IDAHO: FORESTRY TOPICS AND ECONOMIC ISSUES OF WESTERN GEOGRAPHIES

- There is a lot of overstocked forests in an area with high fire risk
  - *And the fire risk is increasing*
- This has led to a situation where we have an accumulation of dead and dying wood
- *Which is bad in a high fire risk area*
- It also puts us in a bad position regarding a lot of the policy incentives for climate mitigation
  - *Which is bad for Idaho's forest industry*
  - *And our potential national climate policy effectiveness*

WE START HERE

- Simple stand dynamics

- Drew and Flewelling (1979) did a great job explaining graphically the concept of maximum size density and how it relates to silviculture

Riley, K.L., I.C. Grenfell, M.A. Finney, J.M. Wiener, and R.M. Houtman. 2019. Fire Lab tree list: A tree-level model of the conterminous United States landscape circa 2014. Fort Collins, CO: Forest Service Research Data Archive. https://doi.org/10.2737/RDS-2019-0026

Kimsey, M.J., T.M. Shaw, and M.D. Coleman. 2019. Site sensitive maximum stand density index models for mixed conifer stands across the Inland Northwest, USA. *Forest Ecology and Management*. 433(2019):396-404.

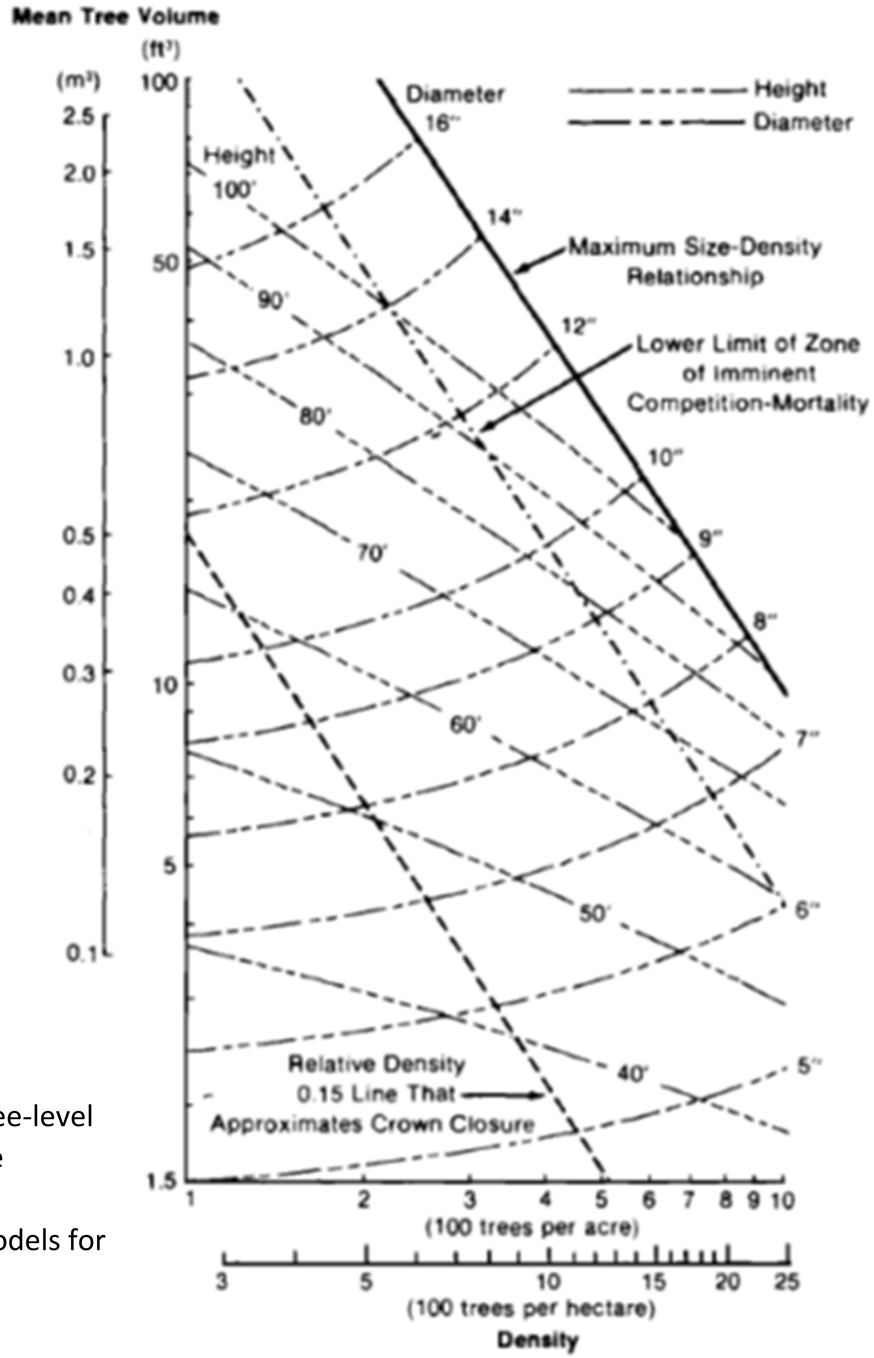

Figure 2. Stand management diagram for Douglas-fir with estimates of diameter and height.

