

# **NORTHERN SPOTTED OWL HABITAT OBJECTIVES**



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# OBJECTIVES

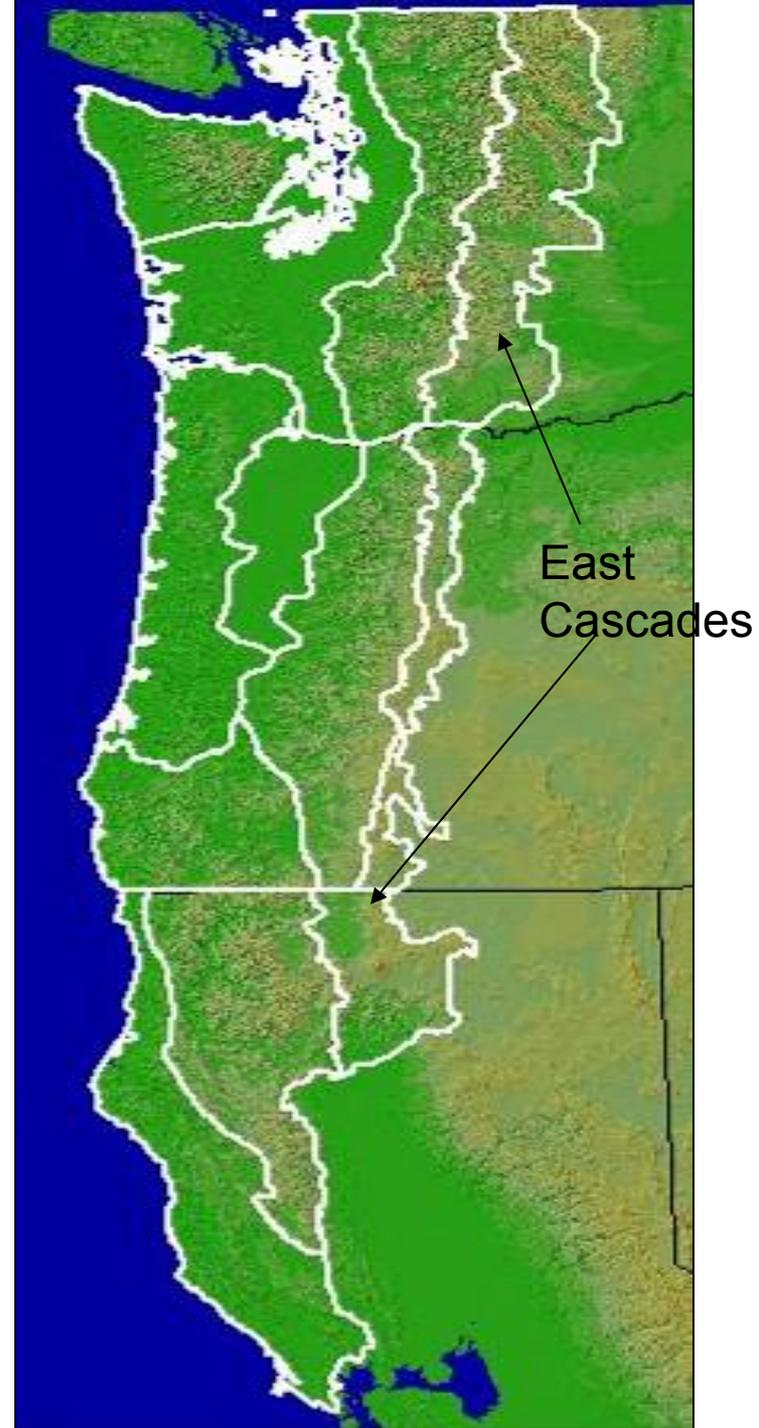
- Provide an overview of what is known about northern spotted owl habitat relationships, East Cascades - WA, OR & CA.
- Provide stand-level objectives to manage northern spotted owl habitat.
- Avoid misusing anyone's research – we'll see



# East Cascades Province

- “..need for spotted owls to be well distributed throughout its range...”

