

Twenty-five years of marine mammal research in The Bahamas:

Conservation successes and gaps remaining

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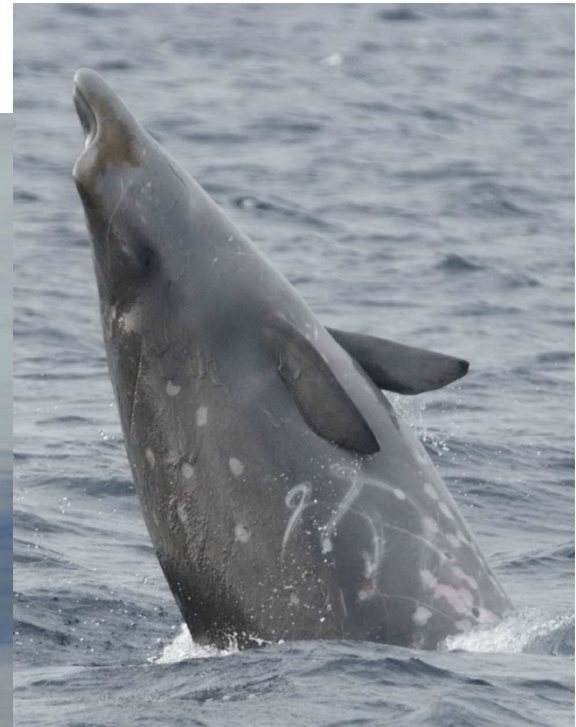
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Bahamas Marine Mammal Research Organisation (BMMRO)

- ❖ Conducting research in The Bahamas since 1991
- ❖ Filling key knowledge gaps on **population and behavioural ecology** of species in the region
- ❖ Some resident populations are impacted by human activities
- ❖ Some policy changes have occurred



Changing environments

- ❖ Habitat loss / alteration
 - Decreasing primary production



- ❖ Marine pollution
 - **Bioaccumulation of contaminants**
 - Entanglement / ingestion



