



Tree Mortality Task Force Forest Health and Resilience Working Group Minutes

June 7, 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), Margarita Gordus (DFW), Susie Kocher (UCCE), Kevin Conway (CAL FIRE), Kelly Larvie (CAL FIRE-FRAP), Chris Fischer (USFS), Heather Williams (CAL FIRE), and Pete Cafferata (CAL FIRE).

FHRWG Participants: Dr. Russ Henly (CNRA), John Dingman (CARB), Emily Meriam (CAL FIRE-FRAP), Liz van Wagendonk (SNC), Kristen Merrill (CAL FIRE), Gary Cline (USFS), Derek Young (UC Davis), Dr. Andrew Latimer (UC Davis), and Tiffany Meyer (CAL FIRE-FRAP).

- II. **Approval of May 2017 Meeting Minutes:** The May 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”**

At the May FHRWG meeting, the group decided to consider the possibility of revising the white paper titled “Recommendations for Comprehensive Sierra Nevada Ecological Restoration.” It was agreed that we would solicit input after the FHRWG had a chance to review Randy Hanvelt (Tuolumne Co. Supervisor) and Jim Branham’s (SNC) comments for 5 working days, at which time participants would inform the FHRWG co-chairs if they thought the document should be revised.

Input was solicited from the FHRWG from May 4th to May 11th. In addition to Randy Hanvelt and Jim Branham’s initial input, feedback was received from Chris Fischer, Cedric Twilight, Patrick Nevis, and Dave Passovoy. FHRWG members did not express a strong desire to move forward with a new version of the paper. A new draft with minor changes was produced by the FHRWG co-leaders on May 15th for the TMTF co-leaders to review. **Their decision was to keep the April 5th version as the final document, due to (1) the lack of substantive changes included in the proposed revision, and (2) the need for the FHRWG to move forward and focus on its new work assignments.** The final version of the white paper is posted on the TMTF website at:

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/Reforestation Story Map**

Emily Meriam described the changes she recently made to the simplified (public friendly) tree mortality seed zone map. These changes include: (1) revising the narrative language, (2) changing the color scheme and graphics so that they are consistent with the CAL FIRE Bark Beetle and Dead Trees webpage (<http://www.readyforwildfire.org/Bark-Beetles-Dead-Trees/>), and (3) graphically displaying categories for the percentage of each seed zone with tree mortality (e.g., 0-10%, 10-20%). **It was suggested that the seed zone numbers be modified so that they are easier to read on the map. When this change is made, it will be considered final and submitted for CAL FIRE Executive Staff review.**

Emily and Heather Williams described and displayed the draft Reforestation Story Map under development. This version has approximately 20 images, including the tree mortality seed zone map. Topics covered in the Story Map include California's recent drought, the bark beetle epidemic, seed zones, reforestation, and resources to aide landowners. It will also include a reforestation video in the near future. The main audience is landowners living in the high hazard counties, with the goal of informing them about reforestation. Suggestions from the FHRWG included (1) not limiting the graphics, including the seed zone maps, to just the 10 high hazard counties, (2) providing the data source for the information displayed (USFS aerial detection surveys), (3) distinguishing between fire-killed trees and beetle mortality, and (4) educating landowners to employ reforestation approaches that do not contribute to increased fire danger in the future. Additional photos are required for several of the images. **The Story Map will be made available on a weblink for 72 hours for more detailed review and comments during the week of June 26th, with an email announcement. Comments on the project can be sent directly to Emily and Heather, or to the FHRWG co-chairs for forwarding. The goal is finish the Story Map for the July TMTF meeting.**

Emily Meriam also electronically displayed the tree mortality-seed zone poster (8' x 5') she has produced for the Esri GIS User Conference being held in San Diego from July 10th-14th (see: <http://www.esri.com/about/events/uc>). **After CAL FIRE Executive Staff approval, the poster will be posted on the TMTF webpage.**

V. **Drought-Related Forest Mortality Patterns in California**

Derek Young, Ph.D. candidate at UC Davis, provided a PowerPoint presentation titled "Climate and Competition Explain Regional Forest Mortality Patterns Under Extreme Drought." This presentation summarizes and updates data presented in a published paper posted at: <http://onlinelibrary.wiley.com/doi/10.1111/ele.12711/full>. Data in the paper cover the period from 2009 to 2015; data from 2016 were also included in this presentation.



