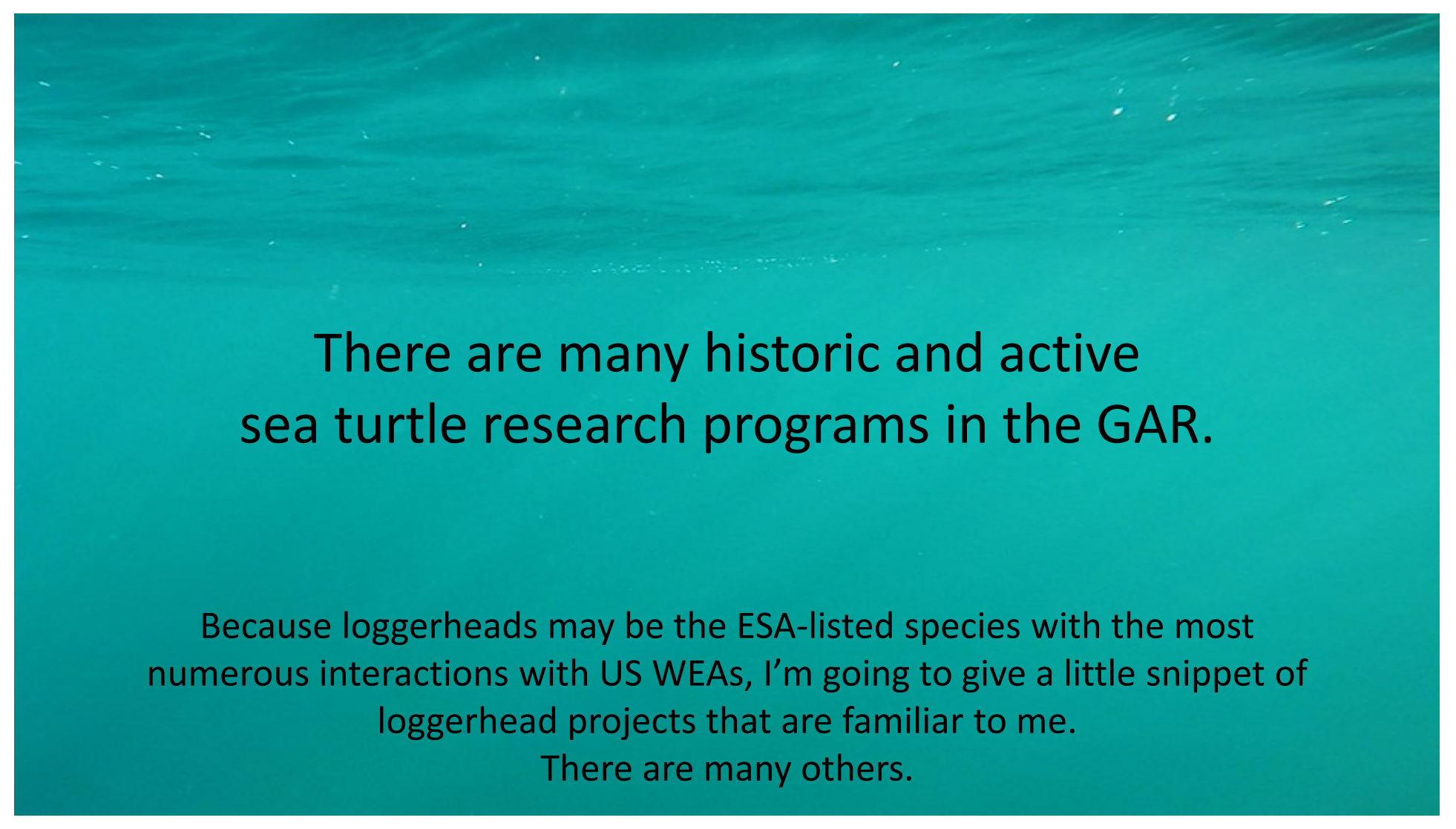
BOEM
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Loggerhead STSSN data in GAR 2008-2017

CT/RI	100
DE	218
MA	420
MD	208
ME	0
NJ	262
NY	263
VA	1522



An underwater photograph of a sea turtle swimming in clear, bright blue water. The turtle is positioned in the center of the frame, moving towards the viewer. Its head and front flippers are visible, and its body is slightly out of focus. The water has a shimmering, rippled texture.