- ❖ Increasing vessel traffic
 - **Increasing noise**
 - Vessel strikes



- ❖ Climate change



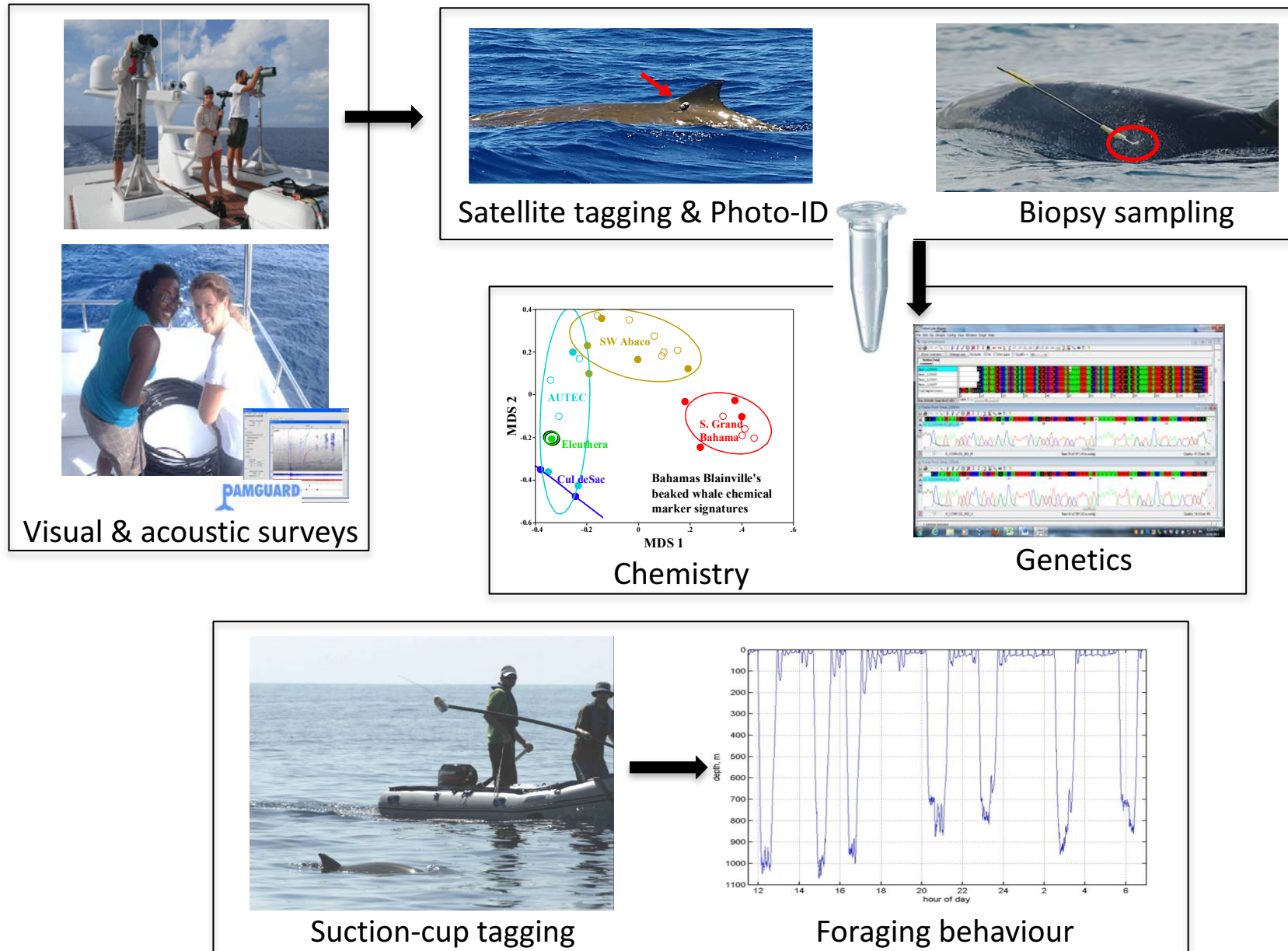
- ❖ Overfishing
 - Ecosystem changes

Sentinels of marine ecosystem health

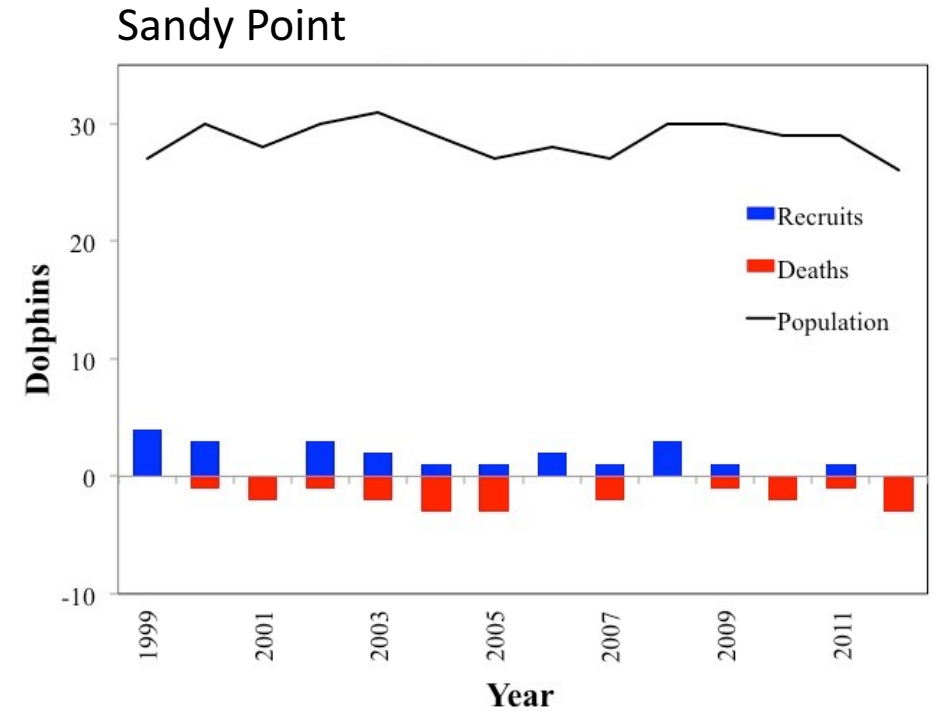
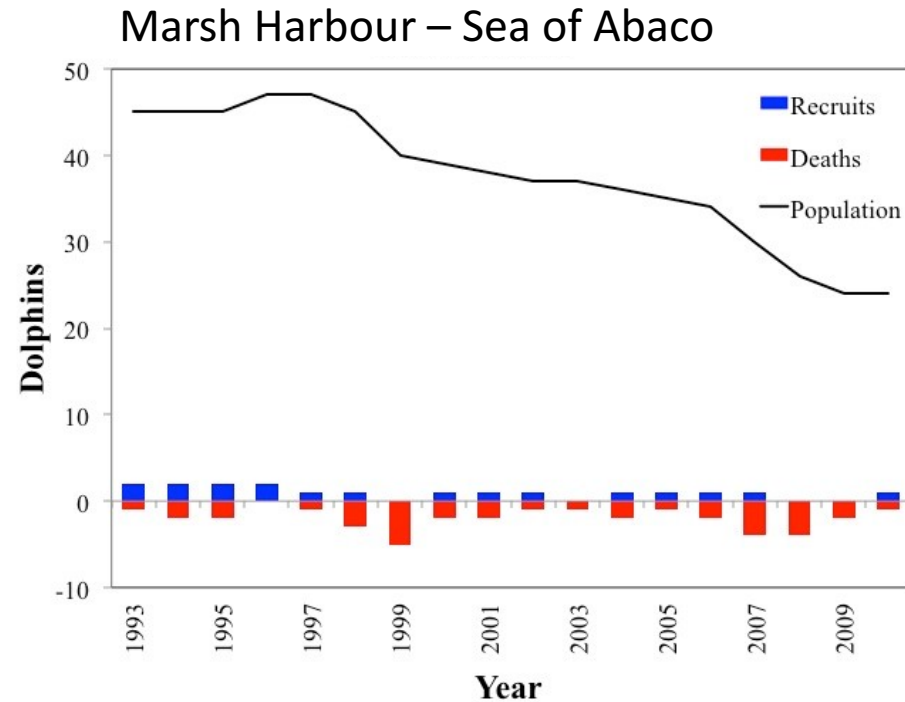
- ❖ Cetaceans are long-lived with low reproductive rates (like humans)
- ❖ Process contaminants / pollutants like we do
- ❖ As top predators, they help us assess health of marine environment



