

Whale Evolution & Conservation

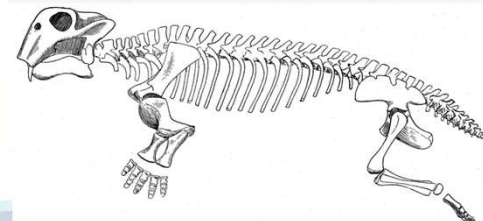
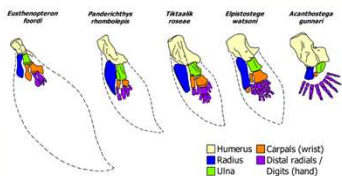
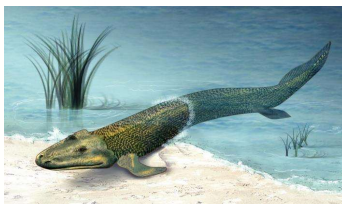
Exploring the transition from land mammal to a fully aquatic life



MYSTIC
AQUARIUM

PROTECT OUR
OCEANS

Animals from Sea to Land



But why?

What makes a mammal a mammal?



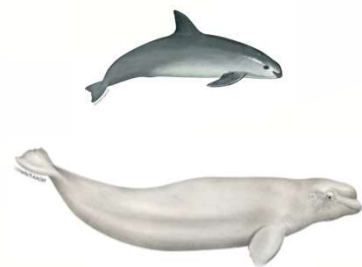
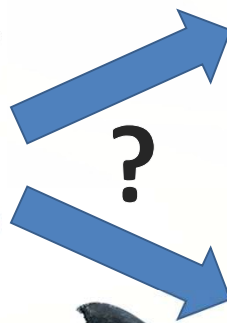
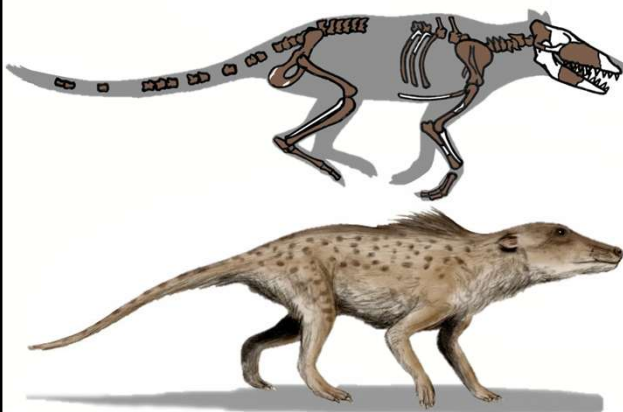
- Vertebrate
- Lungs to acquire oxygen
- Endothermic
- Hair or fur
- Give birth to live young
- Nurse young



Marine Mammal



Evolutionary links to Terrestrial Animals

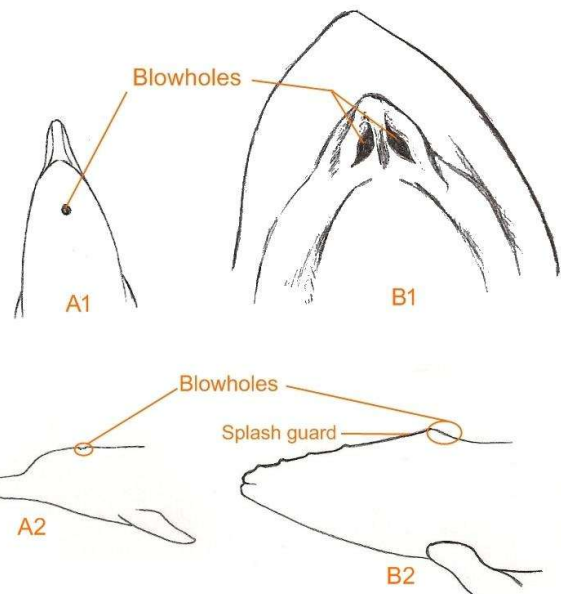
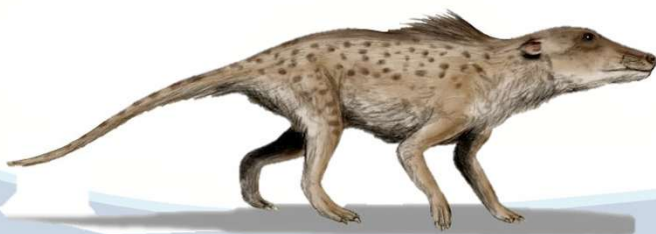
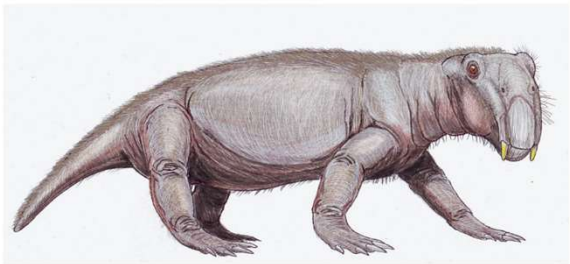


