



Northern Flying Squirrels and Spruce: Research Updates

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Outline

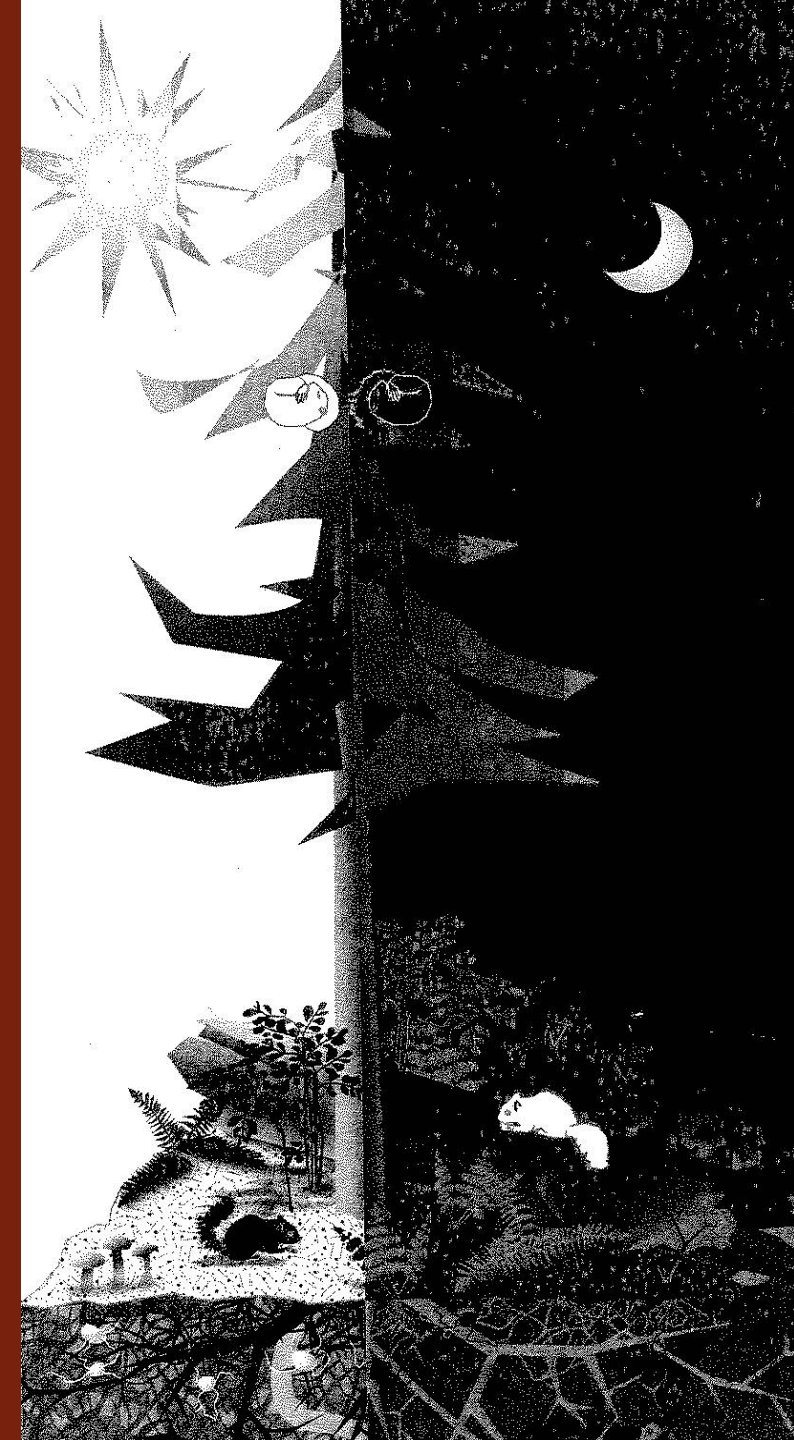
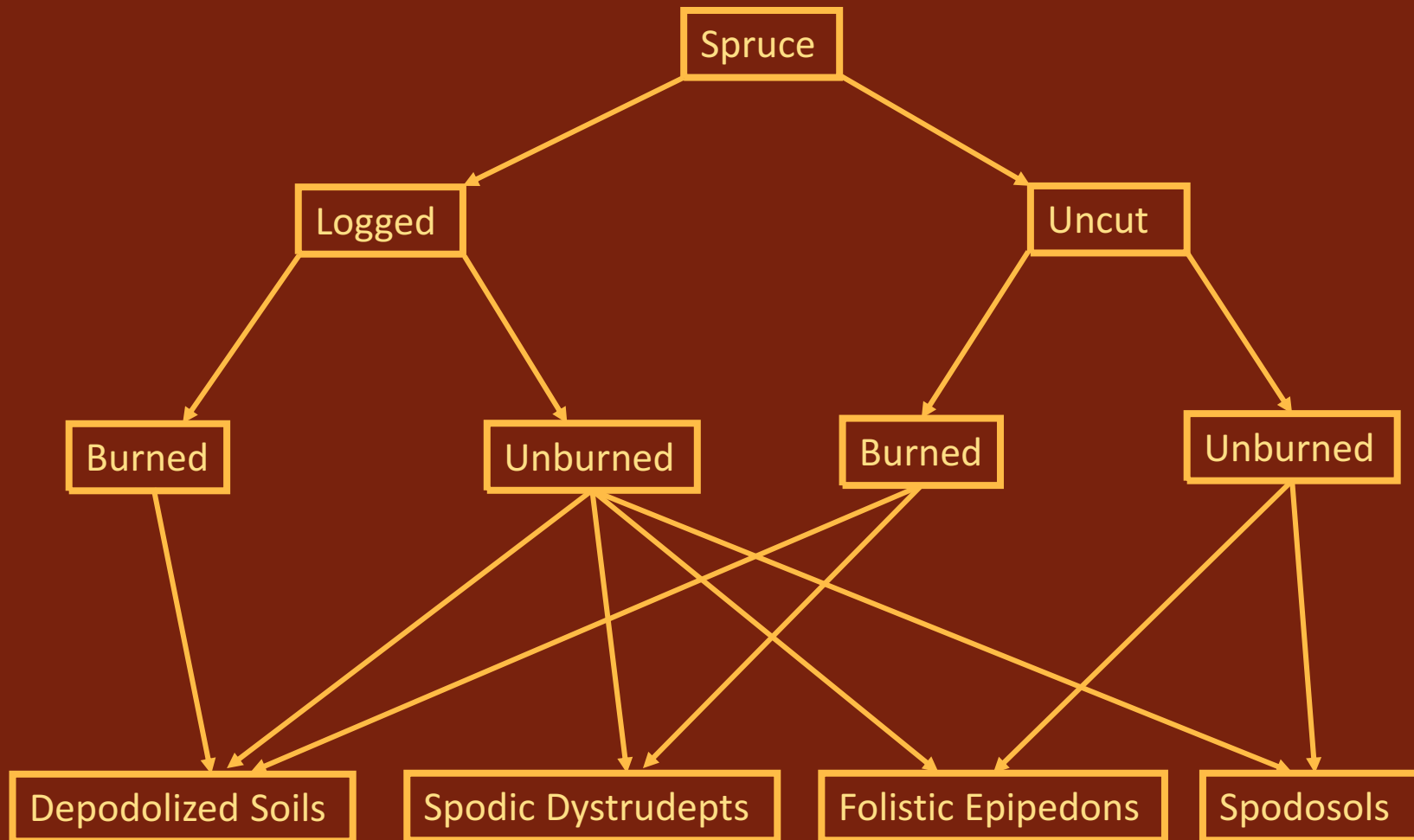
- Flying Squirrel Research Update
 - Microhabitat Study
 - Habitat Model
 - Habitat Use Study
 - Acoustics
- Spruce Release Study



