

Wildlife Spatial Ecology:
Deer Home Range Size and Resource
Selection on the Cornell Campus

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Integrated Deer Research and Management Study

- Repellents
- Deer-resistant Plants
- Fencing
- Population Control
 - Hunting Zones
 - Sterilization Zones





Why study deer resource selection?

Objectives

- Do deer prefer one type of habitat over another?
- Does their preference vary by order of selection (Johnson 1980)?
- Does their preference vary from season to season?

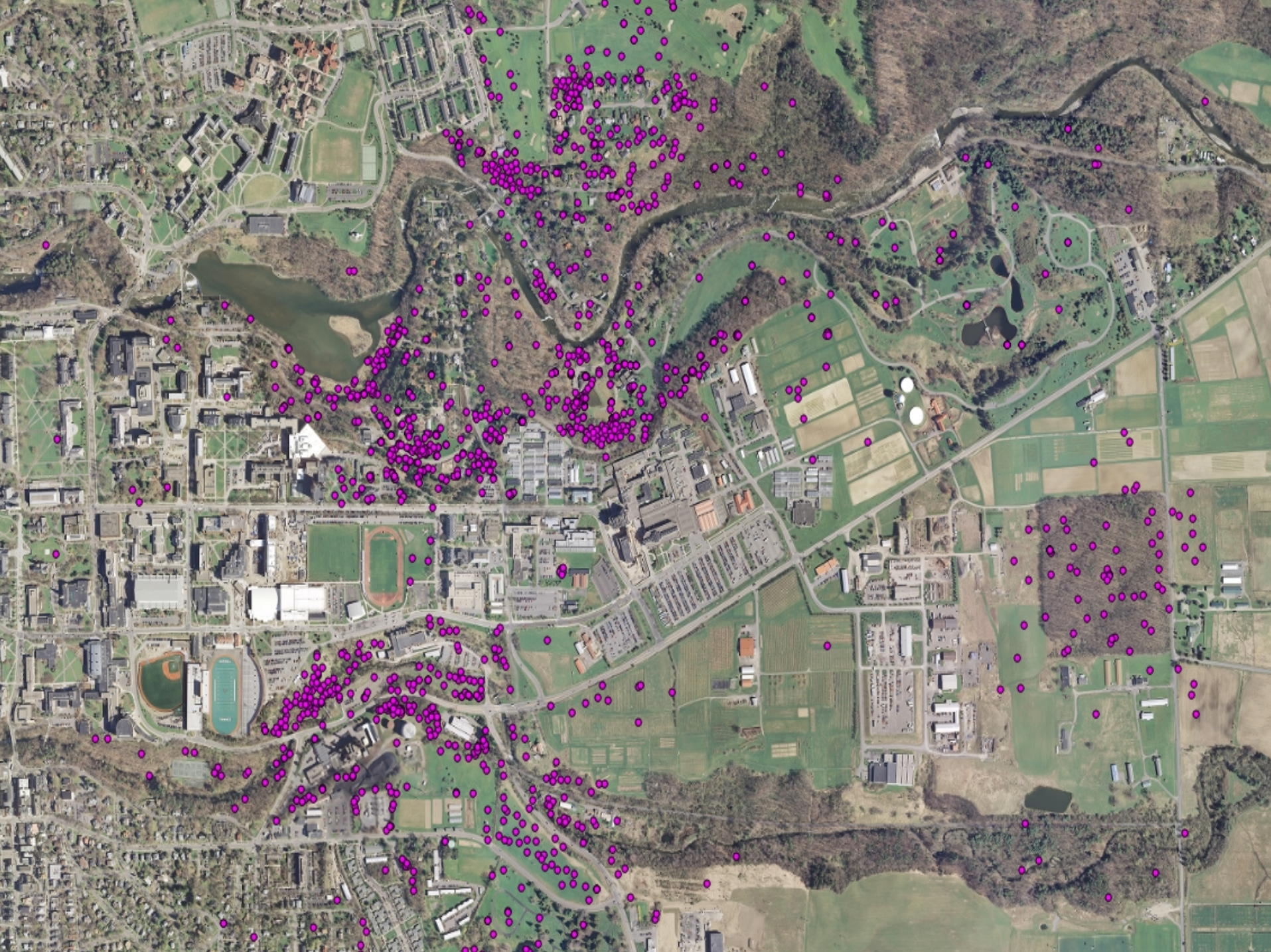