Density Mapping on Existing Forests

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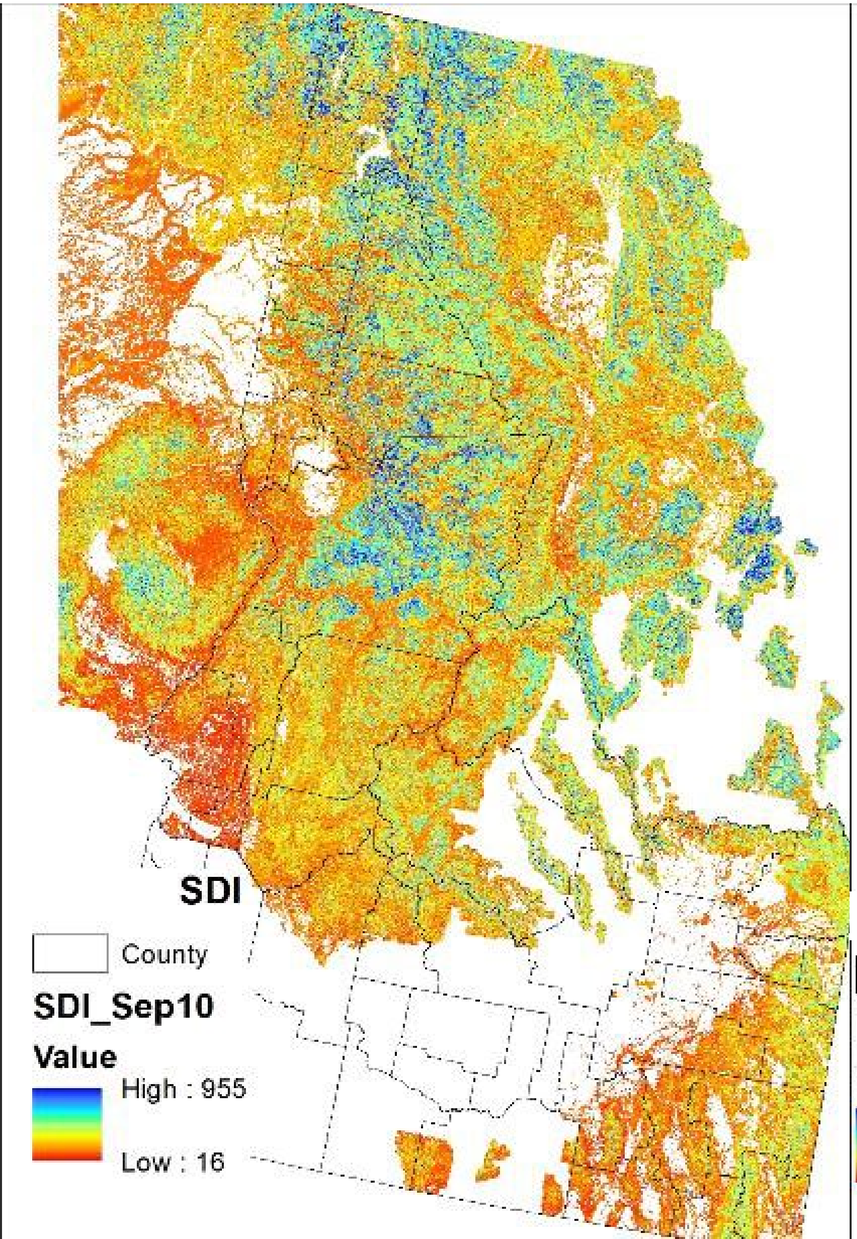

