EFFECTIVENESS MONITORING COMMITTEE

P.O. Box 944246 SACRAMENTO, CA 94244-2460 Website: www.bof.fire.ca.gov (916) 653-8007





Effectiveness Monitoring Committee (EMC) Meeting Notes

Meeting Date and Time: Friday, November 18, 2022 9:30 AM

Hybrid Meeting (physical and virtual options)

Physical Meeting Location: California Natural Resources Agency Headquarters, 715 P Street, Sacramento, 95814, 2nd floor Conference Room 2-309

A recording of the meeting may be viewed by filling out the registration form here: <u>https://attendee.gotowebinar.com/recording/7633281837720227087</u>

Times before each agenda item are approximate and align with the timer in the video recording.

 <u>Call to Order, Hybrid Meeting Format, Roll Call, and Core Values – Dr. Kristina Wolf, Board staff</u> Dr. Wolf called the meeting to order, reviewed the hybrid meeting format and methods for interacting with the committee, and called the roll:

Participants (25)

<u>Members Present (12)</u> – Dr. Elizabeth Forsburg-Pardi (Co-Chair), Bill Short, Ben Waitman, Jessica Leonard, Drew Coe, Justin LaNier, Dr. Matt O'Connor, Peter Freer-Smith, Dr. Michael Jones, Mathew Nannizzi, Clarence Hostler, and Dr. Leander Love-Anderegg

<u>Members Absent (4)</u> – Loretta Moreno (Co-Chair), Dr. Stacy Drury, Jim Burke, and Sal Chinnici <u>Staff (3)</u> – Dr. Kristina Wolf, David Fowler, and Curtis Yee

<u>Audience Participants (6)</u> – James Orlando, Kristy Peterson, Charlie Schneider, Dr. Robert York, Thomas Young, Dr. Kyle Farmer

Time: 07:00

2) <u>Report by the Co-Chair – Dr. Forsburg-Pardi</u>

a. Membership Updates

i. Introduction of Mathew Nannizzi

The EMC's recommendation to appoint Mathew Nannizzi to a seat on the Monitoring Community, taking Member Matthew House's seat on the EMC, was unanimously approved by the Board of Forestry & Fire Protection ('Board') at the Board meeting on November 2nd. Member Nannizzi is an aquatic biologist with the Green Diamond Resource Company, for which Member House was also an employee. Member Nannizzi's term starts 11/2/2022, and expires on 11/2/2026. The Membership Roster has been updated online, and can be found here: <u>EMC Members and Term Expirations</u> (https://bof.fire.ca.gov/media/vl2mg1kv/emc-members-and-term-exp_webpage.pdf).

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ii. Open Seats

There are up to 6 seats that could be filled on the EMC (five mandated, one additional with US Forest Service). Of those, two seats are currently vacant at this time, and the remaining four are filled by members that will vacate them once an appropriate candidate can be found. The seats include the following:

1. Monitoring Community

1 open seat

 1 seat open, previously filled by forest ecology/forestry expertise from University of Nevada, Reno.

2. Agency Representatives

Up to 5 open/pending open seats

- Central Valley Regional Water Quality Control Board (CVRWQCB) 1 seat open, previously filled by Justin LaNier and vacated after the 11/18/2022 meeting. The CVRWQCB is expected to recommend a nominee. Member LaNier's background is in geology, hydrology, and water quality.
- State Water Resources Quality Control Board (SWRQWB) 1 seat to open after February 16th, 2023, currently filled by Jessica Leonard. The SWRQWB is expected to recommend a nominee. Member Leonard's background is in watershed management.
- Department of Forestry and Fire Protection (CAL FIRE) seat not currently open but will be vacated by Member Coe once qualified candidate can be appointed; Member Coe's background is in hydrology and forestry, and he is a Registered Professional Forester (RPF).
- **US Fish and Wildlife Service (USFWS)** mandated agency representation; Lilian (Lorena) Vincent-Solorzano has been recommended by the USFWS to represent their agency on the EMC. Once an interest letter and CV are received, hopefully by the next meeting, the EMC can vote on this recommendation.
- US Forest Service (USFS) seat not currently open but will be vacated by Member Dr. Drury; not a mandatory seat but the USFS has had agency representation on the EMC for some time, and there is strong EMC support for keeping this representation on the committee. Member Drury reported that he has not found a suitable candidate at this time, but there are several new employees that could be good fits. Member Drury's background is in fire ecology.

b. Strategic Plan Final Draft Update

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Co-Chair Dr. Forsburg-Pardi reported that the final draft of the EMC's 2022 Strategic Plan was approved by the Board at the Nov. 2nd Board meeting. The Research Themes and Critical Monitoring Questions (CMQs) were extracted from that document and will be addressed separately as they are revised more frequently than the Strategic Plan. The CMQs will be discussed more later on in this meeting.

The 2022 SP has been updated online on the Board's webpage under "Latest", and on the EMC's webpage here: <u>2022 Strategic Plan (https://bof.fire.ca.gov/media/vaffvb42/2022-emc-strategic-plan-final.pdf)</u>. The previous SP from 2018 is now in the EMC Document Archives, which is linked on the main EMC webpage under "EMC Links" (<u>EMC Archives:</u> <u>https://bof.fire.ca.gov/board-committees/effectiveness-monitoring-committee/effectiveness-mon</u>

c. Annual Report & Workplan project summaries

Liaisons should coordinate with the EMC-supported Principal Investigators (PIs) to provide project updates to Dr. Wolf via email. Any updates received prior to 12/1 will be incorporated into a draft, and an initial draft to all EMC members by no later than December 1. Please send any revisions to Dr. Wolf by 12/31. A final draft will then be sent out to the committee at least two weeks before the next meeting for final revisions, and ideally the committee will vote on approval and sending to the Board at that time. EMC members and project liaisons should coordinate with Principal Investigators (PIs) for status updates. See examples in the 2021 Annual Report and Workplan (https://bof.fire.ca.gov/media/r0wh43vd/emc-annual-report-and-workplan-2022 final_ada.pdf) for the kinds of information that should be included; this will vary widely depending on the project and project stage. The sooner the updates go to Dr. Wolf the better.

