Red Alder Forest Resource Update

Glenn Ahrens
OSU Hardwood Silviculture Cooperative
Extension Forester
Clackamas, Marion, Hood River Co.

My Background

- **Ecology and Management of Hardwoods, specialty area since 1984.**
- **Research, Extension & Consulting**

Oregon State University
Extension Service

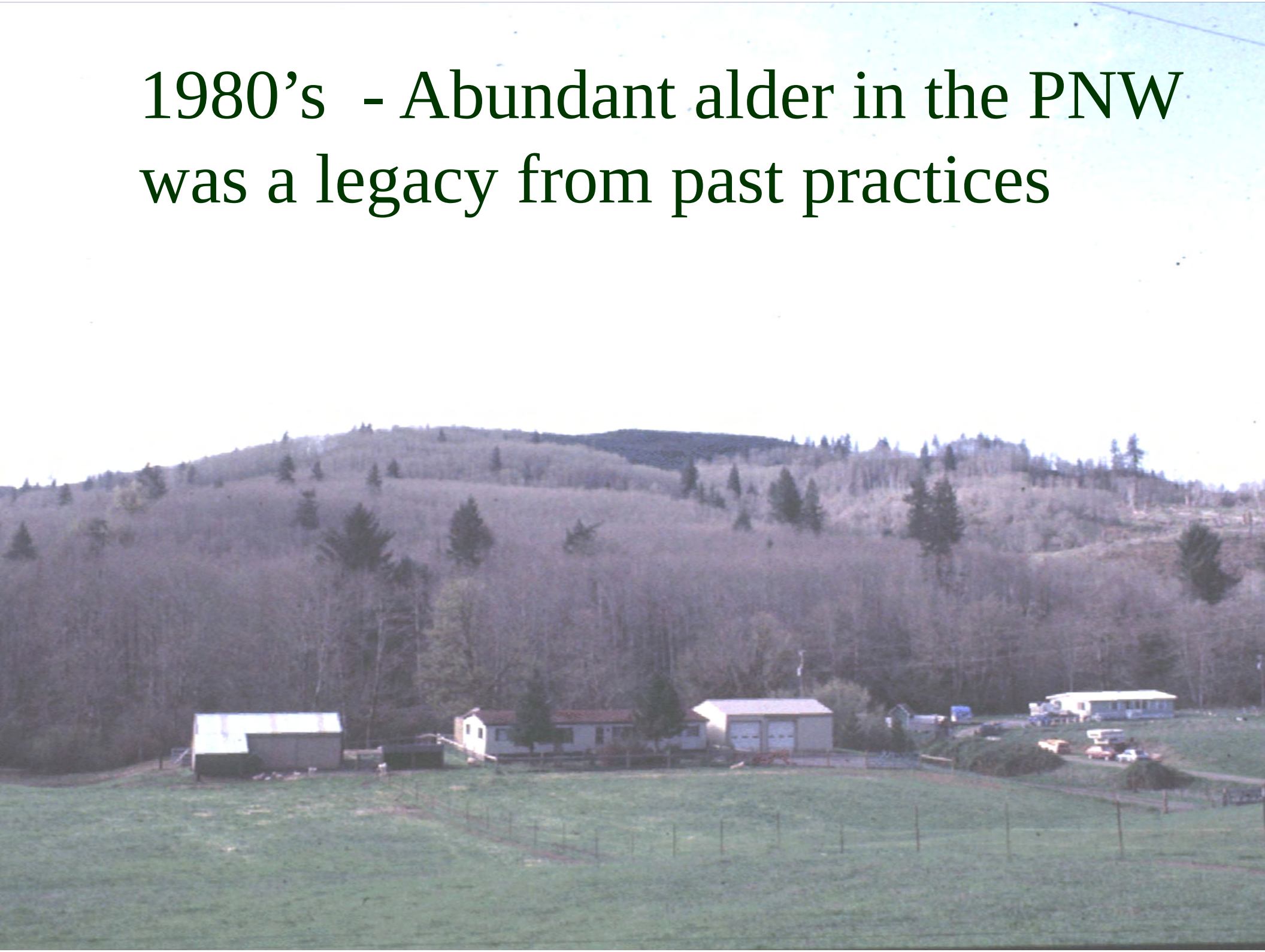
Hardwood Silviculture Cooperative

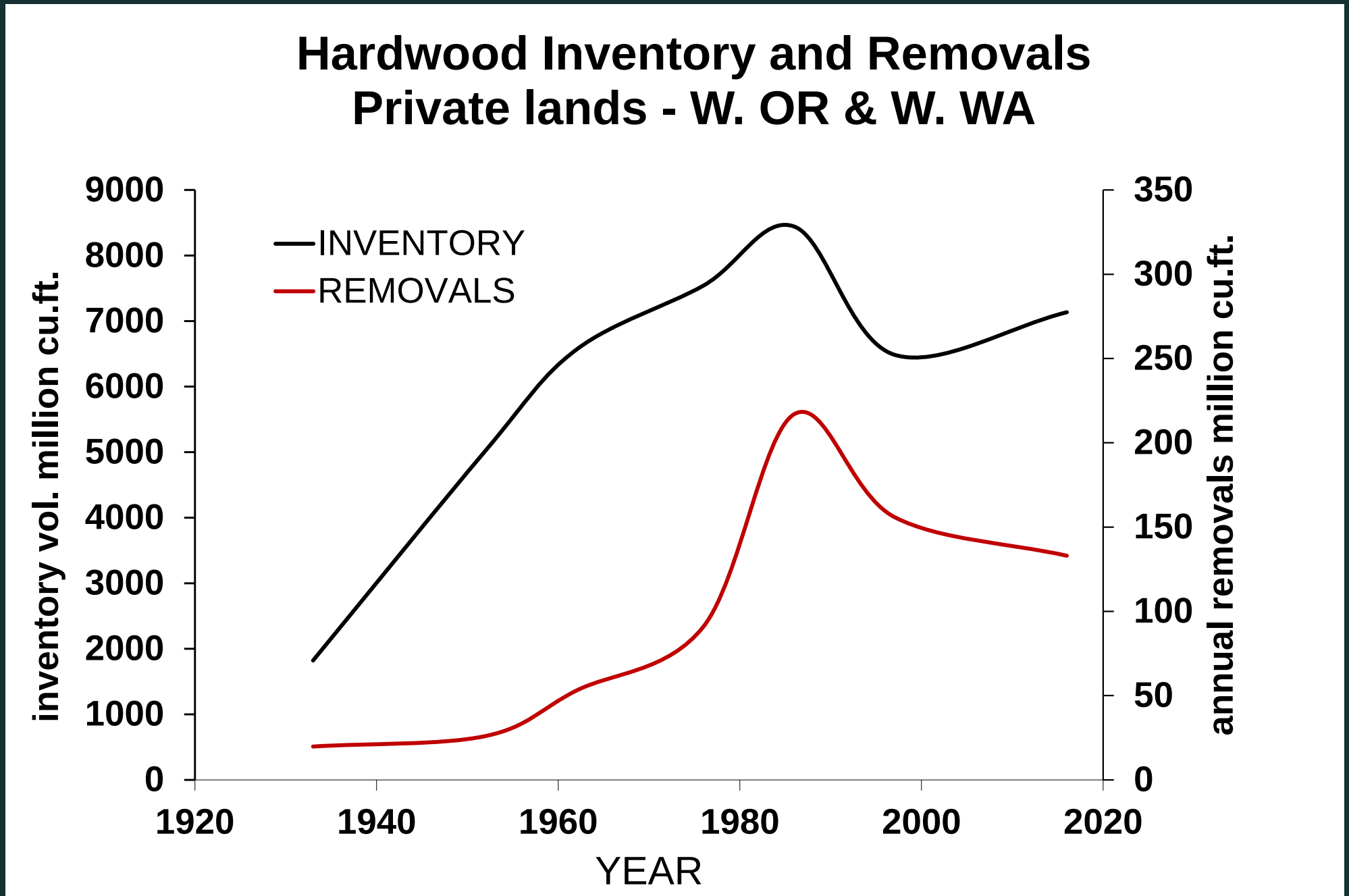
