

**BOF Effectiveness Monitoring Committee Meeting Notes
March 19, 2019**

**California Natural Resources Building, CAL FIRE Conference Room
Sacramento, California**

1. Participants (19): Members--Sue Husari (Co-chair), Sal Chinnici, Matt House, Mandy Culpepper, Drew Coe, Dr. Matt O'Connor, Jim Burke, Justin LaNier, Bill Short, and Cliff Harvey
Staff—Matt Dias, Brandi Goss, Dave Fowler, and Pete Cafferata
Participants— Dr. Rob York, Steve Baumgartner, and George Gentry
Webinar participants: Dr. John Battles, Dr. Richard Cobb, and Clarence Hostler

2. Report by the Co-Chair

Sue Husari reported on the following topics:

- CAL FIRE has contributed \$200,000 to the EMC for FY 2018-19, allowing both EMC-2018-003 Alternative Meadow Restoration and EMC-2018-006 Effectiveness of Class II WLPZ FPRs and AHCP Prescriptions to be fully funded (\$101,802 and \$694,371, respectively). Remaining funds for FYs 2019-20, 2020-21, and 2021-22 are \$222,635, \$215,556, and \$270,528, respectively.
- The EMC will now meet quarterly, with meetings planned for March, June, September, and December. Meeting locations will continue to rotate between Sacramento, Ukiah, and Redding.
- Matt Dias is working with BOF Chair Gilless to select an EMC Co-Chair to fill Dr. Russ Henly's seat. EMC members interested in this position should notify Mr. Dias.
- No EMC membership changes have occurred since the last EMC meeting. Two academic seats remain as vacancies on the EMC. Brandi Goss has worked on a draft academic recruitment flyer with input from Co-Chair Husari.
- The EMC website has been significantly modified and improved; see:
<https://bofdata.fire.ca.gov/committees/effectiveness-monitoring-committee/>

Other announcements:

- Matt Dias stated that AB 434 requires all state agencies to post internet materials that are ADA compliant before July 1, 2019. The director of each state agency must post on the home page of the agency's internet web site a signed certification that its website is in compliance with specified accessibility standards. See:
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB434
This means that it is possible that BOF staff may be required to remove EMC material that is not in compliance.
- Bill Short announced that the USGS, in a letter dated February 27, 2019, accepted the EMC proposal for the acquisition and processing of LiDAR data for a portion of the Upper South Fork American River watershed (2016-003 Repeat LiDAR Surveys to Detect Landslides, \$100,000). In addition, the USGS and USFS have chosen to make additional investments to acquire LiDAR in adjacent areas; the combined project will move forward as a single acquisition. The El Dorado National Forest is supplying funds for LiDAR outside the Tahoe Basin and the USGS is supplying funds for the foothills down to Sacramento County. Most of northern California is expected to have LiDAR data flown in the next year. The contract for this project will be submitted through the Department of Conservation CGS office.

- Pete Cafferata and Drew Coe briefly summarized the status of the CAL FIRE-BOF Exemption and Emergency Notice report, and planned work for 2019. The draft report is currently in CAL FIRE Executive review, with the expectation that it will be released to the BOF and Review Team agencies in late March. The final report will be presented to the BOF at their May meeting. Field work in 2019 will evaluate 1038(c, c(6)) Fire Hazard Reduction, 1104.1(a) Less than 3 acre Conversion, and 1038(b) <10% Dead, Dying, or Diseased Exemptions, as well as 1052.1 Emergency Notices. Field protocols are being revamped using a modular approach. A second report is due to the Legislature by December 31, 2019.
- Matt O'Connor announced that Sonoma County Ag+Open Space has produced several map products, including countywide LiDAR data. For more information, see: <http://www.sonomavegmap.org/>

3. Discussion of Revisions to the EMC Request for Proposals and Proposal Templates

Mandy Culpepper led a discussion of the revisions she worked on with Dr. Emily Burns for the EMC request for proposals (<https://bof.fire.ca.gov/media/8244/3-i-emc-rfp-revisions-clean.pdf>) and proposal templates. Major decision points were covered. It was determined that:

- EMC funding will only be granted for up to three years but researchers with longer term studies can reapply, and previously completed work will be considered in the collaboration and feasibility ranking criteria. No changes to the EMC Strategic Plan are needed.
- Funding will be limited to one university professor during the summer months.
- Indirect (overhead) costs will be limited to 20%, stating that there is some flexibility to adjust this cap.
- For 2019 project proposals, a total of \$708,719 is available over the next three years, but the maximum amount for FY 2019 is \$222,635, for FY 2020 is \$215,556, and for FY 2021 is \$270,528.