Note: This is related to the Research Themes and CMQs in that the Annual Report and Workplan will reference the revisions currently in progress, but because that draft will not be approved by the time the Annual Report and Workplan is likely to be complete, the final product and revised CMQs likely won't be included in this year's annual report.

Time: 13:30

3) Project Updates

In response to questions from EMC members about the responsibilities of project liaison, Kristina created a Project Liaison Guide to help guide members through the process. Please review the document from Dr. Wolf (she will send it out in the follow-up email to this meeting) and send her any revisions by the deadline indicated in the email.

Associated documents: See <u>3. EMC Project Liaison Guidelines DRAFT</u> (<u>https://bof.fire.ca.gov/media/s5njd5ig/3-emc-project-liaison-guidelines-draft.pdf</u>)

• **EMC-2016-003: Repeat LiDAR Surveys to Detect Landslides** – Sarah Bisbing was the project liaison but she is no longer with the EMC; request a volunteer to take on the role.

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- EMC-2019-002: Evaluating Fuel Treatment Longevity and Maintenance Needs for Fuel Reduction Projects Implemented in the Wildland Urban Interface in Plumas County, California – Dr. Stacy Drury and Drew Coe will work on the CRA for this. Do they anticipate being able to present that at the next EMC meeting in 2023?
- EMC-2018-006: Effect of FPRS on Restoring Canopy Closure, Water Temperature, & Primary Productivity – Matt House was a project liaison; as Mathew Nannizzi has taken his place, it seems reasonable that he would also fill this role, esp. given his familiarity with the project. Matt House asked if he could do this. Will Mathew Nannizzi fill this role? Yes.
- **EMC-2018-003: Alternative Meadow Restoration** Liaison Matt O'Connor: A final project presentation was going to be given in the fall, will this happen at the first meeting of 2023?
- EMC-2017-006: Tradeoffs among riparian buffer zones Rob York: Had anticipated a November presentation, but the Mosquito Fire set them back a lot. He plans to present at the first meeting of the new year.
- EMC-2017-001: Effects of Forest Stand Density Reduction on Nutrient Cycling and Nutrient Transport at the Caspar Creek Experimental Watershed – A high quality final report was developed, and Drew Coe is the liaison. Request a volunteer to work with Drew on developing the CRA.
- EMC-2017-002: Boggs Mountain Demonstration State Forest (BMDSF) Post-Fire Automated Bird Recorders Study Stacey Stanish had anticipated a Sept presentation but was indisposed with fire season. She will present at the first meeting of the new year (Feb 16th).

Time: 30:45

4) <u>Discussion of comments received on Research Themes and Critical Monitoring Questions and</u> <u>Presentation of Revised Draft – Co-Chair Forsburg-Pardi</u>

Dr. Forsburg-Pardi explained that the goal for today is to review the current draft and discuss proposed edits. Dr. Forsburg-Pardi walked through the major changes made to the draft distributed to the EMC at the September meeting. These changes were in response to comments received during the official public comment period and during EMC meetings, and from EMC members. After this meeting, the co-chairs will present a revised draft at the next meeting based on edits suggested during this meeting, comments received during the public comment period, and comments received via email from the EMC members. Chair Moreno also provided some additional comments for the committee to consider, which Dr. Wolf shared with the committee on 11/10, and verbally reminded the committee of these comments at the meeting.

Associated documents:

• <u>4. 2022-23 Research Themes and Critical Monitoring Questions_DRAFT 11.10.22</u>

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- <u>4. Co-Chair Moreno Comments on Themes and CMQs</u>
- New set of comments/revisions received 11/15: <u>4. 2022-23 Themes and Questions DRAFT</u> <u>Comments NCRWQCB</u>

From September meeting materials, for reference:

- <u>2017-18 Research Themes and Critical Monitoring Questions</u>
- DRAFT 2022 Research Themes and Critical Monitoring Questions
- Public Comments on Research Themes and Critical Monitoring Questions
- Supplemental materials to public comments:
 - o 6d-i. 1 CZU Fire Redwood Damage Assessment
 - o <u>6d-ii. 1 Redwood Defect Study at SVR</u>
 - o <u>6e. 3 Public Comment 2022-07-29</u>

If there is any EMC funding available in the next fiscal year (FY), the revised Research Themes and Critical Monitoring Questions (CMQs)—and the priority CMQs, as decided on by the EMC—would be included in the Request for Proposals (RFP) released in spring of next year (2023). If the draft is to be voted on at a February meeting, then the final draft would need to be ready by end of January. If approved by the EMC at the February meeting, the draft would then go to the Board for final approval at its March meeting.

Dr. Forsburg-Pardi walked through the initial changes made to the draft Research Themes and CMQs.

- On page 1 –the reference to the description of the Adaptive Management Framework and descriptions of past processes were removed because this is covered in the Strategic Plan. The Strategic Plan and this document (Research Themes and CMQs) were separated due to differences in revision cycles (Strategic Plan is updated on a three-year basis, while the Research Themes and CMQs may be updated annually).
- Changes were made to Theme 6: Wildfire Hazard
 - The first edit adds an additional study brought to the attention of the Board during a literature review.
 - Proposed edits to the questions included additions of new CMQs d-h:
 - d added to address FPRs ability to address and manage resilience
 - e addresses post-fire recovery comment from CNRA
 - f addresses a comment from the Water Boards looking at impacts of fire recovery actions on watersheds.
 - g addresses a comment from CAL FIRE about the impacts of wildfire on wood quality
 - h addresses a comment by CNRA to think through adaptability and resilience of forests in the face of wildfire

