Maintaining and enhancing wildlife habitat

"If we work to support the diverse web of life in the forest it works to support us."

Peter Hayes

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Ecological underpinnings

Conservation Biology

- Strive for large habitat patches
- Avoid fragmentation
- Protect/restore streams, wetlands (behold the busy beaver!)
- Provide wildlife corridors – look outside your property

What is biodiversity?

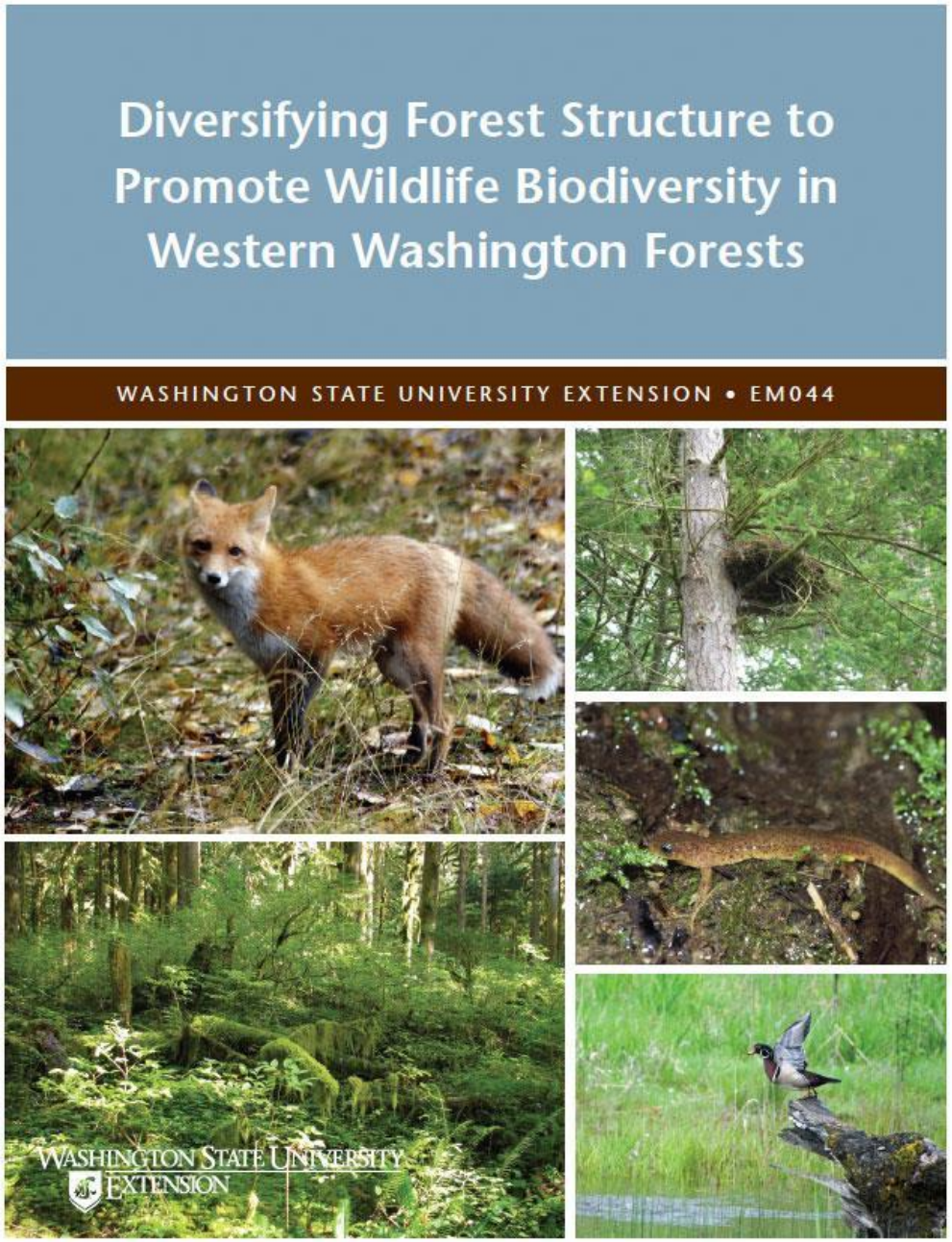
- The variety of living organisms:
  - In your forest
  - Between forest stands
  - Throughout surrounding landscape
- Diverse natural systems are:
  - More stable, able to recover from disturbance
  - Resilient to climate change
  - More functional for us (pollination, insect control, clean air and water)

