

Small Mammal Module

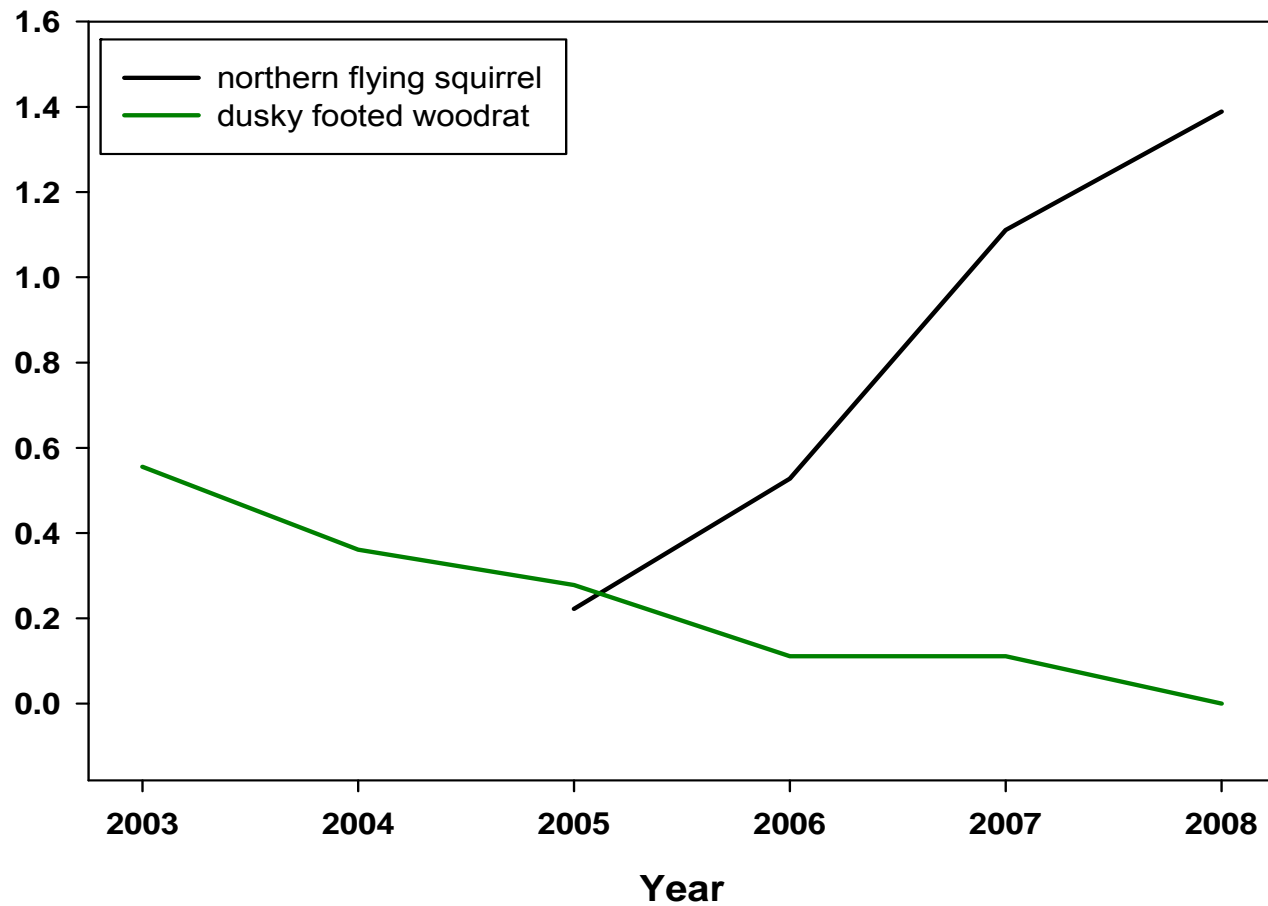
Objective: determine small mammal responses to forest management practices, at local and landscape scales

Responses: demography, habitat associations, spatial distribution

Components

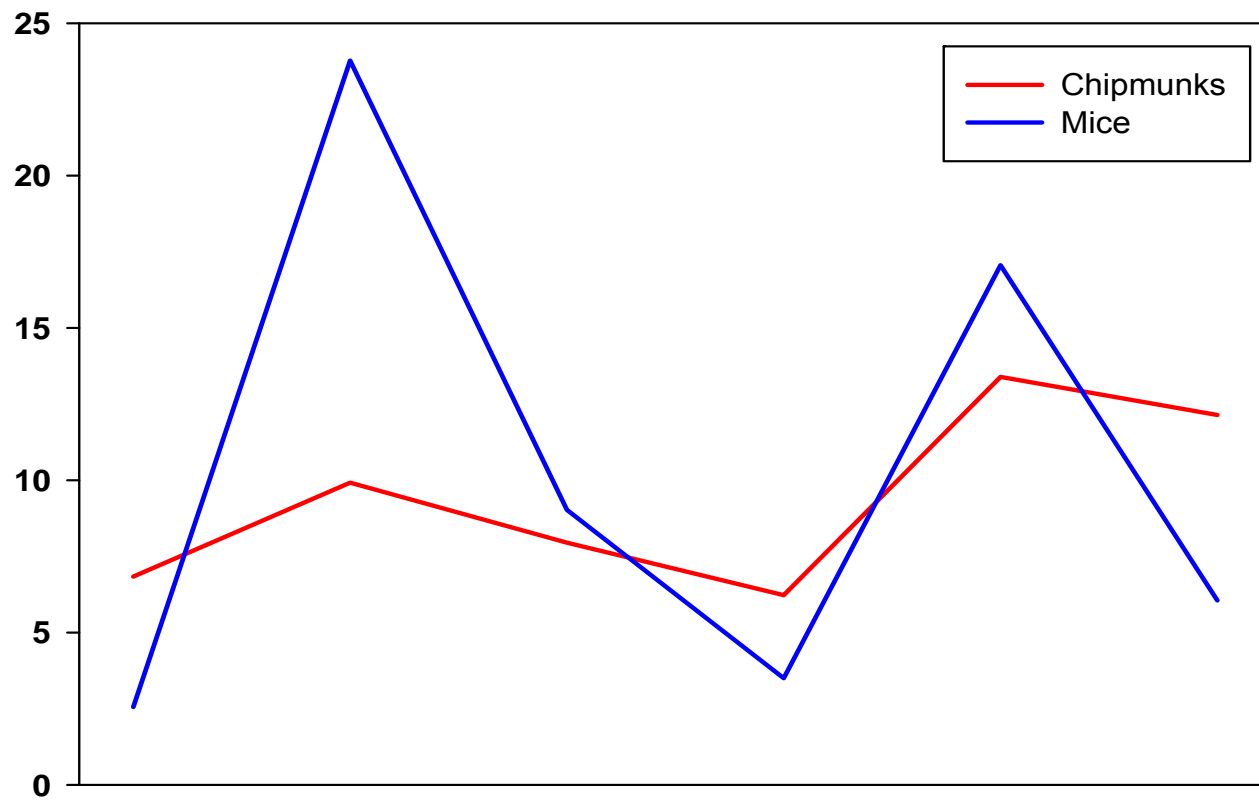
- Long term grids: 21 grids, 4 forest types
mammals, vegetation, cone production (in progress)
- Terrestrial bird transects: 68 transects (in progress)
- Focal species: radiotelemetry
 - Dusky-footed woodrats (completed)
 - Northern flying squirrels (nearing completion)