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- Theme 9: Wildlife Habitat Cumulative Impacts
 - Public comment suggested a broader focus on watersheds and ecological processes beyond terrestrial habitats and species

The floor was opened for additional comment from EMC members and the public:

- Comments were received from the North Coast Regional Water Quality Control Board in November; Dave Fowler noted that Member Jim Burke and he discussed the CMQs and their comments were fairly minor. In Theme 1: the second paragraph, suggests that objectives should be changed to explicitly state that this is intended to maintain specific shade and water quality standards, rather than objectives. Secondly, regarding question a: where sufficient shade doesn't exist, we don't want to maintain the shade levels, we want to provide it, so change "maintain" to "provide". In Theme 2, question b, they suggest that this be for individual plans at the project level, and the rest of the sentence is not really needed, although could alternatively alter the sentence to account for the fact that rules for evaluations of channel response don't exist. These comments are captured in the document: 4. 2022-23 Themes and Questions DRAFT Comments NCRWQCB
- Dr. Wolf reminded the committee that they received all of co-Chair Moreno's comments, and would like the committee to consider these concerns as they make their edits. Many of these comments have not been addressed in the draft presented today (comments related to Theme 6, 9-b), while others have been addressed (general comment, comments related to Theme 9-a).
- Member Dr. Freer-Smith stated in relation to Theme 6 additional questions: CMQs d and h are
 very welcome additions talking about resilience and whether or not the FPRs enhance
 resilience and ability respond to climate change. Believes the need for the FPRs to encourage
 resilience and adaptability to climate change is not restricted to wildfire hazard, but also
 includes drought, pine beetle infestations, etc., which are areas also already extensively
 impacted by climate change. Therefore, suggests that the FPRs encouragement of resilience
 should be reflected in Themes 7 through 11. Co-chair Dr. Forsburg-Pardi stated that it was
 attempted to be addressed in question h, but this is a broader area of concern, and editorial
 suggestions to this would be helpful to capture climate resilience. Member Dr. Freer-Smith will
 submit his suggestions.
 - There was a question as to whether new Research Themes would be allowed; Dr. Wolf stated that yes, new themes may be added. Co-Chair Dr. Forsburg-Pardi suggested that perhaps a new theme capturing this could be added.
 - Member Dr. Jones can Theme 6 be expanded to disturbances to cover all of those fronts (disease, drought, etc)?
 - Member Dr. O'Connor this Theme could also be expanded to think about changing forest ecosystems due to climate change and wildfire with a particular focus on effects of

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watershed hydrology and streamflow; this would be a timely addition to the broader thinking around this theme.

- Member Love-Anderegg would advocate for breaking climate change out into its own theme; there are a lot of forest practice regulations specifically about wildfire, so it seems it is worthwhile to maintain a theme specifically about wildfire, but strongly supports an additional theme about resilience in the broader context of climate change. Co-Chair Dr. Forsburg-Pardi agrees that questions a-c are very specific to wildfire impacts, and we could pull out the resilience and climate change questions into a separate, broader theme, and keep the wildfire hazard-specific questions together.
- Member Dr. Jones stated that he agrees that climate change is a crucial question here, but struggles with the idea of having an independent questions just for that, since it affects ALL of the existing themes and processes. If we pull it out separately, what does that look like? Seems like it could be more important to incorporate climate change into each of the existing themes as they currently stand.
- Member Coe thinks climate change arguably might be better dealt with by the CNRA group that is dealing with statewide ecological performance measures. Certainly, the EMC could incorporate climate change considerations into these more project-based studies and should try to tier this work to the broader work being done at a higher level, but it seems like maybe this is more than this committee can bite off and chew. Is reluctant to send us down that path with a new theme.
- Co-Chair Dr. Forsburg-Pardi suggested that a smaller group could look at doing this work to bring forward to the committee at the next meeting. Dr. Wolf reviewed the next steps: discussing and making these changes before the end of the year, ask for committee feedback, and then a more finalized draft (completed by end January) would be shared prior to the next (February) meeting, with the goal of voting on that document a the February meeting to ensure the questions are ready to include in a spring Request for Proposals (RFP), assuming that there is one (dependent on funding decisions made by the EMC today regarding the full project proposals to be reviewed today). So a solid draft would need to be ready before the next meeting, and Member

Co-Chair Dr. Forsburg-Pardi will take the lead on finalizing that draft, and will work with co-chair Moreno, Member Dr. Freer-Smith, and Board staff to produce that for the committee's review by the end of January. Please send her edits by the beginning of January. A revised draft will then be provided to the EMC members by end of January, and the committee can review and vote at the February meeting.

Time: 1:01:10

5) <u>Review of Full Project Proposals – Co-Chair Dr. Forsburg-Pardi and Dr. Wolf, Board staff</u>

Dr. Wolf walked the committee through the EMC's budget projections, including currently allocated funds over fiscal years (FY) 2022/23 through 2024/25, and the amount of funding



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requested by each new project proposal by FY. Dr. Wolf reported that all proposals could be funded as requested, if it was determined appropriate by the EMC.

Dr. Wolf also reviewed the ranking form used by each EMC member, which includes four scored categories (critical question applicability, need to fill data gap, broad geographic applicability, quality of collaborations and project feasibility.

	Funding advertised in next year's RFP if ALL
Amt available by FY	FPPs funded as requested
2023/24	\$35,274
2024/25	\$194,201
2025/26	\$425,000
TOTAL AVAILABLE FYs 2023/24 to	RFP 2023/24: \$654,475
2025/26	

Associated Documents:

- <u>5. 2022-23 Grant Guidelines</u>
- 5a. EMC Budget Projections 2022-23 Research Proposals
- <u>5b. EMC Ranking-Member Name</u>

The EMC will review four Full Project Proposals (FPPs). Five were requested initially, based on the review of the Initial Concept Proposals at the September meeting, but EMC-2022-002 withdrew prior to receipt of the FPP.

