



UC Science Team updates for SNAMP 2011 Fourth Quarter (Q4)

Main research findings and work accomplished since previous report on October 21, 2011
January 12, 2012

Project Integration and Management Team

Budget

- We did not receive support for the 2011 (Year 5) spatial and water research for SNAMP. The DWR did provide no-cost extensions so work begun in mid-year in 2010 (July) could continue in 2011. However, by year's end, we were forced to reduce the scope of the efforts with regard to water quality and spatial analyses. As we reported throughout the year, the USFS-funded aspects of the project remained generally on-budget for 2011. Given the uncertainty in budgets, some aspects of the research program started later in the year, and thus some teams will complete 2011-budgeted work in early 2012 (e.g., PIM). Other teams expended all of their 2011 funds that will be balanced in 2012 (e.g., Fisher).
- See budget table below (Table 1).

UCST Coordination

- Logistics: Monthly UCST conference calls
- Administration : approve SNAMP data server accounts, maintain UCST documents archive, Annual Meeting follow-up logistics, maintain SNAMP publications list
- Keeping track of adherence to SNAMP and science team agreements
- Coordinated UCST response to stakeholder feedback from Annual Meeting, including expanding list of future options for SNAMP
- Developed criteria to inform UCST decision-making about SNAMP options
- Coordinated UCST decision-making process about SNAMP's future
- Informed SNAMP UC Advisory Committee regarding budget situation and future options
- Coordinated exchange of information about possible funding sources between teams
- Requested and posted to SNAMP website update on USFS PSW Manley group wildlife study

Communication with MOUP Partners (MOUP)

- Coordinated MOUP letters of support for FFEH and Wildlife teams' JFSP proposal
- Helping coordinate planning for follow-up public meeting in early spring
- Informed MOUP of SNAMP publications
- Coordinated UCST research updates for MOUP Q4 meeting
- Communicated with MOUP regarding funding options and opportunities
- Provided CA DWR with detailed budget information

Spotted Owl Team

Working on fall and winter:

- Estimated survival, occupancy and reproductive rates for owls on all study areas 2007-2011
- Continued updating vegetation map to account for recent USFS and private treatments
- Retrospective analysis: construction of a treatment layer that compiles all historic treatments in owl territories, calculation of owl territory centers, formulation of how to construct a polygon layer that reflects changes in vegetation throughout the entire time period
- Paper on core areas revised and resubmitted for publication

Currently working on now and in the near future:

- We have begun interviewing applicants for the 2012 field season in hopes that we will hear good news about funding.
- Continue work on the vegmap layer for retrospective analysis and identify areas that will need to be inspected in the field in order to identify treatment year

Fire and Forest Ecosystem Health (FFEH) Team

FFEH: Fire

- We continue to evaluate lidar metrics to predict fuel models and fuel metrics for the southern site. The three closest RAWS stations have quite different 95th percentile severe weather conditions so we will run the fire models under several weather scenarios.
- We provided the Spatial team with some forest structure data that they will try to use to predict overstory tree species composition.
- Fire history work continues with cross-dating of our fire scar samples. We believe that all samples will be completed in the spring semester of 2012.

FFEH: Forest Ecosystem Health

- We have completed the quality control and quality assurance assessments for all the pre-treatment increment cores from Last Chance and Sugar Pine.
- We are in the process of finalizing the survival probability models for all species at both sites. Our near term goal is to make site by species comparisons.

Spatial Team

Spatial Products:

We have finished several multiple resolution vegetation products, including LAI, Canopy cover fraction, gap fraction at 5, 10, 15, 20, 25 and 30 meter resolution. These are posted at the SNAMP data server site at UC Merced (<https://snamp.ucmerced.edu/>).

Publications:

In Review:

Jakubowski, M. Q. Guo, B. Collins, S. Stephens, and M. Kelly. Prediction of fuel models and stand structure metrics using lidar and optical remote sensing in dense mixed conifer forest. In review in **Photogrammetric Engineering and Remote Sensing**.

Zhao, F., Q. Guo, and M. Kelly. Allometric equation choice impacts lidar-based forest biomass estimates: A case study from the Sierra National Forest, CA. To be submitted to **Agriculture and Forest Meteorology**.

In Press or Published:

Li, W., Q. Guo, M. Jakubowski and M. Kelly. In Press. A new method for segmenting individual trees from the lidar point cloud. **Photogrammetric Engineering and Remote Sensing**. This paper will be published in February 2012.

Garcia-Feced, C., D. Temple, and M. Kelly. In Press. Characterizing California Spotted Owl nest sites and their associated forest stands using Lidar data. **Journal of Forestry**. This will be published in December 2011.

