SNAMP Quarterly Meeting – Q1 2011

Notes

Date and time: Thursday, April 14, 2011 1:00 - 2:30 pm
Location: Conference call
Participants:

UCST: John Battles, Kim Rodrigues, Rocky Gutierrez, Rick Sweitzer, Ann Huber
MOUP: Mike Chapel (USFS), Dan Jiron (USFS), Tony Rodarte (USFS), Cay Goude (USFWS), Jeremiah Karuzas (USFWS), Adam Walters, Tray, Frank Gehrke (DWR)

1) UCST Research Updates

Ann and scientists from the team reviewed the status of SNAMP research and outreach activities (see attached UCST quarterly report for research updates).

Additional notes not in quarterly report:

SNAMP meta-replication project (PIM team) might be a power analysis of mark recapture (Owl Team) and camera trapping (Fisher Team) techniques used for occupancy estimates.

Rocky commented that practitioners are not always aware of scientific papers that should be considered in management plans. Cay suggested a guide or brief that explains how the findings from scientific papers apply to changes in management should be developed. Cay also asked whether and when the science team will suggest / report on triggers and thresholds for management.

- SNAMP publications or links to publications are posted to the SNAMP website as soon as they are published, **with a research brief that explains the highlights of the papers**. (http://snamp.cnr.berkeley.edu/news/categories/research-briefs).
- The idea of setting triggers in SNAMP has evolved into the formation of the Integration Team (in 2009). Integration Team (IT) meetings are where scientists, managers, and public come together to understand SNAMP research and findings, and recommendations for management may come from IT meetings.

The Fisher Team and other fisher researchers (Hoopa researchers and Kings River, KREW researchers) are finding widespread rodenticide exposure in fishers throughout the state. Only one SNAMP fisher mortality had been linked to rodenticide but 90% of the carcasses have tested positive for rodenticide exposure. Multiple sources are likely. Rick and Reg and other fisher scientists are looking into possible sources, and have developed a Q&A page on the topic available at: http://snamp.cnr.berkeley.edu/static/documents/2011/04/22/AR_Posting_Overview.pdf

Agreements:

- UCST will let MOUP know when SNAMP scientific manuscripts are accepted for publication in scientific journals (information transfer via Academic Coordinator and MOUP Coordinator).

Next Steps:

1. Ann will:
    - Ask Maggi about the status of the Owl-Spatial paper (in press); if can be shared with Mike Chapel,
    - Ask Maggi if a list of recent spotted owl scientific papers could be added to the Owl page of the SNAMP website. (*Added May 2: the public participation team is working on creating a website that will provide a summary of recent and important scientific papers for owl management, which will be linked to the Owl page on the SNAMP website).*
    - Send Frank the lidar footprint for the northern site.
2. Mike will
    - Check with the USFS wildlife group that meets annually to review recent research that is relevant to managers
    - Notify Bass Lake staff about SNAMP fishers exposure to rodenticide, to look into possible USFS use on Sierra National Forest.
3. Kim R. will talk with Rick about ways Anne Lombardo can help with public outreach about rodenticide and fishers.

2) Budget

John reviewed the overall funding structure for SNAMP and the funding situation for 2011. The funding structure includes private sources. The current lack of private funding sources has left a funding gap and all teams have had a 20% budget cut for 2011. Fundraising for SNAMP has always been a shared responsibility with MOUP, with MOUP to help find the private funding sources. Owl team is able to bridge the gap with additional funds promised by a State Wildlife Grant (SWG), although it is not 100%.

Next Steps:

5. Mike will assemble members of MOUP to begin planning for a grants team meeting.

3) Updates from USFS Ranger Districts

- Status of Last Chance and Sugar Pine start date for treatments this year.
- Status of talks with SPI for treatment completion timeframe at both sites.

Sugar Pine: Dave Martin reported at the Water Team IT meeting last week that SPI may try to complete treatments this year. It depends on how many and where goshawk and spotted owl nests are found, due to limited operation periods (LOPs) restrictions around nests. (*Added May 2, Dave reports that the field work is going slower than anticipated due to the large number of downed trees that came down this winter.)*

Last Chance: Tony reported that SPI plans to treat 1200 acres this year and complete treatments next year. A recent email from Crawford had indicated that they might complete Last Chance in one year.