Northern Flying Squirrel and Spruce

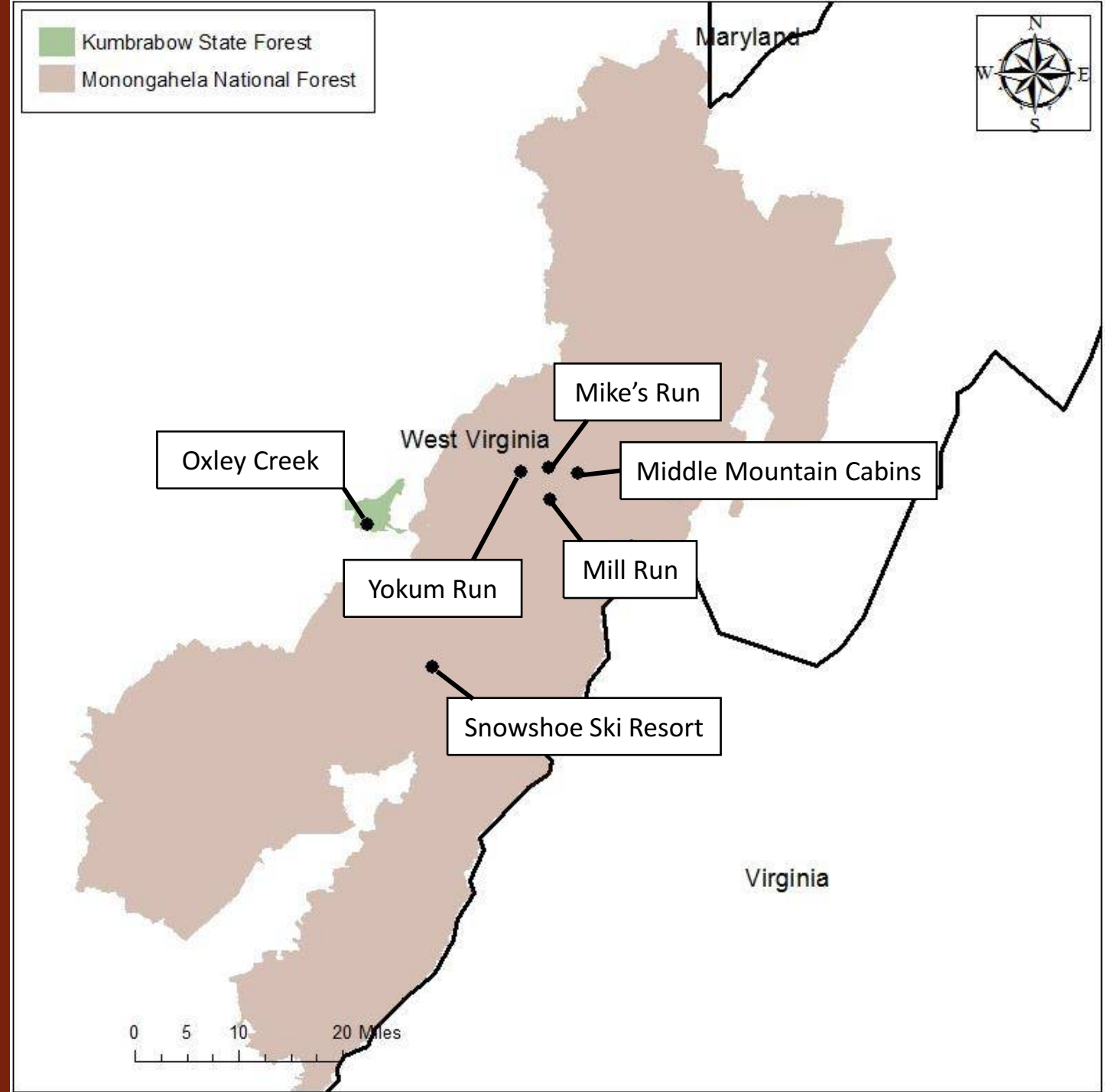
- Pleistocene relict
- Industrial logging and subsequent fires in 1880-1930s (Clarkson 1964, Boyce and Martin 1993)
 - 88-90% of spruce lost in WV
 - 35-57% of spruce lost in NC/TN/Southwest VA
- Critically endangered habitat (Noss et al. 1995)

