



# Large Whale Disentanglement: Saving North Atlantic Right Whales, One Entangled Whale at a Time

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# Acknowledgments

- Center for Coastal Studies
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- Florida FWC
- Georgia DNR
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- New England Aquarium
- NOAA
- Sea to Shore Alliance
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- Funding from NOAA Fisheries and DNR Nongame Conservation Fund
- Photos by DNR, FWC and S2S unless otherwise noted

# North Atlantic right whale (*Eubalaena glacialis*)





# Distribution



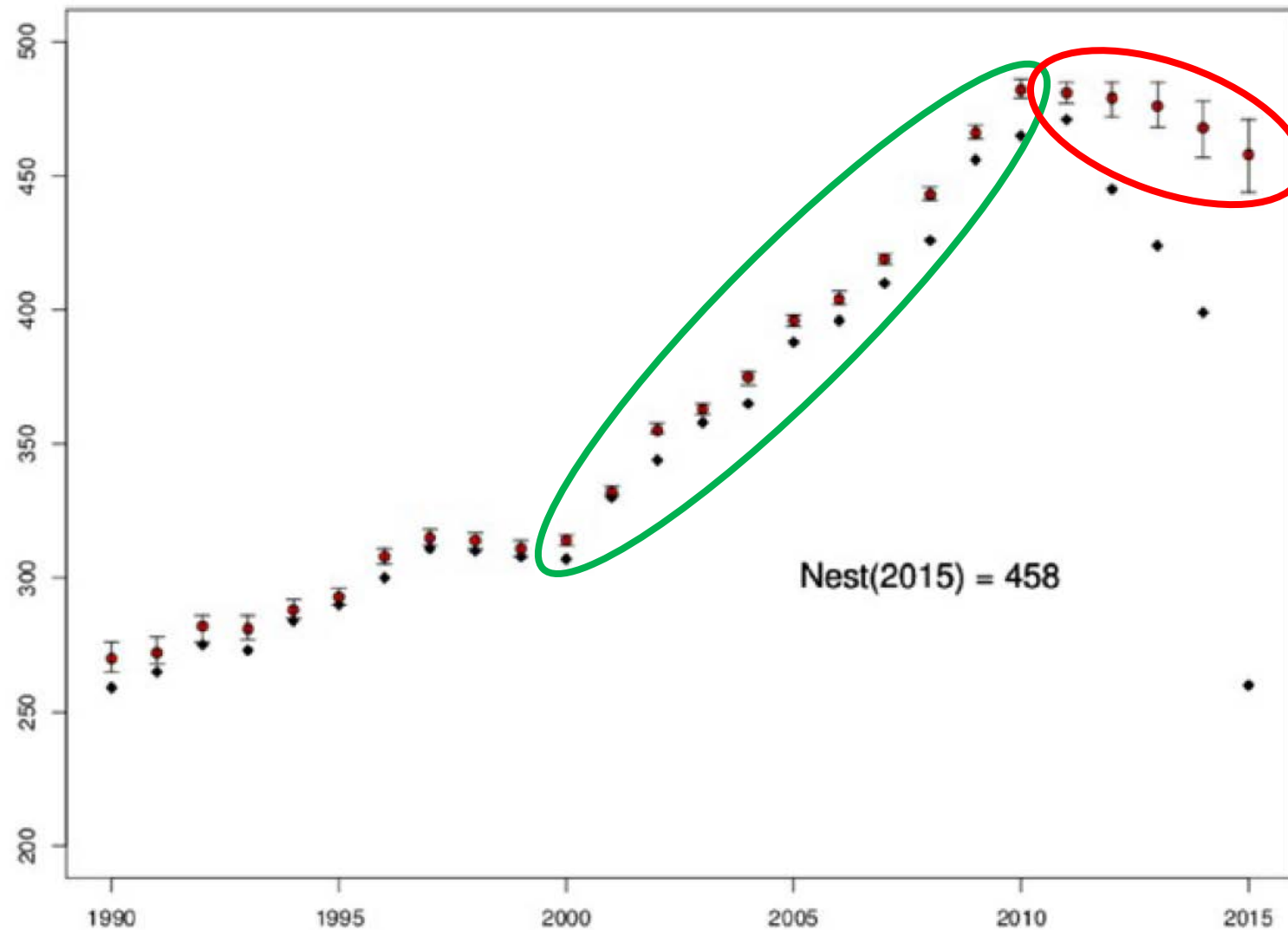
M. Baumgartner



# Distribution



# Population Dynamics



from Pace et al. 2017. State-space mark-recapture estimates reveal decline in abundance of North Atlantic right whales. Ecology and Evolution 7: 8730-8741.

