Polar bear distribution & genetics in James Bay

Alexandra Langwieder
PhD candidate, McGill University

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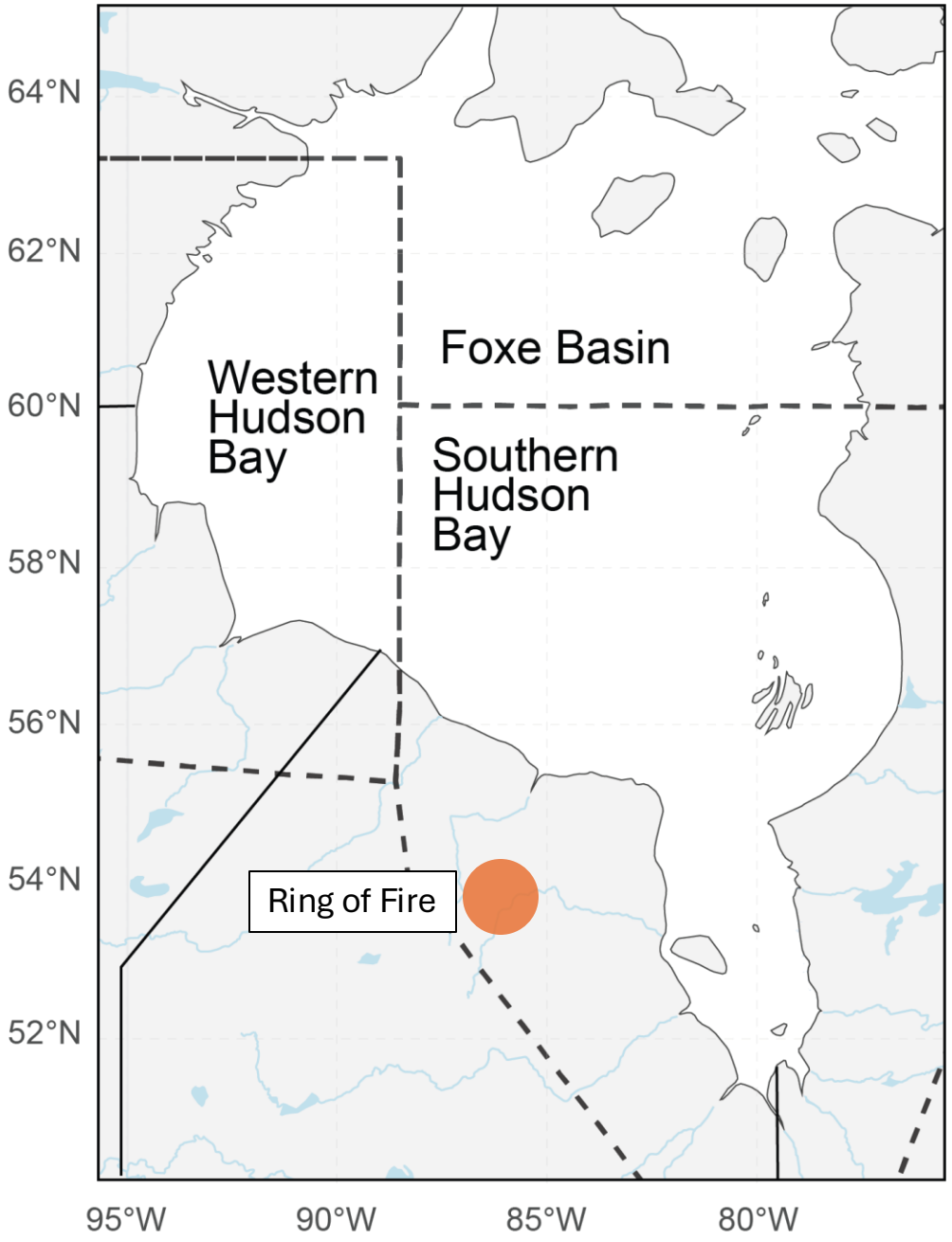
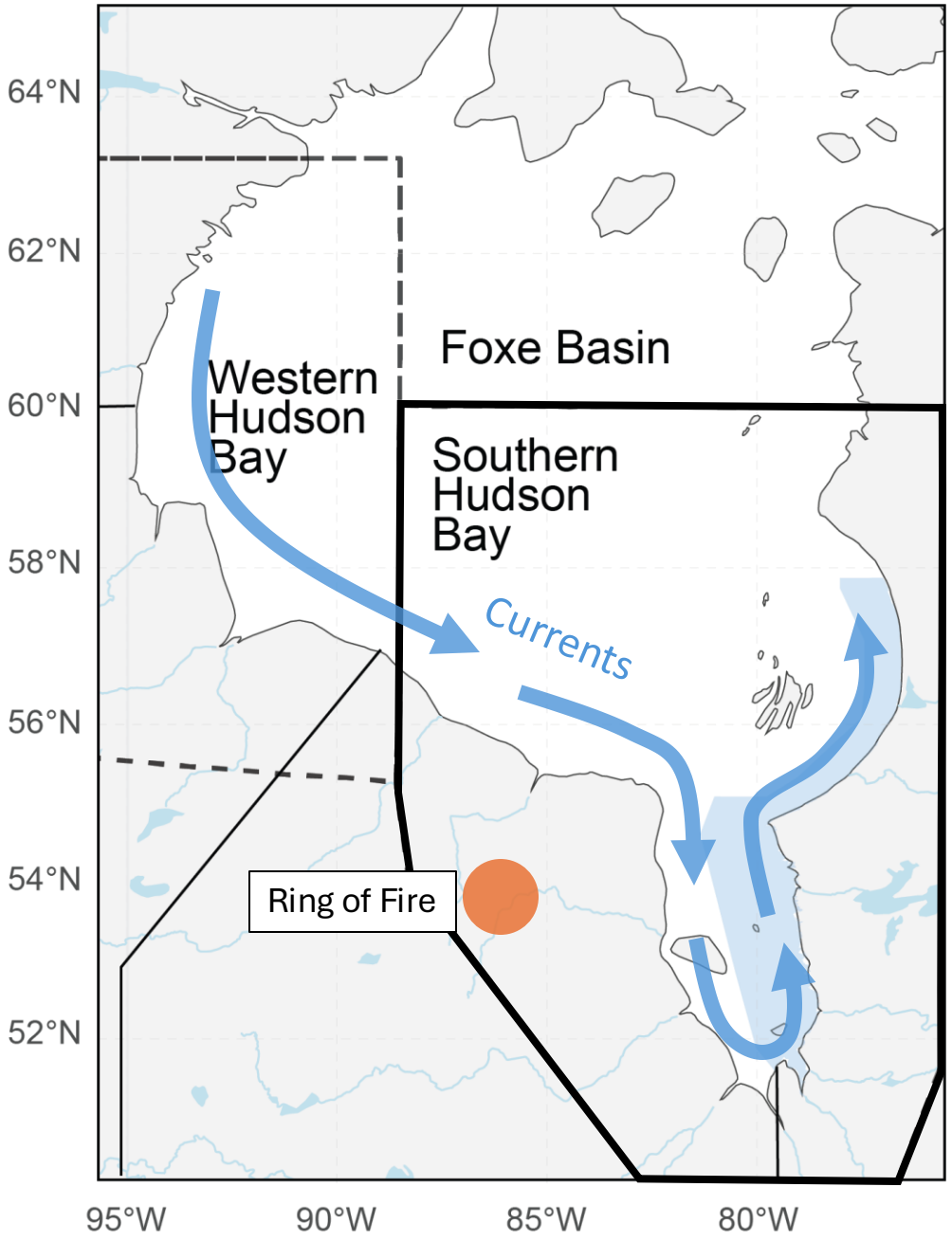


Polar bear subpopulations

- 19 subpopulations
- 3 within the Hudson and James Bay region: Foxe Basin, Western Hudson Bay, and **Southern Hudson Bay**

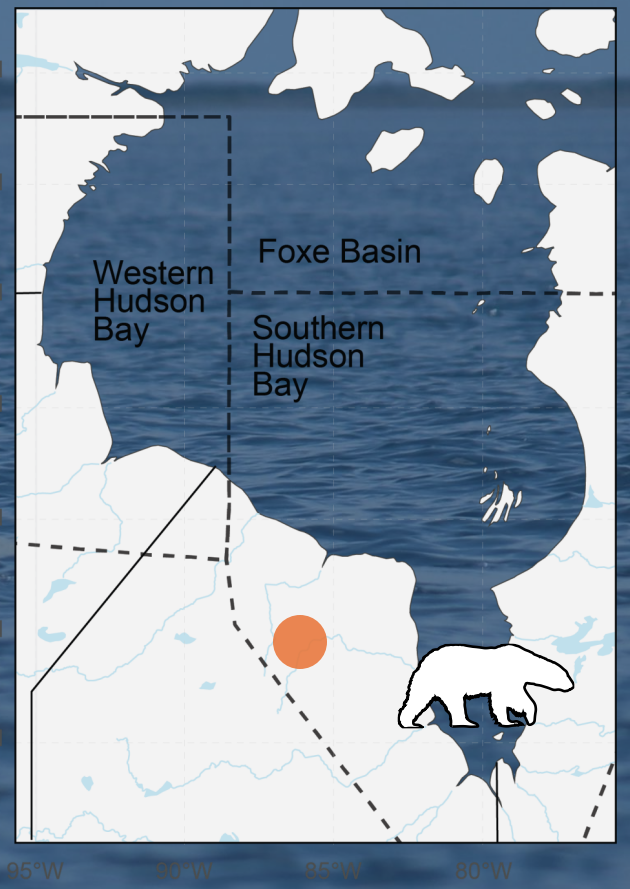


Research in James Bay

- Community-led research in the Eeyou Marine Region of James Bay
- Cree Knowledge, camera traps, and hair samples

