Arctic terrestrial food webs

elements for spatio-temporal comparisons

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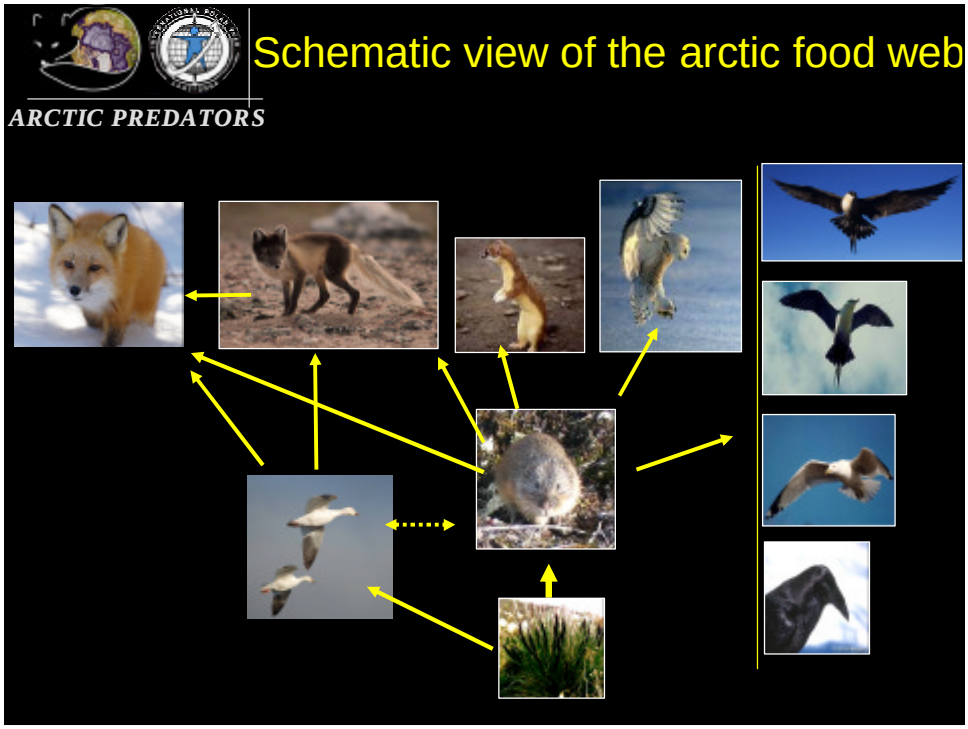
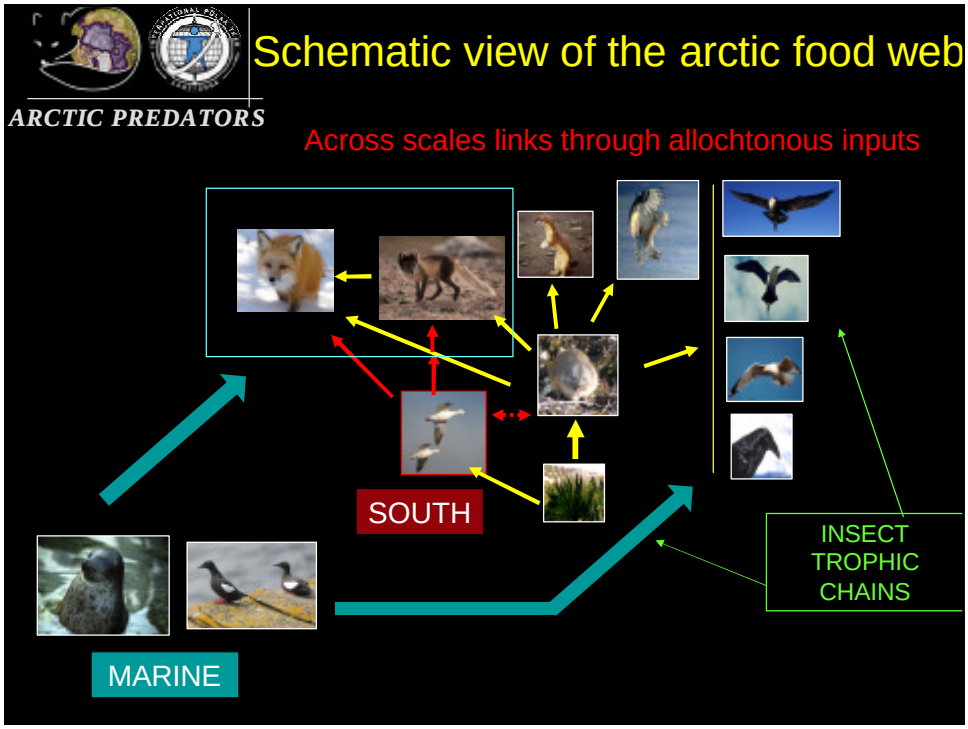
Arctic terrestrial food webs