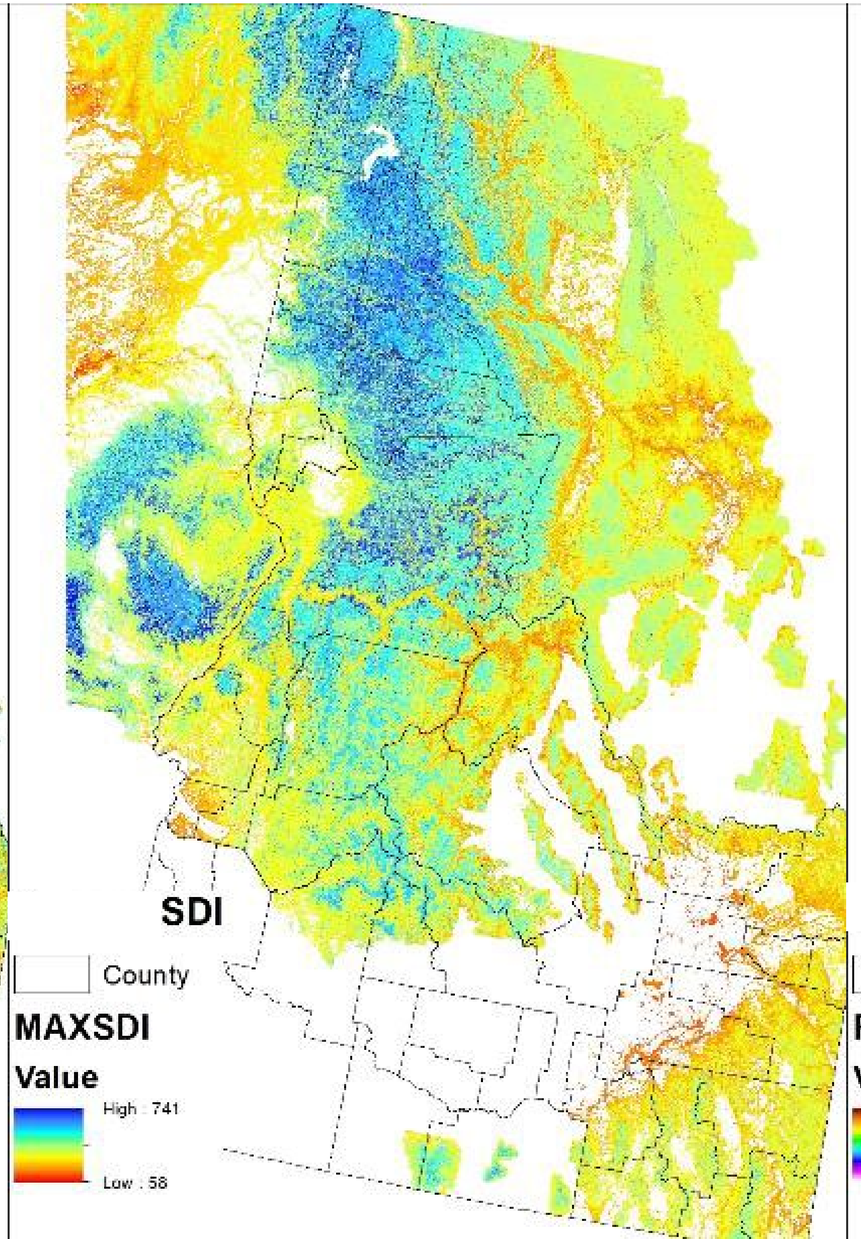

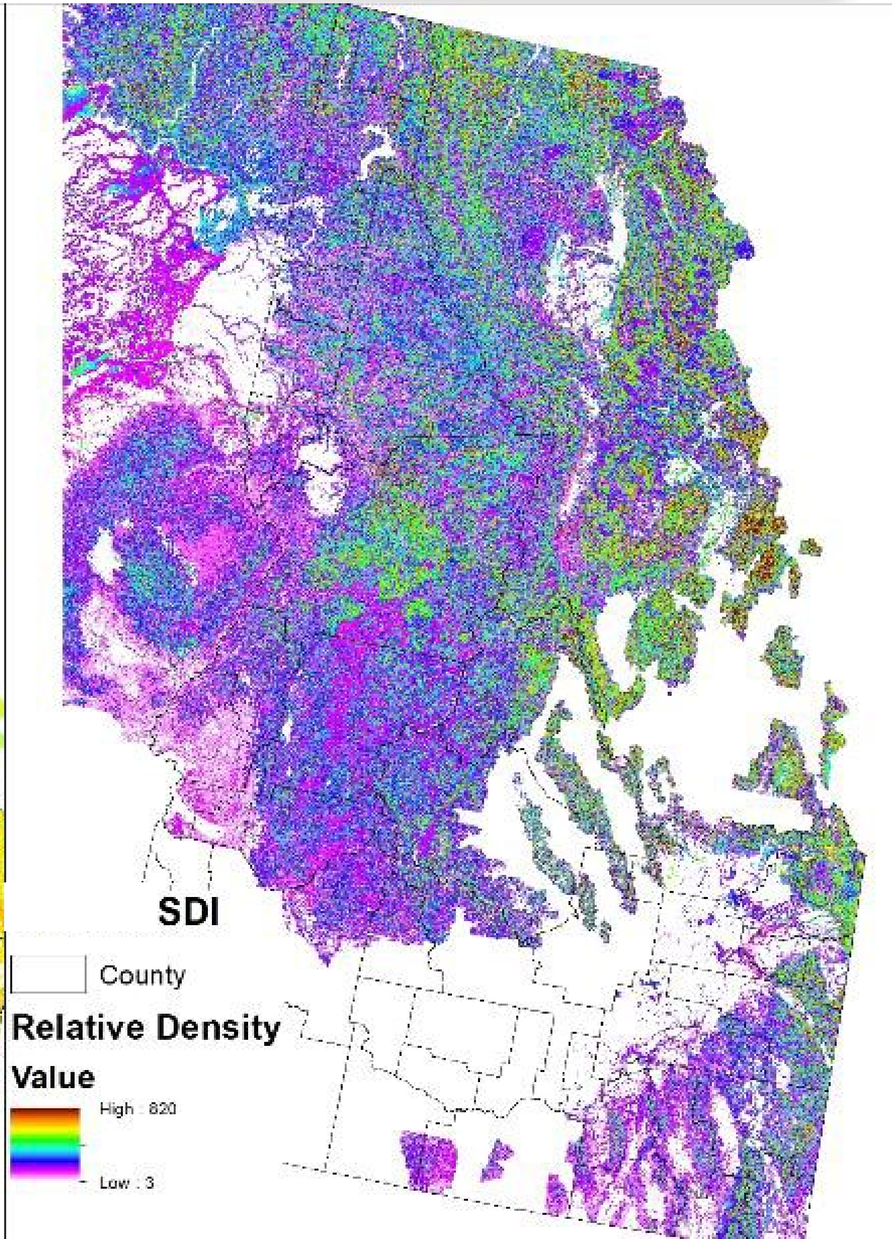

New Data: Maximum Size Density Theory

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