Land History and Soil



Microhabitat Study

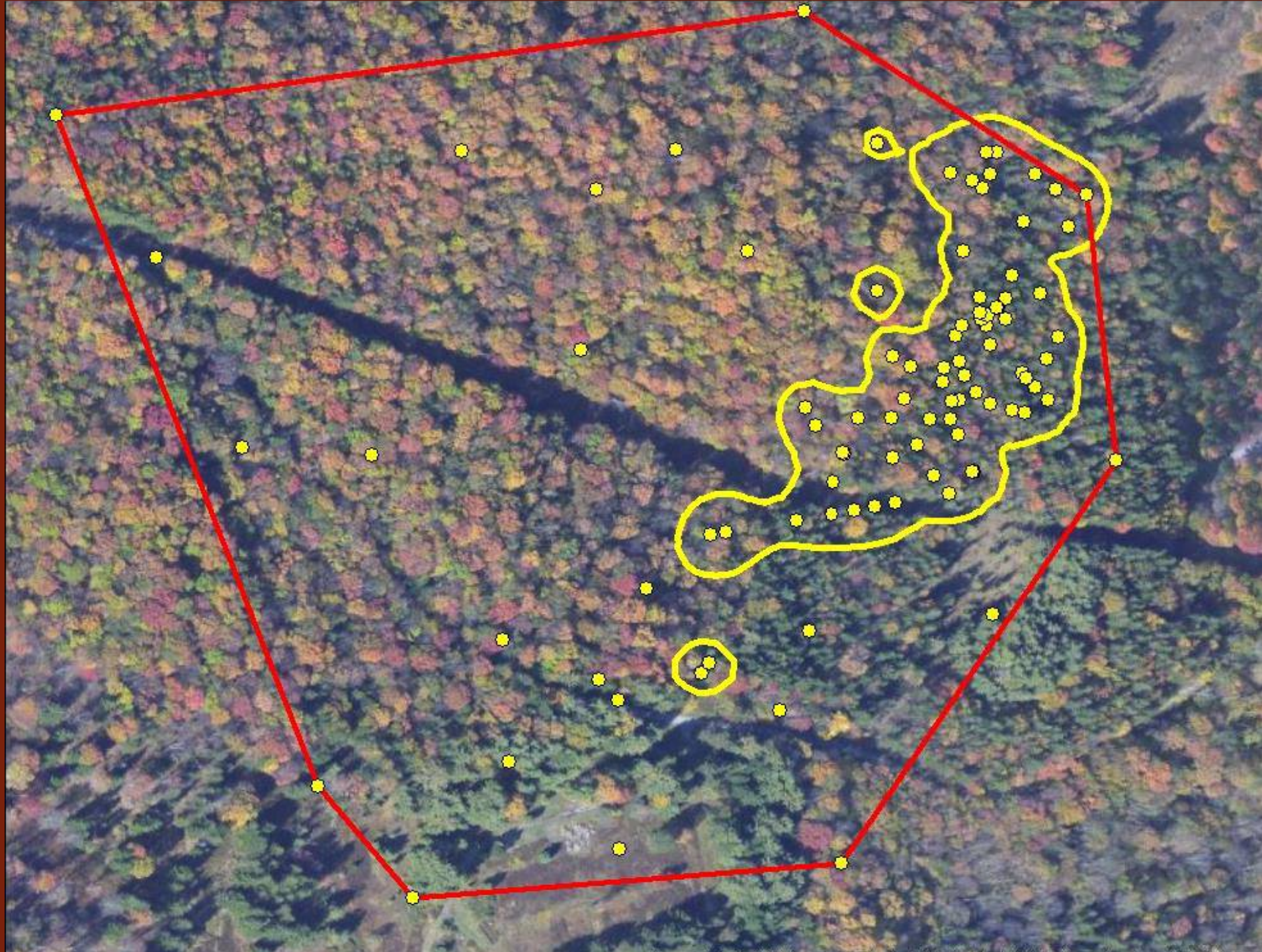
- 2013-2014
- 13 squirrels
- 520 microhabitat plots
 - 260 foraging points
 - 260 random points



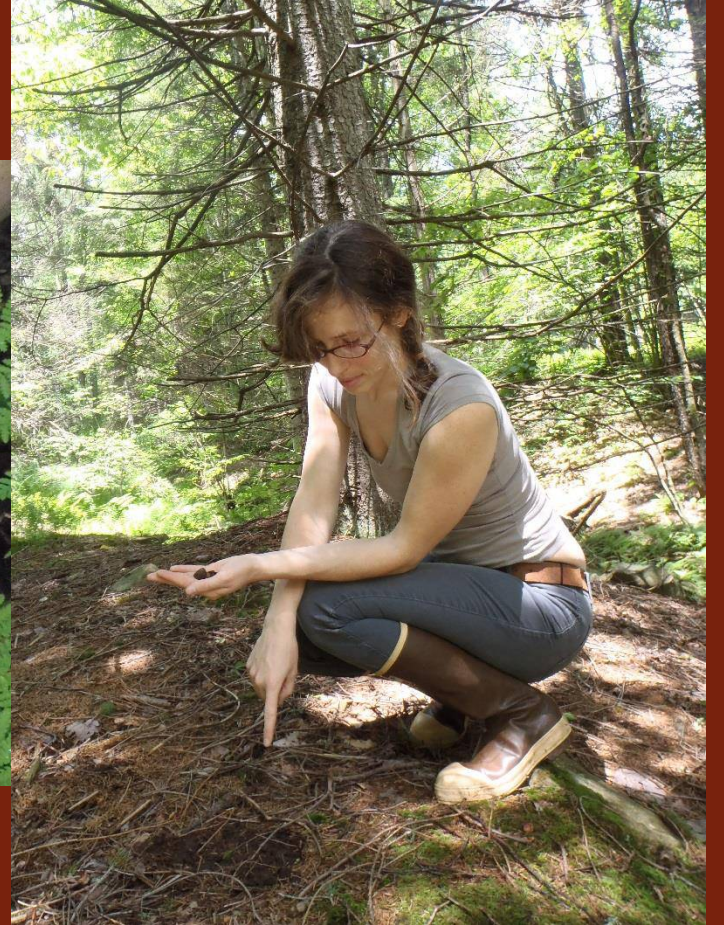
Microhabitat Study

- Nest boxes and live-trapping
- Radio-collared individuals
- Conducted nocturnal telemetry surveys
- Program LOCATE





