



## **Sierra Nevada Adaptive Management Project Annual Meeting Webinar Notes November 6, 2014; 11am to 1:00 pm**

### ***In attendance:***

John Battles – Univ. of California, Berkeley  
Roger Bales – Univ. of California, Merced  
Vince Berigan – University of Wisconsin  
Trey Biasioli – US Forest Service, PSW  
Roy Bridgeman – USFS, Tahoe National Forest  
Sue Britting – Sierra Forest Legacy  
John Buckley – CSERC  
Martha Conklin – Univ. of California, Merced  
Lorna Dobrovoly – CA Dept. Fish & Wildlife  
Tom Engstrom – Sierra Pacific Industries  
Nic Enstice – Sierra Nevada Conservancy  
Travis Espinoza – Univ. of Cal, Merced  
Gary Estes – Cal. Extreme Precipitation Symp.  
Rebecca Ferkovich – CalFire  
Patricia Flebbe – USFS, Region 5  
Joanne Freemire  
Cay Goude – USFWS  
Rocky Gutierrez – U. of Minnesota  
Qinghua Guo – Univ. of California, Merced  
Russ Henly – CA Resources Agency  
Peter Hopkinson – Univ. of Cal., Berkeley  
Lynn Huntsinger – Univ. of Cal., Berkeley  
Kim Ingram – Univ. of Cal. Coop. Extension  
Kathie Jermstad – USFS, PSW Research  
Maggi Kelly – Univ. of California, Berkeley  
Mark Kleinman – Resources Legacy Fund  
Susie Kocher – Univ. of Cal. Coop. Extension  
Shufei Lei – Univ. of California, Berkeley  
Roberta Lim – USFS, Tahoe National Forest  
Theresa Lowe – USFS, Sierra National Forest  
Vic Lyon – USFS, Tahoe National Forest  
Sarah Martin – Univ. of California, Merced  
Chris Nota – USFS, Region 5  
Zach Peery – University of Wisconsin  
Kevin Roberts – Sierra Pacific Industries  
Phil Saksa – Univ. of California, Merced  
Joe Sherlock – USFS, Region 5  
Scott Stephens – Univ. of California, Berkeley  
Adriana Sulak – Univ. of California, Berkeley  
Doug Tempel – University of Wisconsin  
Anthony Toto – Water Quality Control Board, Fresno  
Sheila Whitmore – University of Wisconsin

## I. Welcome and Overview:

Susie Kocher, from the Public Participation Team, welcomed everyone, reviewed procedures for participating and the ground rules for the webinar, as well as desired outcomes. The desired outcomes were: to promote shared understanding of the current status of the SNAMP project and its findings; provide stakeholders an updated timeline of SNAMP activities and public participation; present a summary for integration and the final report; and to discuss post-SNAMP research and the archiving of SNAMP information. The power point presentation from the webinar are posted on the SNAMP website at <http://snamp.cnr.berkeley.edu/documents/628/>

Dr. John Battles briefly reviewed the what/why/who of SNAMP and the University of California Science Team’s (UCST) third party role. SNAMP’s primary goal is to provide relevant research at the fireshed scale that can be used to adapt forest management in the future.

## II. SNAMP Timeline and Final Report:

Peter Hopkinson reviewed the updated and extended SNAMP timeline. The Integration Assessment has proven to be difficult and the UCST has had to come up with innovative solutions to address various issues. The UCST is working on the fire modeling component that is based on the vegetation maps which feed into the spatially explicit vegetation metrics for individual teams. The hope is that these maps will be completed soon, but there is the possibility of needing to extend the timeline again in order to produce the best possible end product.