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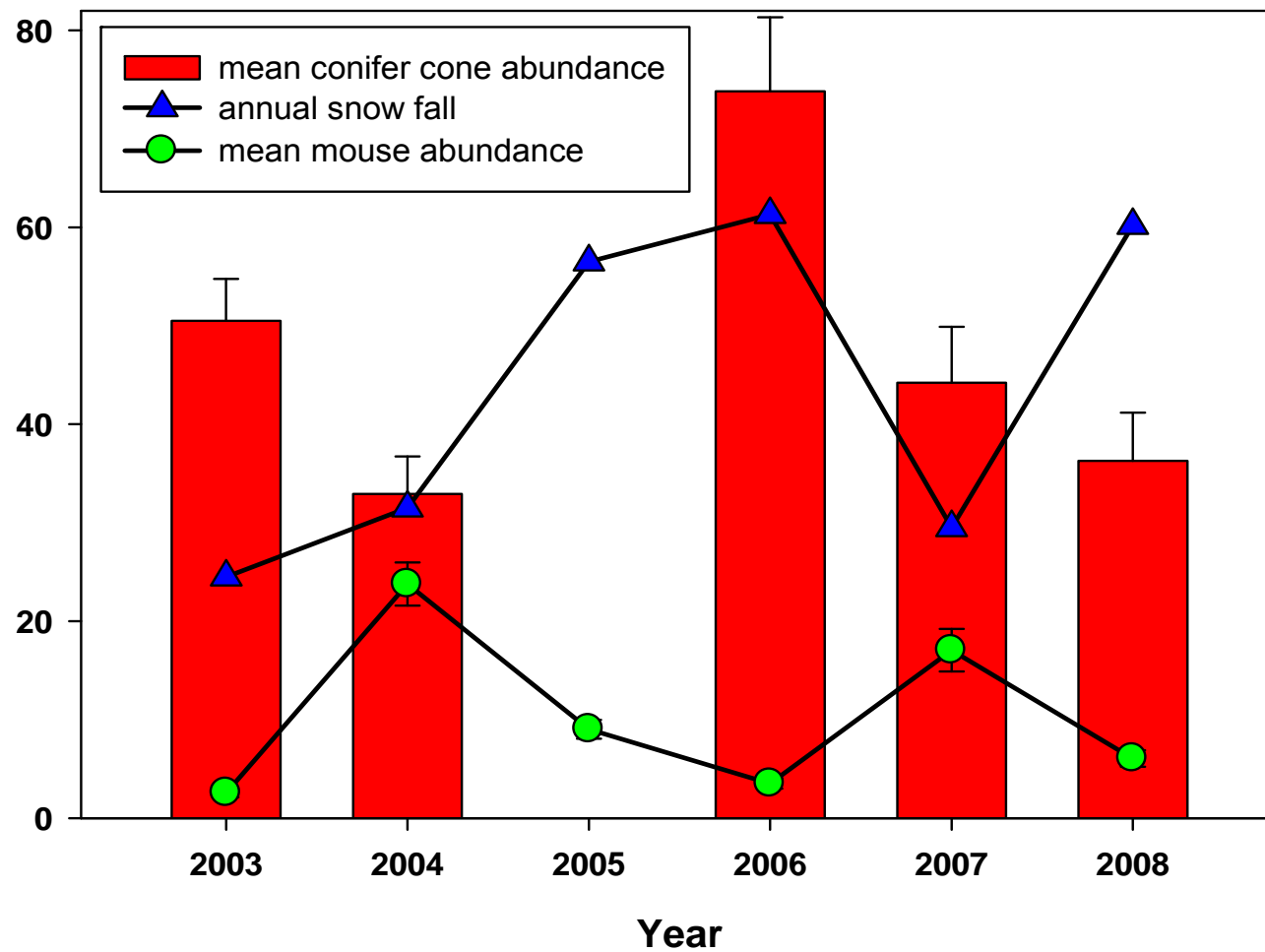
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Overall Year Trends



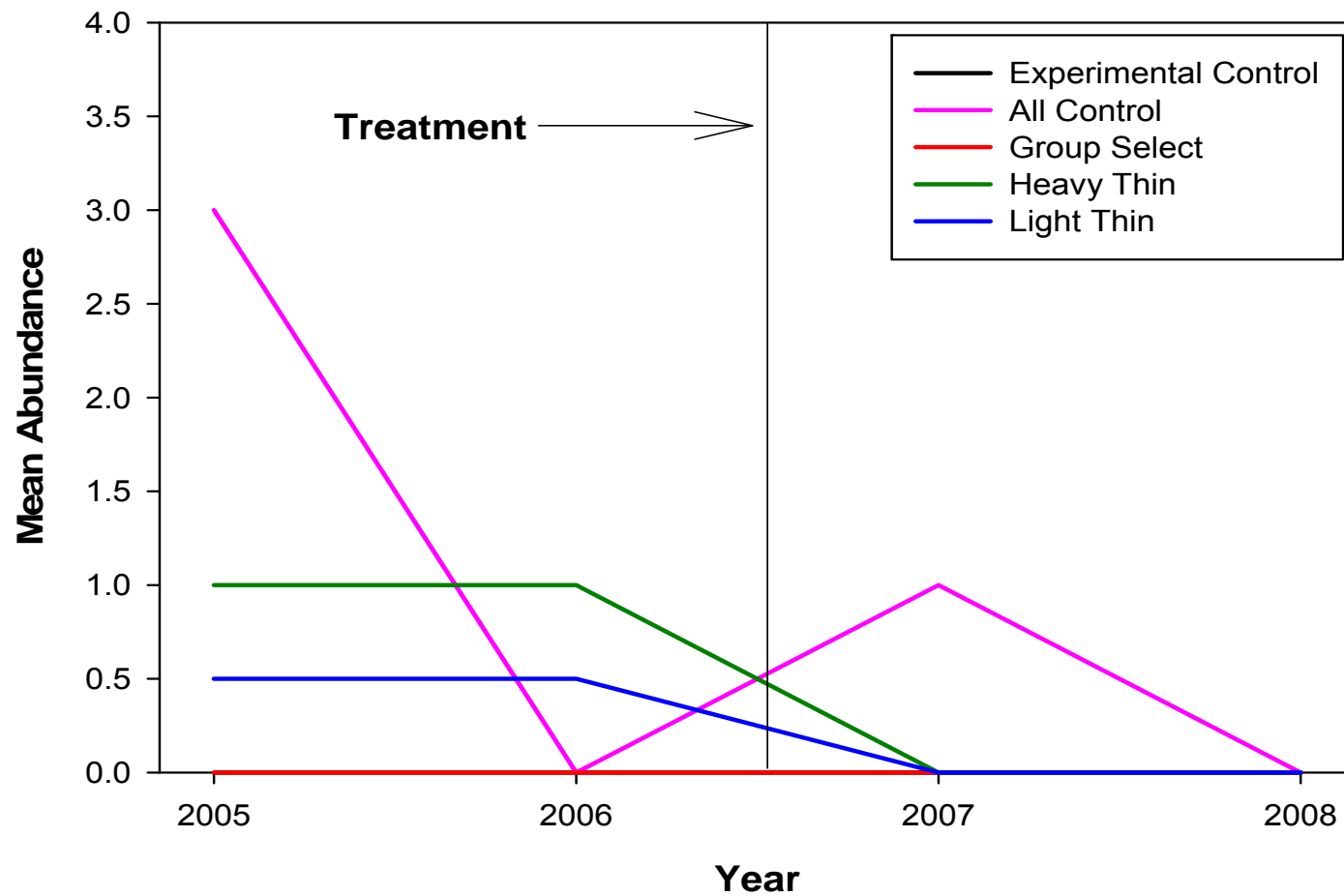
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Mice



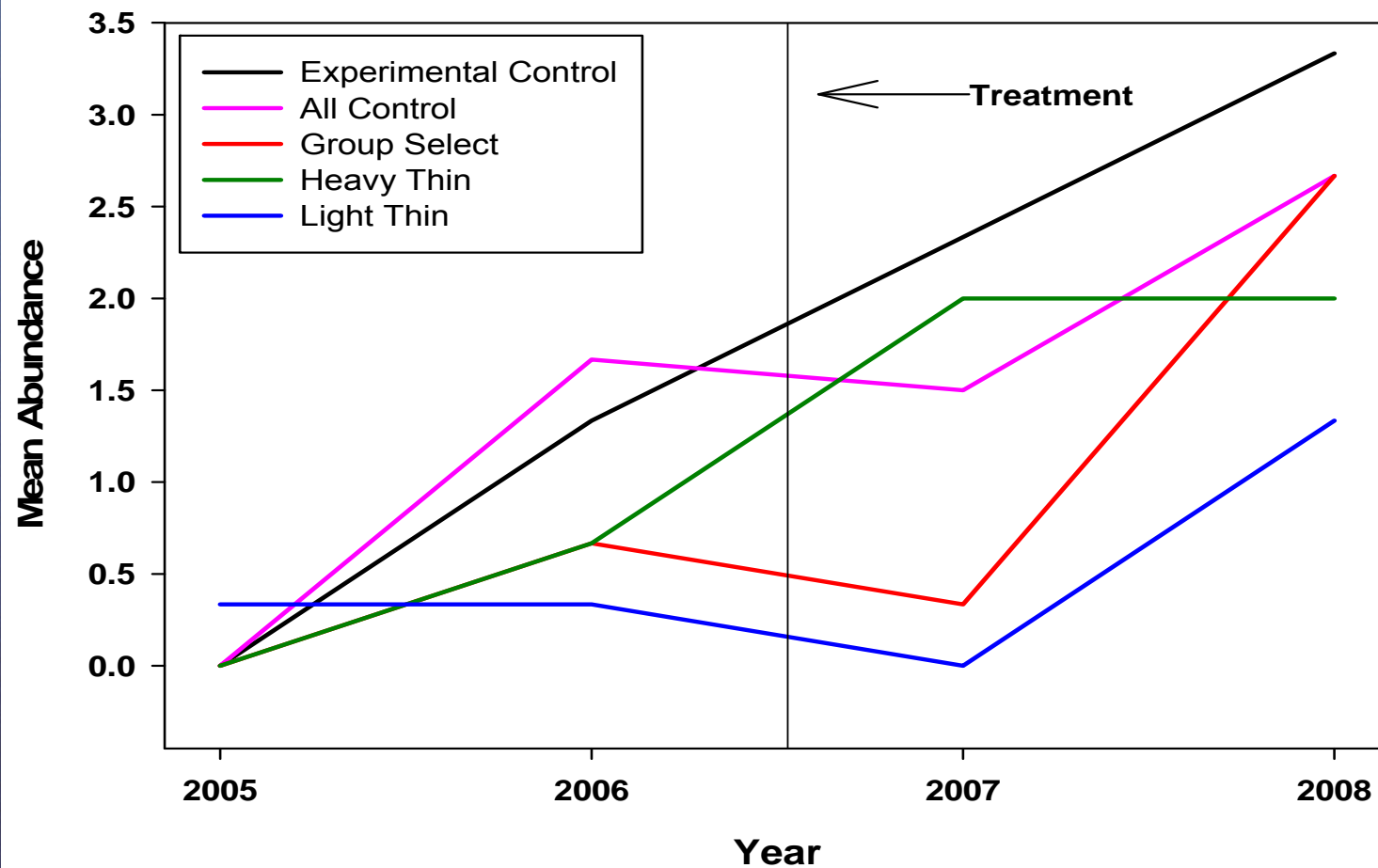
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Dusky-Footed Woodrat



