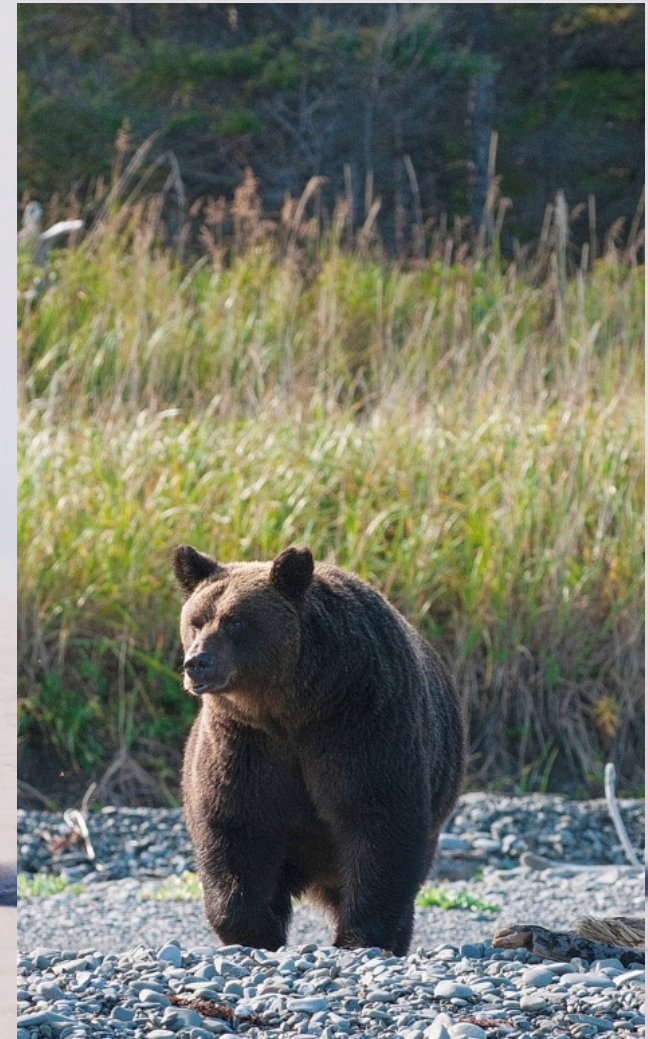
The background of the slide is a photograph of a bowhead whale breaching the sea surface. The whale's dark, elongated back is visible above the water, with a small, rounded blow visible on the left side. The water is a pale, milky blue-grey color, and the sky above is a hazy, light blue. The overall scene is calm and serene.

