

The survival, fecundity, and movement of
the northern flying squirrel (*Glaucomys
sabrinus*) in a managed landscape.

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Overview

- Background
- Objectives
- Methods
- Results
- Conclusions



Landscape Fragmentation



Large (>1000 ha) patch



Small (~2 ha) patch

Photos by Matt Betts



Background

- **Metapopulation Theory-** As patches become more isolated they have a higher probability of local extinction events.
- **PVA-** Population viability analysis requires habitat suitability models and life history parameters.

Northern Flying Squirrel

- Has a number of life history characteristics that make it more sensitive to landscape fragmentation of mature forest.
- Poor movement ability- will normally not cross open areas greater than it's maximum gliding distance (< 60 m)
- Relatively low reproductive output (2 per year)
- Associated with mature forests (shelter, specialized diet)
- Relatively large home range for species of its size.



*Photo by :
Cy Hampson*

Objectives

- I. What are the effects of fragmentation on survival and fecundity of the northern flying squirrel?
- II. What are the effects of fragmentation on movement of the northern flying squirrel?
- III. Use these data in a population viability analysis.

Flying Squirrel Survival Study Grid Sites



Legend

2007 Trapping grids

Landscape



C



F


— Fundy NP boundary

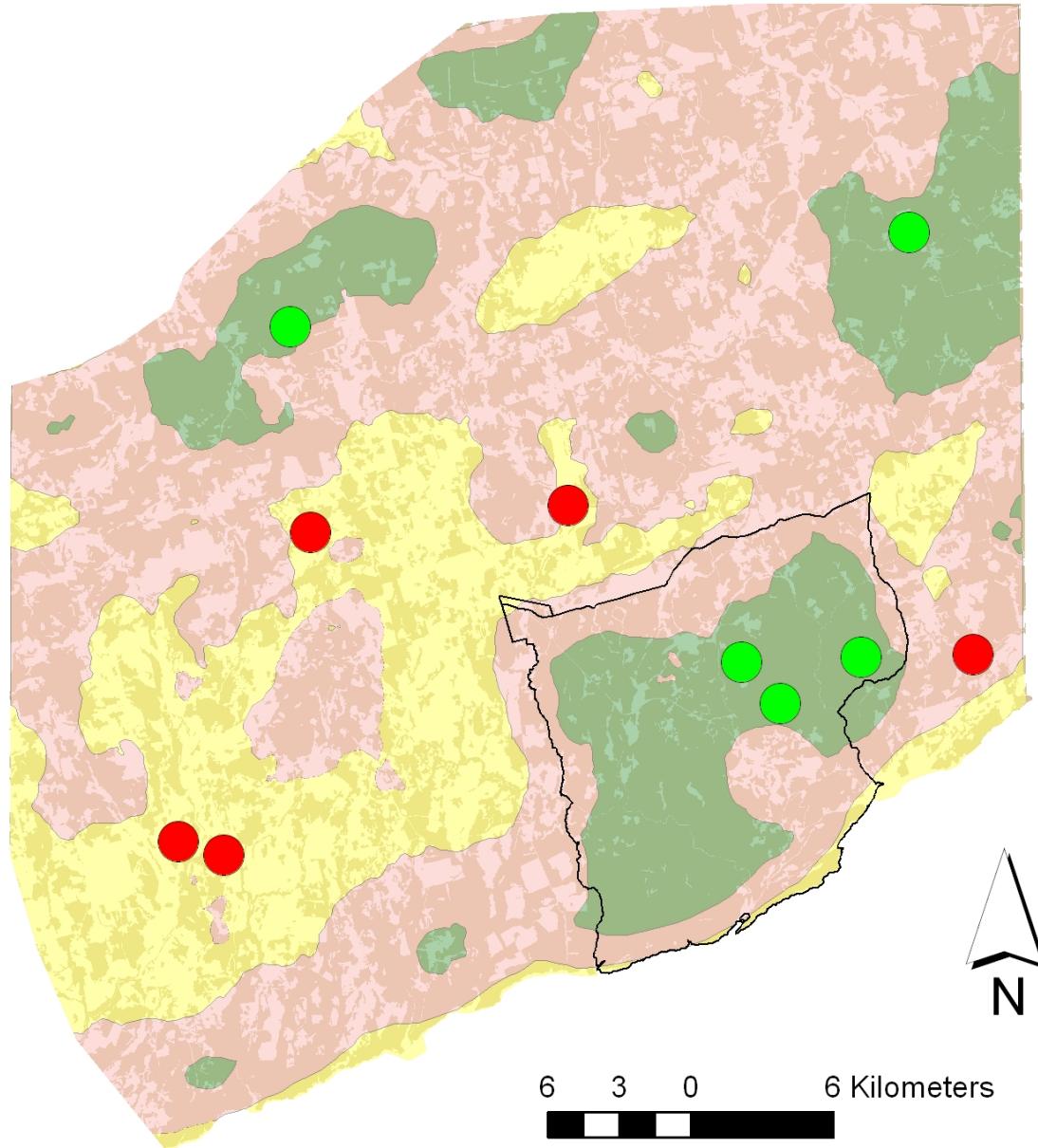
Landscape

 Low Mature Forest Cover

 Medium Mature Forest Cover

 High Mature Forest Cover

 Mature forest cover 2001



Methods- Survival

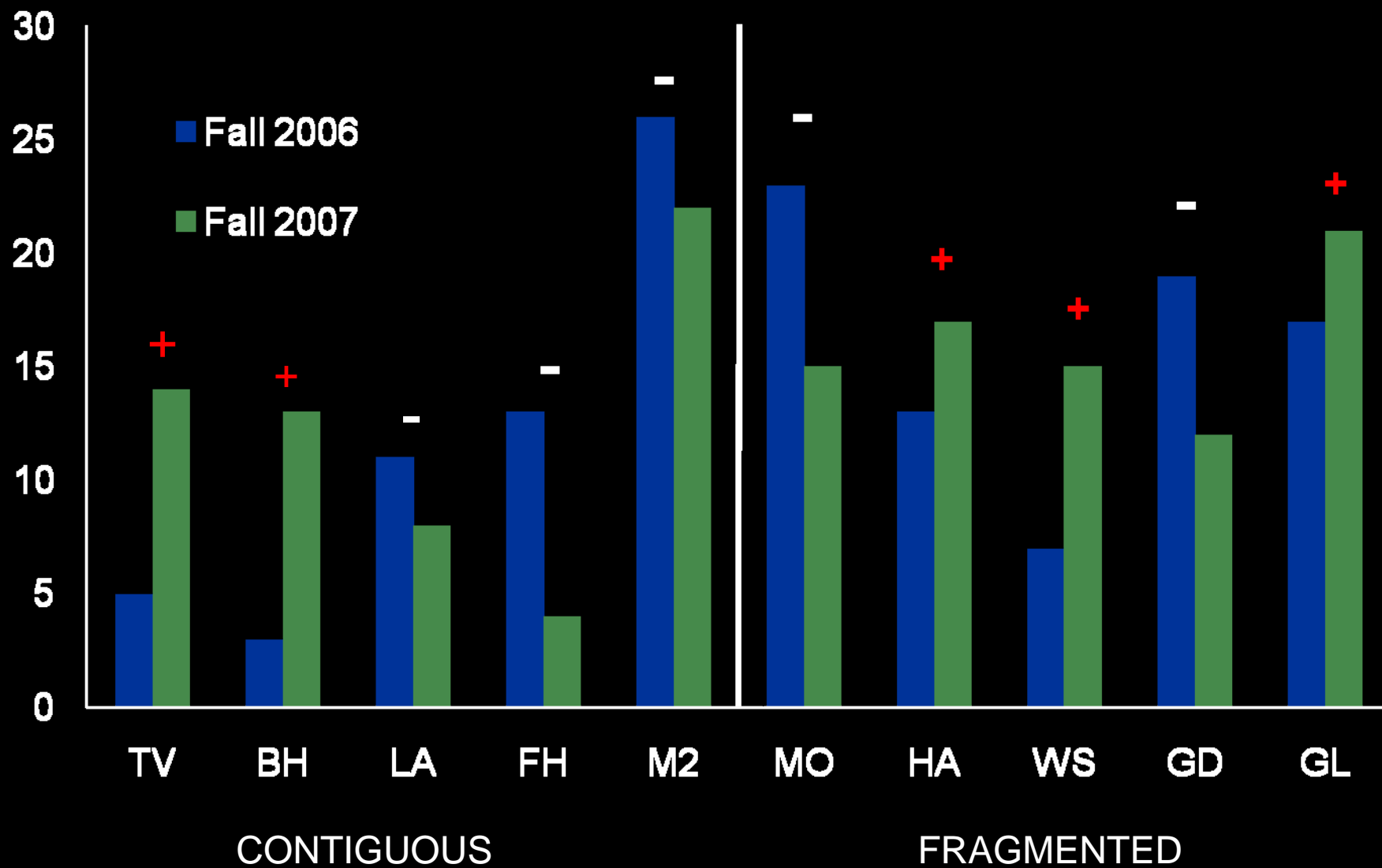


Trapping Results Fall 2007

LANDSCAPE TYPE	TOTAL CAPTURES	TOTAL INDIV.	2007 RECAP.	% Recap	CORR. CAP.RATE (100 trap nights) (average)
FRAGMENTED	238	80	32	23%	11.7
CONTIGUOUS	185	61	19	20%	9.5
TOTALS	423	141	51	22%	10.6

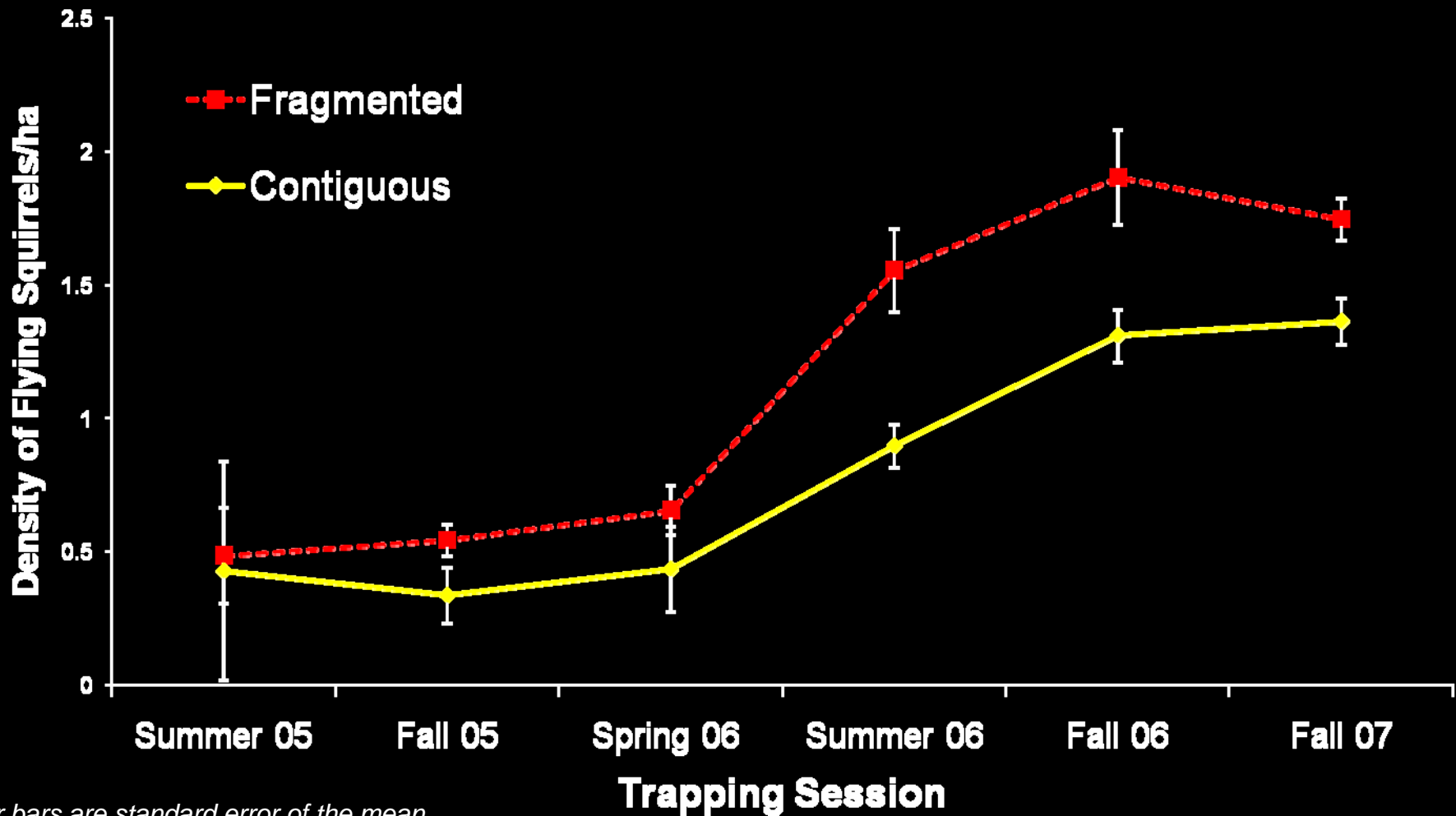
4,800 trap nights in 2007, 228 individuals released in 2006