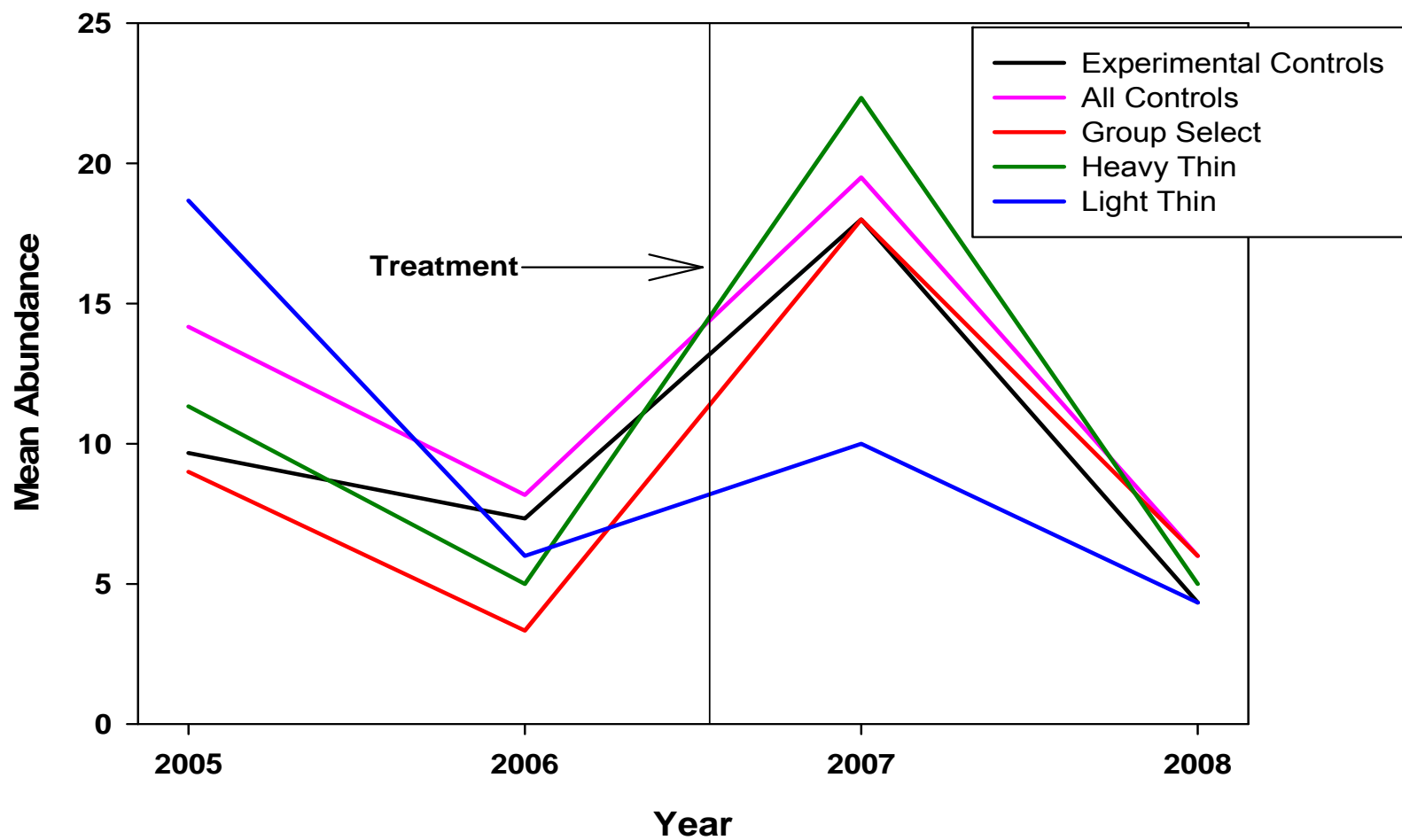
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Northern Flying Squirrels



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Mice





Northern Flying Squirrel and Forest Management

- Home Range
- Habitat Assessment
- Den Trees



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* Co-Principle Investigators on the Plumas Lassen Administrative Study Small Mammal Module

Why Flying Squirrels?

- Implications for logging:
 - Keystone Species
 - Prey of Spotted Owl
 - Managers interested in flying squirrel use of forest



Home Range

- Useful tool that allows managers to determine how much contiguous area an animal needs to survive
- Index of habitat quality



Methods



Trapping



Collaring

... and Radiotracking!