Alder Forest Resource Update

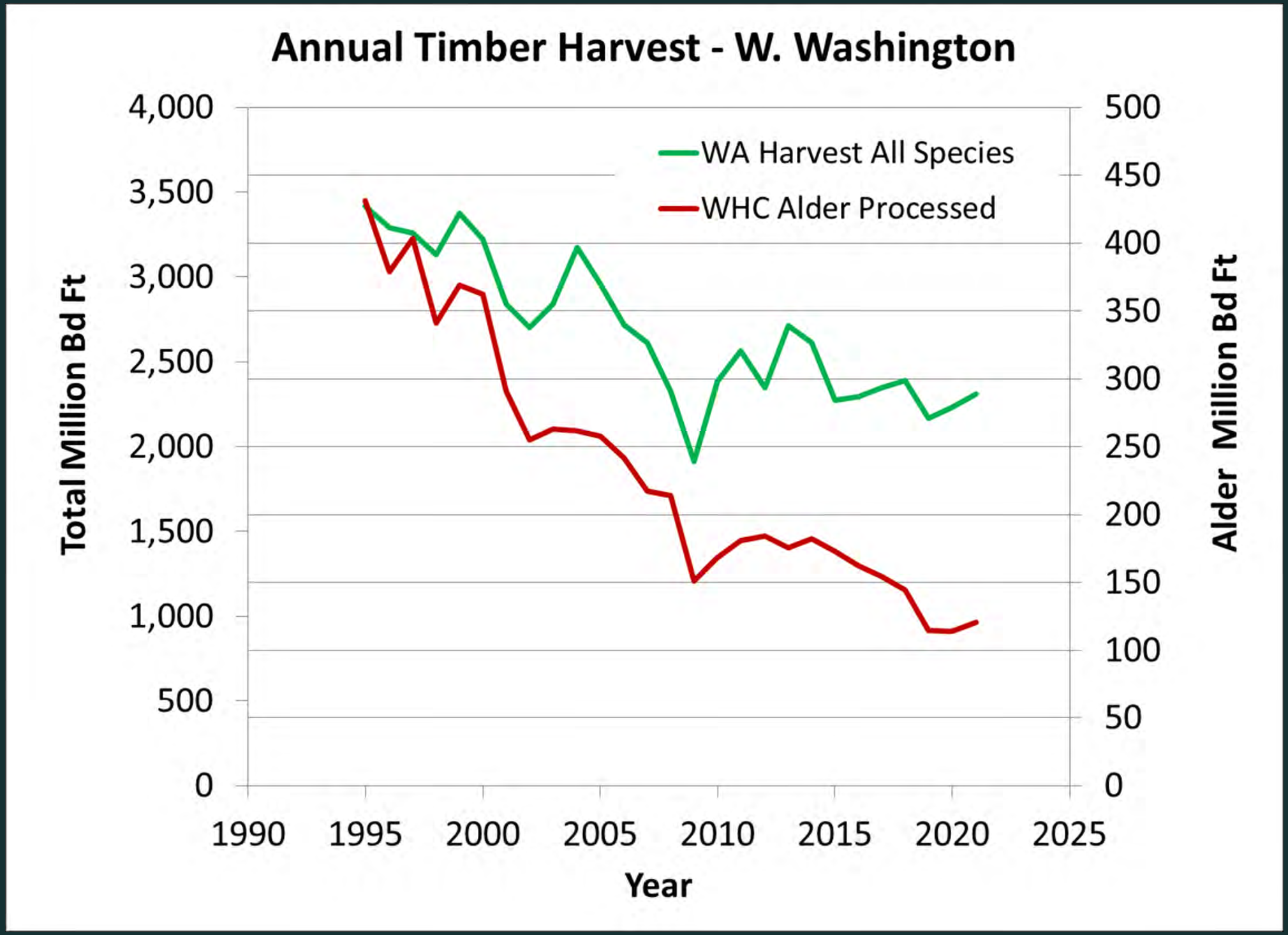
Outline

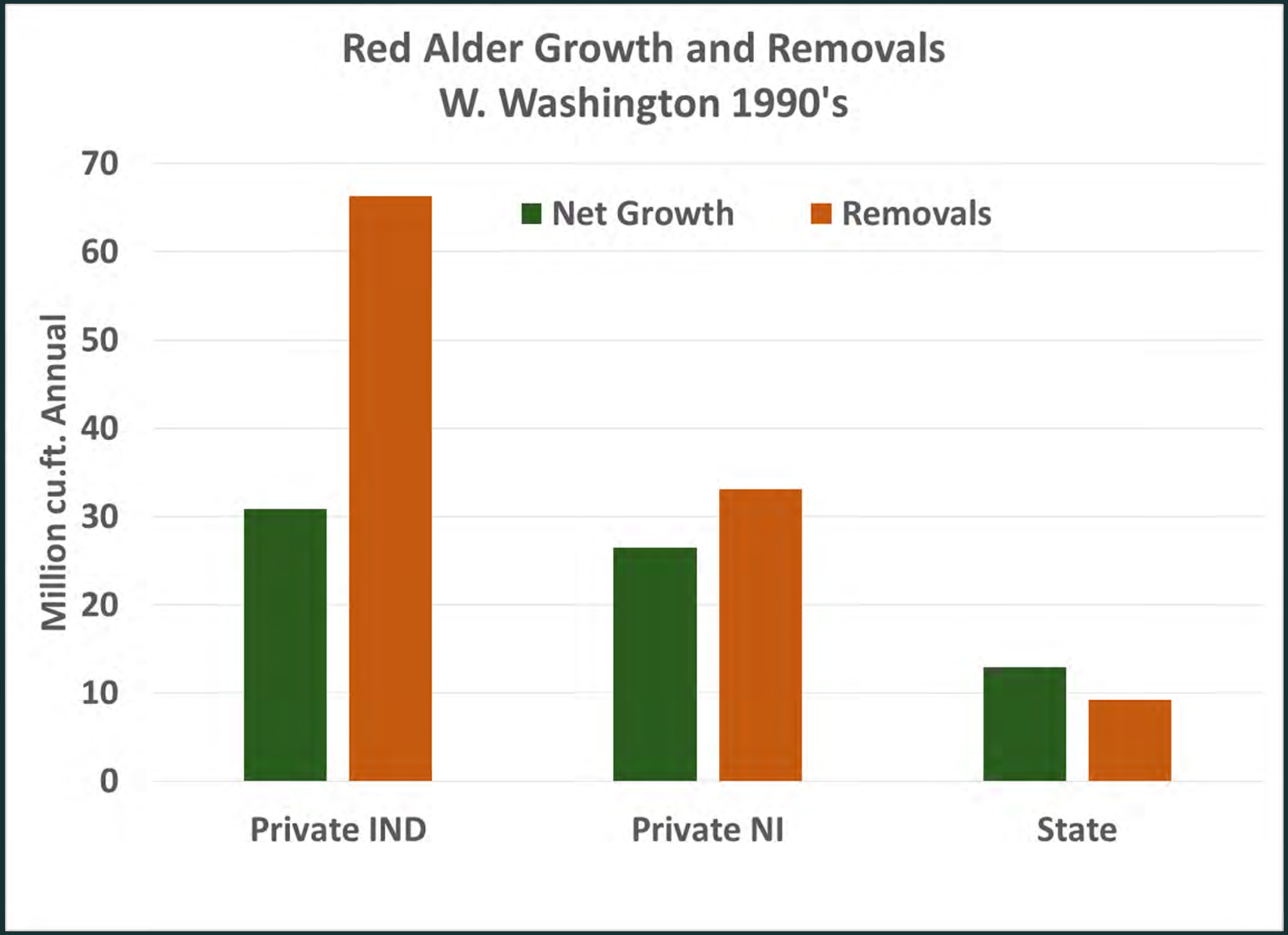
- Alder resource - legacy from past practices and current trends.
- Alder management and harvesting practices of private and public landowners.
- Key Issues & Priorities for future efforts to sustain the alder forest resource.
- Tools to help landowners and foresters manage the alder hardwood resource.