There are many historic and active
sea turtle research programs in the GAR.

Because loggerheads may be the ESA-listed species with the most numerous interactions with US WEAs, I'm going to give a little snippet of loggerhead projects that are familiar to me.
There are many others.

Migrating into the Mid-Atlantic

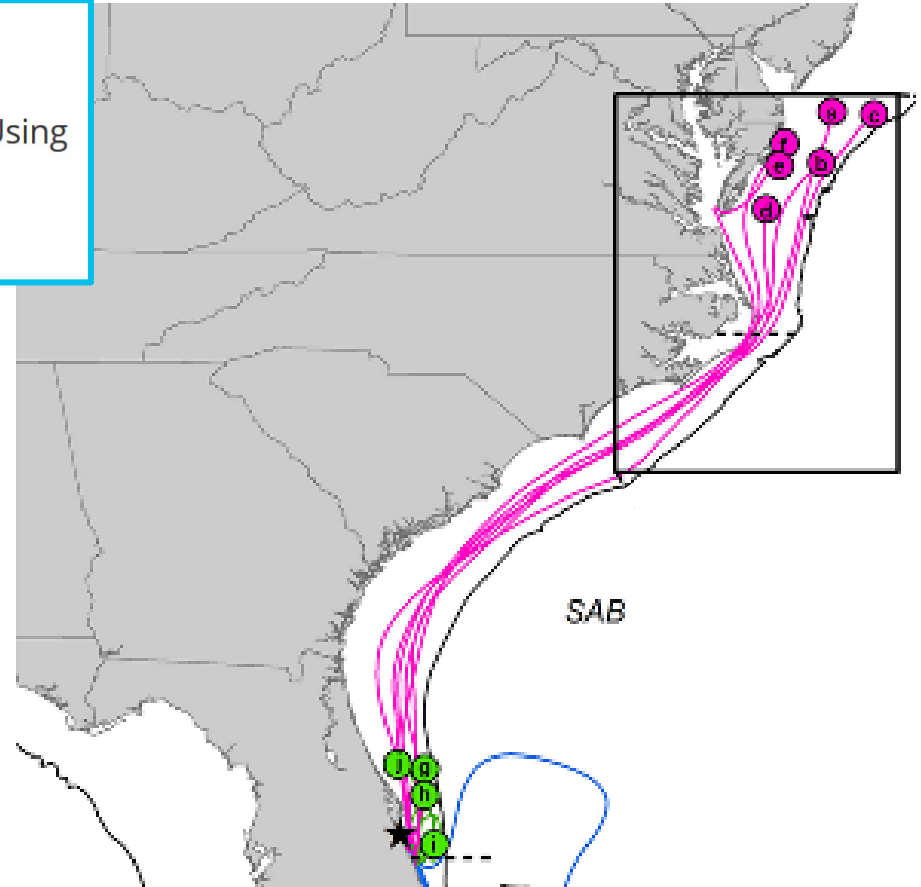
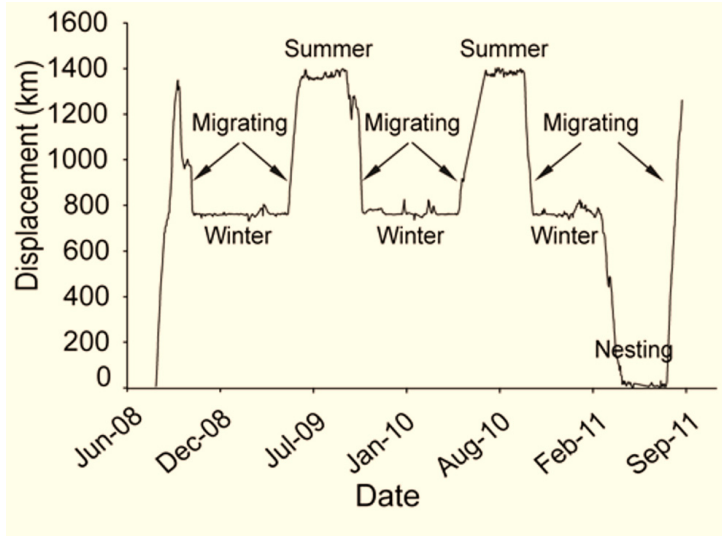
OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Inferring Foraging Areas of Nesting Loggerhead Turtles Using Satellite Telemetry and Stable Isotopes