NSO Recovery Plan 2008



# Landscape Level

Density/Distribution  
of Territories

Abiotic Features  
of Territories

Habitat Features  
of territories

## Home Range

Stand Structure

Core/Edge; Patch Size

Abiotic Features

Owl Behavior

NSO Nesting Habitat

NSO Foraging Habitat

Prey Habitat

# Landscape Considerations: Influences on NSO density and distribution

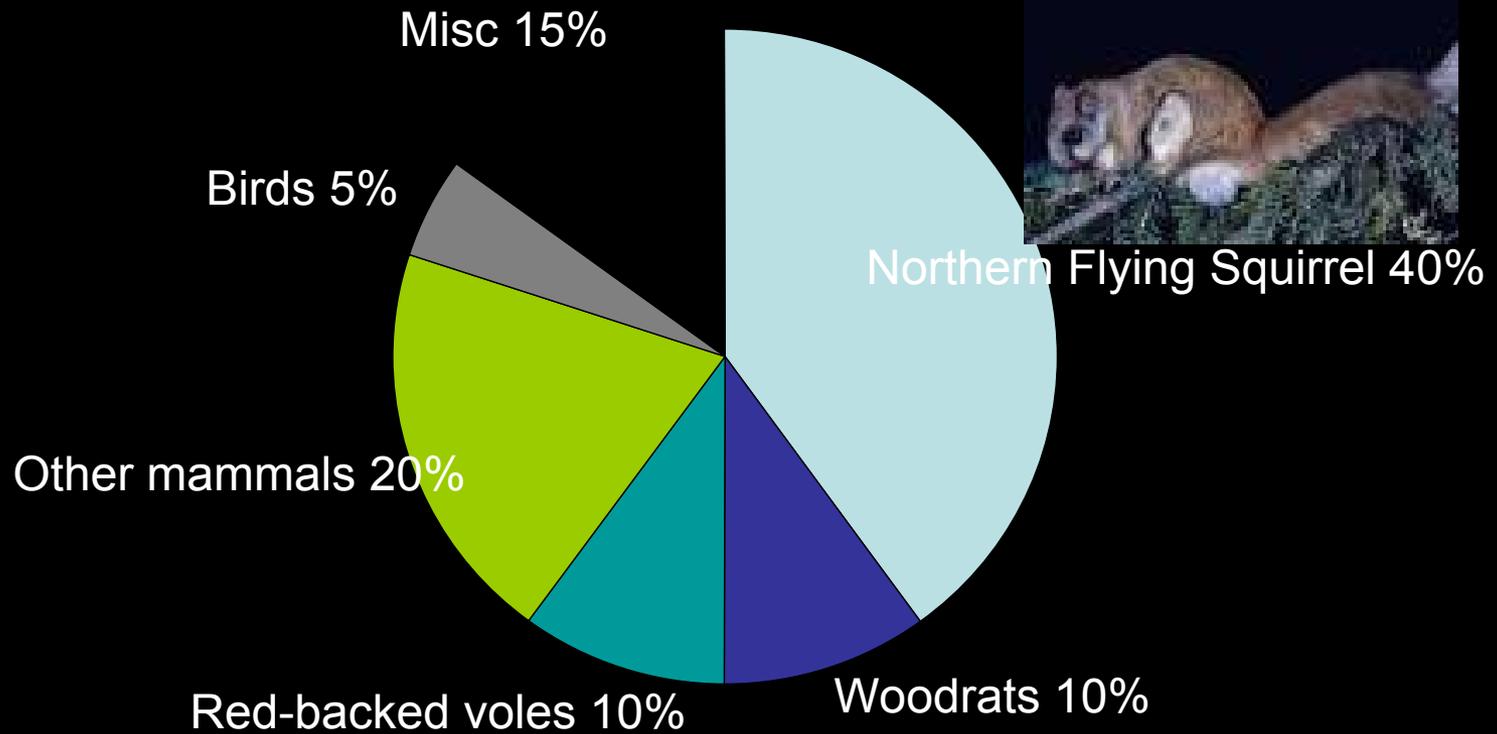


# Abiotic features influence distribution of NSO territories

<b>Variable</b>	<b>Response</b>	<b>Source</b>
Increasing Elevation	Decreased Occup/RSF	Irwin et al 2004
Increasing precipitation	Decreased Reproduction	Irwin et al 2004
Greater riparian area	Increased Occupancy	Irwin et al 2004
Nest slope position	Lower slope, SE	Gerhardt 2009
Distance to nest	Maximizes habitat	Rosenberg and McKelvey 1999
Foraging slope position	More frequent use	Irwin et al. 2005