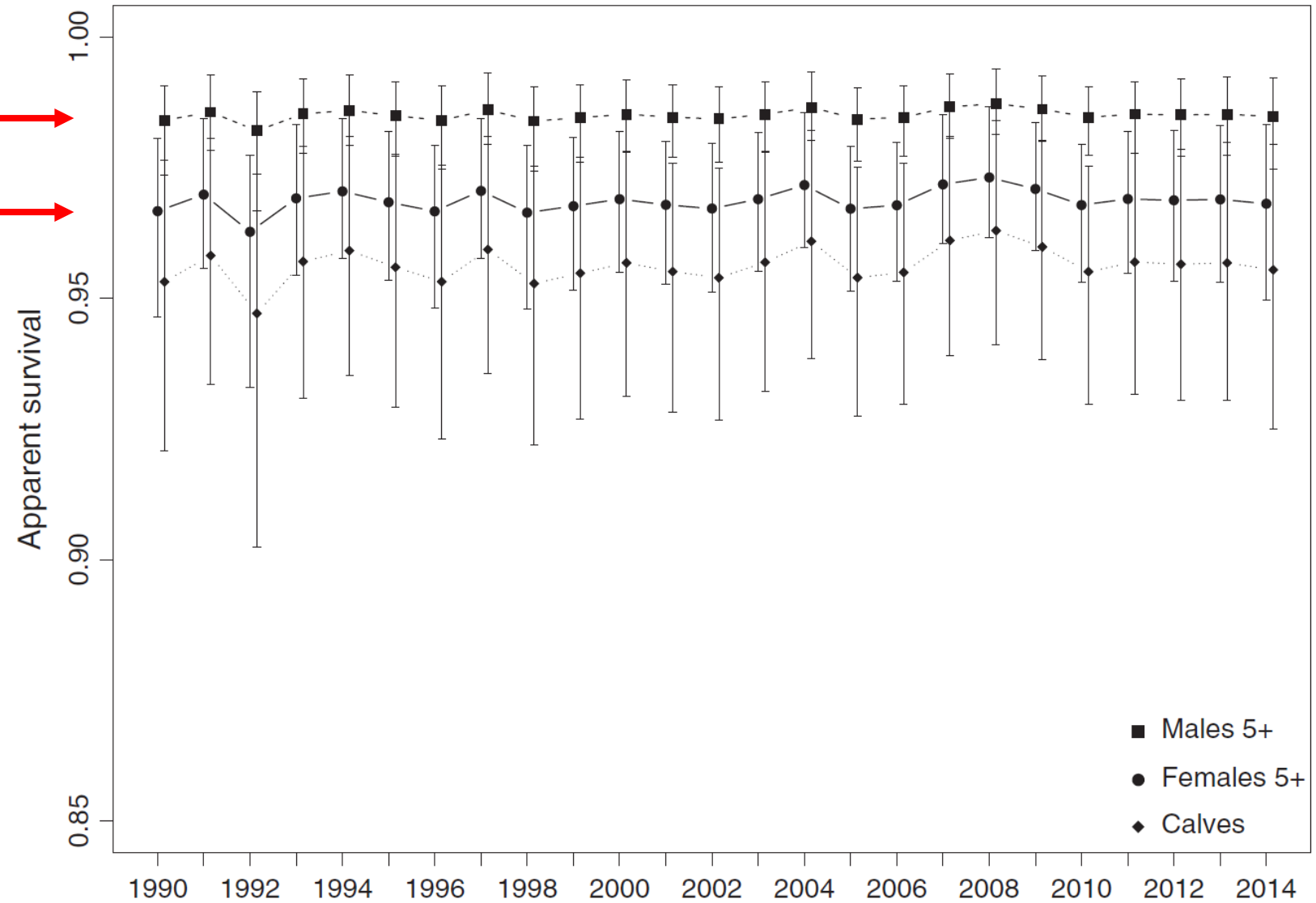


# Population Dynamics

Adult Males

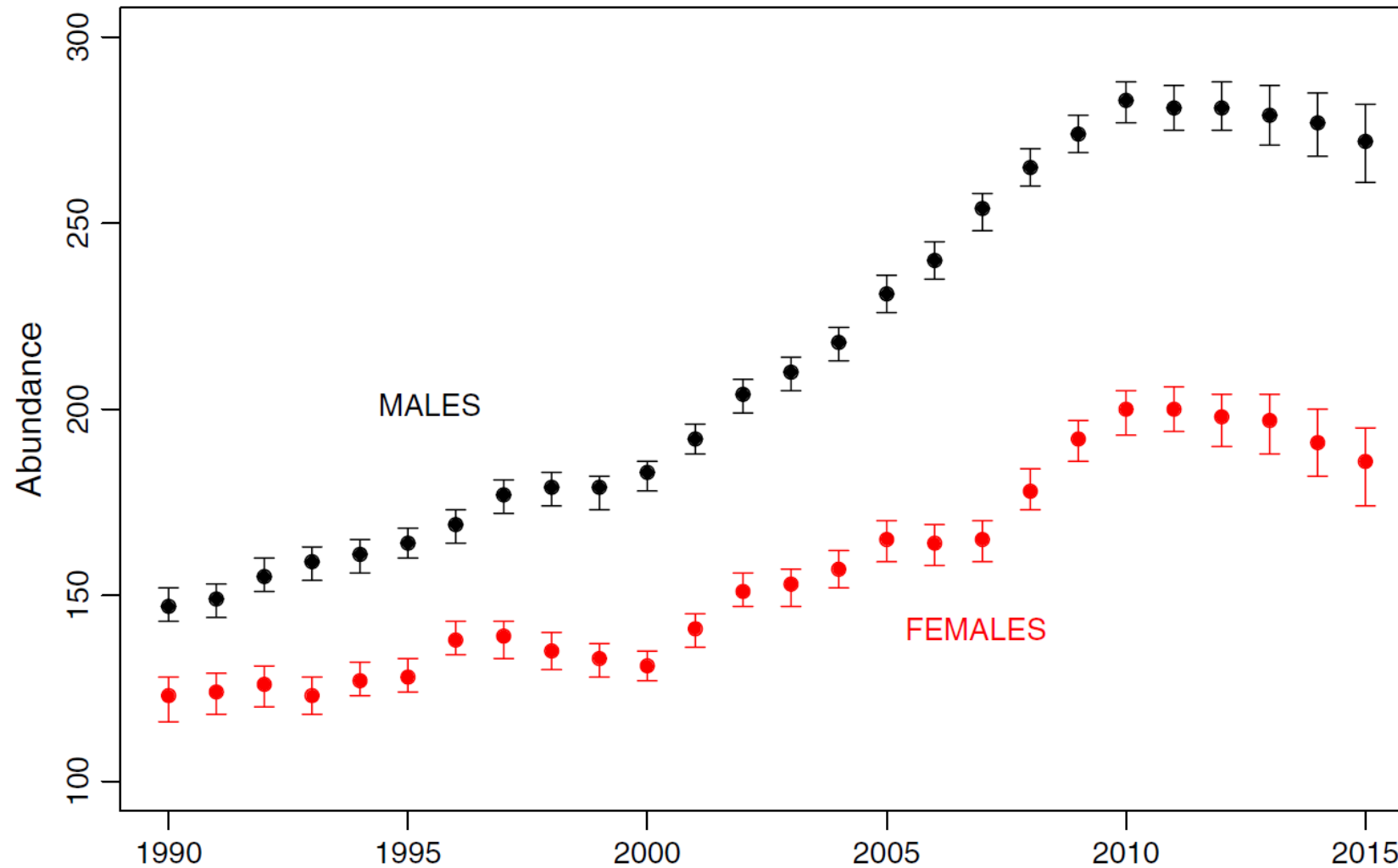


Adult Females





# Population Dynamics



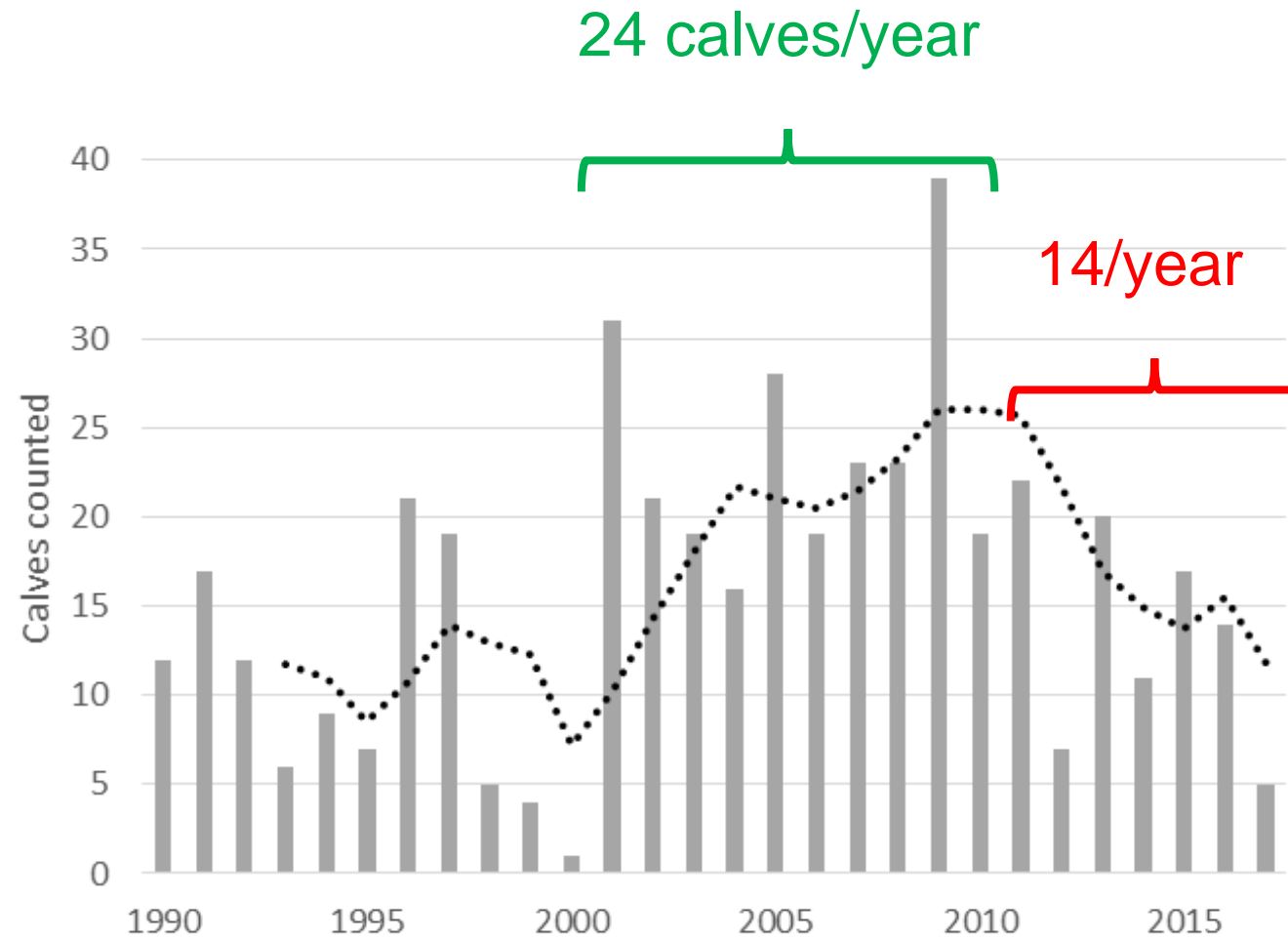


# Post-2010 Distribution Shift





# Declining Calf Production



# ...And It Gets Worse From There

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## North Atlantic right whales on the brink of extinction, officials say

Fishing nets and lack of food blamed for pushing number of the world's most endangered marine animal to just 450

*Associated Press*  
Sun 10 Dec 2017  
19:56 EST

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▲ Researchers examine a dead North Atlantic right whale along the Gulf of St. Lawrence in Canada. Photograph: HO/AP

