



UC Science Team updates for SNAMP 2014 Second Quarter (Q2)

Main project findings and work accomplished since 2014 Q1 updates on April 16, 2014

~July 22, 2014~

Project Integration and Management (PIM) Team

Integration

In addition to the financial, administrative, and logistical support that PIM provides to the UCST, we also are responsible for leading the SNAMP integration component that will result in the final integrated assessment in December 2014. During the 2nd quarter of 2014, we continued to coordinate science team interaction to ensure the flow of integration products between teams, essential for the success of the final assessment. PIM also drafted the introductory and site description chapters for the final report.

PIM continued to coordinate with session speakers and meeting organizers regarding the oral session on adaptive management at the Ecological Society of America (ESA) annual meeting in Sacramento in August 2014. We also finished writing our session talk.

UCST Coordination

PIM continues to plan and budget for successful project completion in December 2014.

- Administration: assisting science teams with planning, budget reporting, maintaining SNAMP publications list, and maintaining bSpace archive and secondary UCST archive.
- Logistics: coordinating monthly UCST conference calls and other interteam communication; helped coordinate UCST participation in field trip.
- Keeping track of adherence to SNAMP and UC science team agreements (e.g., neutrality, data-sharing agreements).
- Helping teams to follow 2014 integration timeline and maintain consistent spatial products.
- Writing, and coordinating other teams' writing of, the introduction, site description, and integration chapters of the final report.
- Writing text for PIM talk at ESA oral session on adaptive management.
- Coordinating UCST team updates for MOUP 2014 Q2 report in July.

- Coordinated development of list of potential peer reviewers for SNAMP final report team chapters; drafted SNAMP summary document for peer reviewers; reached agreement with UC Office of the President to manage peer review process.
- Continued planning for UCST scientists meeting in August.
- Participated in FFEH IT meeting in May, American Fire field trip and Owl IT meeting in June.

Communication with MOU Partners (MOUP) and stakeholders

- Represented UCST on MOUP 2014 Q1 conference call in April.
- Produced notes for MOUP 2014 Q1 conference call.
- Coordinated with MOUP on agenda development for MOUP 2014 Q2 conference call in July.
- Notified MOUP about recently published UCST scientific publications.
- Communicated with MOUP and stakeholders regarding ESA session on adaptive management.
- Assisted in communication between Forest Service Ranger Districts and Fire and Owl teams.

California Spotted Owl Team

Worked on during April-July

- Our retrospective analysis of the effects of habitat change, timber harvest, and wildfire on owl demographic rates was accepted by *Ecological Applications*. The paper is titled “Effects of forest management on California spotted owls: implications for reducing wildfire risk in fire-prone forests,” and the preprint version is available online at <http://www.esajournals.org/doi/abs/10.1890/13-2192.1>.
- Our manuscript on an integrated population model for the Eldorado Density Study Area (Doug Tempel’s dissertation) was accepted for publication by *Ecological Modelling*. The paper is titled “Using integrated population models to improve conservation monitoring: California spotted owls as a case study.”
- We continued surveying for owls on the Eldorado Density and Regional Study Areas. We have detected owls at 37 territories and assessed reproduction at 33 territories. We have found 27 nests (3 of which have failed) and determined non-nesting status at 5 territories. We have completed at least 2 rounds of night surveys covering the entire study area.
- Collaboration with FFEH on fire risk to spotted owl habitat continues to progress. The FFEH Team’s third iteration of the Last Chance map appears to do a good job of characterizing owl nesting habitat. We will begin statistical analysis of the effects of fire

and treatments on owl habitat and vital rates once we receive the fire and FVS modeling for the Last Chance study area.

- We participated in the SNAMP Owl IT meeting in Davis on June 20 and the American Fire SNAMP field trip on June 19, 2014.

Fire and Forest Ecosystem Health (FFEH) Team

2Q 2014 Activities:

- We have completed the Last Chance fire modeling and forest growth analysis for all 4 treatment scenarios: pre-SPLAT forest conditions with and without a wildfire, post-SPLAT forest conditions with and without a wildfire. This analysis includes forest growth for 30 years with summaries of forest structure at 10-year intervals.
- Following our initial completion of the modeling for Last Chance, the Owl Team suggested we reexamine our tree list imputation method. After we had discussed what changes may be appropriate, we took additional time to reassign the tree lists to the vegetation map polygons.
- We have started working on the fire modeling for Sugar Pine. We received the treatment polygons from the Forest Service, and the treatment boundaries will be finalized soon. This is a time-consuming task since it requires reconciling between plot treatment observations, change detection through Lidar, and Forest Service treatment polygons. Additionally, splitting some of the vegetation map polygons is needed so that they can be assigned a single treatment type. For Last Chance, the splitting procedure added approximately 70 polygons.

