BOF Effectiveness Monitoring Committee Meeting Notes
April 28, 2020
GoToMeeting Webinar

1. Participants (29):

Members--Sue Husari (Co-chair), Loretta Moreno (Co-chair), Sal Chinnici, Dr. Matt O'Connor, Matt House, Dr. Sarah Bisbing, Dr. Leander Anderegg, Dr. Peter Freer-Smith, Jim Burke, Dr. Stacy Drury, Bill Short, Drew Coe, Clarence Hostler, Justin LaNier, Elliot Chasin
Staff—Brandi Goss, Stacy Stanish, Dave Fowler, Pete Cafferata
Participants—Greg Suba, Dr. John Battles, Ricky Satomi, Ronna Bowers, Dr. Michael Baker, Will Olsen, Richard Gienger, George Gentry, Dave Longstreth, Tim Ryan

2. Report by the Co-Chairs

a. Monitoring News:

Drew Coe announced that Ryan Cole defended his Oregon State University MS thesis on March 6th based on work conducted on the Boggs Mountain Demonstration State Forest post-fire runoff and erosion study. The thesis is titled "*Post-Fire Management Activities Alter Soil Properties, Sediment Yields, and Vegetative Recovery in the Northern California Coast Range*" and was distributed to the EMC email list. This plot-scale study documented reduced sediment movement following salvage logging compared to that measured on control plots.

b. Budget Update:

Loretta Moreno stated that the funding for EMC projects ($425,000 per year) is expected to be secure in the FY 2020 budget, since it is a reoccurring budget line item with no sunset date.

c. EMC Contracts:

Brandi Goss informed the EMC that contracts for the three EMC projects approved with FY 2019 funds have been sent to the CAL FIRE Business Services Office, and work is actively occurring to get the contracts approved before the end of the fiscal year. The three projects are:
EMC 2019-002 (*Treatment Longevity for Fuel Reduction Projects*)
EMC 2019-005 (*Sediment Monitoring and Fish Habitat--with Accelerated Wood Recruitment*)
EMC 2019-003 (*Fuel Treatments and Hydrologic Implications in the Sierra Nevada*)
Drew Coe stated that Drs. Kinoshita and Hogue successfully modified the scope of work for EMC 2019-003 to better address the Forest Practice Rules (FPRs).

3. Consideration of the EMC Charter Revisions

Loretta Moreno led a discussion on the proposed EMC Charter revisions initially distributed for the December 5th EMC meeting held in Ukiah, but not discussed. Further revisions were made and distributed to the EMC on March 12th. Efforts were made to eliminate redundancies with the EMC Strategic Plan. Key items discussed included:

- In the Necessity section, it was agreed to shorten the discussion regarding the linkage between the EMC and AB 1492 Ecological Performance Measures (EPMs), making this section more focused on the EMC's purpose, and less about EPMs.
- Re-word the sentence on co-chair affiliations. State that co-chairs will either be from the BOF and CNRA, or at least one co-chair will be from the BOF or CNRA and the second co-chair will be

selected from the EMC membership. Consideration will be given to adding a third co-chair from the public.
- Remove Secretary Crowfoot's name from the document and state that the Secretary for Natural Resources will be consulted regarding agency representation on the EMC.
- Reword the sentence stating "Agency representatives will act as consultants rather than direct members." Make the Charter clear that there will only be one voting member from each agency. Consider adding verbiage stating that an agency alternate may vote for the agency when the EMC member from that agency is unable to attend a meeting.
- In the Reports and Adaptive Management Process section of the Charter, add a sentence stating that the EMC shall encourage publication of reports in scientific journals.

These edits and other minor edits discussed are to be made by the EMC co-chairs and BOF staff by May 12th. A revised version will be sent to the EMC for review, with action to be taken on the new version of the Charter at the next EMC meeting.

4. Project Update on the Class II-Large Watercourse Study (EMC-2015-001)

Drew Coe provided a PowerPoint presentation on the Oregon State University Class II-Large Monitoring Study being conducted by Drs. Catalina Segura and Kevin Bladon. OSU MS student Adam Pate defended his thesis on Project 1 of this study (*Regional Effectiveness of Rules for Class II-L Watercourse Identification*) in August 2019, and OSU PhD student Austin Wissler is currently writing up the Project 2 component of the study (*How Does Stream Temperature Propagate in the Downstream Direction?*) as the first chapter of his dissertation.

The EMC contract for this project was approved in June 2017, with field work for Project 1 completed in 2018. Field work for Project 2 began in 2018 and is continuing. The contract agreement has been extended to May 2020. Drs. Segura and Bladon have reanalyzed the data for Project 1 and reframed the findings. A manuscript for Project 1 is to be submitted by May 2020, and the manuscript for Project 2 is expected to be submitted during the summer of 2020.