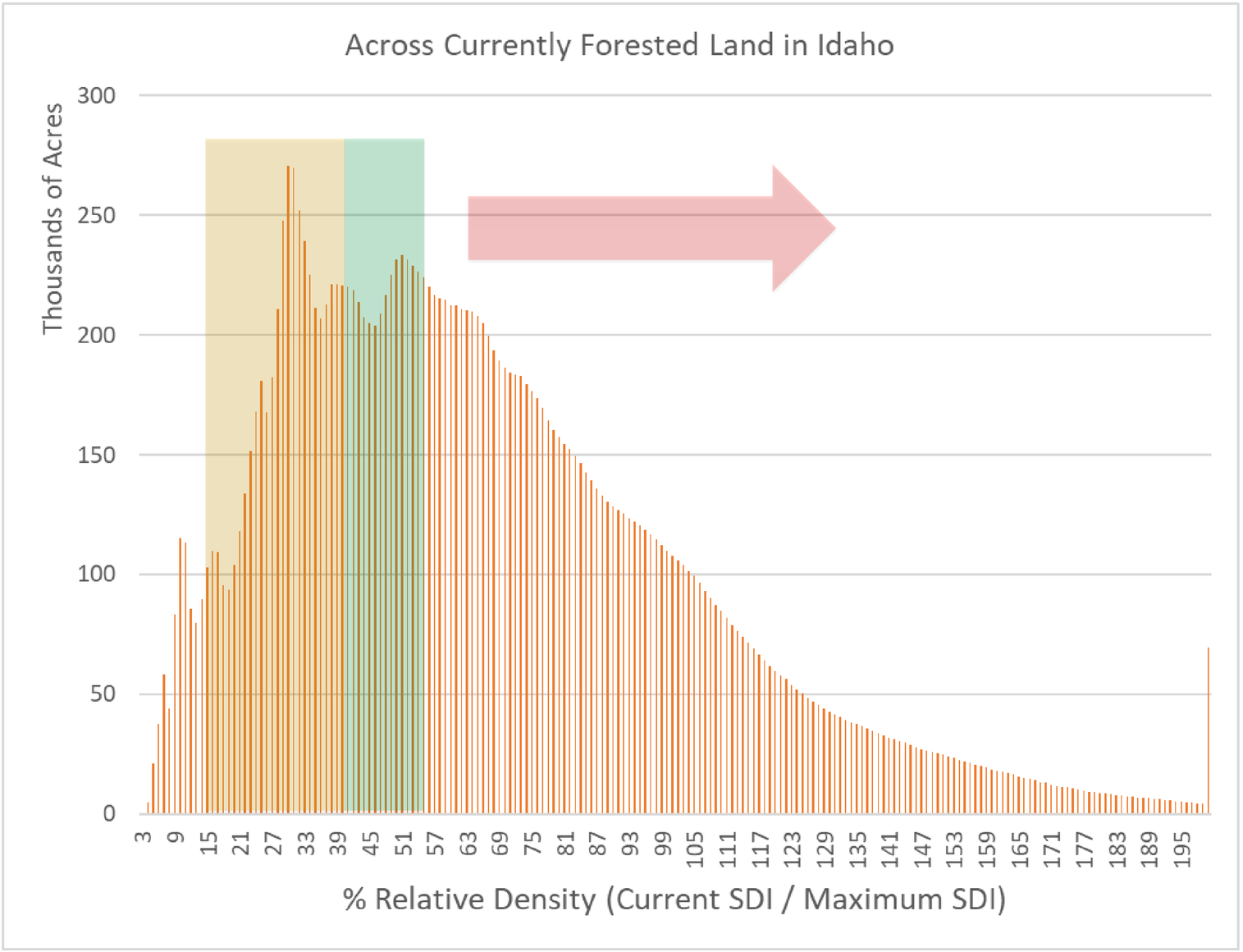


At relative densities between 0.15 and 0.40, growth per unit area increases with density, but growth per tree declines.