Projects will be assessed together individually as a committee before lunch. Members will be called on to provide comments on each proposal. Rankings would then be turned in by members via email to Dr. Wolf over the lunch break using the Excel ranking form provided to them for all four projects on the same document (see PDF version: <u>5b. EMC Ranking-Member Name</u>), saved with each members' last name at the end. Rankings will be tallied and results delivered after lunch.

5c. EMC-2022-001 Full Project Proposal - REDACTED

Project Name: Aquatic Toxicity & Cumulative Watershed Effects of Pesticide Discharge Related to Post-Fire Reforestation

 Co-chair Forsburg-Pardi – impacts on watersheds and water quality have been brought up to the EMC during revision of themes and monitoring questions, so there has been general interest from partners on this topic. Glad this proposal was submitted to help committee think through how the FPRs are addressing water quality in a post-fire situation. Interested in hearing what the rest of the Committee has to say.

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- Member LaNier recalls that this, or a similar project like this, was submitted last year. Asked if
 the project applicants received comments on the Initial Concept Proposals; yes, they were
 sent to all PIs, and comments were addressed at the discretion of the PIs within their
 application, or called out explicitly in the Full Project Proposal. This would affect the agency he
 works for (Central Valley Regional Water Quality Control Board), so he will recuse himself on
 the vote, but will be available for questions.
- Member Waitman felt the PIs had a clear path set out for how they would achieve the research goals, but it wasn't clear how the PIs would relate herbicide use from timber harvest to the FPRs at a greater landscape scale, but that is not a disqualifying comment.
- Member Love-Anderegg this project is a bit outside his wheelhouse, but he was convinced by the PIs arguments about applicability to the Critical Monitoring Questions and was generally impressed by the project. Also is an ongoing project, so is therefore fairly feasible. Would support this project.
- Member Freer-Smith agrees, and thinks the collaboration looks good, and there is funding inkind, so he is rather supportive of this project.
- Member Leonard this FPP did a good job of clearing up the connection to the CMQs, and study has value to the FPRs and addresses a gap related to herbicides. Has good collaboration and momentum and would support this FPP.
- Member Coe this study tackles an interesting problem in post-fire recovery and sediment transport, but does not have as direct linkage back to the FPRs and how the results would be utilized to inform a rule change. Feels there are other studies submitted this year that have a stronger linkage to the FPRs.
- Member Nannizzi recused himself as a new member
- Member O'Connor agrees with Member Coe a bit, but maybe for slightly different reasons. This study is more a test of concept/methodological study, and while it has merit in filling a gap for ability to detect water toxins, but it doesn't have a strong link to the FPRs or seem likely to lend itself to supporting a rule change.
- Member Jones out of his expertise area, but has some general questions about this kind of study that others may help clarify. Had a hard time understanding how cumulative impacts would be sampled/measured; by putting sampling sites downstream, how would they establish a baseline if not sampling upstream as well? Also thinks its great they want to test several sampling methods, and it seems like sample processing dominates the budget; is that typical? It seems like a lot. Is it necessary and justified? Is an interesting study, but is also a bit unclear how this links to the FPRs or how it could influence any changes in the FPRs, but that was a lesser concern for him.

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- Member LaNier The USGS pesticide research lab is a high-end pesticide lab, and generally cost is relatively high, but this is a usual cost for using that kind of lab. If this was done in private sector it could be lower, but it wouldn't have the high data quality that the study is looking to hold itself to.
- Member Coe the case the PIs make for linking back to the rules is a general one, linking water quality objectives and water quality control plans; but are there water quality numeric (or qualitative) objectives for each of the proposed constituents of the research plan?
 - Member LaNier there are different kinds of numeric water toxicology standards, yes, and there are short-term high concentration, and chronic, longer duration exposures at lower concentrations, and current methods are one-time samples. And the question this is trying to answer is: are there low-level concentrations that exist over multiple days or longer out there? There are numeric standards for chronic toxicity, but you have to show that there were multiple samples taken over multiple days. This study tries to address sampling methods and investigates if there are other more efficient methods for determining chronic toxicity.
- Dave Fowler support staff, not a voting member, and wanted to comment that while he
 agrees there is not a strong tie back to the FPRs, it is valid for the EMC to look at whether the
 existing rules are effective OR if there are possibilities of new rules that might be needed. On
 page 4 of the proposal, the first line addresses that, stating that the goal is to determine if
 existing FPRs—OR LACK THEREOF—provide adequate protections. To him, that is just as valid as
 tying the project back to an existing rule.
- Member Short echoes thoughts previously stated, and the thing that struck him the most was that it appears the assumption is that at the downstream sampling locations, that if pesticides are detected that they tie back to specifically to pesticide applications with regard to FPR-related activities. He wonders if, since the lab will be processing the data to a very low detection limit specifically, if there is potential for background effects that may exist that could cloud the results/interpretations. That is his concern, and he agrees with the logic of conducting studies getting toward cumulative effects, esp. if the pesticides are used on a broader basis. But the assumption that background will be zero, and there are no other potential sources of pesticides, causes him some level of concern.
 - Member LaNier to address Member Short's comment: when pesticides are applied anywhere in the state, a notification must be sent to the County Dept of Pesticide Regulation, so there is usually VERY clear application times and locations that could be accounted for in this study. This should help assess cause and effect. Also, a lot of degradation rates are very well-known for many of these chemicals, so that should help assess cause-and-effect as well. There are also upstream sampling sites that could also

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tease that out in addition to the downstream sampling sites.

 Member Jones – if there is intent to do upstream samplings, would like to see that articulated. Also agrees that the legal use of pesticides is reported to the county and state; but to assume that all pesticide use will be accounted for seems inappropriate, because often times unreported applications are more toxic than what is reported. So establishing a baseline upstream seems critical to this research.