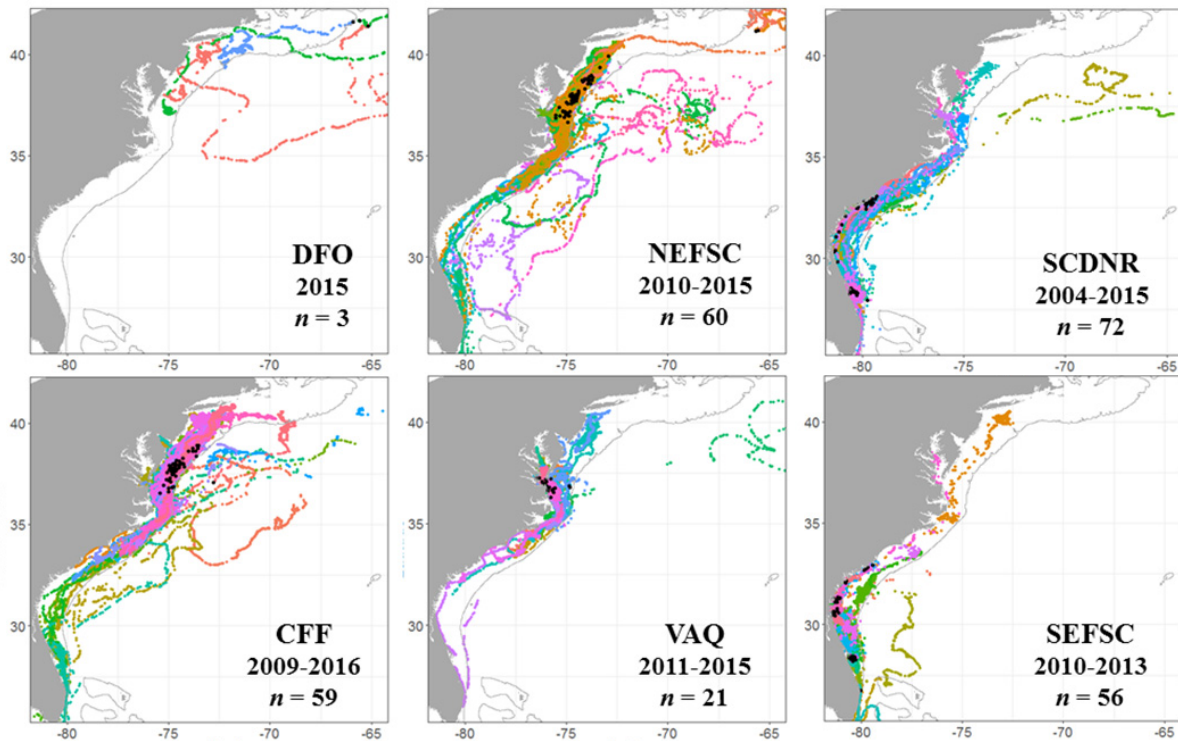
Simona A. Ceriani, James D. Roth, Daniel R. Evans, John F. Weishampel, Llewellyn M. Ehrhart

Published: September 20, 2012 • <https://doi.org/10.1371/journal.pone.0045335>



Estimating the distribution and relative density of satellite-tagged loggerhead sea turtles in the western North Atlantic using geostatistical mixed effects models

Megan V. Winton*, Gavin Fay, Heather L. Haas, Michael Arendt, Susan Barco, Michael C. James, Christopher Sasso, Ronald Smolowitz