At relative densities between 0.40 and 0.55, growth per unit area is unaffected by density

For relative densities greater than 0.55, gross growth is the same as in the 0.40 to 0.55 region, but net growth may be considerably less than this if substantial mortality has occurred

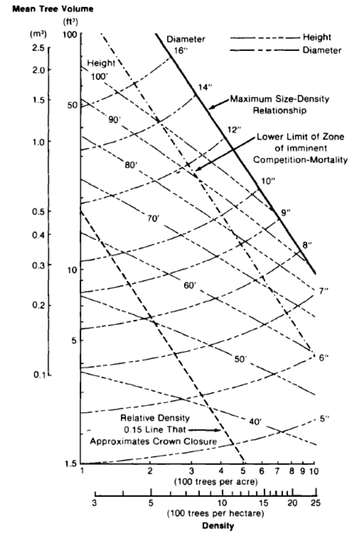
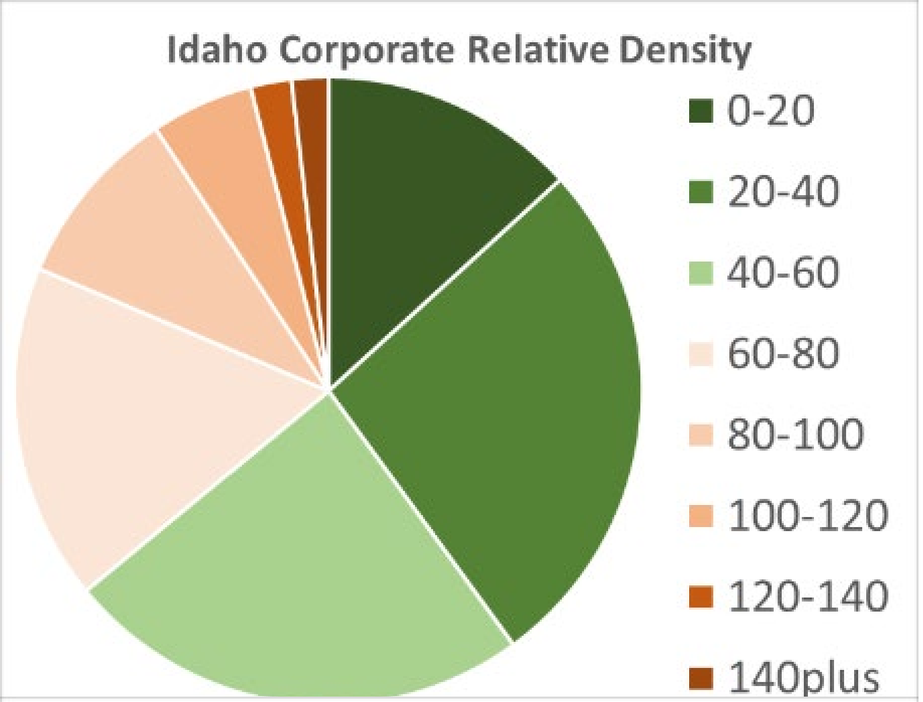
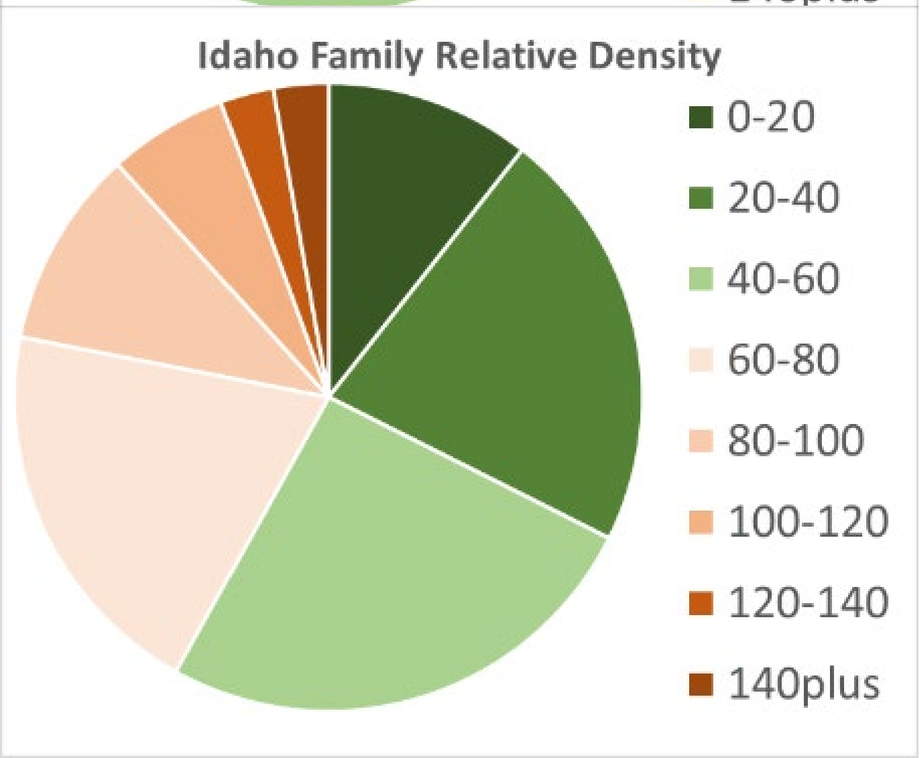