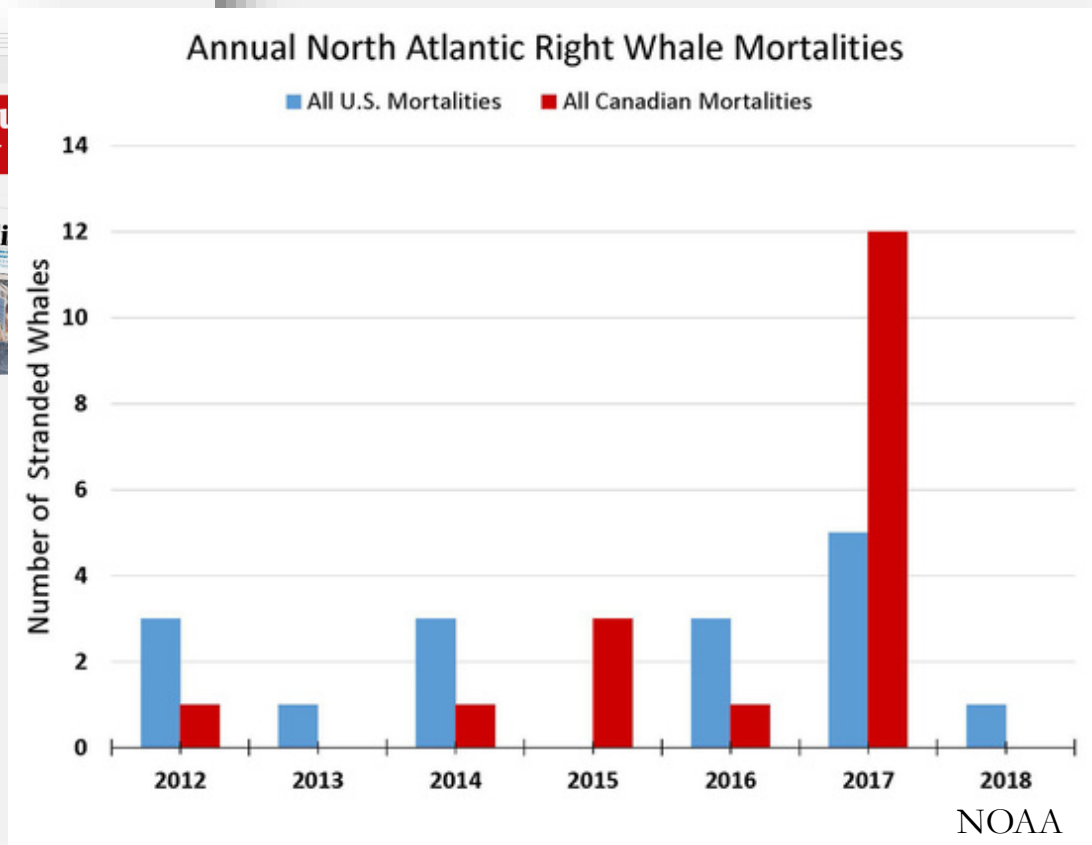
Officials with the US federal government say it is time to consider the possibility that endangered right whales could become extinct unless new steps are taken to protect them.

North Atlantic right whales are among the rarest marine mammals in the world, and they have endured a deadly year. The National Oceanic and Atmospheric Administration has said there are only about 450 of the whales left and 17 of them have died so far in 2017.