EMC members should send Ms. Culpepper additional input (as well as input on the project proposal forms) so that she can incorporate it prior to the June EMC meeting. Brandi Goss will send out clean versions prior to the meeting. Further discussion will occur at that meeting, including whether EMC can only fund effectiveness monitoring projects through government agencies.

4. Presentation of Results from EMC Funded Projects

A. EMC-2017-006 Tradeoffs Among Riparian Buffer Zones—Dr. Rob York, UC Berkeley

Dr. York provided the PowerPoint presentation he gave at the CLFA Spring Workshop earlier in March titled “Testing Fuel Treatment Alternatives in Riparian Forests” (<https://bof.fire.ca.gov/media/8438/4-a-york-presentation.pdf>). Background information on riparian zones and FPR protection measures were provided, as well as data showing that there was historically frequent fire in riparian areas (e.g., Van de Water 2011). Predicted fire behavior in areas upslope of a WLPZ was shown to be considerably different than in the WLPZ (P-torch and surface fuel values). A light single tree selection harvest in a WLPZ without additional fuel reduction does not significantly reduce predicted fire behavior. Treatments in WLPZs can reduce high severity fire, as illustrated with a site in the 2014 King Fire near Stumpy Meadows Reservoir. These treatments can restore stand structure and species composition (e.g., ponderosa pine and Sierra alder). Fears about riparian treatments have centered on sediment delivery, soil compaction, increased

stream water temperature, introduction of exotic invasive species, terrestrial habitat impacts, loss of large wood recruitment potential, etc.

The primary objectives of EMC-2017-006 are to test treatments known to be effective for reducing fire behavior upslope and document the tradeoffs. The study is being conducted at Blodgett Forest Research Station, where all Class I and II watercourse WLPZs have BOF designated experimental status. Class I and II watercourses have randomly been assigned one of four treatments: (1) control, (2) status quo (selective harvest using current FPR WLPZ standards), (3) fuel reduction treatments (thin from below, follow up with ladder and surface fuel treatment), and (4) same as #3 with gap creation ranging from 0.1 to 0.4 acres. Parameters being measured include soil strength (index of soil compaction), species composition/structure, fuel loading, canopy cover/light availability, water temperature, and stream sediment. One #2 treatment and one #4 treatment have been completed to date. Three #2 treatments, three #3 treatments, and two #4 treatments will be completed in 2019. Protocol modifications include trying to capture changes between timber operations and fuel treatments, alder monitoring, and likely additional soil strength measurements. A second phase of the study is planned, with five-year post treatment measurements, and expanding treatments and monitoring to other locations. Results to date show pre- and post-thinning with equipment, but without fuel treatment, have similar surface fuel loading. Timber yields and dollar revenues are considerably higher with Treatments #3 and #4. Dr. York stated that it will be one year before another set of data are available, and two years before the full set of data can be shared with the EMC. Photos of field sites from the EMC field meeting held in September 2018 are posted at: https://bofdata.fire.ca.gov/media/7529/september_2018_emc_meeting_notes.pdf

B. EMC-2017-007 Tree Mortality in the Sierra Nevada—Dr. John Battles, UC Berkeley

Dr. Battles provide a PowerPoint presentation titled “The Life Cycle of Dead Trees” (see: <https://bof.fire.ca.gov/media/8440/4-c-battles-presentation.pdf>). He began by stating that snag retention is a key FPR, but we need a more accurate estimate of how long snags stand in California forests. The primary goal of this research is to provide the necessary scientific basis to develop snag retention guidelines, with a secondary goal of developing an improved understanding of the contribution of snags to carbon storage in Sierra mixed conifer forests. The dead wood cycle was displayed, illustrating how live trees turn into snags and then coarse woody debris (1000+ hour fuels). The study is being conducted in Compartment 160 on Blodgett Forest Research Station (BFRS). Key study objectives are to: (1) extend the record to 2018 by repeating the snag inventory and evaluation, (2) establish a new monitoring protocol that tracks cohorts of new snags on an annual basis to quantify development of cavities/other habitat elements, and (3) establish a long-term study of downed wood decay rates. Snag fall rate data were displayed (~50% fall rate in 5 years), with the half life of snags at BFRS approximately 50% of that at Sequoia-Kings Canyon National Park (SEKI) (i.e., snags fall twice as fast). Snag fall rate by species at BFRS varies considerably, with incense cedar having a slower rate compared to ponderosa and sugar pine. Older data from SEKI reveal an exponential wood decay rate when measuring mean bole density.