5d-i. EMC-2022-003 Full Project Proposal-REDACTED

5d-ii. EMC-2022-003 Supplement

Project Name: EMC-2022-003: Santa Cruz Mountains Post-Fire Redwood Defect Study

- Co-Chair Forsburg-Pardi Something we are seeing that is not fully addressed in the current set of CMQs, and it is something we are being asked to look at based on public comments received during revision to the CMQs. So this is fitting in with themes that might end up being in the revised draft, so she is curious what other members have to say about this.
- Member Short feels the same and sees this as being important due to lack of studies in redwood forests as well.
- Member Leonard thought this has value, but struggled a bit because it seems to lean towards economic viability of the trees, but there is value to the FPRs in understanding fire and its impact on different species, timber harvest practices and wildlife habitat, and there is a strong team of collaborators on this proposal.
- Member Waitman had similar concern as Member Leonard, but felt it was very feasible and there was a clear link between data being collected and the goals of the proposal.
- Member Love-Anderegg agreed with the previous two comments, but was convinced by number of letters of support from non-commercial landholders, so it likely has more applicability than first granted. Was not entirely sure about the magnitude of the scientific uncertainty.
- Member O'Connor happy to see researchers ready to take advantage of rare opportunity to study effects of wildfire in coastal redwood forest, and seems to have implications for salvage logging and wildlife habitat. Looks like a well-supported study with good collaboration.
- Member LaNier agrees with Members Leonard and O'Connor; as a critical question, doesn't rank very high for him though, but otherwise is a well-written proposal, and is achievable.
- Member Jones very important project, as there is very little data on effects of moderate to high severity wildfire on redwoods and how that impacts post-salvage management in

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the redwoods. There is a lot of ecological uncertainty in that, compared to the amount of information we have in the Sierras. There seems to be more opportunity for investigation ecological impacts, and would like to see more focus on that as well. Is a very interesting project.

- Member Coe this study has the potential to advance forest science in general, but struggles with a linkage back to the FPRs. Does have a keen interest on effect of fire in redwood, but the way the problem is framed, there is a lot more need for this in other areas with greater geographic applicability.
- Member Nannizzi no comment
- Member Freer-Smith supportive of the project for reasons previously stated; thinks it is worth pointing out that it directly addresses the new question being considered as an addition to the CMQs regarding post-fire Theme 6, CMQ e: Achieving post-fire recovery and restoration. Brought the score slightly down on geographic application for obvious reasons, but still scores pretty well for him.
- Member Jones general comment that part of the ranking is geographic applicability, and he can appreciate that we want projects with greatest geographic applicability, and maybe he is coming from a biased perspective towards redwoods, but all of the research that we use in the redwoods comes from the Sierras, and that doesn't apply at all. There is very little research and data specific to the redwoods, so asking these questions right now is crucial, especially as we see more high severity fire in redwoods under a changing climate with altered disturbance regimes. So maybe there is a small footprint, but this is critical to know.
- Member Coe appreciates the previous comment, and thinks the issue of geographic applicability becomes more important depending on the CMQ being asked. If this was a little bit of a different question, he would be more willing to ignore the limited geographic applicability, but the research question as stated didn't link strongly enough for him to the FPRs. But he appreciates that redwood ecology is very different from Sierra forest ecology.
- Member LaNier echoed Member Coe's sentiment, and of course different tree species have limited geographic scope, so it is inherent to the project. But he is unclear how the rules would change or how this links back to the FPRs given that whether they file a substantially damaged THP or emergency notice, the forester already has the discretion to decide if the tree will live; the Forest Practice inspectors do NOT have the ability to decide that. So how the results would alter the rules is unclear.
- Member Coe agreed with Member LaNier; these sorts of activities are ministerial. This study does provide decision-support tools to help foresters take the right trees, but under the emergency rules, they can take multiple factors into account when deciding which trees will remain that go beyond just the tree's value as timber or likelihood of survival. So he

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views the project through the lens of their likelihood to inform the FPRs and result in a rule change.

- Member O'Connor Question: what happens to unallocated funds? Dr. Wolf explained that unallocated funds are "use it or lose it", they do not carry over into the new fiscal year.
- Member Jones all points previously made are all fair points.
- Member Short following up on Drew's comment about ministerial activities: because of these being ministerial activities, there is a presumption that they are *de minimus* activities and therefore there are not opportunities for pre-treatment evaluations, etc. but he believes that is not since these are NOT reviewed, any additional data that could shed light on survivability of redwood species is elevated as compared to permitted and reviewed activities like Timber Harvest Plans (THPs).

Time: 1:52:00

5e. EMC-2022-004 Full Project Proposal-REDACTED

Project Name: A critical evaluation of Forest Practice Regulation's capacity to accommodate forest restoration and resilience targets

- Co-chair Dr. Forsburg-Pardi this research would fit into what the EMC is trying to build in the revised set of CMQs, and touches on a package being developed for rules guiding forest resiliency.
- Member O'Connor hard to see how this proposal exactly first current set, but does seem like a very timely and well-intentioned study with some potentially valuable results for forest management across a range of management questions. In general supports the proposal. From prior experience with some of the PIs, we can likely expect very high quality work products, and the funding request is modest compared to the potential value.
- Member Nannizzi no comment
- Member LaNier this is an interesting study, and appreciates Member O'Connor's
 perspective in that the project has good potential for advancing knowledge while not
 being overly expensive. Has limited belief that the regulations will be affected by the study
 results, but that probably comes from the linkage to private lands management being
 more like cropland, and less "sustainable" or healthy. So studies like this are useful because
 they can show how historically, a healthy forest could be more fire resilient, but that won't
 have much effect on the FPRs. But, he would support the project all the same.
- Member Leonard low cost study that gets to the purpose of the committee; we have been talking about climate change and forests, and what should forests look like today, and this is a high-level look at that.

