Martens across seasons: temporal variations in fine scale habitat selection patterns

Presented by
Julie-Pier Viau

Under the supervision of
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Parks Canada Parcs Canada

UQAR
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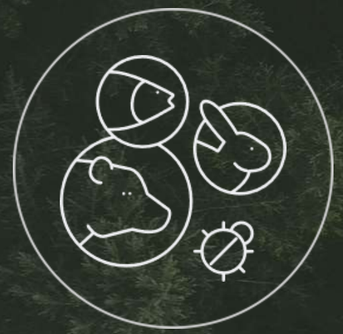
INTRODUCTION

Old-growth forests: why are they important ?

Carbon storage

Watershed services

Soil conservation

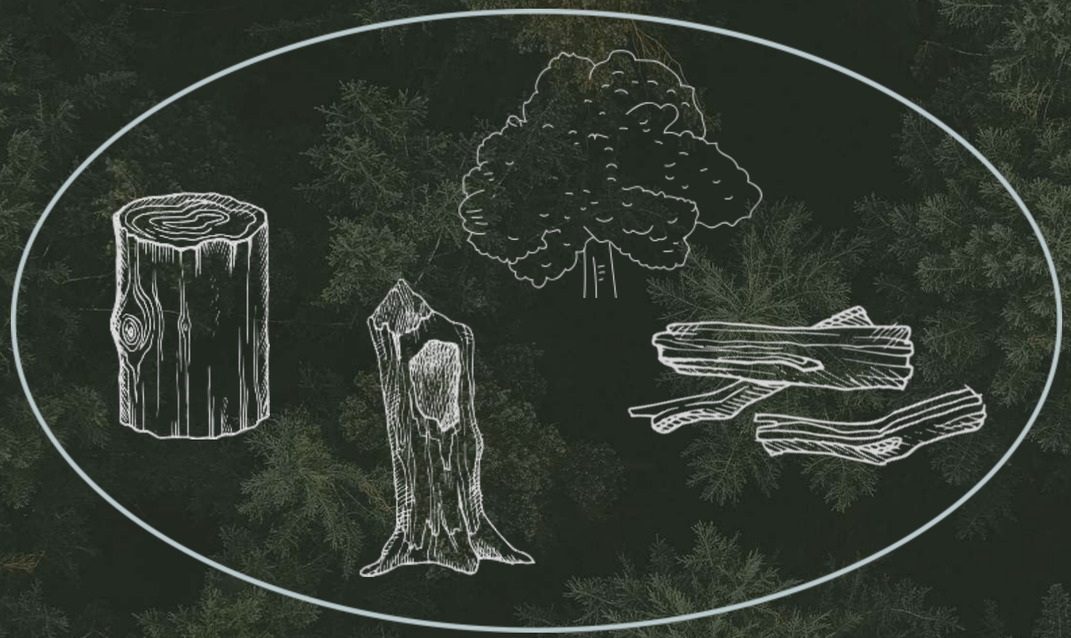


Biodiversity conservation

Beresford-Kroeger 2018; Oldekop et al. 2020

INTRODUCTION

Old-growth forests: why are they important ?



Complex forest structures

Donald Lapointe

Lindenmayer et al. 2014; Le Roux et al. 2014

INTRODUCTION

Old-growth forests: worldwide decline

Anthropogenic disturbances

Old-growth forests

Complex forest structures

Wildlife habitat

Wich et al. 2003; Noon & Blakesley 2006; Arnett et al. 2010; Lindenmayer et al. 2013; Slaght et al. 2013; Bouget et al. 2014