Multi-disciplinary approach



1. Trends in Abaco's bottlenose dolphin population



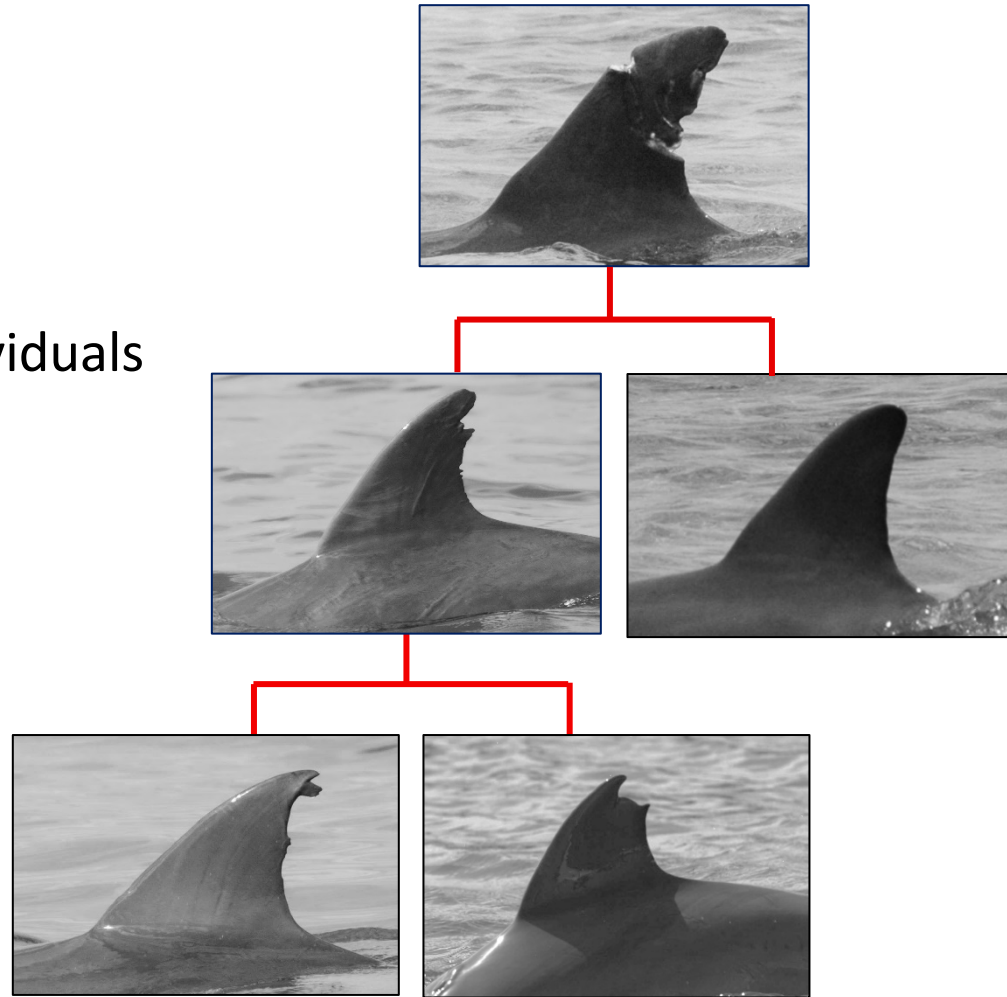
- ❖ **Success:** Banned live captures in The Bahamas
- ❖ Sea of Abaco decline began when coastal development increased
- ❖ **Future need:** Monitor population to stop decline