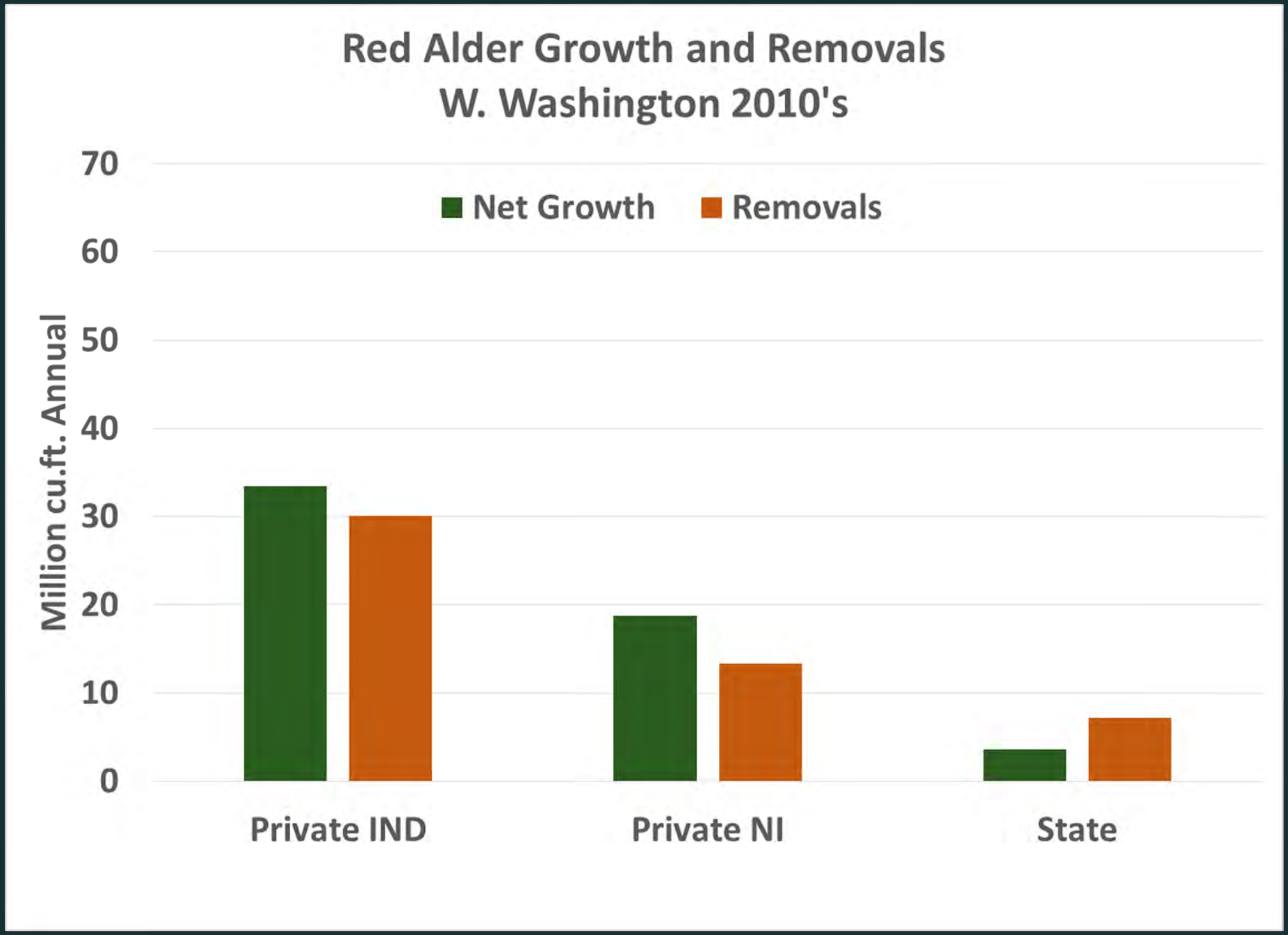
1980’s - Abundant alder in the PNW was a legacy from past practices




Hardwood Inventory and Removals
Private lands - W. OR & W. WA
INVENTORY
REMOVALS
inventory vol. million cu.ft.
annual removals million cu.ft.
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
350
300
250
200
150
100
50
0
1920
1940
1960
1980
2000
2020
YEAR