INTRODUCTION

Management and conservation strategies

Maintain complex forest structures

Species habitat requirements

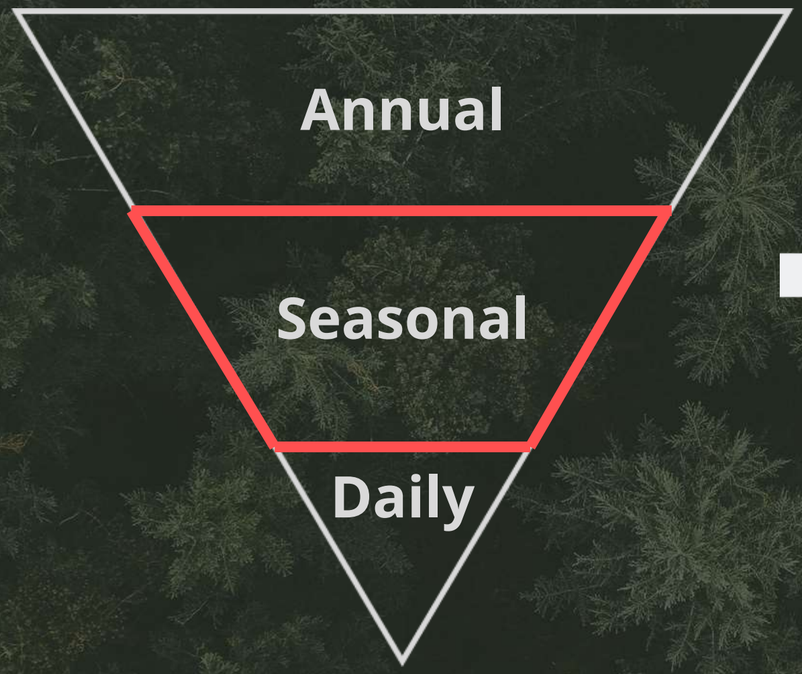
Study of habitat selection patterns

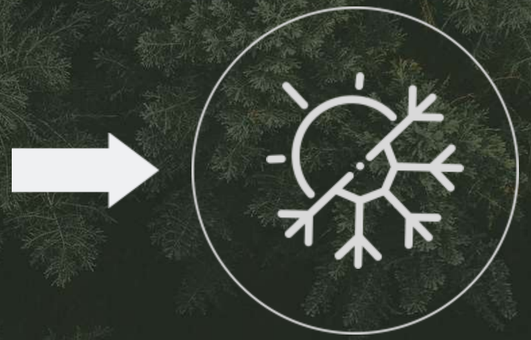
Beese et al. 2019; Ettwein et al. 2020

INTRODUCTION

Habitat selection

Hierarchical process





Temperate ecosystems

Wildlife Biology 2020: wlb.00735
doi: 10.2981/wlb.00735

Subject Editor: Peter Sunde. Editor-in-Chief: Ilse Storch. Accepted 2 October 2020

Seasonal habitat selection of cougars *Puma concolor* by sex and reproductive state in west-central Alberta, Canada

Corey A. Smereka, Paul F. Frame, Mark A. Edwards, Delaney D. Frame, Owen M. Slater and Andrew E. Derocher

ZOOLOGIA 30 (1): 24–34, February, 2013
http://dx.doi.org/10.1590/S1984-46702013000100003

Seasonal habitat selection of the red deer (*Cervus elaphus alxaicus*) in the Helan Mountains, China

Mingming Zhang[1], Zhensheng Liu[1,2] & Liwei Teng[1,2,3]

[1] *College of Wildlife Resources, Northeast Forestry University, No.26 Hexing Road, Xiangfang District, Harbin 150040, P.R. China.*
[2] *Key Laboratory of Conservation Biology, State Forestry Administration, No.26 Hexing Road, Xiangfang District, Harbin 150040, P.R. China.*
[3] *Corresponding author. E-mail: tenglw@gmail.com*

esa ECOSPHERE

Long- and short-term temporal variability in habitat selection of a top predator

Alessia Uboni,[1,4,†] Douglas W. Smith,[2] Julie S. Mao,[3] Daniel R. Stahler,[2] and John A. Vucetich[1]

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[2]*Yellowstone Center for Resources, Wolf Project, P.O. Box 168, Yellowstone National Park, Wyoming 82190 USA*
[3]*Colorado Parks and Wildlife, 0088 Wildlife Way, Glenwood Springs, Colorado 81601 USA*