Habitat Use by Order

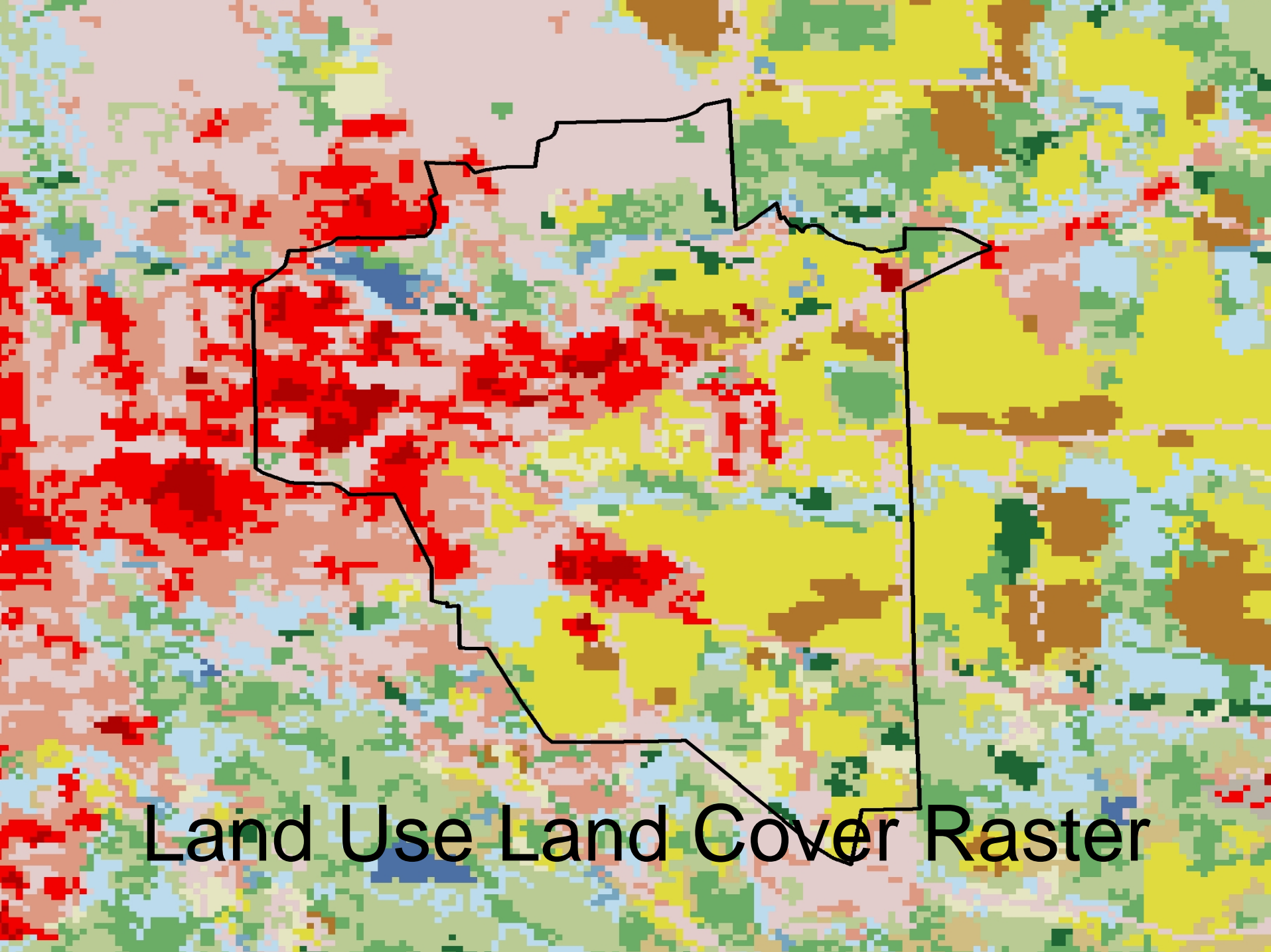
- First Order: Geographic range of the species
- **Second Order: Individual's established home range**
- **Third Order: Specific location where an animal is found**
- Fourth Order: Specific need the animal has for that location

Methods



- Capture deer with Clover traps or dart rifles
- Fit animals with ear tags and radio collars
- Conduct telemetry
- Enter telemetry fixes into geographic information system (GIS) program
- Create selection map
- Analyze selection by order and season