Total NFS Individuals Captured 2006-2007



Density

Lincoln-Petersen Estimate

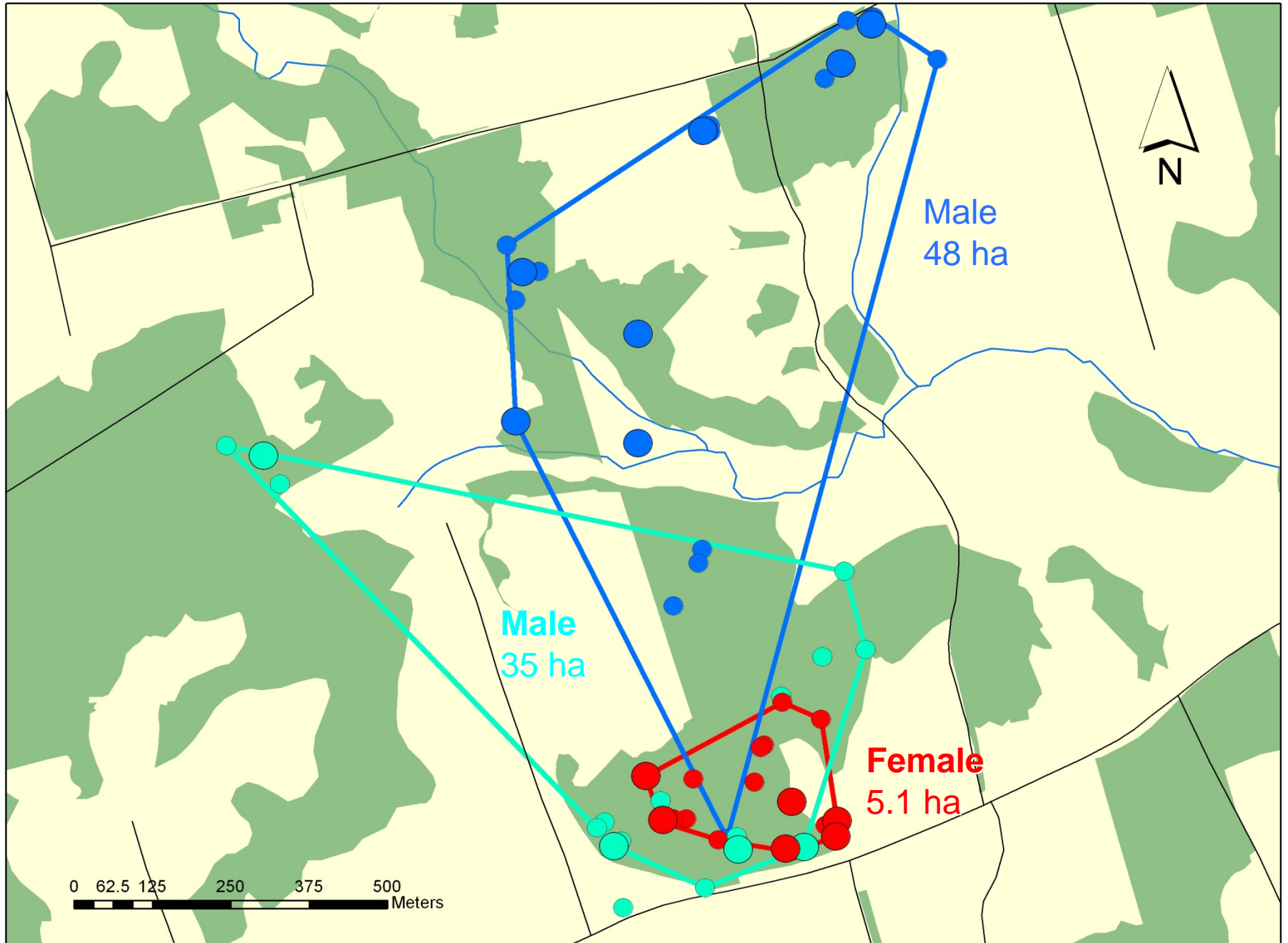


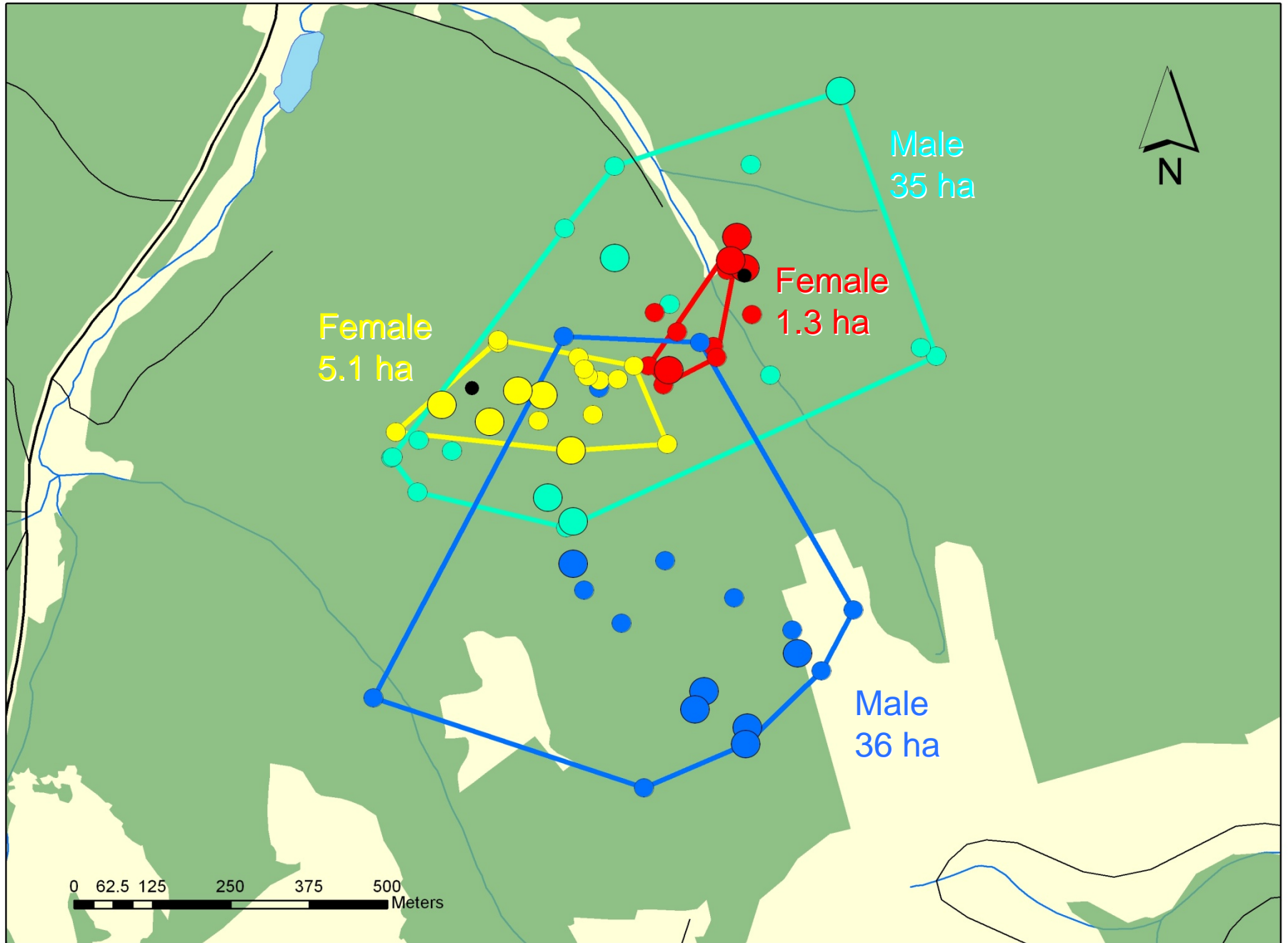
Why are Densities Higher?

- More resources at fragmented sites.
- Animals are crowding into remaining patches.
- Fence effect -movement is restricted.
- Habitat Supplementation -are using surrounding forest to supplement mature forest patch.