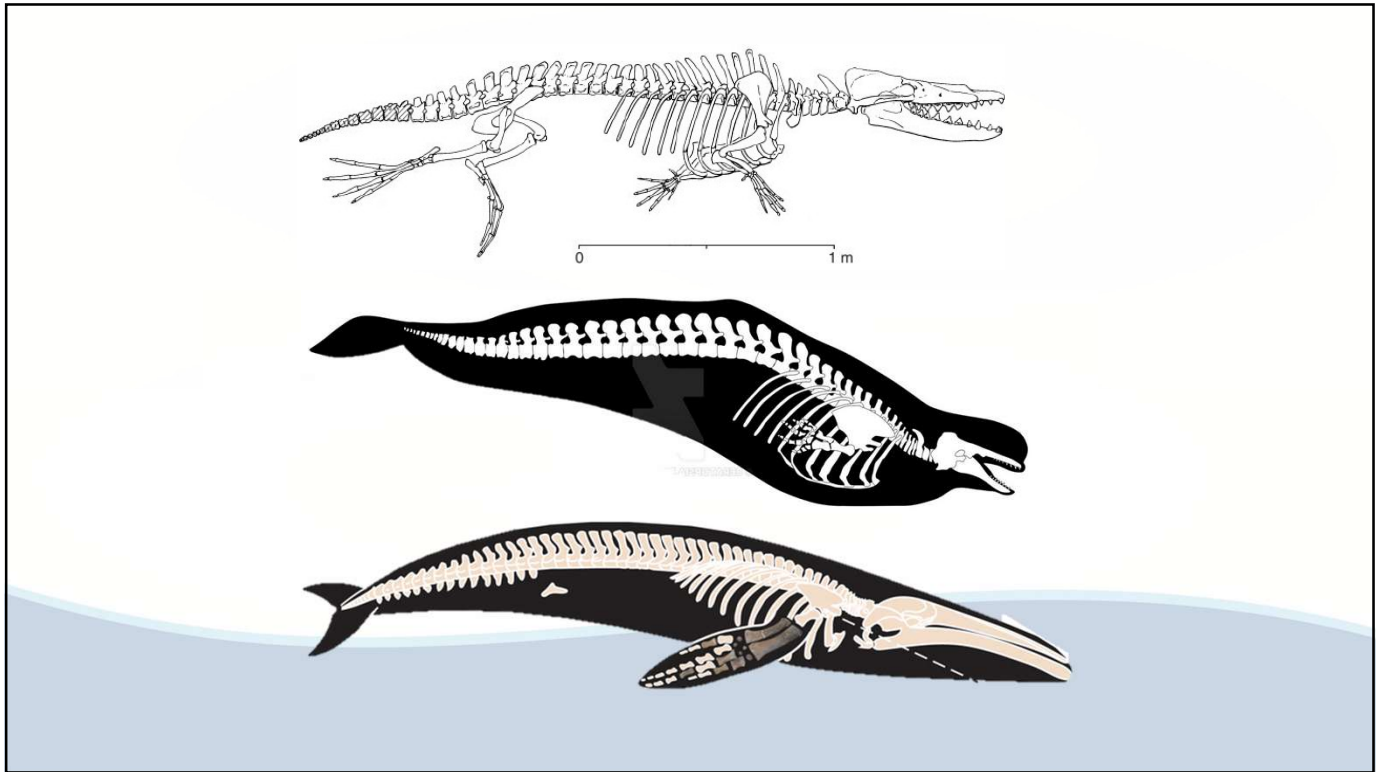
Activity 1 – Skull Identification

There are several stations with marine mammal skulls. At each station there is one pinniped skull and one cetacean skull. Take your time examining each and identify it as either a cetacean or a pinniped. Identify at least one characteristic for each skull that supports your answer. You have 5 minutes.



