



Metro

Conservation with a Climate Change Lens

2019 Johnson Creek Watershed Council Science Symposium

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**My focus today: the forests of
upper Johnson Creek**

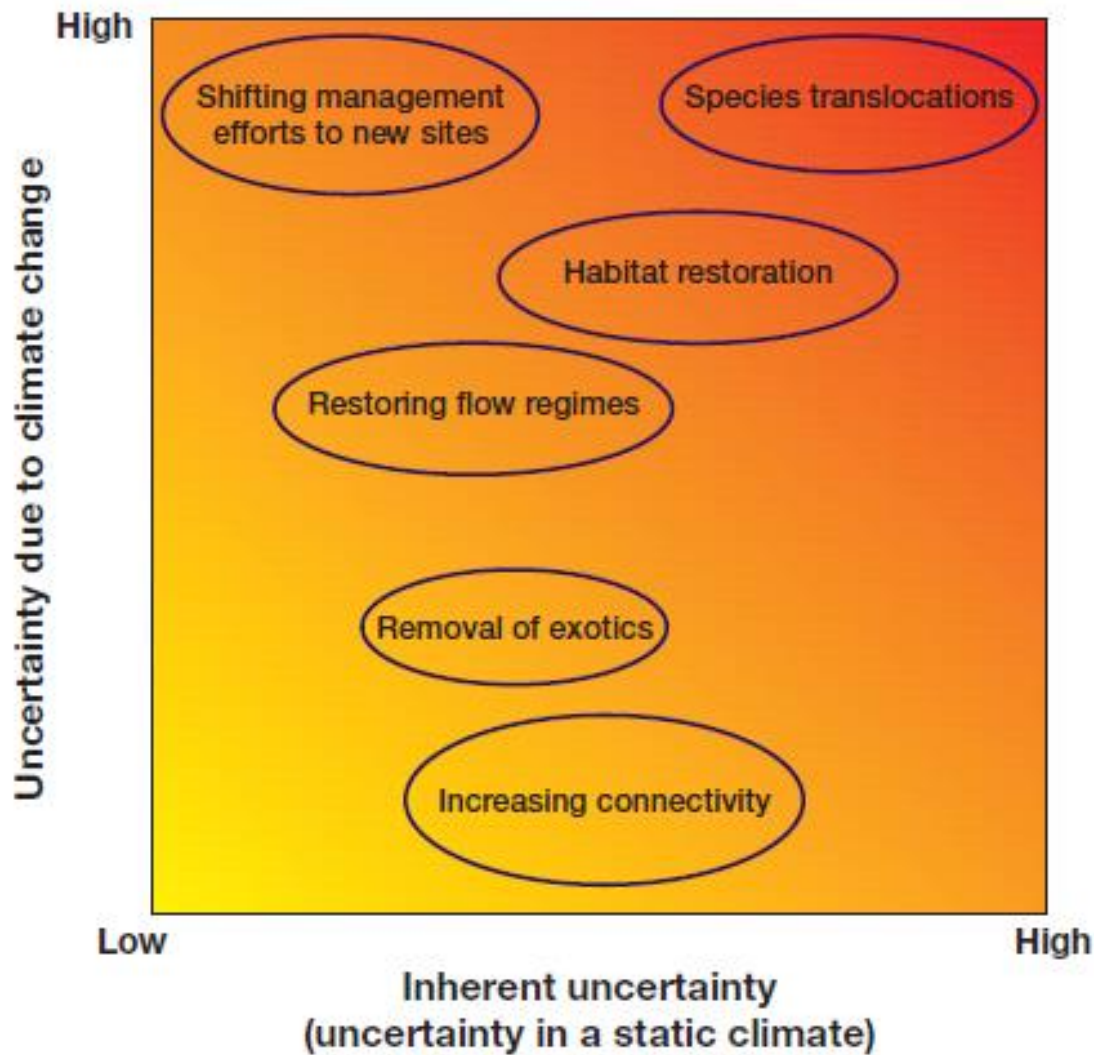


Climate change

Climate change will alter Northwest forests... Many impacts will be driven by [water deficits](#), which increase tree stress and mortality, tree vulnerability to insects, and fuel flammability.

Northwest/National
Climate Assessment
2014





Management
outcome
uncertainty

Climate change adaptation strategies for federal forests of the Pacific Northwest, USA

