MATERNITY ROOST SITE SELECTION BY NORTHERN LONG-EARED BATS AT MULTIPLE SPATIAL SCALES Ellen Whittle¹, Ian Abernethy², Anna Chalfoun³

HABITAT SELECTION IN A CHANGING WORLD



- Wildlife habitat selection is critical during life history stages such as reproduction
- Necessary to understand selection at multiple spatial scales to: 1. Conserve threatened populations
- 2. Understand effects of changing habitat on population



Northern Long-Eared Bats (NLEBs)

- Threatened under the Endangered Species Act (USFWS 2015)
- Up to 99% population loss in areas due to white-nose syndrome (WNS)
- Maternity roosts are critical for population persistence

STUDY AREA & HABITAT



2019 FIELD SITES

Study Area

- Black Hills population (edge of the species range)
- Historical & ongoing high rates of timber harvest
- Previously few studies with low sample sizes Habitat
- Species depends on continuous forested habitat
- Uses tree cavity roosts June-Aug to raise offspring
- Maternity roost characteristics not understood

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A typical knothole cavity Quaking Aspen

QUESTIONS & PREDICTIONS

Questions

1. What are the characteristics of habitat used by female northern long-eared bats (NLEBs) at 3 scales:

- a) Cavity
- b) Roost Tree
- Roost Area (0.04 ha plot)

2. Are individual maternity roost trees used across multiple years?



Above: A lactating female bat fitted with a VHF transmitter, which is glued to bare skin between the shoulder blades

Predictions

1. Preferred roost habitat will have:

- Cavities with greater solar exposure a)
- b) Trees will be snags or damaged and alive with >DBH
- and >height than available trees
- Roost plots will contain more potential roost trees

2. Roost sites will continue to be occupied during the breeding season over multiple years





- Capture and tag up to 50 female NLEBs near water sources on the Black Hills NF (over 2 seasons)
- Track with VHF to day roost trees (3-7 days)
- Count evening emergences
- Collect roost structure data
 - multiple spatial scales
 - random, available plots for comparison roost tree



labitat plot survey (centered o

PRELIMINARY RESULTS

We tracked 17 bats to 26 day roost trees between June-Aug 2019.

Movement

- Bats were tracked avg 4.5 days
- Switched roosts every 1.9 days
- ~2.7 roosts per bat
- Individuals commonly roosted together
- 1-65 females in a roost

Roost Characteristics

- have defects compared to aspen
- Occupied trees were:

61.5% Quaking Aspen



- Second season in 2020:
- Increase sample size
- Determine occupancy at previous years' tree roosts
- Locate roosts in wider more diverse forest types (age & species composition)

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or an individual bat. She used south-facing slop ng the same drainage up until day 6, when she moved to a north-facing slope in a new drainage.

• Over half of occupied trees were **live with defects (53.8%)** Ponderosa Pine most common on the landscape, but less likely to





FUTURE GOALS