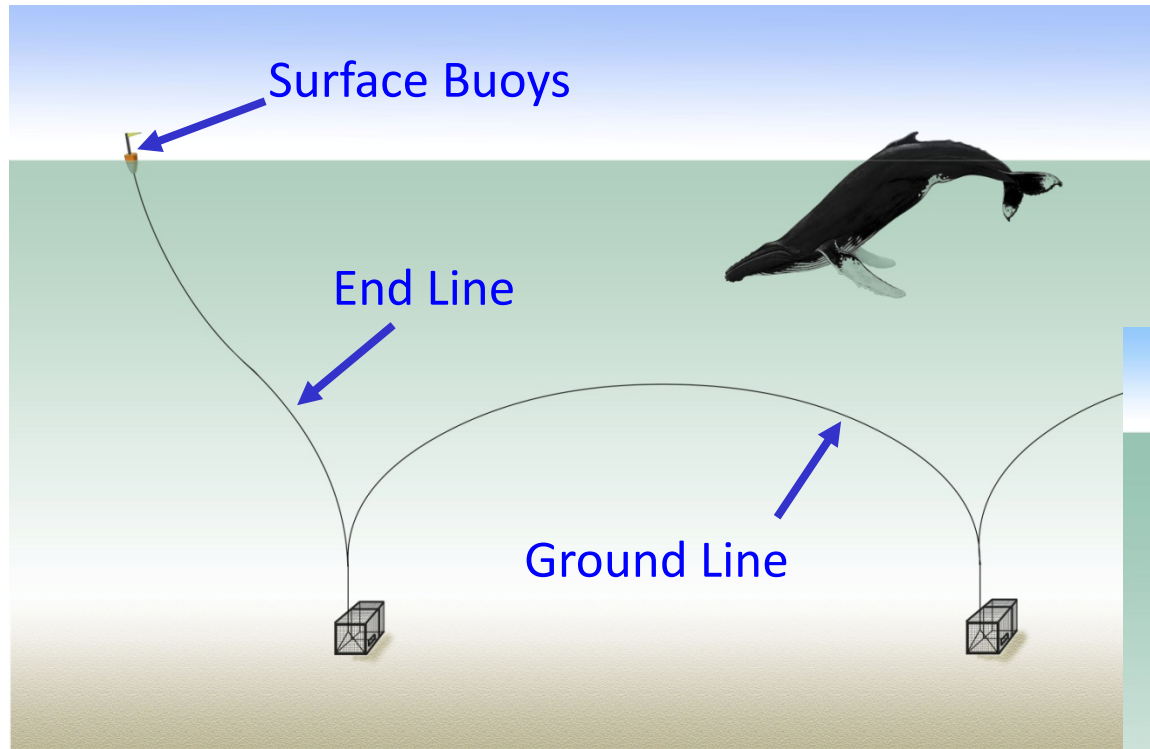
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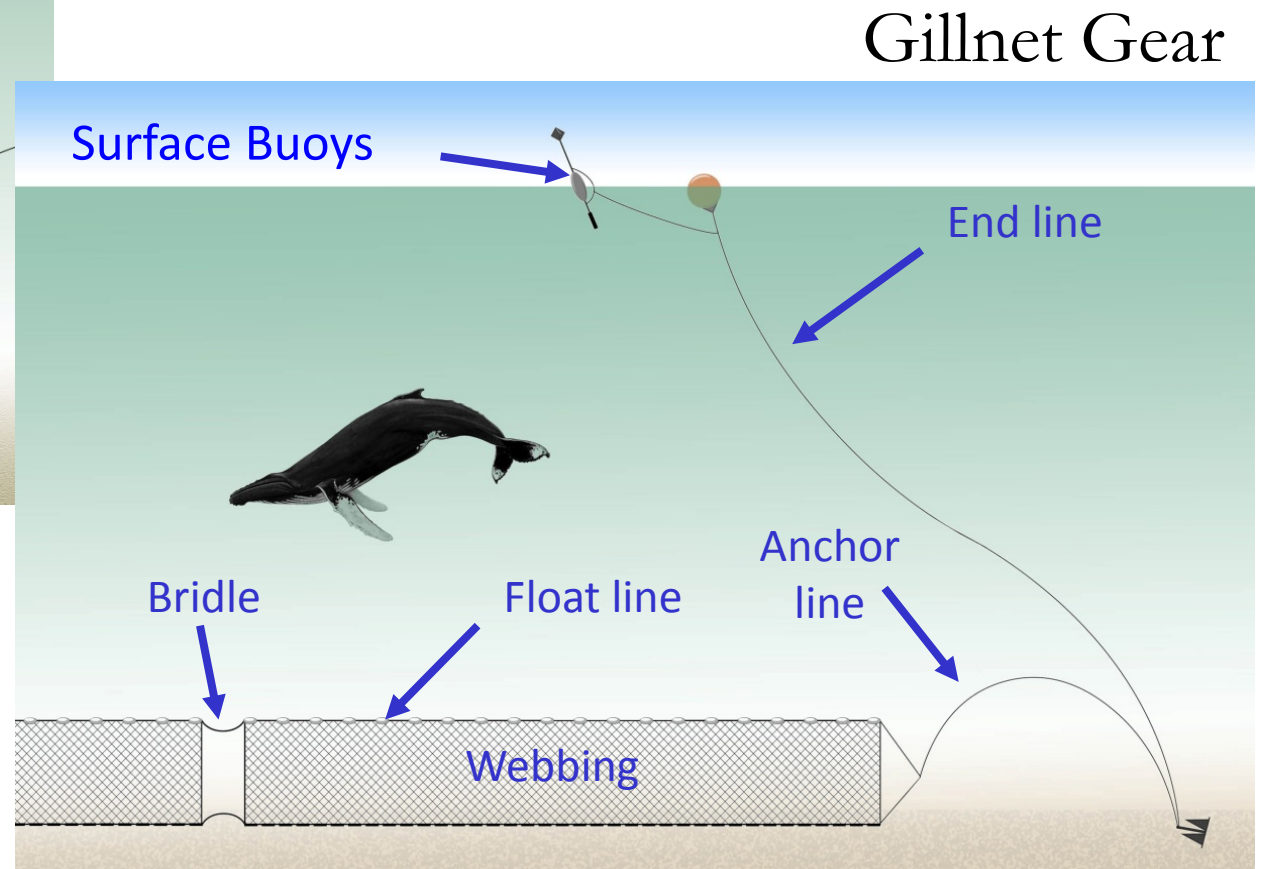