Why is a blowhole more efficient than a snout?

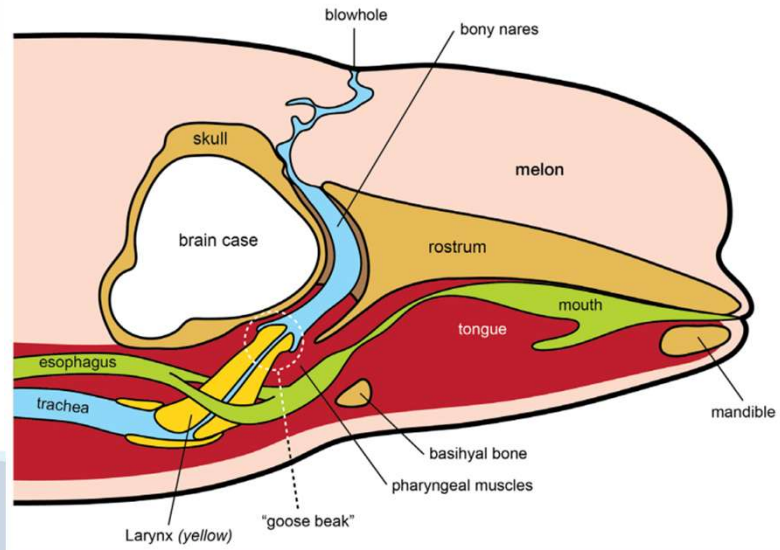




Necessary changes for a fully aquatic lifestyle

1. Streamline body for more efficient movement
2. Prevent heat loss in water
3. Develop feeding strategies to capture a variety of prey
4. Modes of communication appropriate for an aquatic habitat