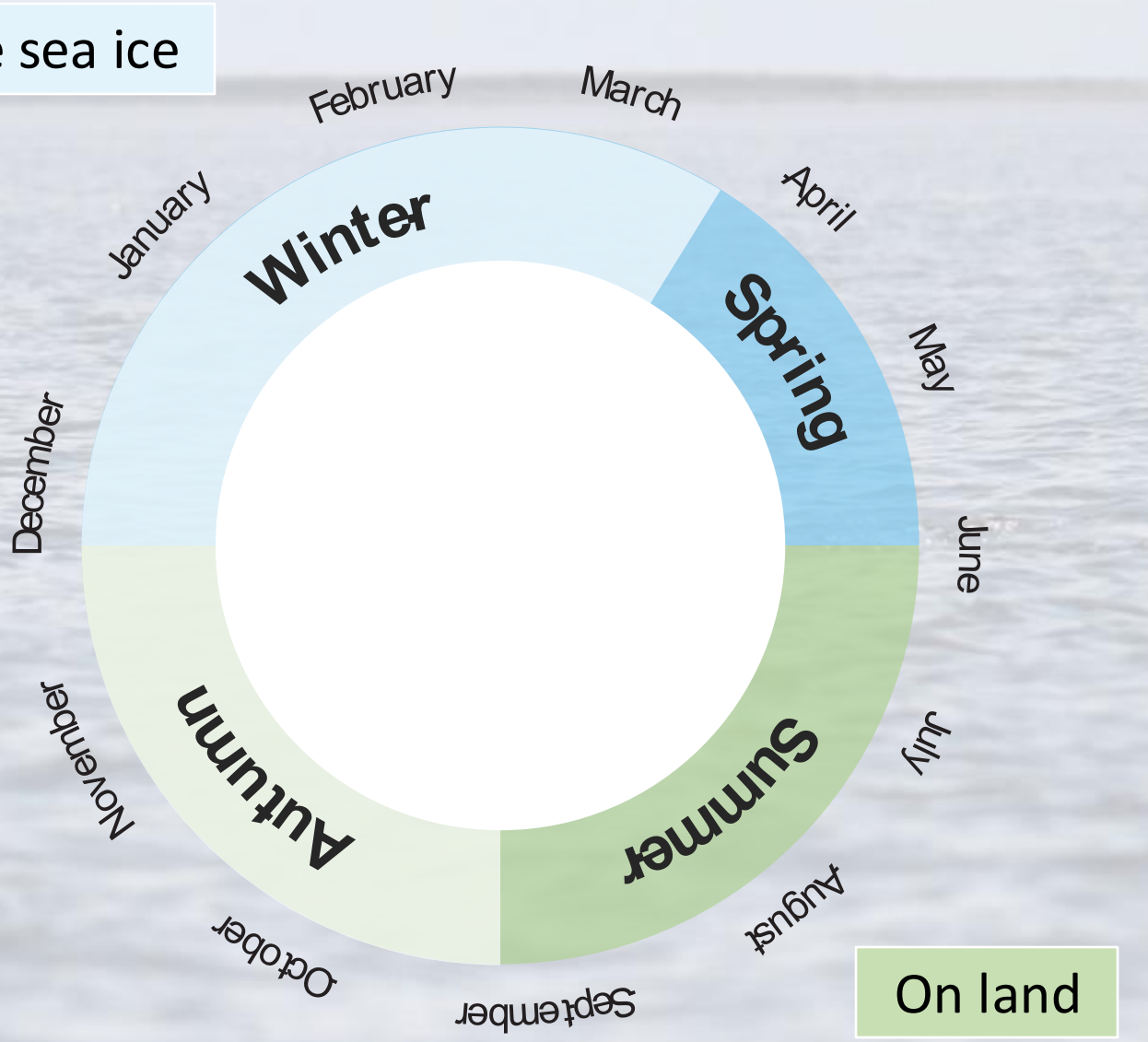
Polar bears

- Large home ranges – can cover thousands of kilometers
- Reliant on sea ice and suitable denning habitat
- Top predator vulnerable to accumulating contaminants
- Long lived, have few offspring
- Reduced habitat can lead to human-bear conflicts



A polar bear’s year:

- At 183 ice-free days, adult survival is impacted
- Ice-free season in Hudson and James Bay is among the longest across polar bear range (up to 165 days)



A polar bear's year:

Denning

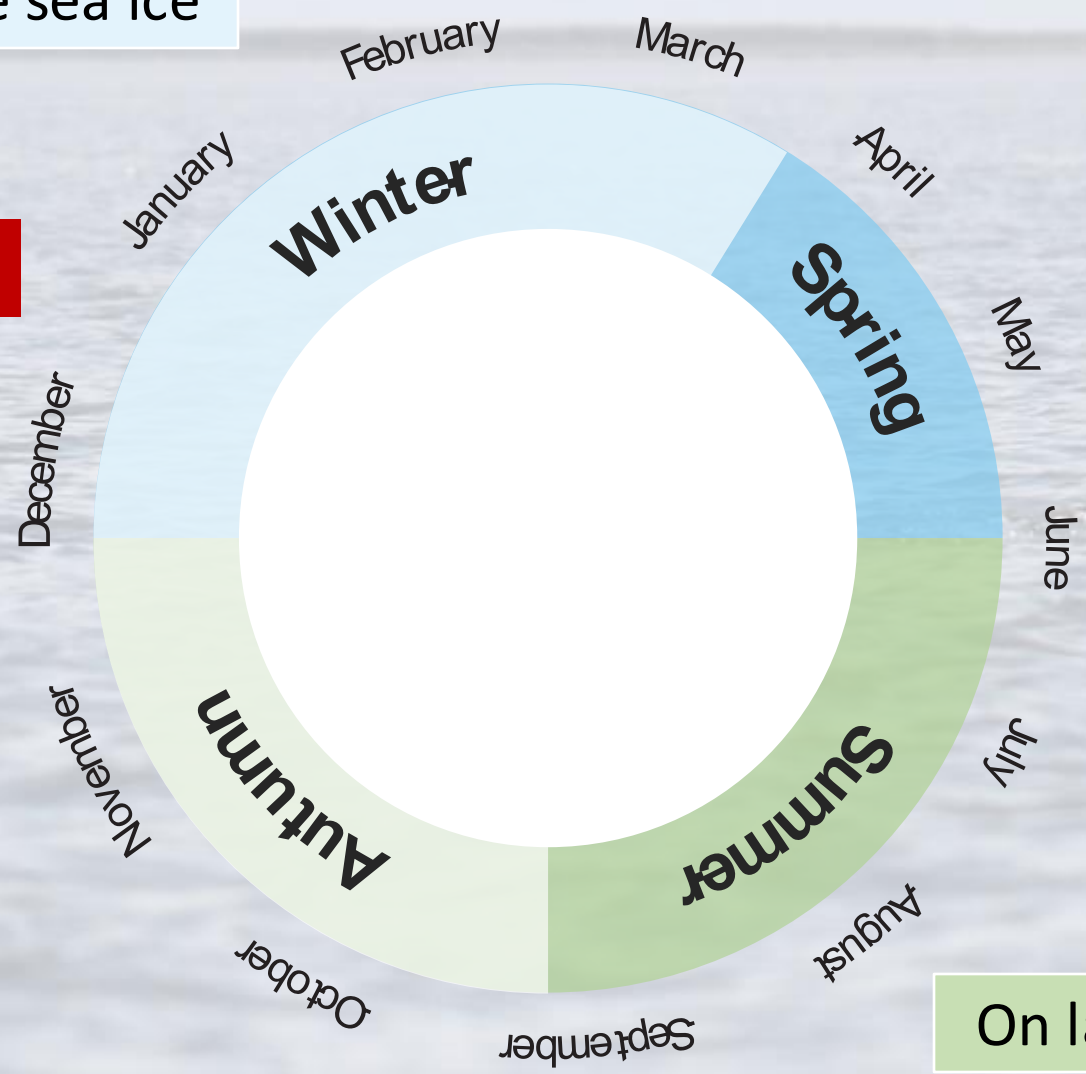
Giving birth

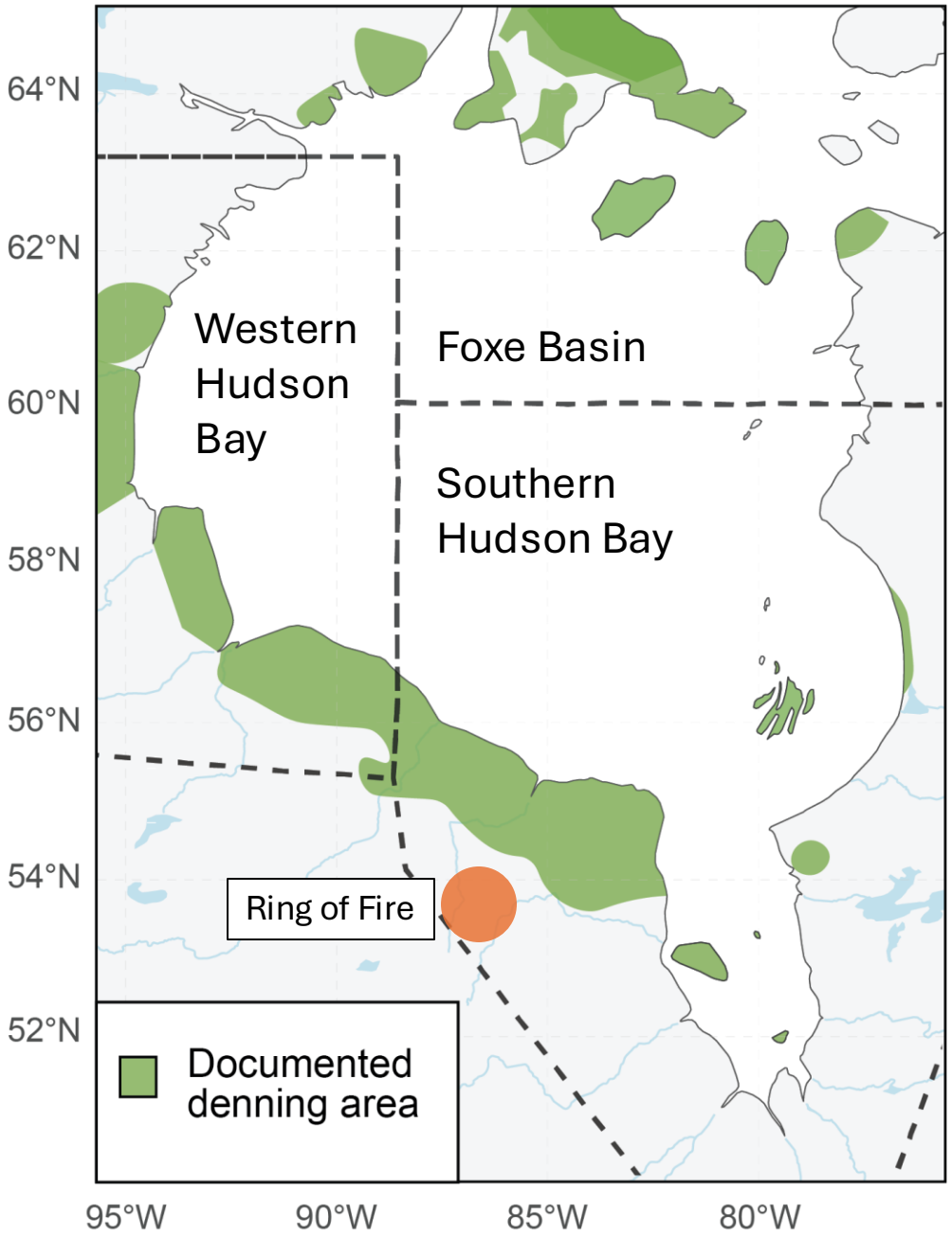
On the sea ice

Emerging from dens

Mating

On land



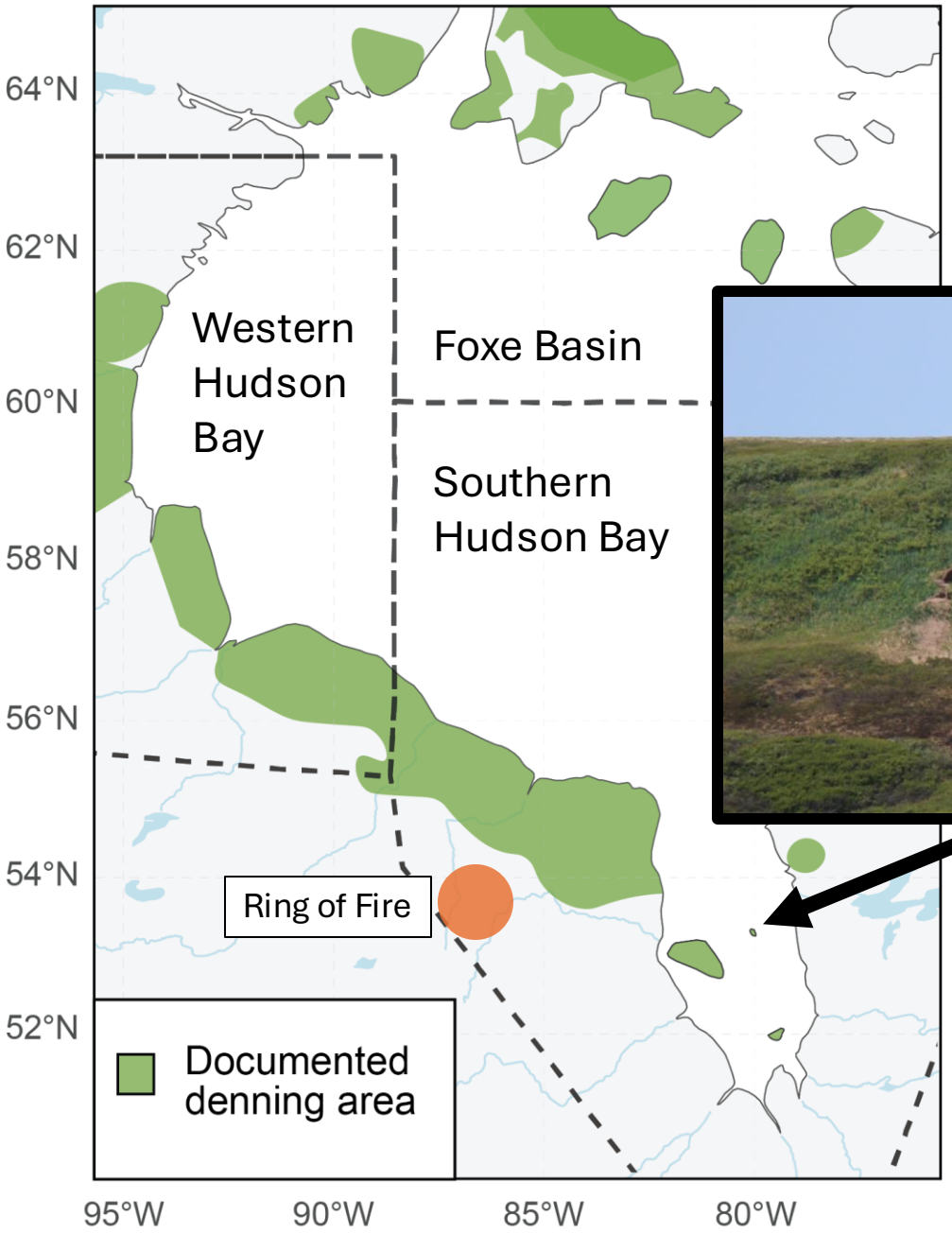


Denning habitat in Hudson and James Bay

- Females den in soil in James Bay rather than snow
- Can be far inland
- Sensitive to disturbance

References: *Clark et al., 1997, 2024; Doutt, 1967; Florko et al., 2020; Harington, 1968; Langwieder et al., 2023, Amstrup 1993*

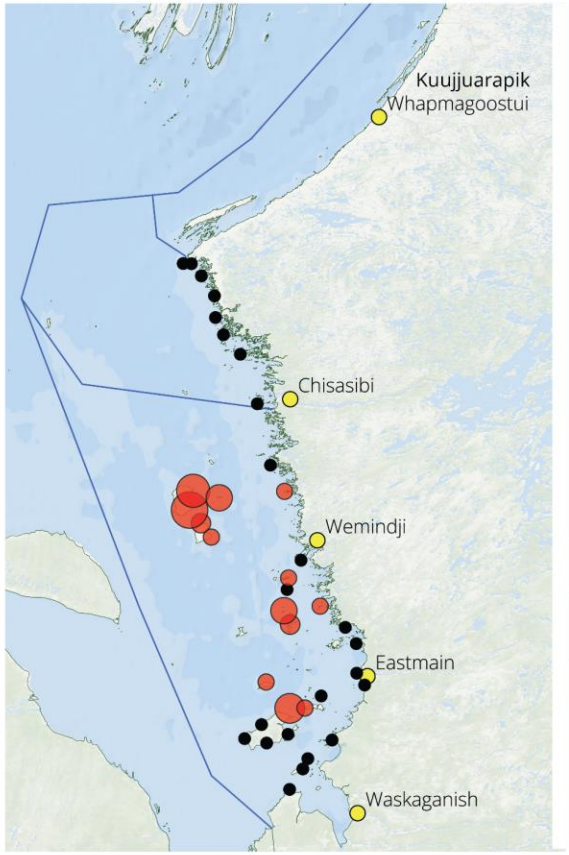
Denning habitat in Hudson and James Bay



References: *Clark et al., 1997, 2024; Doutt, 1967; Florko et al., 2020; Harington, 1968; Langwieder et al., 2023, Amstrup 1993*

Summer habitat

2021



Where are polar bears in the ice-free season?