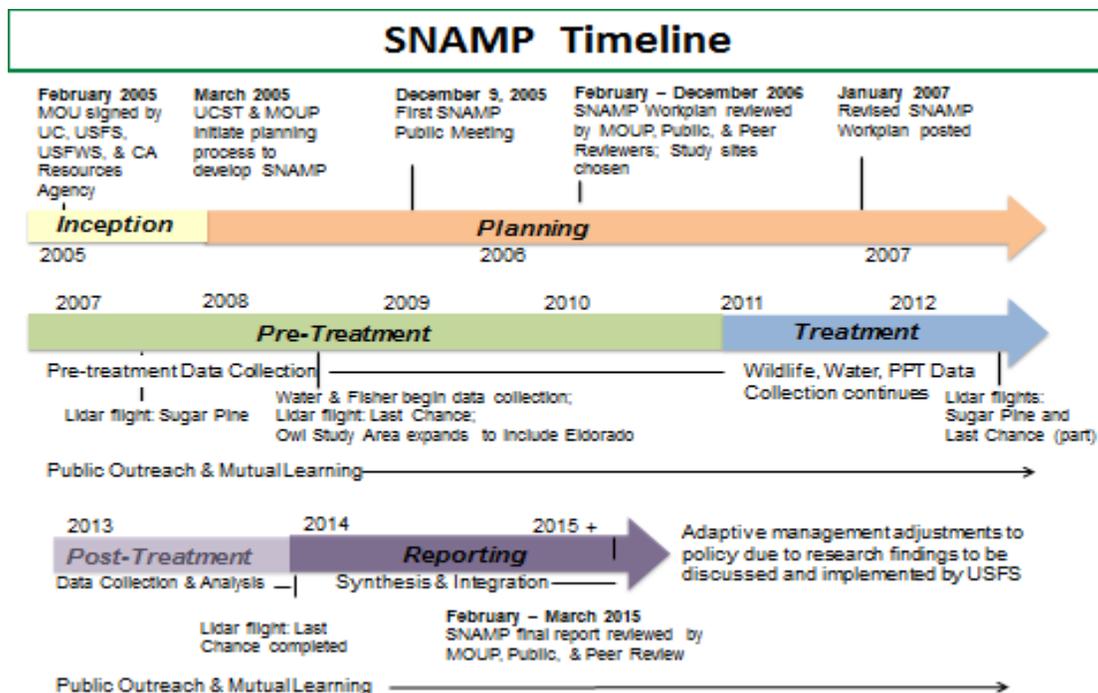


Figure 1. Timeline for SNAMP project.

Peter also reviewed the final report outline and timeline, providing stakeholders information on important dates to provide their input. These include **February 15, 2015** – draft final report out for peer review and public comment; **April 1, 2015** – deadline to submit comments; **April 22, 2015** – final SNAMP meeting; and **May 31, 2015** – final report out.

Susie Kocher addressed the process for receiving public comment. PPT will be developing an online survey that will take all comments, though she will also accept paper and emailed comments too. PPT will then collate, summarize and present the comments at the final meeting April 22<sup>nd</sup>, 2015.

The MOU response is being led by Patricia Flebbe of the USDA Forest Service. The California Natural Resource Agency has agreed to help in the coordination and writing. The response will be included in the final report appendix. There is also agreement that the MOUP should have another meeting in January 2015 to discuss this.

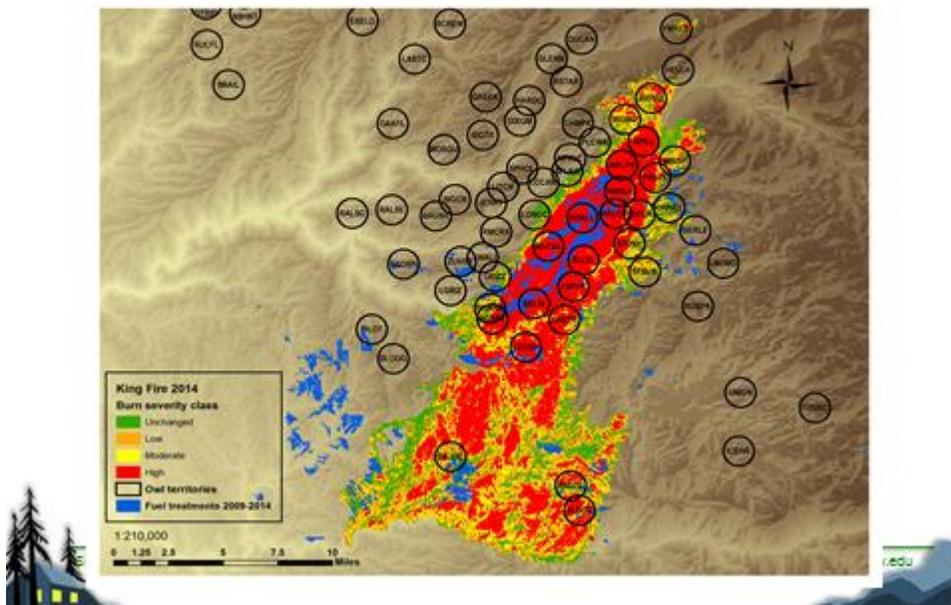
***Question:** Will the final meeting with the public provide an in-depth opportunity for discussion of and questions about the final "findings" from the teams and how those findings are integrated to produce recommendations for management?*

***Answer:** Yes that is the goal of the meeting. PPT is also seeking input from stakeholders on what the final meeting structure should look like.*

### **III. Wildfire Update – King Fire:**

Sheila Whitmore from the Owl Team gave a brief overview of the King Fire and its effects on the Eldorado Study Area. The King Fire began in mid-September 2014 and burned almost 100,000 acres. Within the fire perimeter, 34 PACs are surveyed by the team and of those, 15 were occupied. Eight territories experienced 90% or greater proportion of high intensity burn severity, 3 of which were occupied. The Big Grizzly fuels treatment project was located in the north-central section of the fire but it was incomplete. Several large slash piles remained and those caught fire.