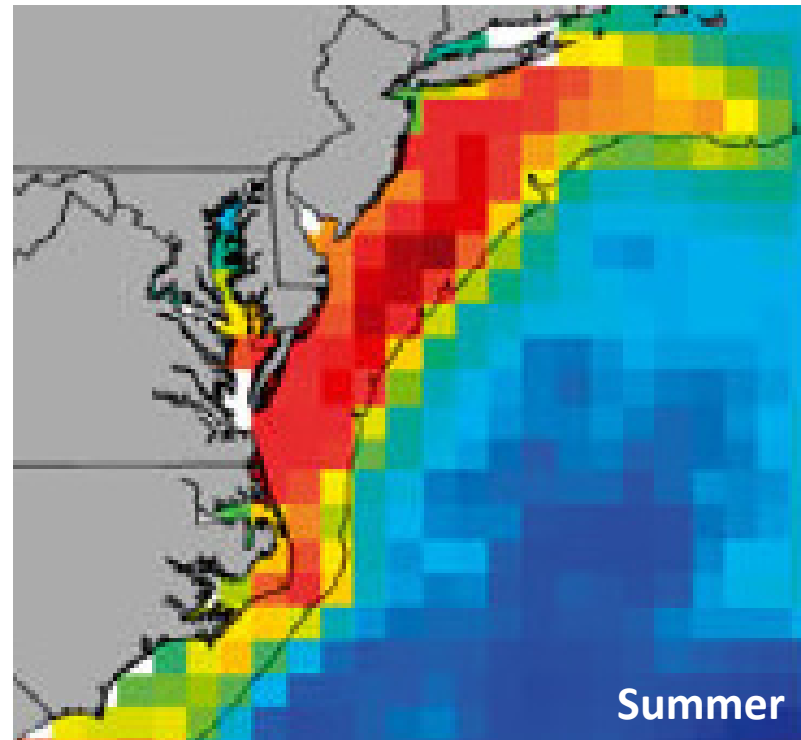
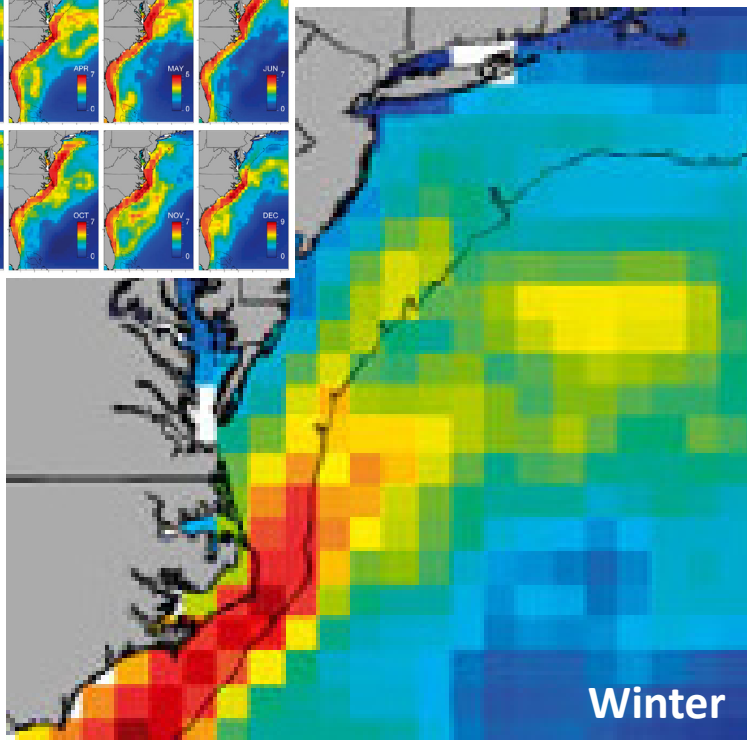
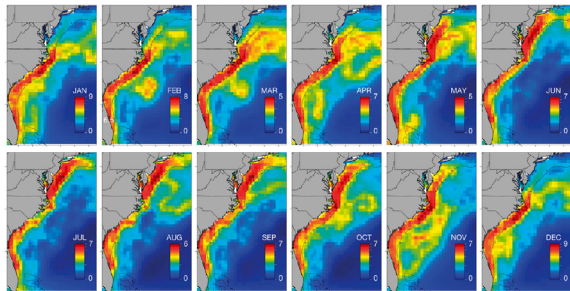