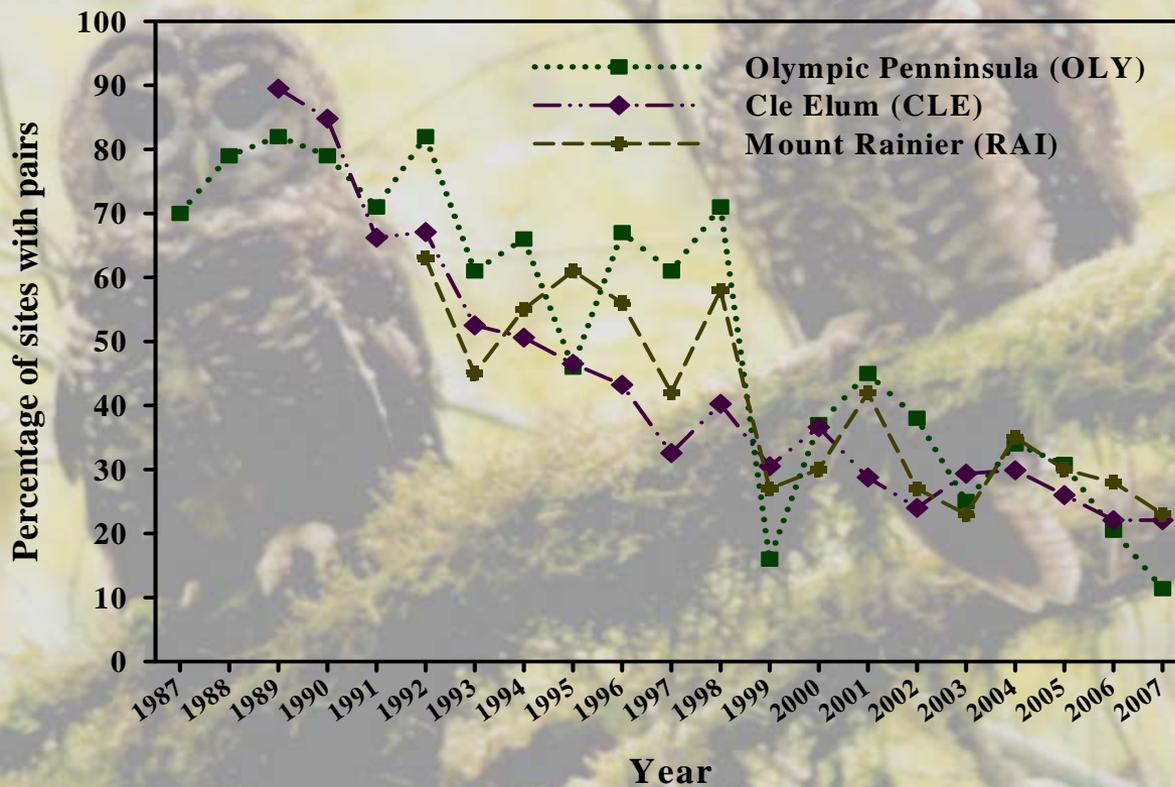
# NSO Diet – Percent Composition, OR & WA

(Forsman 2005)