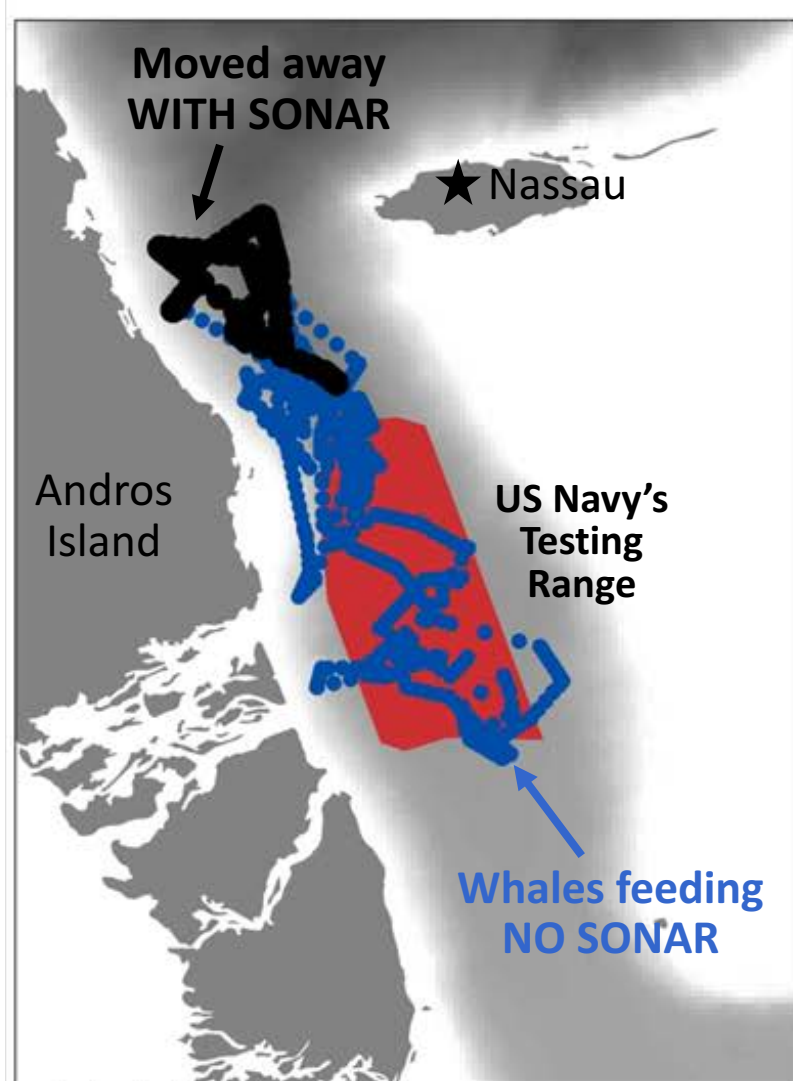
Fearnbach et al. 2013

1. Addressing Future Need – Monitor population to stop decline (\$5-10K)

- ❖ Annual surveys in Sea of Abaco
 - 2 month-long efforts
 - Collaboration with NOAA Fisheries
- ❖ Photo-identification – recognising individuals
- ❖ Monitoring resident populations, documenting births and deaths, over generations