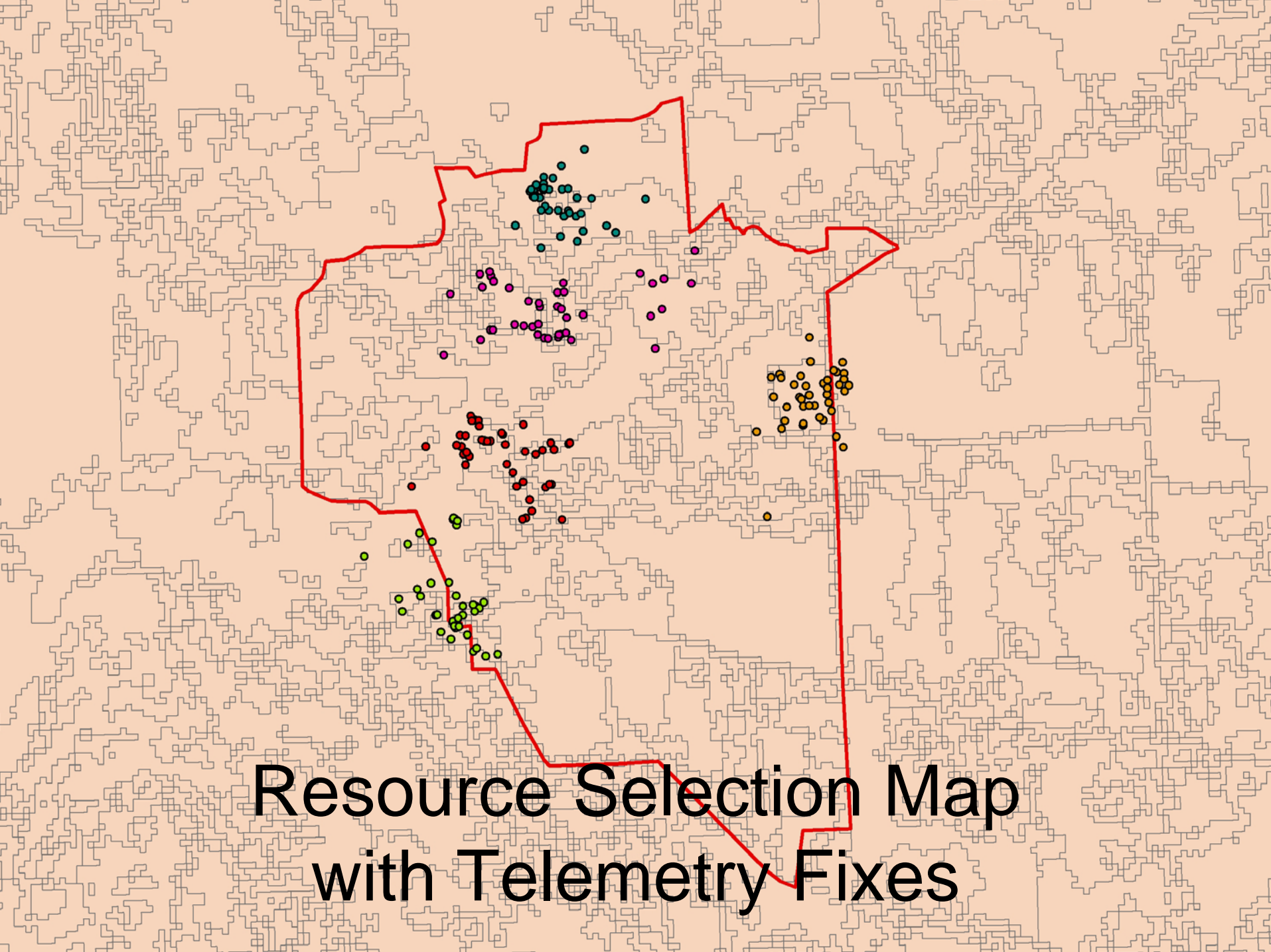




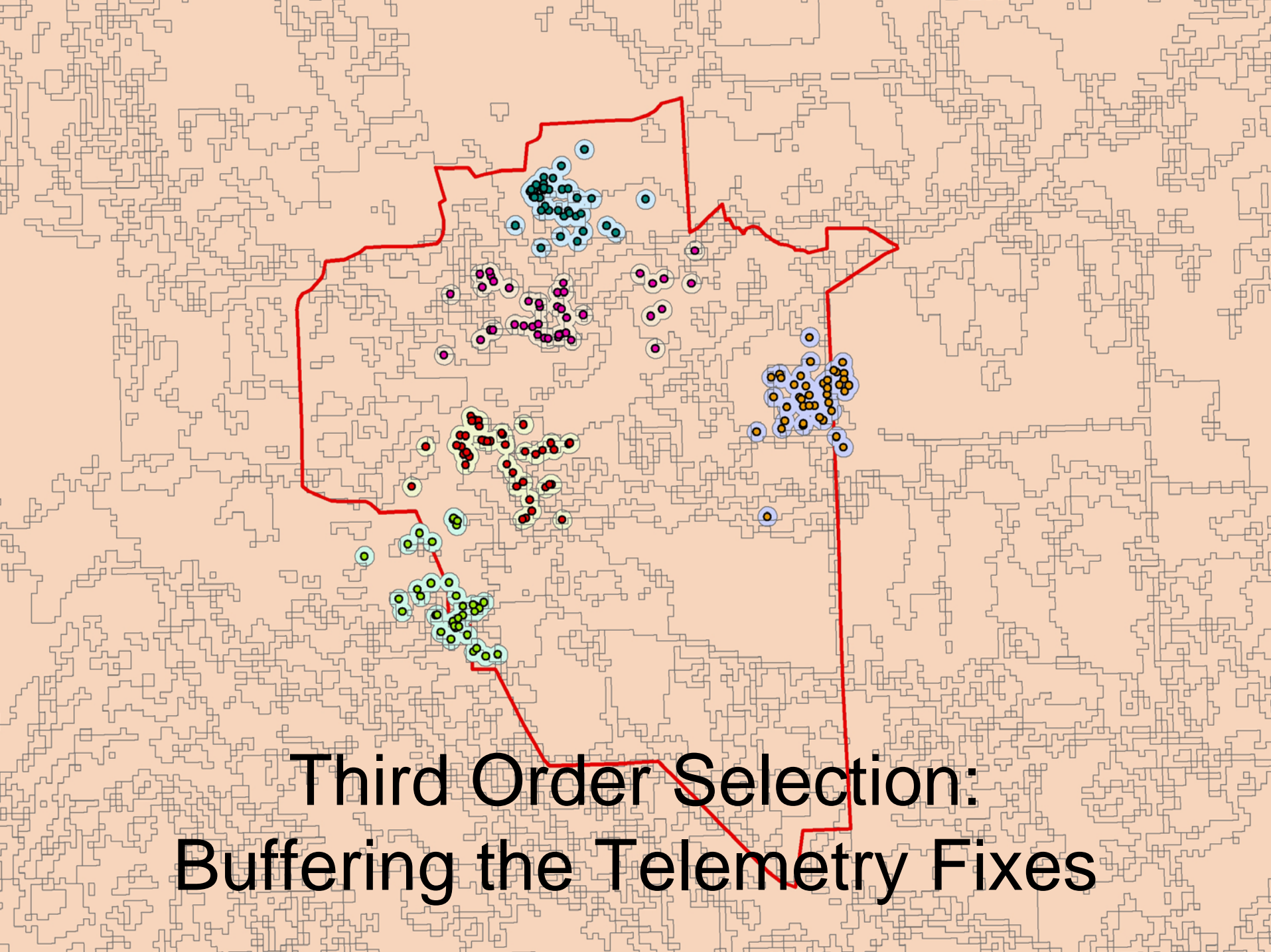
Land Use Land Cover Raster

Reclassification of Land Use

Number	Description
1	Developed, open space
2	Developed, low and medium density
3	Developed, high density
4	Mixed forest
5	Pasture, hay, and cultivated crop fields
6	Open water, wetlands
7	Other remaining land types