Feeding Strategies



Feeding Strategies – Skim Feeding

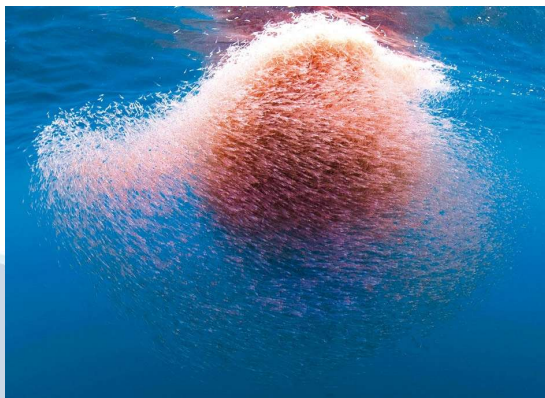


Feeding Strategies – Bubble Feeding

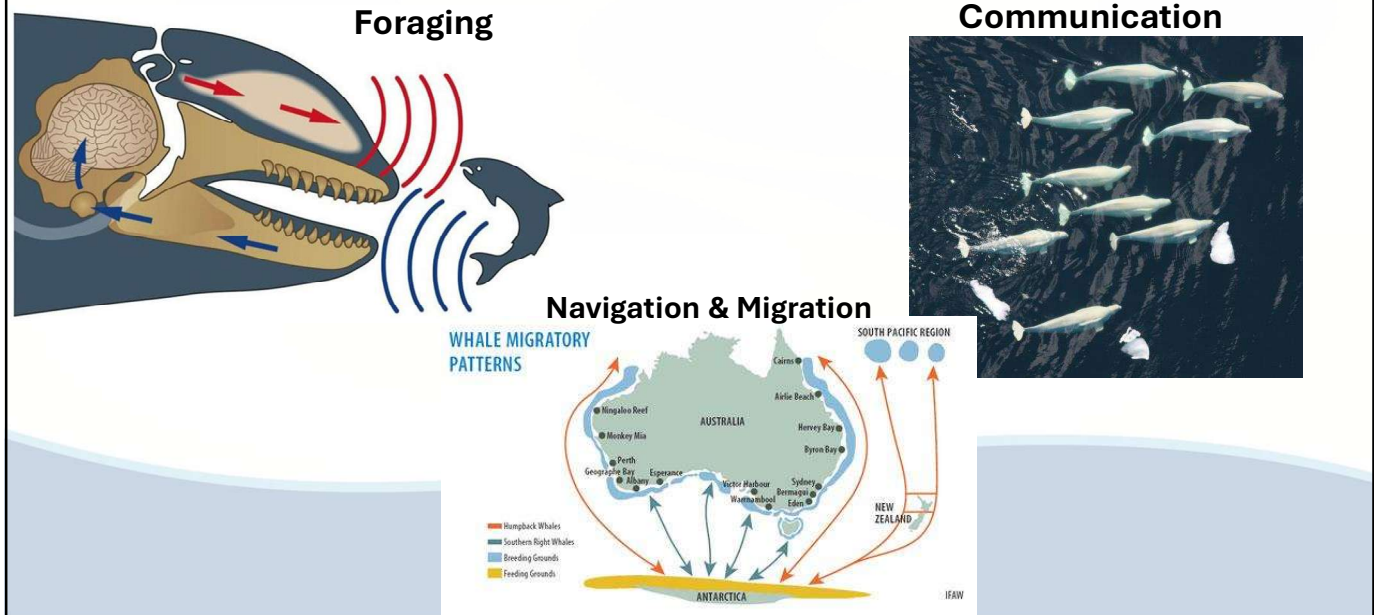


Activity 2 – Baleen ID

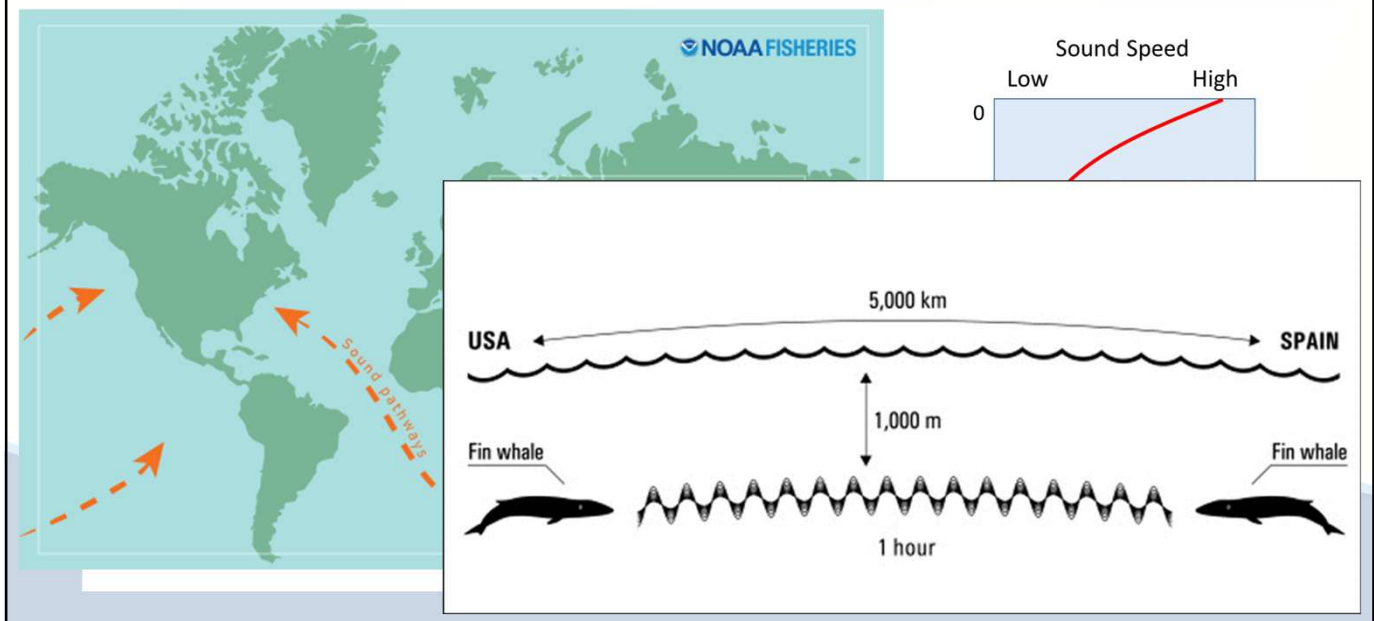
Mysticete baleen varies depending on what the species eats (e.g. krill, other marine invertebrates, fish). Examine the two baleen samples and describe which one you believe is from a species that eats krill or other plankton, and which is from a species that eats fish. Provide the evidence you used to make that conclusion.