Polar bear detections per week

- 0
- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6

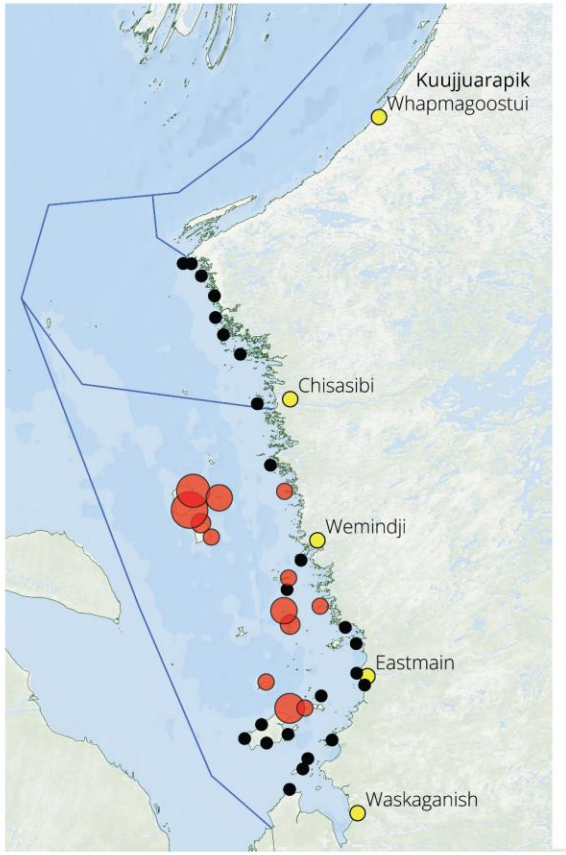
Community

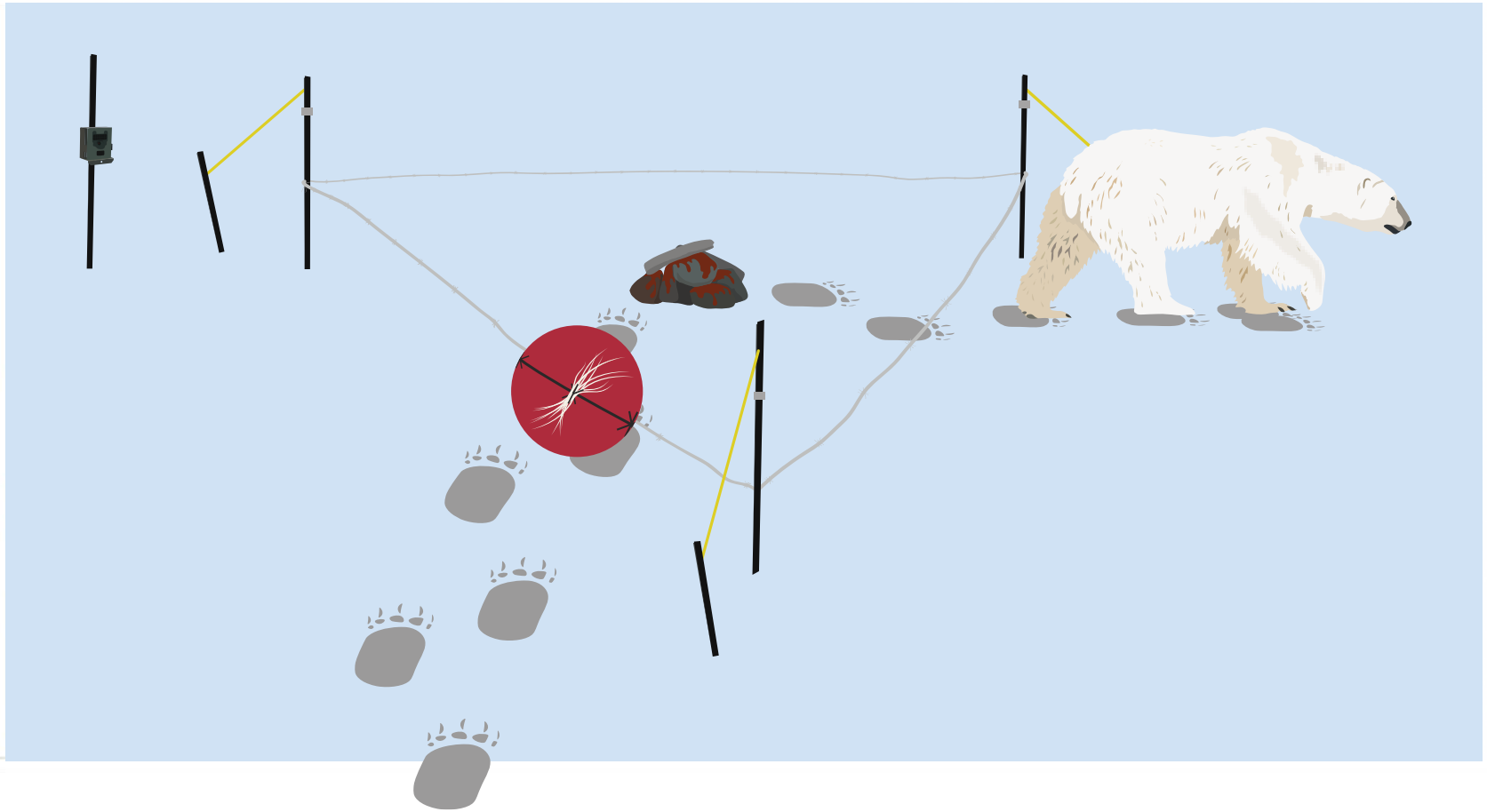
EMR- NMR Boundary

0 50 100 km

Summer habitat

2021 2022 2023 2024





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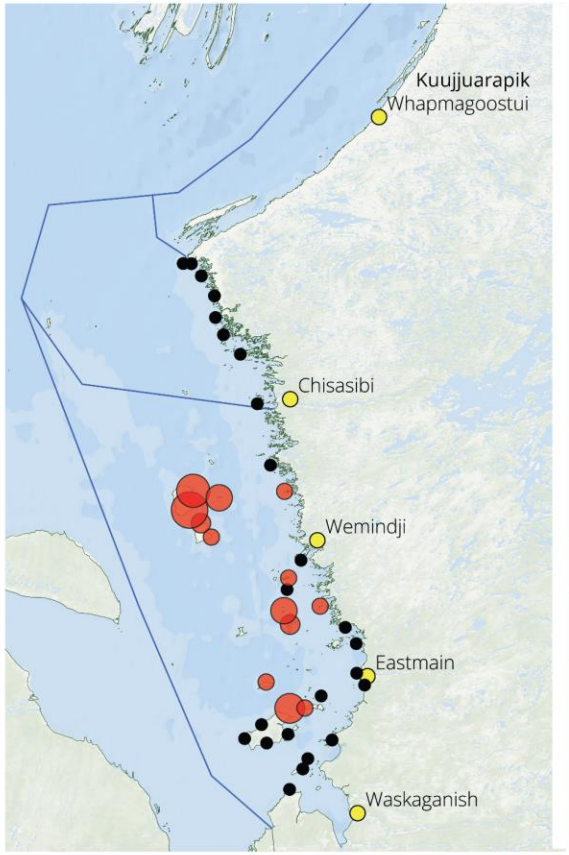
2021



2022

2023

2024

Polar bear detections per week

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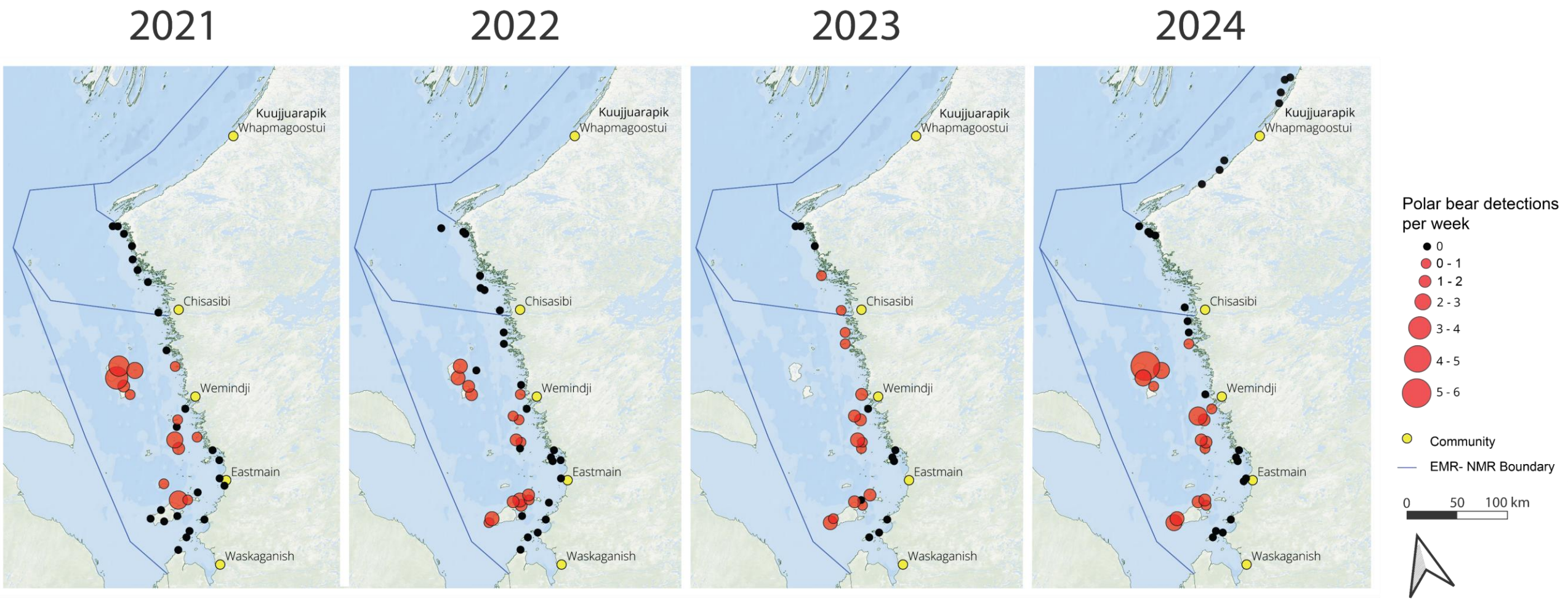
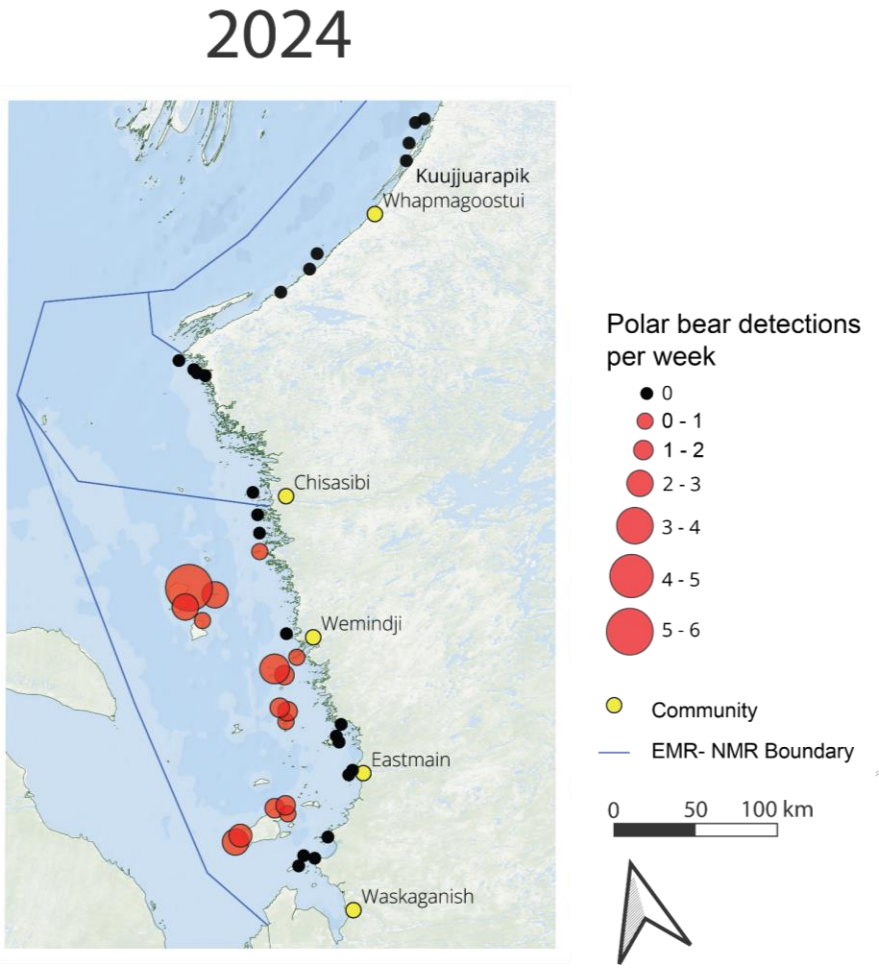
Summer habitat

