

# Forest Growth and Volume Estimates - ponderosa pine forest type

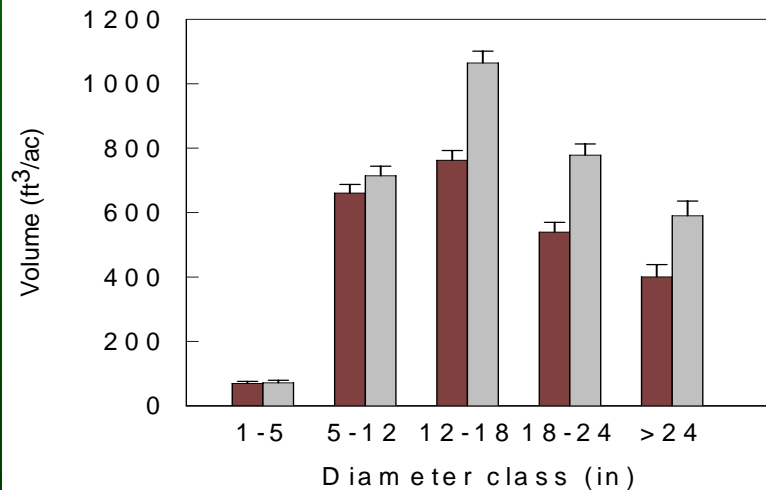
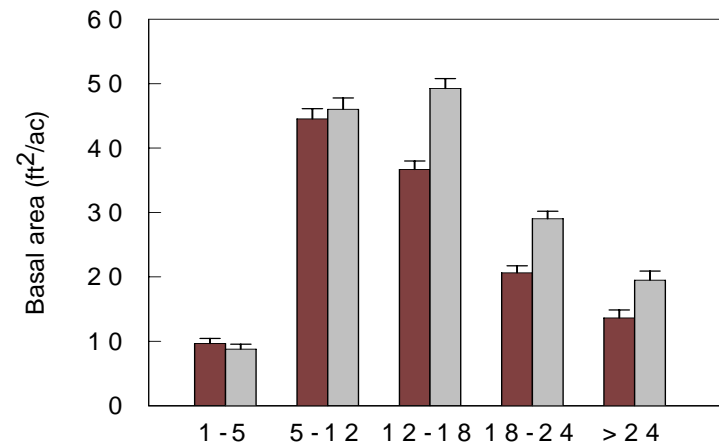
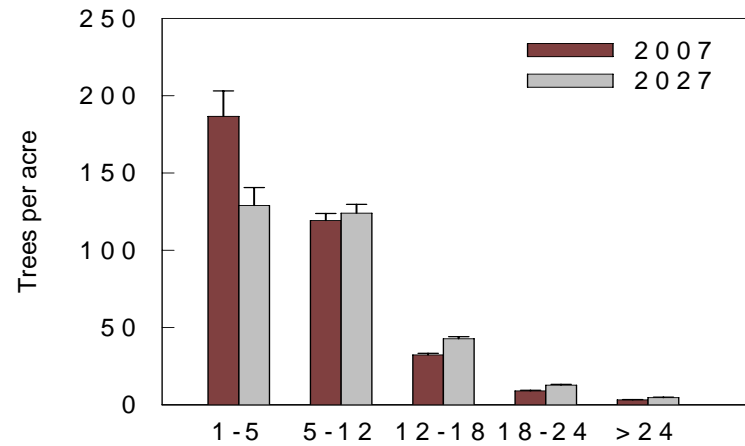
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Slide 1

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# Forest Growth Est. - 2007 & 2027



**Forest Vegetation Simulator  
Projections**

# Forest Growth Summary - 2007 & 2027

Average forest conditions (FIA-FVS)	2007	%	2027	%
Total wood volume	2,431 ft <sup>3</sup> /ac		3,218 ft <sup>3</sup> /ac	
Small diameter volume (<12" d.b.h)	730 ft <sup>3</sup> /ac	30%	785 ft <sup>3</sup> /ac	24%
Total basal area	125 ft <sup>2</sup> /ac		153 ft <sup>2</sup> /ac	
Small diameter basal area (<12" d.b.h)	54 ft <sup>2</sup> /ac	54%	55 ft <sup>2</sup> /ac	36%
Annual growth rate	40 ft <sup>3</sup> /ac/yr		39 ft <sup>3</sup> /ac/yr	