# How Do Entanglements Happen?



Trap/Pot Gear



Gillnet Gear

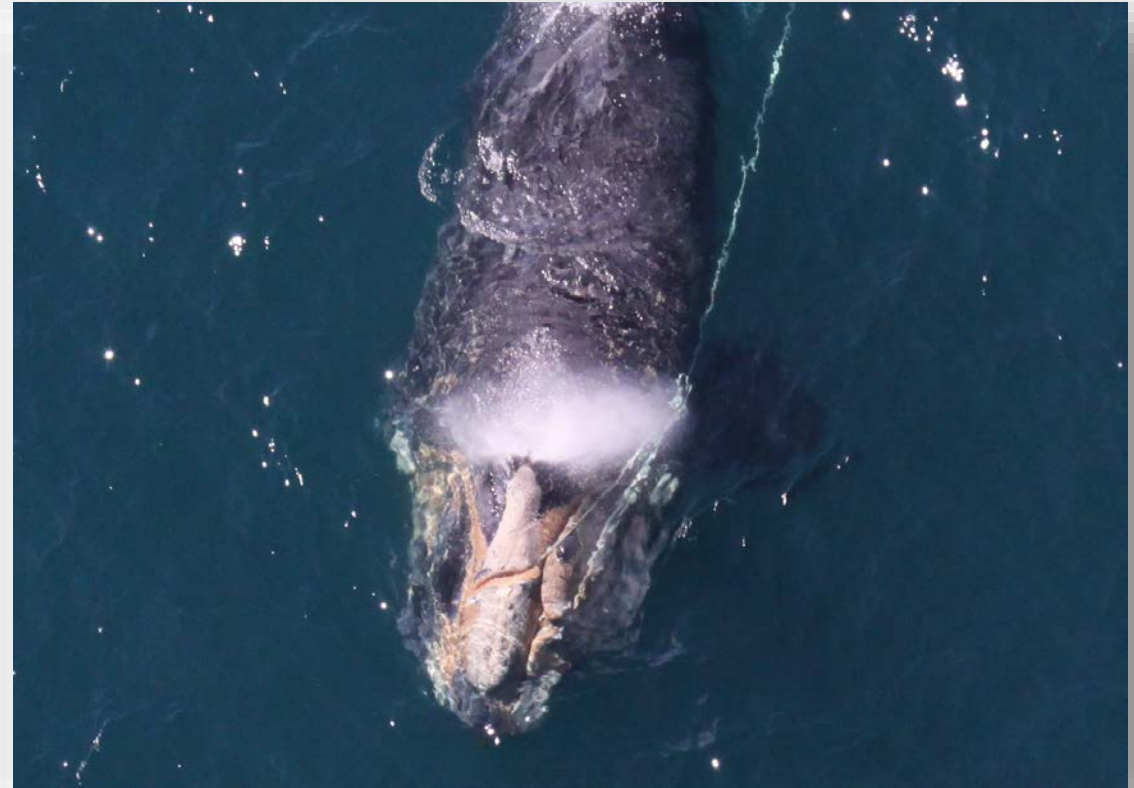


# Effects of Entanglement





# Effects of Entanglement



# Atlantic Large Whale Disentanglement Network







# Network Objectives

- Document fishing gear
- Document impacts to whales
- Increase awareness
- Ensure responder safety w/ standard protocols and training
- Disentangle whales when possible

