Reforestation Decision Support Tool for Tree Mortality Landscapes

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Background

- Over 129 million trees died in CA since 2010
  - Covers ~9 million acres
- Anticipate additional tree mortality from
  - Droughts
  - Bark beetles
  - Wildfires
  - Climate change
Constraints & Considerations

• Declining budgets
• Limited agency capacity
• Engaged public
• Litigation risk
• Accessibility
• Wildlife habitat
• Long-term integrity
National Forests of the Sierra Nevada

Area Treated (ha)

Year Accomplished

Source: North et al. (2019) – Tamm review
Questions

• How do you:
  1. Prioritize areas for reforestation?
  2. Ensure long-term success of reforestation activities?
DS Tool Components

1. Spatial prioritization tool
2. Post-drought stand conditions
3. Reforestation Best Management Practices
Spatial Prioritization Tool - Steps

1. Area of Interest (national forest)
2. Pre-selected variables
   - Ex: tree mortality, topography
3. Optional variables
   - Ex: WUI, climate, forest type
Tool Outputs

1. Spatial map of 3 zones (web)
   – Low, moderate, & high priority

2. Summary data
   – Area (acres) in each zone
   – High priority area by grouping variable (forest type)

3. Maps downloaded as pdf or shapefiles
Products and Funding

• Products
  1. Web-based DS tool
  2. User guide and video
  3. Science publication & brief

• Funding provided by USDA Climate Hub
  – Additional support from Region 5 Forest Service
Spatial Prioritization Tool: Demo
Question 1

• What information (e.g., data sources) do you use to set your reforestation priorities?
  – Where to plant?
  – Ex: Veg burn severity, ADS data, veg data
Zone Schematic:

Z1: Within seed dispersal distance of green trees

Z2: Accessible (for salvage and planting) areas beyond seed dispersal
   A – gentler topography
   B – steeper slopes: higher fire and drought severity

Z3: Remote, inaccessible, potentially unplanted due to cost and safety

Source: North et al. (2019) – Tamm review
2014 King Fire Example

Source: North et al. (2019) – Tamm review
Question 2

- What information is lacking for you to make effective planting decisions (where or how)?
  - Ex: Natural regen, climate projections
Question 3

• What currently constrains where you can reforest?
  – Ex: Salvaged areas, mechanical access, time since disturbance