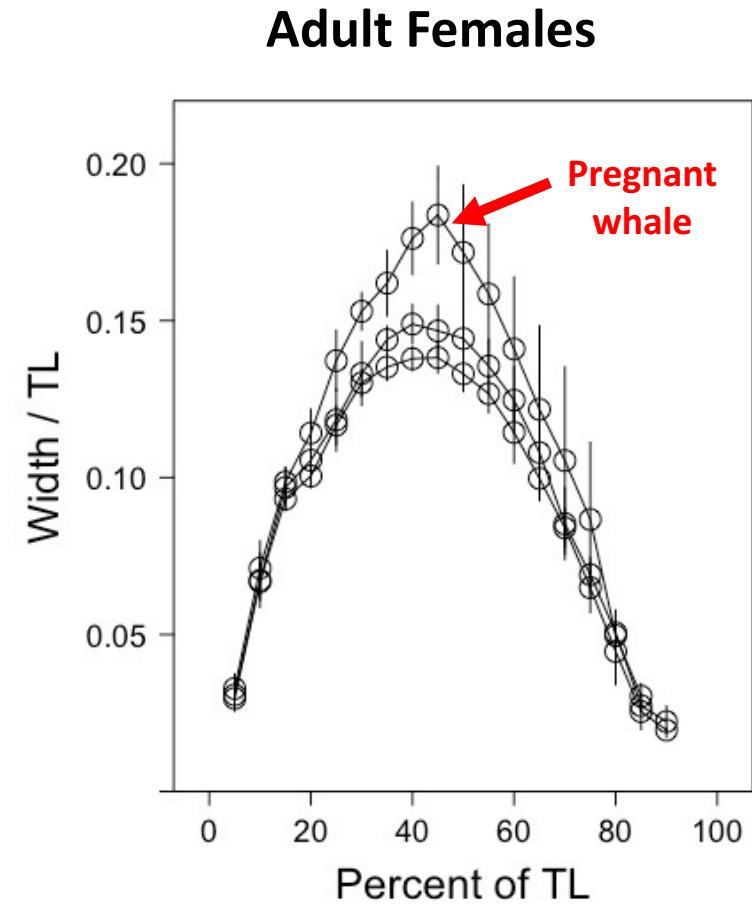


2. Effects of Navy sonar on KEY life functions of Blainville's beaked whales



- ❖ Population disturbed regularly
- ❖ Comparisons to Abaco population
 - Lower reproductive success & abundance
- ❖ **Success:** Limited sonar use on US ranges
- ❖ **Future need:** Quantify pregnancy & growth rates
 - Abaco study site ideal for baseline study

2. Addressing Future Need – Quantifying pregnancy & growth rates to determine impacts of Navy sonar on beaked whales (\$10-30K)