Boyce et al. 2006; Mayor et al. 2009; Zhang et al. 2013; Smereka et al. 2020

INTRODUCTION

Study model: the American marten

Associated with complex forest structures

Prey availability

Predation risk

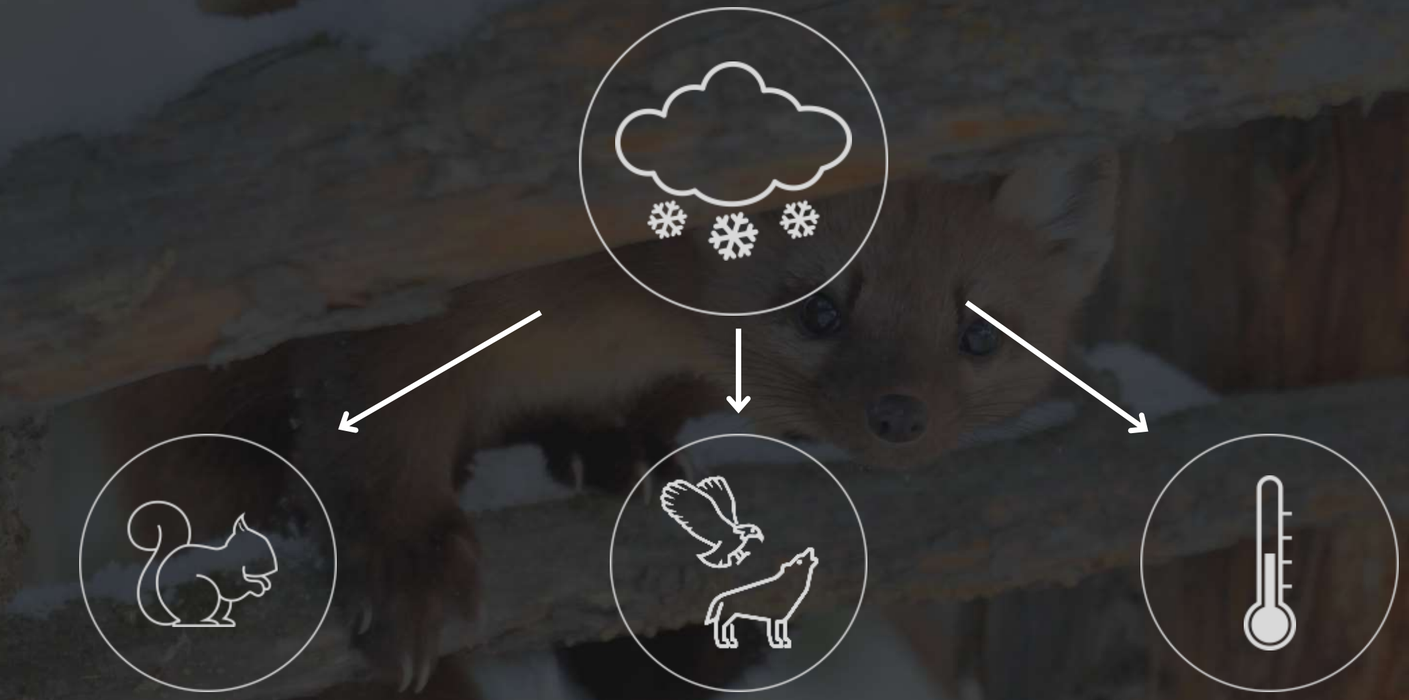
Thermoregulation

Seasonal habitat selection

Thompson 1994; Payer et Harrison 2003; Porter et al. 2005

OBJECTIVE & HYPOTHESES

Study habitat selection patterns of American martens during two contrasted annual periods