## Eldorado Study and the King Fire



**Question:** Are you going to be looking into whether or not the piles that burned in the fire may have contributed to the burn severity around it?

**Answer:** No as that is outside the scope of SNAMP for which data collection has ended. However, the Owl Team will be conducting a full survey to find owls in the Eldorado Study Area in Spring 2015.

**Question:** So what does this say about how effective the fuel treatment was based on this fire?

**Answer:** As this is not part of the SNAMP study, we can only speculate. Scott Stephens has been out to the King Fire and visited some high severity burn areas where treatments had occurred but were incomplete (surface fuels had not been treated). Though they expect some change to fire behavior occurred, it needs to be looked at more closely. The American Fire at Last Chance had similar areas where treatments occurred but surface fuels had not been treated. John Battles has a team that went to those areas on the American Fire this year to collect data and this could be used as a comparison to the King Fire.

**Question:** Have any owl surveys been conducted since the King Fire? Is there an owl survey plan following the King Fire?

**Answer:** SNAMP has only toured the area and did some limited 'hooting'. The team will conduct a full survey in Spring 2015. SPI has done some limited surveys (spot checks) since the fire, and have found some owls still on the landscape.

**Question:** Any idea of the burn severity of those SPI sites?

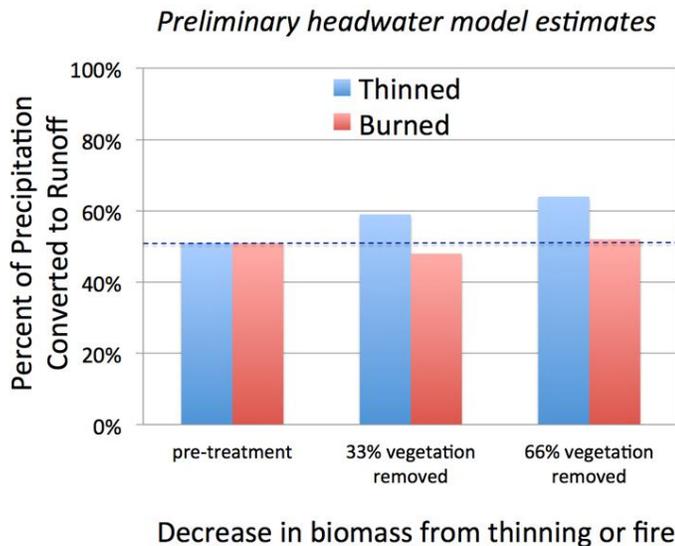
**Answer:** No

**Question:** In the Rim Fire surviving owls moved into patches that did not get incinerated. that may end up being a similar occurrence in the King Fire.

**Answer:** Yes, the design of the Eldorado Study is such that the team will be able to detect that type of response. the Eldorado owls are banded so that the team can see which specific birds moved where. The fire burned through the study area in an almost BACI-like pattern, so it is a valuable opportunity to learn how these owls may have been affected by the King Fire.

#### IV. UC Science Team Updates:

- **Spatial:** The Spatial Team continued production of various models from Lidar; created algorithms for calculating forest parameters such as tree height, diameter at breast height, canopy cover, leaf area index (LAI) and vegetation types; reviewed Lidar, LANDSAT and NAIP imagery for their forest attribute estimation and assessment capabilities, analyzed shortcomings for understory detection, and did a cost and point density evaluation.
- **Fire and Forest Health:** The Forest Team is linking FARSITE with Forest Vegetation Simulator (FVS - FFE) to connect fire behavior with fire effects on vegetation. They are using FVS modeling to grow stands in 10 year intervals – working out algorithms to address issues with FVS in how it grows vegetation the first 10 years. And they are assessing measurements of tree ring width over time to develop vulnerability profiles for individual species and to quantify the probability an individual tree will survive.
- **Water:** Water Team findings are showing that stream channels are the main sediment source and that the channel bed acts as temporary storage. Model projections indicate a 66% thinning of vegetation could result in a 10% increase in water yield. Model sensitivity to the forest litter layer shows if intense fire consumes the litter, water yield can actually decrease with reduced vegetation. The low precipitation following treatments may have masked observed changes in water quantity and quality.