Annual Timber Harvest - W. Washington
WA Harvest All Species
WHC Alder Processed
Total Million Bd Ft
Alder Million Bd Ft
Year
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
500
450
400
350
300
250
200
150
100
50
0
1990
1995
2000
2005
2010
2015
2020
2025


Red Alder Growth and Removals
W. Washington 1990's
Million cu.ft. Annual
70
60
50
40
30
20
10
0
Net Growth
Removals
Private IND
Private NI
State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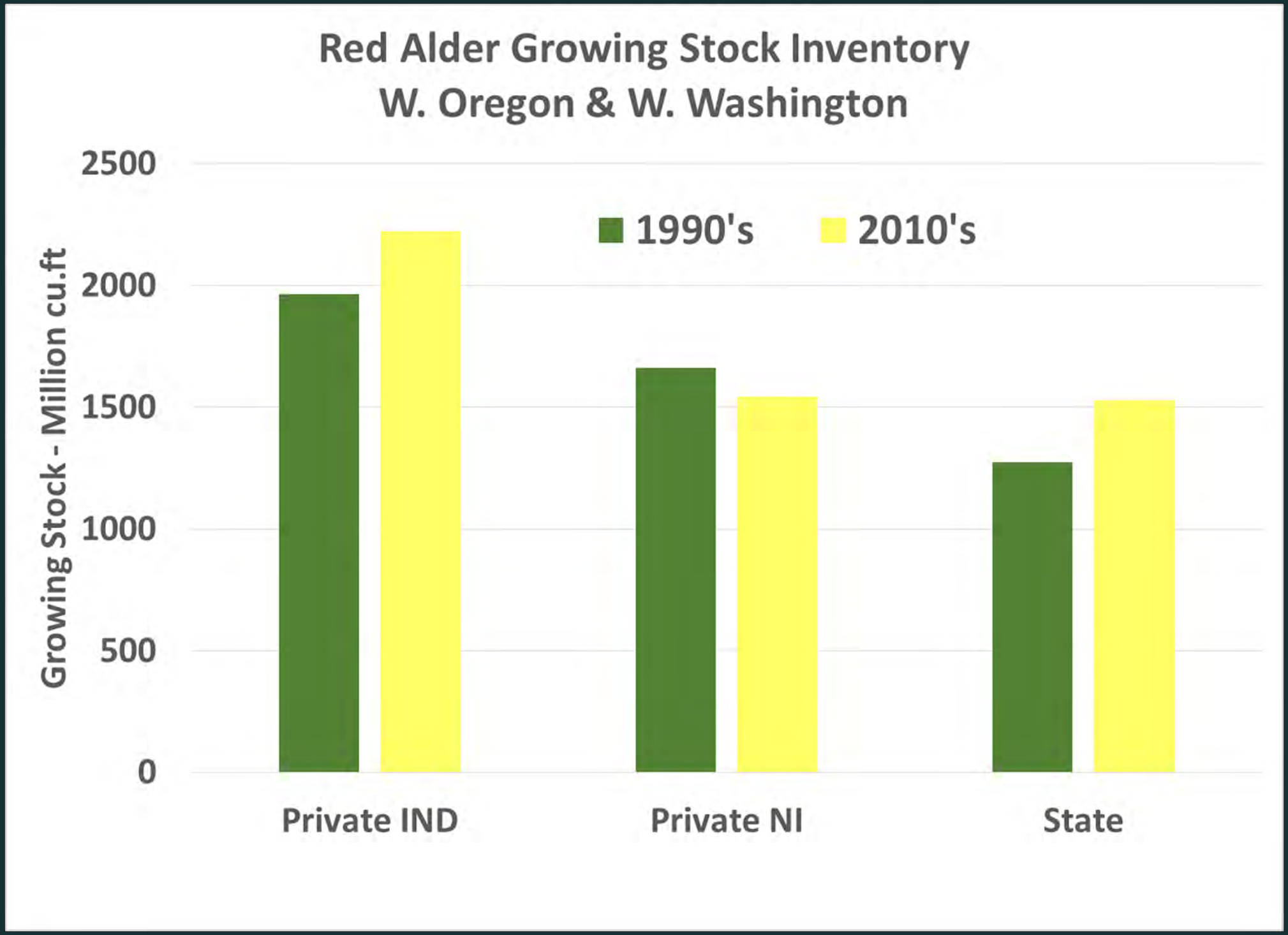
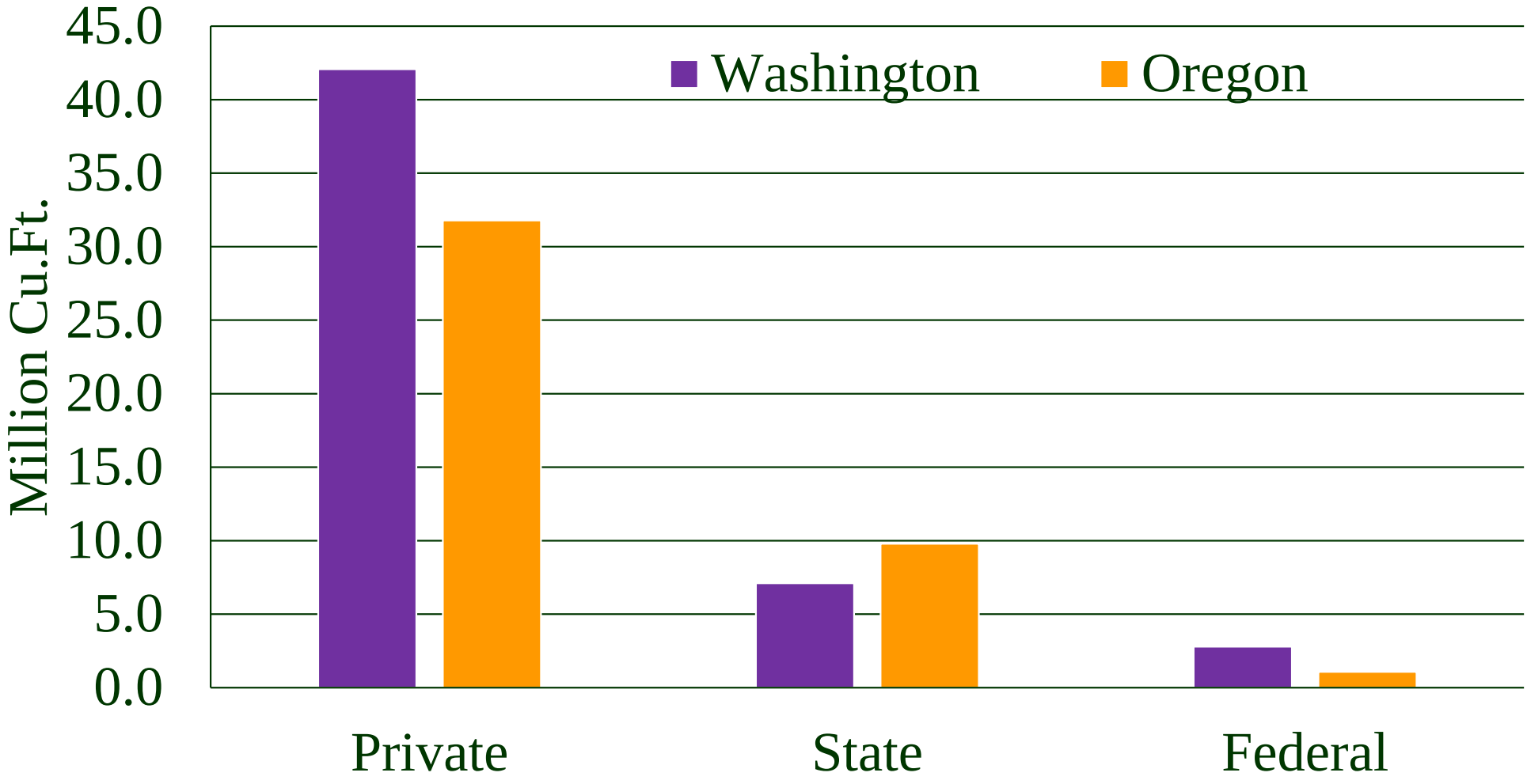
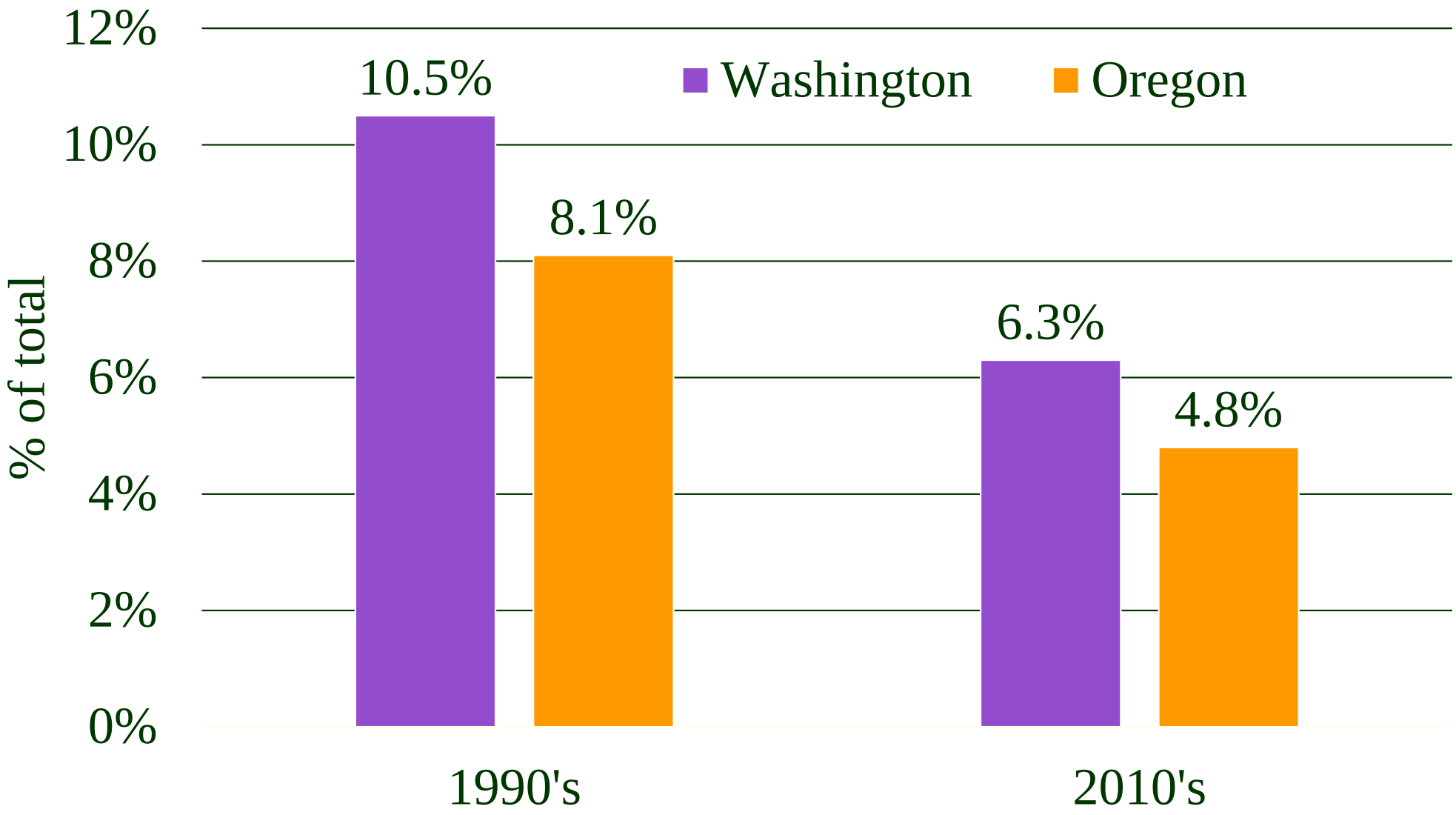