MAIN TOPICS

1- Towards scaling food webs
2- Diet proxies
3- Terrestrial food webs in the Arctic
Review and fresh results

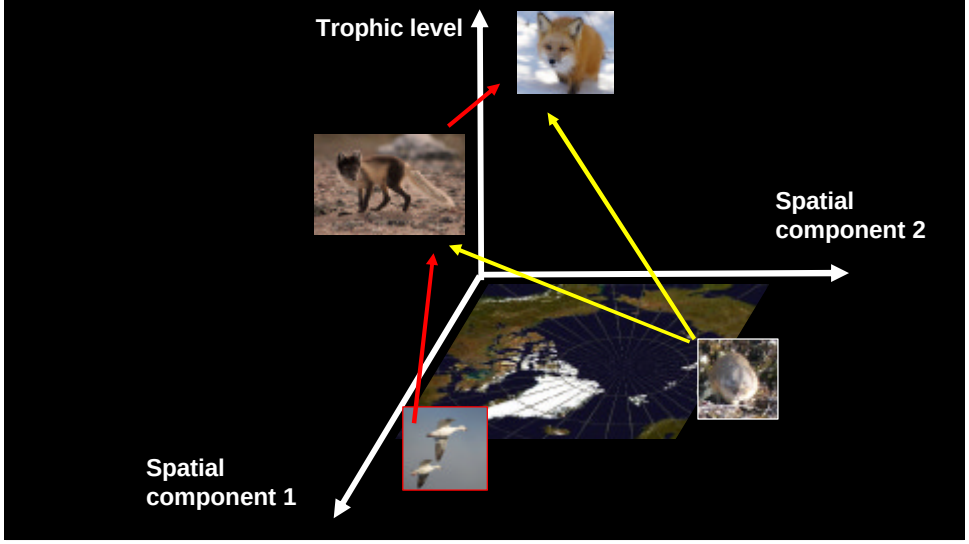

ARCTIC PREDATORS
Schematic view of the arctic food web


ARCTIC PREDATORS
Schematic view of the arctic food web
Across scales links through allochtonous inputs
SOUTH
INSECT
TROPHIC
CHAINS
MARINE

ARCTIC PREDATORS

Schematic view of the arctic food web

Different spatial scales in the community

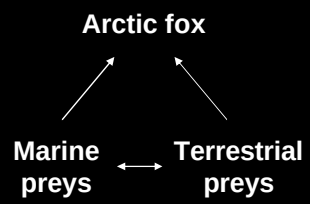


ARCTIC PREDATORS

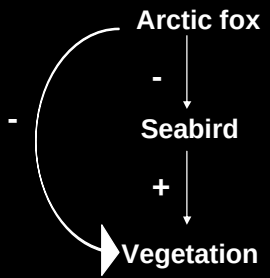
Arctic fox:

a key arctic predator

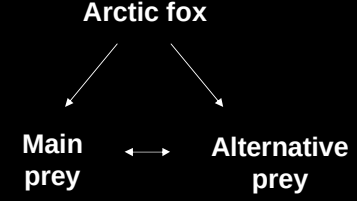
An ecosystem switcher



A top predator inducing top-down cascades



An oppportunist switcher



2.DIET PROXIES

Snapshots of diet:
feces, stomach contents..

