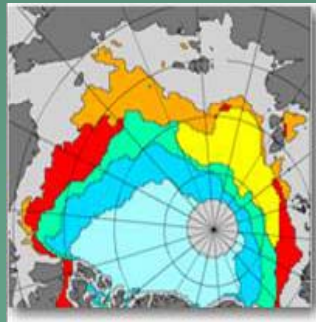


The State and Future of Mammal Populations in the Beaufort Sea and Arctic Ocean

Polar Bears and Walrus as Sentinels of Arctic Change

Dan James, Chad Jay, Steven Amstrup, and Dave Douglas
U.S. Geological Survey





Subsistence



Habitat Loss



Industry



Tourism

Photo by Geoffery Roy

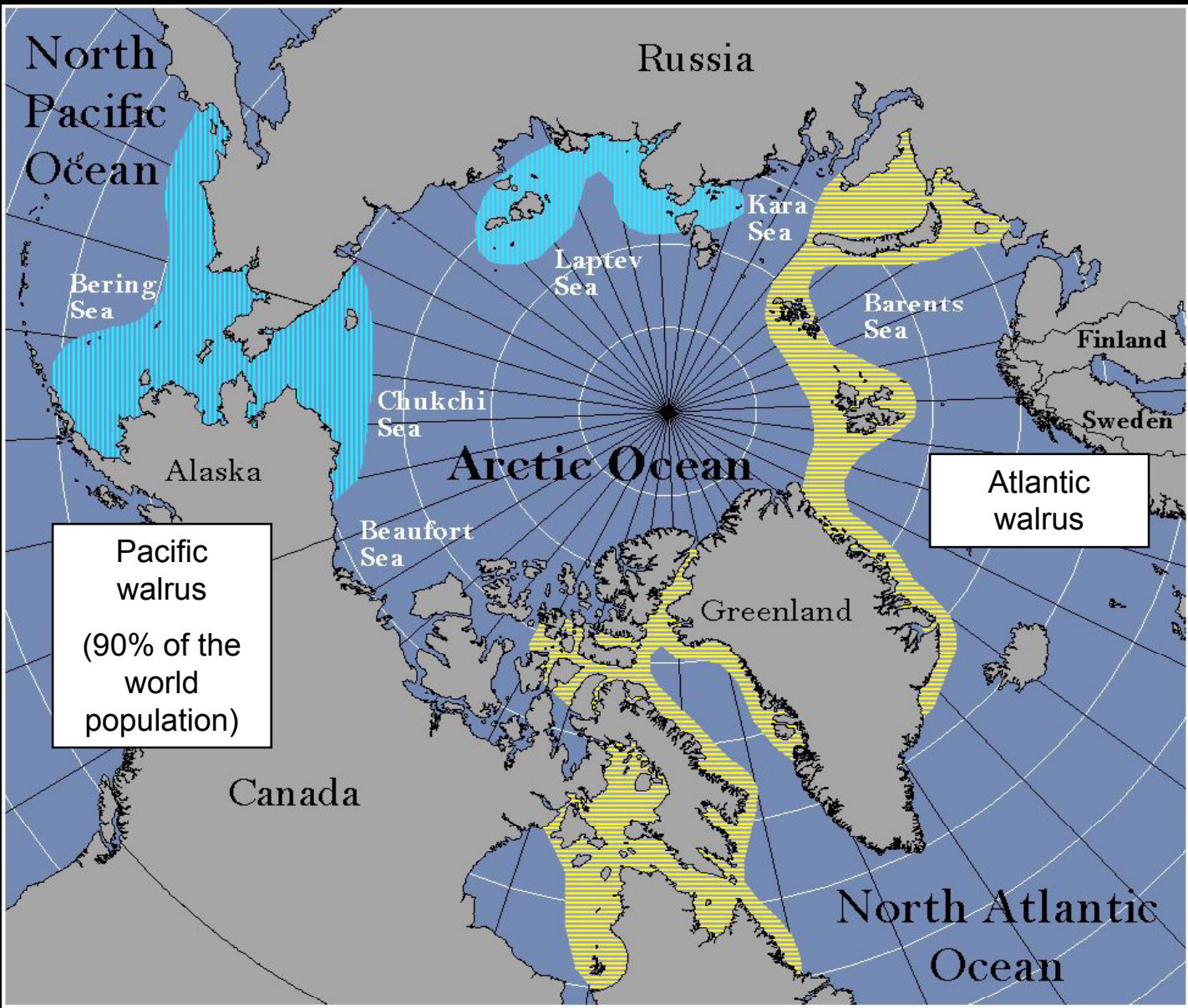
Why polar bears and walrus?

