



Tree Mortality Task Force Forest Health and Resilience Working Group Minutes

April 5, 2017

CAL FIRE FRAP Office, 1300 U Street, Sacramento, CA

- I. **FHRWG Member Roll Call:** Dr. Chris Keithley (CAL FIRE-FRAP), Dr. Tom Smith (CAL FIRE), Paul Mason (PFT), John Amodio (YSS), Larry Camp (FLOC), Margarita Gordus (DFW), Susie Kocher (UCCE), Sherry Hazelhurst (USFS), David Pegos (CDFA), Gabe Schultz (CAL FIRE), Claire Jahns (CNRA), George Gentry (CFA), Staci Heaton (RCRC), and Pete Cafferata (CAL FIRE).

FHRWG Participants: Tadashi Moody (CAL FIRE-FRAP), Kelly Larvie (CAL FIRE-FRAP), Emily Meriam (CAL FIRE-FRAP), Sheri Smith (USFS), Heather Williams (CAL FIRE), Liz van Wagtendonk (SNC), Kristen Merrill (CAL FIRE), Joe Sherlock (USFS), Coreen Francis (BLM), and Tricia Maloney (UC Davis).

- II. **Approval of March 2017 Meeting Minutes:** The March meeting minutes were approved. Minutes from past FHRWG meetings are posted on the TMTF website:
<http://www.fire.ca.gov/treetaskforce/workinggroups>

- III. **Update on the FHRWG White Paper titled “Recommendations for Comprehensive Sierra Nevada Ecological Restoration”**

Pete Cafferata announced that CAL FIRE Deputy Director Helge Eng made the final edits to the document on April 5th. The main change was broadening the document to list other large scale efforts besides the SNC’s Watershed Improvement Program. A hard copy was provided, will be distributed at the April 10th full TMTF meeting, and has been posted on the TMTF website:

http://www.fire.ca.gov/treetaskforce/downloads/TMTFMaterials/TMTF_Comprehensive_Sierra_Ecological_Restoration_FINAL_4-5-17.pdf.

- IV. **Update on the FHRWG Tree Mortality Seed Zone Map**

CAL FIRE Executive review of the February version of the tree mortality seed zone map determined that the following changes were required: (1) simplify the map and make it less technical for public dissemination, (2) remove the table and revise the narrative, (3) make it consistent with the current CAL FIRE Prepare for Bark Beetle and Defensible Space campaigns (i.e., color, font), and (4) remove the region colors and calculate the seed zones by acreage of mortality using the 2012-2016 ADS data.



Emily Merriam, CAL FIRE-FRAP, produced three new versions of the map, two of which were handed out at the meeting. Heather Williams, CAL FIRE Resources Communications Analyst, explained how the revised map will be used as part of a story map (see: <https://storymaps.arcgis.com/en/>) that she is currently developing on reforestation for landowners. **The group determined that the simpler map should be the version distributed to the public, and that the map showing the number of dead trees per acre should be included in the story map.** The goal is to have the story map finished in one to two months (posted on YouTube and the CAL FIRE website).

Emily and Heather stated that further modifications will be made to the simple map, including (1) revising the color scheme so that the counties with greater mortality will be shown in tan or orange colors, rather than darker shades of green, (2) revising/adding text, (3) making the map ADA compliant, and (4) possibly adding data on the percent of each seed zone with mortality. **They asked the FHRWG to review the simple map and provide feedback on how to improve it by April 12th (send comments directly to Heather and Emily, or to Pete Cafferata to forward to them).** Liz van Wagtendonk suggested making the seed zone GIS layer widely available for mobile devices (smart phones, tablets with Arc Collector) that are used in the field.

V. **Formation of a New Sub-Working Group--“Sierra Nevada Forest Science Coordination Group”**

Pete Cafferata briefly summarized how Sherry Hazelhurst, USFS Director for State and Private Forestry, Region 5, suggested at the last FHRWG meeting that a new coordination group is needed to address Sierra Nevada health science and management information related to tree mortality. Specifically, the group would: (1) identify existing interests/needs for science and management information related to tree mortality, (2) identify ongoing research and monitoring projects that address these interests, and (3) determine where gaps exist, funneling existing funding to appropriate projects.

At the March FHRWG meeting, TMTF co-leader Gabe Schultz stated that a sub-working group could be coordinated to help build an appropriate forum. Tom Smith sent an email request for participation to 14 individuals on March 15th. Positive responses were obtained from: Leif Mortenson, USFS PSW Researcher; Chris Fettig, USFS PSW Researcher; Beverly Bulaon, USFS Southern Sierra Shared Service Area Entomologist; Chris Fischer, USFS Deputy Director, State and Private Forestry Region 5; Jodi Axelson, UC Berkeley Cooperative Extension; Tadashi Moody, CAL FIRE FRAP Environmental Scientist; Tom Smith, CAL FIRE Forestry Pest Specialist, and Pete Cafferata, FHRWG Co-Leader.

Volunteers during the meeting included: Sheri Smith, USFS; Tricia Maloney, UC Davis; Margarita Gordus, DFW; Liz van Wagtendonk, SNC; and Coreen Francis, BLM.

Additionally, Tom Smith will contact Mark Meyers, USFS Sierra Province Ecologist, for possible participation. Work on this project is to be conducted by conference calls and email, due to the wide distribution of participants throughout the state.



