



Seasonal habitat selection in Arctic hares: explaining mass movements on Ellesmere Island

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Chaire
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Introduction

- In 2019, we documented a large-scale mass movement of Arctic hares (*Lepus arcticus*) from Canadian Forces Station Alert (Ellesmere Island, Canada), towards the Lake Hazen basin.
- Although hare migrations have already been suggested, our data could provide the first evidence of such behavior.
- Identifying the factors influencing habitat selection of Arctic hare across seasons will improve our knowledge on mammals persistence strategies in harsh environments such as High Arctic.

Lake
Hazen

CFS Alert

North Pole

Nunavut
(Canada)

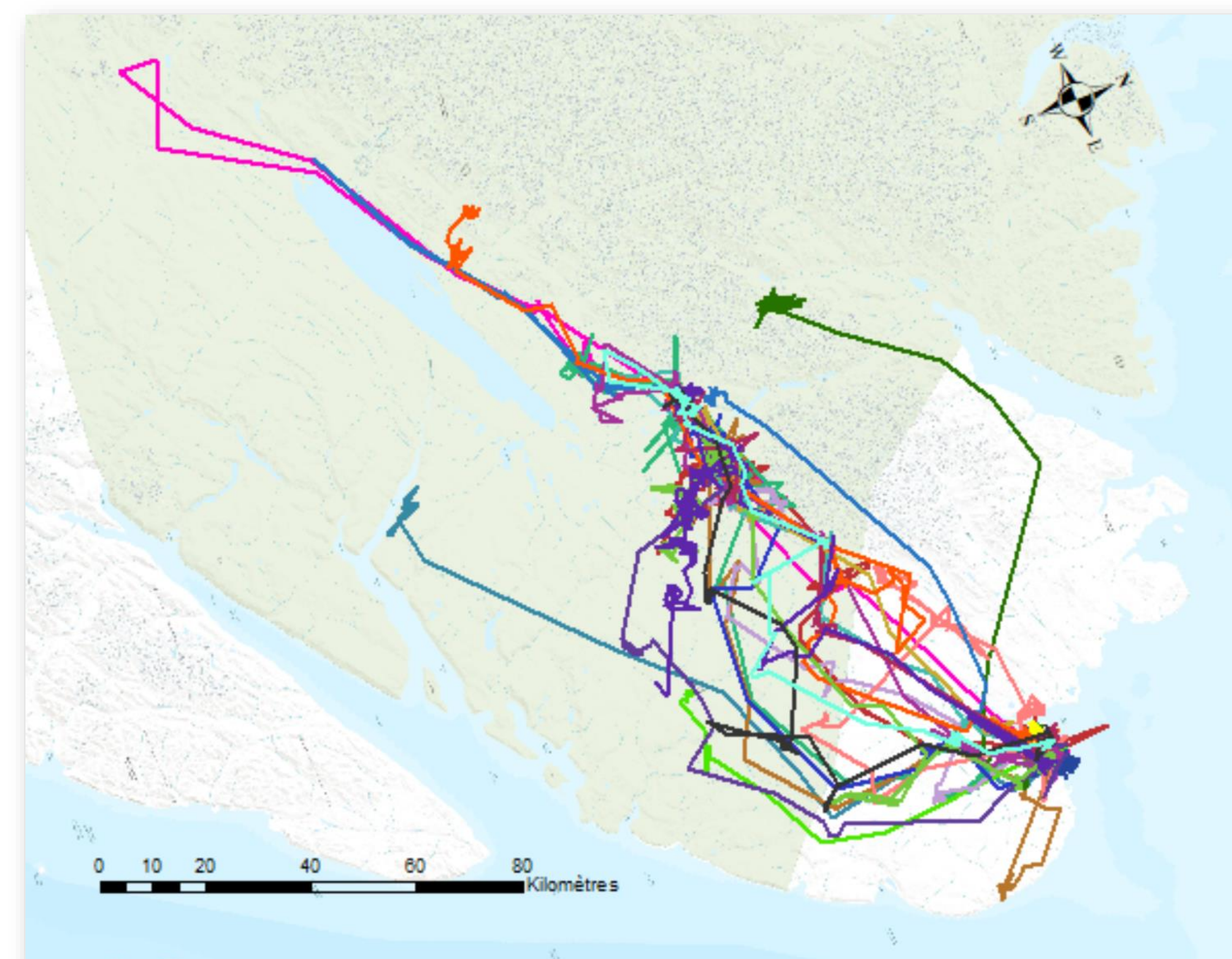
Greenland



Hare Locations

2019-2020 data :