Some species need big spaces

- Black-headed grosbeak
- Brown creeper
- Cassin's vireo
- Hairy woodpecker
- Pacific-slope flycatcher
- Pileated woodpecker
- Steller's jay
- Swainson's thrush
- Pacific (winter) wren
- Yellow-breasted chat
- White- & red-breasted nuthatch
- Ermine (short-tailed weasel)
- Northern flying squirrel
- Douglas squirrel
- Western gray squirrel
- Townsend's chipmunk
- Elk
- Cougar, bobcat
- Bear
- Fisher, marten

Variety is the spice of life

- High structural diversity = more species
- Different aged forests = more species
- Different tree densities = more species
- Changes over space, time = more species
- Many species require >1 habitat type



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Forest age:
Wildlife and seral stages

Wildlife in young forests

- Characteristics
  - Follows disturbance
  - Grasses, herbs, shrubs, young trees
- Typical wildlife
  - Lots of birds (bluebirds, flycatchers, warblers, goldfinches, hummers, kestrel)
  - Elk, deer, bear
- Important features
  - Snags and dead wood; legacy trees
  - Fruit-bearing shrubs

Early seral hardwoods

- OSU study: veg structure x birds
  - Hardwood s esp. important in early seral
  - Threshold effect in 10-13 YO stands
  - Bird abundance went up w/hardwood tree cover, peaked at 10%

Shrubs for dispersal/fall migration

Opening size: 2+ acres (5 acres better)

Focus on fruit – helps store fat

- Elderberry
- Twinberry
- Huckleberry
- Native raspberry, blackberry
- Thimbleberry
- Western serviceberry
- Cascara

Wildlife in middle-aged forests

- Characteristics
  - Dominant trees emerge
  - Canopy open enough for shrubs, herbs
- Typical wildlife
  - Nuthatches, swifts, tanagers, flycatchers, kinglets
  - Frogs and salamanders
  - Bats, flying squirrel, red-backed voles, deer
- Important features
  - Different aged trees; mixed shrub understory
  - Fallen logs/snags

OSU shrub study – bugs in forests

- Best shrubs for Wilson's warbler food
  - Broad-leafed deciduous shrubs
  - Bracken fern
- Other bird species often used
  - Ocean spray – caterpillars!
  - Salmonberry
  - Salal
  - Vine maple
  - OR grape
  - Huckleberry
  - Sword fern

Good hardwood trees

to maximize wildlife benefits

- Bigleaf maple*
- Dogwood
- Madrone
- Oregon white oak
- Willows
- Native cherry
- Pacific crabapple

Wildlife in older forests

- Characteristics
  - Large trees, complex canopy
  - Great understory, lots of logs & snags
- Typical wildlife
  - Large contingent of amphibians
  - Many flycatchers, warblers, owls, murrelets, woodpeckers, species needing snags/dead wood
  - Bats, bear, carnivores
- Important features
  - Snags/dead wood, many decay stages; organic soils