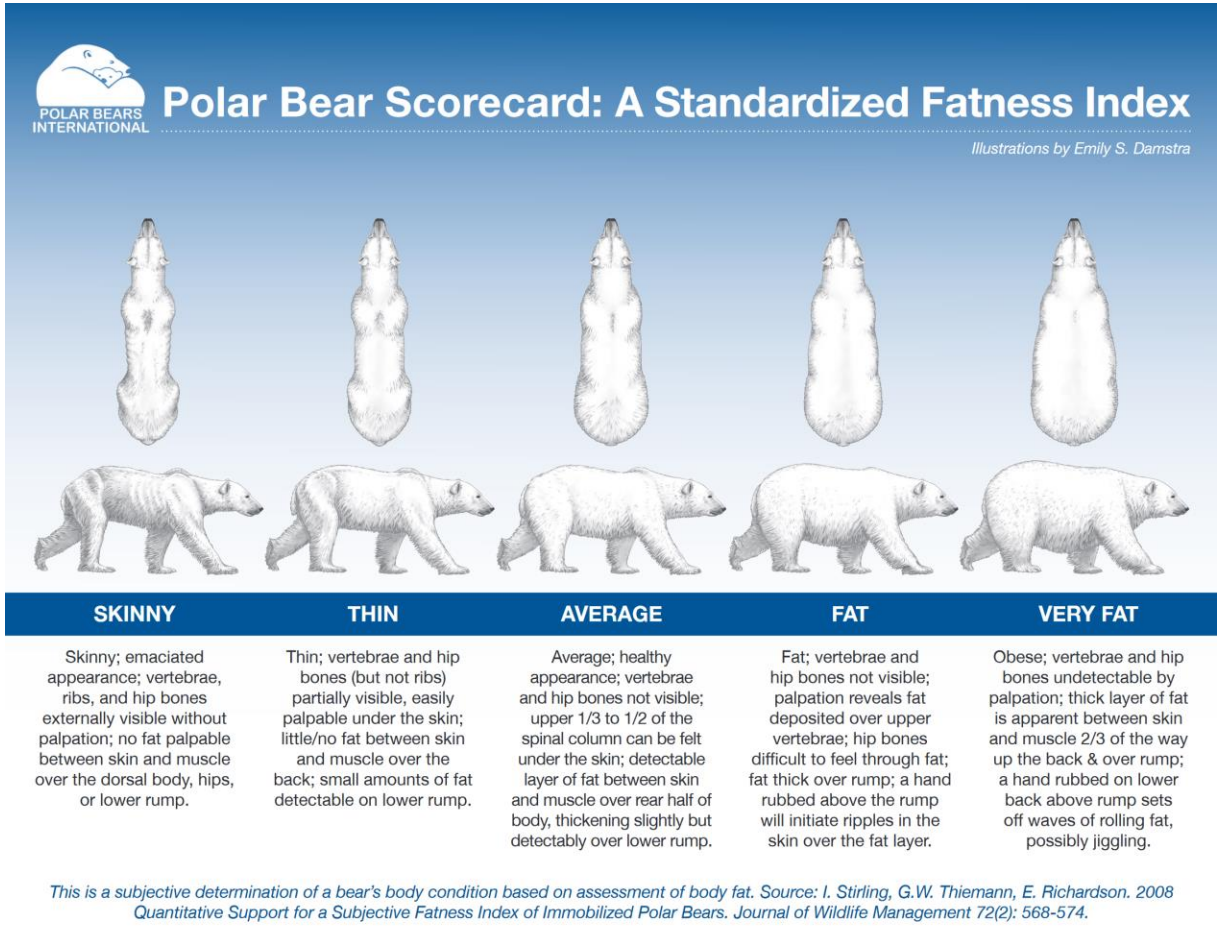


Summer habitat in the Eeyou Marine Region

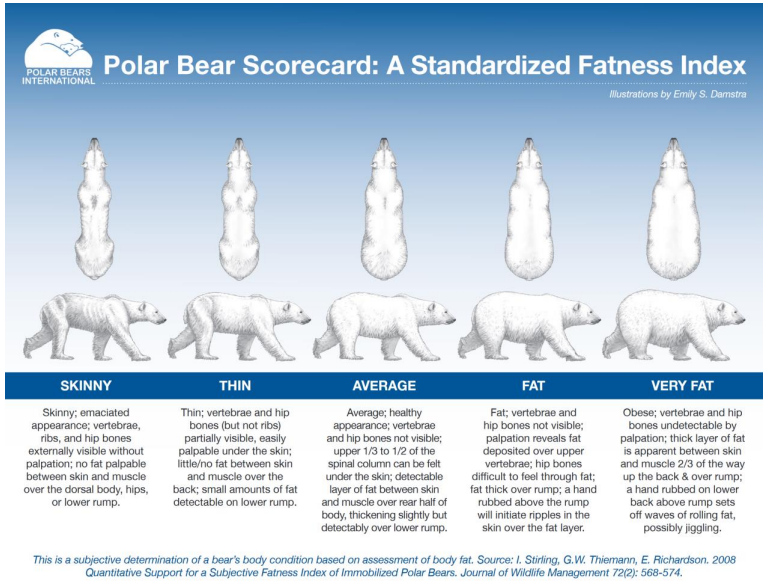
- On the east coast, offshore islands are most important
- No impact of island vegetation type, island size, or latitude on where polar bears were detected
- *Habitat differences- more islands on east coast*

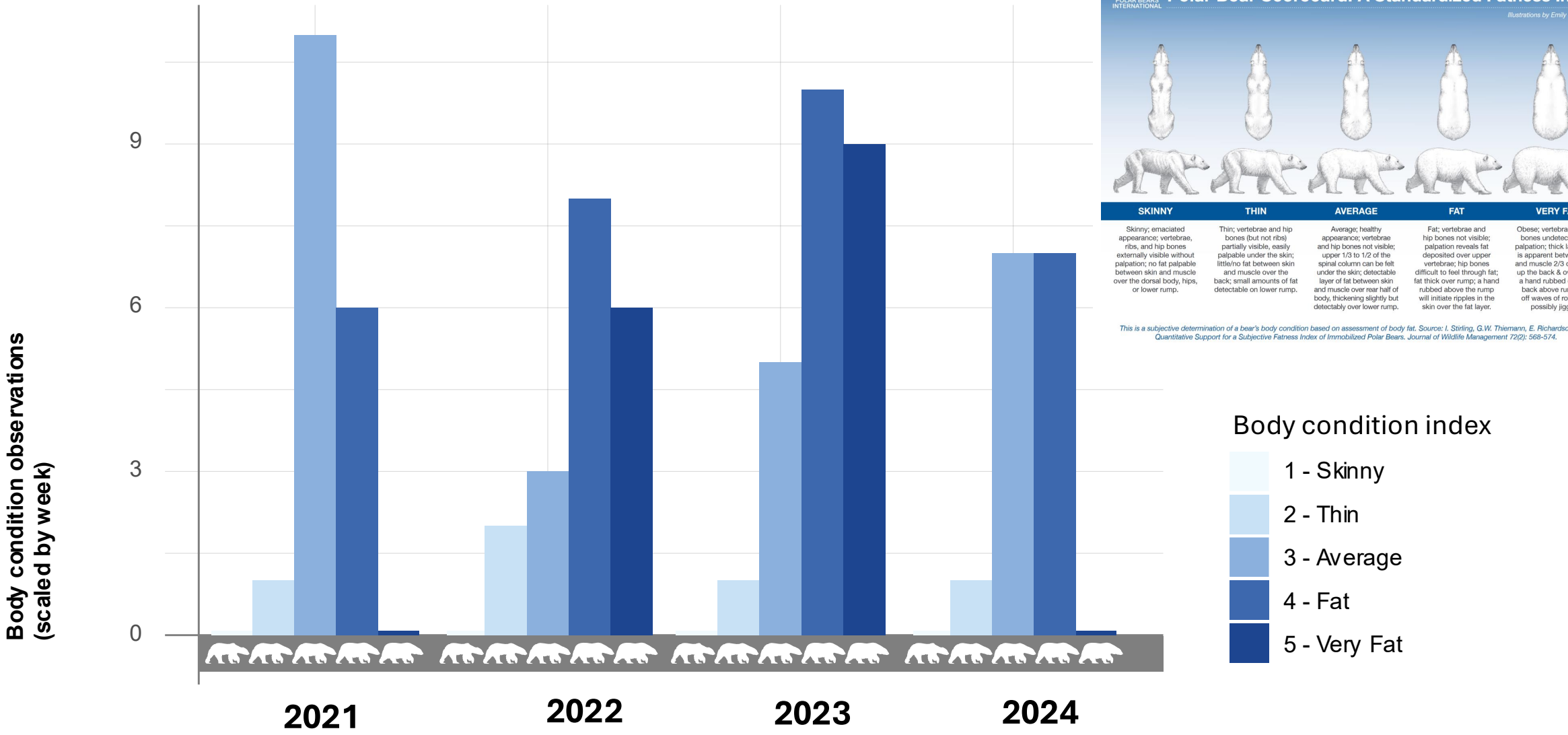


Polar bear body condition



Polar bear body condition in the EMR from camera trap observations (July-September)