Project 1 evaluated 101 streams in four geomorphic provinces (Northern Coast Ranges, Klamath Mountains, Cascade Range, and Sierra Nevada). Field work took place in three Jackson Demonstration State Forest (JDSF) watersheds, two upper Klamath River basins, the South Cow Creek watershed in LaTour Demonstration State Forest, and the Yuba River watershed near Downieville. Sampling occurred from late June to early September in 2018, and was done in areas that had not been recently harvested, burned, or had visible water diversions. Stream survey reaches were 20 times active channel width, and 10 cross-sections at a minimum of 6-m spacing were established. Flow presence or absence was documented at the cross-sections and at the reach scale. A distinction was made between flow connectivity and flow permanence. Sixteen geospatial variables were used in the analyses.

Project 1 results indicated that 68% of the streams in the Klamath province were perennial (i.e., flow permanence, with water flowing continuously within the entire surveyed reach), while only 31%, 40%, and 32% of the Cascades, Sierra Nevada, and North Coast streams were perennial, respectively. In terms of network connectivity (i.e., water flowing at the confluence with a Class I watercourse), 84% of the streams in the Klamath Mountains and 80% of the streams in the North Coast were connected, while only 46% of the streams in the Cascades and 48% of the streams in the Sierra Nevada were connected.

Median drainage areas documented for the perennial and connected streams were found to be relatively close to the rule requirements, but there was considerable variability in the dataset. Drainage area was found to be a much more important factor than active channel width for explaining perennial flow and connectivity.

Using random forest statistical analysis, this study found that for Class IIs that are perennial, the most important variables are:

- 16th percentile of streambed particle size (D_{16}) – smaller grain sizes are more perennial
- Winter precipitation as taken from PRISM – more winter ppt generates more perennial
- Drainage area – more drainage area is more perennial

Channel width is 14th on the list of parameters in terms of importance.

For Class IIs that are connected near the confluence of a larger stream, the most important variables are:

- Winter precipitation as taken from PRISM – more winter ppt is more connected
- 16th percentile of streambed particle size (D_{16}) – smaller grain sizes are more connected
- Spring precipitation as taken from PRISM – more spring ppt is more connected

Drainage area is the 7th most important variable, and channel width is the 13th most important variable.

A smaller grain size may be important for perennial and/or connected flow for a variety of reasons, including (1) a finer grain size reflects a less permeable bed, which means water does not permeate into the hyporheic zone or groundwater; and/or (2) a finer grain size reflects a less flashy hydrologic system (i.e., less flashy means less stream power/shear stress which means smaller grain size), which allows more rainfall to be stored within catchment hillslopes to be metered out during the summer rather than as part of the storm peak.

Regarding Project 2, stream temperature propagation downstream, thermistor data have been collected from Caspar Creek in JDSF and Latour Demonstration State Forest. The LaTour data show downstream warming until there is groundwater input, while the Caspar Creek data reveal a slight downstream warming trend or no warming. A closer coupling of air temperature to water temperature exists for the Caspar data compared to the LaTour data.

Overall, data analyses conducted to date show that there are no clear thresholds for either width or drainage area for connectivity and flow permanence. Channel geometry relationships were ineffective at distinguishing perennial or connected streams from non-perennial or disconnected streams across the study area. Downstream cooling was found to be a possibility in groundwater dominated systems.
EMC discussion of this study centered around the difficulty of translating these results into potential rule changes. Making rules to reflect these findings was stated as being very difficult, since the best rules are those easy to use in the field, and there is considerable complexity with these study results.

5. Discussion of Science to Policy Framework

Loretta Moreno and Drew Coe provided a PowerPoint presentation and led a discussion on moving science to policy using adaptive management, based on the EMC's need to transfer study results to the Board. The presentation was centered around the components of the adaptive management cycle. Some of the key questions/decision points covered in the PowerPoint included (see Figure 1, modified adaptive management loop):

Critical Scientific Question and Monitoring Plan

- Are critical questions (per the EMC Strategic Plan) being strategically funded?
- Is the EMC funding projects in a coordinated manner to build confidence in research results?
- Can we improve how we manage and select research projects in the future?
- Are studies being selected that are designed to see if rule/policy intent is being met, or if specific rules and/or management approaches are effective?
    - EMC prioritizes general/specific questions on an annual basis; this needs to be a much more explicit process than that currently detailed in the EMC Strategic Plan.

