FIA
VOLUME/Biomass/Carbon Study
Status and Plans

James A. Westfall
OVERVIEW

- Cooperators/Technical assistance
  - University of Maine
  - Virginia Tech
  - Oregon State University
  - Michigan State University
  - University of Montana
  - University of Georgia
  - N. Arizona University
  - Industry: NCASI, Rayonier, Potlatch, Weyerhaeuser
  - Wood Properties: SRS RWU-4704, Forest Products Lab
  - Forest Management Service Center
  - FIA – PNW, IW, NRS, SRS
DATA COLLECTION

- Ongoing data collection
  - 2018 Western species felled-tree effort
  - Spatial and tree size gaps
- Felled-tree samples through 2017 = 3,070
- Legacy data (legacytreedata.org)
  - Volume = 237,721
  - Biomass = 16,896
  - Volume and biomass = 13,301
- Other non-public data
  - Industry studies
  - ENFOR biomass and taper (Canada)
Research accomplishments

- ~ 40 publications (30+ peer-reviewed journal)
- ~ 60 presentations
- Sampling Gaps (NRS-GTR)
- 2017 FIA Stakeholder Science Meeting Session
  - Development and evaluation of multi-species, cross-regional stem taper and bark thickness equations for predicting total and merchantable volume across the United States.
  - Modifying the component ratio method: Implications for carbon sequestration in Eastern U.S. forests.
  - Systems of component biomass equations for 7 important conifer species of the Inland Northwest, USA.
CURRENT WORK

- Unified database
  - Combines all data sources into a single dataset
  - Nationally-consistent database across all cooperators
  - Provides testing ground for various modeling approaches and comparisons among them

- Tree components and modeling approaches
  - Variable vs Fixed biomass component definitions
  - Modeling approaches
    - Predict total volume of main stem – convert to mass.
      - Taper model to volume to mass
      - Cumulative volume to cumulative mass
      - Predict total volume (no-taper) then predict mass
        - Use ratios etc... to get key sub-components desired by FIA.
    - Predict total stem mass directly (derive volume if desired)
      - Recover important sub-components of main stem mass (or volume)
### FUTURE

- **Continue development and evaluation of modeling framework(s) that meets FIA and clients needs.**
  - Evaluate pro/cons and performance
  - Narrow the field of options
  - Pursue completion of biomass prediction system for national FIA implementation (~2020)

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- **Spring**
- **Summer**
- **Fall**