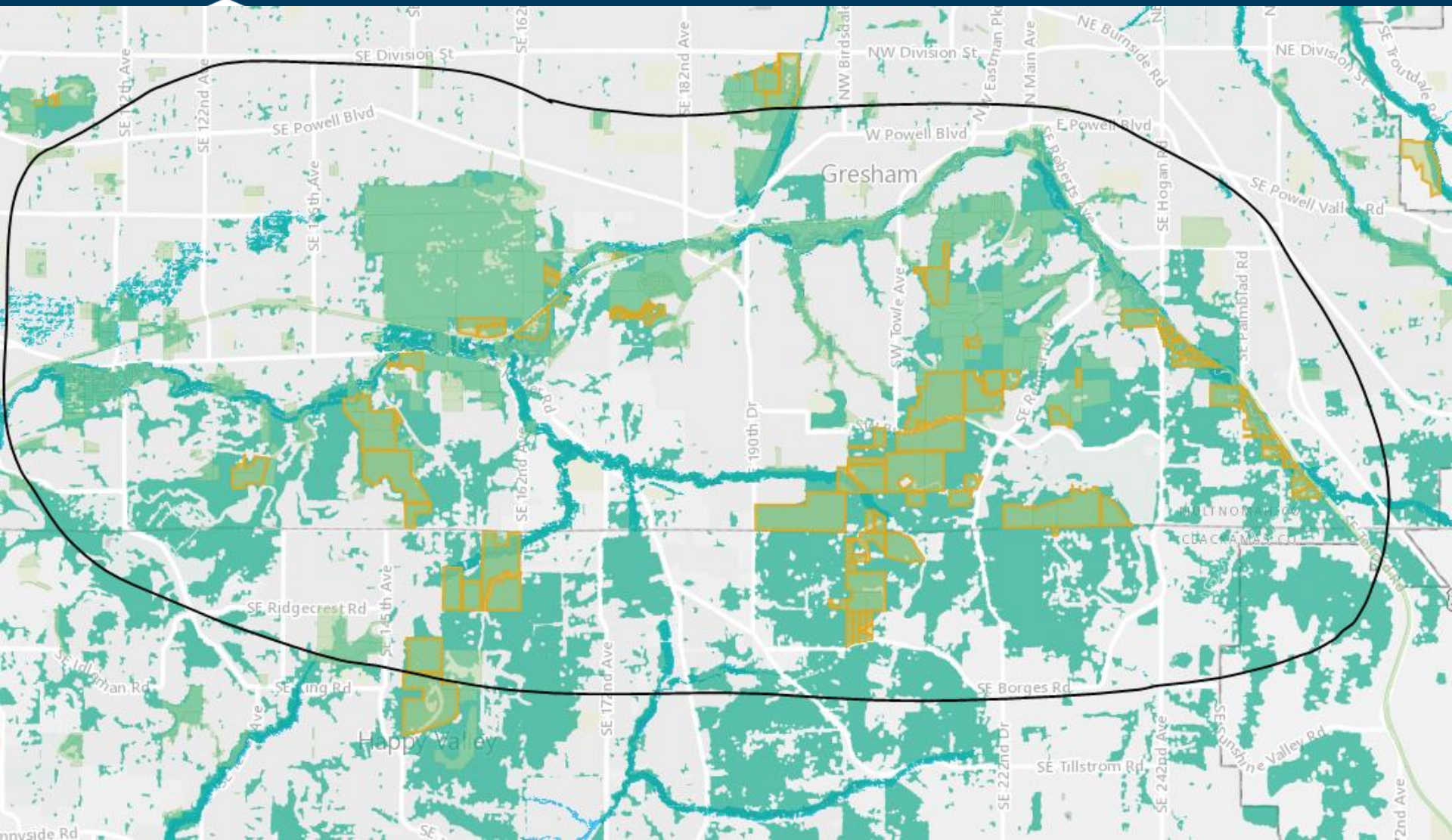
Spies et al, 2010

- Increase connectivity
- Protect critical habitat and resilient ecosystems
- Control exotic species
- Variable density thinning in young stands
- Maintain species diversity
- Maintain older forests
- Establish new genotypes and species
- Identify potential refugia at regional and landscape levels
- Use regional planning to coordinate across jurisdictions

Stewardship for healthy forests (resistant and resilient): key recommendations, multiple papers

- Reduce fragmentation and maintain corridors for gene flow and migration
- Conserve and increase biodiversity (at all scales)
- Use best science in selecting seed zones
- Density management (thinning)
- Monitor and control invasive species

Connectivity and Reducing Fragmentation





Gallop
Loop Trail

What species?

- **Vulnerability Assessment** Devine et al 2020
- Oregon white oak (most vulnerable)
- Grand fir
- Pacific madrone
- Doug fir
- Bigleaf maple
- Red alder
- Ponderosa pine
- Western redcedar
- **Drought tolerance** ODF 2016
- Grand fir (least tolerant)
- Western redcedar
- Douglas fir
- Incense cedar
- Ponderosa pine
- Oregon white oak



Red alder decline





Johnson Creek

Springwater Corridor Trail

SE 252nd Ave

SE 30th St

SE Telford Rd

146 ft



Alder Component Rating System

Red alder decline rating system			
	Canopy in good condition (healthy crowns, no obvious signs of decline)	Canopy in fair condition (Dead tops present but not significant {<20%}, crowns in generally fair to good condition)	Canopy in poor condition (More than 50% of trees show signs of decline, dead tops, thin crowns)
80% or greater native understory including shade tolerant seedlings *			
Native understory without conifer recruitment (lack of seed source, competition?)			
Understory trending to dominance by non-native invasive plants (50% or greater non-native)			

Worse case scenario..



With the climate change lens-

- Hazard tree removal
- Drop red alder out of planting mix
- Remove in thinning if infrastructure present
- Great source of standing and down dead wood!
- Tree codes....



Climate change changes everything so-

- Conserve diversity and connectivity
- Manage for the right species and densities
- Target invasive species

Thank you!

- Voters and partners (CoG, CoP, HV, EMSWCD, volunteers...)
- Chris Hagel, Metro Natural Resource Lead Technician
- Mike Messier, Trout Mountain Forestry
- Jonathan Soll, Metro Science and Stewardship Manager