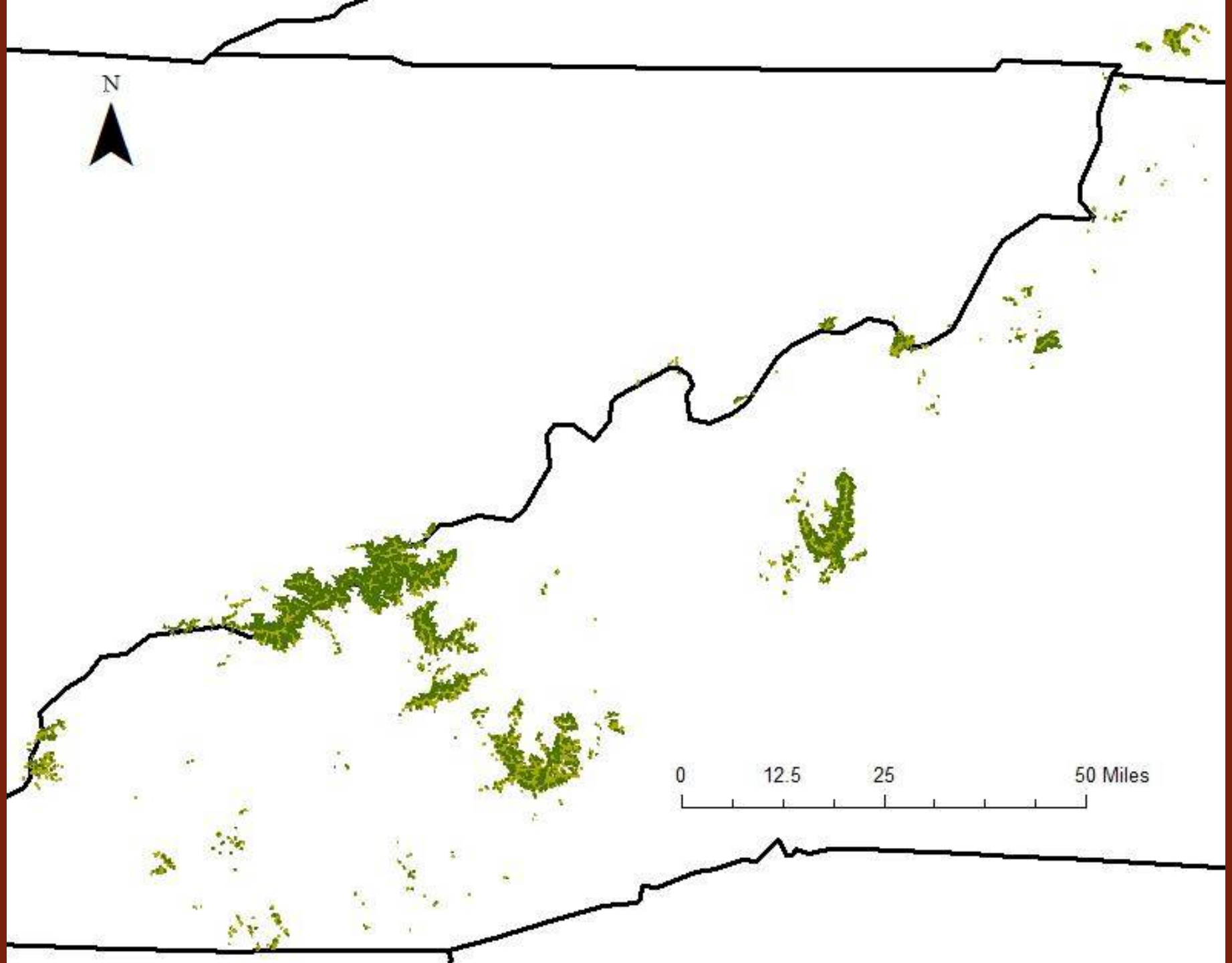
Microhabitat Study





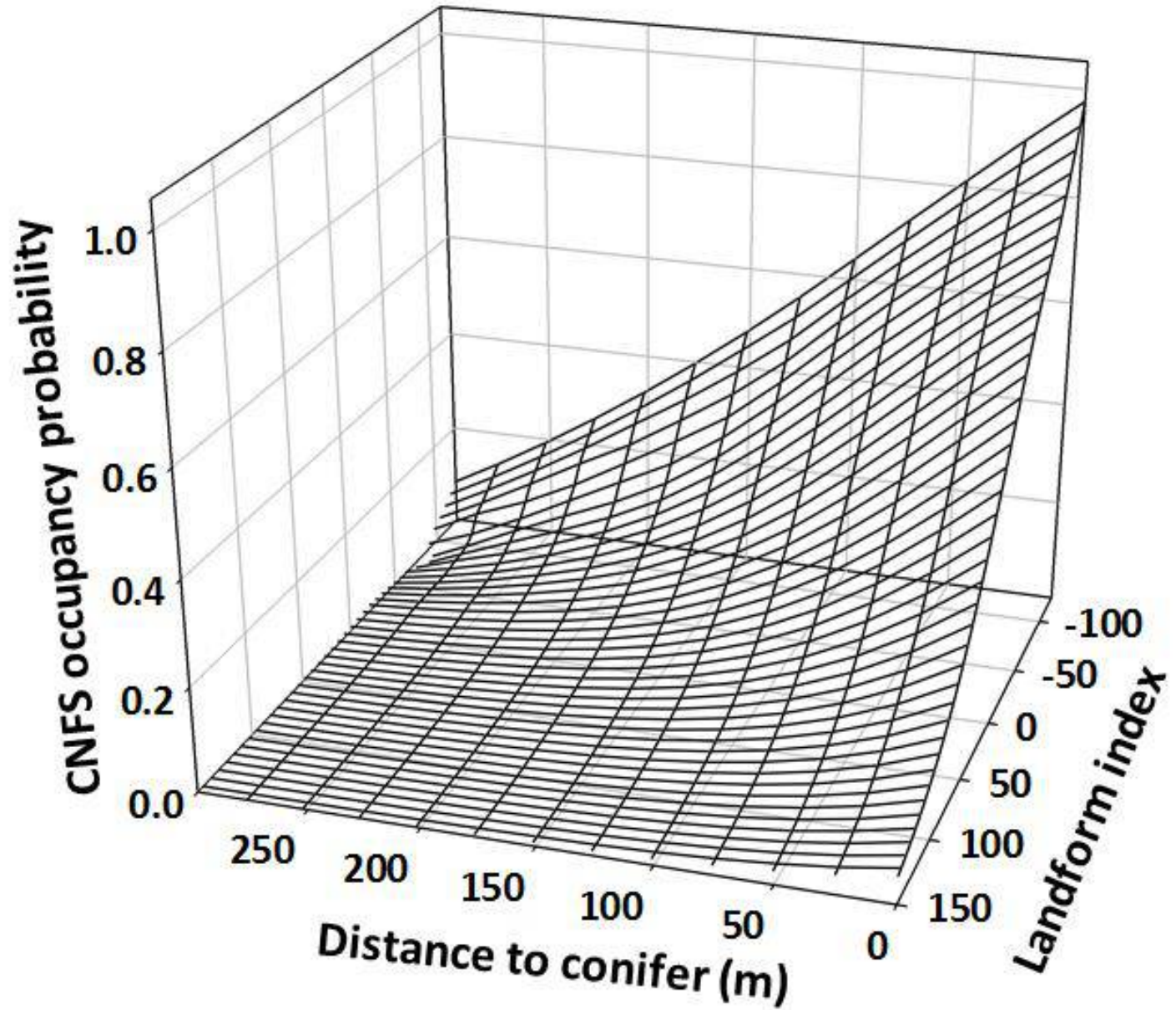
CNFS Occupancy Model

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