Prey availability

Predation risk

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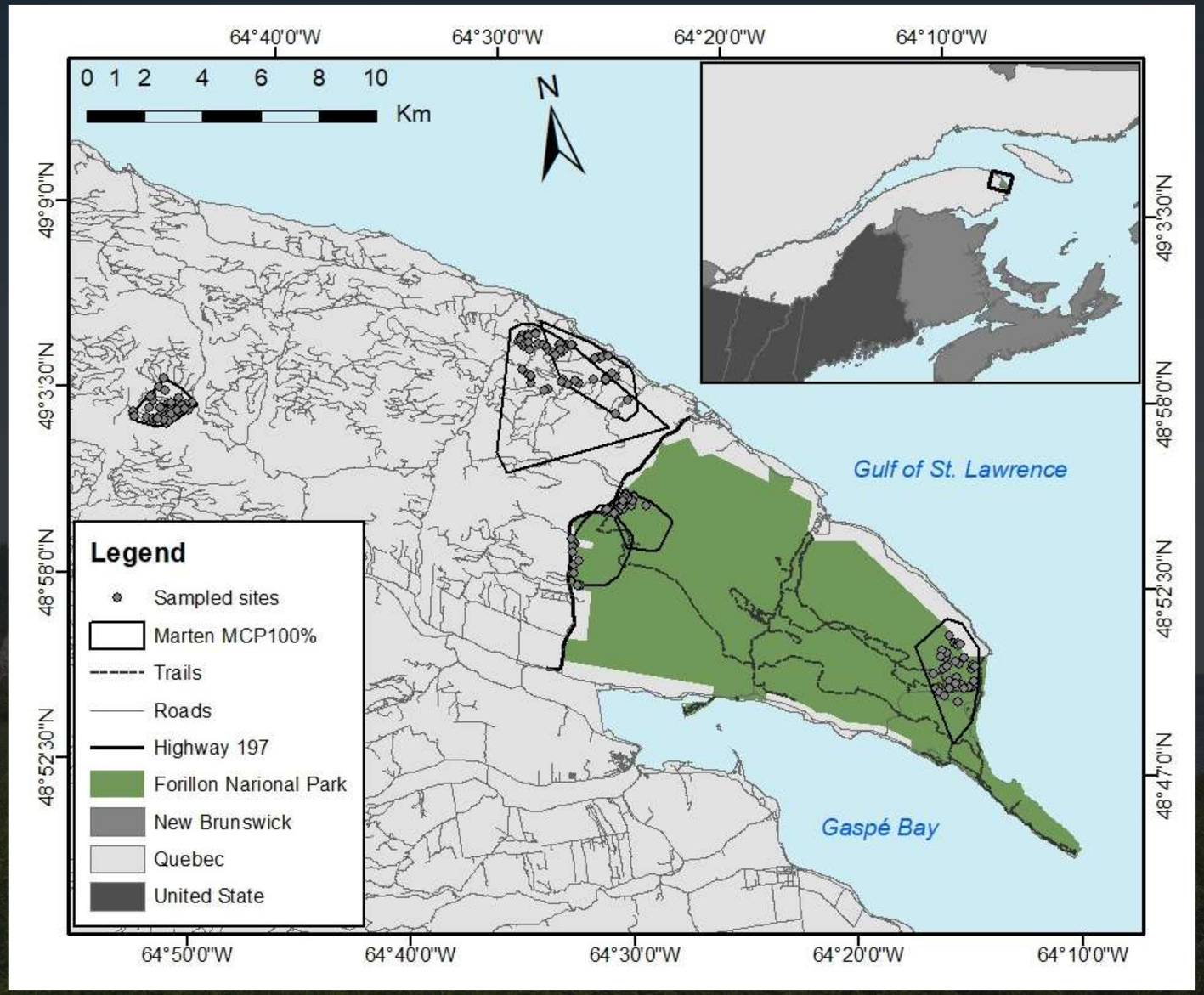
OBJECTIVE & HYPOTHESES

Study habitat selection patterns of American martens during two contrasted annual periods