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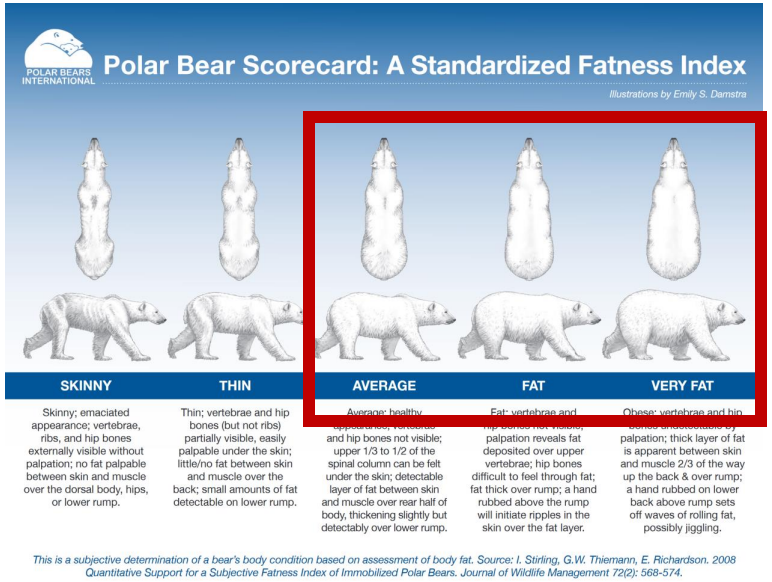
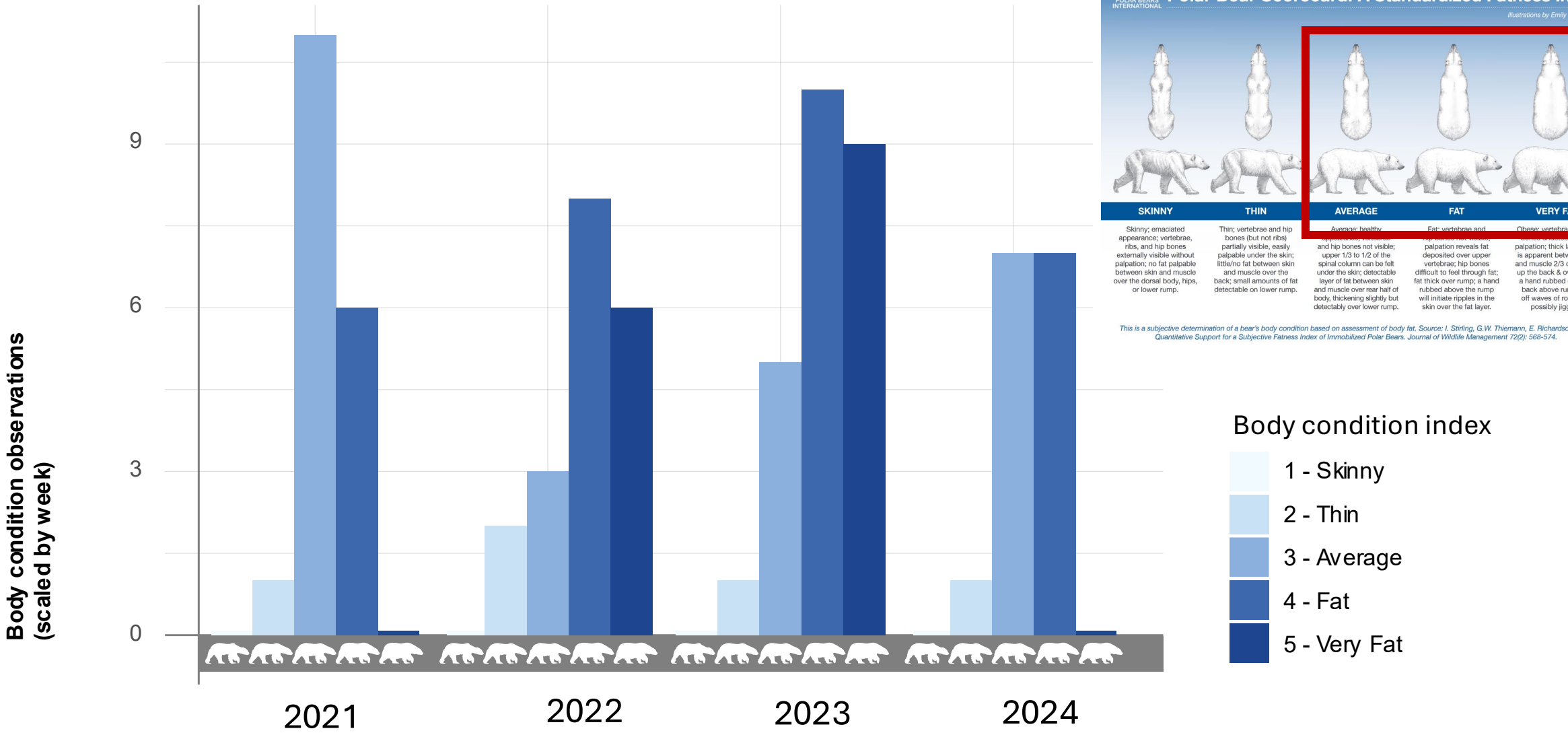
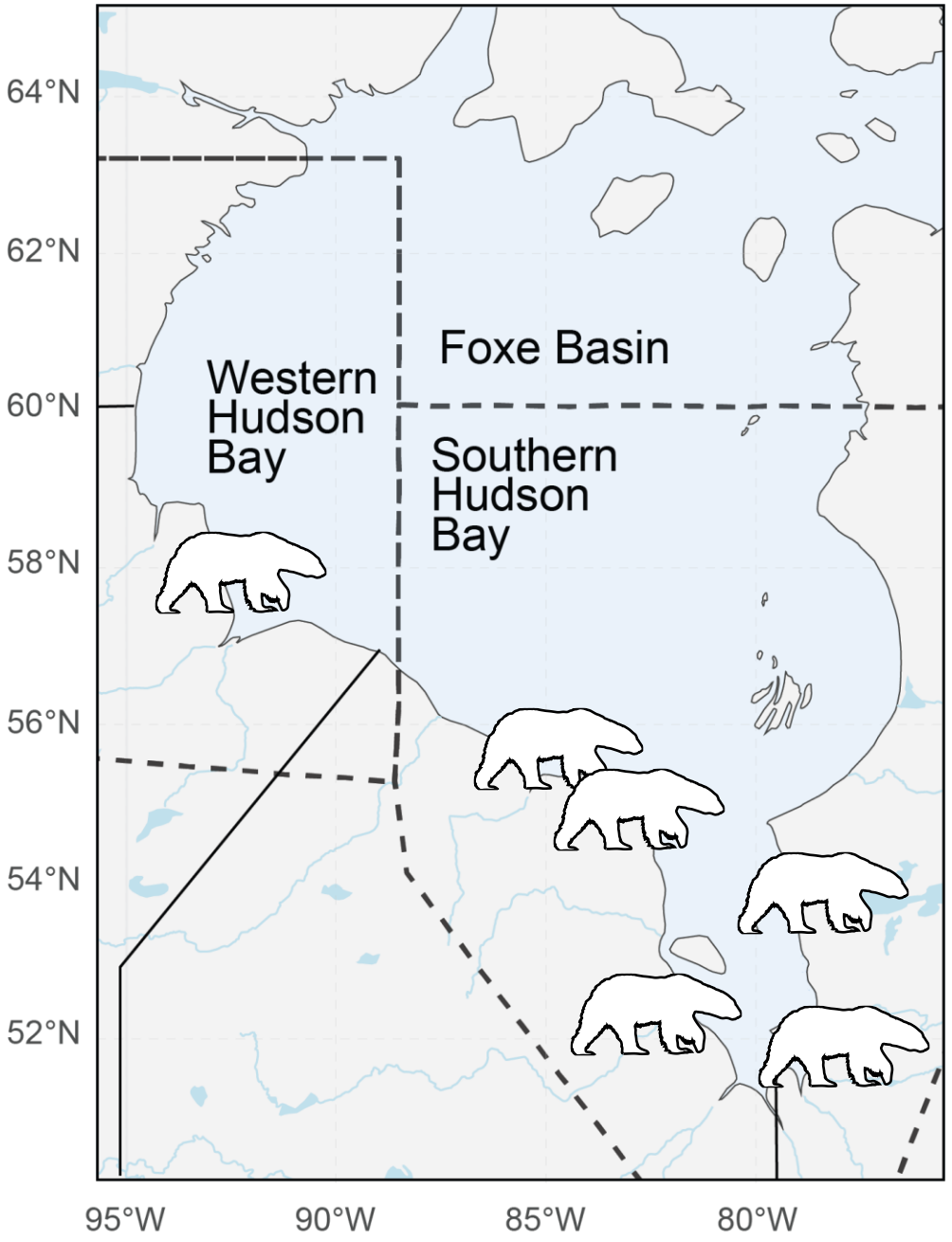
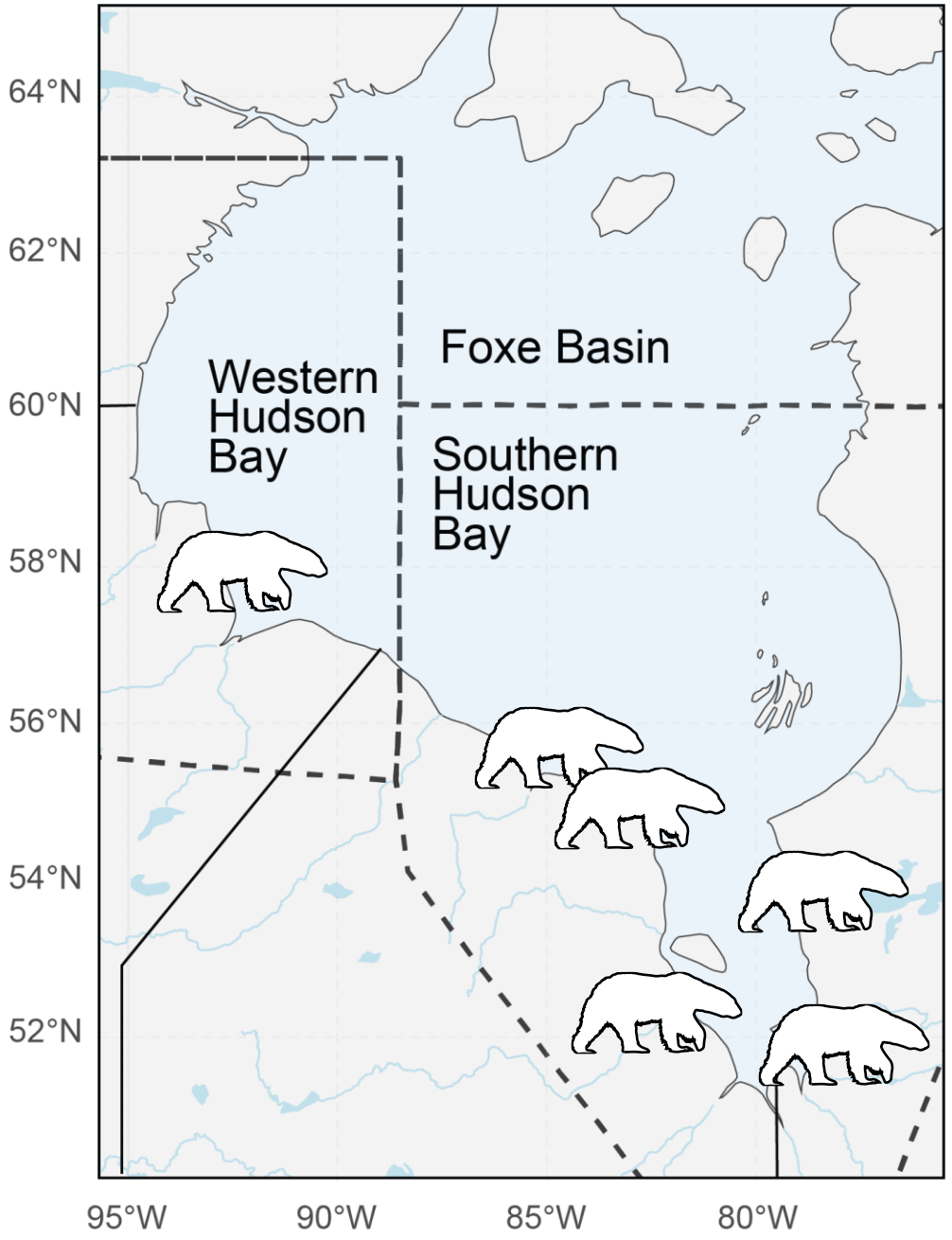