Telemetry/Home Range Analysis

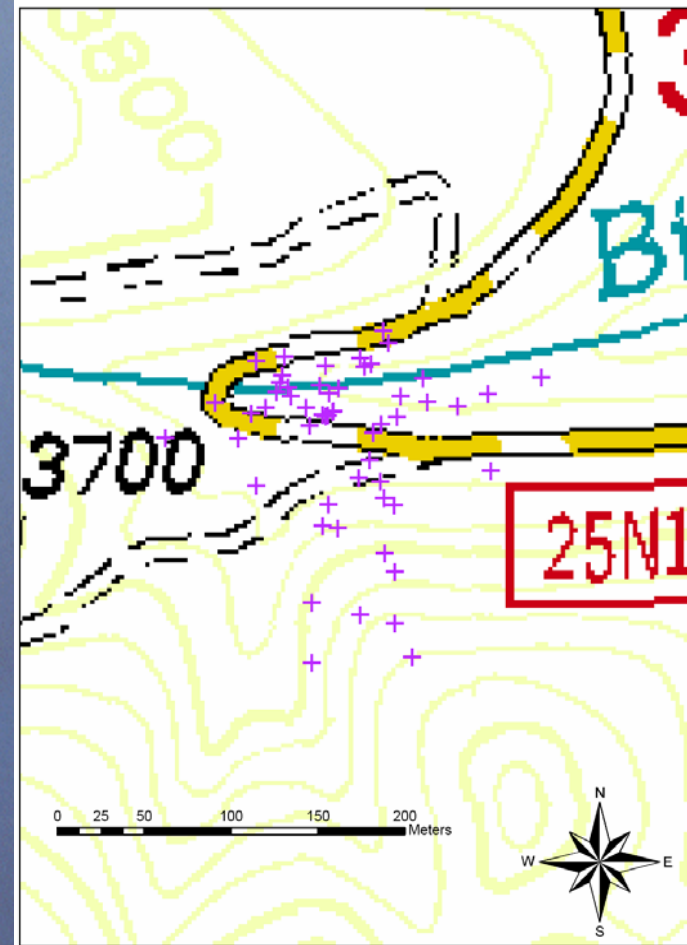


Concurrent
Triangulation

Home Range
Estimates

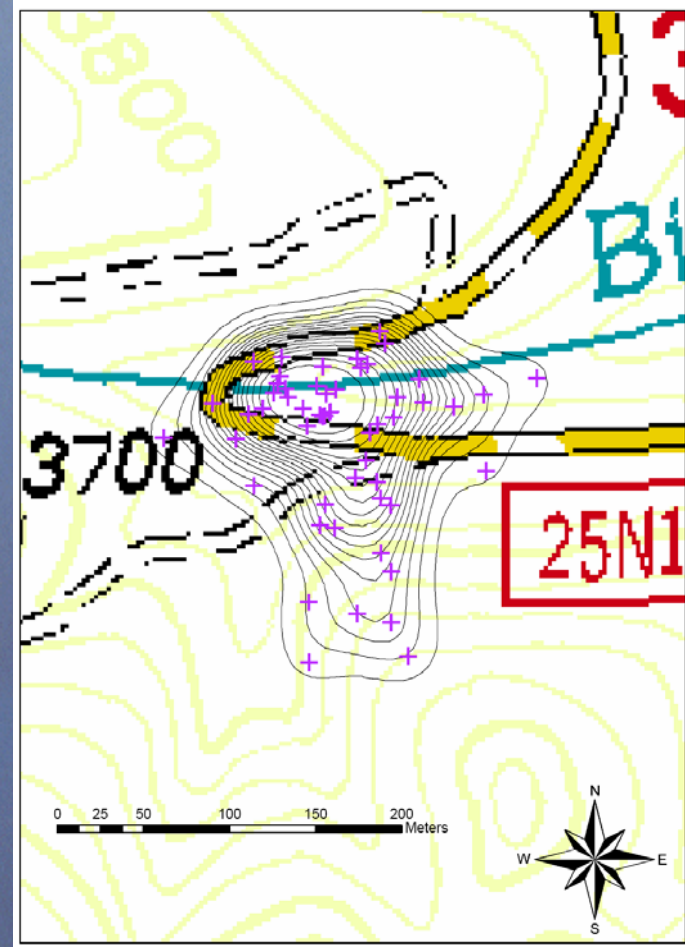
Locations

- Achieved from triangulation
- Best estimate for where the animal is located
- Allows generation of home ranges



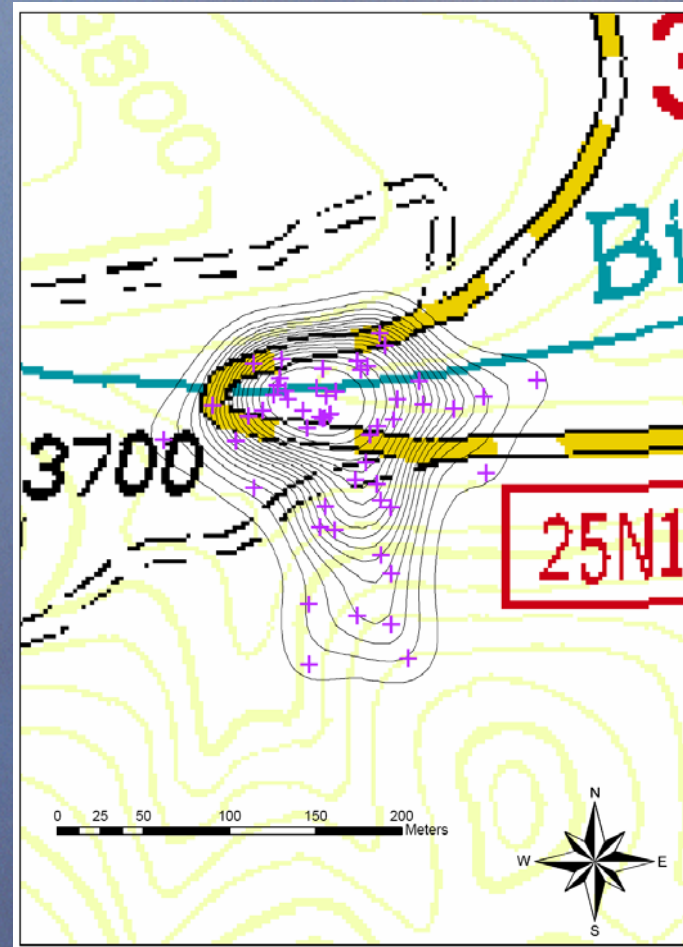
Home Range

- Helps forest managers make decisions:
 - How much area is needed?
 - What habitat types are in the home range?

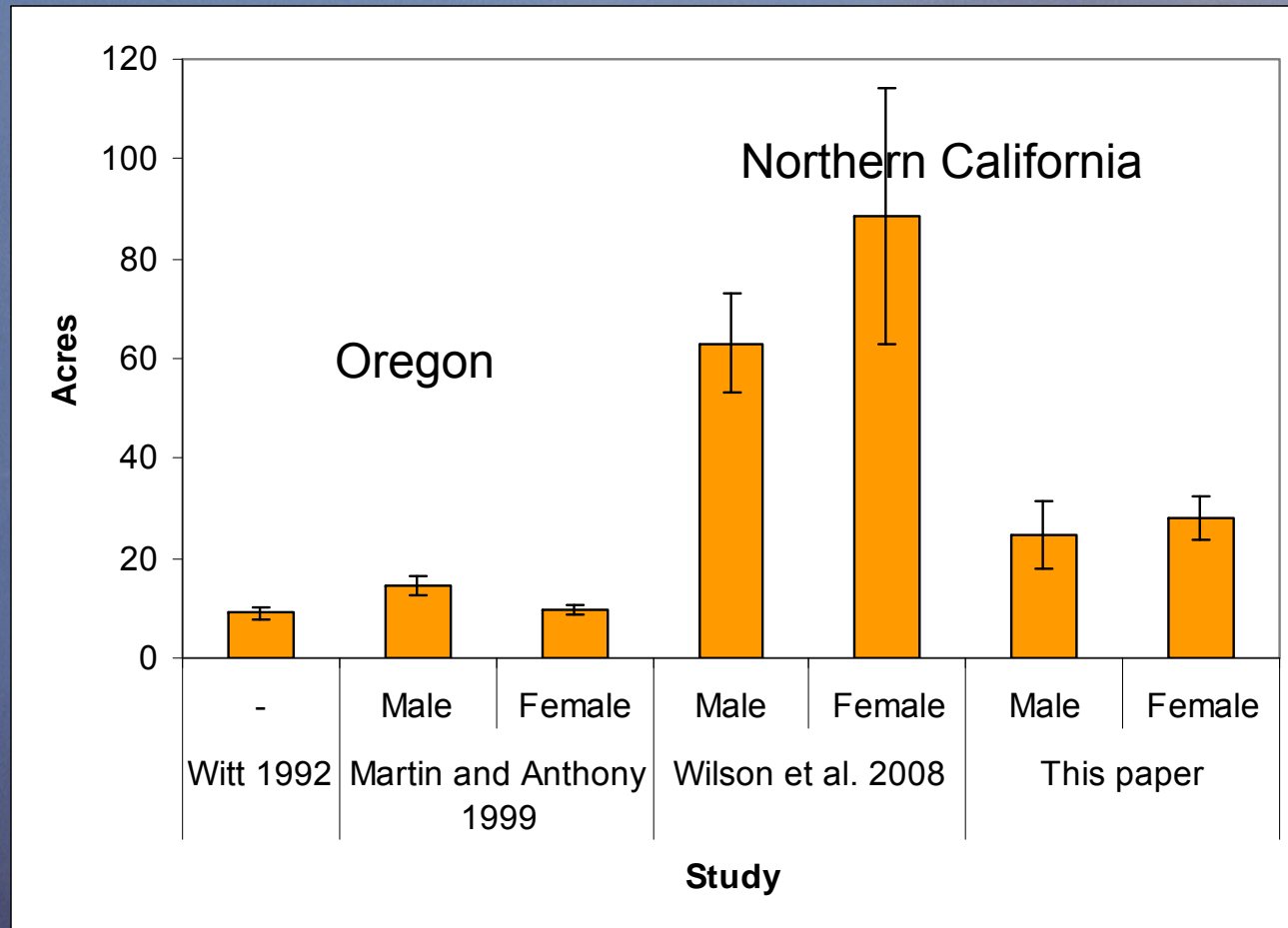


Home Range Area (Fixed Kernel)