Next Steps:

6. Tony will check with the SPI contractor to confirm the treatment schedule and follow up with Ann. *(Added April 28 – Tony confirmed that SPI plants to treat 1200+ acres of tractor-ground work this summer and next year will complete treatments with 200 acres of cable thinning.)*

UC Science Team Updates for SNAMP 2011 First Quarter (Q1)

Main research findings and work accomplished since last reported on January 11, 2010
April 13, 2011

Project Integration and Management Team

Budget

- The supplemental SWIG (State Wildlife Grant) grant to support the SNAMP owl work has been executed. It is a two-year grant that will almost entirely back-fill the 28% reduction in support.
- We do not have the Q1 budget summaries from the USFS funding but will shortly. All of the teams have their 5th year budgets and are planning accordingly.
- We need to start the discussion with the Department of Water Resources regarding 2011 funding of the water and spatial teams.

UCST Coordination

- Scoping stage of SNAMP meta-replication project has begun; Dr. Perry deValpine and post doc Viorel Popescu (UCB) are leading the research. In general terms, the project will be a methodological study that aims to improve understanding and seek solutions to common statistical challenge(s) of wildlife studies. We held a meeting with Fisher and Owl Teams to get their input for ideas that would benefit SNAMP.
- Logistics: Monthly UCST conference calls, updated UCST data sharing agreement, housing for science teams this summer, other meeting logistics.
- Keeping track of adherence to snamp and science team agreements.

Communication with MOUP

- Communication with Bass Lake (Sierra N.F.) to avoid treatments from being planned in the Nelder control study site.
- Keeping tabs on talks with SPI and changes in new state leadership

Spotted Owl Team

USFS Workshop, Sacramento February 24 2011

- The Owl Team made significant contributions to this workshop. The workshop was attended by USFS managers and biologists, state agency biologists, and researchers from four owl demography studies (Eldorado, Plumas/Lassen, Sierra, Sequoia/Kings Canyon). The Owl Team provided the lead among researchers to summarize the history of CASPO, the funding history for the Eldorado study, past spotted owl research in the Sierra Nevada and the major current research findings from each study site. After the presentations, the researchers fielded questions from agency personnel pertaining to spotted owl research and management. Kim Ingram of the PPT also attended the workshop and kept a record of the proceedings.

Funding

- Funding for the Eldorado Study Area has now been approved by the USFS for the 2011 field season.

Collaboration with other Science Teams

- The Owl Team has been in contact with the SNAMP Public Participation Team (PPT) about a potential Owl IT meeting later this summer, perhaps relating to some of the concerns and issues raised during this workshop.

- The Owl Team has discussed potential collaborations with John Battles and Perry de Valpine regarding developing power analyses of the Owl Team's study design.
- The Owl Team's collaborative paper with the Spatial Team on the use of lidar to characterize owl nesting habitat has been accepted for publication by the Journal of Forestry.

Other publications
- The Owl Team has also submitted a paper on long term use of Protected Activity Centers (PACs) to the Journal of Forestry. This issue is related to the premise that PACs are useful and what might be the effect on owls if treatments occur within PACs as has been suggested by both MOU partners and the public during SNAMP meetings.

Fire and Forest Ecosystem Health (FFEH)

FFEH: Fire
- Developing the information needed to evaluate the SPLAT network in the southern site. We met with Spatial Team to request additional lidar data that represents the plot area better. We are planning on using lidar data and field data to predict fuel models and fuel metrics.
- We are exploring methods to do the southern SPLAT evaluation without lidar data too.

In the spring we plan to:
- Continue work on the southern study site SPLAT evaluation. Evaluate SNF vegetation classifications with plot data. Continue spatial analysis with subset of plots.
- Continue to cross-date fire history samples taken from the northern and southern site. About 50% of these samples have been dated.

FFEH: Forest health

Species-specific survival models. In the last quarter we completed the processing of all live/dead tree pairs needed for our tree survival model. We have developed population-level mortality models for four of the major species for the Sugar Pine site: white fir (ABCO), incense cedar (CADE), sugar pine (PILA) and ponderosa pine (PIPO). We used the SNAMP size distributions and the mortality rates from our plots in nearby Sequoia Kings Canyon National Parks to interpolate results to the populations at Sugar Pine. Models for every species except sugar pine was split into two size classes: trees between 20 and 40-cm dbh and trees ≥40cm dbh. There was no substantive advantage in the size split for sugar pine.

Overall these models performed well with the results for incense cedar and white fir doing a particularly good job of predicting mortality. The one exception was sugar pine which performed only marginally better (ROC = 0.68) than a null model. The forms of the modeled varied among species but in general the best predictors of mortality included the recent trend (last 10-15 years) in growth rate and the number of abrupt annual declines in growth experienced in the last decade. We will begin development of surivial models for the species at Last Chance in the next quarter.