Marine Ecology
Progress Series

Estimating the distribution and relative density of satellite-tagged loggerhead sea turtles in the western North Atlantic using geostatistical mixed effects models

Marine Ecology
Progress Series

Megan V. Winton*, Gavin Fay, Heather L. Haas, Michael Arendt, Susan Barco, Michael C. James,
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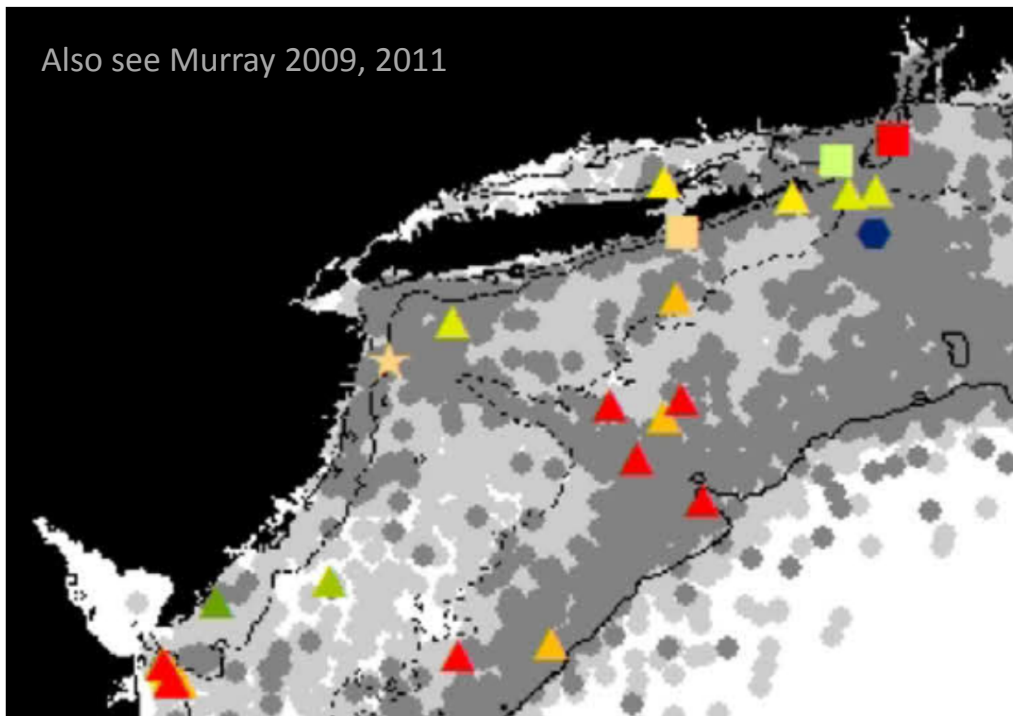


The importance of location and operational fishing factors in estimating and reducing loggerhead turtle (*Caretta caretta*) interactions in U.S. bottom trawl gear

Kimberly T. Murray*

NOAA Fisheries, Northeast Fisheries Science Center, 166 Water Street, Woods Hole, MA 02543, USA