Red Alder Growing Stock Inventory
W. Oregon & W. Washington
Growing Stock - Million cu.ft
2500
2000
1500
1000
500
0
1990's
2010's
Private IND
Private NI
State

Red Alder Timber Harvest-Removals by Ownership
2010's W. Washington & W. Oregon



Sources: USFS FIA “Data Mart”.

Red Alder Harvest-Removals
Percent of Total Growing Stock Removals



Sources: USFS FIA - PNW-RB-237, PNW-RB-246, FIA Data Mart.

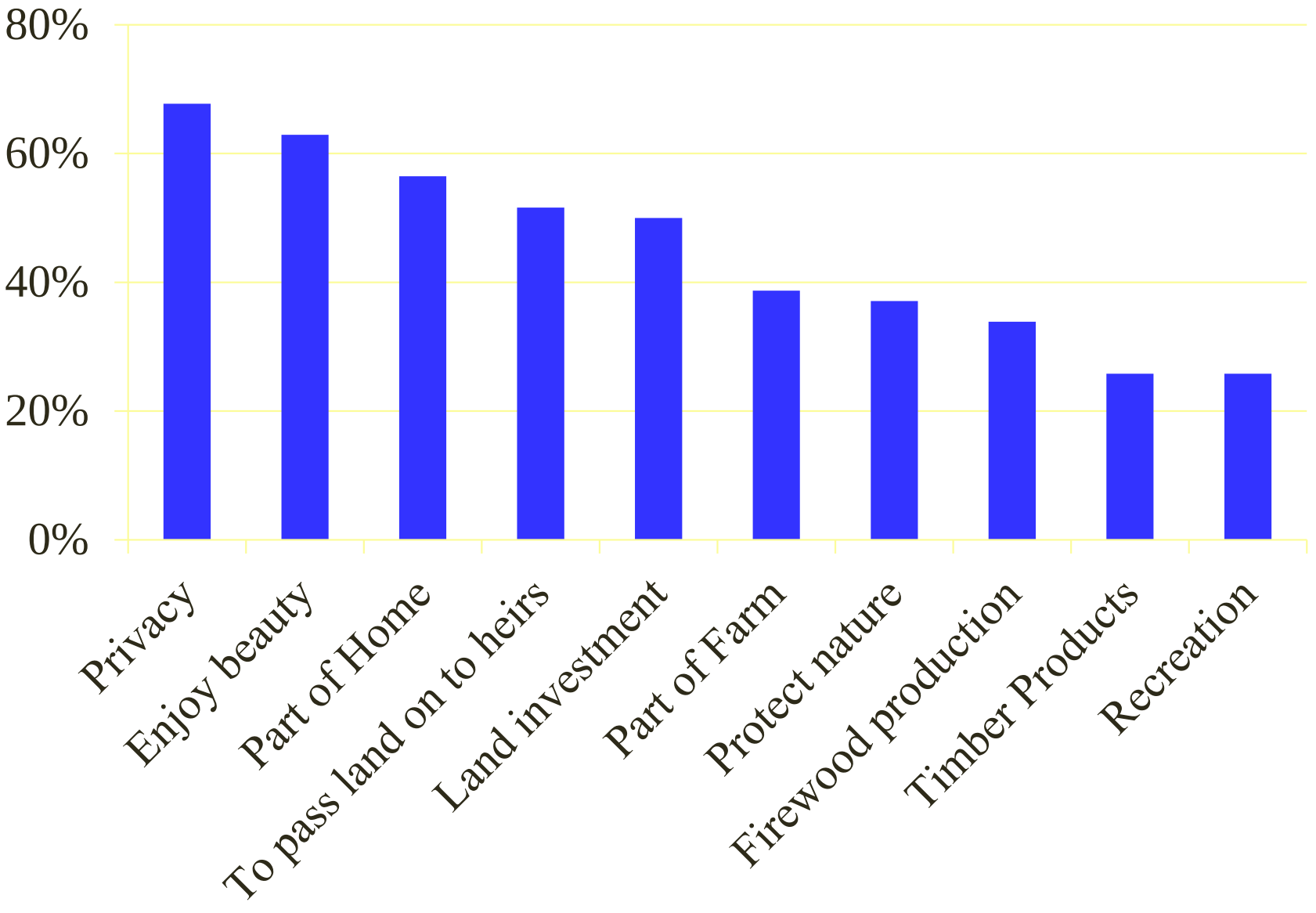
Resource Trends and Management

Summary

- Both the inventory and harvest of “legacy alder” peaked in late 1980’s/early 1990’s.
- 1990’s - harvesting in excess of annual growth, management for conifers, alder declined.
- 2001-2019 - harvest of red alder declined to less than half of peak harvest levels; reduced availability of inventory with increasing regulation and development.
- 2001-2019 - inventory and growth of red alder did not decline significantly.
- Alder supply largely depends on land management and availability of timber from private lands.

Non-industrial private forest owners – diverse goals, changing demographics, decreasing timber management.

Top 10 Reasons for Owning Woodlands



National Woodland Owner Survey http://www.fia.fs.fed.us/nwos/

Conversion to non-forest use continues - especially in Washington.

Protection of riparian areas and steep slopes with abundant alder ~1/3 of the alder resource in WA. New rules will also increase riparian protection in Oregon.

Most upland alder is in mixed stands, managed primarily for conifer.

Reduced Management and Availability of Alder for Timber

- Protection of riparian areas and steep slopes with abundant alder ~1/3 of the alder resource.
- Conversion to non-forest use, especially in Washington.
- Non-industrial private forest owners – diverse goals, changing demographics, decreasing timber management.
- Most upland alder is in mixed stands, managed primarily for conifer.
- Owners who manage timber intensively still favor Douglas-fir and other conifers on uplands.

Management of red alder on “working forest” uplands is key to sustaining alder timber production