**Question:** What is meant by “66% vegetation removed”?

**Answer:** The team uses LAI (leaf area index) which in this case is more like a representation of biomass being removed, not necessarily individual plants. 66% LAI removal translates into about 75% basal area removal. For LAI to basal area relationships see page 14 of 2014 annual report.

**Question:** Why does the yield go back up under the 66% scenario versus 33%?

**Answer:** Yield goes back up at 66% because transpiration reductions start to offset the increases in evaporation that caused yield to go down in the 33% burned scenario.

**Question:** Did any treatment areas receive both vegetation removal and burning?

**Answer:** This was a modeled scenario under severe conditions. In Last Chance the controlled catchment was burned and we do have some data from that.

**Question:** What treatments are you assuming in your modeling to achieve the "removal" of vegetation of surface vegetation in between the residual thinned trees - such as groundcovers, brush, etc.? Are you modeling by expecting that herbicides, shredding, etc. will perform that "removal"?

**Answer:** Vegetation removal and burning will be assessed after the fire model output is completed. Initial treatments just looked at overstory, we now have under and overstory vegetation in the model and can do more specific tree versus shrub removal.

**Question:** What is the time frame for the model results? You mentioned expecting change overtime, so I was not sure what time frame applied in these results.

**Answer:** This time frame is just one year with average precipitation. We will be looking at the 30-year time frame under average, high, and low precipitation conditions.

**Question:** How much Basal Area (BA) was removed in a typical treatment in SNAMP?

**Answer:** Basal area removal in SNAMP treatments is variable but rarely exceeds 25% of existing BA.

**Question:** Since tree crowns expand quickly to fill "gaps" how did your modeling maintaining the openings created to produce the increased water production?

**Answer:** Our models are not perfect. We have looked at sensitivity to gap size and we have to put in an approximate size and the size stays 'static' for the year.

**Question:** What data is being used to evaluate the how well this model is predicting water yield if 66% removal is not in the SNAMP treatments?

**Answer:** We spent over a year calibrating models and we are using KREW data sets which add up to about 5 years of data. There are future research plans to implement 66% thinning to be able to compare observations and modeling.

- **Public Participation:** The Public Participation Team is tracking information use through web content and citation analysis to show how SNAMP information is being used. Work includes visual mapping of participation networks to identify who participates and what they talk about most often, and before and after interview and survey analysis of how SNAMP has affected stakeholder opinions about forest health, adaptive management, the UC role, and

treatment results. People were very good about answering the survey – overall they felt good about the treatments and the long-term impacts but many considered the treatments ‘a bit light’. Most felt their opinions on treatments and forest health were reaffirmed or had changed for the better.

**Question:** *How did participants change their views on the fisher? Were they informed about how small the fisher population is within the context of the questions?*

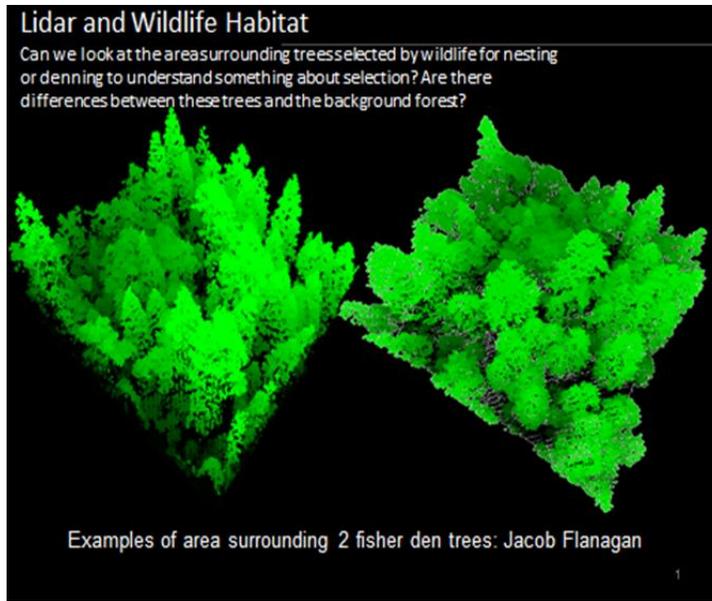
**Answer:** *People learned that issues other than treatments are important - rodenticide, road kill and predation, views that they might not have held previously. They were not informed about population size. Also, we let the interviewees frame their answers.*

- **CA Spotted Owl:** The Owl Team developed an integrated population model (IPM) to assess population trends which shows a 50% decline in owls on the Eldorado Density Study Area from 1990-2012. Results from the retrospective analysis show that the amount of high-canopy cover forest is the primary correlate of owl population growth and occupancy at the territory scale and high-intensity fire can negatively impact territory occupancy. They recommend that managers target forests with lower canopy cover for fuel treatments, and that treatments retain focus on removal of ladder fuels and smaller trees.