OKHOTSK SEA BOWHEAD WHALES AS A LIVE MODEL ON HOW CLIMATE CHANGE MAY AFFECT THE SPECIES IN THE POLAR REGIONS

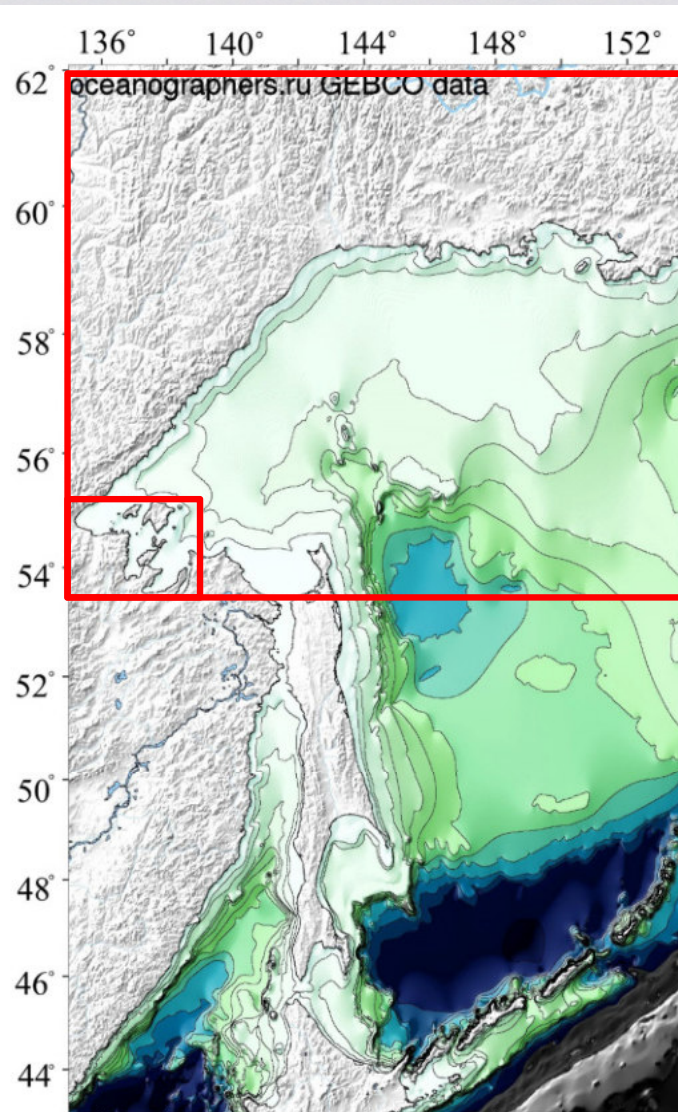
Olga Shpak
Severtsov Institute, Moscow

CAFF Congress
Rovaniemi, October 10, 2018

ICE WHALES FROM THE BROWN BEAR LAND



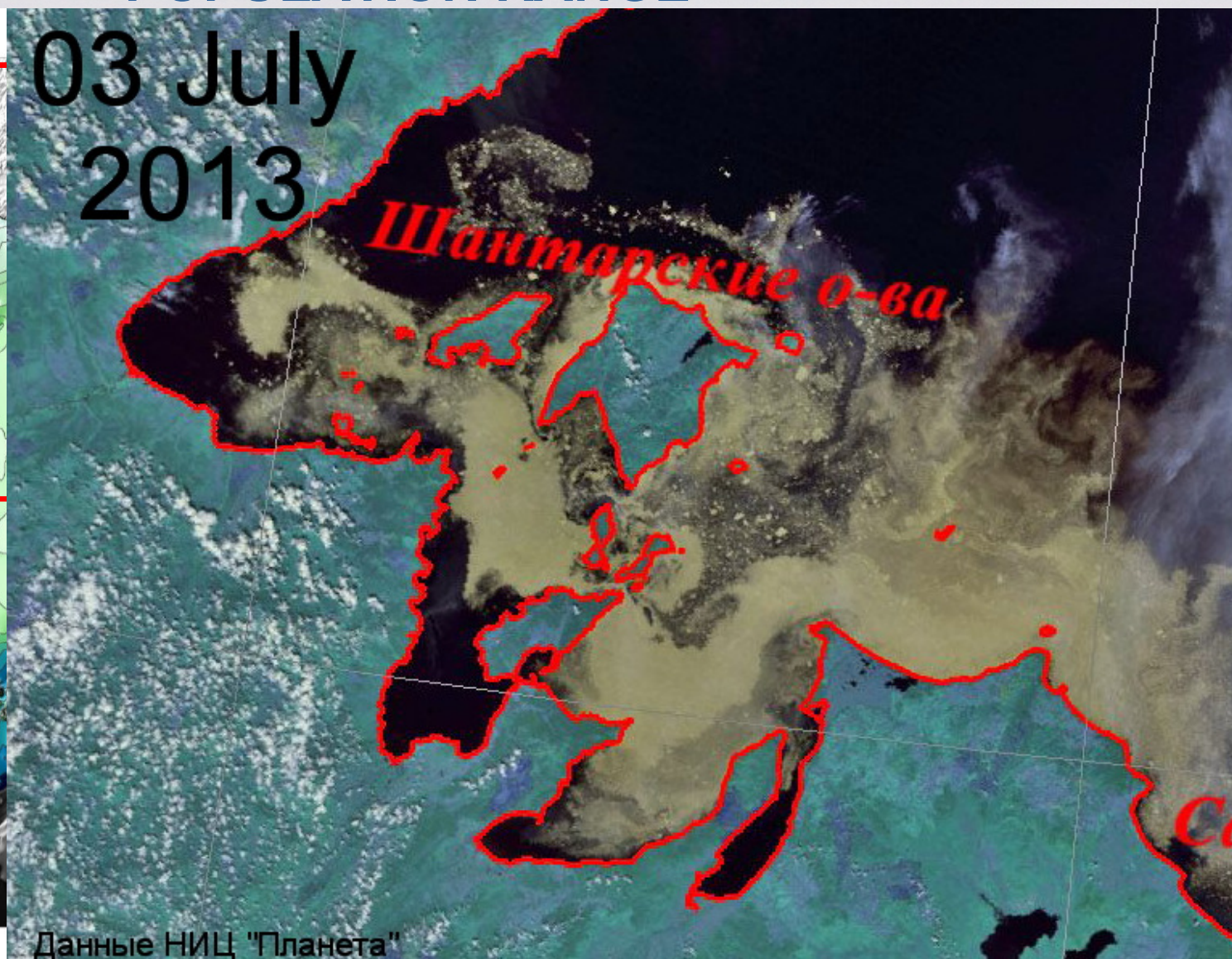
POPULATION RANGE



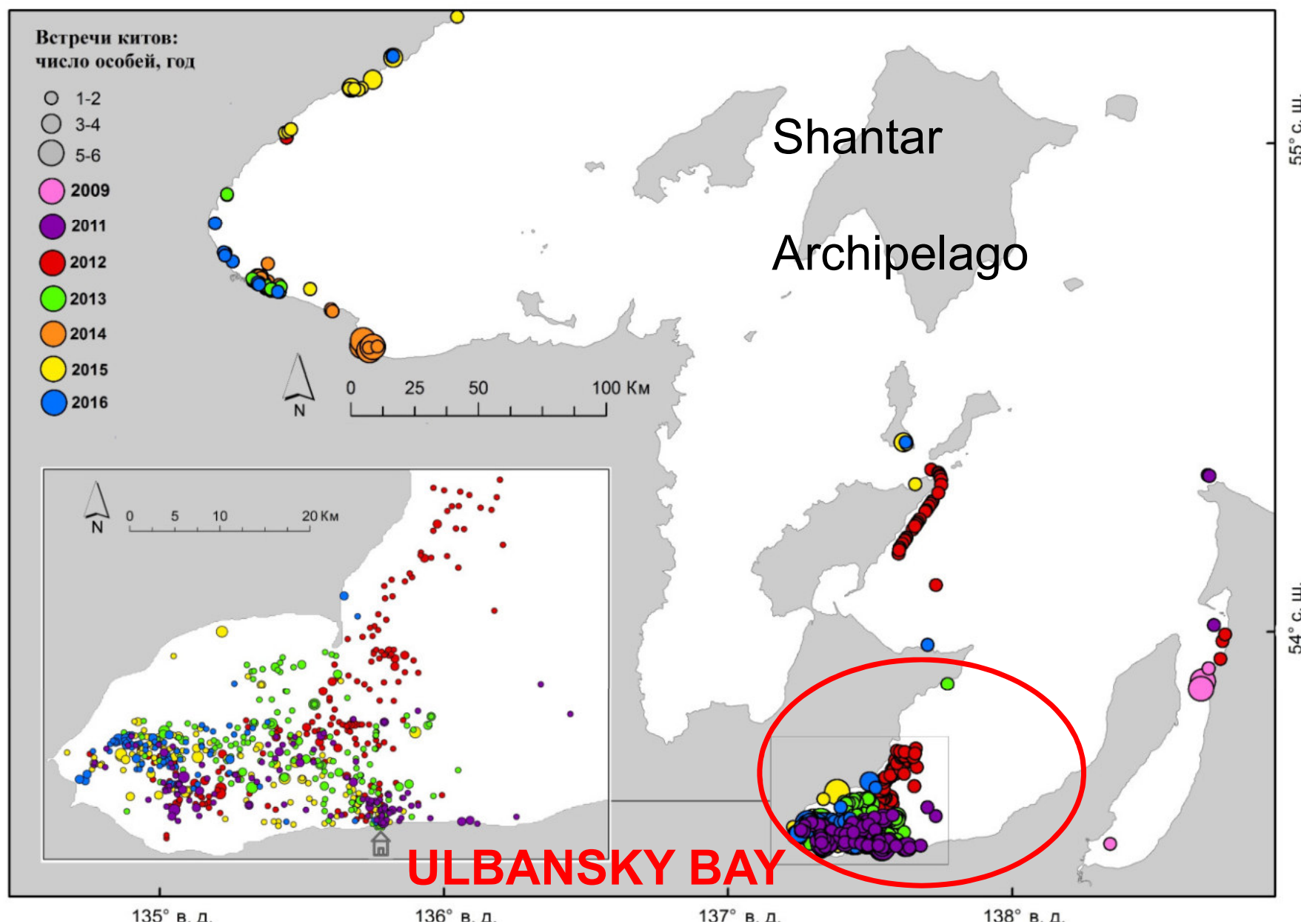
03 July
2013

Шантарские о-ва

Данные НИЦ "Планета"



(from Shpak O. and
Paramonov A., Rus.
J. of Mar. Biol., 2018)



SUMMER HABITAT OF WHALES