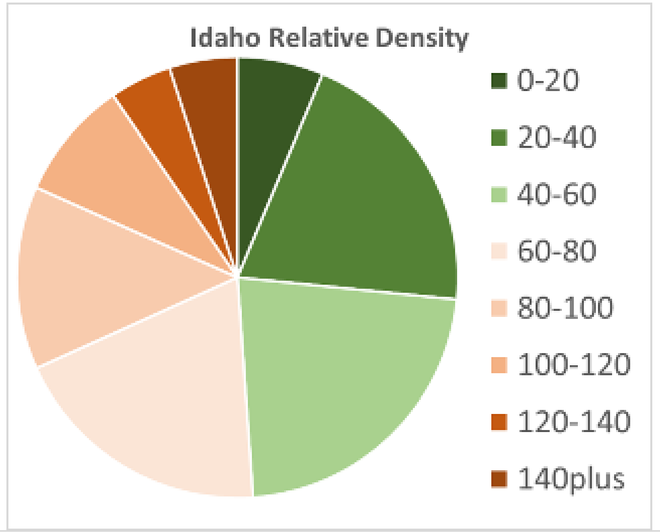
Figure 2. Stand management diagram for Douglas-fir with estimates of diameter and height.

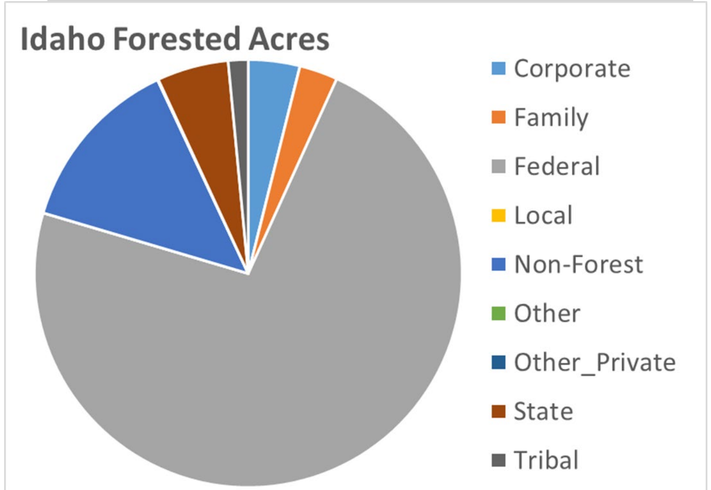
Drew and Flewelling (1979)