Prey availability

Predation risk

METHODS - STUDY AREA



METHODS - DATA COLLECTION

September - December 2020

Capture and telemetry

September 2020 - June 2021

GPS data collection

June - August 2021

Vegetation surveys

Snow-free

Snow-covered

METHODS - DATA COLLECTION

September - December 2020

Capture and telemetry

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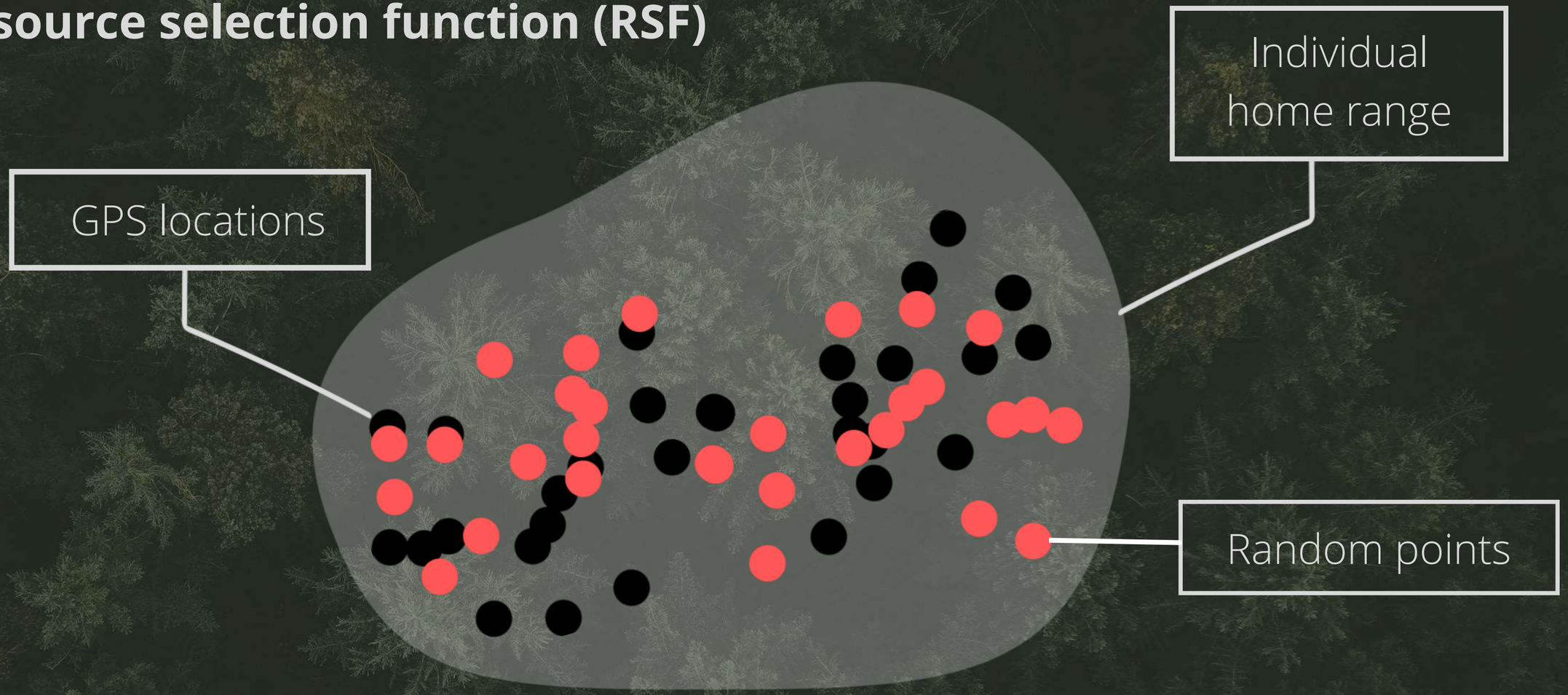
Vegetation surveys

METHODS - STATISTICAL ANALYSES

Resource selection function (RSF)



METHODS - STATISTICAL ANALYSES

Conditional logistic regression

Presence/availability ~

Habitat variables

- Total canopy closure
- Coniferous canopy closure
- Tree density
- Tree diameter
- Snag diameter
- Lateral cover
- Volume of coarse woody debris
- Slope

METHODS - STATISTICAL ANALYSES

Model selection (AICc)

Candidate models	Variables
1 – Prey availability	Coniferous canopy closure + Lateral cover + Coarse woody debris
2 – Predator avoidance	Tree density + Total canopy closure + Slope + Lateral cover
3 – Thermoregulation	Tree diameter + Snag diameter + Coarse woody debris
4 – Complete	Model 1 + Model 2 + Model 3

RESULTS & DISCUSSION

Model selection (AICc)

Candidate models	Snow-free			Snow-covered		
	K	LL	ΔAICc	*K*	LL	ΔAICc
1 – Prey availability	3	-35.17	0.83	3	-41.88	0.09
2 – Predator avoidance	4	-45.30	23.08	4	-50.55	20.32
3 – Thermoregulation	3	-55.67	41.83	3	-45.67	8.56
4 – Complete	8	-29.76	0.00	8	-37.39	0.00

RESULTS & DISCUSSION

Conditional logistic regression

Significant variables	Snow-free	Snow-covered
Snag density	+	N.S.
Coarse woody debris	N.S.	+
Coniferous canopy closure	+	+
Lateral cover	+	N.S.

