Restoring sudden oak death impacted forests of Mt. Tamalpais

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Lovett et al 2016
Costs of ‘pest’ invasions is 2 billion USD annually

- Who carries the most cost?
  - Municipalities
  - Home owners
    - tree removal
    - loss of property value
    - Ecological degradation
- Importers (often live plant importers) are not paying the costs of these invasions

Lovett et al 2016
This disease is killing California trees by the millions, but scientists urge against giving up
Study Design

- **Goal:** increase carbon sequestration while reducing fuels and increasing water provisioning
- **Treatments:** Understory vegetation removal and ground fuel reduction
  - Mastication (8) (excavator/masticator)
  - Mastication of hand-crew piles (7)
  - Fuel piles (10)
    - Half of piled plots were burned
  - Untreated reference (5)
Fine woody debris
(Fine fuels – 1-100 hrs)
Soil moisture dynamics

Gravimetric soil moisture content (m$^3$/m$^3$)

Soil Temperature °C

- 20 cm depth
- 80 cm depth

Month:
- Nov
- Dec
- Jan
- Feb
- March
- April
- May
Results

- **Goal:** increase carbon sequestration while reducing fuels and increasing water provisioning
- Reduced stand density (all treatment types)
- Altered fuel bed (compacted)
- Transferred carbon to the forest floor
Cost-benefit analysis

• Treatment costs –
  – Approximately $12,000 ac
  – Replanting and follow-up costs expected ~$8,000 ac

• What factors drive costs?

• MMWD budgeted for $750,000 in vegetation management for the next 2 years

• Fuels
  – Reduced stand density
  – Compacted fuel bed

• Benefits
  – Carbon sequestration
    • Soil
    • Vegetation

• Water
  – Outflow to groundwater recharge
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