- Arctic undergoing rapid change
- Both species are symbols of the Arctic
- Both species integrate change at lower trophic levels
- Both species tightly tied to sea ice – proxies for the status of the arctic ecosystem



Life History





General Biology



General Biology ...



A



B



Hiatella

Mya

C

Serripes

Life History



RANGE OF POLAR BEARS IN THE POLAR BASIN

RUSSIA

GREENLAND

NORTH
POLE 

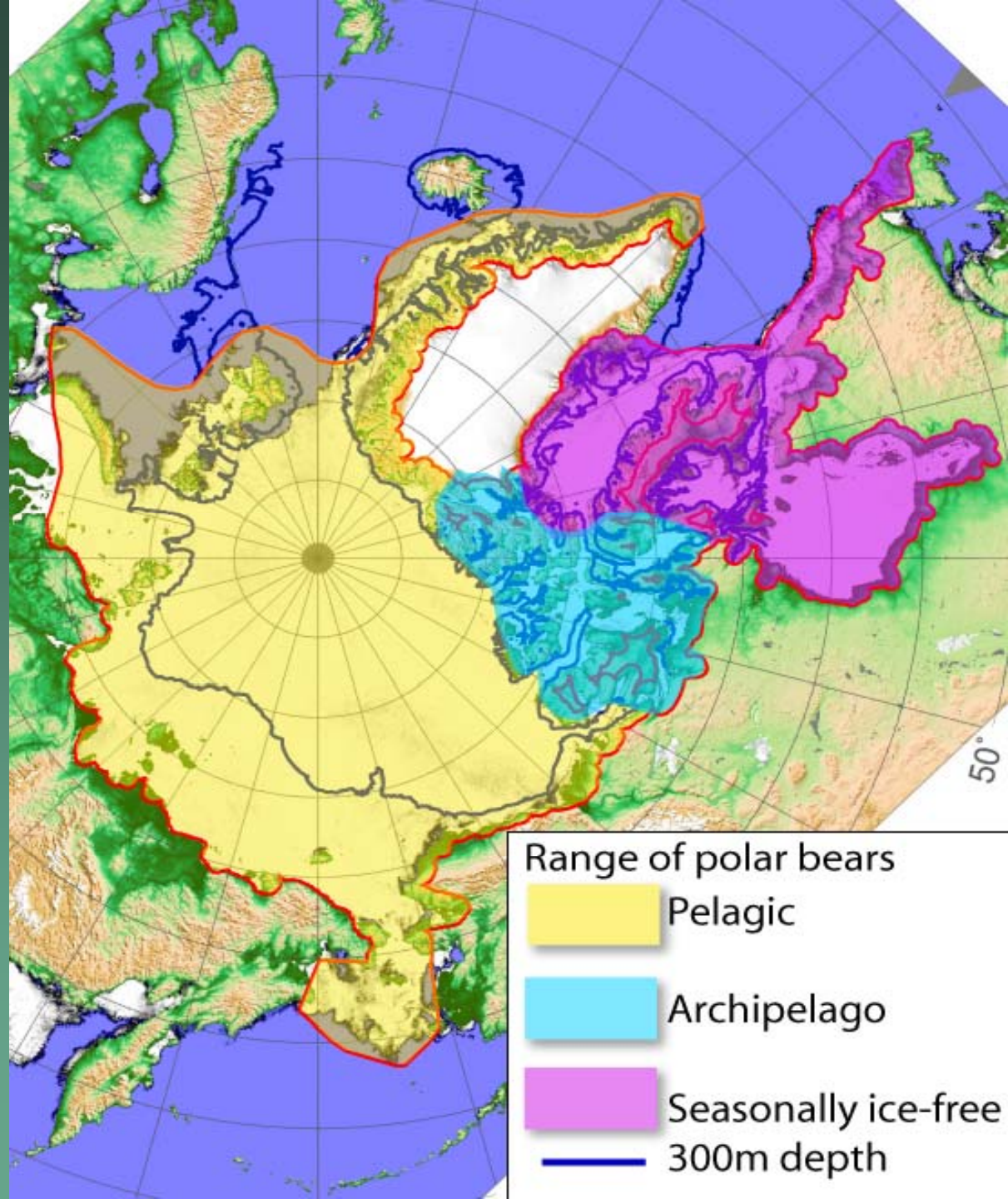
ALASKA

CANADA

U.S.A



Polar Bears Utilize three Ecological Strategies





Life history dependence on sea ice



 USGS

- Foraging
- Reproduction

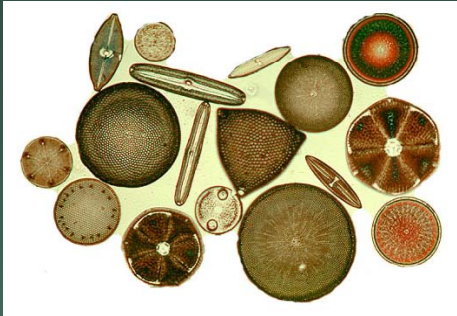
Like all bears, polar bears begin life very small.



- Females can weigh 800 pounds and males 1400 pounds