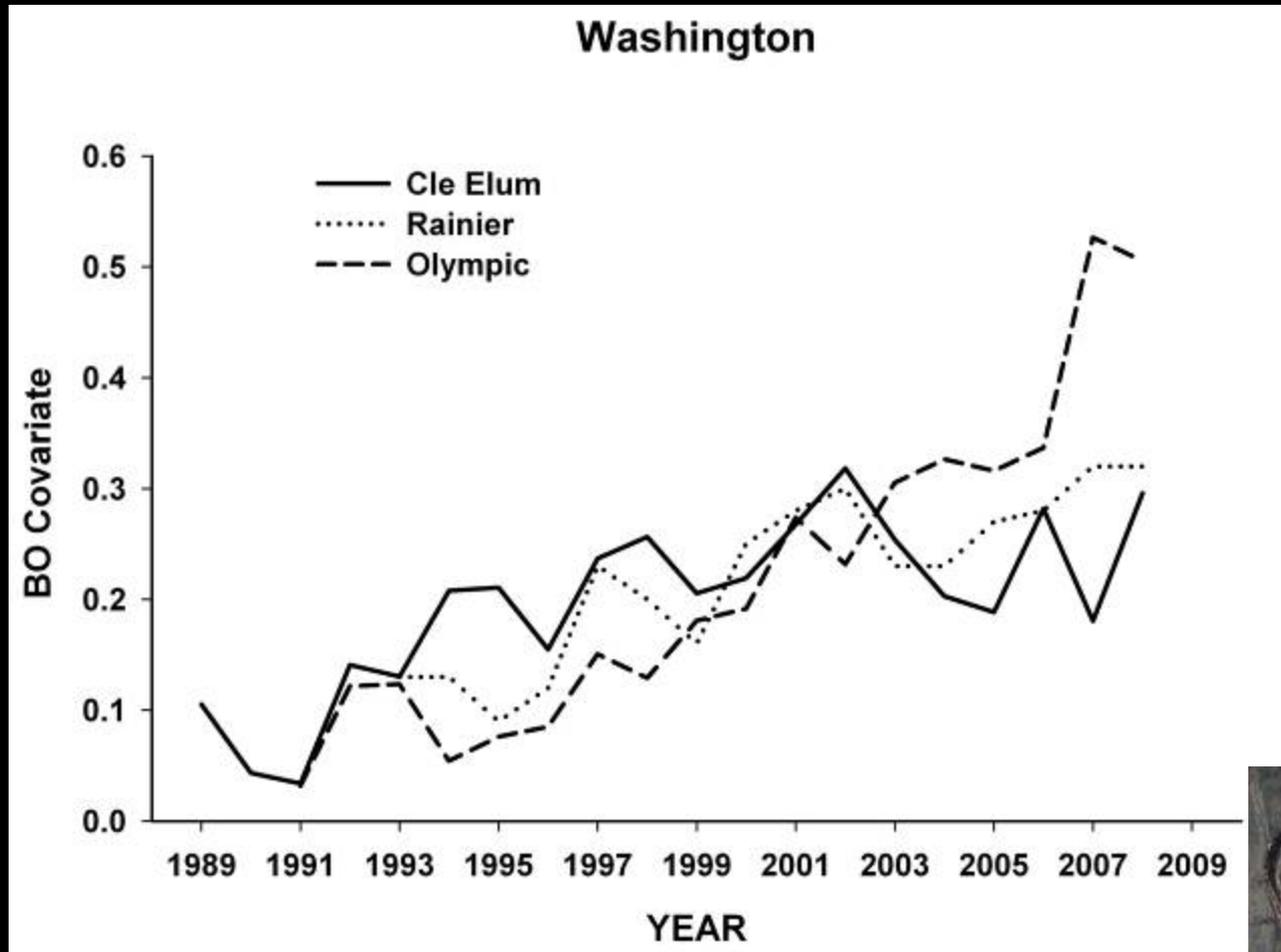
# Northern Spotted Owl Occupancy

## Washington Study Areas



Anthony et al. 2007

# Barred Owl Occurrence



Forsman et al. 2009

# Reproduction – East Cascades

- Generally higher reproduction (Anthony et al 2006)
- Highest in P.Pine/DF and Grand fir, mixed conifer (Irwin et al 2004)
- Lowest in western hemlock & subalpine forests (Irwin et al 2004)



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# NSO Foraging Habitat Structure

<b>Location</b>	<b>Variable</b>	<b>Source</b>
<b>Yakima Reservation (managed lands) Use vs Random</b>	<b>Higher canopy* (best discriminator)</b>	<b>King 1993</b>
	<b>Higher basal area, medium size fir, 27.5- 52.4 cm dbh</b>	
	<b>mature size trees 52.5-89.9 cm dbh</b>	
	<b>Lower shrub height</b>	
<b>Yakima Reservation (unmanaged portion) Use vs Random</b>	<b>Canopy cover</b>	<b>Pigeon 1995</b>
	<b>Basal area of large conifers</b>	
	<b>Log volume</b>	
<b>Cle Elum</b>	<b>47% canopy cover 6 snags &gt;10" dbh 140 tpa</b>	<b>Benson 1991</b>