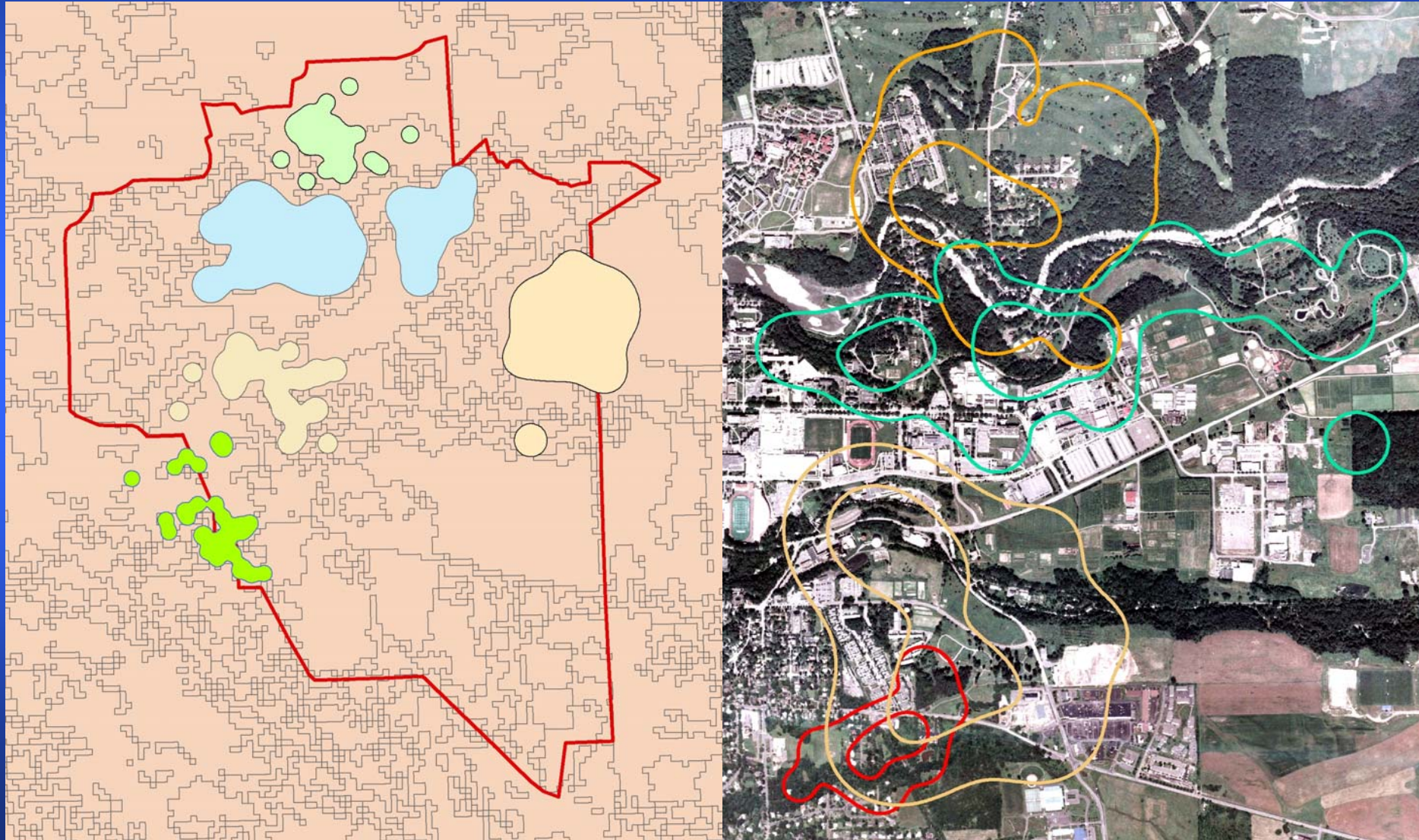


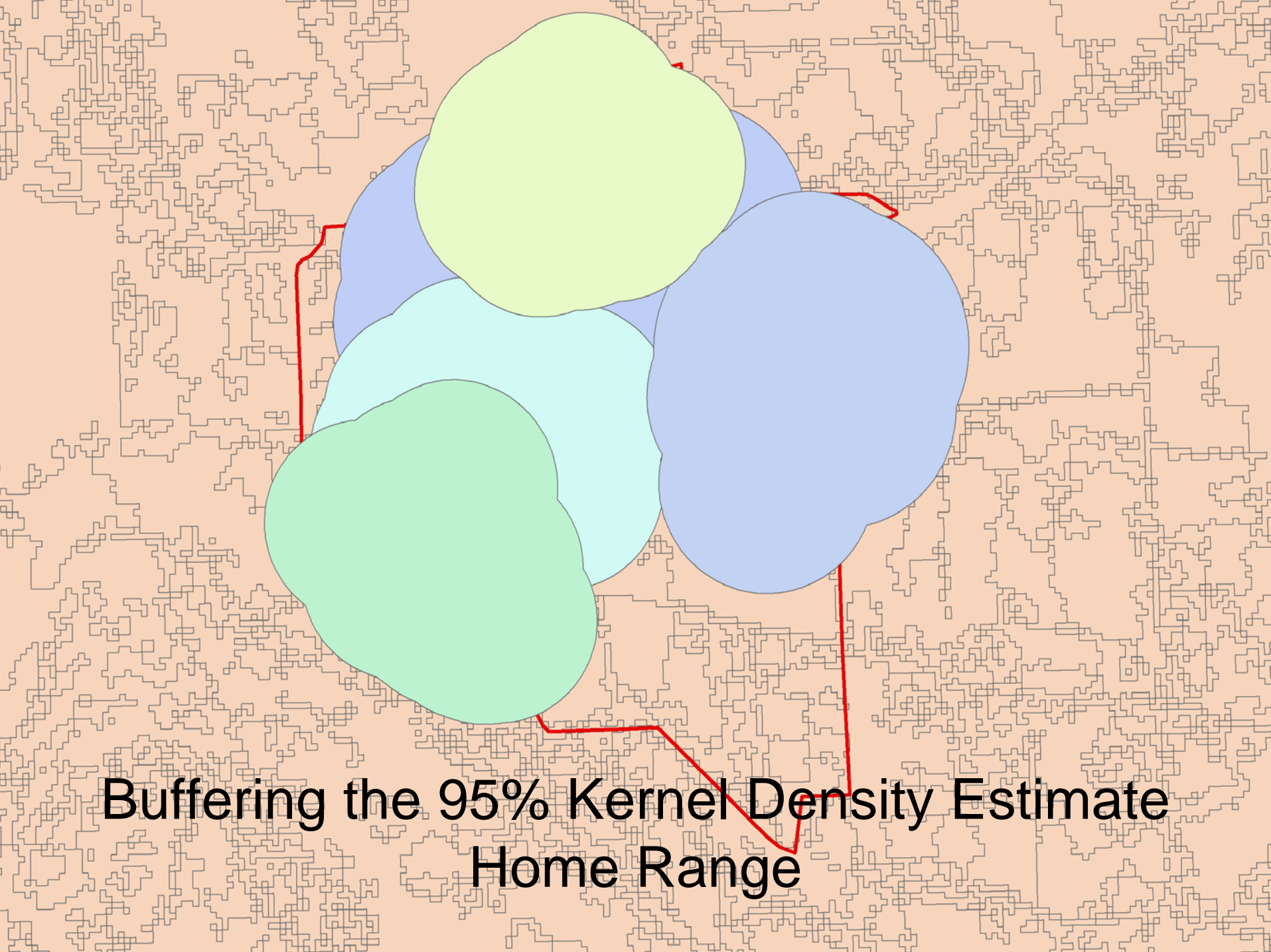
**Resource Selection Map
with Telemetry Fixes**