- Polar bears live for 30 years.
- There are 22,000 - 25,000 polar bears in the Arctic.

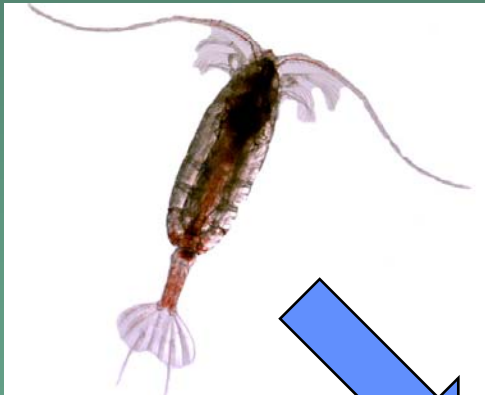


Diatoms



Polar bear

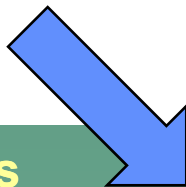
Arctic food chain



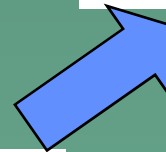
Copepods



Ringed seal



Arctic cod



Research Challenges

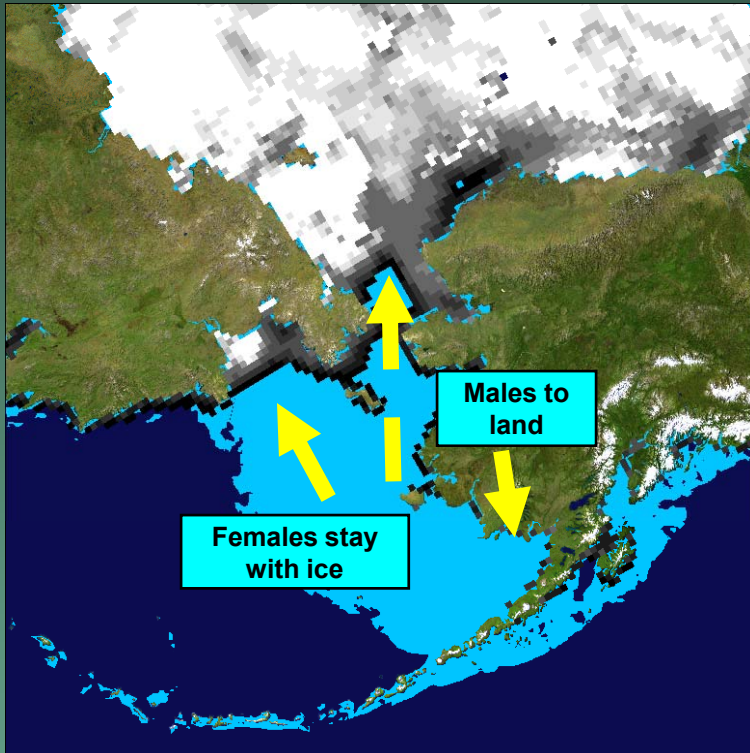


In or under water 80% of time



Live on surface

Research Challenges



WALRUS

Large, segregated migrations



POLAR BEARS

Mixed populations

Research Challenges



**Harder to capture
or handle**



**Easier to capture
or handle**

Sea Ice, Arctic Climate, and Wildlife Habitat



Alaska Science Center

U.S. Department of the Interior
U.S. Geological Survey