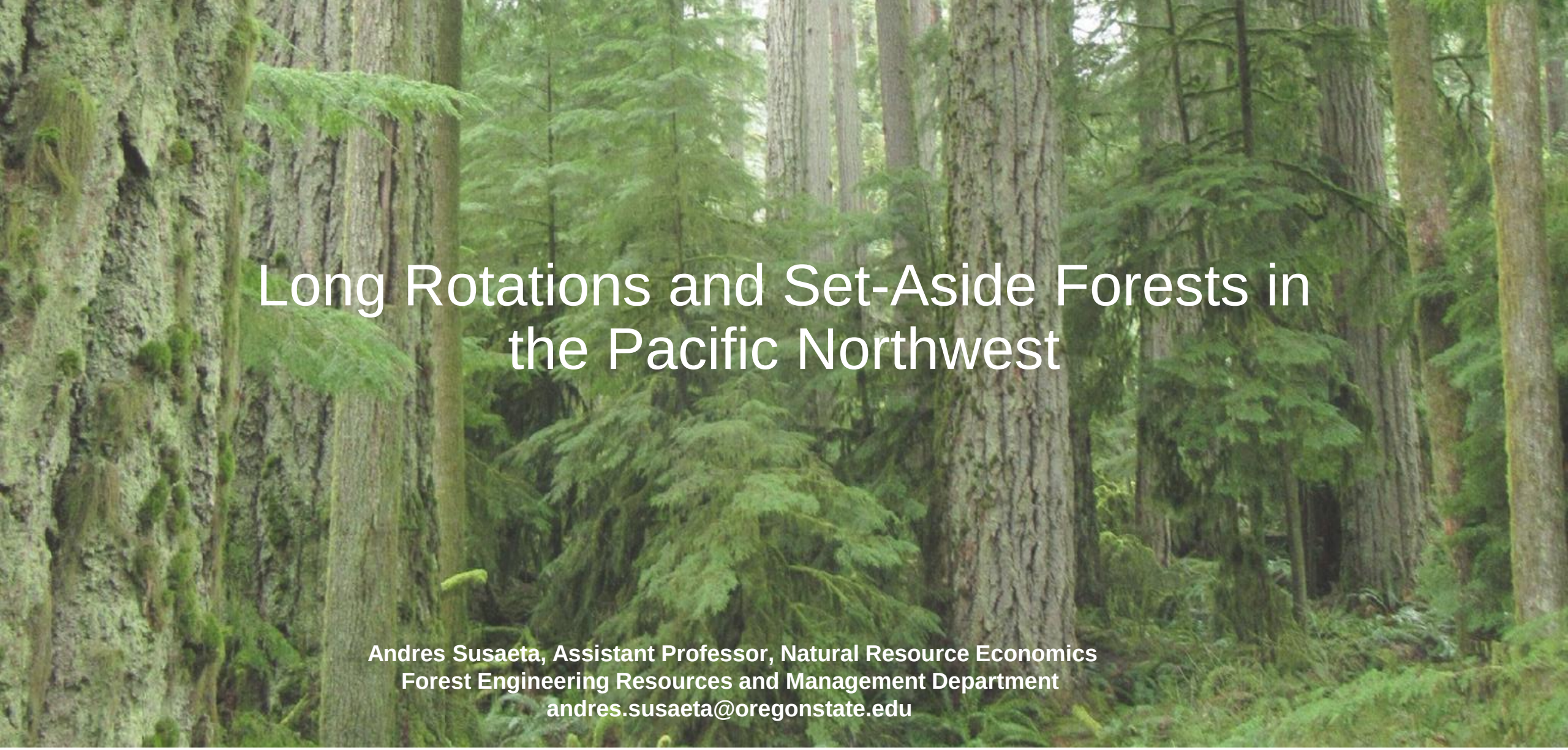

Long Rotations and Set-Aside Forests in the Pacific Northwest

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- Long rotations and set-aside forests are gaining traction as tools to balance timber production with other environmental goals