# Forest Volume Estimates - ponderosa pine forest type

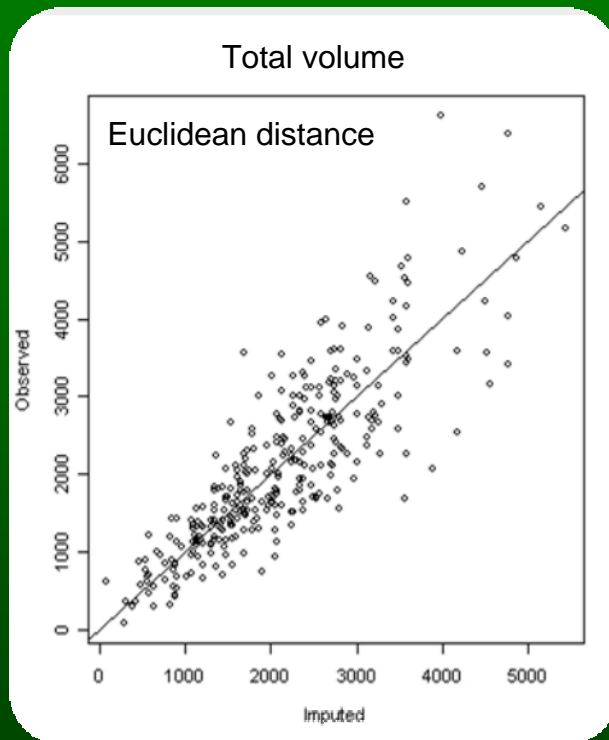
## Regression modeling approach (*k*-NN imputation)

- FIA plots - reference data by volume class (Y)
- Data layers— CC, QMD, BA, TPA, biophysical vars. (X)
- Error estimation - Root Mean Squared Difference (RMSD) from observed and imputed variables

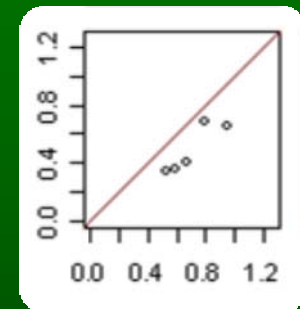
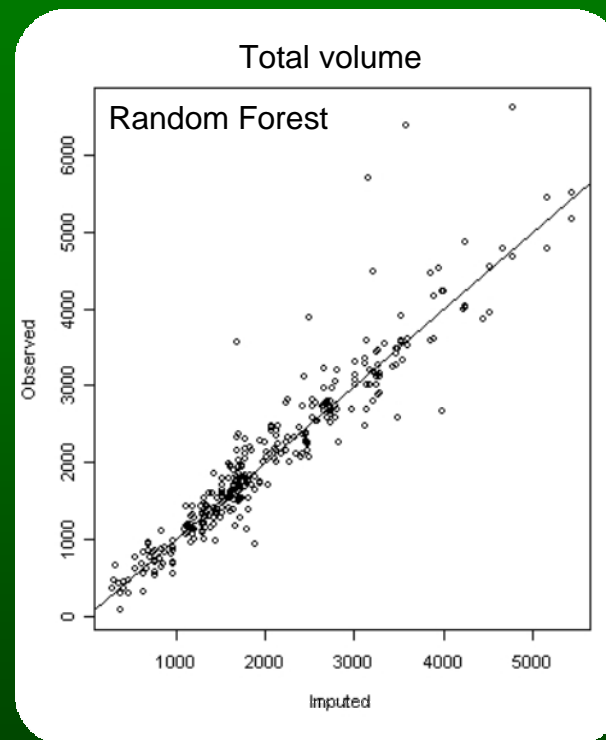
Hudak et al. 2006, Stage and Crookston 2007

# Forest Volume Estimates - ponderosa pine forest type

RMSD = 0.71



RMSD = 0.49



# Tree mortality and disturbance factors affecting volume estimates?

- Forest insect outbreaks
- Fire perimeter (BAER data)
- Fire severity
- Drought killed trees
- Others?