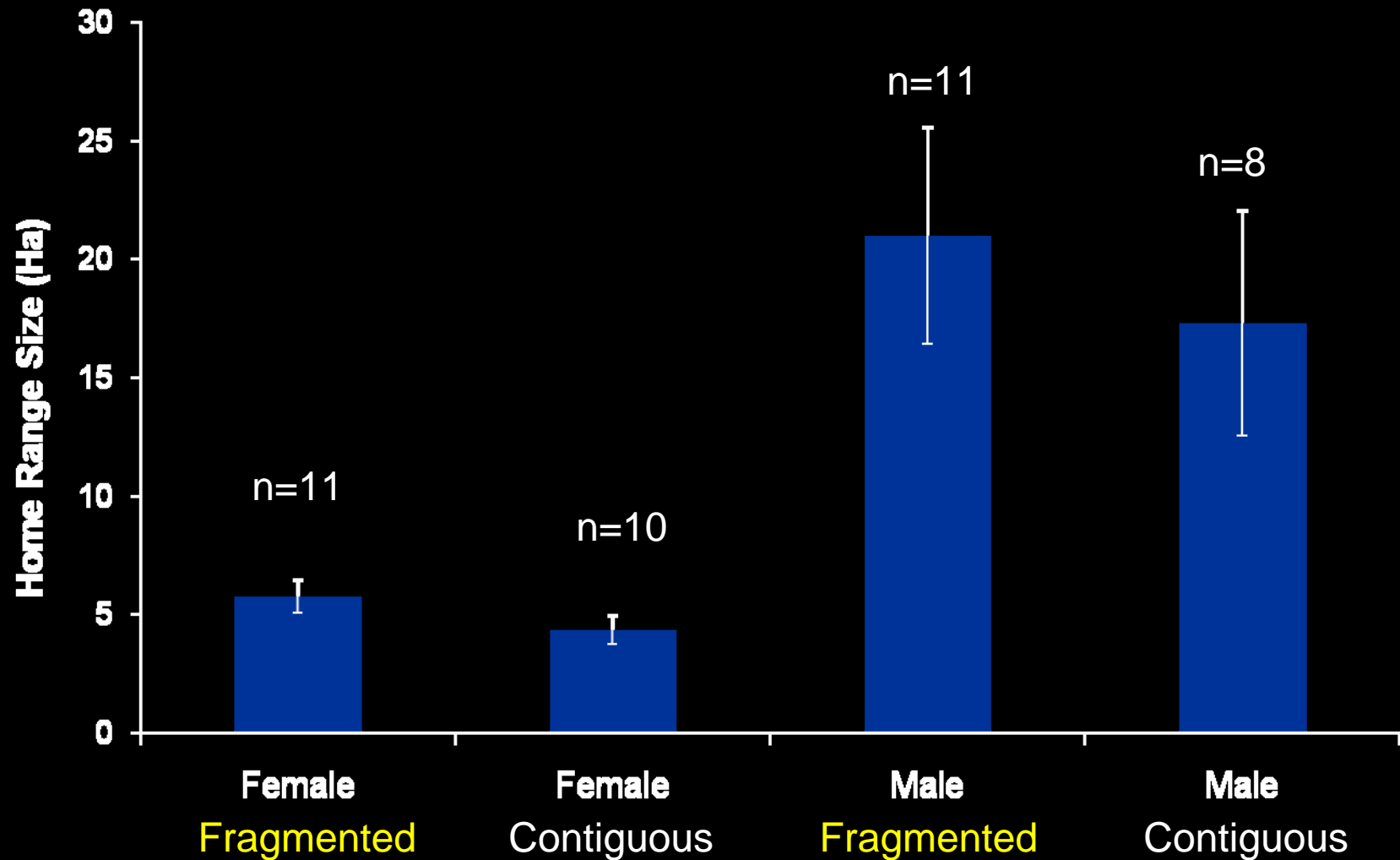
Methods- Movement





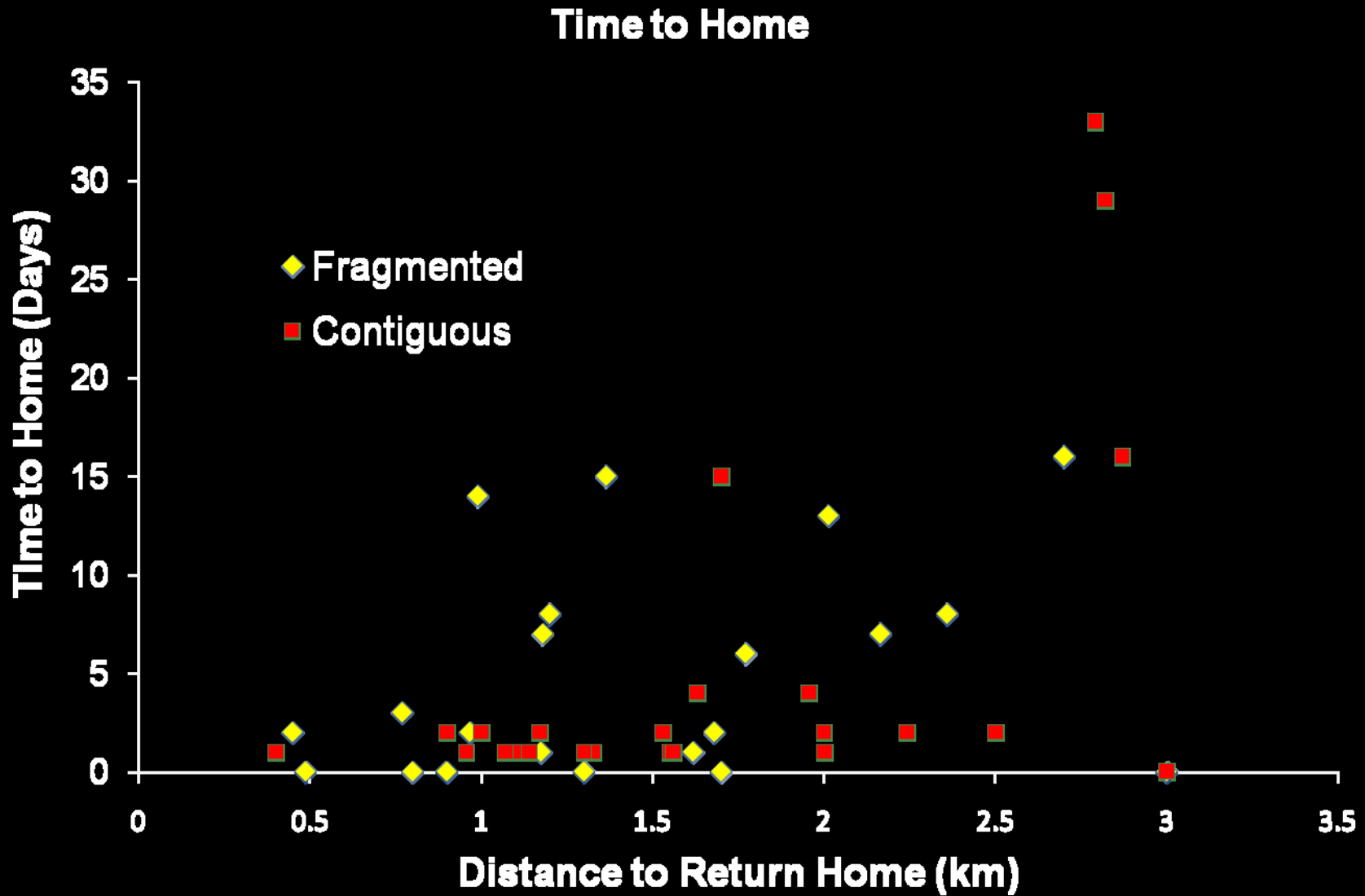


Home Range Size in Fragmented and Contiguous Landscapes

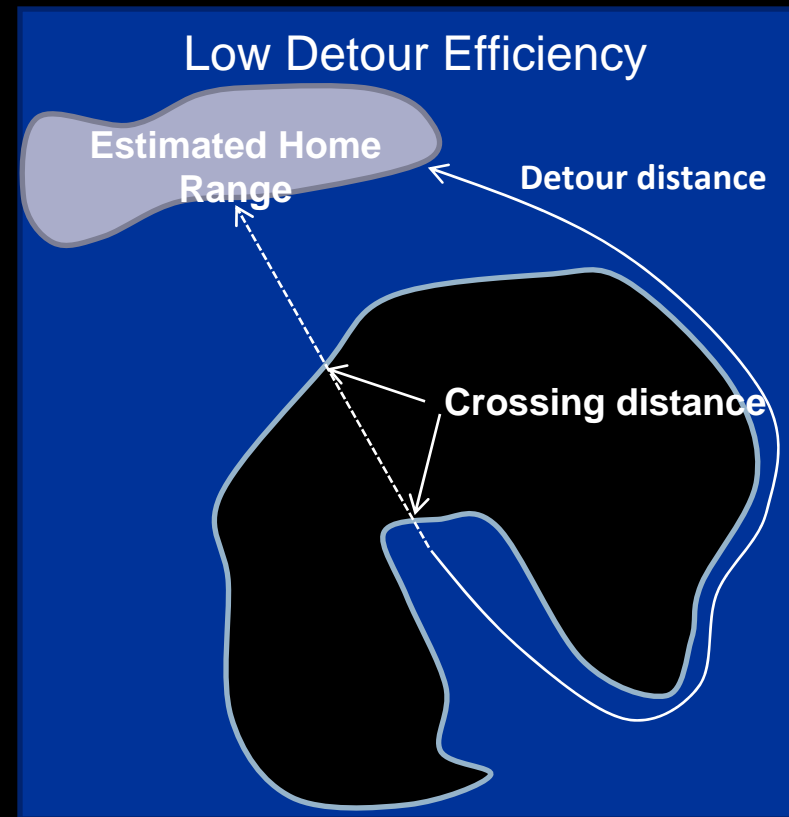
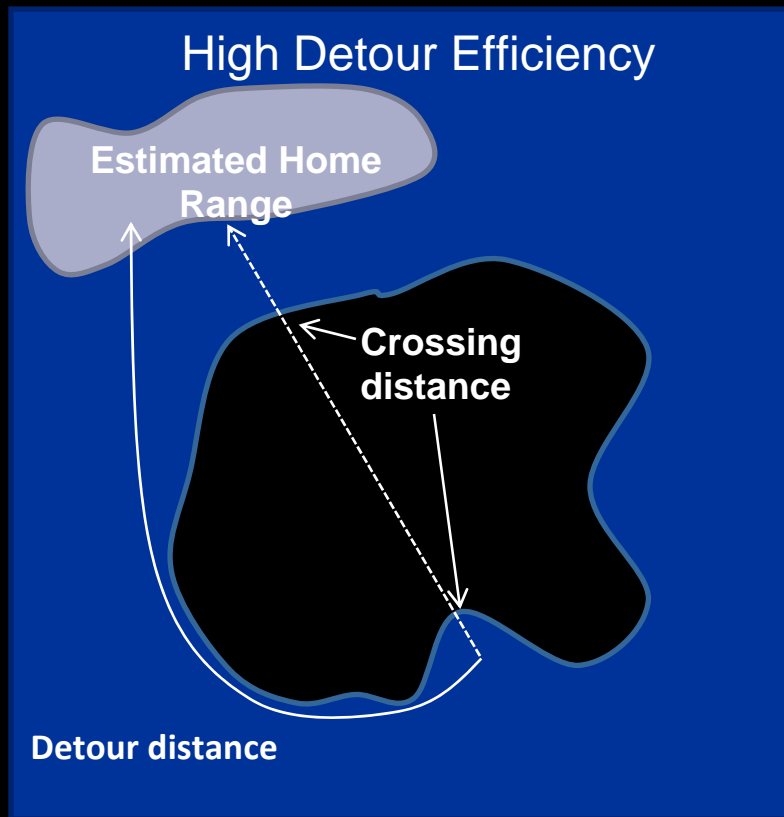