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- Member Jones really interesting proposal, very supportive of it; study doesn't necessarily specifically address the current research themes, but the overall research question could have a potential impact on ALL of the questions in terms of being related to climate change, which will have an umbrella effect on all of the CMQs/themes.
- Member Short supports the project
- Member Love-Anderegg agrees with previous comments; supports the project.
- Member Waitman same comments as previous; supports the project.
- Member Coe likes the project, and while it doesn't relate to the CMQs and themes from the most recent document, it does relate to some we are discussing about adding in, and this has real implications for the FPRs. In the last two monitoring reports for the 150-300 ft exemptions proximal to structures the recent draft calls for potentially different approaches to managing stand density, and asks whether uneven-age basal area stocking standards are appropriate; and in fact, there is a recommendation in the report is to investigate if there are other standards/numeric targets that would be more appropriate. So this could maybe steer us in a more reasonable direction for managing stands for fire resilience.
- Member Freer-Smith It would be really nice to have the input of this research, particularly for restoration and resilience, and managing fuel loads.

5f. EMC-2022-005 Full Project Proposal-REDACTED

Project Name: Decay rate and fire behavior of post-harvest slash in coastal redwood forests

- Co-Chair Dr. Forsburg-Pardi Relevant to discussions we have been having; is limited to redwood forests, but there is importance in looking at different forest systems and types, so seems like an important study.
- Member O'Connor compared to some of the others, this links pretty clearly to some existing FPRs, and seems like a very practical study that is likely to produce some relatively unambiguous work products that could be helpful, and it is relatively inexpensive.
- Member Nannizzi no comment
- Member Coe From doing monitoring on fuel reduction projects in the redwoods, he
 knows that slash is a real problem there, and this project tackles an issue that has been
 identified. Likes this project, because we know there is a lot of slash left over, but we don't
 know how meaningful that is for potential fire behavior, and unless we can prop up a
 biomass utilization sector to use these materials, we need to fund out a way to manage
 these fuels to better manage wildfire and fire behavior.

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- Member Waitman clear linkage to CMQs and FPRs; some aspects were very clear and seems to have a good chance for success, but it did seem like later portions that require prescribed burns didn't have a clear plan for achieving the methods.
- Member LaNier generally supports this study, likes the modeling aspect, definitely applicable to the FPRs.
- Member Jones recused himself in terms of a vote, but is available for answering questions. In terms of the prescribed fire element, they are taking advantage of the fact that some of the prescribed fires are already planned and in prep/ready for implementation in the timeframe of the grant. So a separate burn is not being planned for this research; the research is taking advantage of burns that will happen regardless.
 - Member Waitman -that explains why fire treatments are not in the budget.
- Member Short likes the specificity of this project, and it is a good question to see if we can get some data on.
- Member Leonard strong proposal that gets at some important concepts that the EMC wants to look at, so she supports it.
- Member Freer-Smith very supportive of this proposal for all the reasons previously stated. Slash harvest is a really important topic, and this research starts to answer some of the questions we need to get at.
- Member Love-Anderegg concurs with previous statements; this has really high and direct applicability to the FPRs and CMQs; has some of the same geographic shortcomings as the other redwood project, but that notwithstanding, was impressed by its direct applicability.

Ranking Forms

The members were instructed to provide their rankings via email to Dr. Wolf over lunch, at least 15 minutes before the end of results so she has time to compile the results. The results of the rankings will be provided to the EMC after lunch. Then the committee could decide if it wanted to make some recommendations for funding. The EMC went to recess for 1 hour.

Time: 2:14:00 Ranking Results

Time: 3:02:00

Voting Record

Member O'Connor moved to approved funding for EMC-2022-003, EMC-2022-004, and EMC-2022-005, with a request to PIs on all projects to redistribute funding from other FYs to this current FY (2022/23) as feasible, up to the amount available of \$47,588 across all projects, with the understanding that if funding cannot be reallocated to the current FY that would not change the

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EMC's recommendation for funding of these three projects. Member Short seconded the motion, and Dr. Wolf called the question.

Leonard	Aye
Coe	Aye
LaNier	, Abstain
Hostler	Aye
Short	Aye
Jones	Aye
Waitman	Aye
O'Connor	Aye
Anderegg	Aye
Freer-Smith	Aye
Nannizzi	Abstain
Forsburg-Pardi	Aye

Unanimous vote of 8 members, 2 recused. As the quorum is 9, there was discussion around whether or not this is a valid vote. Board legal counsel was consulted during Agenda Item #7, and this discussion was tabled for the moment.

Skipped to Item 7, and the EMC returned to Item 5 thereafter, and then proceeded with Item 6.

7) <u>Final Project Presentation: EMC-2017-001 Effects of Forest Stand Density Reduction on Nutrient</u> <u>Cycling and Nutrient Transport at the Caspar Creek Experimental Watershed – Dr. Helen Dahlke,</u> <u>U.C. Davis (switched in order with 6)</u>

Member Coe introduced Dr. Helen Dahlke, who provided a final project presentation on this project. Member Coe stated that this third Caspar Creek experiment looks at effects of stand density reduction on a variety of watershed products. The first experiment was in the South Fork back in the 60's and 70's and compared a control to a selectively logged catchment (i.e., comparing the north and south forks; the second one looked at effects of clear-cut harvesting on sediment hydrology and nutrients. This third one is looking at variables rates of stand reduction and the impacts on nutrients, hydrology, and sediment transport; much of the larger project was funded by CAL FIRE, with additional funding support from the EMC. Dr. Dahlke gave a presentation on the project findings in 2021 at the Annual Caspar Creek meeting, and this is the EMC's final project presentation; this is not the end of the study, as next steps will be developing a publishable article out of this work, if not more, in the next year or two.