2.DIET PROXIES

Stable isotopes of preys are included in predator tissues

Marine

$?^{13}C$

$?^{15}N$

≠

Tundra

$?^{13}C$

$?^{15}N$

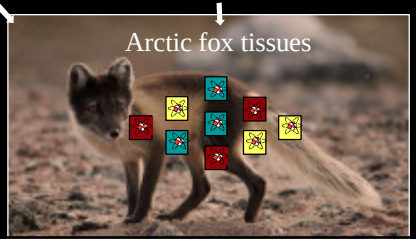
≠

South

$?^{13}C$

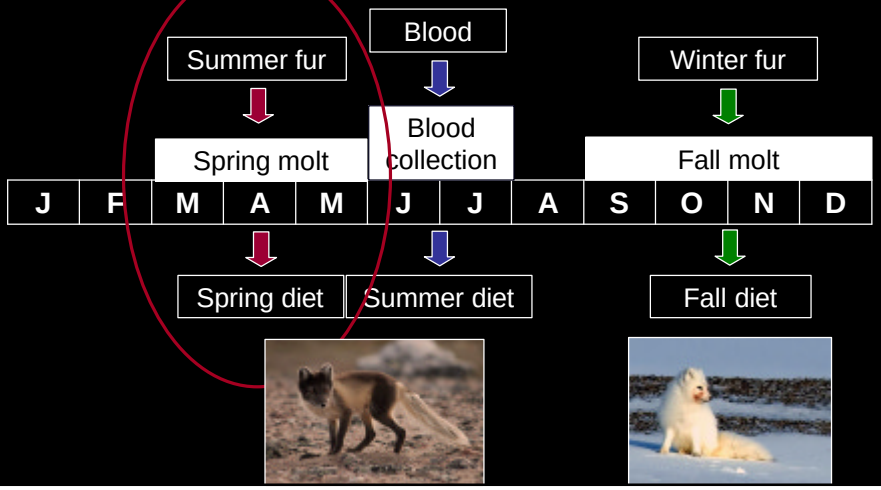
$?^{15}N$

Arctic fox tissues



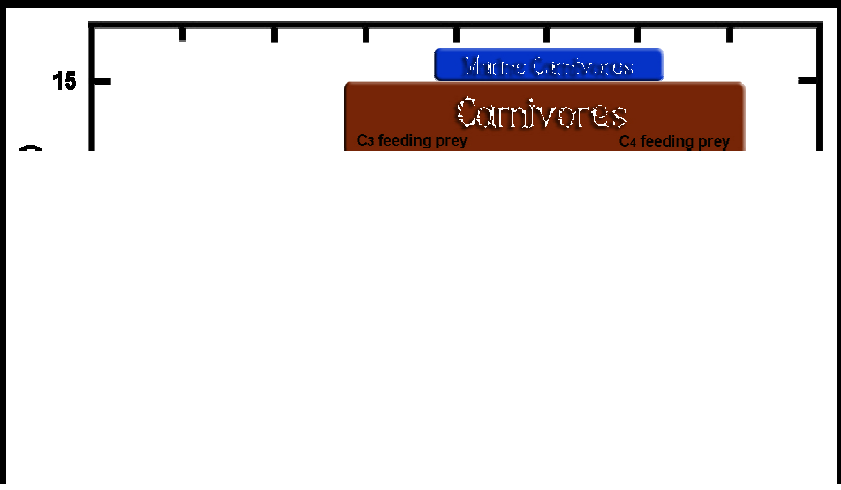
2.DIET PROXIES

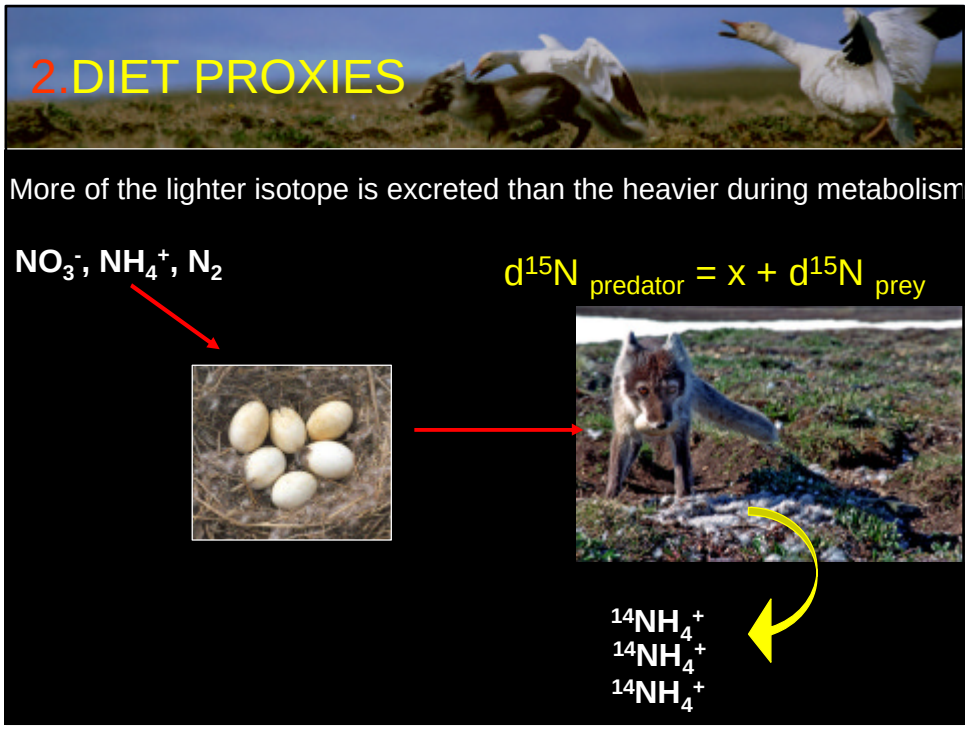
Different tissues describe diets for different seasons