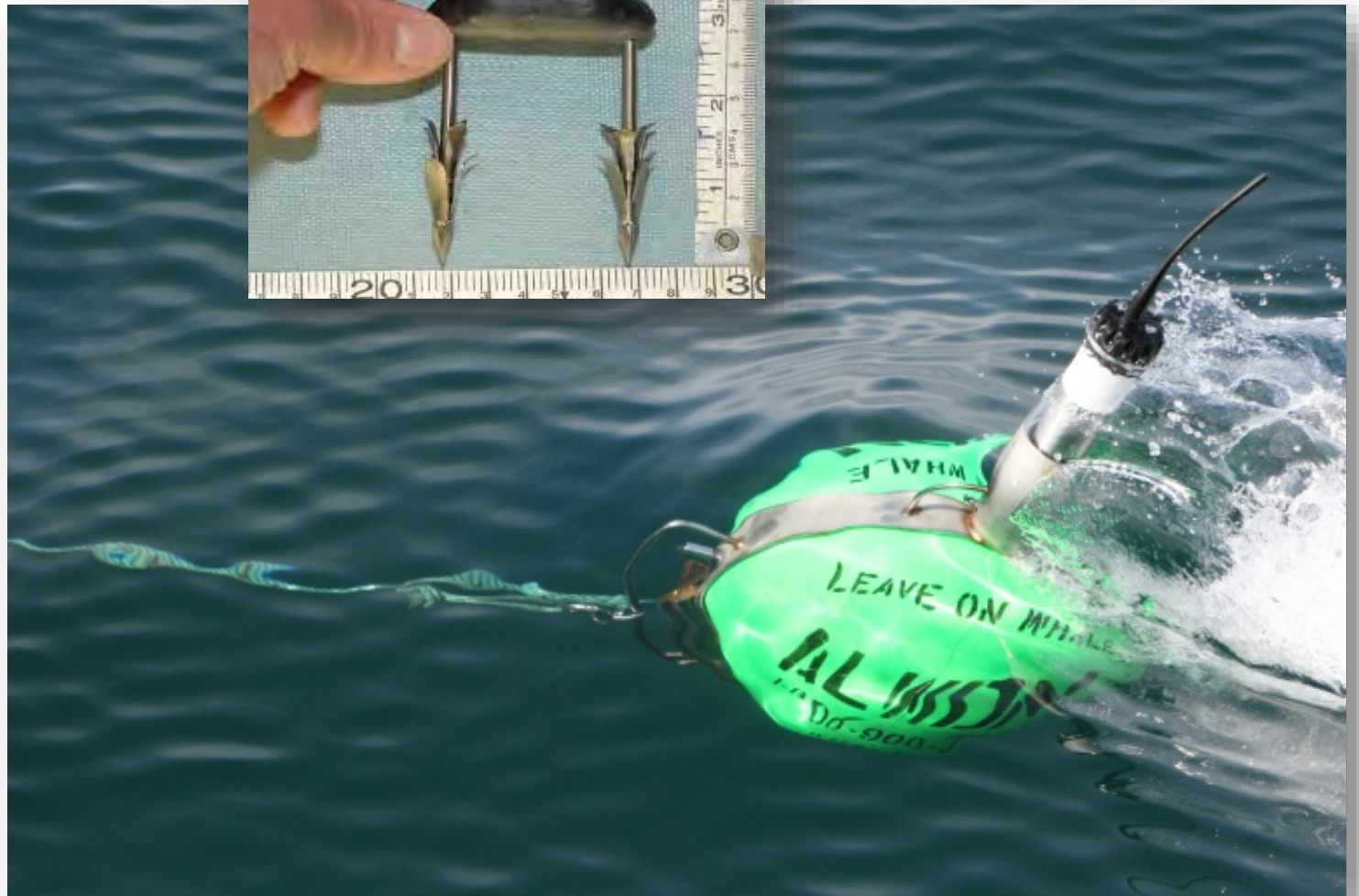


# Toolbox: Safety and Training





# Toolbox: Satellite Tracking





# Toolbox: Buoys and Grapples





# Toolbox: Cutting Tools





# Detection, First Response and Assessment



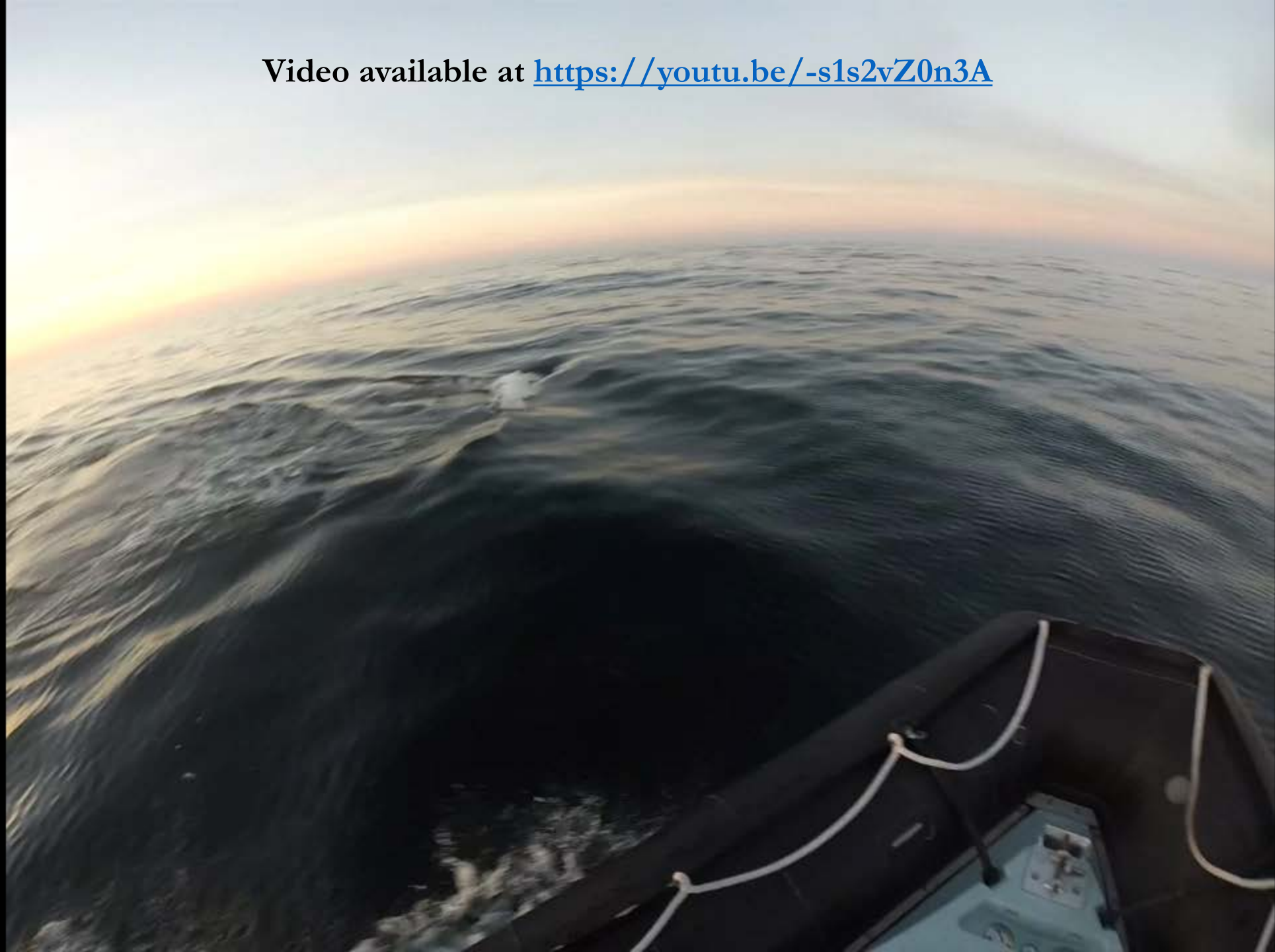
# Case Study: Right Whale #3530 “Ruffian”







Video available at <https://youtu.be/-s1s2vZ0n3A>



# Case Study: Right Whale #3530 “Ruffian”







Video available at <https://youtu.be/-0hwT8lx82M>



# Case Study: Right Whale #3911 “Bayla”





# Sedation Methods

Estimated weight = 7,000 kg

Sedation:

14 mL x 50 mg/mL butorphanol +  
14 mL x 50 mg/mL midazolam IM at 10:23

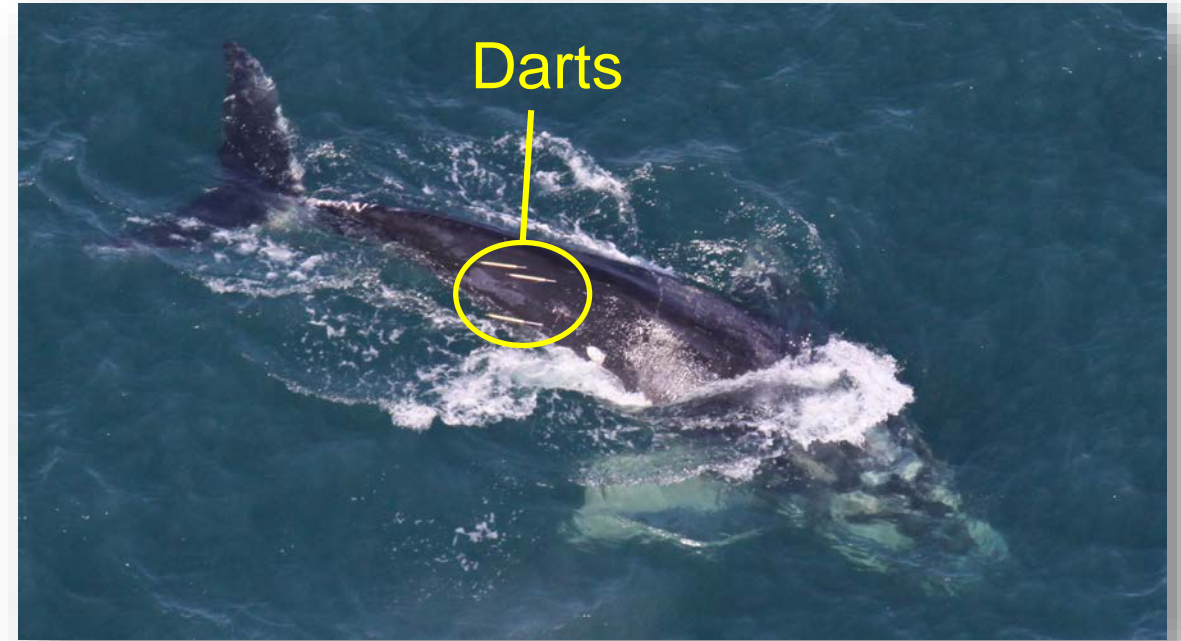
Reversal:\*

56 mL x 50 mg/mL naloxone +  
7 mL x 0.1 mg/mL flumazenil IM at 11:43

Antibiotic:

24 mL x 220 mg/mL ceftiofur

\*syringe did not deploy



Michael Moore - WHOI



A different video from this case is available at  
<https://youtu.be/MsKZnuzBpEU>





# Case Study: Right Whale #3911 “Bayla”





# Disentanglement Is Not the Solution

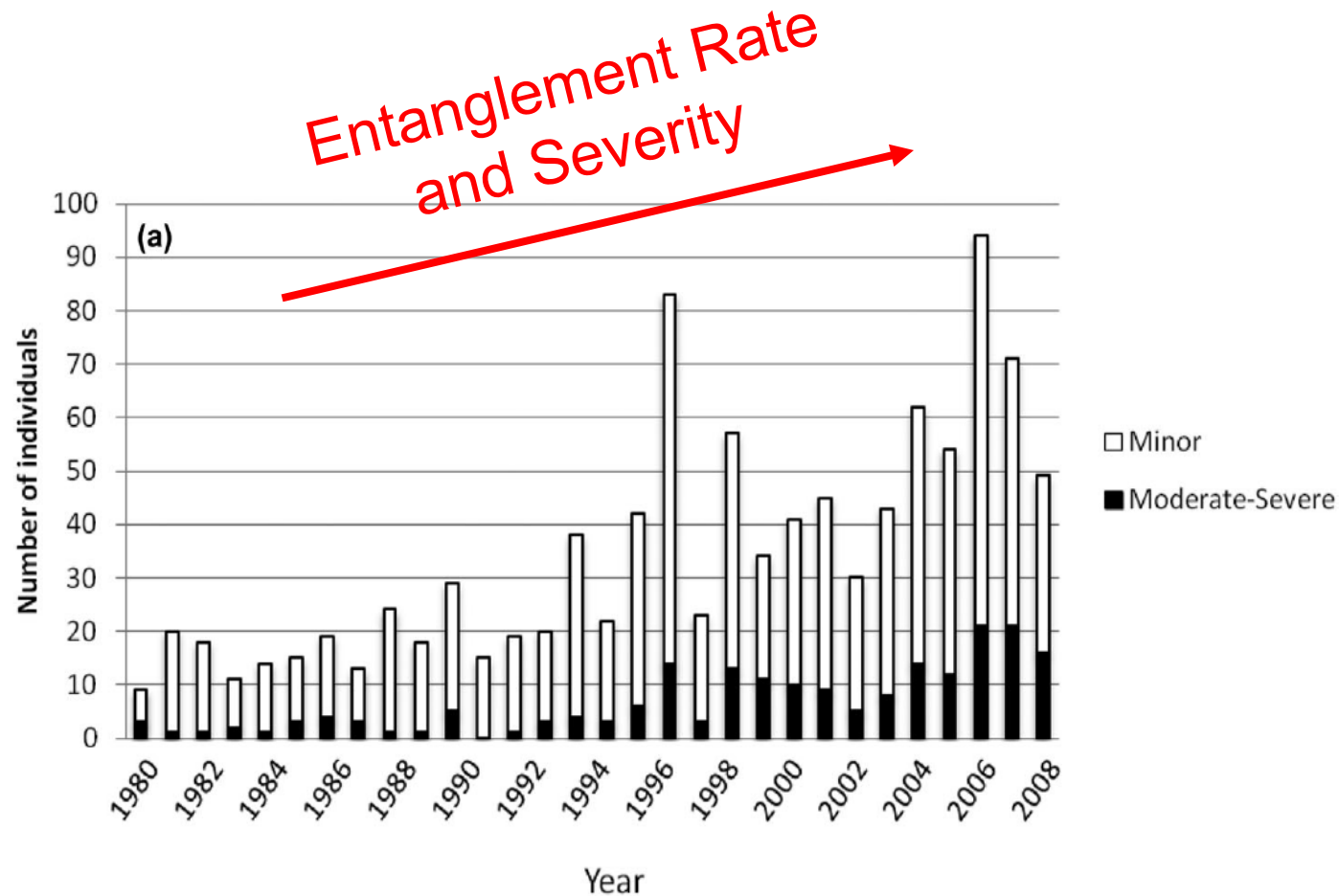




# Right Whale #4193



# Rope Is the Problem



**Thicker, Stronger  
Rope Causes More  
Severe Injuries**