# NSO Nesting Structure: Canopy Closure

Location	Canopy Closure	Source
Wenatchee NF (Nest v Random)	75% (57-90%)	Buchanan et al 1995
O-W NF (sites only)	> 60%	Gaines et al 2008
Gifford Pinchot	83 - 94%	Everett et al 1997
Deschutes NF (sites only)	averaged 75%	Gerdes et al 1996

# NSO Nesting Structure: Live Trees

Location	Live Trees	Source
Wenatchee NF use v random (mixed conifer)	> D-F trees 35-60 cm dbh > P.pine 61-84 cm dbh > Live tree basal area	Buchanan et al 1995
Wenatchee	Trees 20-64 cm dbh	Irwin et al 2004
O-W NF (sites only)	>15" qmd	Gaines et al 2008
Deschutes NF (sites only)	• TPA 280 • 180-210 ft <sup>2</sup> /ac (135-350) • >40% white fir understory >8"	Gerdes et al 1996
Wenatchee NF	• 187 ft <sup>2</sup> /ac basal area (trees and snags) • 173 tpa (live trees)	Buchanan 1988
Gifford Pinchot (sites only)	188-260 ft <sup>2</sup> /ac basal area	Everett et al 1997

# NSO Nesting Structure: Other features

Location	Variable: other features	Source
Wenatchee NF	➤ Basal area of decadent snags ➤ Canopy layers 2-3	Buchanan et al 1995
	snags 28 tpa	Buchanan 1988
Gifford Pinchot	• canopy layers 3+	Everett et al 1997
Deschutes NF	• canopy layers - 3 • logs 15/ac >15" • snags 8/ac >16"	Gerdes et al 1996

# Nest Trees

Study Area	Primary Nest Tree Species	Nest Type %		Source
		Cavity	Platform	
WA	Douglas-fir	20	80	Buchanan 1993 and 1996
OR	Douglas-fir	40	50	Gerhardt 2009



Forsman 2005



# Prey Habitat

- Northern Flying Squirrels: snags, truffles, and lichens



- Woodrats: snags, mistletoe and logs



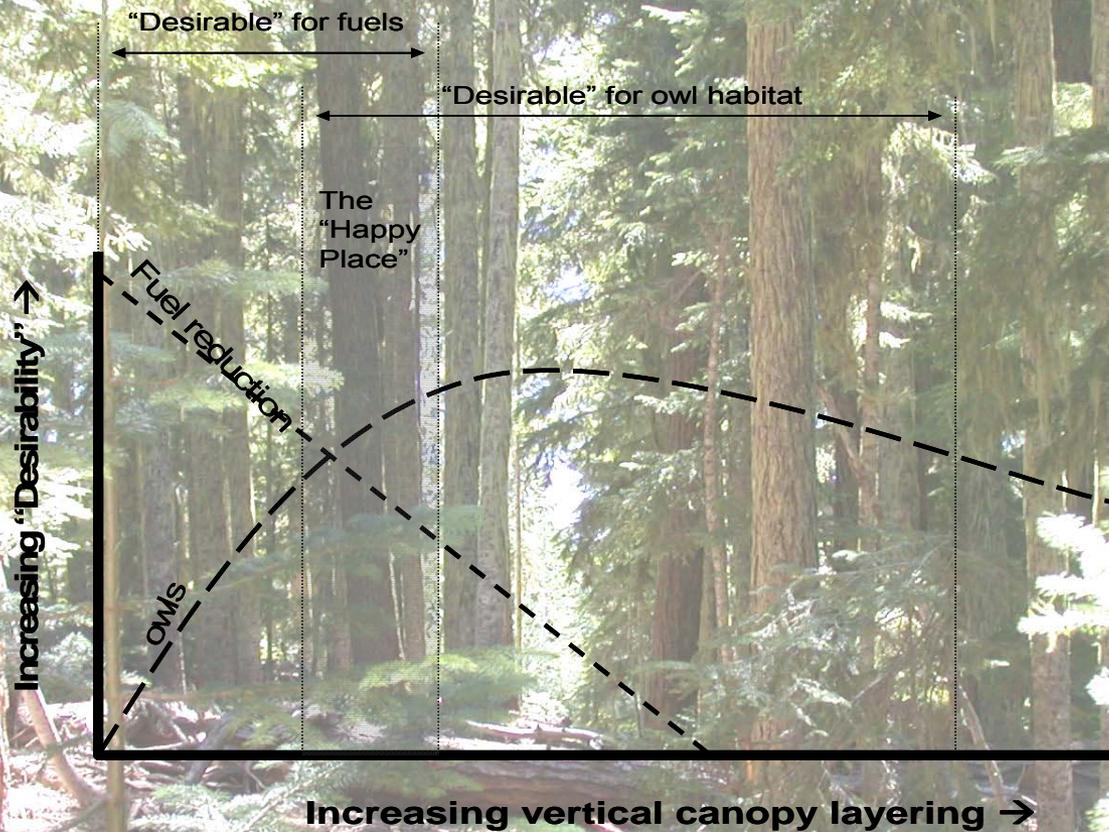
# Nesting Habitat Components Summary Table