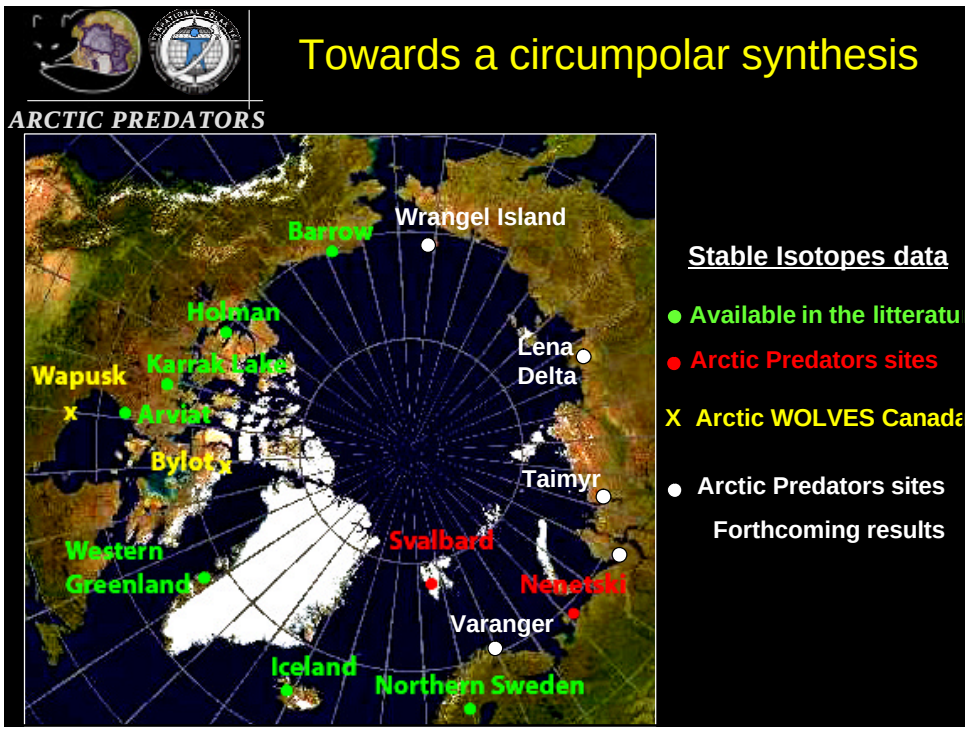


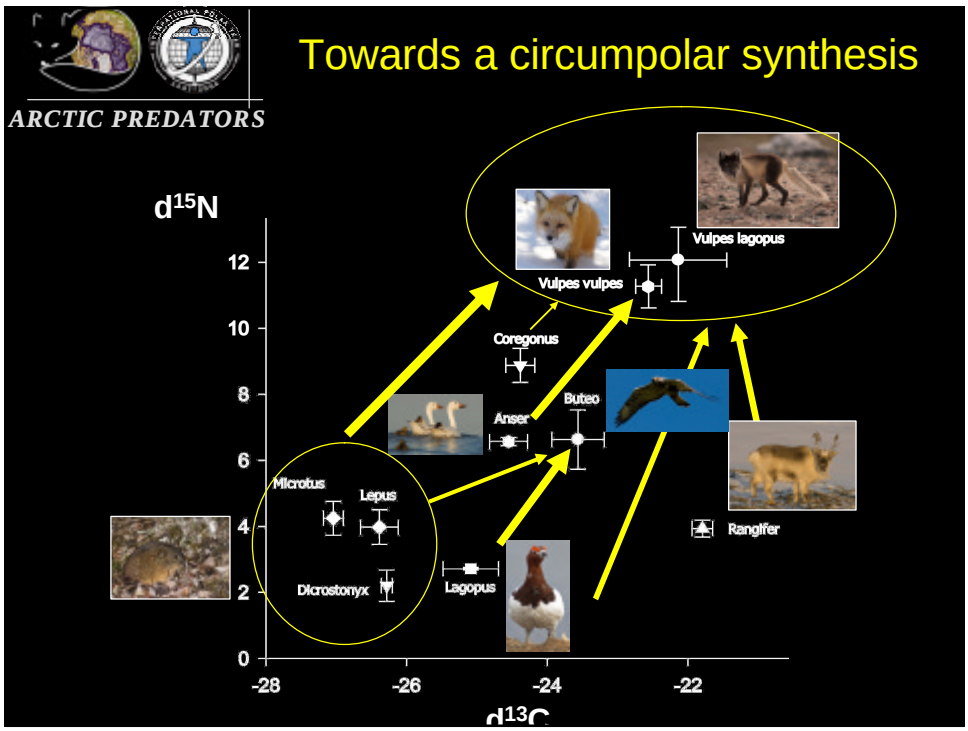
2.DIET PROXIES

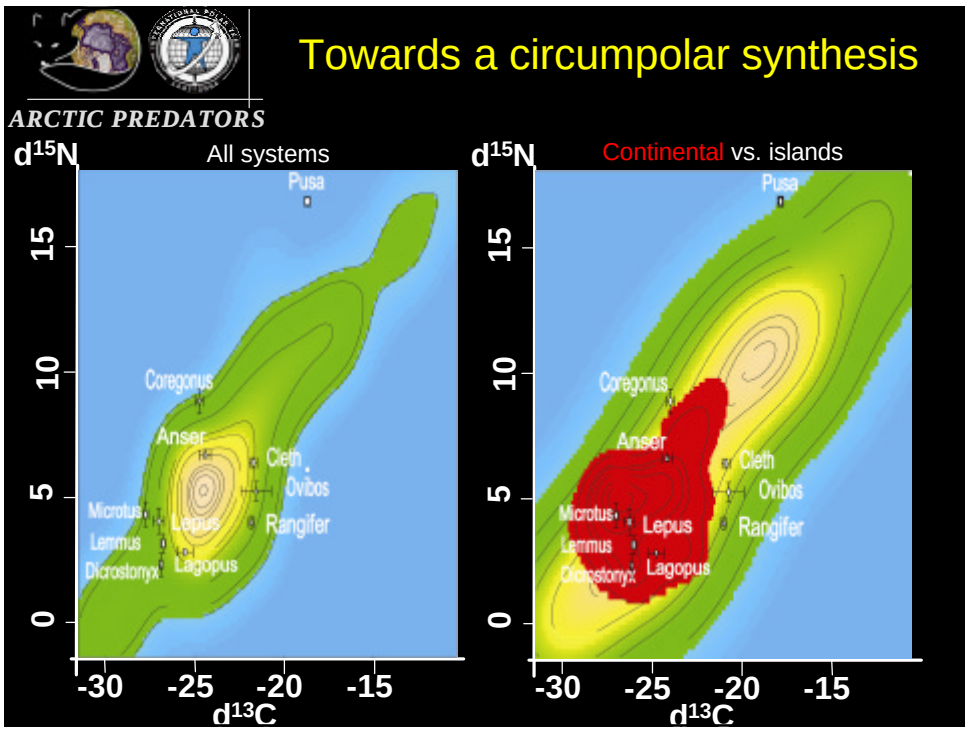
Carbon and nitrogen fractionation




2.DIET PROXIES
More of the lighter isotope is excreted than the heavier during metabolism
NO_3^-, NH_4^+, N_2
$d^{15}N_{predator} = x + d^{15}N_{prey}$
$^{14}NH_4^+$
$^{14}NH_4^+$
$^{14}NH_4^+$

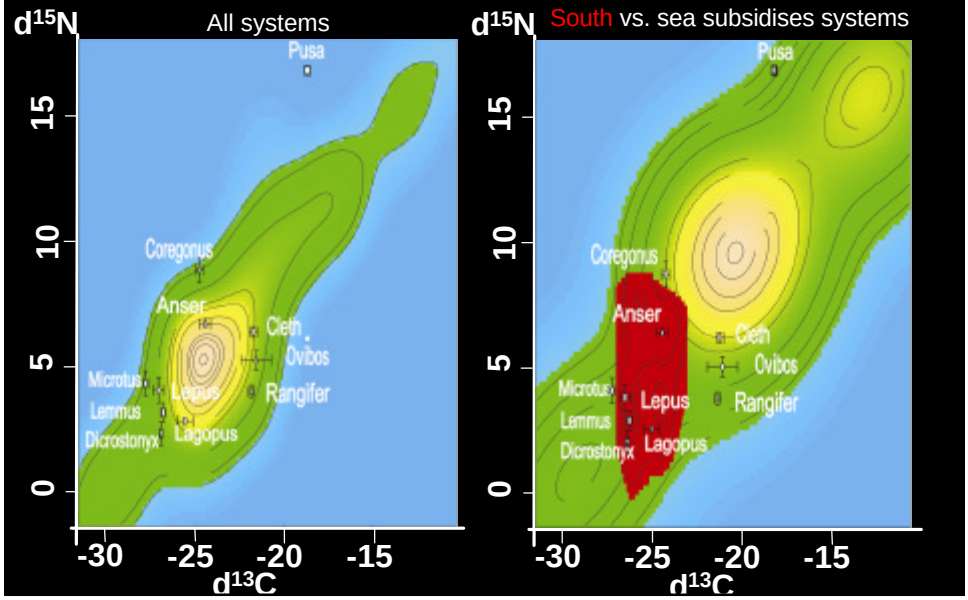

ARCTIC PREDATORS
Towards a circumpolar synthesis
Barrow
