Tree Mortality Task Force
Forest Health and Resilience Working Group Minutes

March 1, 2017

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

I. **FHRWG Member Roll Call**: Stewart McMorrow (CAL FIRE), Dr. Chris Fettig (USFS-PSW), Paul Mason (PFT), Margarita Gordus (DFW), Rich Wade (BOF), Dr. Chris Keithley (CAL FIRE-FRAP), Susie Kocher (UCCE), Sherry Hazelhurst (USFS), David Pegos (CDFA), Gabe Schultz (CAL FIRE), and Pete Cafferata (CAL FIRE).

FHRWG Participants: Tadashi Moody (CAL FIRE-FRAP), Kelly Larvie (CAL FIRE-FRAP), Eric Huff (CAL FIRE), Dr. Jodi Axelson (UC Berkeley), Chris Fischer (USFS), Laurie Litman (InfoWright), Emily Meriam (CAL FIRE-FRAP), Joe Sherlock (USFS), Dr. Michele Slaton (USFS), Arnaldo Ferreira (USFS), Mark Egbert (Eldorado Co. RCD), Tricia Maloney (UC Davis), and James Savage (BLM).

II. **Approval of February 2017 Meeting Minutes**: All concurred to approve the February meeting minutes. Minutes from past FHRWG meetings are posted on the TMTF website: http://www.fire.ca.gov/treetaskforce/workinggroups

III. **Presentation on the USFS Ecosystem Disturbance and Recovery Tracker**

Dr. Michèle Slaton, USFS Ecologist with the Forest Service Region 5 Remote Sensing Lab, provided a PowerPoint presentation titled “Remote Sensing of Tree Mortality: Ecosystem Disturbance and Recovery Tracker (eDaRT).” eDaRT was described as an application under development that makes use of land use imaging for documenting vegetation changes over time. It provides an approach for remote sensing of tree mortality, as well as other disturbances such as wildfire and vegetation treatments. It uses free Landsat imagery (30 m pixels, two week frequency). A pre-drought baseline (2006-2007) is used for “training stage” or reference image data; each subsequent pixel (2008-2016) is compared back to the 2006-2007 pixel for change detection. If an anomaly is detected, it is flagged as a disturbance event (documenting when the disturbance occurred). eDaRT “scenes” currently cover the Sierra Nevada, Cascade Range, and Modoc Plateau.

Examples were provided using the Dinkey Creek area, south of Shaver Lake in the Sierra National Forest, and the Mt. June Ski Area, located on the east side of the Sierra Nevada. Results were particularly good at Mt. June, due to the lack of understory trees. Estimating the amount of biomass, volume, and basal area lost were also discussed. FastEMap, using FIA data, is combined with eDaRT to get estimates of stand metrics (e.g., basal area) affected by mortality. Also, several land cover change detection algorithms were presented.

A main objective is to improve interpretation of mortality. Approaches include using a disturbance classifier to isolate drought and pathogen induced mortality, calibration using field verification, and development of a "Mortality Magnitude Index" that will quantify the intensity of an event in a pixel (percent of pixel affected, and early vs late stage of stress).

Statewide coverage is expected in the next few months. The goal is to have a fully automated, near real-time, operational mode system in place in the near future. New versions will have better accuracy by reducing omissions, reducing false positives, and improving interpretation in mortality as a disturbance class. Additional information on eDaRT is found on these websites: http://www.cstarsd3s.ucdavis.edu/portfolio/edart-sosierra-mortality16/
http://cce.nasa.gov/meeting_2015/abs_and_discussions/mtg2015_ab_searchab_id82.html

Sherry Hazelhurst stated that with USFS funding going down for aerial detection flights, this tool will provide valuable information regarding future mortality impacts.

IV. Presentation on a Possible New Coordination Effort for Sierra Nevada Health Science and Management Information in Response to Mortality

Sherry Hazelhurst, USFS Director for State and Private Forestry, Region 5, provided a briefing paper and led a discussion on developing a possible new coordination effort for Sierra Nevada health science and management information related to tree mortality. She stated that while researchers, land managers, and others have been measuring forest conditions prior to and during the tree mortality event, and others have new interests in studies, there is no forum to bring all the interests and projects together in a coordinated manner. Such a forum could reduce redundancy and prioritize available funding. Specifically, a forum or coordinating group could (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. She provided a spreadsheet displaying existing studies being worked on within California National Forests (13 entries).

Sherry provided examples of two existing working groups taking a similar approach: Southern California wood borers and the California Oak Mortality Task Force. These are collaborative working groups that meet regularly to identify and prioritize science and monitoring needs, and work towards supplying available funding sources.

After discussion on how to proceed, TMTF co-leader Gabe Schultz suggested if the FHRWG cannot reasonably undertake this role, a sub-working group (possibly including other working group members) could be coordinated to help build an appropriate forum. **Dr. Tom Smith, CAL FIRE Forestry Pest Specialist, and Sheri Smith, USFS Regional Entomologist, both members of the California Forest Pest Council, were requested to ask the Forest Pest Council if they would be willing to undertake this effort, or help coordinate a subgroup to work on this concept. We will report on progress at the next FHRWG meeting.**

Dr. Jodi Axelson, UC Berkeley, agreed that coordination between agencies and researchers is needed moving forward. Jodi reported that other groups are also thinking along these lines. She stated that she has been in contact with the Sierra Nevada Conservancy (SNC), who is working to reconvene the Southern Sierra Conservation Cooperative (SSCC) that was previously active and had a comprehensive MOU between numerous state and federal agencies. This is another example of a group seeking coordination among land managers and researchers.