A systematic survey of Compartment 160 was conducted in 2018, with 16 survey lines running east to west. Field crews mapped 577 snags, with 275 snags recorded since 2012. The project was started by Bob Heald in 1983. Additionally, there have been 196 new treefalls since 2012. Re-measurement will occur in 2019, with a snag wildlife habitat evaluation, a record of height and type of breakage, and a complete inventory of downed wood. Log cemeteries are an additional component of this study to

document long-term downed wood decay rates. Eight log decay sites were established in 2018 in compartment 160, using four functional groups of trees (fir, pine, oak and cedar). Five of the decay sites are located in typical areas of the unit; three are located in open gaps. Log sizes are representative of snag sizes in the unit, and log density and volume will be measured over the next 20 years (i.e., 0, 2, 5, 8, 12, and 20 years). Initial wood samples were collected in 2018 and are being processed for wood density, as well as carbon and nitrogen content. The logs will be monumented for this long-term study.

C. EMC-2015-001 Class II-Large Monitoring—Drew Coe, CAL FIRE

Drew Coe reported on the progress of Oregon State University MS student Adam Pate, working under the direction of Dr. Catalina Segura and Dr. Kevin Bladon (see: <https://bofdata.fire.ca.gov/media/8439/4-b-coe-presentation.pdf>). The primary objectives of this study are to: (1) investigate the variability of the relationship between drainage area, channel width, and the perennial flow extent across the geographic scope of the Anadromous Salmonid Protection (ASP) rules; (2) compare the relationships derived in (1) to the rule criteria for the Class II-L identification system in terms of both drainage area and channel width; and (3) conduct a pilot study to investigate the downstream propagation of water temperature from Class II-L systems in sites with contrasting lithology. Documentation of downstream propagation of water temperature from Class II watercourses in contrasting geologies on Jackson Demonstration State Forest (JDSF) and LaTour Demonstration State Forest (LDSF) began in 2017. Field data for the broader study took place during the summer of 2018, using clusters of Class II-L watercourses in JDSF (North Coast), LDSF (Cascades), and near Happy Camp and Sawyers Bar (Klamath Mountains). Site selection factors included aspect, geomorphic province, climate (temperature and precipitation), and ease of access/cluster factor. Field data were collected on approximately 100 Class II-L watercourses (100 m reaches), including measurements of bankfull width and depth (10x/reach), wetted width and depth (10x/reach), channel slope, and grain size distribution.

Geospatial analysis has been conducted for drainage area, mean catchment elevation, catchment curvature, and several other metrics. Preliminary data analyses conducted to date indicate that longitudinal patterns of perennial flow are highest in the Klamath Province, lowest in the Cascades, and intermediate in the North Coast region. Klamath Province and North Coast watercourses had a high degree of connectivity at the reach mouth, while the Cascade reaches had approximately half connected. The channels in the Klamath Mountains displayed some relationship between drainage area and bankfull channel width, while channels in the other two provinces did not. Random forest modeling was used to predict the relative importance of covariates to predict network connectivity. Mean channel slope and drainage area were positively related to stream connectivity, while grain size was negatively related to connectivity. Mr. Pate is on track to finish his Master of Science degree in 2019.

D. EMC-2017-008 CA FPRs and Relation to Fir Mortality—Dr. Richard Cobb, Cal Poly SLO

Dr. Cobb provided a PowerPoint presentation titled “Do Forest Practice Rules Minimize Fir Mortality from Rood Disease and Bark Beetle Interactions?” (<https://bofdata.fire.ca.gov/media/8441/4-d-cobb-presentation.pdf>). The original study was to occur on Collins Pine forestlands, but that has changed and now the study is being conducted at Blodgett Forest Research Station (BFRS) and Yosemite Mountain Ranch. Five wounding treatment locations are being used at BFRS, including one 1970’s fir planation and four second growth sites with variable density. At the five sites, 40 trees per site are studied with four treatments for limiting root disease: borates, urea, control (wound but no treatment), and no wound.