Also see Murray 2009, 2011

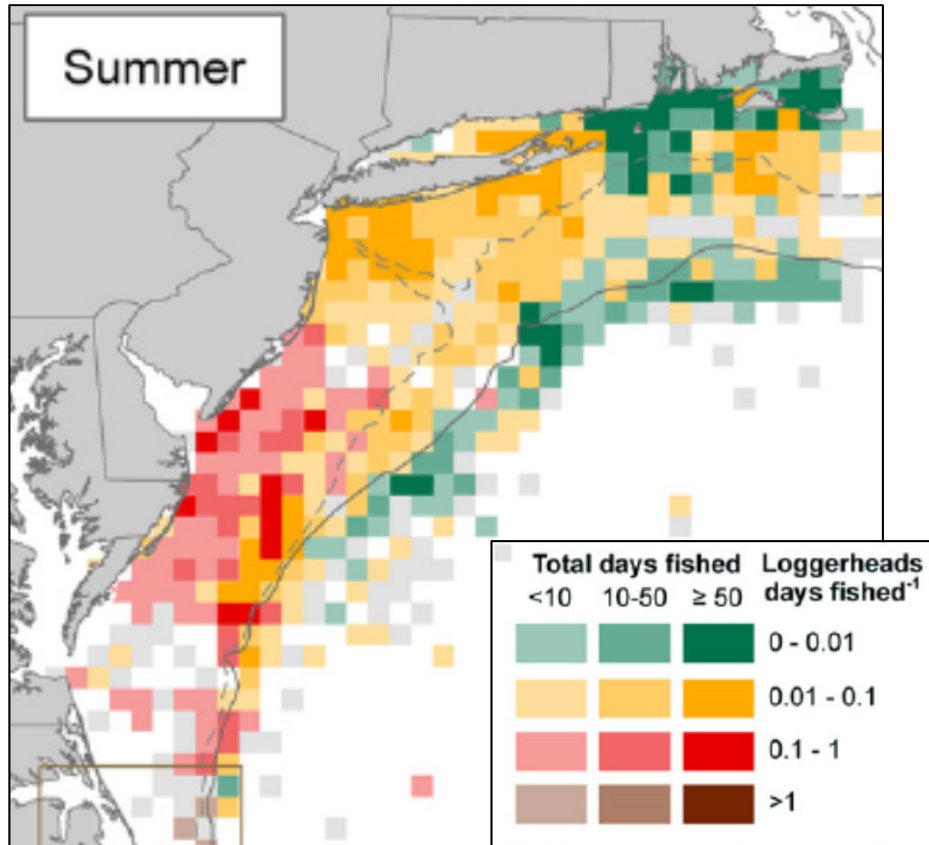


Fisheries Research

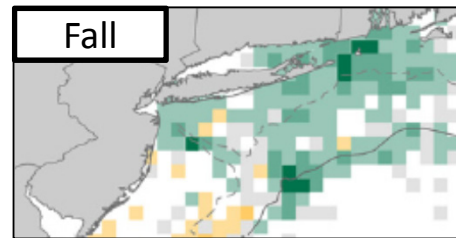
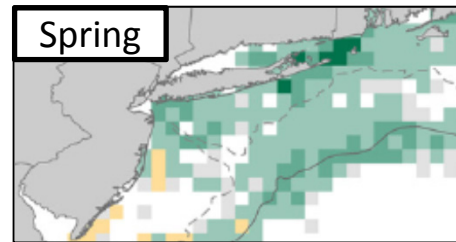
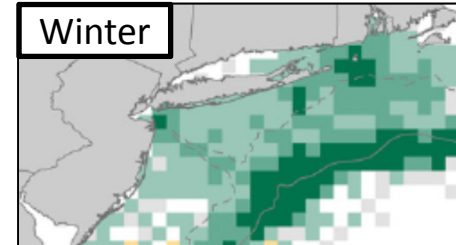
Leatherback	Loggerhead	Observed Trips
Jul n=2	Jan n=6	VTR Trips
Sep n=1	Feb n=16	
Oct n=1	May n=1	
Kemps ridley	Jun n=2	
+ Dec n=1	Jul n=3	
Green	Aug n=4	
Aug n=1	Sep n=15	
Sep n=1	Oct n=26	
Unid	Nov n=6	
Dec n=1	Dec n=22	

Modeling loggerhead sea turtle (*Caretta caretta*) interactions with US Mid-Atlantic bottom trawl gear for fish and scallops, 2005–2008

Melissa L. Warden*



Biological Conservation



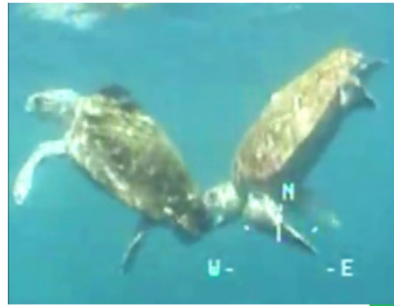
Using a remotely operated vehicle (ROV) to observe loggerhead sea turtle (*Caretta caretta*) behavior on foraging grounds off the mid-Atlantic United States