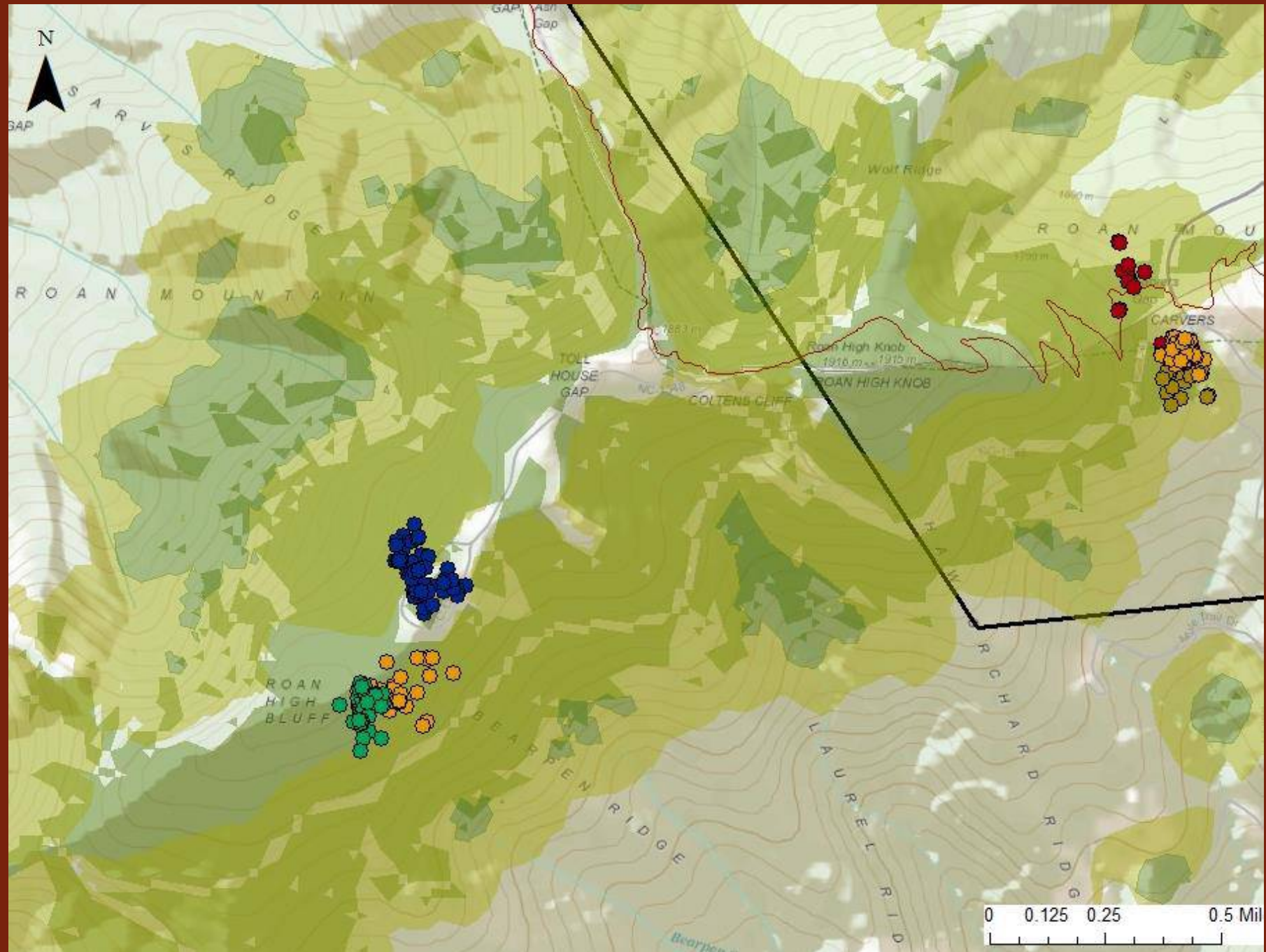
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Habitat Use Study

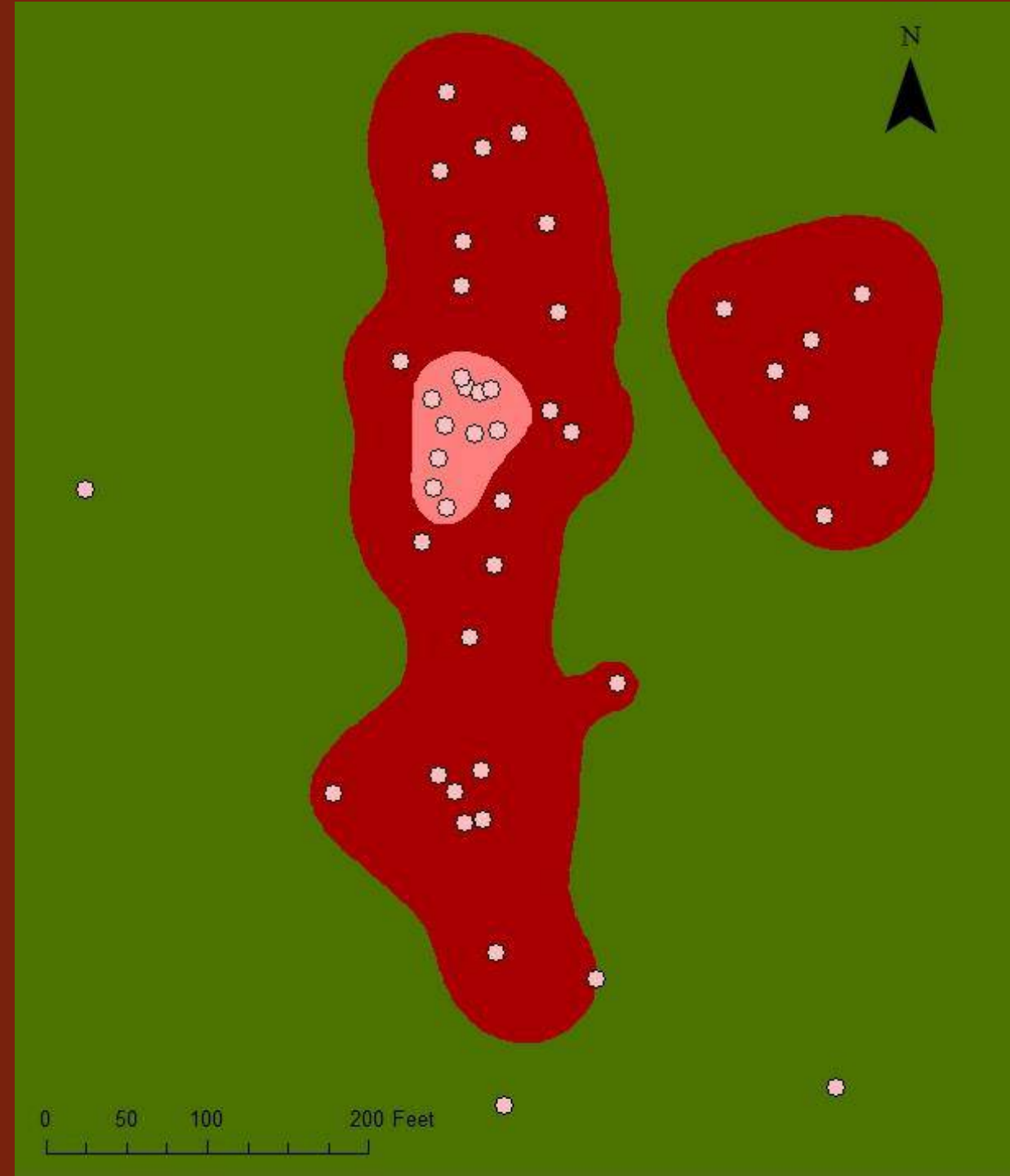