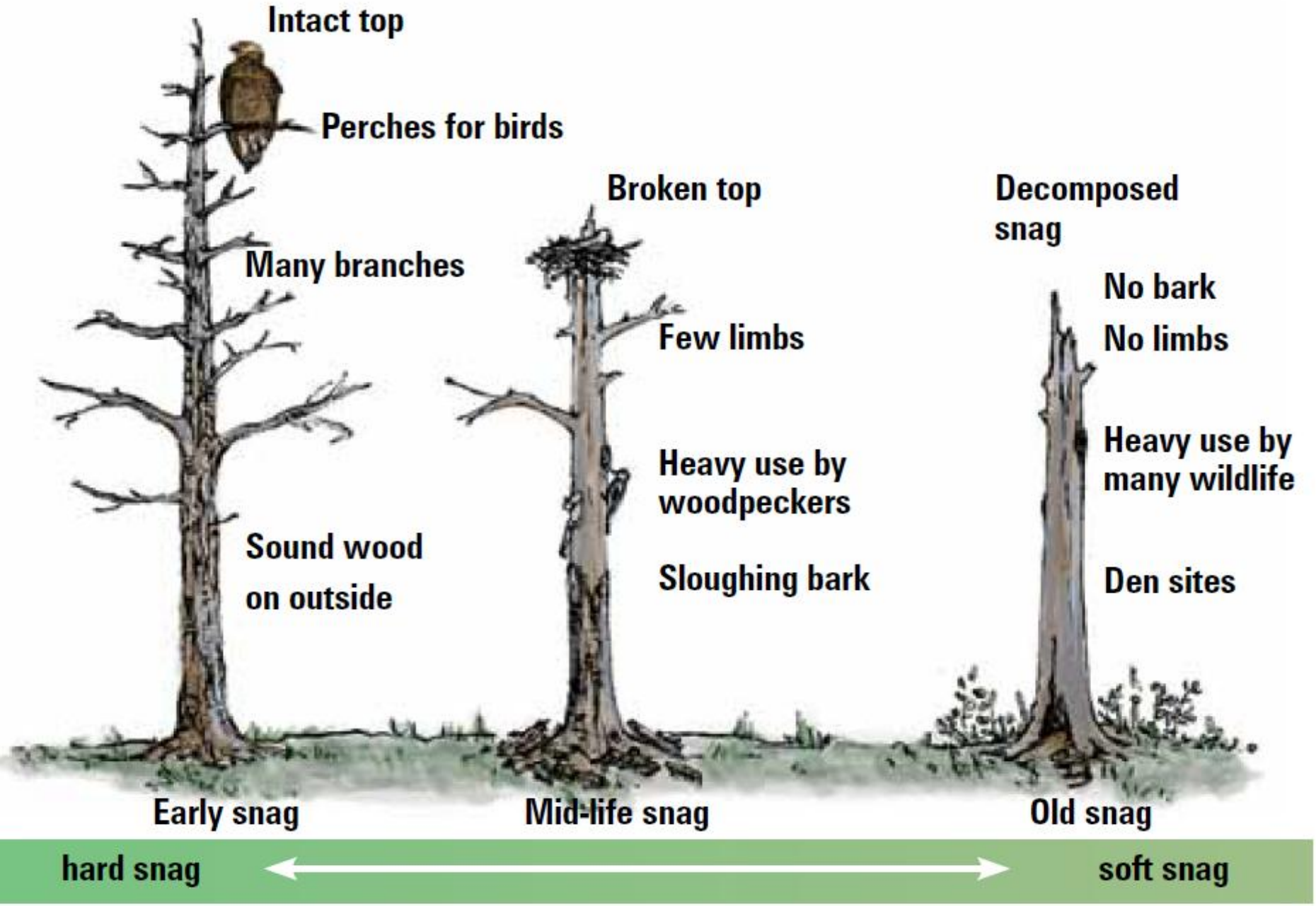
Snags and dead wood

Wildlife and dead wood

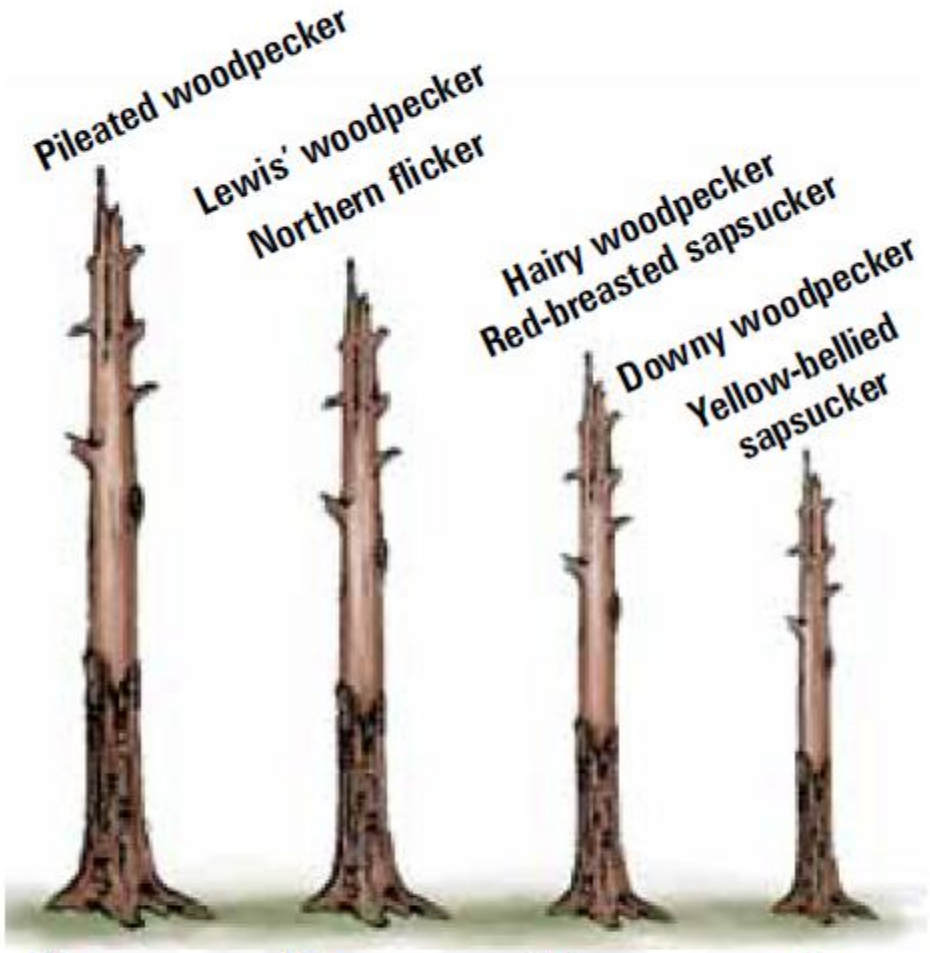
- 93 wildlife species in PNW rely on snags
- 71 species rely on downed wood
- Conifers & hardwood valuable
- Conifers last longer
- ***Critical habitat components***

Snags – OR forest practices rules

- For harvest units >25 acres:
  - ≥ 2 standing live trees or snags each > 30’ tall, 11” diameter
  - ≥ 2 logs on ground per acre at least 10 cubic ft


Intact top
Perches for birds
Many branches
Sound wood
on outside
Broken top
Few limbs
Heavy use by
woodpeckers
Sloughing bark
Decomposed
snag
No bark
No limbs
Heavy use by
many wildlife
Den sites
Early snag
Mid-life snag
Old snag
hard snag
soft snag