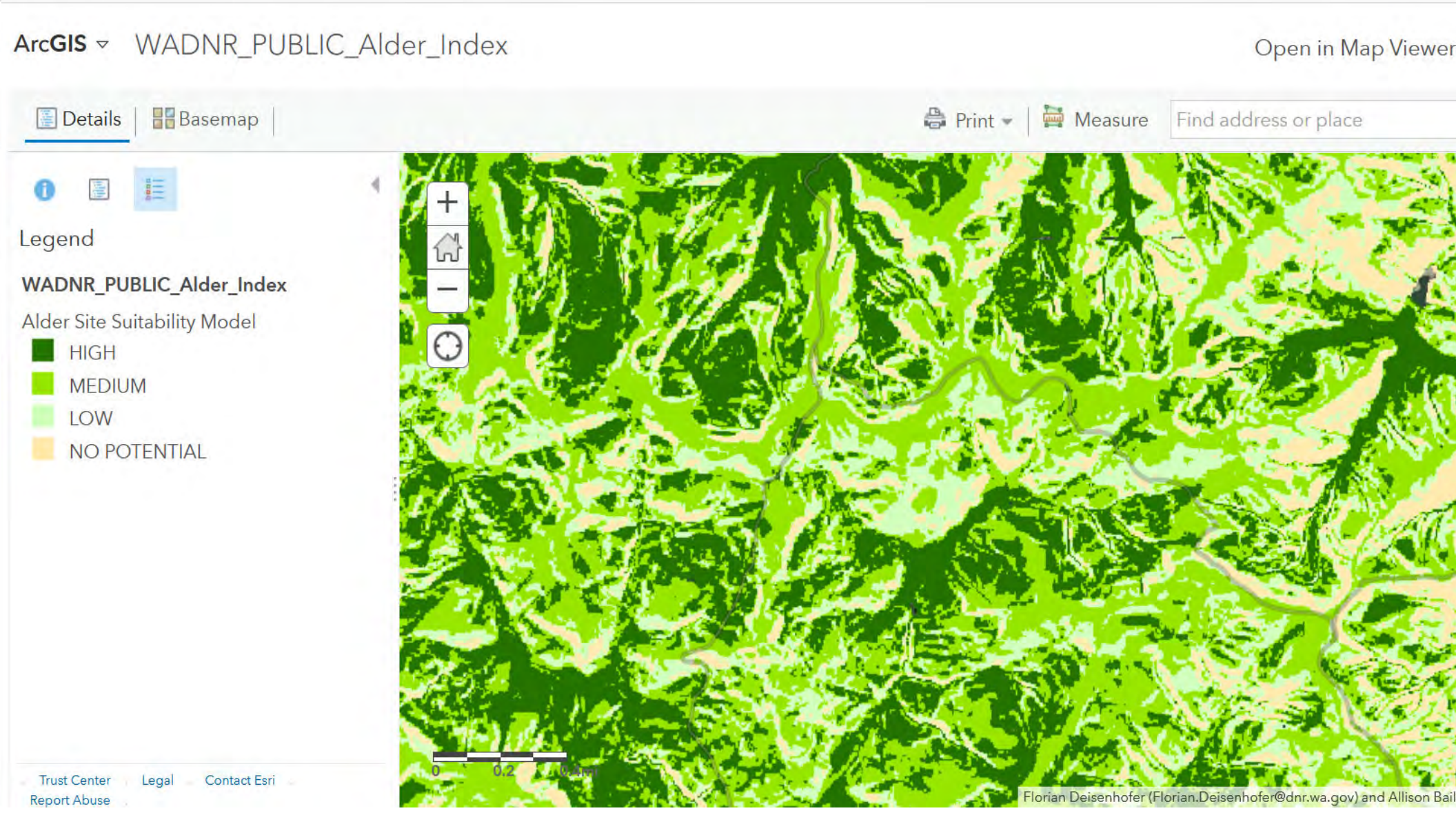

VANDALS

Adoption of alder management on uplands

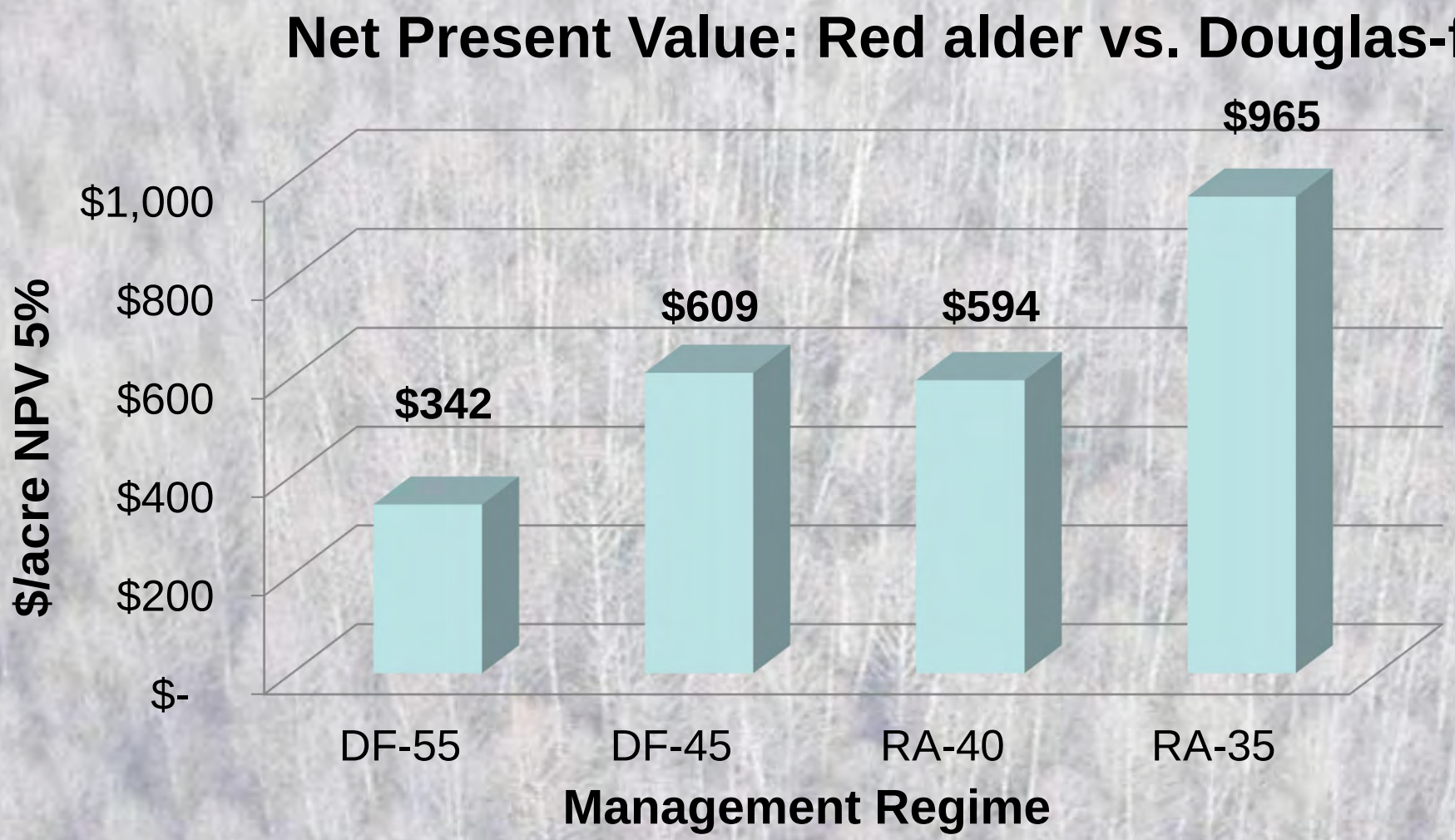
Issues and obstacles

- Alder plantation establishment is expensive - seedling costs, high planting density (500-600 tpa)
- Lack of seedling availability - inconsistent supply of high-quality seedlings.
- Landowners' and managers' unfamiliar with management of red alder.
- Alder site productivity varies significantly across relative small area – smaller management units.
- Economics - Alder has reputation of low volume per acre.

Alder site productivity varies significantly across a relative small area - selecting suitable sites is the key - and the challenge.



Red alder is economically competitive under certain conditions…what conditions?



Plantation age 10;

RA: 525 TPA, no thinning

Plantation age 20;

RA: 525 TPA, no thinning

Plantation age 30;

RA: 525 TPA, no thinning

Estimating alder vs Douglas-fir productivity and carbon sequestration across W. WA (Borman et al 2023)