- 25 Argos collars (1 position/day for 3-9 months)
 - 21 relocalized - 4 residents
 - 21 females - 4 males



2021-2022 data (planned) :

- 20 GPS-Iridium collars (4+ locations/day for one year)
 - Females only

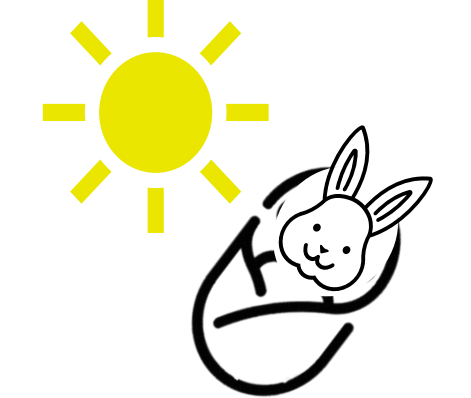


Objective and Hypotheses

Determine the factors explaining habitat selection of Arctic hares at the local and regional scales

Variation within seasonal life cycle

Summer



Habitats maximizing predator avoidance during young rearing

Spring/Fall relocation



Use of routes that will minimize travelling time

Winter

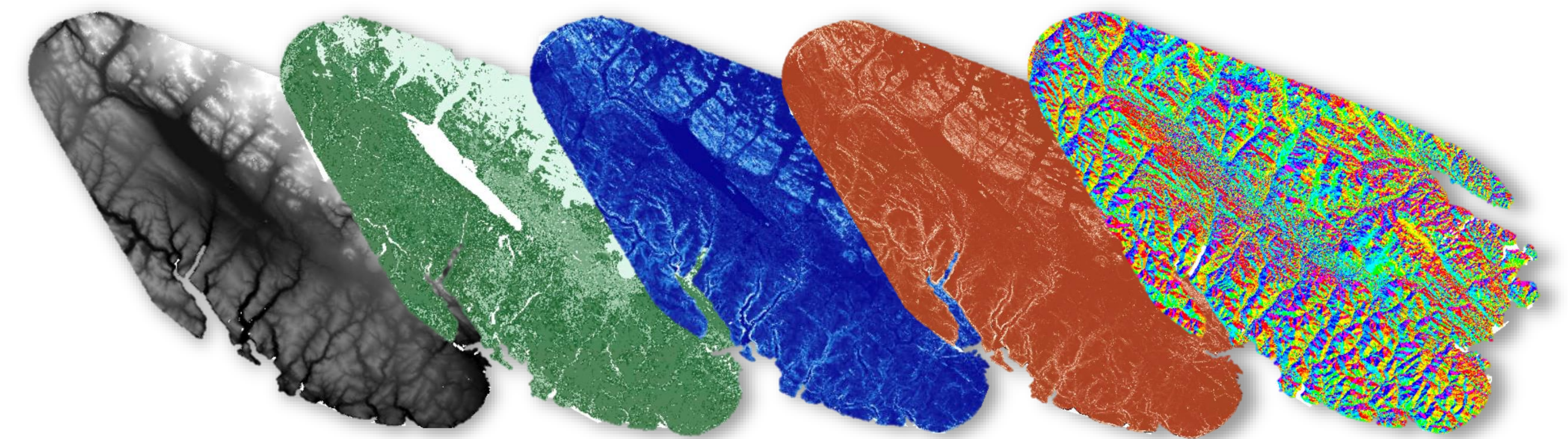


Habitats optimizing food access



Habitat Variables

Environmental variables acquired with satellite remote sensing



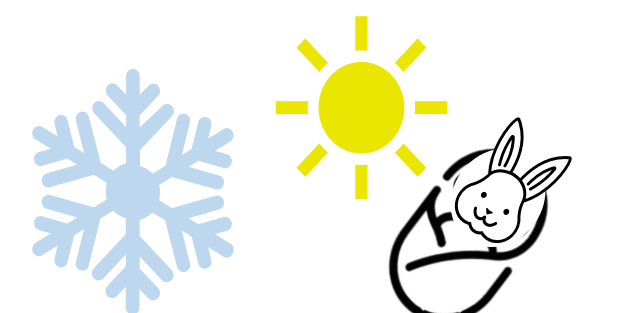
Elevation Plant Abundance Slope Angle Rugosity Slope Aspect