Dr. Dahlke explained that this third project was an extension of Dr. Randy Dahlgren's previous project (the second experiment in Caspar Creek Watershed), and this project will examine the effects of different percentages of stand density reduction on the mass balance of water quality parameters, including EC, pH, turbidity, DOX, nitrate, ammonium, DON, TN, TP, phosphate, with research questions focusing on:

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- a. Temporal variations and patterns of nutrient and base cation/anion fluxes from coast redwood forests; and,
- b. Impacts on patters, concentrations, and fluxes of nutrients and base cations and anions compared to pre-harvest conditions.

Cation/anion values have not yet been evaluated due to temporarily limited access to necessary equipment, but this will be evaluated once reliable equipment access is re-established.

Overall, the project took water samples over a four year period from 07/2016 to 06/2020, involved four subwatersheds in Caspar Creek. The four treatments for reduction in basal area were:

- a. WIL 0% reduction, control watershed, no harvest conducted
- b. TRE 35% reduction
- c. UQL 55% reduction
- d. ZIE 75% reduction

Note: Other samples were taken from other watersheds but to a lesser degree (SFC)

Most Samples were collected in the summer with auto-samplers placed near the gauges placed in each of the watershed outlets. They were programmed to take hourly samples during storm events, and auto-samplers were cleaned out every 24 hours; two samples each were taken on the rising and falling limbs, and one sample was taken near the peak, for over 2000 samples over the four-year monitoring period. Concentrations were converted to nutrient loads to estimate nutrient fluxes leaving the watersheds. ANOVA and Tukey's HSD tests were performed at a significance level of alpha = 0.05; across all comparisons (10 tests), the threshold for significance is p = 0.005.

Comparisons for the nutrient analysis were mainly based on yarding periods, because felling mainly meant they were cut, but the yarding actually represented most of the disturbance on the forest floor. Felling dates were the basis of the hydrologic analysis, because felling dates because that is when trees no longer have access to moisture and a change in hydrologic conditions would be expected. Post-harvest to pre-harvest comparisons were made for the nutrient analysis in each watershed, and included two dry years and two wet years; the hydrologic years (here, operationally defined as August 1 based on a previous study that examined the water year in Caspar Creek. Years were also compared, as were seasonal dynamics (fall, winter, spring, summer) and wet to dry years.

There was an assumption of the watersheds being "paired" so to investigate that assumption, they compared discharge prior to harvest to determine if the watersheds behaved similarly, and found that Watersheds TRE, UQL, and ZIE had discharge greater than in WIL (the control watershed) by about 6.4%, 18%, and 20%, respectively. For the most part, the discharge was therefore greater in the experimental treatment watersheds than in the control watershed but were still relatively well-aligned. The differences could not be explained by watershed slope or area, so differences were likely related to differences between the watersheds in factors such as aspect, precipitation, and storage.

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Results

Daily water yield/runoff and flow increased in all experimental watersheds in the post-felling season. The largest increase in water yield was in the treatment with the greatest stand density reduction (ZIE).

Turbidity was highest after large rainfall events, as expected; Post-harvest winter turbidity was significantly higher in the greatest reduction stand (ZIE)

EC is expected to increase in dry flow summer months and decrease during winter storm events. In the pre-harvest period, the EC was consistently higher in the control watershed than in the treatment watersheds, and therefore likely has deeper flow pathways and longer residence times in the soil and contact with the bedrock in the control watershed.

pH: In general there was a declining trend of pH over the study period, ranging from 6 – 9.2, possibly indicating higher amounts of OM-rich runoff contributing to the streamflow. pH was lower in winter when runoff has more time in contact with the organic-rich soil and humic acid.

DOC: highest in fall, typically after a wetting period. Also highest post-harvest, which is also expected. Very high in dry years when not diluted by higher precipitation.

TN: High during storm events in wet years and in fall flush of dry years, as expected because of mineralization and nitrification. Total Nitrogen was also significantly higher in the two watersheds with the two highest reductions (UQL, ZIE).

Nitrate: was relatively low throughout the monitoring period; but, was relatively higher in the largest reduction watershed (ZIE) treatment post-harvest as exptected.

Ammonium: behaved similarly as nitrate; mainly highest during storm events and late in the rainy season (spring), which is expected since microbial activity begins to pick back up again in the spring with warmer temperatures.

DON: dominant form of TN, calculated as the residual of the TN minus Inorganic N; DON was elevated during storm events and peaked late in the rainy season (spring) in wet years, and the peak occurred earlier in dry years.

TP: very low (near the MDL) most of the time, but spiked during storm events, and was clearly related to flow and geogenic sources such as mineral weathering. There was no trend in soluble P.

In summary:

- clear increase in water yield from harvested watersheds following harvest;
- clear increase in carbon and TP flux from the watersheds post-harvest;
- TN and DON was largest in the wettest year of the four, and was larger than even during the post-harvest period
- DON, nitrate, and ammonium increased as percent timber removed increased.

Gavin Newsom, Governor

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• N, P, and C fluxes were >1 to 9 times higher than in the control watershed.

Timing: 4:05:00

Q&A Period

Member Coe stated that the results seem to jive with the body of research on impacts of stand reduction on water yield; was there anything surprising or out of line for the nutrient impacts? Dr. Dahlke stated that the values were actually relatively low compared to most other studies, which is not surprising because it was conducted in a fairly dry climate, while most watershed studies are conducted in more humid, wetter climates with greater water fluxes.

5) <u>Continued: Review of Full Project Proposals – Dr. Wolf, Board staff and Co-Chair Dr. Forsburg-Pardi</u> The committee returned to Agenda Item #5.

Do the recusals count? Need to have a quorum present at the meeting based on the total number of seats (there are 17 technically, so 9 is the limit for a quorum), but the recusals do count in the voting process and a quorum was present, so this still is a valid vote. For some committees and particular items, there are rules about having a minimum number of members voting yes, but the EMC does not have those constraints. In this case, a majority of the quorum voting yes, even with recusals, means this motion passes.

Motion passes unanimously. Full Project Proposals will be requested from all five of the PIs from which ICPs were received. Dr. Wolf will compile comments from the members for the applicants to address in their FPPs.