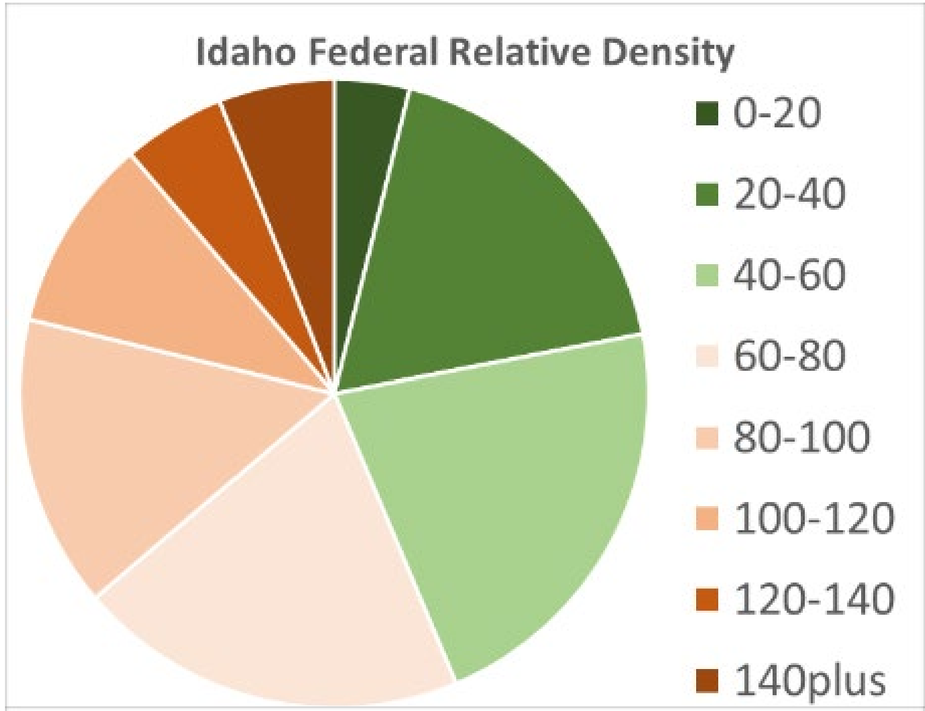
Looking at differences across owners

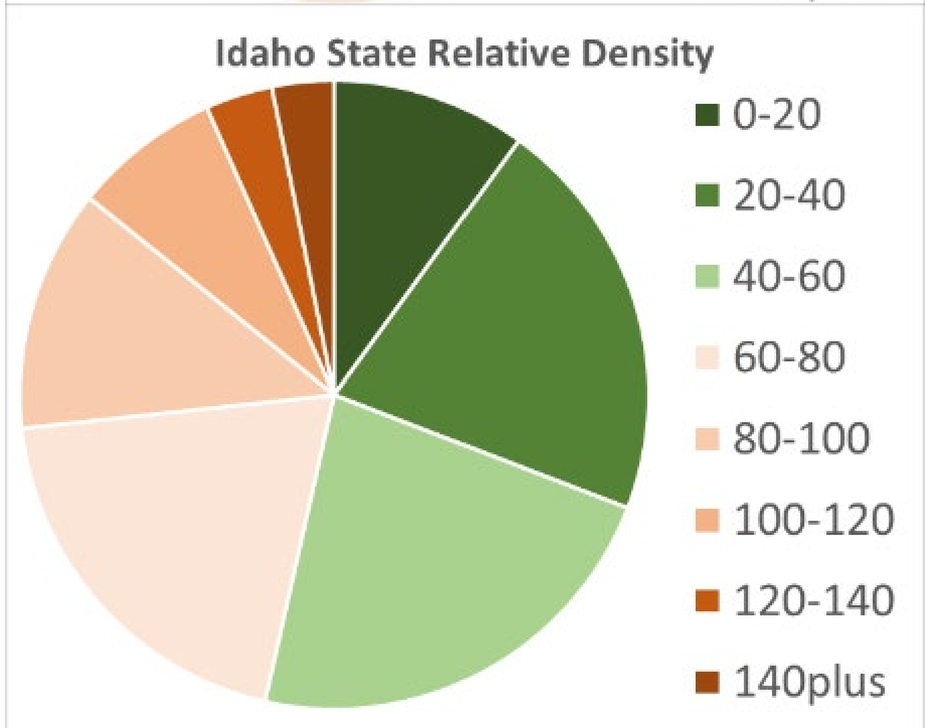






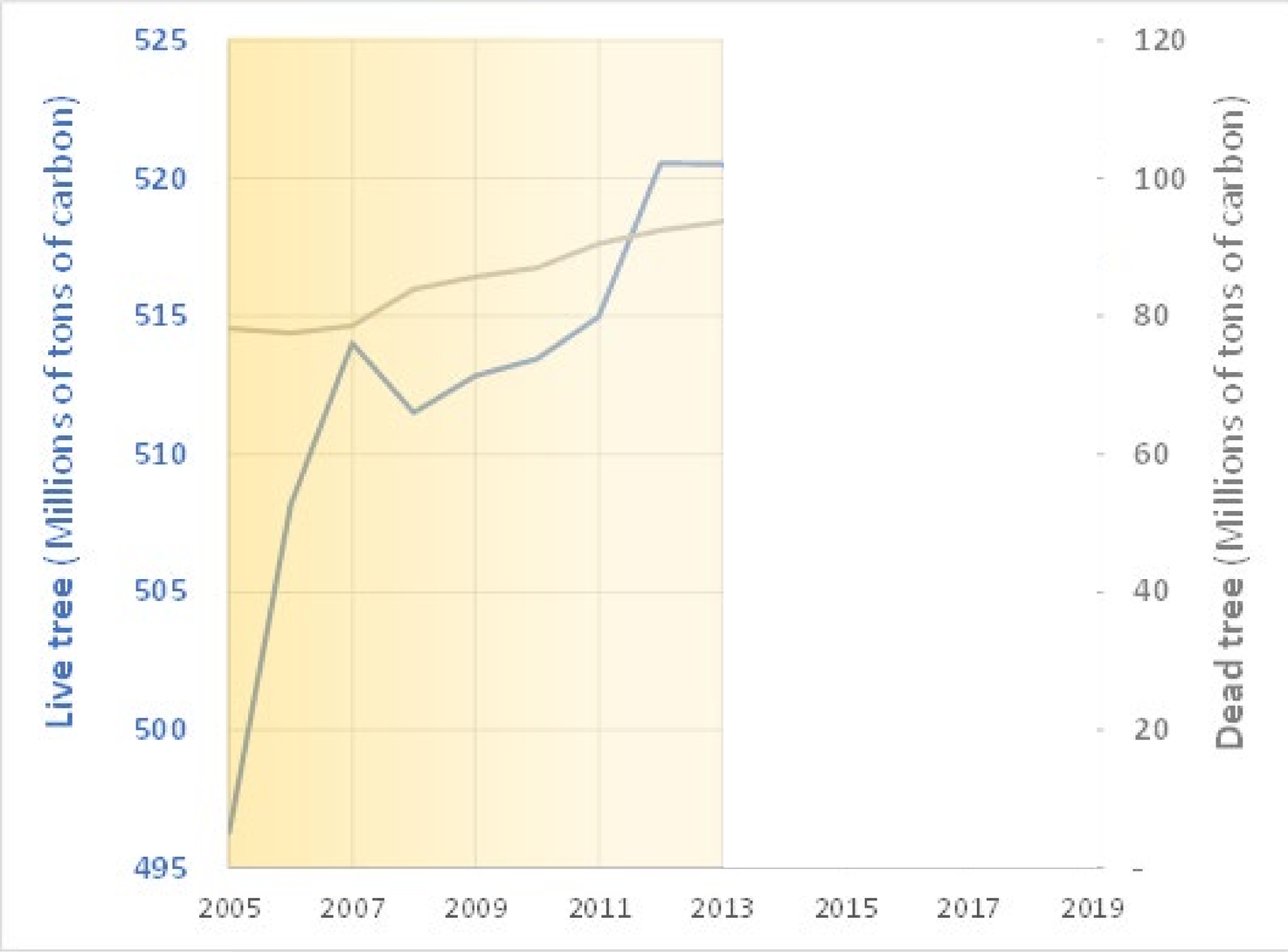






IDAHO'S FOREST RESOURCE

- What do the forests of Idaho contribute to our climate change mitigation efforts?



Idaho in our National Forest (FIA) Inventory

We measure 1/10th of the land base each year starting in 2004. The yellow area below is where we had less than a full sample

The only thing keeping Idaho's forestry sector from being a net emitter of carbon is the accumulation in dead wood (which our national inventory doesn't track as closely as live trees)

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Journal of Forestry, 2023, **XX**, 1–12
https://doi.org/10.1093/jofore/fvad037
Advance access publication 14 August 2023
Research Article - biomass, carbon & bioenergy

OXFORD

If you use Idaho lumber in your building you must include a negative carbon balance