**Question:** *As a strong advocate for the owl, I also see the conflict between the observations that fuel treatments in the King Fire weren't apparently significant enough to save the habitat. Doesn't that set up a conflict between maintaining current owl habitat by minimizing treatments, but making the lightly treated area more vulnerable to a significant wildfire event? Part of the whole point of the treatments was to help reduce the impacts from fire and improve the conditions for the owl.*

**Answer:** *Firstly, the retrospective analysis assessed the effects of habitat within owl territories and it is possible to implement lots of treatments, even heavier ones, outside of owl territories and have a positive effect on them in regards to fire. Secondly, it is unclear why the treatments within the King Fire did not positively affect the fire – it is possible that because they were incomplete they were less effective. The whole landscape there is very vulnerable. The UCST cannot really comment on this as the FFEH Team is not working on the Eldorado Study Area and has no data there.*

- **Pacific Fisher:** There is a division of labor between the Pacific Southwest Research Station and SNAMP with analysis of data on fisher survival, home range size, reproduction, mortality, and dispersal. Over 100 den trees have been identified, to include vegetation quantification of sites to help inform protection of trees that might be used for denning in the future; causes of mortality have been determined, including the identification of a previously unknown poisoning component. High canopy cover and tree size have surfaced as critical habitat factors for denning. Management indicators around occupancy and survival of females support a female home range template of about 4 square miles to be used in conservation efforts.



## V. Post-SNAMP: Future Studies

- American Fire study – John Battles said that the National Science Foundation funded collection before the salvage operation was carried out. They are evaluating tree damage, post-fire mortality and forest health benefits.
- Water – The possibility for funding to continue data collection at Last Chance and Sugar Pine is in discussion. The team is work on another large scale catchment study (SWEEP) using Last Chance data.
- Owl – The Owl Team is continuing monitoring of the Eldorado Study area (including the area impacted by the King Fire). They are working on an assessment of climate change and forest management on owl populations in the 21st century. And they are attempting to raise funds to study owl demographic history in the Sierras using genomic methods.
- Fisher – Craig Thompson of USFS PSW is continuing the study in collaboration with the Kings Range Fisher Study.

**Question:** *Can you elaborate on the genomics approach for owl studies? Was genetic data (feathers, etc) collected during capture/ banding work with owls? Or would genomics studies start from square one? Jody Tucker reported population genetic diversity and substructure in 2012 and 2014 using SSRs. Genomics is cool but spendy.*

**Answer:** *There has been a lot of genetic work done on CSO and a lot of advancement in technology so that we can do work on historic trends and conductivity across the Sierra. We are in the process of applying for an NSF grant for this work. We have been collecting blood samples routinely in anticipation of further genetics work. In addition, we have samples from previous work archived in ultra- cold freezers that we can use.*

## VI. CSO Conservation Assessment:

The purpose is to update the current knowledge for the foundation of an owl conservation strategy and make it more accessible for managers. They are asking - After 20 plus years of

CASPO what do we know and what do we still need to learn? The strategy will include peer reviewed literature, some non-peer reviewed literature, and those things rejected by journals but still found to have merit based on reasons study design and the quality of data since CASPO was implemented in 1992. A first draft is being internally reviewed now. Then it will be externally peer reviewed with a goal of being publically available in February 2015.

**VII. SNAMP Website:**

The website will be up and running at UC Berkeley through the end of the project (May 31, 2015). It will then be archived and made available as a static document archive. The USFS will not be able to host the SNAMP website due to agency constraints and technical issues.

**VIII. Future of SNAMP Results:**

SNAMP is providing data to support work being done with fisher including listing process as soon as possible. SNAMP data is being used in various conservation strategies, planning processes and the forest plan revision process. Timing is an issue in the revision process in that the southern forests are farther along and that some SNAMP reports are coming out later. The USFS receives these reports at the same time as the public does.

**IX. Wrap Up and Next Steps:**

Susie explained encouraged everyone to fill out the evaluation. A summary is listed below. The recording and notes will be posted on the SNAMP website.