Monitoring Design and Implementation

- Is scale (temporal/spatial) representative? Minimum standards (scope, scale, sample size, etc.) need to be addressed to translate study results to regional and/or statewide policy application.
    - EMC creates a technical subgroup to (a) identify landowner or land base to perform study, (b) define scope of work, methods and sample design, (c) do targeted outreach to members of the academic community to gauge interest in collaborative monitoring/research effort; and/or (d) put out a request for proposal (RFP) to implement scope of work (optional if multiple interested PIs).

Results and Evaluation

- Does study confer sufficient evidence to affect policy change?
- Are study results scientifically relevant and significant?
- EMC member or technical support staff work with the PI to distill study results in a way that is appropriate and relevant for decision making.
    - Analyze, prepare, and review findings. This can be done by peer-reviewed literature and/or technical reports.

Policy/Rule Modification

- To provide sufficient decision space for policy makers, what are the full and objective range of policy options as a result of the study and related science?
    - Communicate findings to the BOF and the Forest Practice Committee, done by technical subgroup or the PI.

There was EMC consensus that a proactive, more focused approach for selecting projects for the EMC to fund in the future is preferred over the current passive approach, so that we do not need to search for a linkage to the FPRs. While a targeted approach was favored, it was stressed that this should not be a targeted *university/academic* approach (need diversity for PIs and to conduct extensive outreach). Advantages and disadvantages of using an RFP approach were discussed. Limitations of a relatively small amount of funding, existing contracting requirements, and the time frame for developing contracts were raised. Before a contract is finalized with a PI, it was agreed that we need to include a formalized engagement process between the EMC and the researcher to ensure better coordination (making sure that key steps are followed and expectations are understood).

Technical subgroups were discussed as an approach to (a) develop annual EMC funding focus/critical questions; and (b) work with the PIs in the early project development design phase, and then later to ensure that results are packaged appropriately for FPC response/use. Bagley-Keene Open Meeting Act (limit of two EMC members, limitations on serial meetings, etc.) requirements were discussed as reasons why it will be difficult to form a technical subgroup. Alternatives discussed were to (1) have the EMC meet more frequently, or (2) obtain greater commitments from CAL FIRE and the other agencies to formally assign staff to help develop EMC objectives. Additionally, co-chair Husari suggested that it would be appropriate to determine what topics the BOF wants monitoring information on, looking at the policy questions the Board is working on every year to guide determination of appropriate critical questions (i.e., more two-way interaction with the Board using their priorities).

Action items include: (1) Board staff (Matt Dias, Brandi Goss) will meet with the Board's legal counsel to discuss options regarding forming a technical subgroup, (2) BOF staff will schedule two meetings in May and June to develop critical questions for the FY 2020 funding cycle, (3) additional comments on this agenda item are to be sent via email to Brandi Goss.

6. Public Forum

None

7. Future Meeting Locations and Dates

Brandi Goss will send out Doodle polls for EMC meetings in May and June (virtual meetings).

8. Announcements

No scientific conferences, symposiums, or workshops were announced.
Bill Short provided a map showing the publicly available LiDAR status for California; data can be accessed from the USGS data portal (https://www.usgs.gov/core-science-systems/ngp/tnm-delivery/gis-data-download) (see Figure 2).