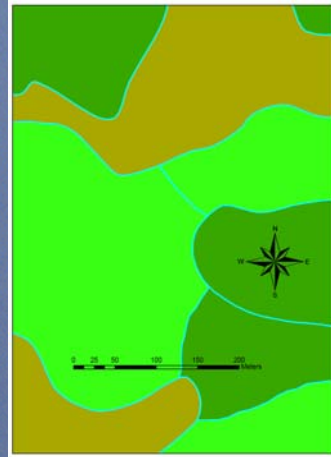
- Area = 27.2 ± 3.7 Acres



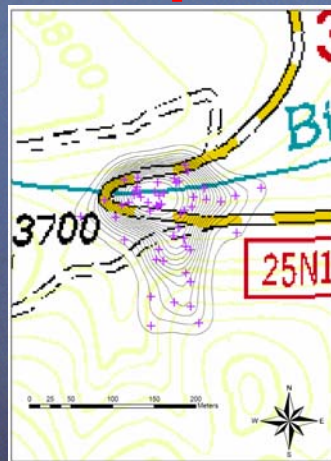
Comparison Across Studies



Overlay Habitat Map with Home Range and Points



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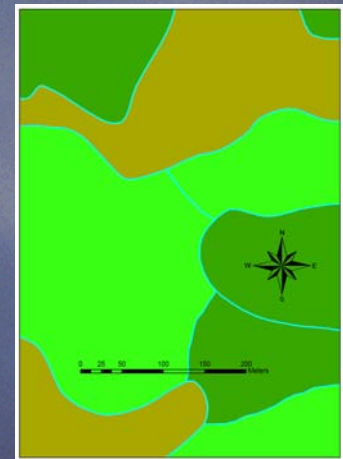


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Habitat Map

- Modeled using California Fish and Game's Wildlife Habitat Relations (WHR) model from Vestra habitat layer for Plumas National Forest
- Categories in our area included:
 - Riparian
 - Sierra mixed conifer (small, medium and large)
 - Monocultures
 - Wet meadows
 - Barren areas
 - Chaparral
 - Bodies of water



Habitat Preferences

- Conduct Habitat Assessment on two scales:
 - 1-Across the forest (Broad)
 - 2-Within the home range itself (Narrow)
- Compare *Available* habitat with *Used* habitat

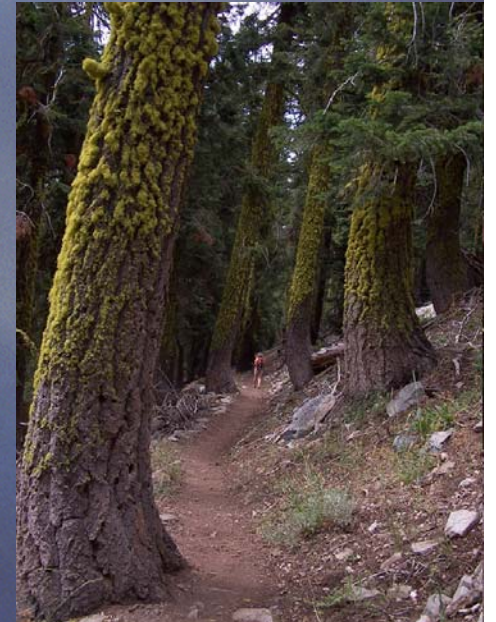


Habitat Preferences

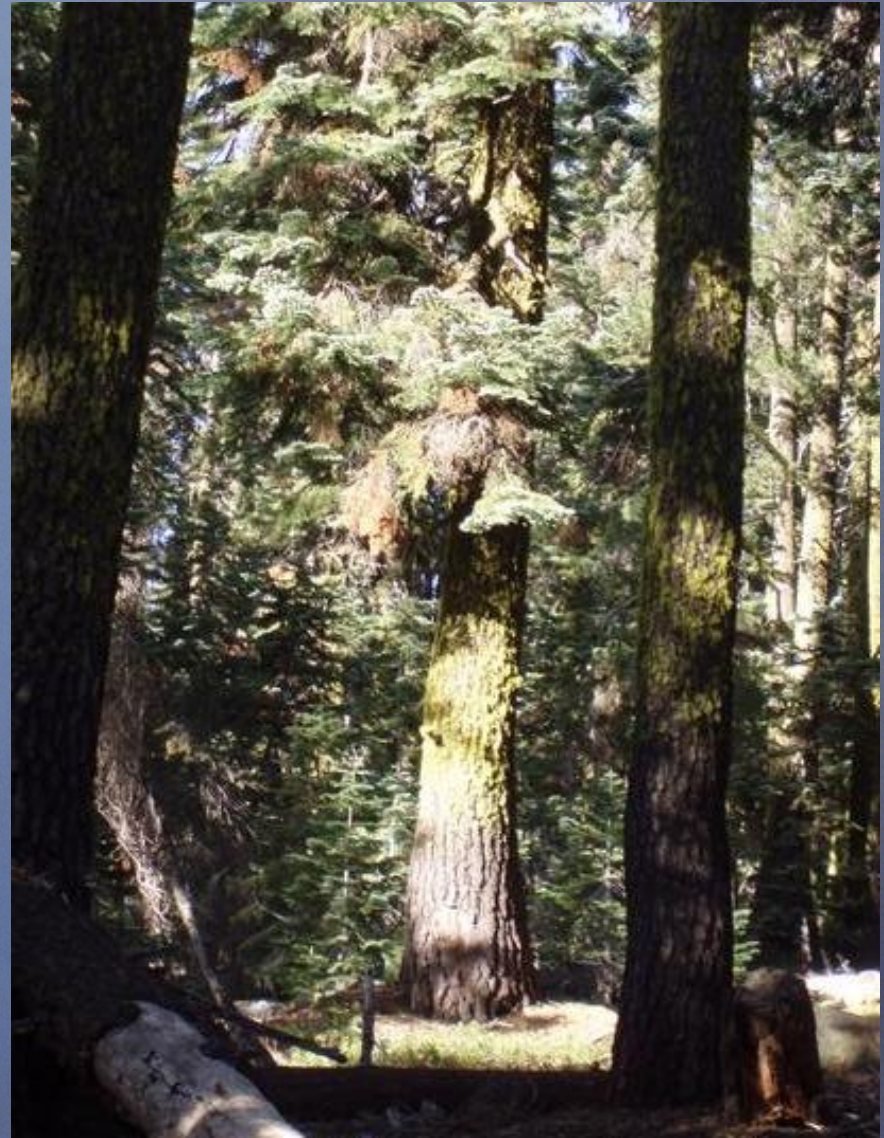
- Two most important habitat types:
 - Broad-Scale Importance:
 1. Large Sierra mixed conifer
 2. Medium Sierra mixed conifer.
 - Fine-Scale Importance:
 1. Large Sierra mixed conifer
 2. Medium Sierra mixed conifer

Habitat Preferences

- Take-home message:
 - Northern flying squirrels prefer mature forests over forests with small immature trees relative to abundance in Plumas National Forest.