Polar bear genetics in Hudson and James Bay

- Genetics can tell us how different populations are from each other
- Some populations may have important genetics for conservation

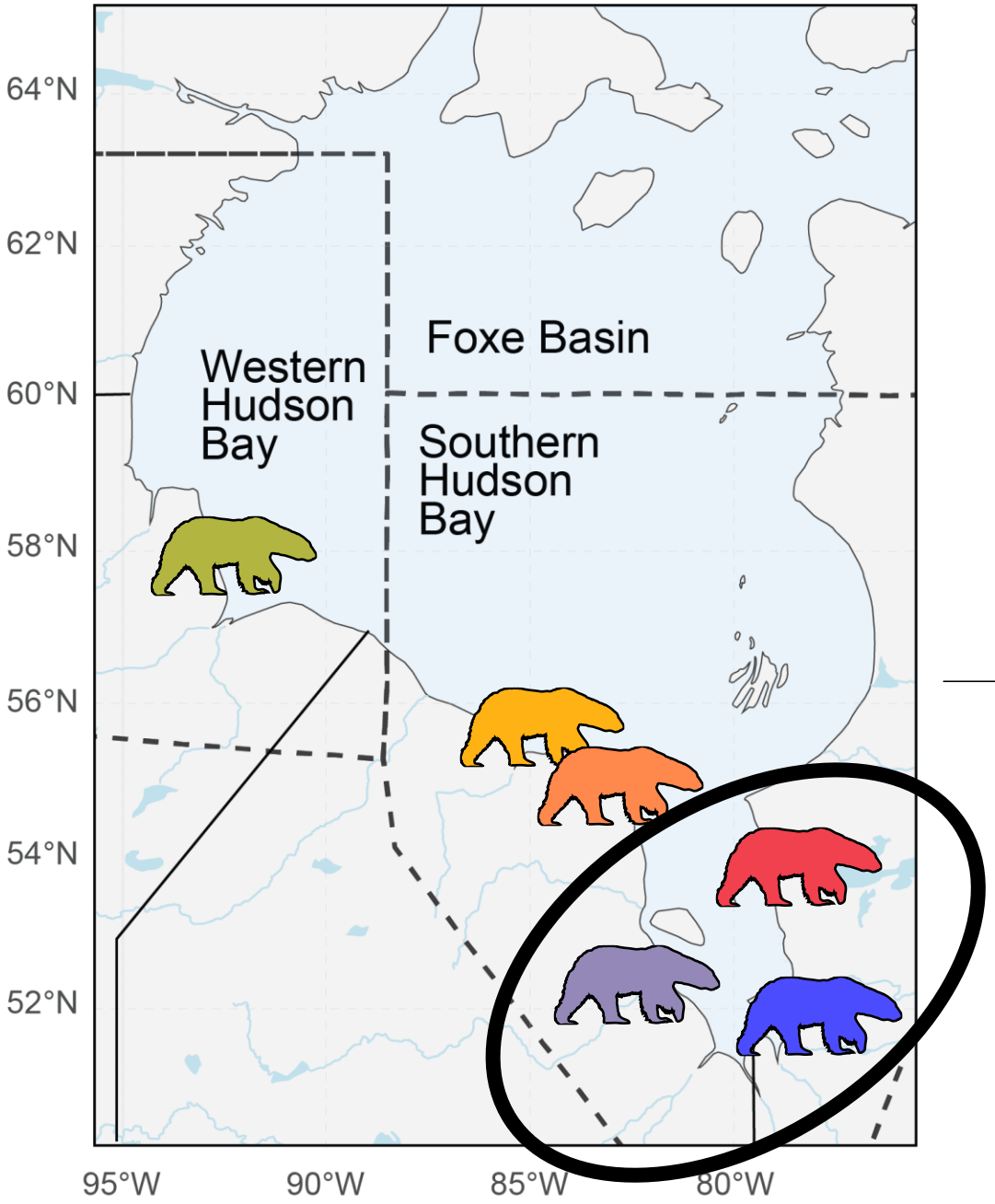


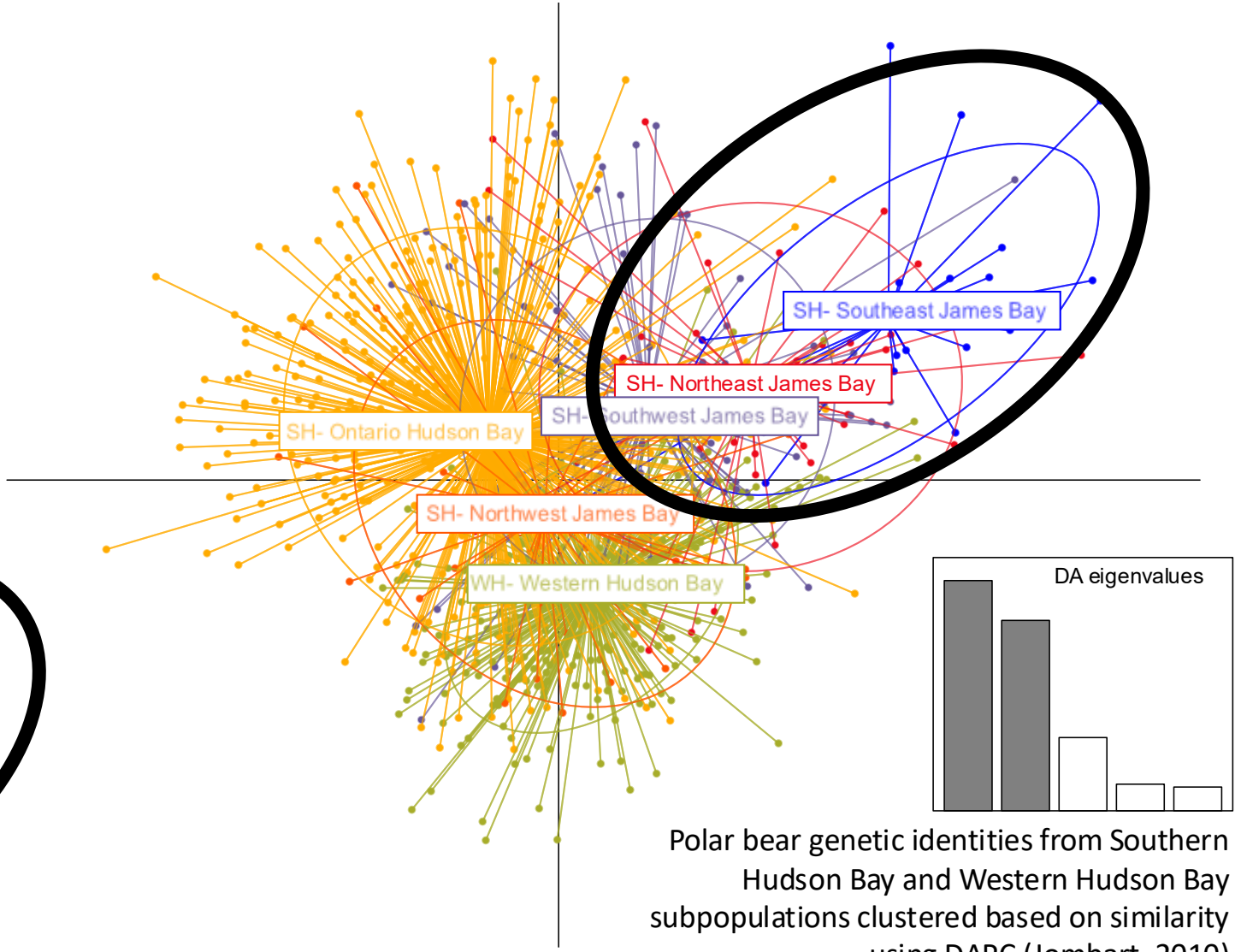
Polar bear genetics in Hudson and James Bay

- How genetically unique are polar bears in James Bay?