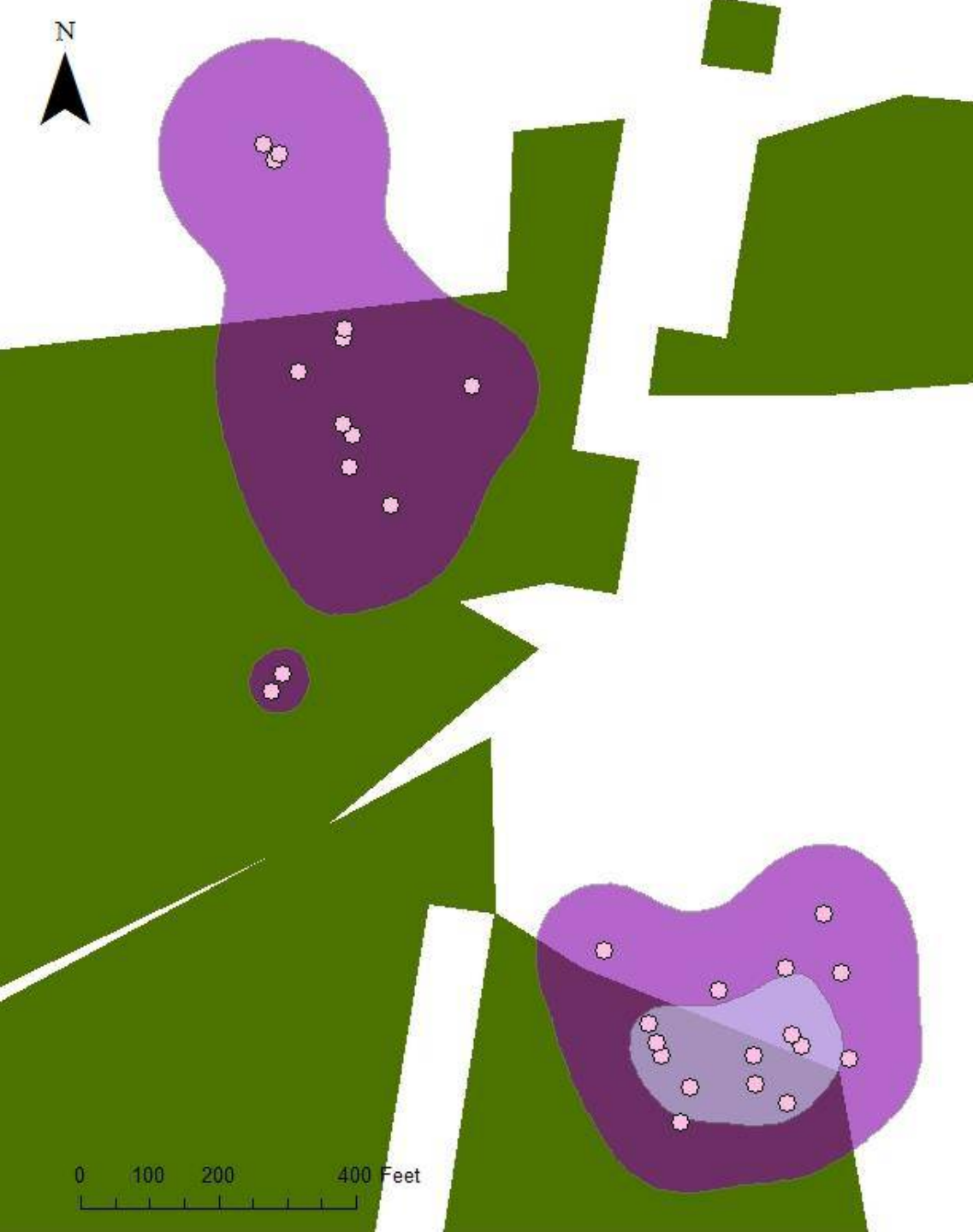
- Focus on pure spruce-fir forests
- Live-trapping
- Radio-collar individuals
- Spatially assess habitat use