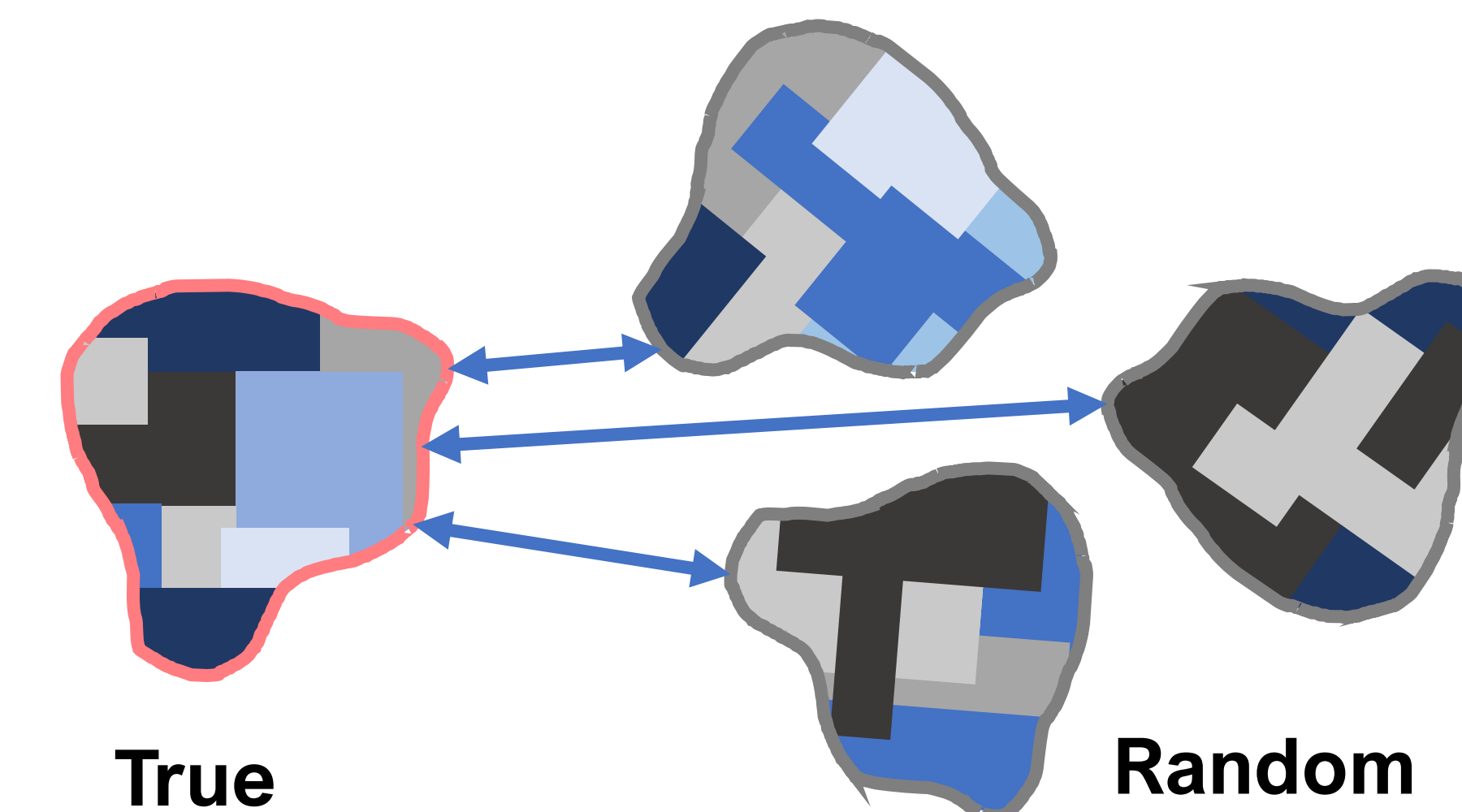
Statistical Analyses

1. Summer & Winter: Resource Selection Functions

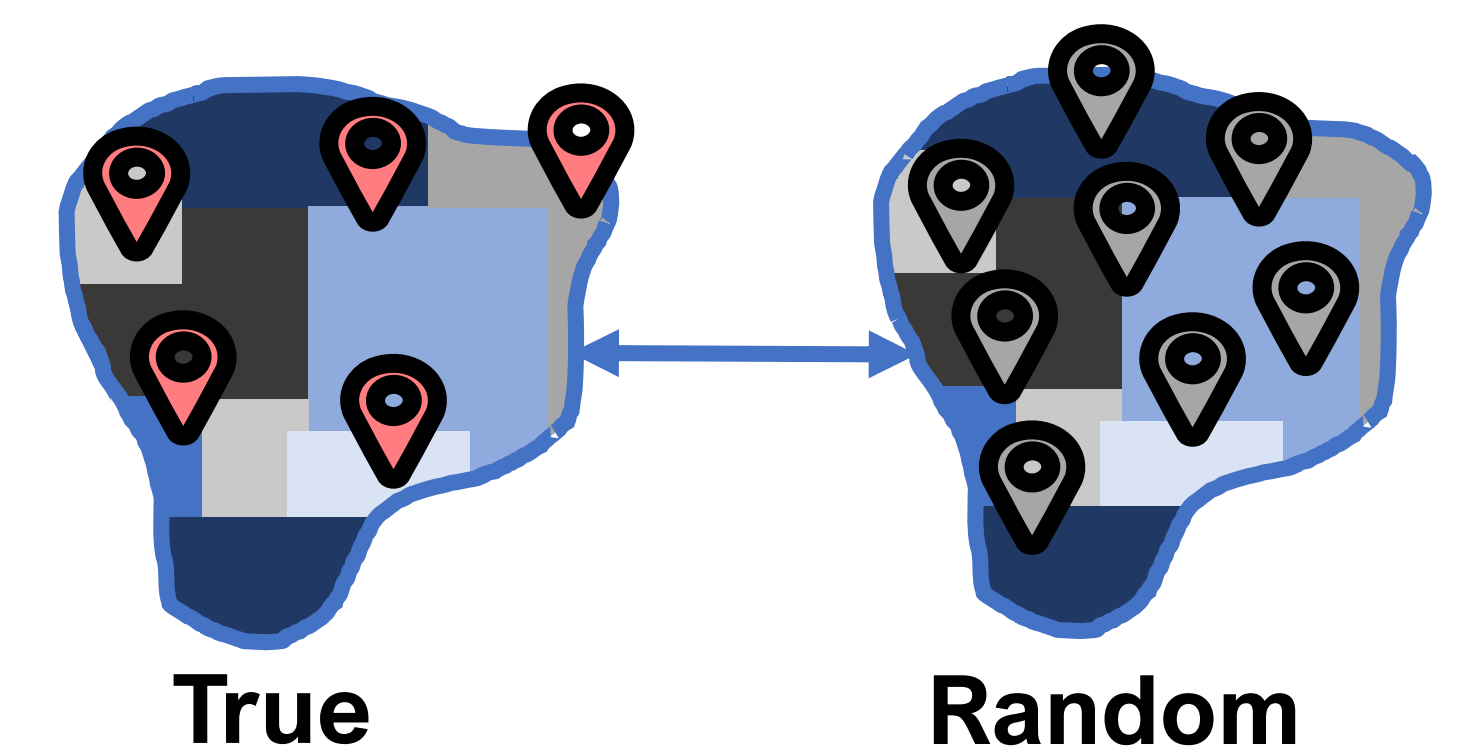
(Manly et al. 2002: Springer Science & Business, 223 p.)



1.1 Regional Scale : Homorange comparisons

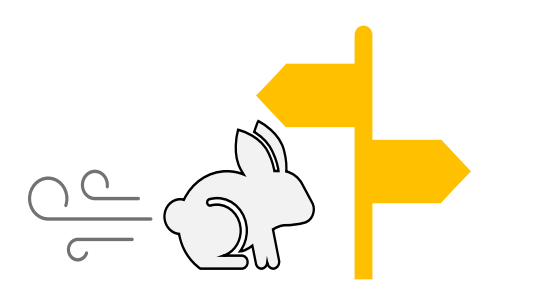


1.2 Local Scale : Locations comparisons within homorange



2. Relocation phases : Resource Utilization Distributions

Brownian Bridge Movement Models (Horne et al. 2007: *Ecology* 88(9), 2354-2363)



In summary...

What we know so far:

- Female hares rear their young around Alert during summer.
- In fall, most of them relocate to the Lake Hazen basin, where they spend the winter.

What we expect to learn from this project:

- Are hares migrants? Are they coming back to Alert at spring?
- Which environmental features best describe habitat selection among their annual life cycle?

To be continued...