**Third Order Selection:
Buffering the Telemetry Fixes**

Second Order Selection: 95% Kernel Density Estimate Home Range



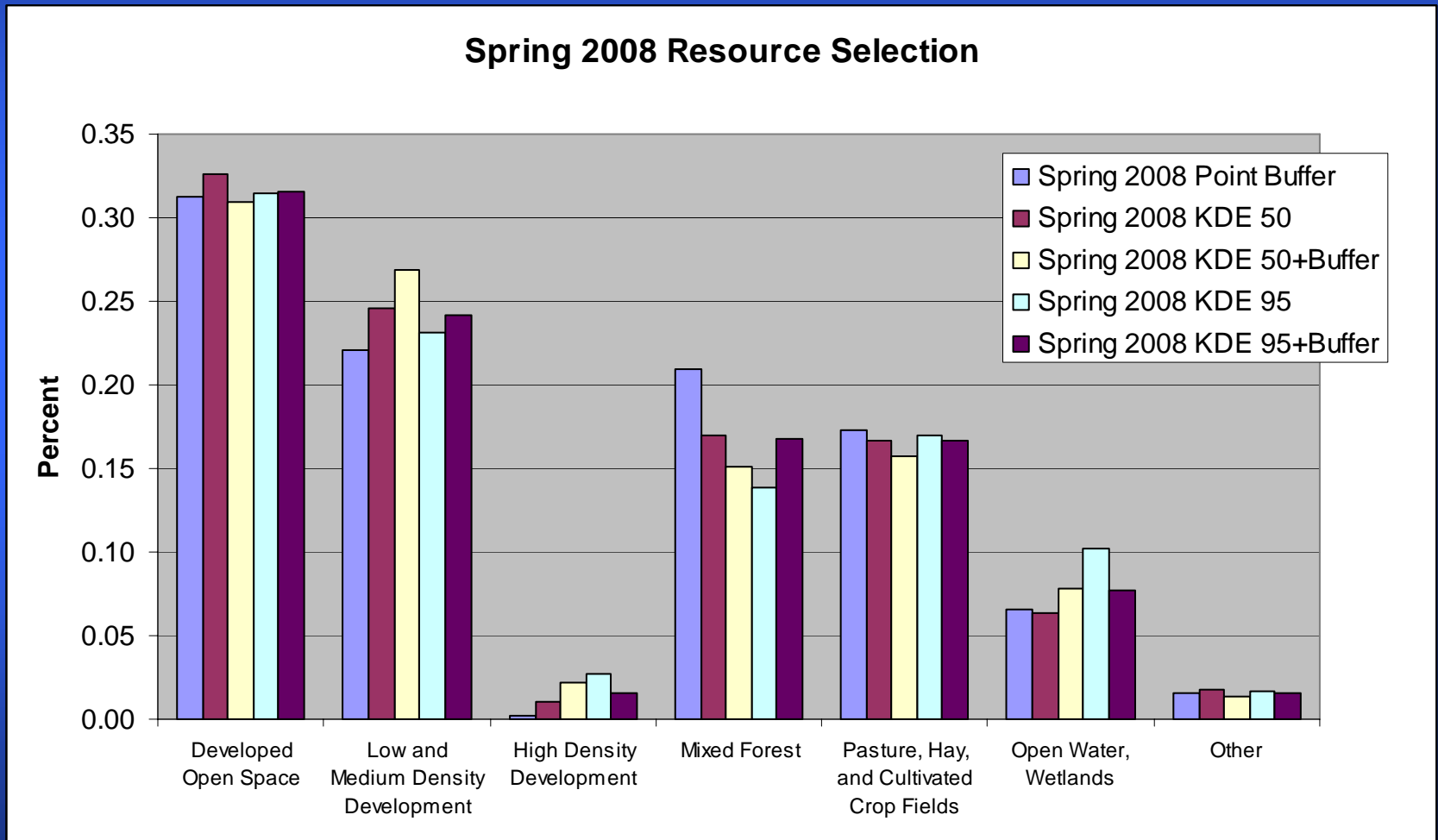


**Buffering the 95% Kernel Density Estimate
Home Range**

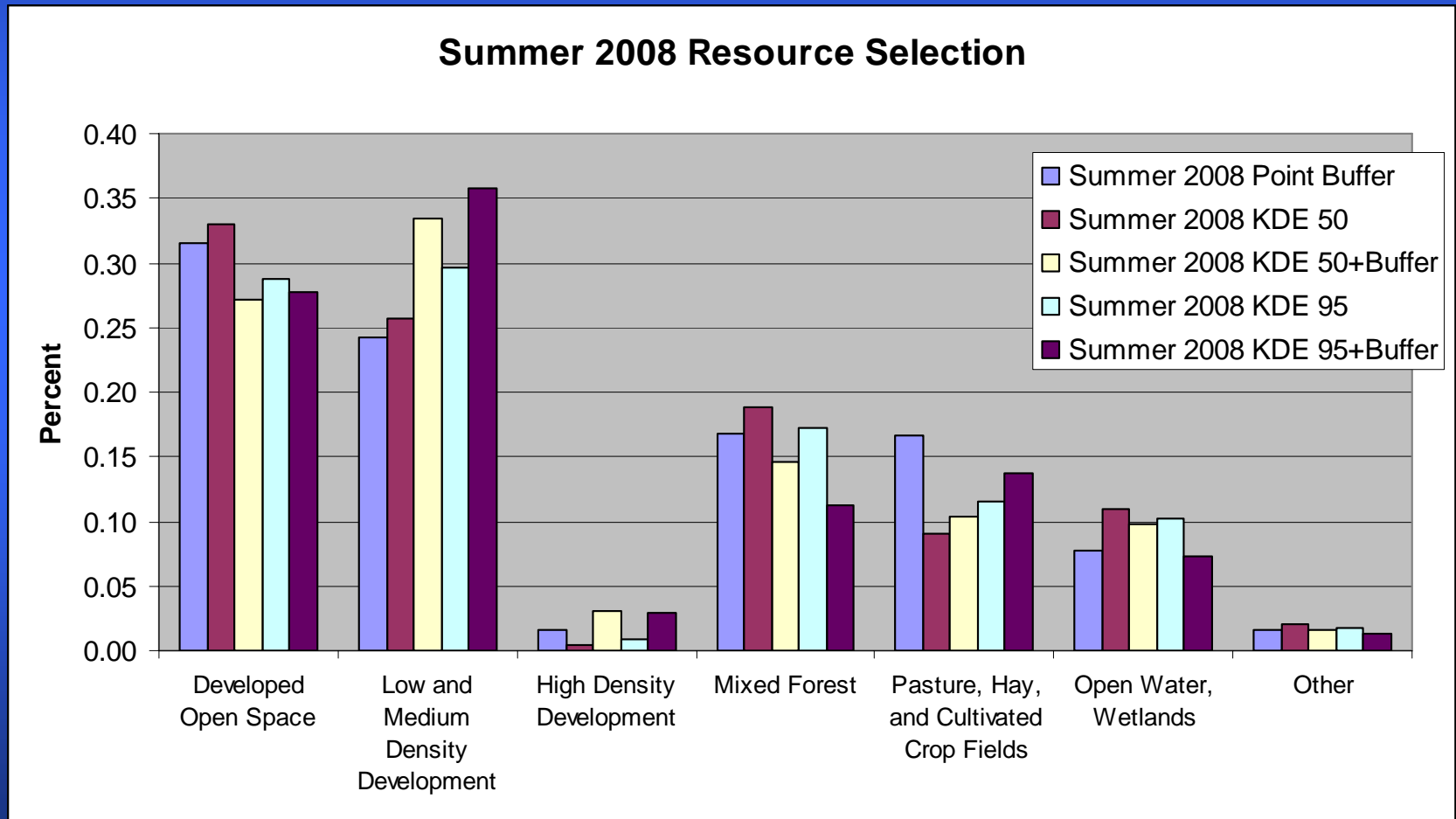
Biologically Relevant Seasons