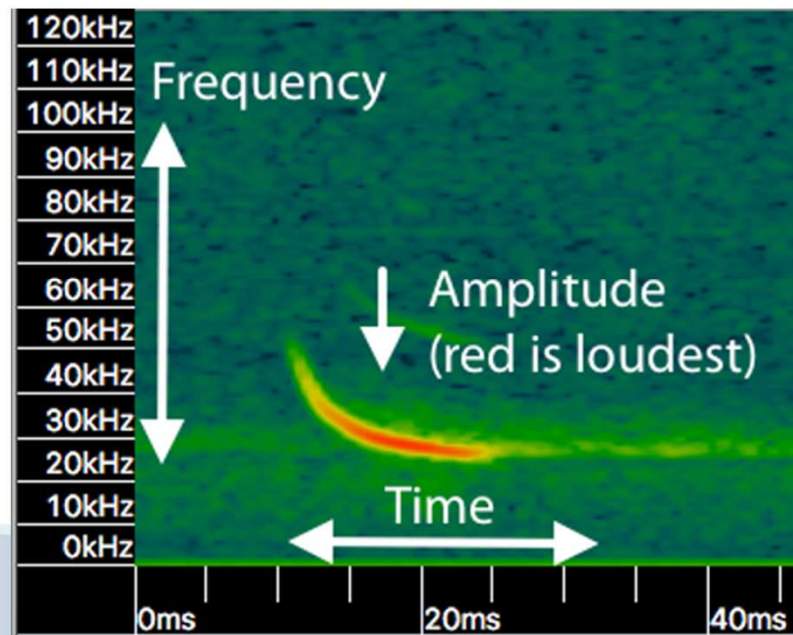
How do whales use sound?



But why use sound?

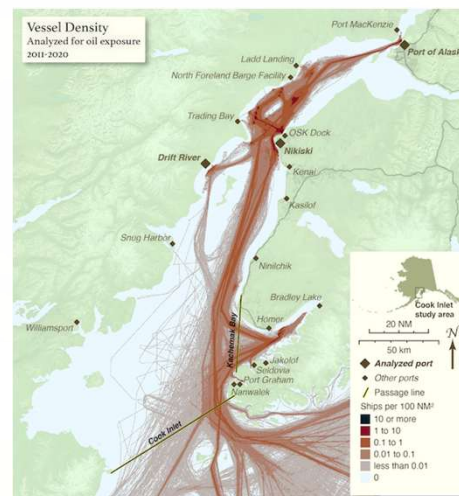
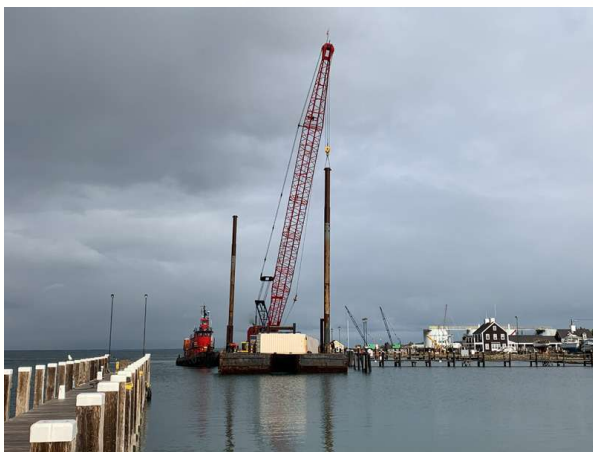
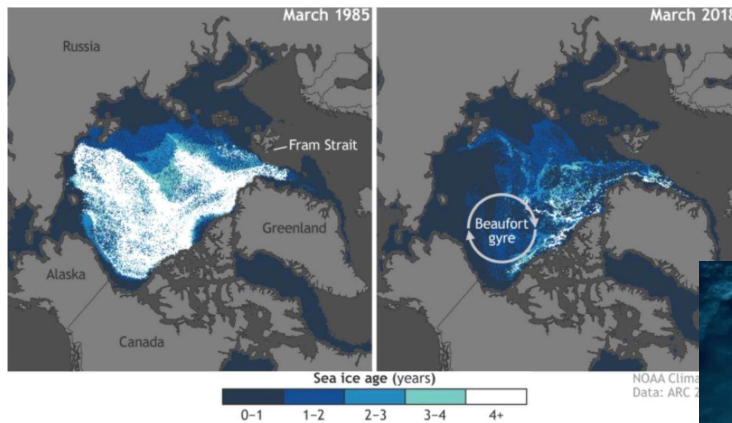