Tree core processing and analysis. We anticipate having all the model development and pre-treatment cores read and checked by August 2011. Out of 4,300 tree cores, more than 90% have been mounted and sanded, 83% have been analyzed, and 36% have been cross-dated (Table 1).

Table 1. Status of tree cores collected to measure impacts of SPLATs on tree growth and survivorship.

	Tree status	Collected (field)	Prepared (mounted/sanded)	Analyzed (rings read)	QAQC
Model pairs	Live	1553	1553	1553	770
	Dead	1553	1553	1553	770
Pre-treatment samples	Live only	1194 (includes subsamples with 2 cores per one tree)	796	450	

Spatial Team

We welcome the new SNAMP spatial postdoc, Feng Zhao, who will be based at Berkeley and working with us on spatial topics. Feng joined us in January 2011 from the Geography and Environment Department at Boston University where he conducted his dissertation work on leaf area index (LAI) and foliage profile (leaf area with height) retrievals using a ground-based, upward-scanning, under-canopy, full waveform, near-infrared (1064 nm) lidar, the Echidna Validation Instrument (EVI).

Spatial team has been working on:
Using lidar data to predict fuel models and fuel metrics; this work has been submitted to a scientific journal.

Highlights: The accuracy of fuel models prediction was below 50% for all data and model types, but we found good correlation between lidar data and canopy height (r2=0.87), canopy cover (r2=0.85), total basal area (r2=0.83), and moderate fits between shrub height (r2=0.59), shrub cover (r2=0.51), and fuel bed depth (r2=0.33). Results suggest that most stand structure variables are best predicted with simple lidar or lidar and imagery combination with no data transforms applied. The support vector machine algorithm, Sequential Minimum Optimization, performed the best in nearly all cases.

Publications:
We have submitted a paper to Photogrammetric Engineering and Remote Sensing that presents a new method for characterizing individual trees from the lidar point cloud.

Highlights: In this study we develop a new algorithm to segment individual trees from the small footprint discrete return airborne lidar point cloud. We evaluated the algorithm with our SNAMP data. Results show that the proposed algorithm can detect 86% of the trees, 94% of the segmented trees are correct, and the overall accuracy is 90%, which indicates that the proposed algorithm has good potential in segmenting individual trees using lidar data.

Additionally:
We have held several joint meetings with the FFEH team to discuss integrated SNAMP work, including:
- How and when to incorporate lidar data (other than DEM and Fuel Models) in fire behavior modeling;
- New ways to use maps of individual tree results in the FFEH tree health models;
- Appropriate field methods for capturing lidar-relevant field data;

- Links between lidar products and fire models.

We are in the process of detecting all the individual trees for the study areas. As this process is very time consuming, priorities are given to two watershed areas based on the need from the FFEH team.

We are also working on extracting LAI from lidar for both study areas. Preliminary results have been obtained, and we are validating the result using the field measurements and other remote sensing data sources.

Public Participation Team (PPT)

PPT: Website

- Continuing to maintain website
- SNAMP newsletter Vol 5 No 1 published; focuses on the Spatial team
- SNAMP newsletter Vol 4 No 3 published; focuses on the Owl team
- Sent out web updates to the full SNAMP distribution list in Feb 2011
- Poster on SNAMP presented at George Wright Society Conference on Parks and Protected Areas, March 15, 2011

PPT: Outreach Whole Team Activities

- Reprioritizing outreach needs and SNAMP information tracking needs based on input from the PPT IT meeting in February.
- Hosted:
  - Public Participation Team IT meeting. February 2, 2011 in Davis
  - The first Water IT meeting. April 8, 2011 in Merced
- Planning:
  - Fisher Team IT meeting July 19, 2011
  - October 27th 2011 Annual meeting in Sacramento
  - Water team field trip late June, 2011
  - Spotted Owl field trip Summer 2011
- Outreach Presentations:
  - Ecosystem Sciences Seminar, UCB by Kim Rodrigues
  - Trout Unlimited February 2011 CA. Native Plant Society - El Dorado chapter, March
  - Table display at a regional Fire Safe Council meeting in Sacramento, April
  - Poster at UC & Forest Service Wildfire Conference, April 11
  - UCCE Forest Pest Management Workshop in Cathey's Valley, March 2
  - Willow Bridge Bookstore in Oakhurst 3 5 2011
  - Presented SNAMP with Water and Fisher teams at Regional RCD meeting in Coarsegold, March 10
- Participation in:
  - USFS Sierra-Cascades Dialogue Group meeting, February 24
  - UC & Forest Service Wildfire Conference, April 11
  - USFS California Spotted Owl workshop, February, Sacramento
- Projects:
  - Collecting and producing introductory SNAMP videos for posting to SNAMP website
  - Developing a website with a catalog of information on California Spotted Owl
- Attended a presentation on 'Climate Change & Wildfire in the Sierra Nevada' by Anthony Westerling at UC Sacramento facility, March 1

