THE STATE OF BEAUFORT BELUGAS

Belugas are the most abundant toothed whales in the Arctic. Because there are so many of them spread out over the pole, researchers look to this species to see how climate change affects Arctic marine mammals in general.

Over the past 20 years, growth rates of belugas in the Beaufort Sea have declined, for reasons unknown but likely related to climate change.

The Arctic is getting warm, fast. Some forecasts predict that in the next few decades, summers in the Arctic Ocean may be ice-free. How will this affect species that depend on sea ice for hunting and hiding?

BELUGA WHALE
Delphinapterus leucas

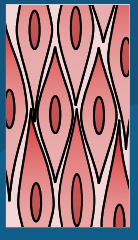
Dr. Emily Choy and colleagues wanted to find out how beluga body condition affected diving performance.

The team sampled muscle & blood from 77 whales to estimate how much oxygen belugas could store, or, how long they could stay under water!

Oxygen is transported to muscles & organs by red blood cells, so they took 3 measurements from the samples:

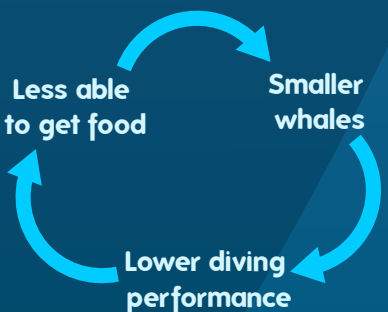
→ HEMATOCRİT
% of red blood cells

→ HEMOGLOBİN
molecule that holds oxygen in blood



→ MYOGLOBİN
molecule that holds oxygen in muscle

!! WARMER TEMPERATURES



Smaller whales had lower oxygen stores. This means that they can't dive as long as larger whales, affecting their ability to hunt, avoid predators, and escape sea ice traps. Climate change could create a vicious cycle between size & performance.

Declines in beluga body size negatively affect diving performance.

Choy, E.S., Campbell, K.L., Berenbrink, M., Roth, J.D., and Loseto, L.L. 2019. Body condition impacts blood and muscle oxygen storage capacity of free-living beluga whales (Delphinapterus leucas). J. Exp. Biol. 222(11). doi:10.1242/jeb.191916.