Habitat Component	Range	Selected Range
Canopy closure	48-100%	≥60%
Total basal area	135 - 450 ft <sup>2</sup> /ac	>180-240 ft <sup>2</sup> /ac
Mean tree size	10.5-18.5" qmd	≥15" qmd

# Nesting Habitat Components – Summary

- Multi-layered forest
- Large (>26”) trees with structure and snags for nesting
  - Tree deformities, mistletoe, cavities
  - $\geq 8$  large trees/ac
- Tree species associated with NSO use
  - Douglas-fir (nesting structure and mesic conditions)
- Other habitat components
  - Tree size ( $\geq 15$ ” qmd)
  - Basal area (>180-240 ft<sup>2</sup>/ac)
  - Canopy closure ( $\geq 60\%$ )

# NSO HABITAT OBJECTIVES



***“What you call ladder fuels, I call owl habitat.”*** E. Forsman 2005

# NSO Habitat Objectives

## Overarching:

- Need sufficient NSO habitat in the short term
- Build a landscape that is resilient
- Restore function

# NSO HABITAT OBJECTIVES

## General:

- Treatments vary by plant association
- Focus treatments in declining stands
- Apply treatments unevenly within stands
- Maintain moisture gradient

## Abiotic factors:

- Lower areas on slopes
- Southerly facing slopes
- Lower elevations??

