Scott Kolpak, SW Oregon Zone Geneticist

- Oversight of R6 forest tree seed orchards
- Seed use planning and collection (forest tree & non-tree spp.)
- Seed sourcing and deployment guidance
- Climate change adaptation strategies to promote resiliency and forest productivity
- Genetics support for plant conservation strategies
- Guidance on disease resistance screening strategies and plant material selection and use
- Design/conduct/interpret genetic studies to resolve management questions and issues
Reforestation and Revegetation: USFS Policy, Practices, & Infrastructure

“Right Seed....Right Time.....Right Place”
Reforestation Policy – FSM 2475.03

- Use seedlings adapted to local climatic conditions (i.e., within the seed zone).
- Seedlings from distant sources may be used to accommodate projected changes in climate (after demonstrating successful performance in evaluation trials).
- Monitoring protocols should be established to track survival and performance of seedlings from distant sources.
Seed Zones for Forest Trees

Have been developed for most major tree species

- Based on common garden study research – empirical seed zones
- OR/WA in 1966

Sugar pine zones

1966
Native Plant Material Policy – FSM 2070.3

Ensure genetically appropriate plant materials are given primary consideration:

• Adapted to target site conditions with good establishment, vigor, and reproductive capabilities
• Suffciently genetically diverse to respond and adapt to changing climates and environment conditions
• Unlikely to cause genetic contamination and undermine local adaptations, community interactions and function of resident native species within the ecosystem.
• Unlikely to become invasive and replace other native species
• Unlikely to be a source of non-native invasive pathogens
• Likely to maintain critical connections with pollinators
Willamette Valley seed zone delineation

Five species
- Eriophyllum lanatum var. leucophyllum
- Epilobium densiflorum
- Potentilla gracilis var. gracilis
- Lupinus polyphyllus var. polyphyllus
- Saxifraga oregana

Common garden test (Corvallis)
- 10 – 19 pops / species
- randomomized
- 1 test site / species (NRCs Plant Material Center)
Rogue Basin seed zones – what are important ecological, climatic, geographic features for adaptation?

SW Oregon III and IV ecoregions
Provisional Seed Zones
When empirical genetic information is lacking

Zones based on:
• Minimum winter temperature
• Aridity (heat:moisture index)
• Omernik Ecoregions (Level III)

Bower, St. Clair & Erickson

http://www.fs.fed.us/wwetac/threat_map/SeedZones_Intro.html
Seed Transfer Zones

- Elevation
- Rainfall
- Mean annual temperature
- Frost free days
- Ecoregion

Southern Oregon Provisional Seed Transfer Zones
Rogue Basin seed zones development

Develop Collaborations ($$$)
• Federal, state, NGOs (e.g., RNPP)
Provisional seed zones (K. Prive, RNPP 2020)
• Define scope of the project – past research and recommendations, species groups, geographic scale, examine ecological and climatic factors
• Write a white paper
• Create content for RNPPs website

Empirical seed zones
• Collect populations of species based on provisional seed zones
• Plant in common gardens in several diverse S. Oregon sites
• Measure traits over 1 – 3 years
• Use spatial data from provisional seed zones along with plant data

SW Oregon III and IV ecoregions