The Tree Mortality Data Network Collaborative: Findings and Future

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Drought >> Tree Mortality
Drought Mortality Network

UC Berkeley/UCANR Research Project:

• Eight sites
• Established in 2017
• Five ownership types
• Spanning 3 degrees of latitude / 285 miles
• Ranging in elevation from 4100 – 7552 ft
Understanding Change

Disturbance(s) → Response → Recovery → Transition

Region → Stand → Plot
Mortality Rate in Time

![Bar chart showing mortality rates for different sites. The x-axis represents the sites: PLUM, BRTN, BF-ER, BF-ST, YOMI, YOPI, SEKI, MTH. The y-axis represents the mortality rate (percent/year). The bars are divided into two groups: 'pre-2017' and '2017-18'.]
Mortality Rate by Species

Mortality Rate (Percent/Year)

Pine
Fir
Oak
Cedar

pre-2017
2017-18
Key Points

• Increased bark beetle populations, driven by drought and tree stress, played a significant role in mortality across the network

• Surviving canopy trees are increasingly shade tolerant species – what does mean for fire resilience?

• Small trees are overwhelmingly shade tolerant species – will future forests be well adapted to climate?
Research & Extension

Tree Mortality Data Collection Network 2018 - present
https://ucanr.edu/sites/forestry/Tree_Mortality/Tree_Mortality_Data_Collection_Network/

- Share in near real-time field assessments of mortality patterns, ongoing impact of bark beetles, tree fall rates, fuels, regeneration and remotely-sensed landscape assessments

- Discuss on-going research collaborations and interpretation and applications of data on annual basis
Research & Collaboration

The California Tree Mortality Data Collection Network — Enhanced communication and collaboration among scientists and stakeholders

Critical research and dialogue are underway to understand the consequences of the massive wave of tree mortality in the Sierra Nevada.

Roundtable Discussions

- Develop **rapid response** framework to share information and **coordinate** decision making *before* a state-level emergency needs to be declared.

- Collaboration in four areas: research & monitoring, land management, education & outreach, and policy.

- Examples of **needs** identified:
  - A set of key factors, or indicators, that identifies when a mortality event is occurring and where forests are most vulnerable.
  - Nuanced messaging — focused on ecosystem services and wildfire hazard risk reduction — effects of changed species composition and the need for reforestation.
Research – Extension – Decision Making

• Research collaboration + extension is critical to inform science-based policy in California

Next Steps:

• Host annual workshop around Sacramento area (McClennan) ~ February/March 2020

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Collaborators & Funders

- CalFire
- National Park Service
- UC Agriculture and Natural Resources
- US Forest Service Forest Health Protection
- US Forest Service Pacific SW Research Station
- US Forest Service Region 5
- United States Geological Survey