Habitat Use Study

- Conduct resource utilization function model based on telemetry data
 - 40 squirrels in WV
 - 13 squirrels in NC/VA (plus 2015 squirrels)
- Assess habitat use on landscape scale
- Potential for microhabitat study in So Apps





Current Monitoring

- Nest box checks
 - West Virginia
 - 1985 - Present
 - North Carolina
 - 1996 - Present
 - Virginia
 - 1985 - 2006
- Trapping
- Labor intensive
- Low capture rates



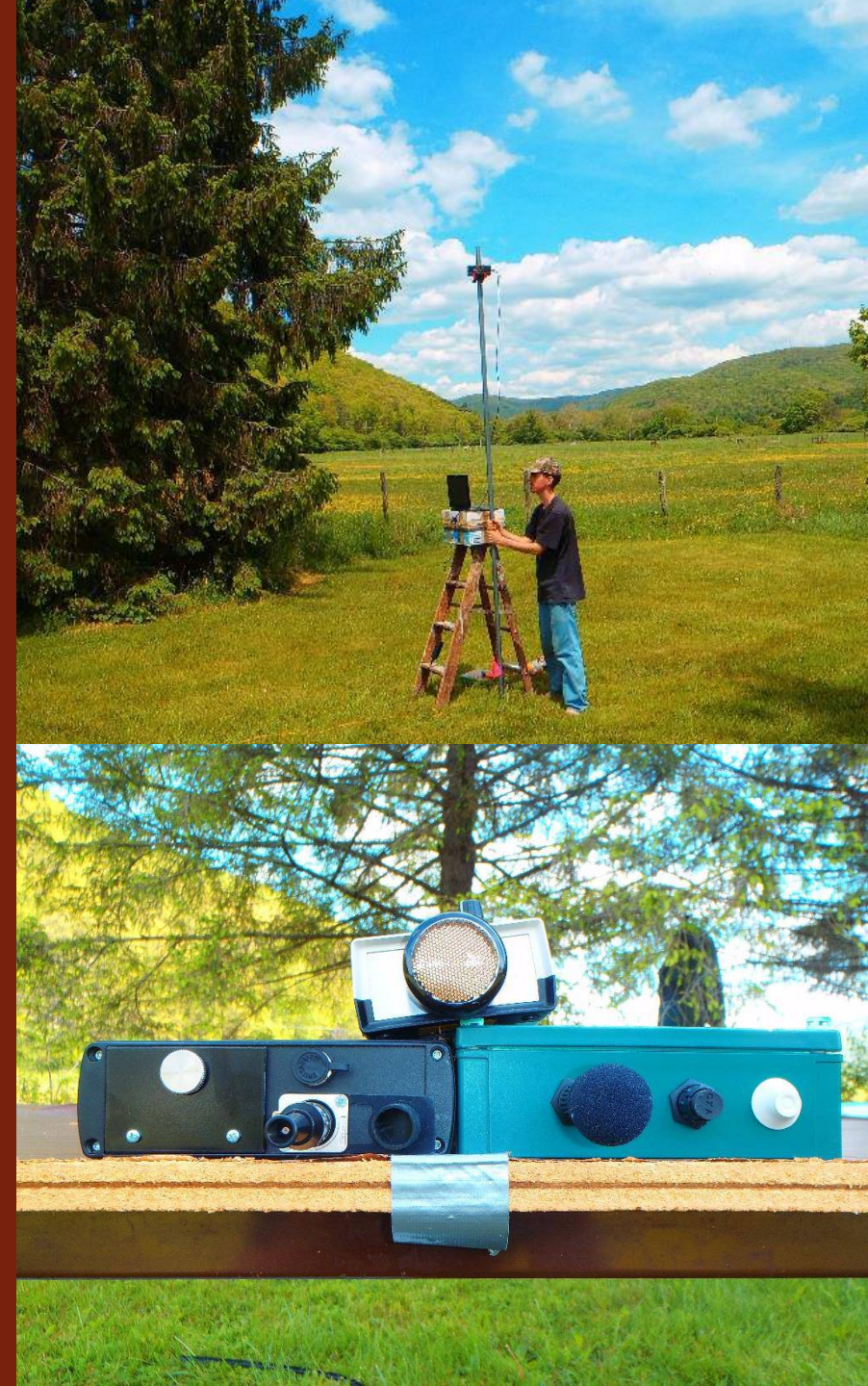
Bioacoustics

- Rapid assessment of habitat occupancy
- Discovery of 4 new populations of Carolina Northern Flying Squirrels in NC



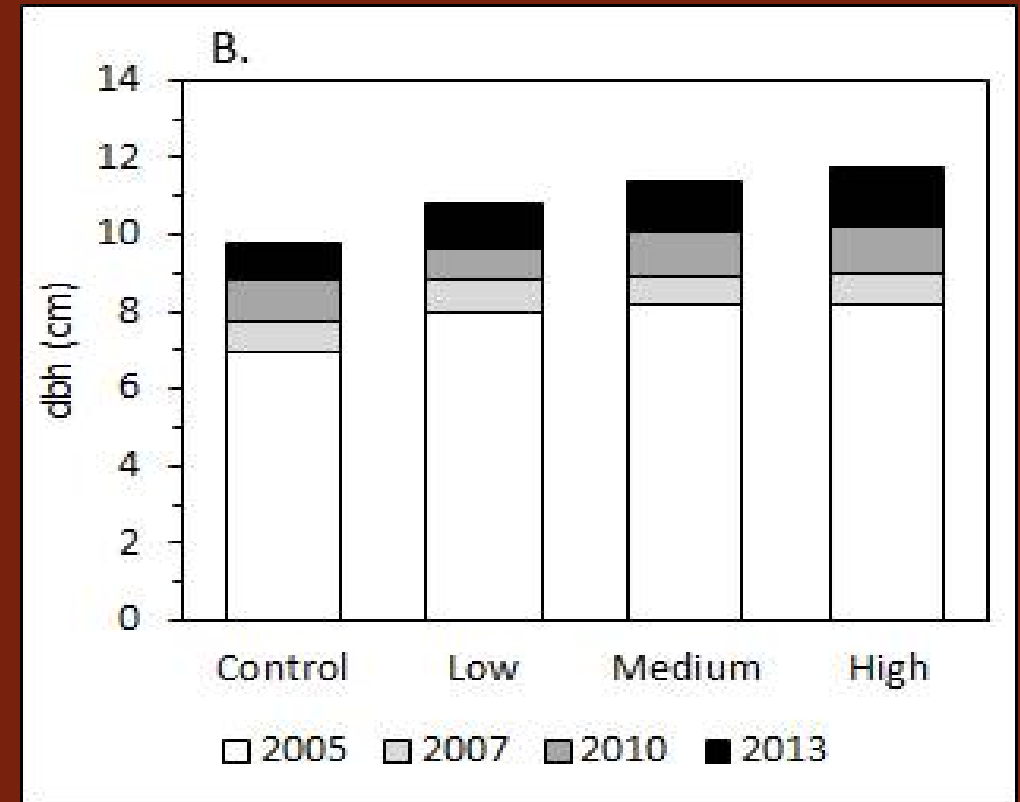
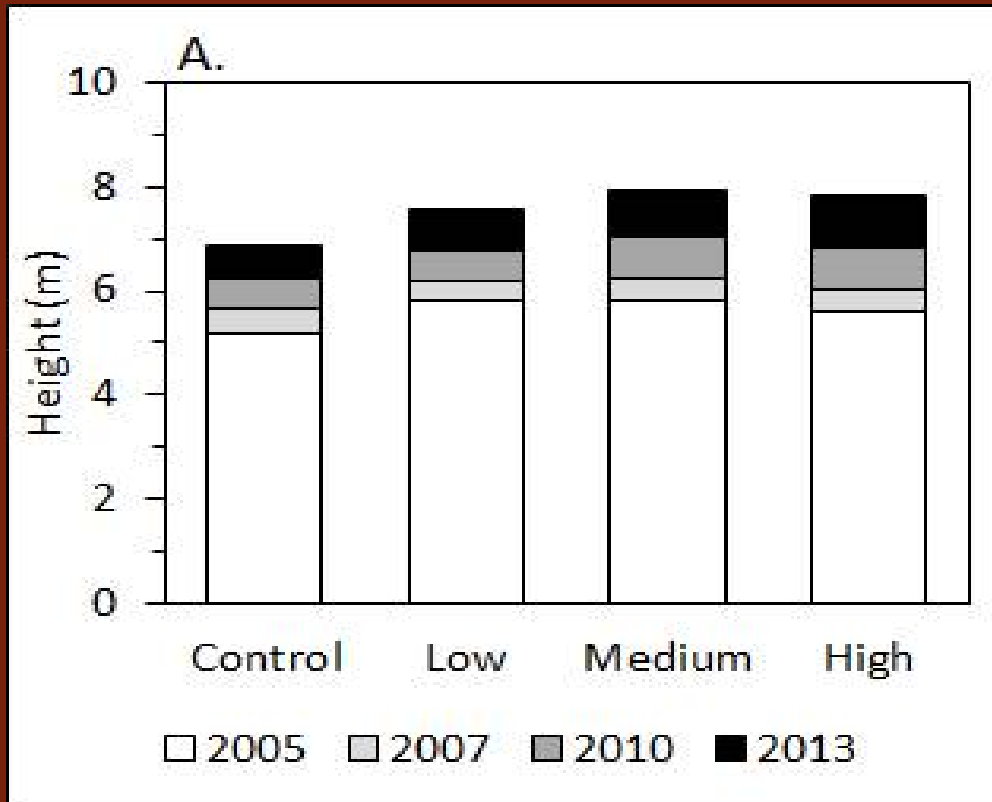
Bioacoustics - Protocol