Snag diameters most often used by woodpeckers



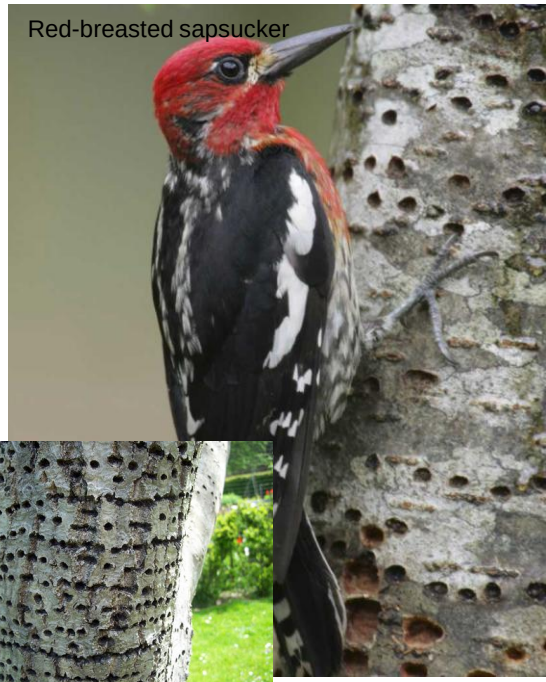
Larger-diameter, taller snags stand longer and provide more cavities.

Hairy woodpecker
Photo: Dick Daniels/Creative Commons

Downy woodpecker

Northern Flicker

Pileated woodpekcer



Red-breasted sapsucker

Chestnut-backed chickadee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Ways to tell a future snag

- Sap runs
- Splits in trunk
- Dead main limbs
- Fungi on bark
- Woodpecker holes

Increasing snags

- Leave high, unmerchantable stumps
- Create snags


Oregon slender salamander

Trees to create snags

- Hazard trees (forked top, weak wood, disease…)
- Shade tree where you want sun
- In group where you want to thin
- In areas with no snags

Courtesy WDFW

How to create snags

- Larger snags + conifers last longer
- Try for minimum 12” diameter 15 ft tall; bigger is better
- But – even tall stumps help

1. Remove top 1/3 of tree, ½ remaining side branches
2. Leave top intact, remove ¾ side branches (good for Doug fir, hemlock pine)
3. Girdle the trunk*

Increasing dead wood

- Leave some burn piles in clear cuts
- Brush piles for wildlife
  - Largest pieces as foundation
  - Pile large branches loosely on top
- Cover for weasels, marten, voles, brush rabbits, reptiles
- Think connectivity

Faking it

Affix nest boxes to gnarly trees

Clean every year or two

Plywood, rock piles, brush piles

Forestry practices to enhance biodiversity

Enhancing biodiversity: recap

- Mix it up - variable density thinning, skips, gaps
- Promote tree species diversity (incl. shade-tolerant)
- Promote age diversity; keep some big trees
- Keep some hardwoods
- Increase plants with fruits, nuts
- Underplant to enhance structure
- Protect riparian areas
- Retain and enhance dead wood
- Fake it

Reptiles

- Really rely on cover
- Cool spots when it’s hot: rocks, brush
- Warm spots for basking
- Clearings in south-facing slopes

Western pond & painted turtles

Do you have turtles in your pond?

- In trouble
- Some things are easy to fix
- Basking logs!

Oak release

- Oak reduced to ~10% of original in Willamette Valley
- Very specific plant, wildlife associates
- Fire suppression, harvest, **overtopping by Doug fir**
- Oak Prairie Work Group

Herbicides x wildlife? Jury's out

- Substantially reduces shrub, herb cover
- OSU study, white-crowned sparrows
  - No difference in nest success from no herbicide -> heaviest application
  - But – ground nester
- OSU study, moth abundance
  - Key food resource for many songbirds
  - Strongly influenced by plant diversity
  - Some herbicide effects

Case study:
Hayes' ecological monitoring

Why monitor?

- Improve implementation
- Increase likelihood of successful outcomes
- Build credibility
- Communicate lessons learned

Does monitoring need to be data heavy?