Ronald J. Smolowitz^{a,*}, Samir H. Patel^a, Heather L. Haas^b, Shea A. Miller^a

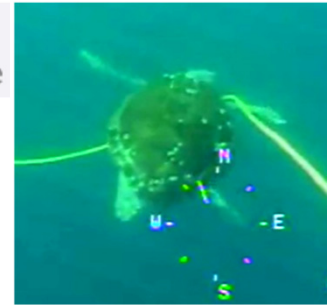
^a Coonamessett Farm Foundation, Inc., East Falmouth, MA, USA

^b Northeast Fisheries Science Center Woods Hole, MA, USA

Journal of Experimental Marine Biology and Ecology



Videography Reveals In-Water Behavior of Loggerhead Turtles (*Caretta caretta*) at a Foraging Ground



Samir H. Patel^{1*}, Kara L. Dodge², Heather L. Haas³ and Ronald J. Smolowitz¹

¹ Coonamessett Farm Foundation, East Falmouth, MA, USA, ² Integrated Statistics, Woods Hole, MA, USA, ³ NOAA Fisheries NEFSC, Woods Hole, MA, USA

Water Column
Distribution

Frequent use of
near surface waters



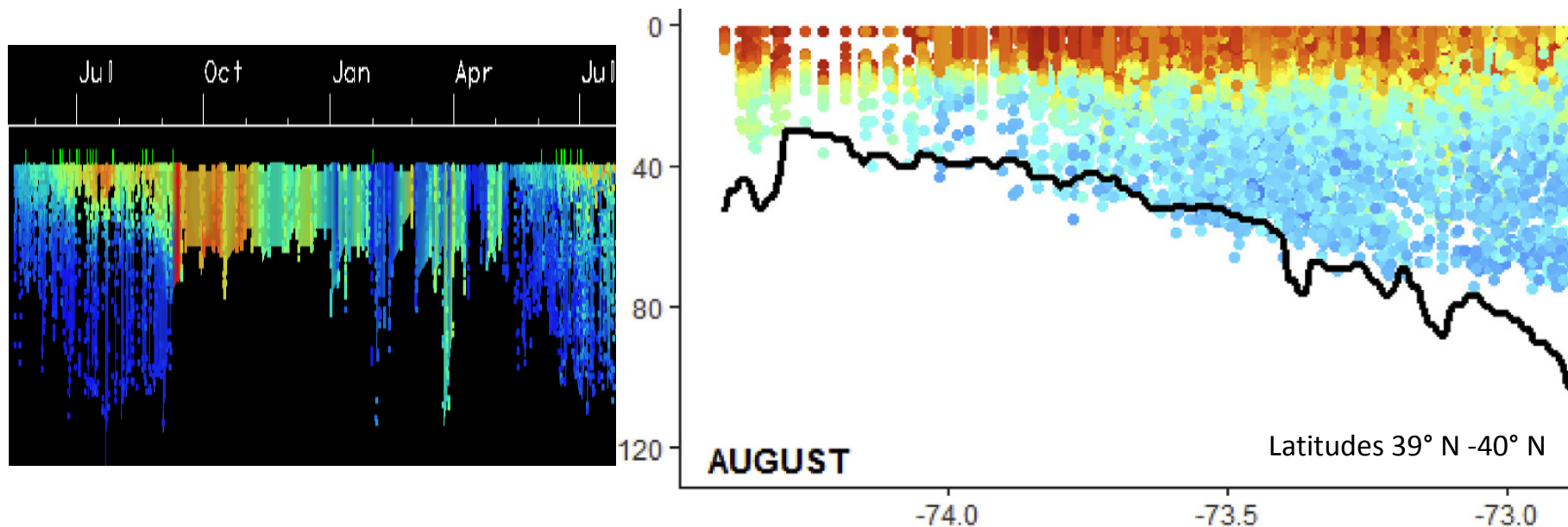
Prey
Availability

Prevalence of
abundant gelata



Loggerhead turtles are good ocean-observers in stratified mid-latitude regions

Samir H. Patel^{a,*}, Susan G. Barco^b, Leah M. Crowe^c, James P. Manning^d, Eric Matzen^d, Ronald J. Smolowitz^a, Heather L. Haas^d





The End