- Detector Type
- Survey Length
- Seasonal differences
- Temporal variation in call patterns with SFS
- Affects of weather and lunar cycle
- Playback Surveys



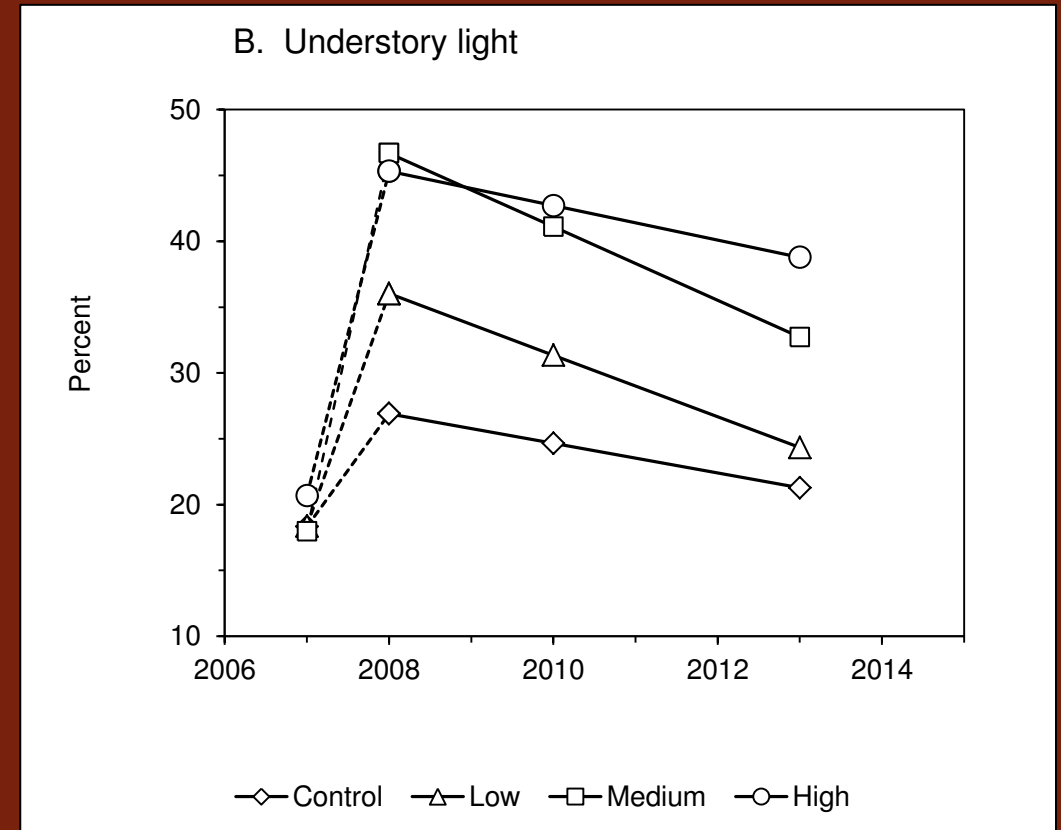
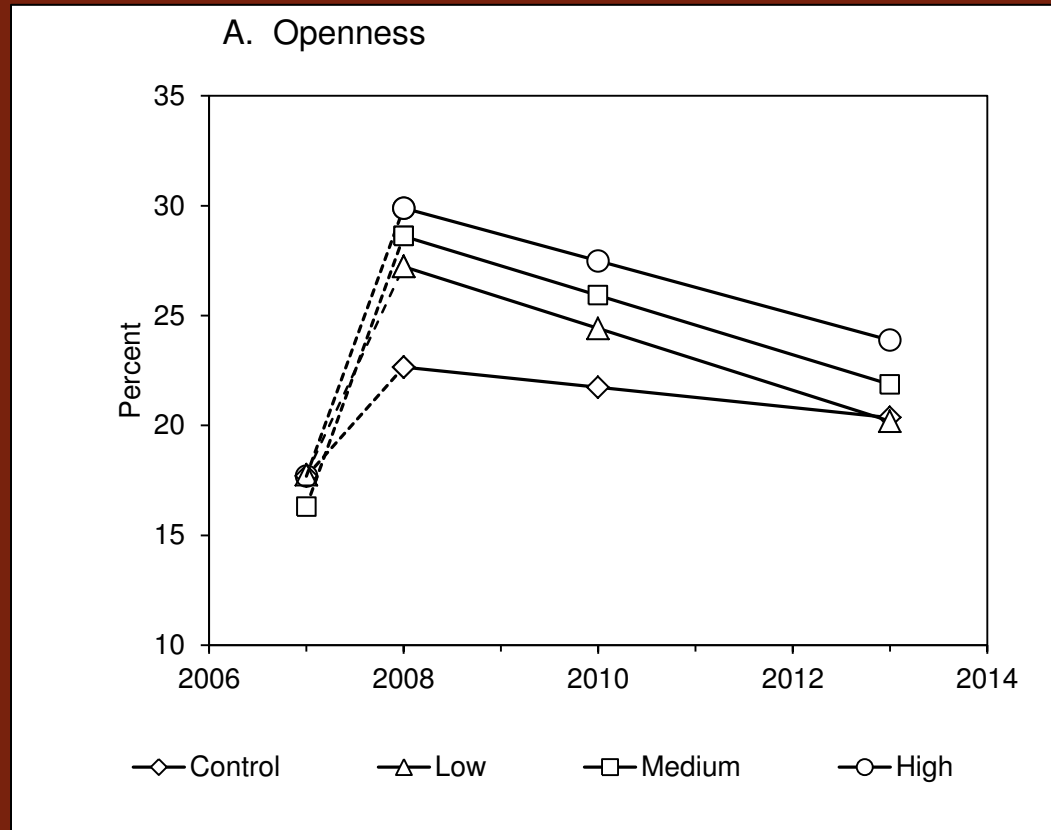
Spruce Release Study

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THANK YOU!!!

- Team Squirrel: Mark Ford, Chris Kelly, and Michelle Gilley
- Sue Cameron (USFWS)
- U.S. Forest Service
 - Shane Jones, Jack Tribble, Stephanie Connelly, and Kent Karriker (Monongahela NF)
 - Mary Beth Adams (Fernow Experimental Forest)
 - Jay Martin (Mt. Rogers National Recreation Area)
 - Carol Croy (George Washington-Jefferson NF)
 - Christopher Williams and Matt McCombs (Pisgah NF)
 - Joe McGuiness (Cherokee NF)
 - Sheryl Bryan (National Forests of North Carolina)
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- Jason Teets (NRCS)
- Jim Rentch (WVU)
- Bob Cherry (Blue Ridge Parkway)
- Rick Reynolds (VDGIF)
- Peter Weigl
- John Pagels
- Marcella Kelly and Sarah Karpanty (Virginia Tech)
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