6) <u>Revised Completed Research Assessment: EMC-2017-008 – Do Forest Practice Rules Minimize Fir</u> <u>Mortality from Root Disease and Bark Beetle Interactions – Member Ben Waitman, California</u> <u>Department of Fish & Wildlife and Member Jessica Leonard, State Water Resources Control Board</u> The draft document can be found online: <u>https://bof.fire.ca.gov/media/c1qlu5uw/8-emc-2017-008-cobb-cra-sept-2022-draft_ada.pdf</u>

Members Waitman and Leonard are working with PI Dr. Richard Cobb to develop the Completed Research Assessment (CRA). This study is looking at how *Heterobasidion* expands from treated areas over time, and Dr. Cobb did give a final presentation to the EMC at a previous meeting. Member Waitman walked the EMC through each of the questions on the CRA:

1) Fulfills and addresses scientific question(s) posed in proposed research? Does not necessarily answer any of the FPRs, although the results do further the intent of forest management outlined in the FPRs.

The three studies were largely successful with one hiccup: they were able to complete treatments on stumps after operations in true fir stands. They were able to look at whether treatments were able to prevent *Heterobasidion* spread but they were not able to determine whether wounding resulted in increased colonization. They did not get colonization on their target trees with *Heterobasidion* using established methods.

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- 2) Scientifically sound? Yes, analyses were appropriate to the data for each of the three studies conducted. One of the studies has an accepted and published article, and two additional manuscripts are in preparation for journal submission.
- 3) Scalable? Yes. In the first study, only one treatment had a significant difference in Heterobasidion present but all treatments resulted in lower area colonized by the fungus. Introduction of Phlebiopsis cannot prevent colonization, but was effective at slowing/stopping the spread of Heterobasidion to hopefully prevent colonization of additional trees via root contact, and it could be a potentially cheaper treatment than others.

Next study is the use of long-term monitoring plots developed in the 1970s in mixed conifers on the East Side infected with two *Heterobasidion* species, one for fir and one for pine. (The same is present in El Dorado county and Yosemite.) Looks at basal area reduction as compared to compare sites. Gap expansion rate in the first ten years indicates gap expansion size over ten years. Best predictor of mortality is gap size.

In the final study, infection by *Heterobasidion* decreased basal area in all forest types. Only in white fir stands did it decrease the dominance of the host tree species (i.e., the fir) as compared to the other non-host tree species.

- 4) New EMC study recommended to advance research on this topic (e.g., to expand findings and/or temporal or spatial relevance of this study)? No identified gaps in literature review. The studies are largely closed out, and additional funding is not necessary. No EMC support is requested for further study, but there are additional studies planned: Dr. Cobb is will investigate the portion of sites burned in the Dixie Fire to look at the relationship between *Heterobasidion* presence and fuel conditions/fire severity.
- 5) Scientific Applications was not discussed.

Dr. Wolf noted that this draft has not been distributed to the EMC for review yet. Member House requests time to review.

Member Waitman requests that Dr. Cobb be allowed to provide clearance for papers that may be in the manuscript stage.

Dr. Wolf set October 19th as the deadline for the EMC to provide comment on the document. Dr. Wolf will compile those statements and send them to Members Leonard and Waitman to address in the revised CRA.

8) <u>Review of Member Application – Dr. Wolf, Board staff (10 min)</u>

Applicant Mathew Nannizzi from the Green Diamond Resource Company submitted a curriculum vitae and letter of interest (see documents online: <u>https://bof.fire.ca.gov/media/hi0ddsya/9-nannizzi-emc-member-applicant_redacted.pdf</u>) to replace Member House on the EMC's Monitoring Community. The EMC members were invited to share feedback or concerns:

• Member LaNier: No questions or comments

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- Member Short: No questions or comments
- Member House: No comments, can answer questions about the applicant.
- Member Burke: Sorry to see Member House go, his replacement has big shoes to feel.
- Member Waitman: No comments
- Member Drury: No questions or comments
- Member Love-Anderegg: No questions or comments
- Member Freer-Smith: Not present at this time
- Member Chinnici: Thanks to Member House, sorry to see him go. Knows Mr. Nannizzi personally and know his qualifications, support having him on the committee unreservedly.
- Chair Dr. Forsburg-Pardi: Thanks to Member House, look forward to bringing the newest member to the board.

Voting Record

Member Chinnici moved to recommend Mathew Nannizzi to fill a seat in the Monitoring Committee on the EMC to the Board of Forestry and Fire Protection for their review and approval; this was seconded by Member Waitman. Dr. Wolf called the question.

Waitman	Aye
LaNier	Aye
Jones	Aye
Leonard	Aye
Drury	Aye
Love-Anderegg	Aye
Chinnici	Aye
Freer-Smith	Absent at time of vote
Burke	Aye
House	Abstain
Short	Aye
Forsburg-Pardi	Ауе

Motion passes with one abstention. The recommendation will be sent to the Board for their review and approval at the November meeting.

we will have to wait until the next meeting to do this, since we don't have Lorena (Lilian) Vincent-Solorzano's materials yet. She was going to send them but was unable to before this meeting.

9) Public Forum

No comments.

10) <u>Future Meeting Locations, Dates, and Agenda Items</u> <u>Meeting Date: Thursday, February 16, 2023</u>

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- Dr. Jones reported that with UCCE there are some forest workshops for planning stewardship with private landowners that will be happening. There will also be some post-fire workshops being hosted as well. UCANR Forest Stewardship Workshop Series (https://ucanr.edu/sites/forestry/Forest_Stewardship/ForestStewardshipWorkshops/):
 - o Butte Yuba Counties, October 18, 2022 December 13, 2022: Online and Nov. 5th inperson field day. Registration now open!
 - Napa County, January 2023 March 2023. Registration coming soon!

12) Adjourn