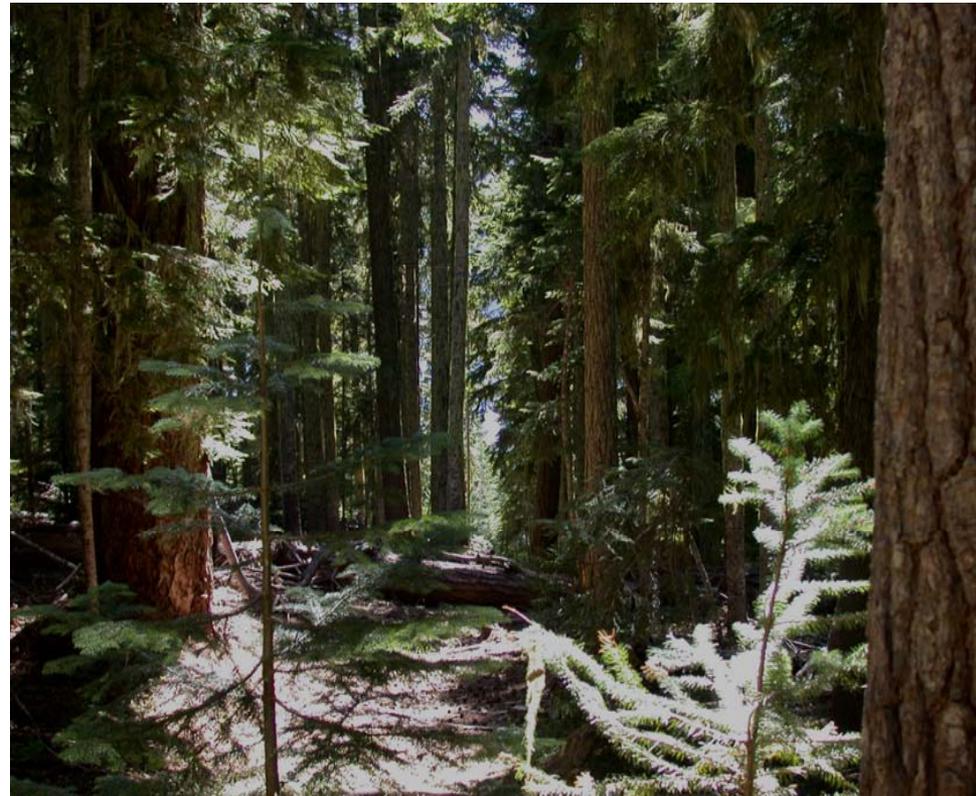


## NSO Habitat Objectives

- Large tree retention/generation (nest tree size)
- Hardwood regeneration
- High canopy cover (>60%)
- 150 sq ft basal area (Grand fir zone) across diameter classes (Treneman); other studies
- Preferentially select trees for removal (suppressed, budworm, etc)

### Decadence management:

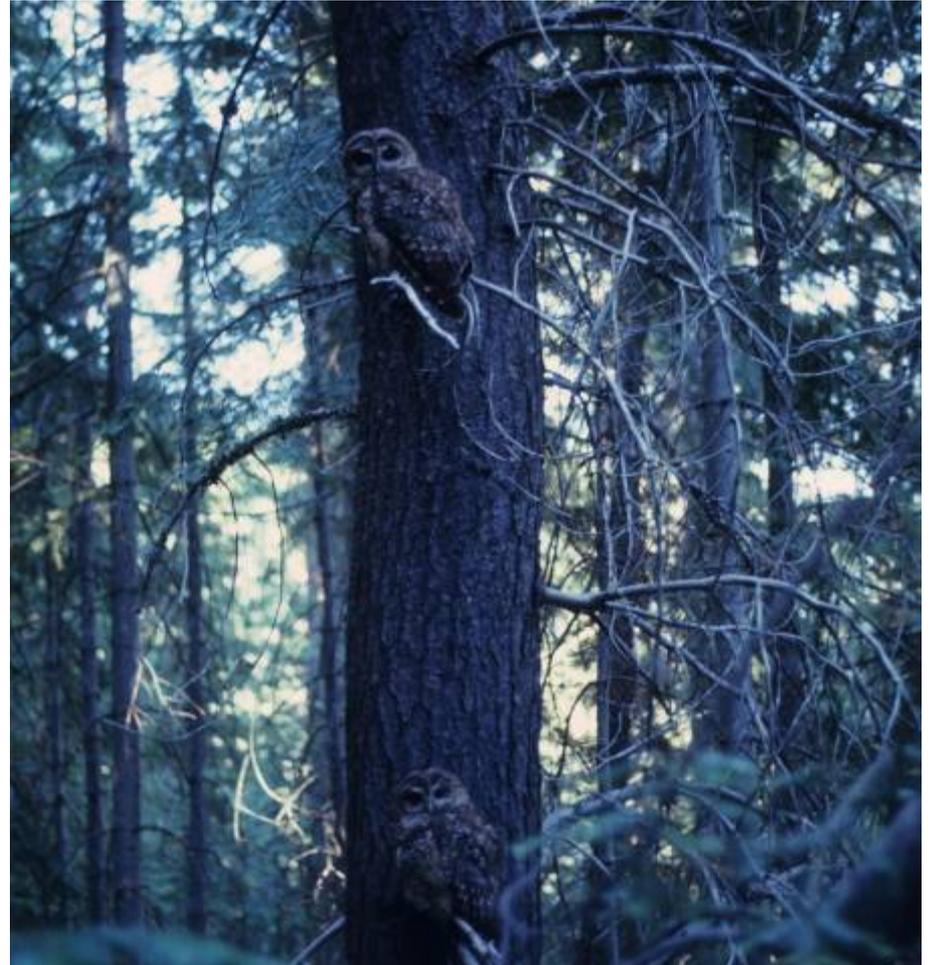
- Large dead trees and snags
- Dwarf mistletoe control?



# NSO Habitat Objectives

## Institutional:

- IDTs
- FWS involvement



Thank You.