Error bars are standard error of the mean

Results: Translocation

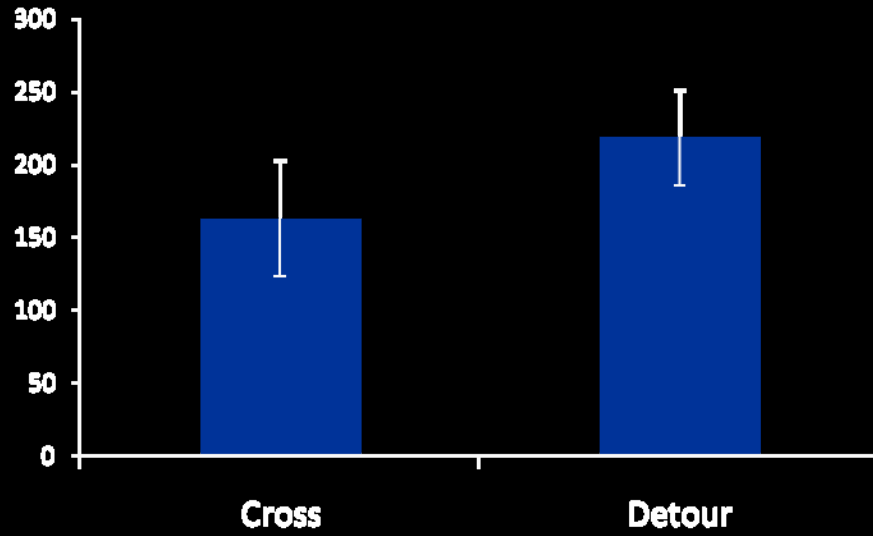


Gap-Crossing Ability

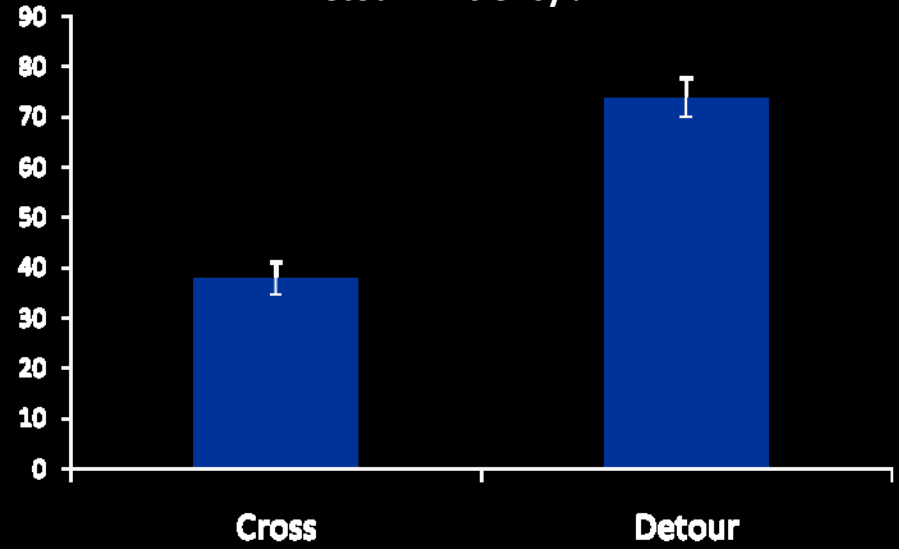


$$\text{Detour Efficiency} = \text{Crossing Distance} / \text{Detour Distance} * 100$$