Chris Keithley and Kelly Larvie reported that the research project being led by UC Berkeley's Jodi Axelson and John Battles for on-the-ground measurements of tree mortality and forest characteristics that complement remotely sensed data is partially being funded by CAL FIRE-FRAP (\$50,000). A contract scope of work and budget are currently being developed. **Due to the need to finalize the contract quickly, FHRWG input on methods, study site locations, metrics to measure, etc. will be requested via email in the near future.**

VI. Presentation on the Current USFS Region 5 Reforestation Strategy

Joe Sherlock, Regional Silviculturalist for Region 5, provided a PowerPoint presentation titled "A Modern-Era Reforestation Response to Stand-Replacement Disturbance." He began by showing a spreadsheet illustrating that from 2000 to 2016, approximately 2,416,500 acres of National Forest land in California has been deforested by fires over 1000 acres. He estimated that approximately 275,000 acres require reforestation, prior to the large scale bark beetle mortality outbreak (i.e., fire only). On average, 10,000 to 15,000 acres are being planted each year (2000-2015), with no increasing trend over time, primarily due to funding limitations.

Joe explained the rationale he has developed for prioritizing areas for reforestation, including selecting areas with higher site productivity (gentler slopes) and where fire suppression will be less difficult. Strategies for successful reforestation include minimizing post fire or insect attack fuel levels (i.e., salvage log), controlling competing vegetation (e.g., adequate site preparation and herbicide use where allowed), and early and repeated use of low intensity prescribed fire to reduce ("nibble at") accumulating fuel loading. The goal is to produce young conifers with adequate bark thickness and height to withstand inevitable future wildfires. Past studies were summarized to show how tree growth is adversely impacted by brush competition.

Regarding seedlings, Joe stated that it is critical to plant early, prior to shrub establishment. First year surveys have only generally found approximately 50-66% survival, with third year survival even lower due to inadequate brush control. Much higher survival is obtained in areas where herbicides have been applied. While heterogeneity in the long term is needed, "cluster planting" was not recommended. Standard planting arrangements can be used to achieve the long-term desired stand structure for fire and insect resilience, with the use of prescribed fire, variable density thinning, and group selection. Figures were presented illustrating how thinning ponderosa pine stands reduces mortality while maintaining stand productivity over time. Joe stated that a resilient forest structure can be created that provides desired wildlife habitat, reduces the extent of high-severity fire, and continues to produce forest products.

Finally, reforestation was stated as a key to rebuilding carbon stores. Recent wildfires on 6% of the state produced two-thirds of the live carbon stock loss, illustrating that increased



tree densities from a century of fire suppression have allowed the accumulation of fuel for significant carbon losses. Joe stated that while we work to reduce fuel hazards, we must also act to rebuild forests to regain and increase the levels of carbon sequestration.

The FHRWG will use the concepts Joe presented to help develop our reforestation strategy for non-federal forestlands in California.

VII. **Synthesis of Relevant Studies Exploring the Long-Term Outlook for Sierra Forests**

The FHRWG has been recently tasked by the TMTF to (1) research lessons learned from beetle outbreaks in other states, such as Colorado, Montana, and Alaska, as well as in British Columbia, and earlier in southern California near Lake Arrowhead; and (2) generate a white paper in the near future exploring the long-term outlook for Sierra Nevada forests. Some initial questions to address include how do these events end, and what are the long-term changes in forest composition (species composition, age class distribution, species distribution, etc.) and health that we can expect.

The FHRWG co-leaders contacted Dr. Jodi Axelson, UC Berkeley, as she worked in British Columbia during their last beetle kill event and is knowledgeable regarding the literature on this topic. Jodi informed us that British Columbia, Montana, Colorado, and Alaska, which have all experienced large beetle outbreaks, are energy limited systems, meaning that the types of trees, and more importantly the shrub/grass species that take advantage of reduced crown cover, are limited. This is not the case in California, where our Mediterranean climate enables numerous shrub, grass and invasive plant species to establish, which substantially changes future forest dynamics. She suggested reviewing "Bark Beetle Outbreaks in Western North America: Causes and Consequences" (Bentz ed. 2005, https://www.fs.fed.us/rm/pubs_other/rmrs_2009_bentz_b001.pdf) as a good starting point. Additionally, Jodi's stand dynamics and forest succession PowerPoint presentation (<http://ucanr.edu/sites/forestry/files/257067.pdf>) used at CAL FIRE reforestation workshops addresses this topic.

Susie Kocher suggested that this effort should include climate change aspects, and that the March 2017 document titled "Adapting Forests to Climate Change" (<http://anrcatalog.ucanr.edu/Details.aspx?itemNo=8574>) should be utilized for the white paper. **Gabe Schultz agreed that climate change should be covered, and stated that the FHRWG should attempt to produce a draft white paper by June. The FHRWG co-leaders are collecting relevant literature and working with Jodi to learn more about this topic. FHRWG participants are encouraged to volunteer to assist in researching and writing the white paper.**

VIII. **New Business and Announcements**

Reforestation workshops are being held in Sonora on April 7th, Oakhurst on April 27th, and Sutter Creek on May 24th. See: <http://ucanr.edu/barkbeetle>



David Pegos, CDFA, informed the group that contaminated pine Enviro-Log fire logs have been found at California border protection stations. A pest exclusion advisory has been sent to all County Agricultural Commissioners. He stated that we need to determine how to encourage pine firewood dealers in California to use local pine from our forests, rather than shipping in infested wood from other states.

IX. **Next FHRWG Meeting**

The next meeting will be held on May 3rd, 2:00 p.m., at the CAL FIRE FRAP office.