- Den Tree;
Methods
 - Telemetry/Homing

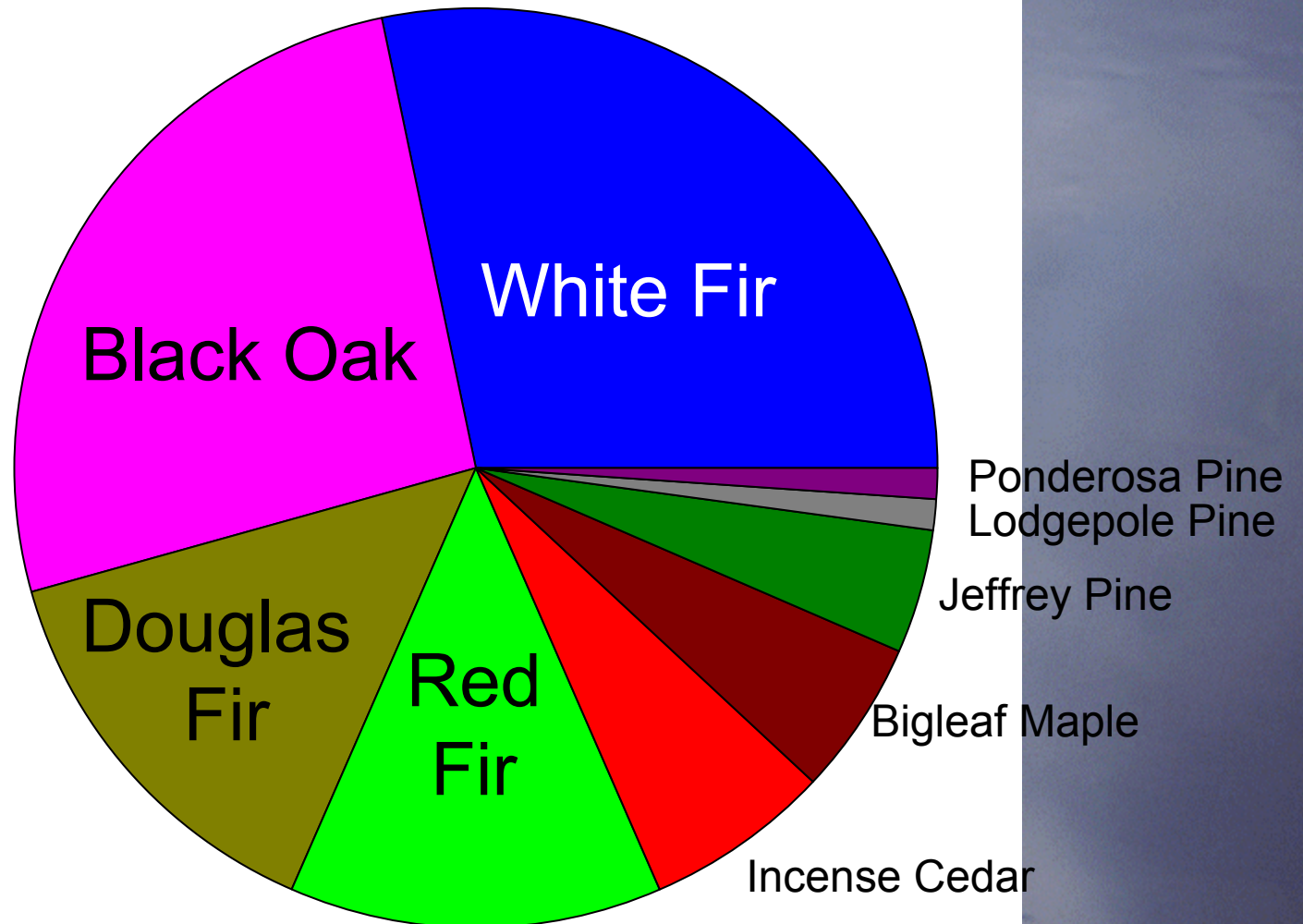


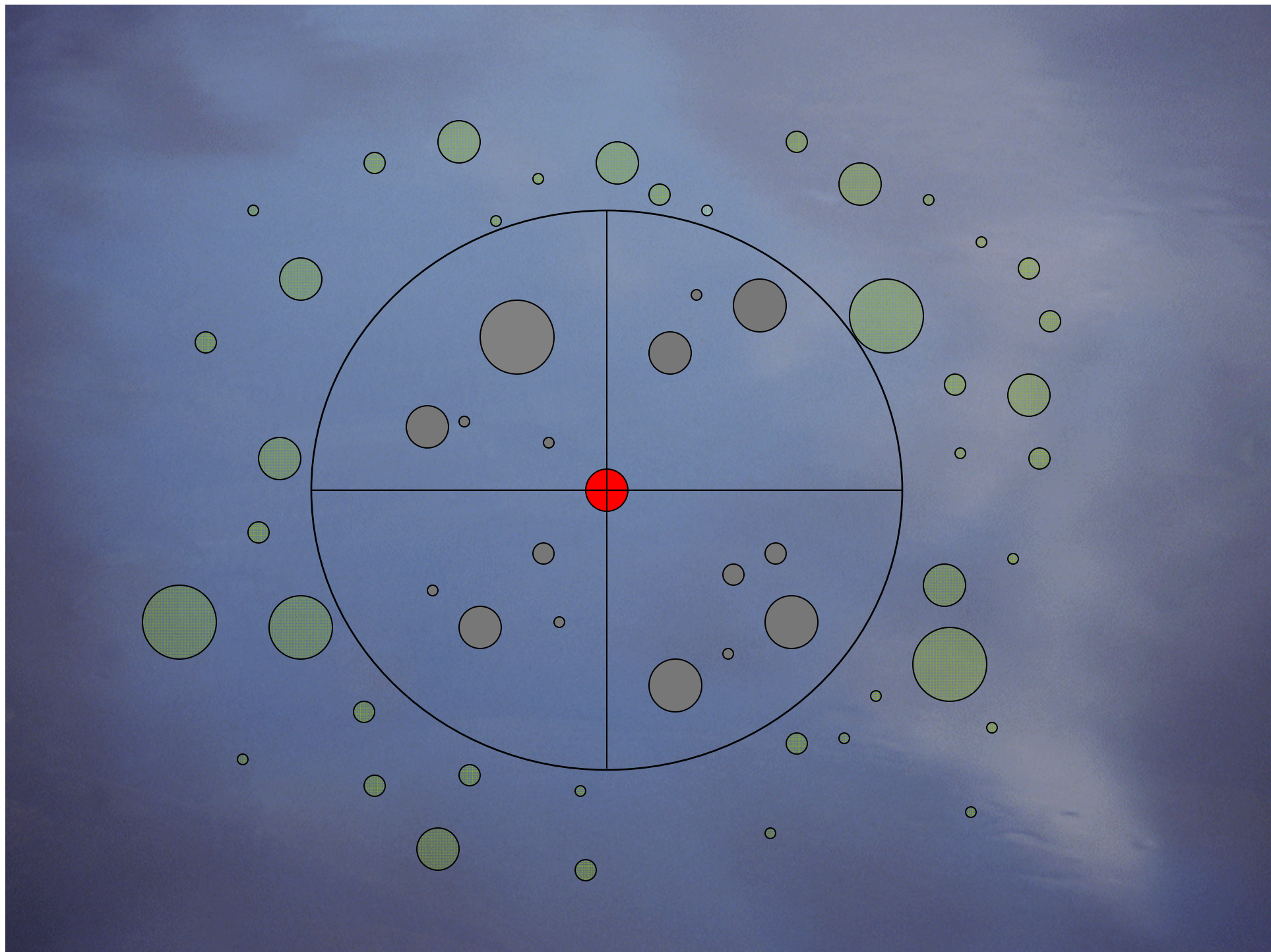


Telemetry/
Homing

Den Trees Used

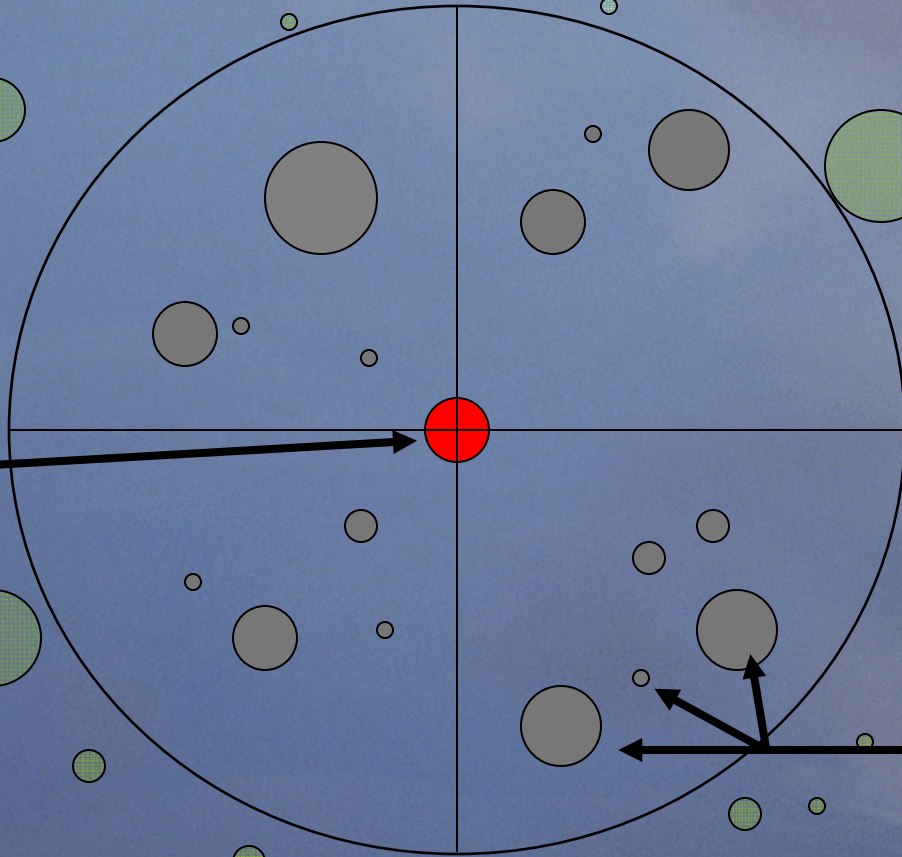
92 Flying
Squirrel Dens
Measured



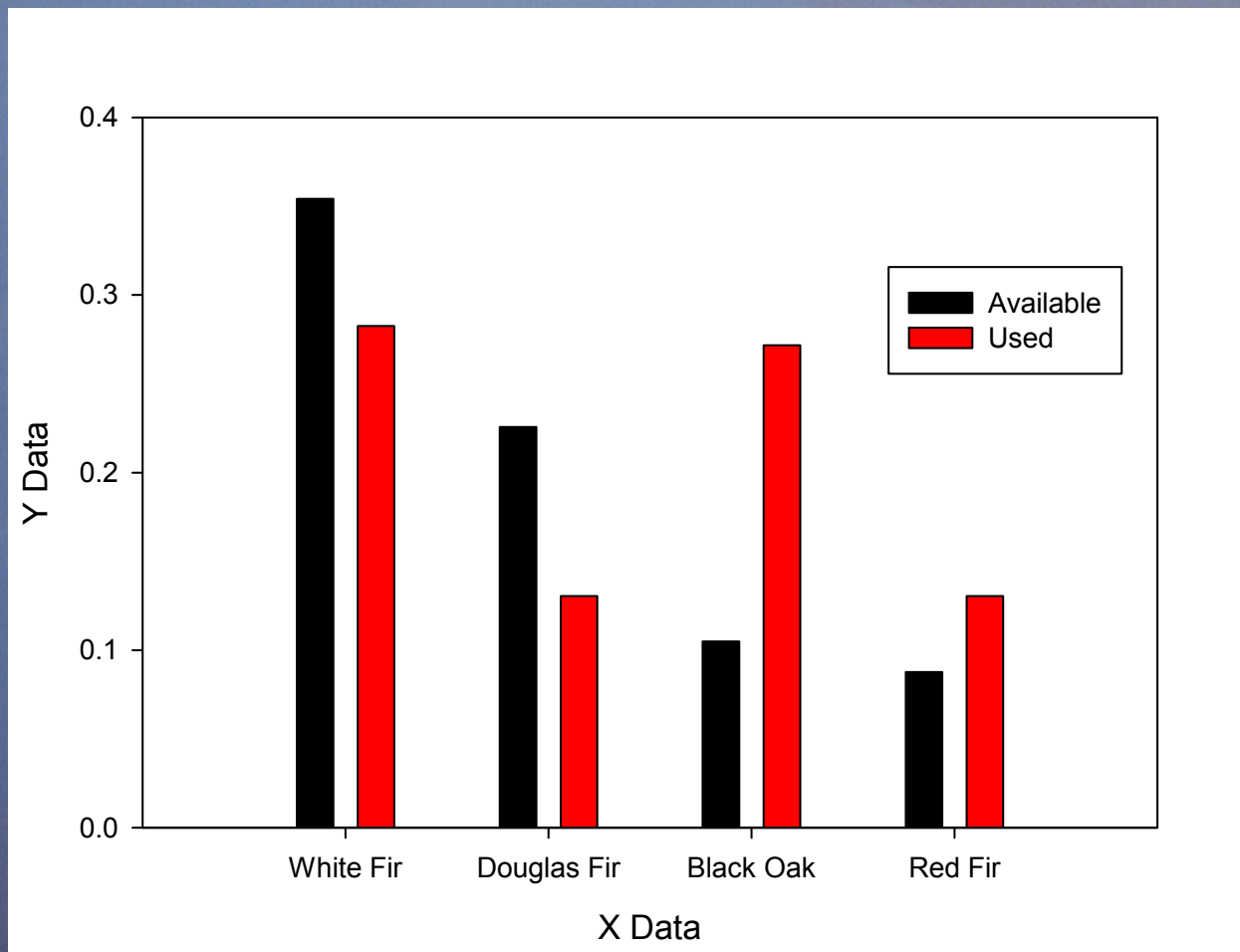