+ = Positive correlation

N.S. = Non significant

Thermoregulation constraints

Predation risk

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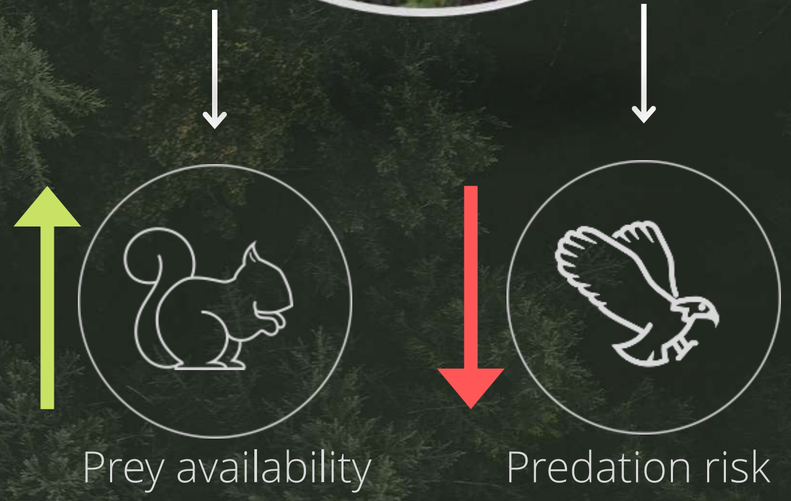

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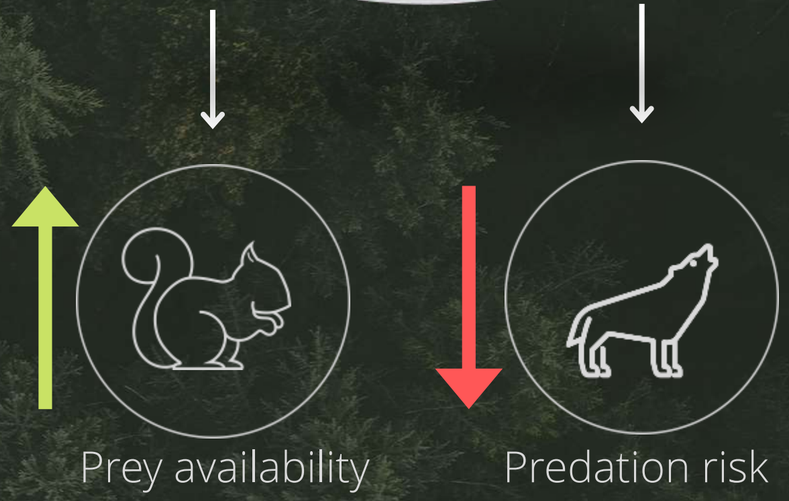
George Sanker



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Cat McNicol

Thermoregulation constraints

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Prey availability

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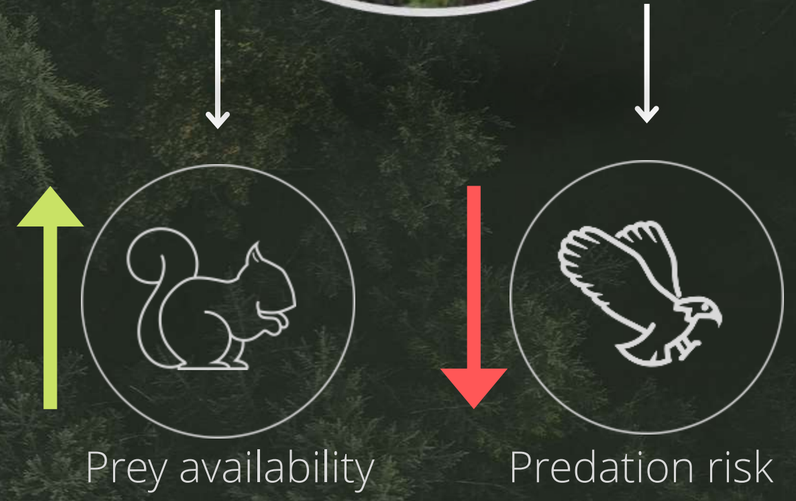

MANAGEMENT IMPLICATIONS

- Highlight the importance to evaluate habitat selection patterns over multiple annual periods

- Management approach:
  - Preserve habitats containing complex forest structures




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