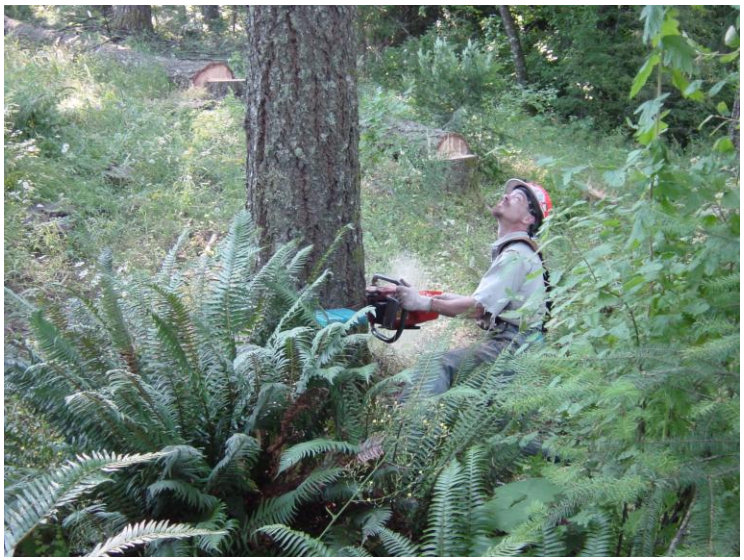
Consistent Sufficient quality Easy to collect Suitable for analysis