Sea surface salinity (SSS, ‰), temperature (SST, °C), and depth (m) at the sites of whale sightings in Ulbansky Bay, August 2016.

ULBANSKY BAY

	SSS	SST	depth
Mean	21.1	13.5	4.6
Minimum	8	11.5	2.3
Maximum	30	16.5	9.4
No of measurements	15	17	34



From Shpak O. and Paramonov A.. Rus. J. of Mar. Biol., 2018

...AND THE AIR TEMPERATURE IS SOMETIMES HIGH TOO



ICE-FREE SUMMER HABITAT

- **Shallow water**
- **Low salinity**
- **High water temperature**
- **High air temperature**





ECTOPARASITES



Cyamus ceti



SKIN CONDITIONS OF UNKNOWN NATURE

Parallel grooves/welts and Shedding in sheets associated with welts

SC/67A/E/01 (SC IWC, 2017)



SKIN CONDITIONS OF VERY WELL KNOWN NATURE



KILLER WHALE PREDATION



KILLER WHALE PREDATION

Average calf production in NARW population is 4.4%

(Pace, R. M., Corkeron, P. J., & Kraus, S. D. *Ecology and Evolution*, 2017).

For OS bowhead population, whose size may be as low as 218 (Cooke et al., 2017, SC/67A/NH/10), 4.4% calf production would result in less than 10 calves per year.