Blanchard, S., M. Jakubowski, and M. Kelly. 2011. Object-based image analysis of downed logs in a disturbed forest landscape using lidar. **Remote Sensing** 3(11), 2420-2439. A Research Brief for this paper has been posted at the SNAMP website under Research Briefs.
<http://snamp.cnr.berkeley.edu/news/2011/dec/12/snamp-publication-7-object-based-image-analysis-do/>

Spatial Research ongoing:

We are working on classifying the vegetation types for both sites. We are also working with the Fisher team to look at fisher habitat and lidar.

Public Participation Team (PPT)

PPT: Outreach Team Activities

Northern site:

- Planning: Spatial IT meeting
- Outreach: CA Native Plant Society presentation (11/9/11)
- Attended: 'Ties to the Land' workshop (10/9/11)
- SNAMP presentation for CalEPA brown bag seminars (10/13/11)
- Participated: Sierra Cascades Dialog meeting (10/12/11)
- SNAMP Annual meeting (10/27/11)
- Sierra Cascades Dialog meeting (12/15/11)
- Projects: CSO video production; Fuels Treatment Implementation video production

Southern site:

- Attended and helped facilitate at the Sierra Cascades Dialog.
- Attended meetings for two other collaborative efforts developing in my south: The Dinkey Creek Collaborative and the Willow Creek Collaborative.
- Attended and took notes for SNAMP Annual meeting
- Attended a two day Cross Cultural Workshop with about 30 of our local community members and land owners to help develop the best working relationships.
- Arranged for Rick Sweitzer and the Fisher Team to open their office to the Fresno Wildlife Rehabilitation Group for a chance to visit and learn more about their work.
- Identified five local landowners willing to survey/or have their lands surveyed for fisher with our wildlife cameras. The protocol involved 32 days with 4 different checks of the camera photo chip. Participants then bring their photos to the fisher office to download any photos and get a clean chip.

- Launched a drive for socks to fill Fisher Team need for bait socks. With the help of an ANR blog it has gone viral and appeared in at least 6 new papers from Chico to San Francisco to San Diego. Rick has had at least three interviews, and Anne has received about 75 packages in the mail from as far away as Oregon, Reno and San Diego...so far!! Example: <http://blogs.kqed.org/newsfix/2011/12/14/uc-berkeley-researchers-study-pacific-fishers-want-your-socks/>
- Fuels treatment fieldtrip has to be postponed till May 1, 2012, due to the late start of the fuels treatment work this year.

PPT: Website and publications

- Website has been maintained and updated regularly

PPT: Research and evaluation

- Archiving SNAMP materials – on going
- Analysis of online survey, interview and observational data – on going
- Program evaluation matrix refinement – on going
- Publication of journal articles with PPT:
 - “Participatory management of natural resources: The Sierra Nevada Adaptive Management Project from an institutional viewpoint” submitted for publication
 - “Perceptions of forest health among stakeholders in a Sierran Adaptive Management Project” submitted to **Journal of Forestry**
 - “SNAMP: Cooperative Extension and University Researchers Collaborate in Participatory Adaptive Management” to be resubmitted to **California Agriculture** with online survey data in spring 2012
 - Others in draft form
- Completed “Community Impacts Analysis” document for UCST internal use in conjunction with SNAMP closure discussions.
- Implementing increased focus on mutual or social learning, Prof. Heidi Ballard working with us on a part-time basis.
- Ready to immediately implement learning “mid-course” survey with participants from first survey dependent on timeline decision and funding outcomes.
- Completing white papers - local history in preparation for posting.

Challenges: The uncertainty about budgets and sites is demoralizing. It is very difficult to plan the next research initiative. Outreach presentations have been put on hold till funding and timeline decisions are final to assure a united and consistent SNAMP message.

Fisher Team

- The Fisher Team is midway into the Fall and Winter trapping season for 2011-2012, and making great progress on captures. Our major goal for trapping during this period is to capture juvenile fishers that were born in April 2011 prior to when they begin dispersing from their natal home ranges. We have succeeded in capturing eight juvenile-age animals to date, but have also captured or recaptured a good number of subadult/adult-aged animals. Many of the recaptures were short term missing animals that required fresh radiocollars or that had dropped their radiocollars sometime over the last 6-12 months.