Spatial Team

We have received the discrete and waveform lidar for the Southern site and the Northern site (total: about 4T byte space). We are in contact with NCALM with respect to the hyperspectral data for the Northern site being flown last year.

Analysis:

The UC Berkeley Spatial team is focusing on an uncertainty analysis of lidar data used for forest modeling (FARSITE). This is in collaboration with the FFEH team.

The UC Merced Spatial team has been actively working on the following:

1. Finishing classifying the vegetation classes for both sites at the plot level.

2. Finishing the vegetation change detection product for both sites in collaboration with the FFEH team.
3. UCM Spatial is actively working on modifying the SNAMP data server to meet data sharing needs.

Presentations/Workshops:

Maggi Kelly. Mapping forests and conversations about them in SNAMP. Invited colloquium at UC Davis. April 29, 2014.

Maggi Kelly and Qinghua Guo. SNAMP Spatial Team IT Meeting (Webinar). May 1, 2014.

Maggi Kelly. Objects, boundaries, and meaning across domains: mapping of knowledge in forest management. Keynote speech given at the 2014 GEOBIA conference in Thessaloniki, Greece. May 22, 2014.

Publications:

Published:

Jakubowski, MK, L Wenkai, Q Guo, and M Kelly. 2013. Delineating individual trees from lidar data: a comparison of vector- and raster-based segmentation approaches. *Remote Sensing* 5, 4163-4186; doi:10.3390/rs5094163

Jakubowski, M. K., Q. Guo, B. Collins, S. Stephens, and M. Kelly. 2013. Predicting surface fuel models and fuel metrics using lidar and CIR imagery in a dense, mountainous forest. *Photogrammetric Engineering and Remote Sensing* 79(1):37-49

New or In Process:

Su et al. Forest treatment detection using multi-temporal airborne Lidar data and high resolution aerial imagery ---- A case study at Sierra Nevada, California. To be submitted to *Remote Sensing of Environment*

Tao et al. Using volume metrics calculated from airborne Lidar for aboveground biomass estimation: a comparative assessment. In review *Agriculture and Forest Management*

Li et al. Lidar with multi-temporal MODIS provide a means to upscale predictions of forest biomass. To be submitted to *Remote Sensing of Environment*

Di Tommaso et al. Uncertainty analysis of Simulated Fire Behavior in a Sierran Mixed Conifer Forest. To be submitted to *Forest Ecology and Management Update*

Public Participation Team (PPT)

Outreach

- Hosted the Public Participation Team meeting April 2, 2014, via webinar for 22 people.
- Hosted the Spatial Integration Team meeting May 1, 2014, via webinar for 25 people.
- Hosted the Fire and Forest Ecosystem Health Integration Team meeting at McClellan, May 15, 2014, attended by 20 people.
- Recordings of the meetings are on the SNAMP website: <http://snamp.cnr.berkeley.edu/events/>.
- Presented SNAMP as a case study of adaptive management in the Sierra Nevada to about 50 people at the UC Davis Graduate Colloquium in Geography on April 29, 2014.
- Made three different SNAMP presentations to about 125 people at the Association of Natural Resources Extension Professionals bi-annual conference in Sacramento, May 19 & 20, 2014.
- Planned for and hosted two Collaborative Adaptive Management/Facilitation workshops for 15 people in Marysville/Oregon House on May 30, 2014 and June 25, 2014.
- Scheduling final outreach presentations through April 2015.
- Working on participant hours analysis.

Northern site:

- Held the second of a two day CAM/facilitation workshop in South Lake Tahoe on April 23, 2014.
- Helped facilitate the Sierra Cascade Dialogue meeting in Sacramento on April 30, 2014.
- Planned and co-hosted a field trip to the American Fire/Last Chance study site on June 19, 2014.
- Planned and hosted the CA spotted owl IT meeting in Davis on June 20, 2014.
- Gave a SNAMP presentation to the Nevada County Fire Safe Council on June 26, 2014.
- Co-wrote an editorial piece with Brett Storey, Placer County, on the SNAMP project and resulting biomass reduction project.
- Maintained the UC Collaborative Tools site for CAM trainings – on-going.

Southern site:

- Developing fisher outreach notecards with our wildlife team's photos, March 2014.
- Developed a fisher calendar for outreach/awareness purposes for the fisher IT meeting in July.
- Collected a \$25,000 grant award check from the Chukchansi tribe with the local Yosemite/Sequoia Resource Conservation District to assist in the cleanup of illegal grow sites in the Sierra affecting the mortality of the fisher, April 8, 2014.
- Hosted a booth at Earth Celebrations in Oakhurst, April 22, 2014.
- Picked up a mounted fisher specimen made for outreach purposes, April 18, 2014.
- Attended the Minarets Natural Resource Day in O'Neals to meet with the local game warden, Michael Orme, April 25, 2014.
- Attended a roadkill fieldtrip to discuss work being done on fisher and wildlife roadkill on Highway 41, April 28, 2014.
- Presented SNAMP to a Road Scholar group in Oakhurst, May 5, and June 16, 2014.
- Presented SNAMP to the Upper Merced River Watershed Council, June 19, 2014.
- Planning for our final fisher integration meeting on July 31, 2014.