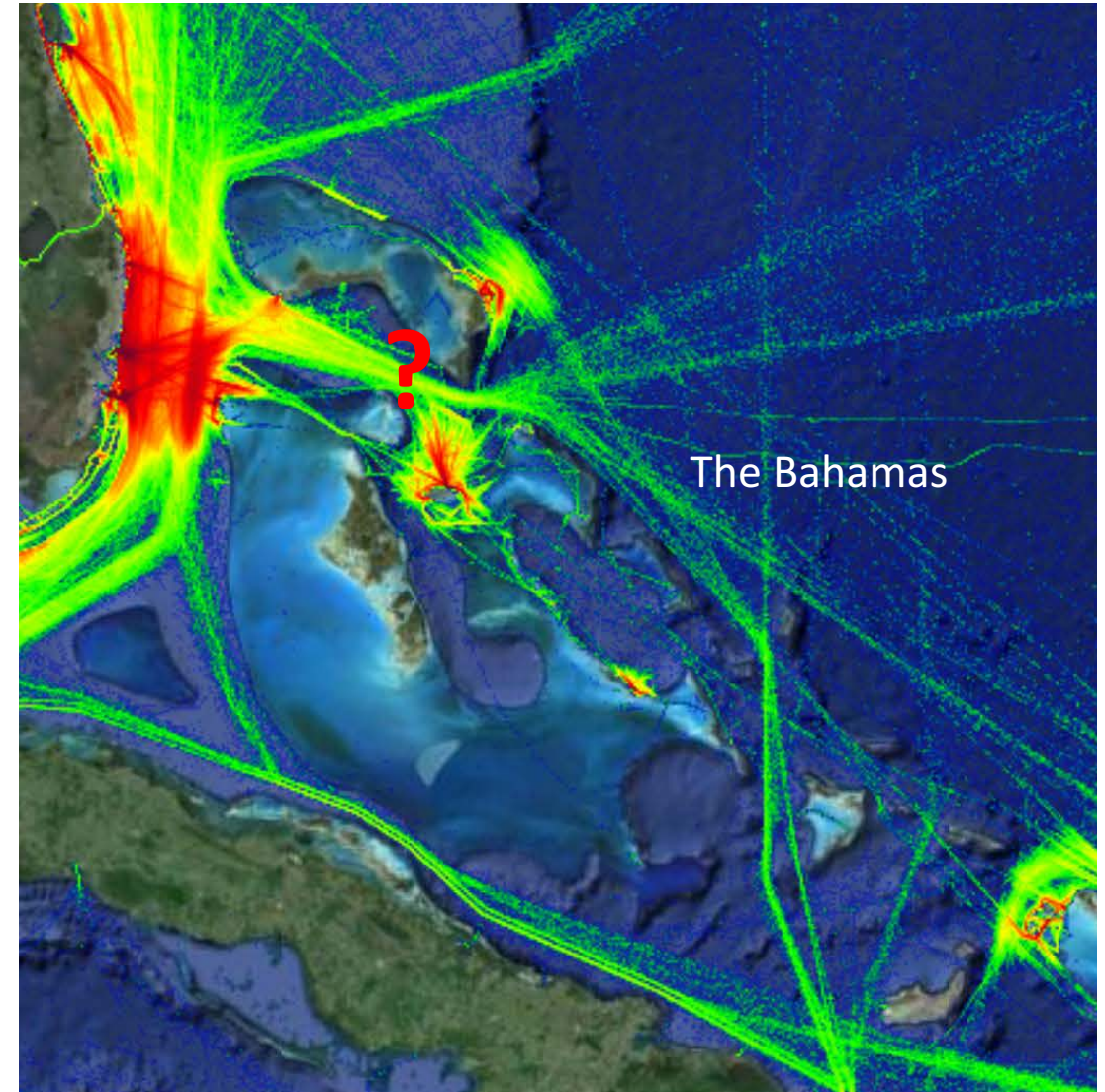


3. Sperm whales and increasing shipping traffic

- ❖ Females and calves here year-round
- ❖ *A changing environment:*
 - 4-fold global increase in commercial shipping
 - Expansion of Freeport Container Port
 - Proposed new oil refinery
- ❖ Marine Traffic - AIS
- ❖ Future need: Assess need for shipping regulations in NW Providence Channel