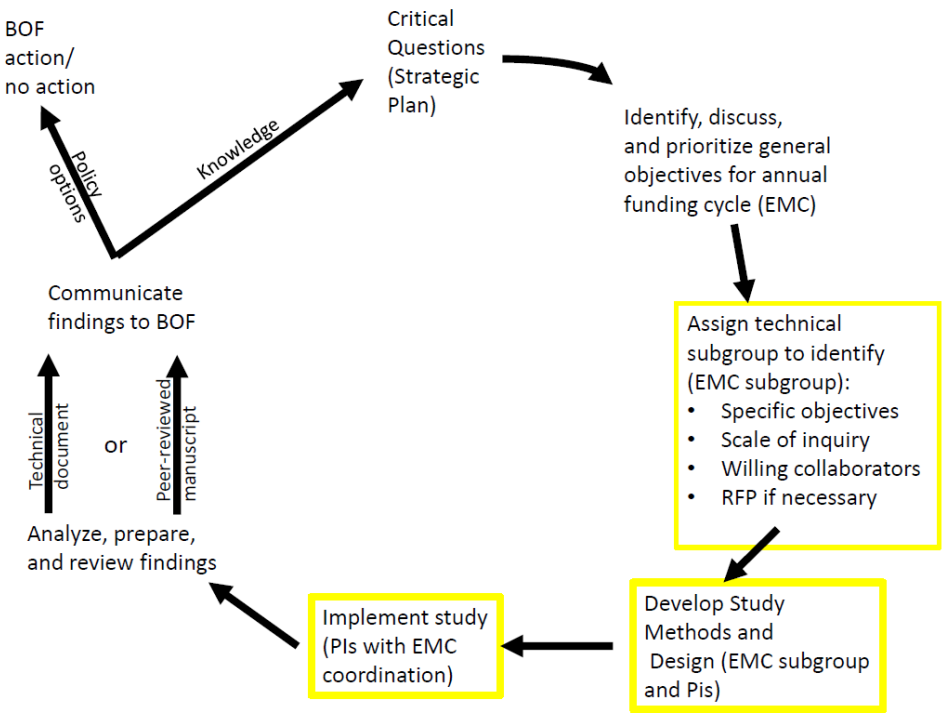

Figure 1. Modified adaptive management loop. Yellow boxes require additional work.

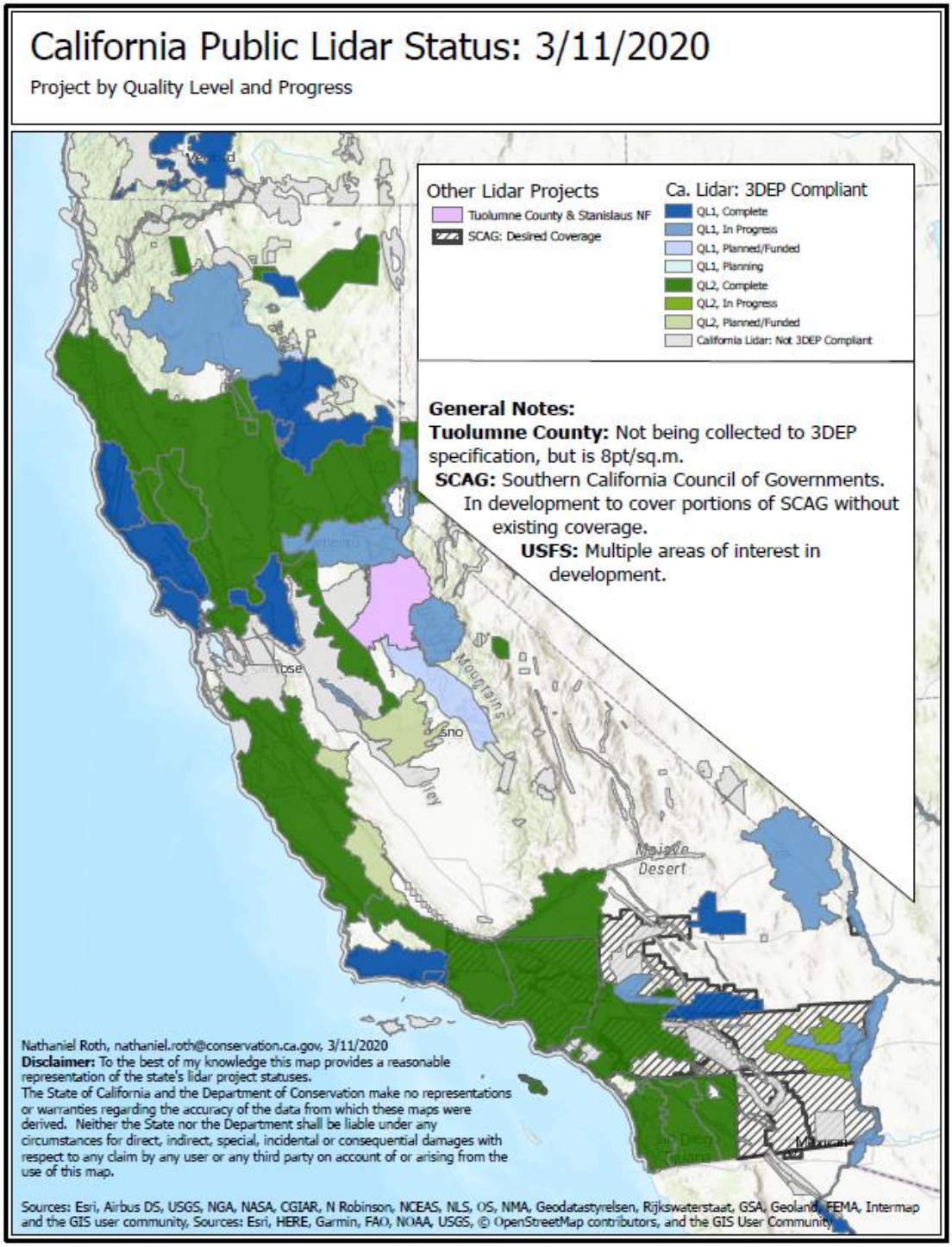

Figure 2. Map of publicly available LiDAR in California.