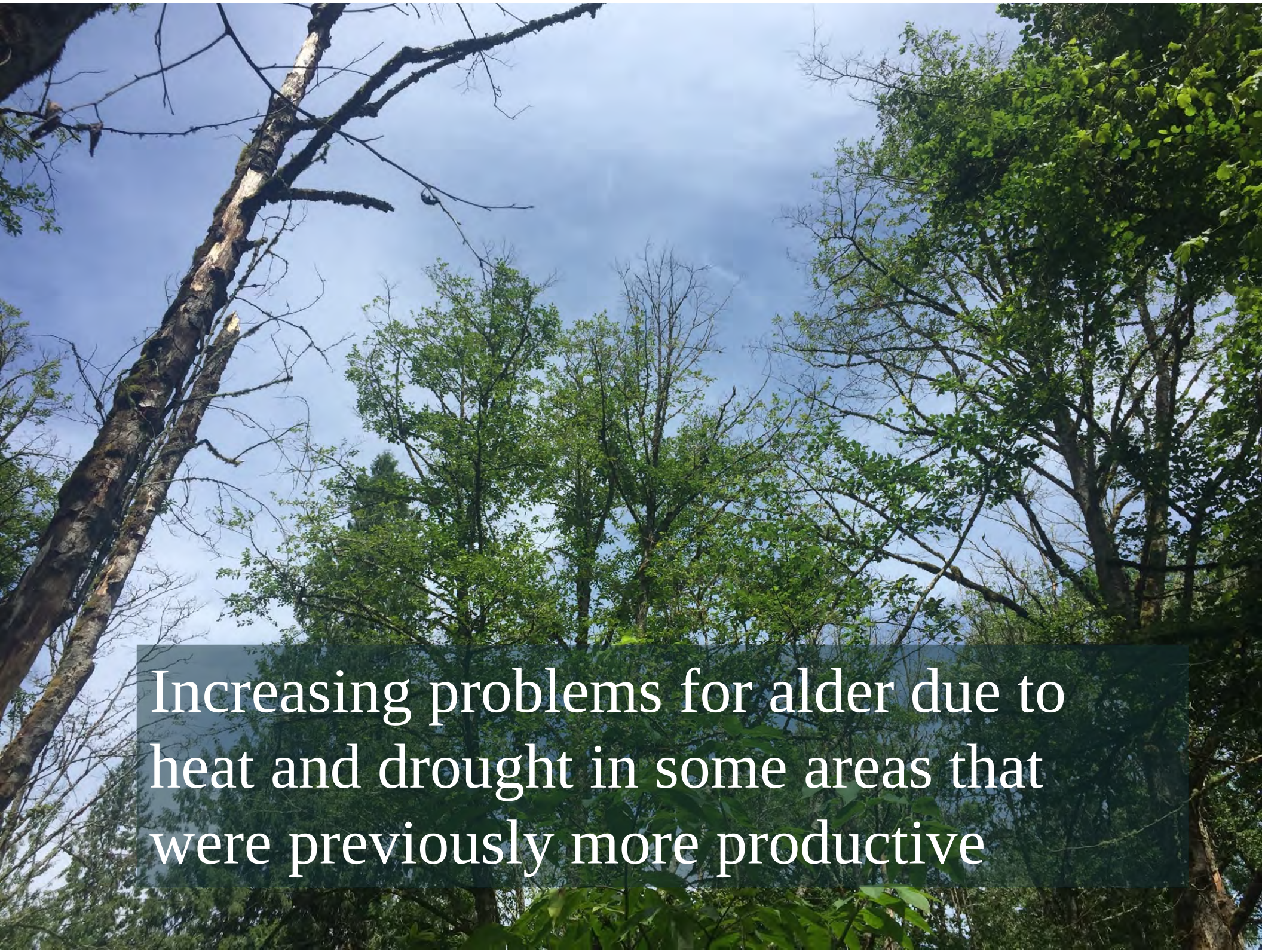
DF > RA

RA > DF

Red alder plantation management for timber production on high-quality sites

site selection is key

Red alder plantation management for timber production


Increasing problems for alder due to heat and drought in some areas that were previously more productive


Red alder dieback
Drought * stem
canker fungus

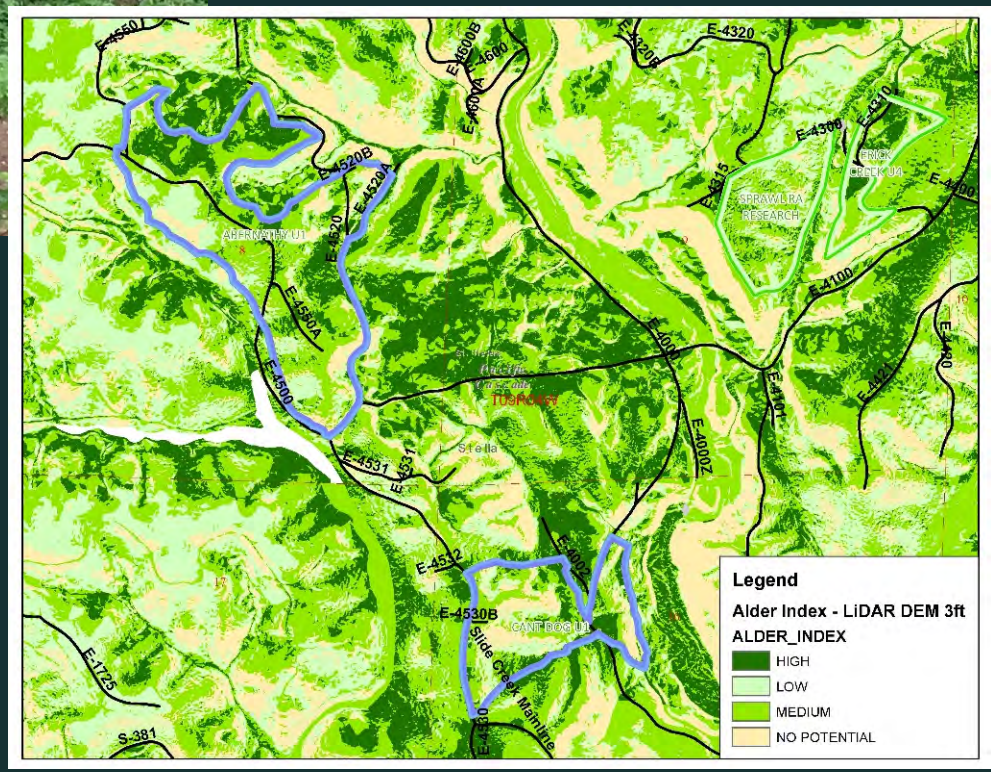
Alder bark beetle attack

Red alder seedlings – recent experience: inconsistent supply of high-quality seedlings + they are relatively expensive.

Adoption of alder management on uplands

- Restore and support economical seedling production systems.
- Improve the alder management toolkit for site selection and stand establishment.
- Increase management of natural regeneration
- Lower planting density to reduce costs?
- Genetic improvement, tree breeding and/or cloning?
- Increased management for carbon and landscape fire resilience?

HSC, WHC, and DNR - support and share applied research, education, and operational experience.



Support and share applied research, education, and operational experience

- The Washington DNR is the major landowner with an active alder management program - knowledgeable Silviculturist, alder propagation, planting, stand management and timber sales.
- University of Washington and The Nature Conservancy showing increased interest and support for alder R & D.

Summary – Future of the Alder Resource

- The future of the red alder resource depends on upland forest management on private and state lands.
- Increasing importance of alder for carbon sequestration and landscape fire resilience?
- Need to see how alder will adapt to warmer, drier conditions.
- Need to increase professional knowledge and skills and demonstrate success.

For more information on Alder resources and Alder management

Glenn Ahrens
Hardwood Silviculture Cooperative
OSU Extension Forester
200 Warner-Milne Rd.
Oregon City, OR 97045
503-655-8631
glenn.ahrens@oregonstate.edu