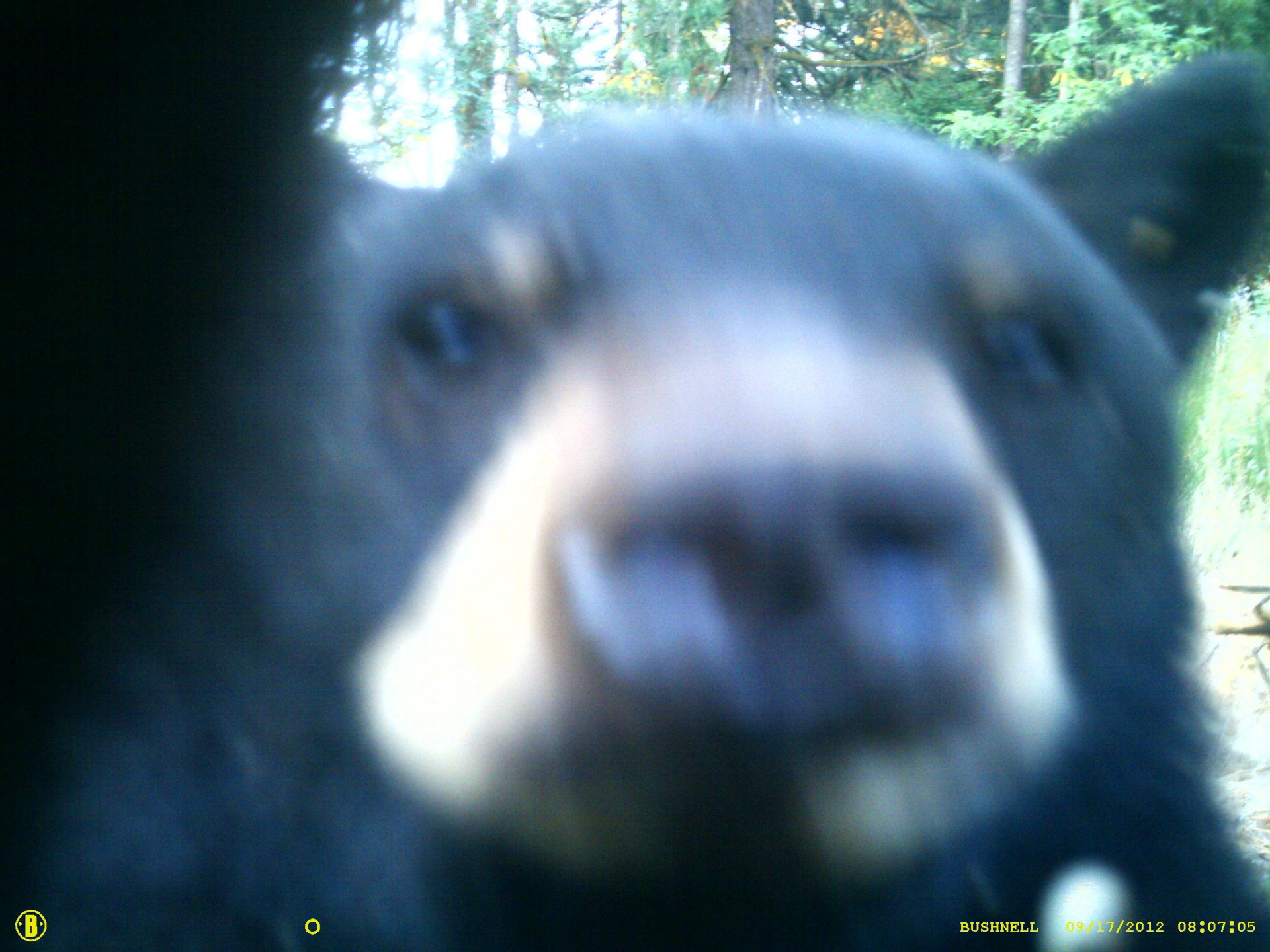
Breeding bird window:
May 15-June 30

Try to limit activities

Lessons learned

- Shifted silvicultural focus from finer to coarser scale; larger mgt. units, larger patches
- Reduce ground disturbance to minimize weeds
- Success requires long-term strategies

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Case study:
Chehalem Ridge Natural Area