Dunn et al. 2015



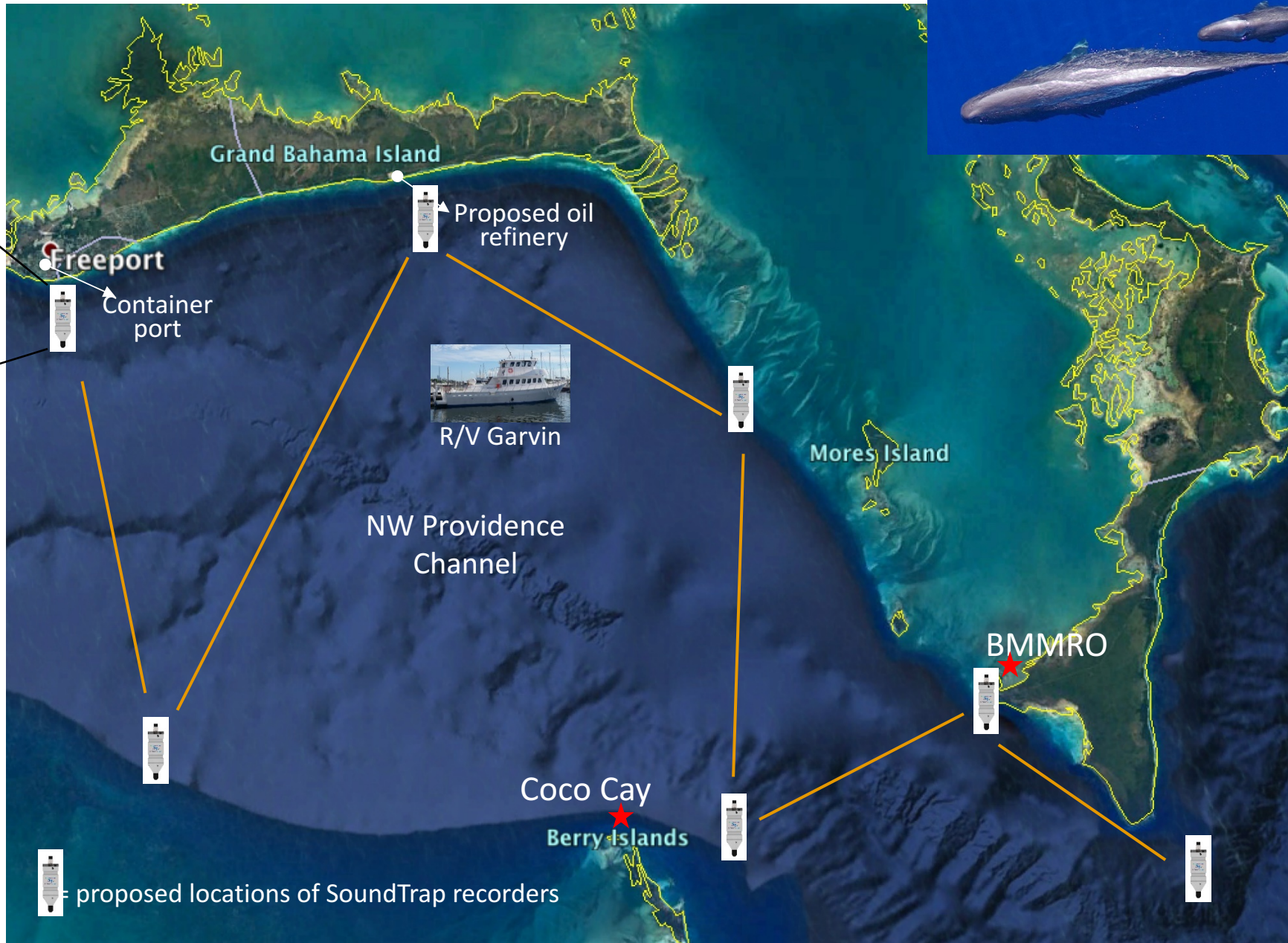
AIS ship density data 2014 (source: www.marinetraffic.com)

3. Addressing Future Need – Whales & ships sharing NW Providence Ch. (\$25-102K)



Survey goals:

- 1. Deploy/recover SoundTraps
- 2. Use towed hydrophone & visual team to locate & track sperm whales
- 3. Provide field experience for U Bahamas students



4. Conservation challenges

- ❖ Education & awareness
 - Disconnect with pelagic species
- ❖ Build capacity / engaging youth in science
 - Whale Camp and internships
 - Field courses with U of the Bahamas/U Miami
 - Stranding workshops
- ❖ Future need: Increasing awareness



4. Addressing Future Need – Increasing awareness (\$3-9K)



Marine Mammal Educational Package (all enclosed in a poster tube):

1. Introductory letter to provide a guide for using the educational package.
2. 'Marine Mammals of The Bahamas' poster.
3. Powerpoint slide presentation on marine mammal diversity, on a USB thumbdrive.
4. Video of the above Powerpoint presentation for schools without a science teacher to give the presentation; on a USB thumbdrive.
5. "Let's Ask the Scientists".
6. Educational games.
7. Pre- and post-presentation evaluation survey questions and score sheets.

Acknowledgements



THANK YOU FOR YOUR ATTENTION!

Follow our work:

www.facebook.com/BMMRO

www.bahamaswhales.org

All research has been conducted under conditions of the Bahamas Department of Marine Resources Research Permits issued under authorisation of the Bahamas Marine Mammal Protection Act (2005) and under guidance from BMMRO's Institutional Animal Care and Use Committee.