Wrangel Island
Holman
Karrak Lake
Wapusk
Arviat
Bylot
Lena Delta
Taimyr
Svalbard
Western Greenland
Nenetski
Varanger
Iceland
Northern Sweden
Stable Isotopes data
Available in the litteratu
Arctic Predators sites
X Arctic WOLVES Canada
Arctic Predators sites
Forthcoming results


ARCTIC PREDATORS
Towards a circumpolar synthesis
d15N
12
10
8
6
4
2
0
-28
-26
-24
-22
d13C
Vulpes lagopus
Vulpes vulpes
Coregonus
Buteo
Anser
Microtus
Lepus
Dicrostonyx
Lagopus
Rangifer


ARCTIC PREDATORS
Towards a circumpolar synthesis
d15N
All systems
Continental vs. islands
Pusa
Coregonus
Anser
Cleth
Ovibos
Microtus
Lepus
Rangifer
Lemmus
Dicrostonyx
Lagopus
15
10
5
0
-30
-25
-20
-15
d13C

Towards a circumpolar synthesis

ARCTIC PREDATORS



Elements of discussion…

1. Using stable isotopes as a tool for ecological monitoring

2. Terrestrial arctic food webs could be compared at different spatio-temporal scales


C??????!
TAKK!
THANKS!


Questions?