The same treatments are being applied on 30-50 trees at Yosemite Mountain Ranch (validation treatment).

Stump treatment is a second component of the study, with one site at BFRS where 120 trees will be felled in May 2019. There will be two treatments per stump; paired treated and untreated (borates, urea, *Phlebiopsis*). Stump treatment with *Phlebiopsis gigantea* (Rotstop) has been widely used in Scandinavian countries as the preferred method for the control of the conifer pathogen, *Heterobasidion annosum*. Fomes root rot is a major root rot pathogen of conifers in North America, and this will be the first *Phlebiopsis* test in the western U.S. This biocontrol treatment is applied as a spore suspension to stumps immediately after cutting. Insect trapping every two weeks during peak flight (July-August) will also occur, providing information on whether fir disease centers are refugia for fir engraver beetles (*Scolytus ventralis*). GIS analysis will be utilized to determine if fir disease centers coalesce. A Cal Poly SLO graduate student has been recruited for this study. Final reporting will occur in 2020.

E. Boggs Mountain Demonstration State Forest Bird Study

Stacy Stanish, CAL FIRE, provided a hardcopy of her PowerPoint presentation on the avian richness study being conducted on Boggs Mountain Demonstration State Forest, which is posted on the EMC website at: <https://bof.fire.ca.gov/media/8390/4-stanish-bird-study-results.pdf>

Ms. Stanish was in a training class in Colorado and unavailable to present the study to the EMC.

5. Public Forum – no public comment received.

6. Location and Future EMC Meeting Dates

The next EMC meeting will be held in June 2019 in Redding. **Brandi Goss will send out a Doodle poll to find an acceptable meeting date.** A two day office/field meeting will be held in September, which will include review of project concept proposals submitted after July 1, 2019.

Topics to cover at the June meeting include:

- Presentation by Dr. Helen Dahlke or MS student Seanna McLaughlin on the UC Davis Caspar Creek nutrient study (EMC-2017-001).
- Discussion on how to best translate EMC results to possible FPR modifications.
- Discussion of EMC Strategic Plan themes we want to emphasize for 2019 project proposals.
- Additional discussion on the EMC Request for Proposals and proposal templates.

8. Announcements

The California Fish and Game Journal is seeking submissions for a special issue titled “Effects of Fire on California’s Natural Resources.” Manuscript submissions are open until April 1, 2019. For more information, see: https://www.wildlife.ca.gov/Publications/Journal/Special-Issues?fbclid=IwAR2JGayjZnlQxBCUIFlsX7yzj63Ri1yF6q3-6MA7WJ0kpzYsWs8PGJ_8fc4

The 37th Annual Salmonid Restoration Federation (SRF) Conference will be held on April 23-26, 2019 in Santa Rosa (see: <https://www.calsalmon.org/conferences/37th-annual-salmonid-restoration-conference>).

The State Board of Forestry and Fire Protection will be meeting on April 9-10 in Sacramento and May 7-9 in Chico, with a field trip on May 8th to the 2018 Camp Fire.

<https://bofdata.fire.ca.gov/business/meeting-agendas-and-annual-schedules/>

Drew Coe's video presentation at the Soil Science Society of America (SSSA) International Soils Meeting held in San Diego on January 6-9, 2019 titled "Post-Fire Watershed Hazards in the 'New Normal': A CAL FIRE Perspective" is posted at:

<https://scisoc.confex.com/scisoc/2019sssa/meetingapp.cgi/Paper/116570>

A public workshop titled "Implementing AB 1492: Ecological Performance Measures for California Timberlands—Regionalized Monitoring and Assessment Stakeholder Workshop" will be held on April 17th, 9:30 a.m. to 3:30 p.m., at the Sac State Downtown Campus. See the flyer for the meeting at:

<http://resources.ca.gov/wp-content/uploads/2019/03/EPM-workshop-2-announcement-20190417.pdf>