Purchased in 2008
Site conservation plan develop 2013

What we have-lack of biodiverstiy at multiple scales

What we want

Diversity of tree species and size,

Snags: variable sizes and decay

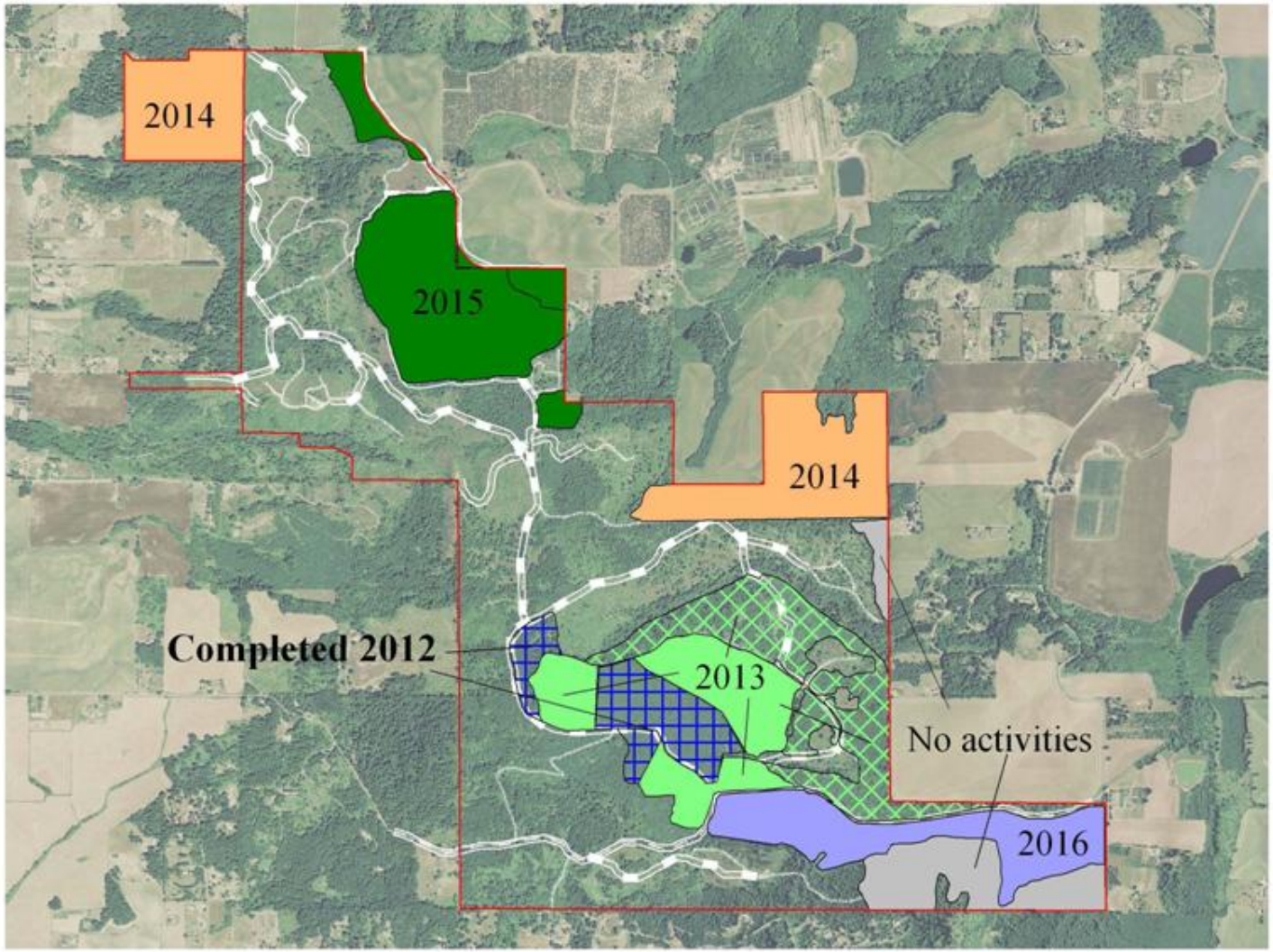
Vertical and horizontal heterogeneity

Shrubs and herbaceous layers

Down wood: various sizes

Move towards old growth

Chehalem Ridge thinning plan



TRACTS

STANDS

- '2012'
- '2013'
- '2013 PCT'
- '2014'
- '2015'
- '2016'
- 'No activity'

ROADS

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2012	
commercial thin	46 acres
2013	
commercial thin	67 acres
pre-commercial	70 acres
2014	
commercial thin	66 acres
older stand thin	43 acres
2015	
commercial thin	107 acres
2016	
commercial thin	63 acres
total	462 acres

N
W E
S

04-19-2013

2000 0 2000 4000 6000 8000 Feet

Snags and downed wood creation

- 4-8 snags/acre, 4-10 down wood pieces or wildlife piles/acre, distributed across project site
- Will require multiple entries
- Breaking even

Creating log piles


Are the dead wood features being used?
First year: no evidence of use
Second year: 60% foraging evidence
Third year: 93% foraging evidence

“Leave” log and planted shrubs

Oak release

Additional resources

Wildlife damage

- Deer, elk, beaver, mountain beaver (a.k.a. aplodontia, boomer), nutria
- Repellants, tubing, exclusion
- Beaver: cage trees near streams, wetlands
- Mt. beaver: http://wdfw.wa.gov/living/mtn_beavers.html
- See APHIS website

Oregon Forest Resources Inst. publications

- http://oregonforests.org/sites/default/files/publications/pdf/Wildlife_Mngd_Habitat.pdf
- http://oregonforests.org/sites/default/files/publications/pdf/OFRI%20managed%20forests%20elk%20deer_for_web.pdf
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- http://oregonforests.org/sites/default/files/publications/pdf/EMFTWO_establishing.pdf

Other interesting publications

- https://www.allaboutbirds.org/guide/search
- http://oregonforests.org/content/wildlife-variety
- http://wdfw.wa.gov/living/snags/
- http://www.onrc.washington.edu/Publications/2012/ZobristHinckleyForestBiodiversity12R.pdf (diversifying forest structure)
- http://www.oregonturtles.com/native_turtle
- https://www.oregon.gov/ODF/Documents/WorkingForests/CohoHabitatBrochure.pdf
- https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/sa_reports/ct_prevention+and+control+of+wildlife+damage%2C+2015
- http://www.fs.fed.us/pnw/sciencef/scifi112.pdf - skips and gaps

Take home:

Keep the diversity you have, create opportunities for more.

Thank you!