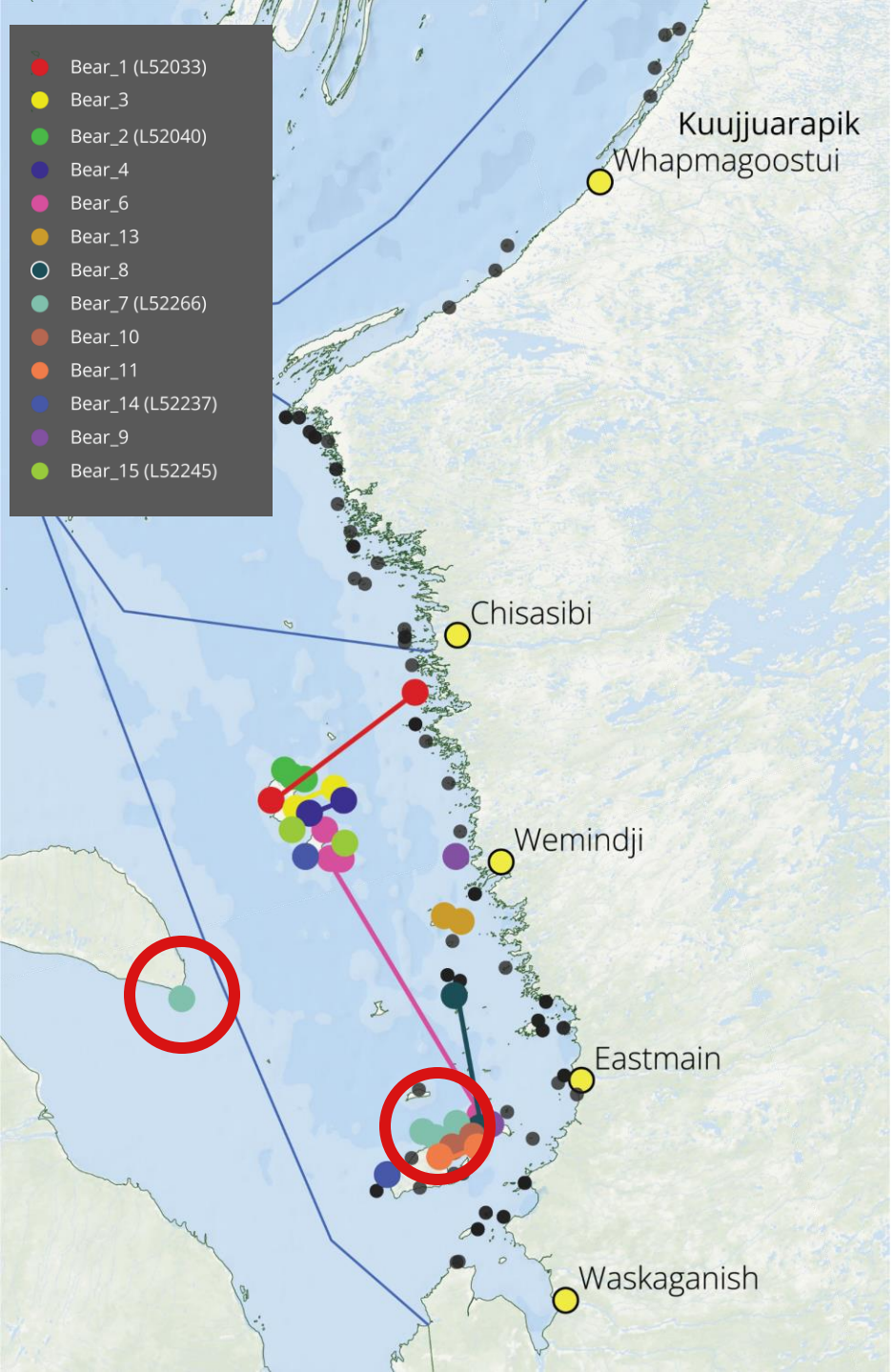
References*: Viengkone et al., 2018; Crompton et al., 2008*

Polar bears in James Bay are genetically different from the rest of Southern Hudson Bay



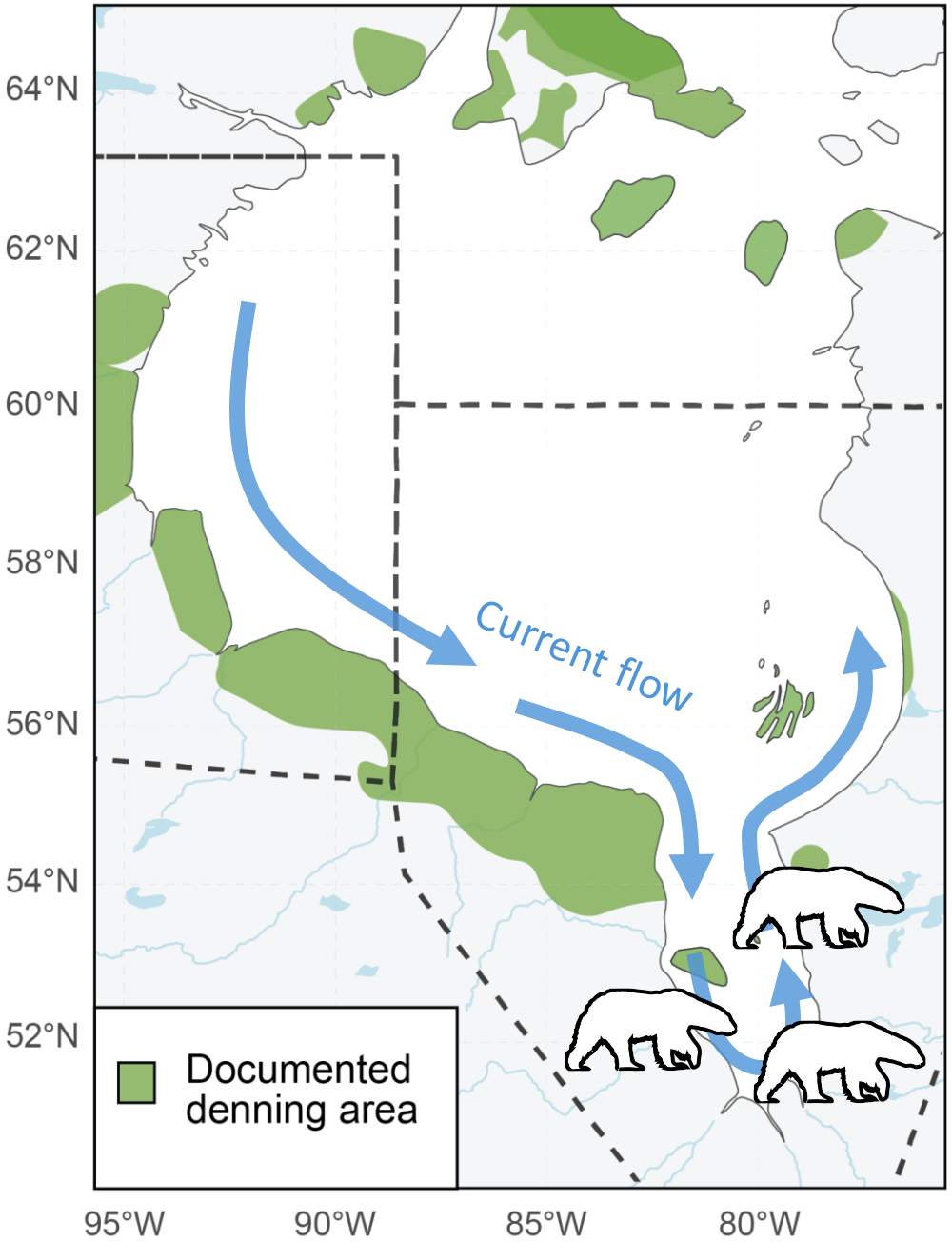


Polar bear genetic identities from Southern Hudson Bay and Western Hudson Bay subpopulations clustered based on similarity using DAPC (Jombart, 2010)



Movements from non-capture methods

- Movement between islands during the summer season



Key points

- Islands are important polar bear habitat during the ice-free season on the east coast
- Denning habitat limited and highly concentrated in James Bay – including Akimiski Island
- Polar bears in generally good body condition from recent camera trap observations
- Genetically unique group in southern James Bay with some movements between the east and west coasts

Miigwetch, thank you, merci to everyone who makes this work possible!

Contact: alexandra.langwieder@mail.mcgill.ca

Waskaganish Field Crew
Eastmain Field Crew
Chisasibi Field Crew
Wemindji Field Crew
Whapmagoostui Field Crew
Kuujjuarapik Field Crew
Coral Harbour Field Crew

CTA – EMR staff:
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Sanford Diamond
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Samantha Delisle
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