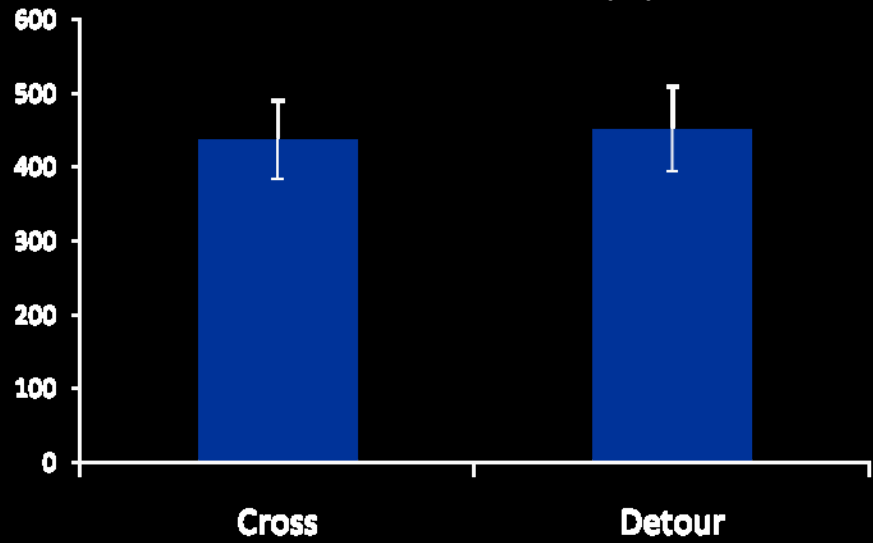
Crossing Distance (m)



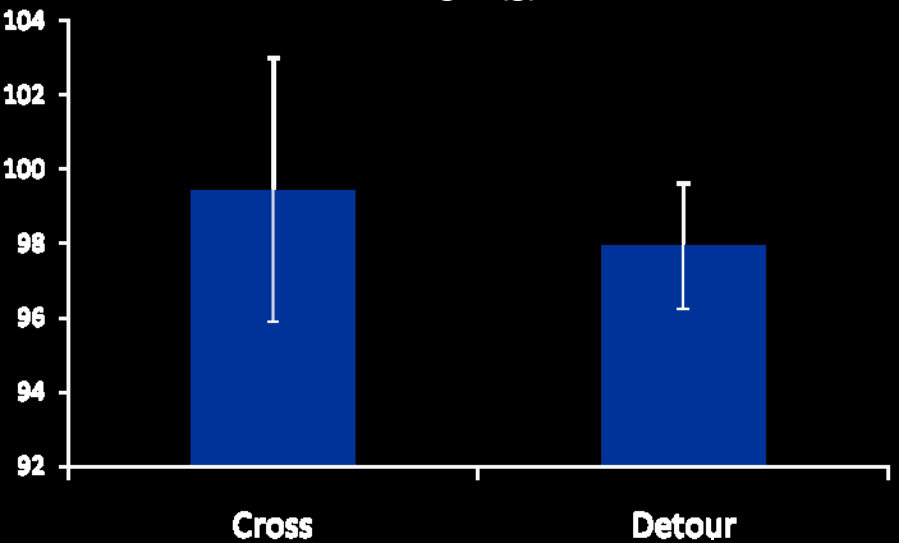
Detour Efficiency %



Total Distance (m)



Weight (g)