Dates	Season	Biological Season
June 1 – August 31	Summer	Fawn-rearing
September 1 – November 30	Fall	Breeding
December 1 – February 28	Winter	Winter
March 1 – May 31	Spring	Winter-spring transition

Spring 2008 Resource Selection (n=11)

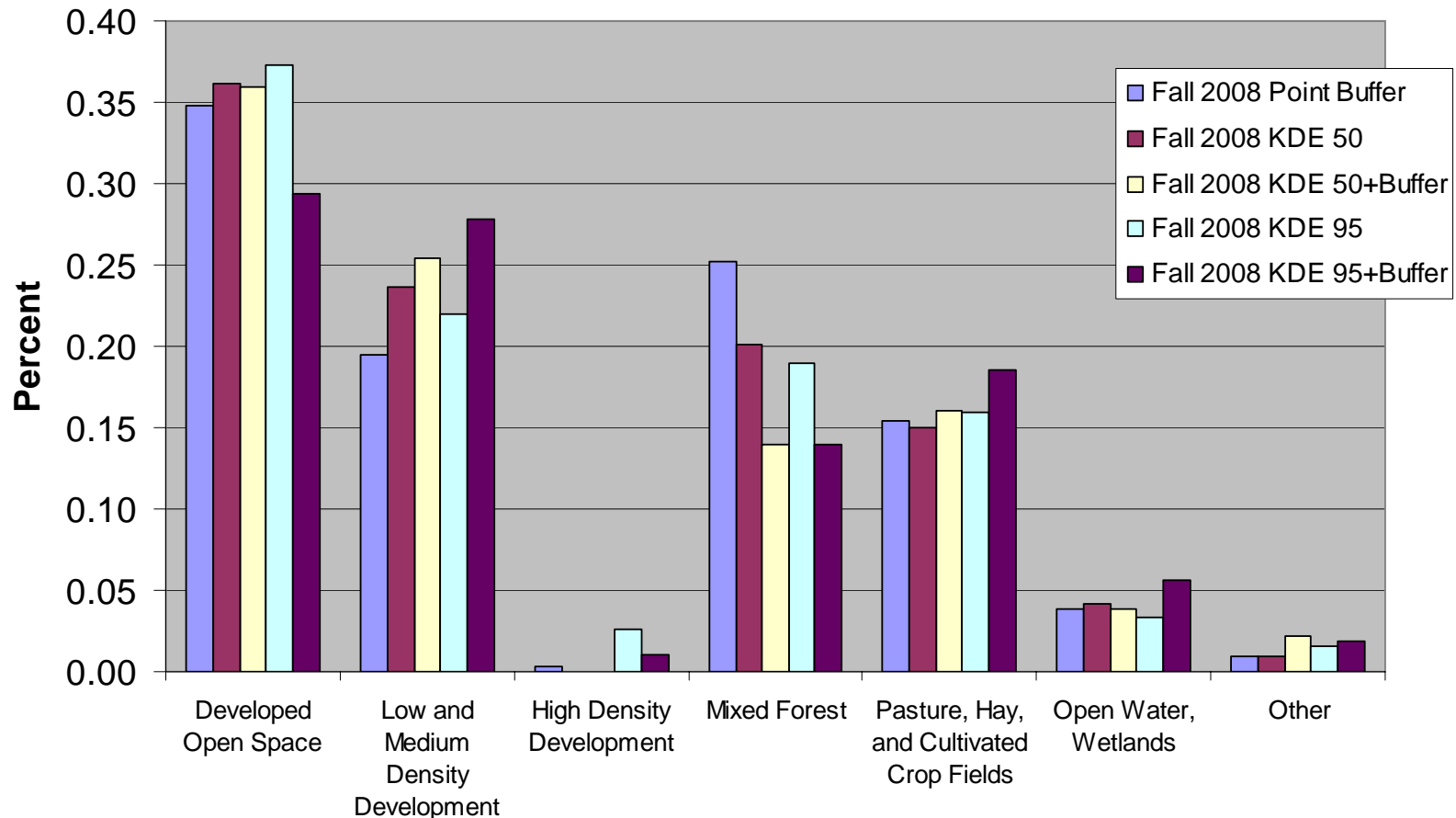


Summer 2008 Resource Selection (n=19)