- Planning for our final water integration meeting on Sept 4, 2014.

Assessment

- Archiving SNAMP materials – on-going.
- Analysis of online survey, interview, and observational data – on-going.
- Program evaluation matrix refinement – on-going.
- Integration analysis based on final interviews.
- Field trip survey created and implemented for Last Chance field tour, June 19, 2014.
- Email survey created and initiated July 1, 2014 and will close on July 20, 2014.
- *California Agriculture* paper accepted and revisions submitted.
- Submitted scientific paper on analyzing the SNAMP social network to peer-reviewed journal.
- Submitted scientific paper on analyzing notes from public meetings to peer-reviewed journal.
- Continued citations tracking: Total number of citations for all publications is 231.
- Planning and detailed analysis of SNAMP publications' citations by MOUP.

Web

- Maintained and updated site regularly.
- Sent out Web Updates.
- Maintained server health and backed up data.
- Updated SNAMP Facebook page regularly.
- Uploaded SNAMP-related videos and photos to YouTube and Flickr, respectively.
- Supported newsletter and science brief production

Fisher Team

- The second quarter of 2014 has been busy for the SNAMP / Sugar Pine fisher team with both fieldwork and analysis. In the field, seven adult females were closely tracked during the denning season. Six females produced kits, and a total of 14 dens were located. The dens were located in a variety of tree species, including 46% black oak, 31% incense cedar, and 7% white fir, ponderosa pine, and sugar pine. Average diameter at breast height of the den trees was 103.88 cm. Aerial telemetry and camera work were ongoing, and trapping to remove collars from animals residing outside the key watershed areas began in late June. Finally, rodenticide contamination issues continue to plague the project. Several suspicious mortalities were recovered in Spring 2014, and banned pesticides were again documented at a grow site central to the SNAMP fisher study area.
- Significant progress was made on analyzing SNAMP fisher data for both the integration effort and the SNAMP Fisher final report. In collaboration with the Conservation Biology Institute, a revised fisher denning habitat model was developed using a combination of SNAMP and Kings River fisher data. In collaboration with the USFS Northern Research Station, a telemetry-based habitat use model is being developed for presentation at the Fisher IT meeting on July 31, 2014 (<http://snamp.cnr.berkeley.edu/events/jul-31-2014-fisher-it-meeting>). And in collaboration with the Great Basin Institute, a camera-based

occupancy model is being developed. These models are being used to inform the SNAMP integration efforts, led by the University of Wisconsin. A draft fisher final report was also completed during Spring 2014; this version is currently being edited for presentation to the SNAMP Science Team.

- On the human interest side of things, SNAMP / Sugar Pine scientists were able to assist with locating a missing Alzheimer's patient. On April 30, 2014, an elderly man suffering from Alzheimer's disappeared from his home in Mariposa. After three days of searching, the Mariposa County Sheriff requested the assistance of the SNAMP fisher project plane in locating the man's tracking bracelet. Within 20 minutes of takeoff, project biologists had located the bracelet's signal and led ground crews to a remote drainage. The man was found unconscious and suffering from exposure and multiple injuries, however he later recovered at a local hospital. As a result of this incident, the SNAMP aerial telemetry capacity has now been added to the regional search and rescue contact list.

Water Team

Second quarter updates (2014)

Data Analysis

- QA/QC of WY 2013 data is complete, and the resulting final report to Department of Water Resources is near completion. All data will be turned over to the Department of Water Resources.

Water Quality

- Our manuscript on seasonal and event level turbidity patterns has been accepted for publication. A manuscript on bedload movement from scour pan data is in progress. Final channel bed morphology and scour pan calibration data have been collected. Data are being processed for use in completing our analysis of the scour pan data. Processing of water chemistry samples is complete, and analysis of water chemistry data is ongoing.

Hydrologic Modeling

- At the headwater scale, incorporation of the pre-treatment vegetation map created by the FFEH Team is in progress. Conifer overstory and shrub understory communities will both be represented in the model, which requires some additional external model processing to expand the vegetation manipulation capabilities of RHESSys. We are currently working through that additional processing to ensure accurate replication of the vegetation map. Once that product is complete, we will be able to run final calibrations for the Last Chance headwater basins.

- We tested the model results of the larger basin scale model with the calibration parameter sets that were run through the headwaters, and determined that using the same parameter sets for the headwaters and firesheds will be feasible for the Last Chance basins. There is still some additional model processing that needs to be done before this approach can also be confirmed for the Sugar Pine sites.