Calculating a Land Carbon Accounting Factor in the United States: an Example and Implications

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*Corresponding author email: sprisley@ncasi.org

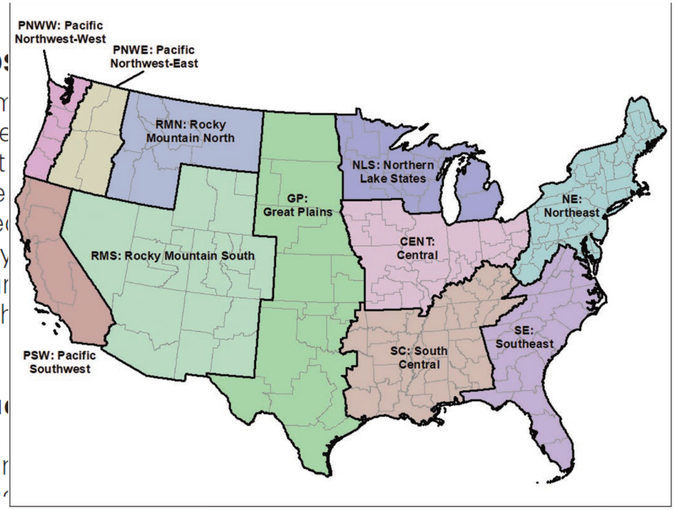

Table 5. Metrics describing regional carbon dynamics. Metrics in bold are better than the national average, metrics in italics are worse.

Region	Land carbon accounting factor (annual net C stock change per green ton delivered)	Annual net C stock change per hectare ($MT\ CO_2e/ha/year$)	Annual harvest per hectare ($MT\ CO_2e/ha/year$)	Mortality as percent of stock
CENT	**1.174**	*1.36*	*1.44*	*1.53*
GP	**3.648**	*1.21*	*0.42*	*1.73*
NE	**1.313**	*1.97*	*1.85*	**1.02**
NLS	**1.002**	*1.36*	*1.61*	*1.38*
PNWE	*0.832*	*0.87*	*1.30*	*1.20*
PNWW	*0.637*	**3.05**	**6.47**	**0.63**
PSW	**1.354**	*2.15*	*1.81*	**0.97**
RMN	*-0.509*	*-0.35*	*0.69*	*1.74*
RMS	*-6.171*	*-1.39*	*0.13*	*2.38*
SC	**1.309**	**4.18**	**3.87**	**1.04**
SE	*0.757*	**3.07**	**4.67**	**1.13**
National average	0.979	2.26	2.79	1.16