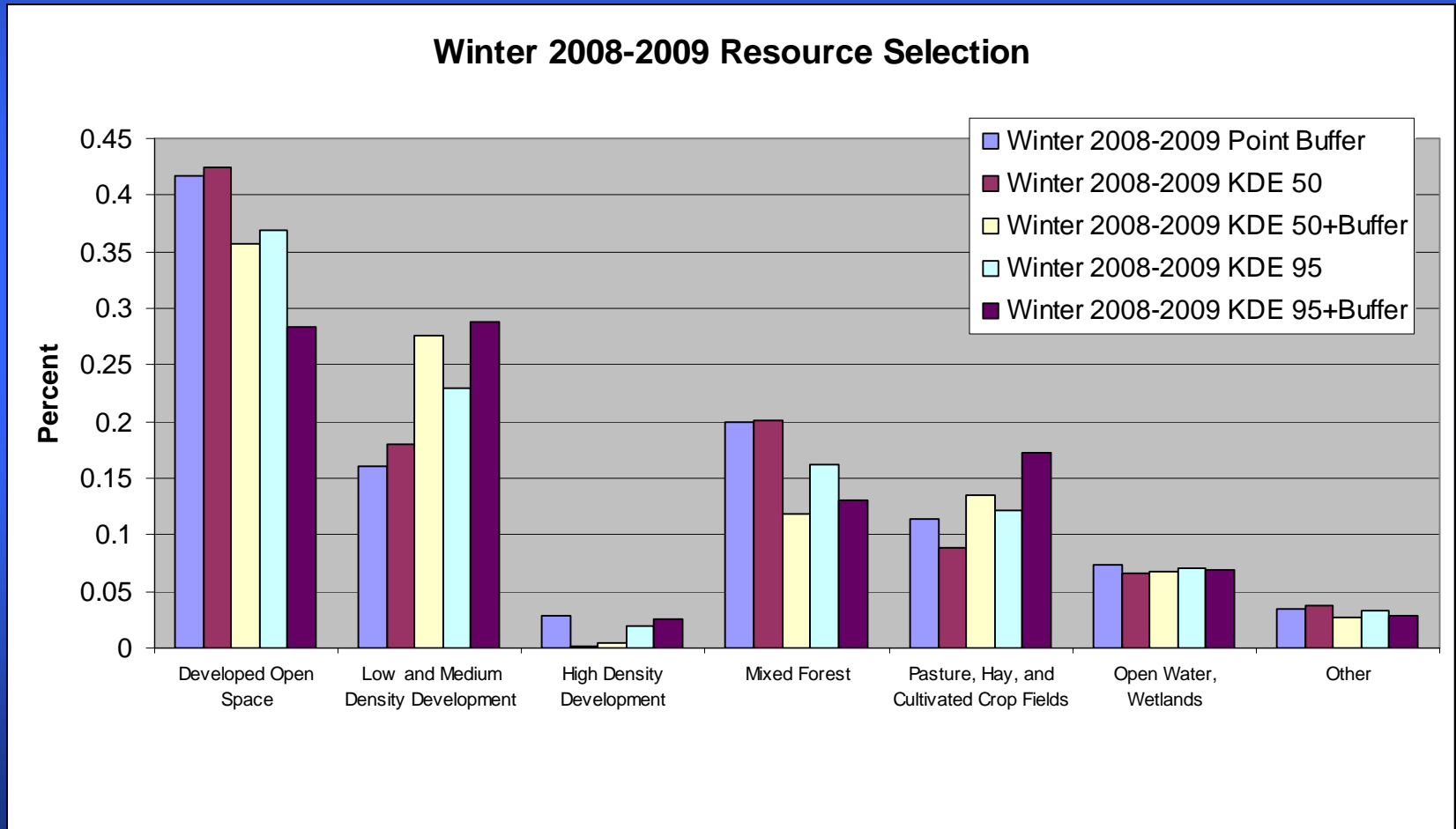


Fall 2008 Resource Selection (n=10)

Fall 2008 Resource Selection



Winter 2008-2009 Resource Selection (n=17)



Home Range Size (ha)

Home Range	KDE 50%	KDE 95%
Spring	18.56	81.04
Summer	7.057	31.89
Fall	9.281	43.48
Winter	16.88	61.67

Management Implications

- Interrupting or removing forest travel corridors as well as increasing high density development may decrease deer capacity to inhabit an area.
- If capture and harvest regulations are seasonally dependent, managers would be best suited to look for deer in developed open spaces in winter, low or medium density development or near wetlands in the summer, and in pasture, hay, or cultivated crop fields in the spring.



Questions?