Jodi reported on a proposed study in which she and Co-PI Dr. John Battles, UC Berkeley, are searching for funding to implement a project for on-the-ground measurements of tree mortality and forest characteristics that complement remotely sensed data. A two-page handout describing the proposed study has been widely circulated to state agencies and others for possible funding assistance (~$50,000). The goal is to implement the study this coming spring/summer making traditional channels for seeking funding incompatible with this timeline. Jodi stated her intention to apply for a competitive UC Agriculture and Natural Resources Grant that, if awarded, would carry the project through to completion (start date April 2018 for funding). The UC project not only focuses on forest health but fire risk and carbon questions, and is a comprehensive partnership between USFS, PSW, USGS, NPS, and UC researchers. Communication with the project team is ongoing ensure they avoid duplication of existing studies.

V. Brief Update on Emerging Remote Sensing Technologies Sub-Working Group Meeting

Kelly Larvie, CAL FIRE-FRAP, provided an update on the Emerging Remote Sensing Technologies sub-working group meeting held in February. She stated that the USFS has a contract in place for a JPL/NASA flight using LiDAR and hyperspectral imaging in the Plumas National Forest in June of this year. This work will yield information on moisture stress, numbers and locations of dead trees, and locations of critical infrastructure. Kelly said that there is a need for the high impact counties to get precise counts of dead trees, but they have insufficient funds to make this occur. The cost is estimated to be $1-3/acre. Funding to the JPL must come through the USFS's Remote Sensing Laboratory, and it is needed rapidly before the June flight. TMTF assistance is being requested by Tuolumne County.

VI. Discussion of FHRWG Priorities for 2017

Stewart McMorrow began a discussion on FHRWG priorities for 2017 that will be continued at the April FHRWG meeting. He read the current FHRWG group objectives from the ICS-204 posted on the TMTF website:

1. Develop a strategy to reforest areas deforested by bark beetles. Investigate which species and genotypes should be replanted considering elevation zones and seed zones, areas with high rates of mortality, and other considerations (e.g., climate change) in the high hazard counties.

2. Utilize all relevant scientific investigations and analyzes to develop the reforestation strategy for the high hazard counties. [new objective]
3. Coordinate with the CAL FIRE LA Moran Seed Bank, the USFS Placerville Nursery, and other private nurseries to determine seed/seedling availability for the appropriate conifer species and genotypes in the high hazard counties. Work to expand collection of seed from seed zones impacted from high rates of tree mortality.
4. Prepare for implementation of the reforestation strategy at the appropriate time (i.e., plan the recovery phase).
5. Coordinate the reforestation strategy with the Private Landowner Assistance sub-group of the TMTF Resource Allocation Working Group.

Stewart asked the FHRWG to consider how to move forward with these objectives this year, particularly regarding the scope of a reforestation strategy. **Joe Sherlock, USFS Regional Silviculturalist (R5), agreed to supply the Forest Service reforestation strategy he has written to assist with this effort.** Paul Mason stated that FHRWG objectives should not be limited to just reforestation, and that other important objectives should be considered at the next meeting.

VII. New Business and Announcements

Stewart McMorrow and Pete Cafferata announced that the FHRWG white paper titled "Recommendations for Comprehensive Sierra Nevada Ecological Restoration" and the Tree Mortality Seed Zone Map are both still in the CAL FIRE "green sheet" review process.

Paul Mason announced that he attended a joint informational hearing of the Senate Natural Resources and Water Committee and the Assembly Natural Resources Committee titled "Tree Mortality, Forest Health, and Prescribed Fire" on February 27th. Overviews on forest heath were provided by Brandon Collins, Laurie Wayburn, Rich Bagley, and Danielle Lindler. Prescribed fire's role in forest health was addressed by Craig Tomas, Ken Pimlott, and Jean Wade Evans. PowerPoint presentations from the hearing are posted at: http://sntr.senate.ca.gov/content/2017-informationaloversight-hearings. Paul suggested that the FHRWG inform the TMTF that there is only a limited amount of time to use prescribed fire in the high mortality counties to reduce the risk of catastrophic wildfire, including a possible letter to CAL FIRE Director Ken Pimlott. Eric Huff, CAL FIRE Staff Chief, suggesting having Staff Chief John Melvin address the FHRWG on the efforts being undertaken by the Prescribed Fire Working Group.

Tadashi Moody, CAL FIRE-FRAP, announced that CARB, in consultation with CAL FIRE, has developed a greenhouse gas (GHG) quantification methodology for evaluation of proposed Greenhouse Gas Reduction Fund (GGRF) grant projects. CARB is currently accepting public comment on the Draft Greenhouse Gas Quantification Methodology and GHG Calculator Tool for the 2016-17 Forest Health Grant Program. The public comment period for will be open through March 13, 2017. More information can be found here: http://www.fire.ca.gov/resource_mgt/resource_mgt_foresthealth_grants

Susie Kocher, UCCE, announced that she received a $10,000 grant to help homeowners replant trees in the tree mortality zone. She will be working with the UC Master Gardener Program to train Master Gardeners to educate landowners about tree planting. PowerPoints, brochures, and videos will be produced.

VIII. Next FHRWG Meeting

The next meeting will be held on April 5th at 2:00 p.m. at the CAL FIRE FRAP office.