- Trapping success has been very good, and we are currently monitoring the activities/fates of 34 radiocollared fisher. Notably, on December 20 we had a capture that briefly pushed our active radiocollared fisher total to 35, which was an all-time project high and the impetus for an afternoon celebration coincident with our office holiday party!
- Recaptures over the last 2 months included two of the Orphan Fisher Kits from May 2010 (F29, M27). These two animals had been released back into the SNAMP Fisher Study Area in October 2010, and both had been missing due to failed implant radiotransmitters. It is likely that F29 will produce kits during the upcoming spring 2012 denning season, and we are looking forward to being able to monitor her denning status during this period.
- Trapping is ongoing and will continue until mid-March 2012 when female fishers initiate denning.
- The 5th year of repeat camera surveys in the Key Watersheds portion of the Fisher Study Area has been ongoing since mid-October, and will continue through the rest of the winter season. We are also performing camera surveys for fisher presence in other parts of the study area where management treatments are known to have occurred after Fall 2007. To date, we have initiated or completed camera surveys in 161 grids distributed across a large part of the study area.
- We detected and recovered the carcass of a single radiocollared fisher on December 27, 2011; otherwise, there were no other mortalities of radiocollared fishers during the Fall reporting period.
- Data management and analysis is an ongoing activity but now intensifying as we work to prepare several manuscripts on denning season habitat use, diel activity patterns, home range movements and dispersal, and survival and causes of mortality for fishers in the southern Sierra Nevada region.
- We are currently preparing a number of oral/posters presentations for the upcoming Western Section of The Wildlife Society Conference scheduled for February 1-3, 2012, in Sacramento, CA.

Water Team

Fieldwork

- The weir-plate fabrication and installation was successfully completed at Speckerman Creek thanks to the snow holding off long enough for the contractor to access the site.
- The automated water sampling program installed at the stream sites seems to be operating properly, with the exception of Bear Trap Creek which oversampled due to a malfunction with the water quality sonde. The sonde has since been repaired but needs to be reinstalled once accessibility is possible.
- Miscellaneous repairs were completed at all Last Chance and Sugar Pine sites in preparation for the winter season. With the help of the Fisher Team's tree climber, solar panels were moved to better locations at Speckerman Creek stream site and Fresno Dome met site to help prevent power issues caused by weather and low-light conditions.
- Some soil moisture sensors have been malfunctioning. We are currently working with the manufacturer to resolve this issue.
- Efforts are being made to build redundancy into the field measurements (especially water quality measurements) to better avoid data gaps due to power and instrument failure.

Modeling

- Preliminary analysis of LAI reduction in the RHESSys model has been completed and was presented at the AGU Fall Meeting in San Francisco in December.

- Refinement of the model calibration against observed data continues but needs to have a final "end calibration" that best represents the observed conditions, so experimental model scenarios do not have to all be processed again every time a slight improvement in calibration occurs.
- Expansion of the LAI reduction scenarios is currently being performed with a comparison to a "total biomass" method of reducing vegetation, incorporating additional climate zones for better handling of the rain/snow transition, and connecting forest harvesting with increases in canopy openings.
- Modeling experiment incorporating lidar canopy cover fraction and gap fraction is currently under process.

Data Analysis

- Finalizing data clean-up for water year 2011. Complete discharge records will be available shortly with other water quality and quantity parameters to follow.

Table 1. Summary of expenditures of the Sierra Nevada Adaptive Management Project for Year 5 (1/1/2011 - 12/31/2011). Budgeted amounts were based on approved costs for Year 5. Received amounts reflect actual transfers of funds from the contracting institutions. Project balance at year end (December 2012) based on known costs (e.g., salaries, rents). Balance reported for November 2011.

Research Theme	Contracting Institution	Budgeted (\$)	Received 2011 (\$)	Balance Nov 2011 (\$)	Projected Balance Dec 2011 (\$)
Spatial ¹	UC Berkeley	0	0	--	--
	UC Merced	100,357	0	0	-100,357
	Imagery	0	0	--	--
Fire and Forest Health	UC Berkeley	142,340	142,340	25,516	16,154
Wildlife	UC Berkeley (fisher)	444,917	444,917	19,191	-5,129
	U Wisconsin (owl) ²	115,500	115,500	--	0
	U Wisconsin (owl) ³	54,954	54,954	--	--
Water ¹	UC Merced	269,286	0	0	-269,286
Project integration	UC Berkeley	174,477	174,477	27,244 ⁵	5,451
Public participation	UC Cooperative Ext ²	129,812	129,812	--	0 ⁴
	UC Berkeley	60,954	60,954	2,314	-3,845
TOTAL		1,492,597	1,122,954	74,265	357,012

Notes for Table 1:

1. We did not receive funding for the Water or Spatial teams in 2011.
2. We do not see budget details for the subawards (from the USFS contract) to UC Cooperative Extension and the University of Wisconsin.
3. The University of Wisconsin received a two-year SWG award from the Department of Fish and Game to support SNAMP owl research. The grant is administered by the San Jose State University Research Foundation.
4. The public participation subcontract with UC Cooperative Extension is from 1 May 2011 to 30 April 2012.
5. The integration effort led by Perry de Valpine (robust designs to measure occupancy rates of wildlife populations) continues until March 2012, hence the large balance in November 2011.