The study examined how two factors affect variation in tree mortality in California—average aridity and stand density (competition). Mortality data from 2009-2016 were obtained from the USFS Aerial Detection and Monitoring Program (ADMP). Mapped polygons of mortality were converted into a raster layer (grid cells). This analysis did not distinguish mortality among species. Thirty-five year mean annual climatic water deficit (CWD), a representation of average water stress experienced by plants for a particular grid cell, and CWD anomaly (departure from average conditions in a given year for a particular grid cell) were used to explain mortality patterns in this study. CWD was modeled for the forested parts of California, with higher deficits found for lower elevation areas. Basal area was used for an index of stand density and tree competition. For each year, a separate statistical model was used to explain annual tree mortality within a grid cell using mean annual CWD, CWD anomaly for the year and grid cell, and stand basal area.

Plots of aridity vs. competition showed that modeled (predicted) mortality agreed well with actual mortality. Model results through 2015 showed that the hottest, driest areas (i.e., higher mean annual CWD) had the highest mortality (less so in 2016, due to a longer mortality lag in cooler, wetter areas). Greater mortality was also observed in denser stands. An aridity—density interaction was observed, with a greater competition effect in drier areas. These results support the contention that fire suppression has likely increased drought vulnerability, and that forest management treatments can reduce drought vulnerability. **Management implications include focusing forest treatments (e.g., forest thinning, prescribed fire, and managed wildfire) on the driest and densest areas to reduce tree mortality.**

VI. **Update on FHRWG White Paper Synthesis on the Long-Term Sierra Outlook**

Pete Cafferata stated that little progress has been made since the May meeting on the white paper synthesis on the long-term outlook for the Sierra Nevada. The presentation by Dr. Jodi Axelson at the May meeting and the papers used in her presentation will assist with this effort; both the PowerPoint and papers are posted on the TMTF website at: <http://www.fire.ca.gov/treetaskforce/workinggroups>. The FHRWG has received direction from the TMTF co-leaders on paper length (~10 pages) and primary paper audience (non-scientist/ researcher). Limited assistance from CAL FIRE FRAP staff is anticipated. The white paper will be completed by August 2017. Additionally, presentations from July 25th Science and Management Symposium at McClellan titled “**Lessons learned from extreme drought and tree mortality in the Sierra Nevada: How can past events inform our approach forward?**” is expected to be helpful for white paper. Register for the workshop at this site: <https://drought-treemortality-symposium.eventbrite.com/>



VII. **Discussion on Development of a Reforestation Strategy for Non-Federal Lands**

To date, the following actions have taken place to begin work on a reforestation strategy for non-federal lands in California: (1) Joe Sherlock, USFS Regional Silviculturalist (R5), provided a PowerPoint presentation on the Forest Service's reforestation strategy at the March FHRWG meeting, (2) the FHRWG co-leaders, TMTF Manager Kevin Conway, and Dr. Tom Smith met with Dr. Steve Ostoja, Director, USDA California Climate Hub, on April 24th in Davis to discuss reforestation strategies, and (3) Stewart McMorrow and Steve Ostoja met on May 23rd to continue working on the development of the reforestation strategy. The California Climate Hub staff is generating a prospectus for hiring a postdoctoral researcher to lead the effort, cost and timing estimates, and a proposed strategy outline. The prospectus is expected to be available by the July FHRWG meeting. Funding is anticipated to come from expected funds in the LA Moran Reforestation Center BCP budget.

VIII. **Update on Sierra Nevada Forest Science Coordination Group**

Pete Cafferata briefly reviewed work conducted to date for the Sierra Nevada Forest Science Coordination Group (SNFSCG), a subcommittee of the FHRWG. This group was formed to (1) identify existing interests/needs for science and management information related to tree mortality in the Sierra Nevada region, (2) identify ongoing research and monitoring projects that address these interests, and (3) determine where gaps exist, funneling existing funding to appropriate projects. Currently 15 people have volunteered to participate in this group. The first SNFSCG conference call held on May 25th with 11 participants. We identified 27 people to contact for information on ongoing research/monitoring projects. The May 2016 spreadsheet/questionnaire developed by Sheri Smith, USFS, was distributed to allow the group to determine needed information additions prior to distribution to people on the contact list. Nine new questionnaire entries have been added (e.g., questions/hypotheses, expected outcomes, mode of quantification). The next SNFSCG conference call will occur in mid to late June, after which the revised questionnaire will be sent out to the people on the contact list.

IX. **Next FHRWG Meeting**

The next meeting will be held on August 2nd, 2:00 p.m., at the CAL FIRE FRAP office in Sacramento.