Spectrograms





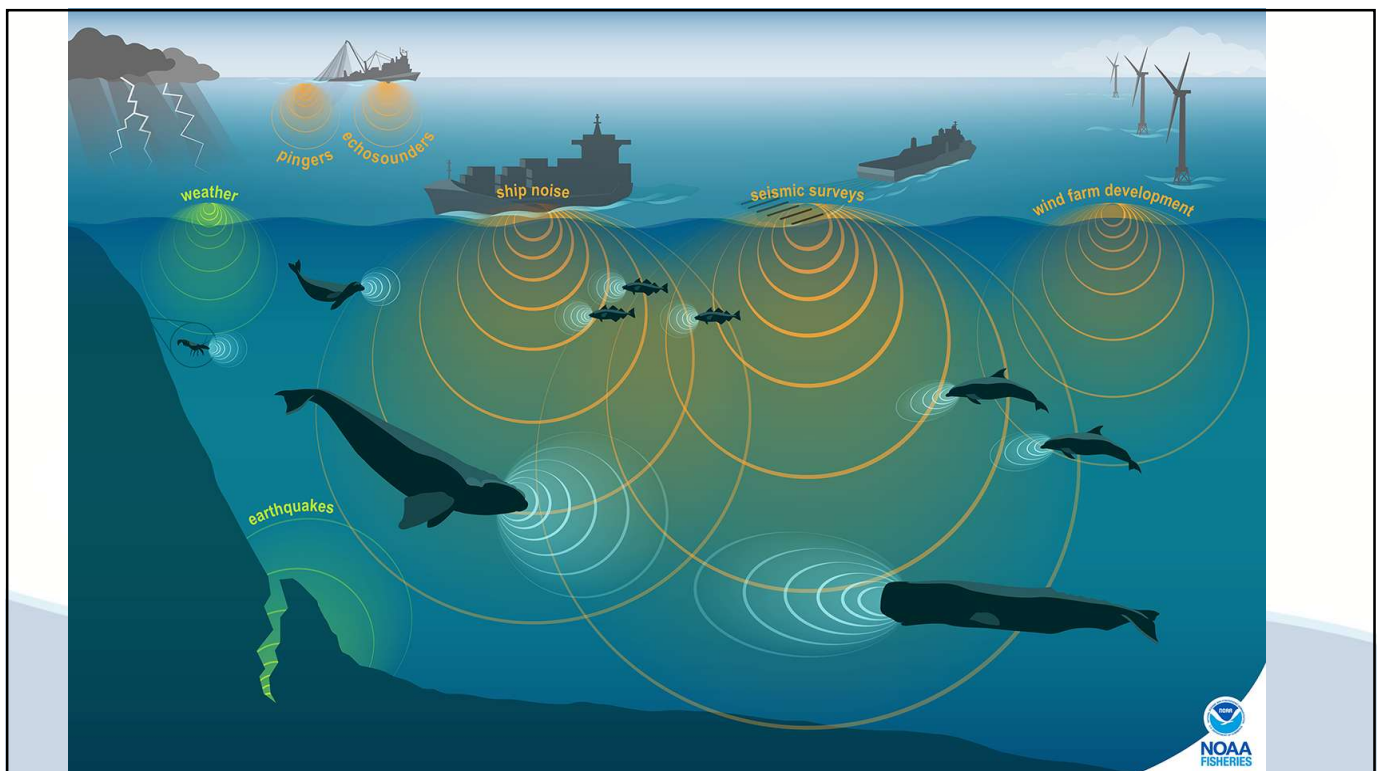
Changing Arctic Habitats



Anthropogenic Noise Pollution

- Inputs of excess noise include:
 - Global shipping
 - Oil and gas exploration
 - Construction activity
 - Naval sonar exercises

What does that look like?





Anthropogenic Noise Pollution

- Effects of excess noise include:
 - Temporary/permanent hearing loss
 - Stress responses
 - Disrupted feeding, breeding, nursing, and other important communication/socialization behaviors
 - Mass strandings

What are potential solutions?

- Modifying propellers and hulls
- Showing ship traffic
- Seasonal limitations in drilling, mining, etc.
- Bubble curtains