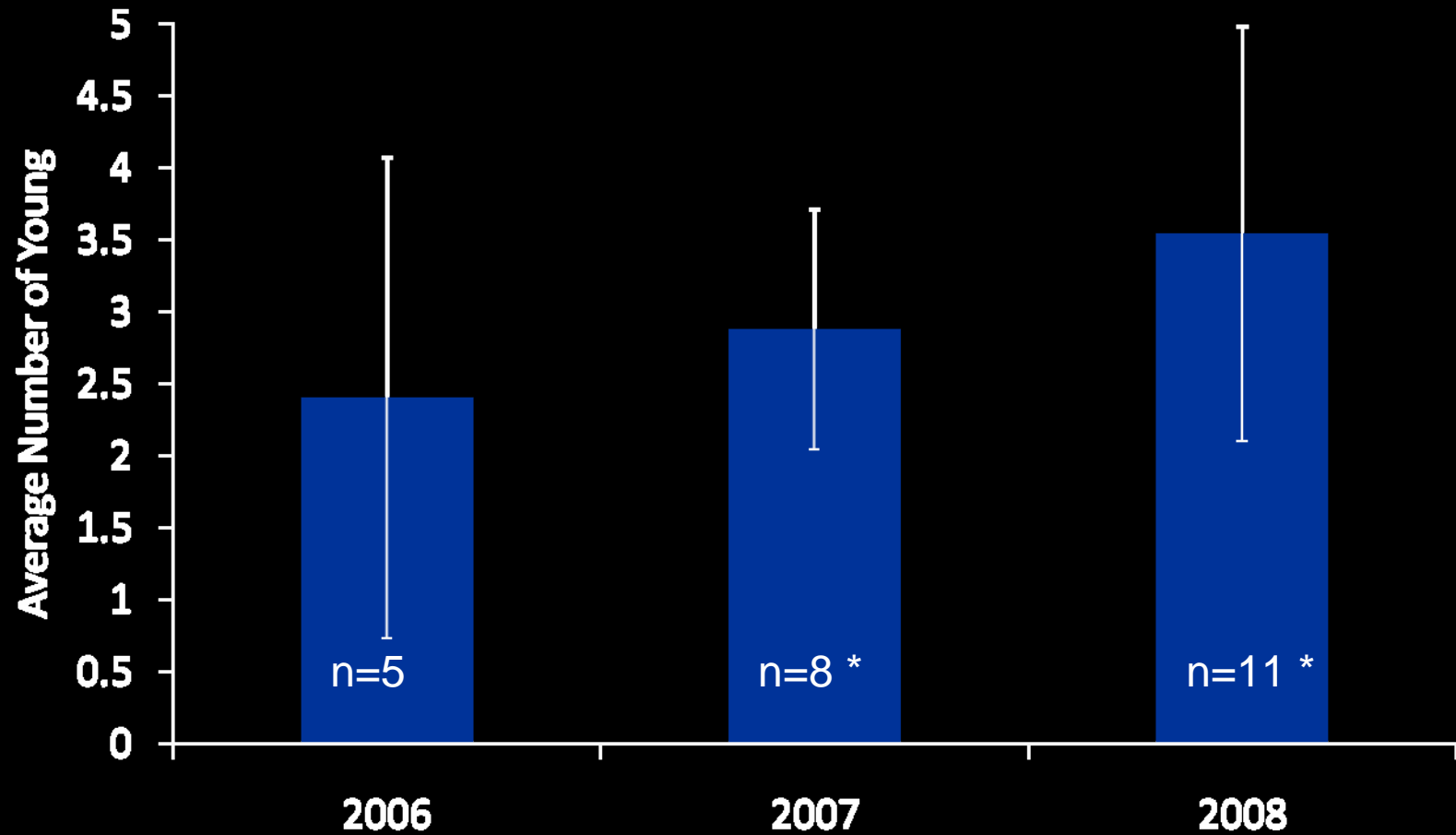


Methods- Fecundity





Fecundity



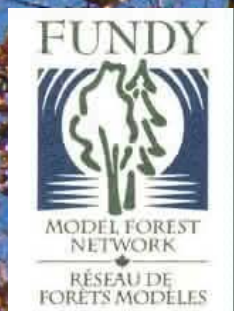
*- 3 nest boxes included in 2007 and 1 nest box in 2008

Error bars- show standard deviation of the mean

Final Comments

- Higher density of flying squirrels in the fragmented landscape.
- 20% of individuals released last year were recaptured.
- Flying squirrels are using younger forest stands in the fragmented landscape.
- Flying squirrels will cross gaps when the detour to crossing distance is long.

Acknowledgements



Fundy National Park
Fundy Model Forest
New Brunswick Wildlife Trust Fund
N.B Department of Natural Resources
Environmental Trust Fund

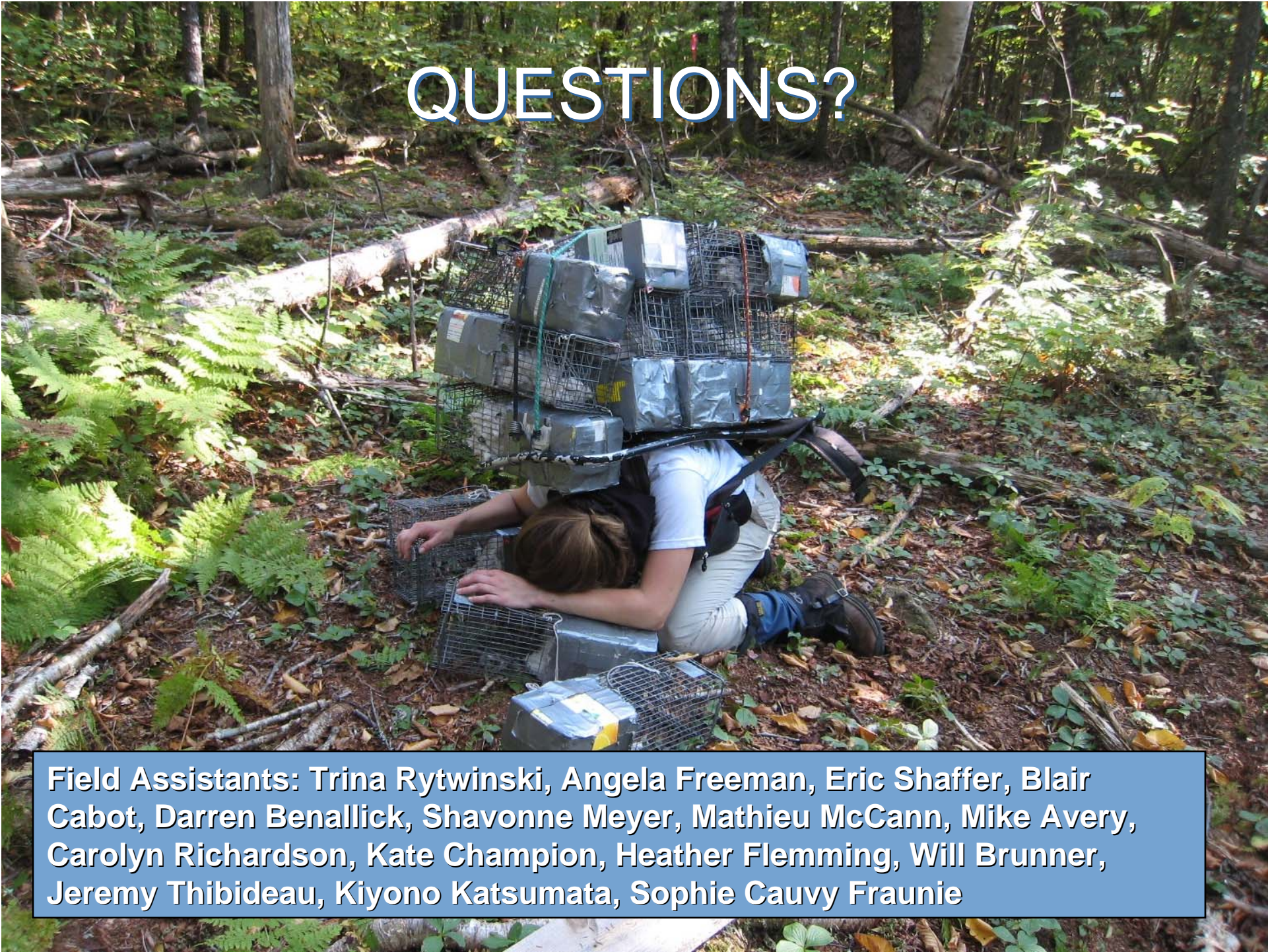


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QUESTIONS?

A field assistant is kneeling in a forest, surrounded by traps and equipment. The assistant is wearing a white t-shirt, light-colored pants, and blue boots. They are positioned in the center of the frame, with their back to the camera. They are surrounded by several metal traps, some of which are stacked on top of each other. The forest floor is covered with fallen leaves and ferns. The background is a dense forest with tall trees and sunlight filtering through the canopy.

Field Assistants: Trina Rytwinski, Angela Freeman, Eric Shaffer, Blair Cabot, Darren Benallick, Shavonne Meyer, Mathieu McCann, Mike Avery, Carolyn Richardson, Kate Champion, Heather Flemming, Will Brunner, Jeremy Thibideau, Kiyono Katsumata, Sophie Cauvy Fraunie