- Ecological resilience
- Important economic trade-offs

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- Long rotations extend the time between timber harvests to allow trees to reach older, larger sizes
    - In Douglas-fir forests, this may mean 80-120+ years instead of 40-50
- Set-aside forests are areas excluded from commercial timber harvesting
    - Legally protected or voluntarily managed for conservation

Economic Implications

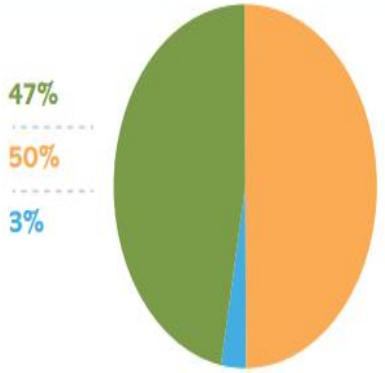
- Long rotations and set-aside forests offer valuable ecological benefits but come with economic challenges

- Long rotations →net present value
- Set-asides forgo harvest income

- However, forests may qualify for carbon credits
- Produce higher-value timber
- Improved wildlife habitats

- Opportunity costs vs long-term benefits

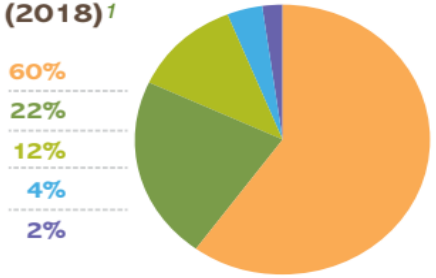
Oregon total land area (acres)



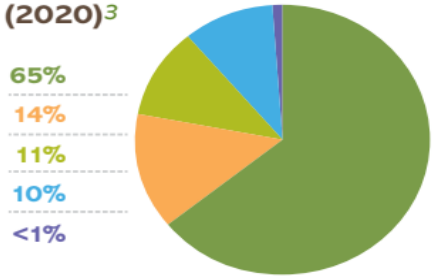
FORESTLAND	29,656,000
NONFOREST LAND (urban, cropland, range, etc.)	31,826,800
WATER AREA	1,807,600

Ownership	Forestland (acres)	Percent of total
U.S. Forest Service	14,093,000	48%
Bureau of Land Management	3,573,000	12%
National Park Service	160,000	1%
Other federal	32,000	<1%
Total federal	**17,858,000**	**61%**
State	942,000	3%
County and municipal	187,000	1%
Total state and county	**1,129,000**	**4%**
Total government	18,987,000	64%
Large private landowners (>/= 5,000 acres)	6,487,000	22%
Small private landowners (<5,000 acres)	3,702,000	12%
Total private	10,189,000	34%
Native American tribal forestland	480,000	2%
TOTAL FORESTLAND, all owners	**29,656,000**	**100%**

FORESTLAND ACREAGE, BY OWNER (2018)[1]



TIMBER HARVEST, BY OWNER (2020)[3]



FEDERAL
LARGE PRIVATE
SMALL PRIVATE
STATE/COUNTY
TRIBAL

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Pacific Northwest Context

- The PNW includes diverse land ownerships and management goals
    - Federal lands include large set-asides under the Northwest Forest Plan
    - Private lands might face economic pressure for short rotations
- There is a trade-off between immediate timber revenues and long-term ecosystem services
    - In some cases, synergies exist—older forests can yield high-value timber while storing carbon and supporting biodiversity

Extended Rotations

- Carbon payments
  - Gong and Susaeta: C sequestration and substitution effects

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Is forest conservation a socially optimal strategy for increasing forest carbon sequestration?

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Extended Rotations

- Economic environment, aka, fluctuating timber prices can also influence rotation ages

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Optimizing Douglas-fir management in the U.S. Pacific northwest: Integrating timber prices, thinning strategies, and harvest age decisions

Andres Susaeta

Set Aside forests

- Private Forest Accord

- The PFA imposes significant restrictions on timber harvesting

- Lu, Susaeta, Kaetzel, Canadian Journal of Forest Research, under review)

- IMPLAN's Multi-Regional Input-Output model

- Employment reduced by 0.39%
- Direct output reduced by 0.10%