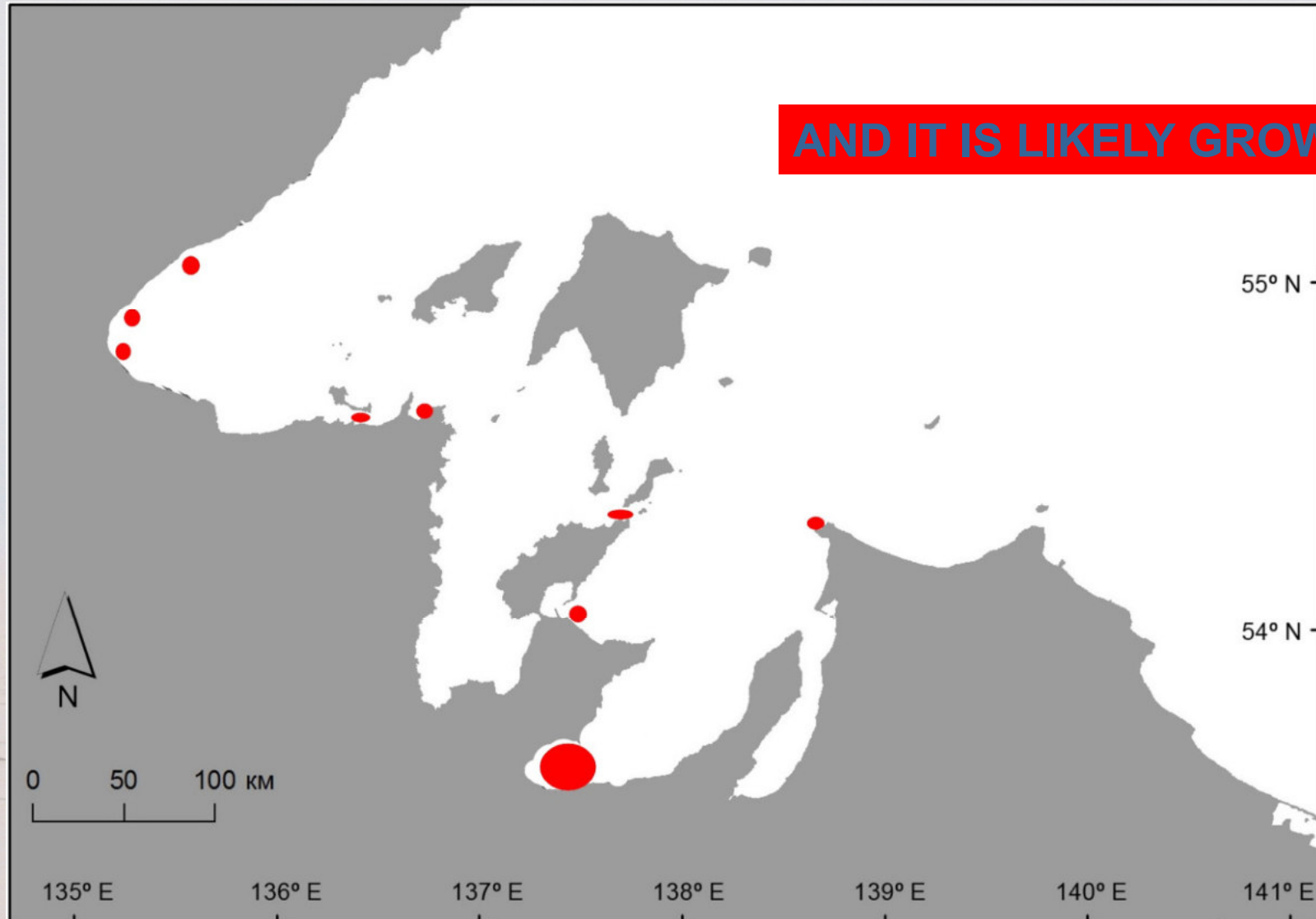
KILLER WHALE PREDATION

2015: Ulbansky **ONLY** – 3 attacks, 4 kills/corpses, 2 corpses (interview) = **6+**

2016: Ulbansky **ONLY** – 1 attack, 7 kills/corpses, 1 kill (interview) = **8+**



KILLER WHALE PREDATION IN THE ENTIRE REGION



AS BIG AS 10-METER LONG WHALES ARE HUNTED



OTHER THREATS ASSOCIATED WITH ICE-FREE HABITAT

Entanglement in fishing gear

Tourism disturbance and harassment

Growing ship traffic (possible strikes, noise)









OTHER ARCTIC MARINE MAMMAL SPECIES FROM THE BROWN BEAR LAND



PREDICTIONS, MODELS, HYPOTHESES ON HOW POLAR SPECIES
OF MARINE MAMMALS WOULD ADAPT TO THE ICE-FREE
ARCTIC...

TODAY, LIVE - IN THE OKHOTSK SEA

THANK YOU



©Photo by O. Shpak