Use

Availability



Use Versus Availability



92 Used den trees

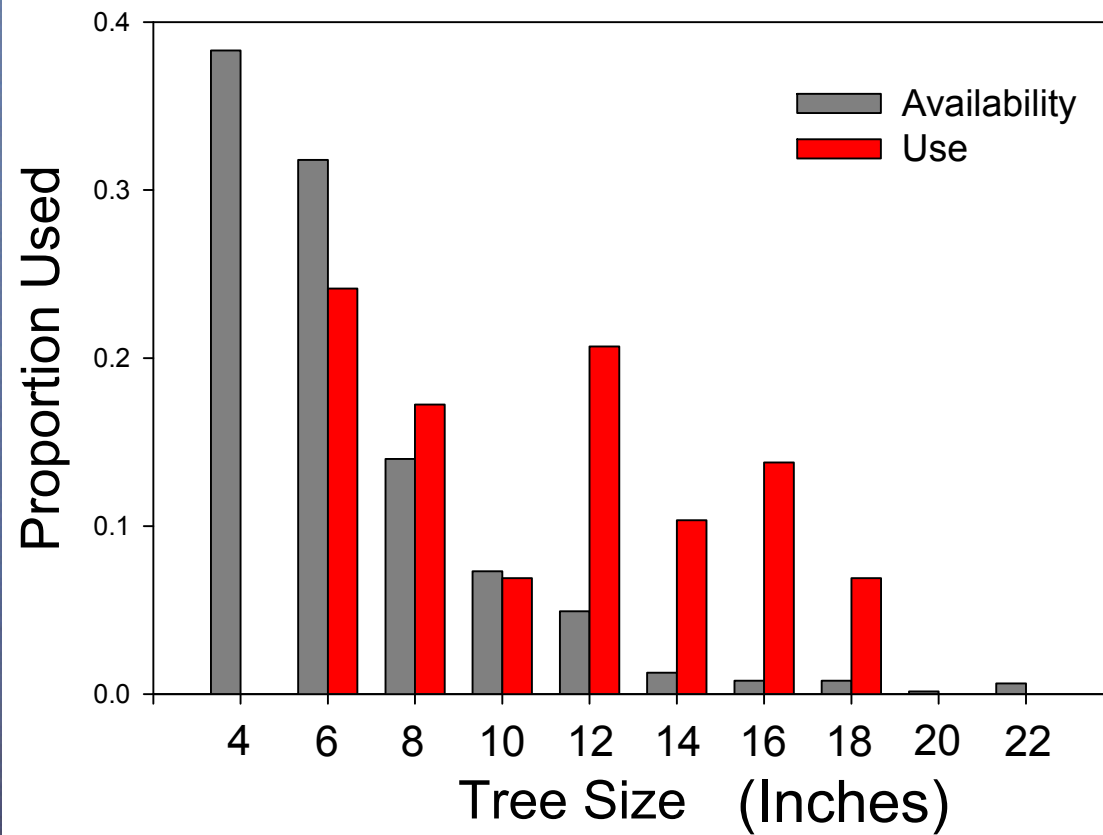
4,188 Available trees measured!!

Tree Size

- Two Categories Based on Forestry Practices
 - Hardwoods (Oak, Maple, Dogwood)
 - Conifers (Pine, Fir, Cedar)

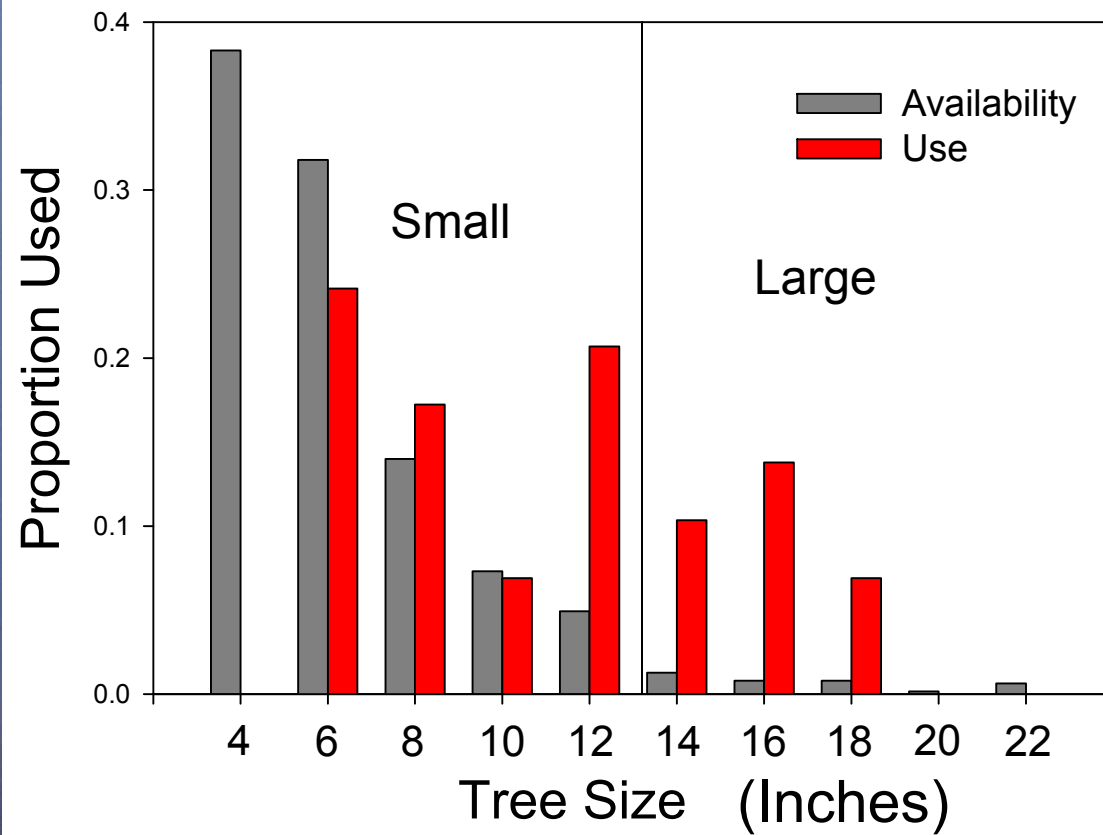
Hardwoods

Use Versus Availability of Hardwoods



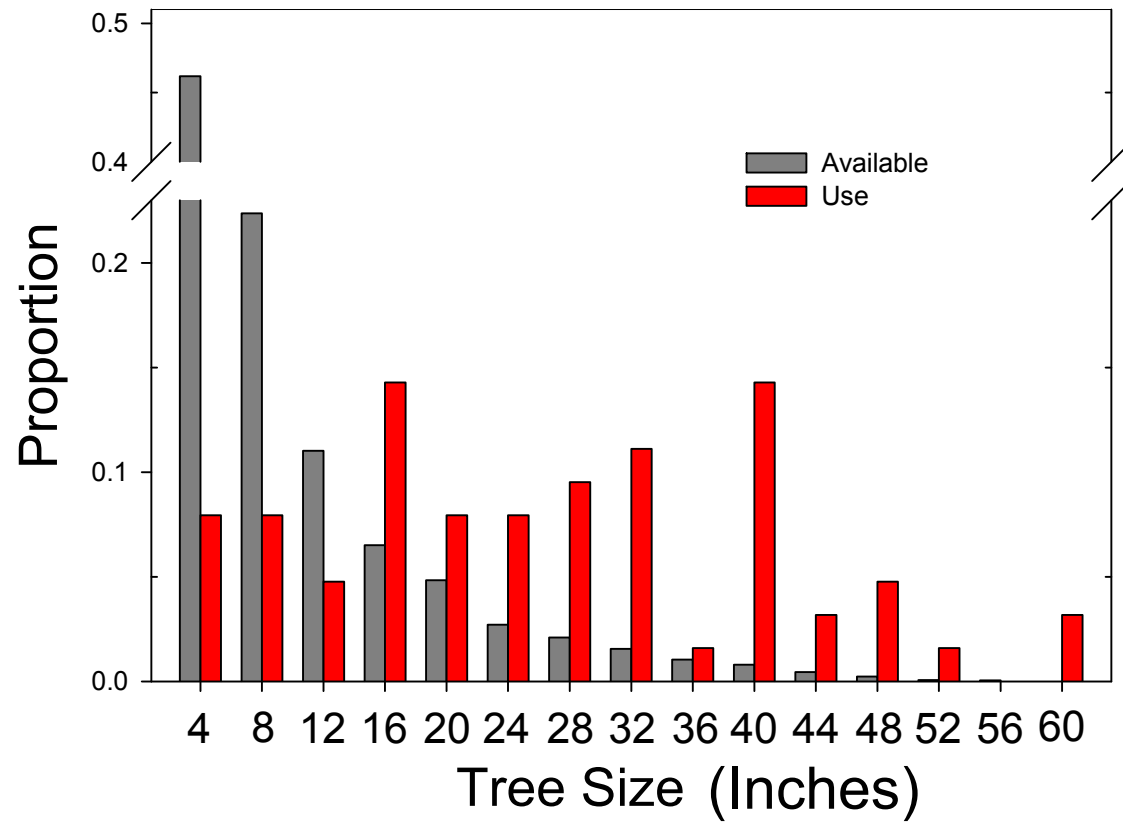
Hardwoods

Use Versus Availability of Hardwoods

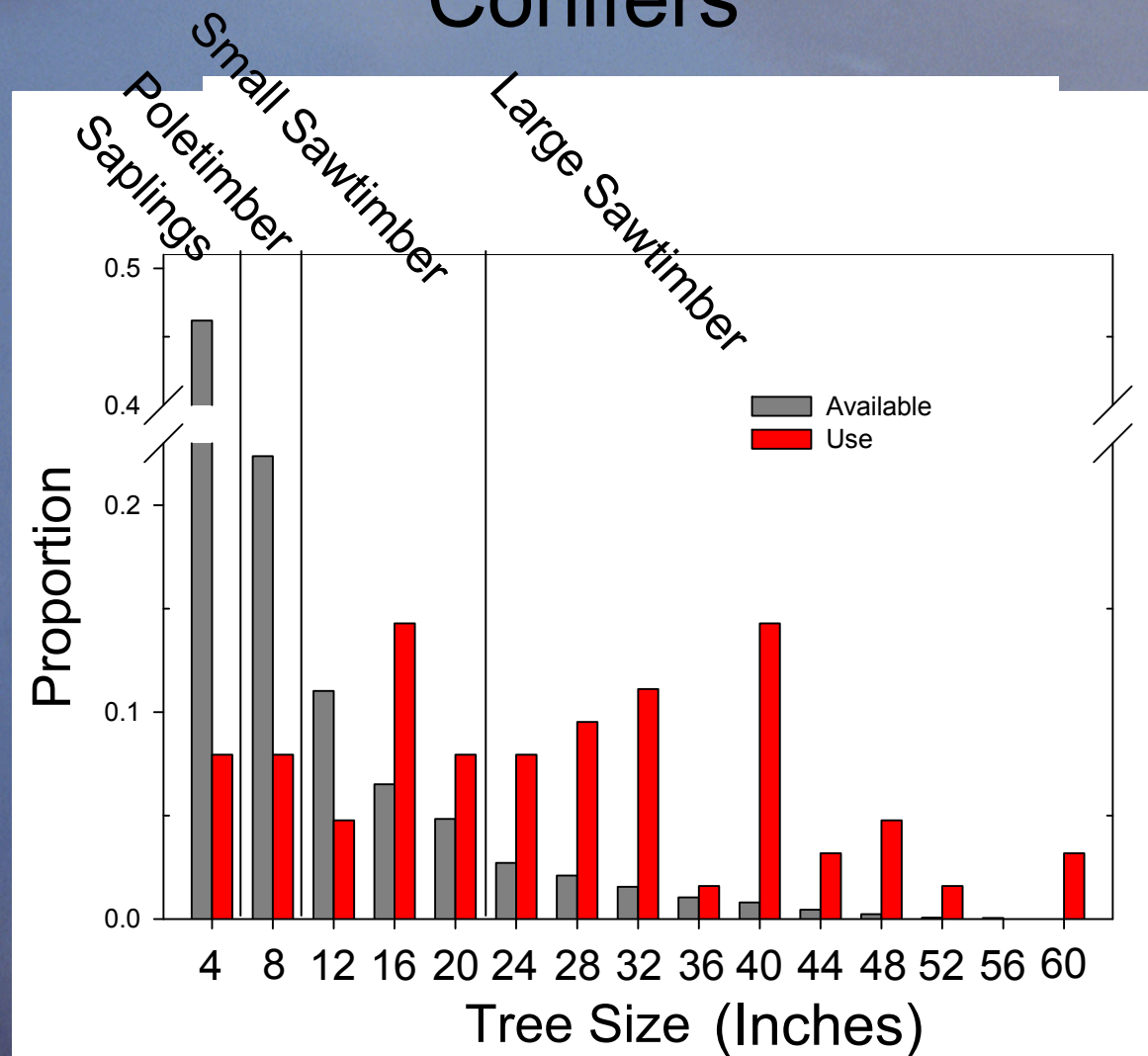


Conifers

Use Versus Availability of Conifers



Conifers



Den Trees; Use vs Availability

- Den Tree Ranking (most to least important):
 1. Large hardwood (≥ 13 inch dbh)
 2. Large sawtimber (Conifer ≥ 21 inch dbh)
 3. Small hardwood (4-13 inch dbh)
 4. Small sawtimber (Conifer 11-21 inch dbh)
 5. Poletimber (Conifer 3-11 inch dbh)
 6. Sapling (Conifer and hardwood 0-3 inch dbh)

Summary

- Northern Flying Squirrel:
 - Home range = 27.2 ± 3.7 Acres
 - Preferred habitat types are large and medium Sierra Mixed Conifer
 - Preferred den trees are large hardwoods and conifers, and small hardwoods

Informed Forest Stewardship