• Submitted articles

UC Greenblog (http://ucanr.org/blogs/Green/) March

SNAMP/Owl Team article to Northern CA Society of American Foresters newsletter, February

PPT: Research

- Reported in and helped plan PPT IT
- Revising workplan to incorporate IT results
- Refining evaluation criteria
- Continuing to draft and submit papers for publication
- Reported and discussed SNAMP in faculty roundtable on interdisciplinary research
- Developed increased focus on mutual learning, Prof. Heidi Ballard will be working with us on a part-time basis.
- Archiving SNAMP materials – on going
- Analysis of online survey, interview and observational data – on going
- Program evaluation matrix refinement – on going
- Completing white paper revising and preparing to post.

Fisher Team

We are currently monitoring the activities/fates of 30 radiocollared fisher across the Fisher Project Study area. No mortalities among radicollared fishers between February 21 to April 12, 2011.

Completed 4th year of camera surveys for grids within Key Watersheds portion of the Fisher Study Area. Fisher use was detected in 81 of the 124 total grids surveyed (81%), higher than any of the previous years.

Winter season trapping ended March 18, 2011. Overall, we captured and radiocollared 14 previously unknown fishers during population year 3 (Apr 1, 2010 to Mar 31, 2011), and recorded mortalities on 12 radiocollared fishers during the same period. Full details on the demography of the study population will be provided during the Fisher IT Meeting in Fresno on July 19, 2011.

We are currently about 3 weeks into the spring 2011 denning season. Our major research focus over the next 2 months will be locating natal and maternal den trees used by adult female fishers across the study area. Information on denning behavior will be used to determine/estimate reproductive rates and fecundity for population year 4.

The start of the spring 2011 denning season was significantly hindered by a series of late March snowstorms that left deep snow above 4500 feet, while also toppling hundreds of trees under the weight of heavy, wet snow between 3000 and 4500 feet. Access into the backcountry has been very difficult, but we have succeeded in clearing down trees along many key roads, and are now accumulating information on den tree locations/denning activities for the radiocollared females in the population. As of April 12, we have identified 5 den trees, including 3 within the Sugar Pine region of the Fisher Study Area.

Outreach during February 21 to April 12, 2011:

- Seminar presentation on the SNAMP Fisher Study at UC Berkeley, March 4, 2011
- Presentation on SNAMP Fisher at a Regional RCD meeting in Coarsegold, CA, March 10, 2011

- Update on SNAMP Fisher Study, Bass Lake Ranger District, North Fork, CA, March 17, 2011
- Presentation on SNAMP Fisher to Fresno Wildlife Rescue and Rehabilitation group, Fresno, CA, March 23, 2011

Water Quality and Quantity Team

1. Solved an issue with the soil moisture sensors at the north and south facing nodes of the Fresno Dome Met Station. These were not operating properly and are now online and recording data correctly.

2. Collected water samples, flow measurements, and replaced batteries at nodes that lost power during the December/January snow storms at both Last Chance and Sugar Pine sites.

3. Finished installing sonic sensors to measure water depth in the culverts at Last Chance and Sugar Pine.

4. Deployed the Turbidity Threshold Sampling (TTS) program at Big Sandy Creek. Adverse weather and dangerous conditions have prevented us from being able to confirm the program functioning as designed. The Speckerman Creek site is prepped and ready for the TTS program which will be uploaded as soon as conditions allow.

5. Completed rating curves for all four streams through the 2010 water year and have finished calculating discharge hydrographs for the catchments.

6. Nearing completion of QA/QC on stream chemistry data, to be posted on the SNAMP server.

7. RHESSys model is running for Speckerman Creek, parameterization continues. Working on bringing the other streams up to modeling status.

8. Held the first Water Team IT Meeting in Merced on April 8, with the theme "Detecting Change".

9. Presented water team research at the California Resource Conservation District meeting in Coarsegold on March 10.

10. Near term fieldwork goals are repair/replace faulty snow depth sensors at stream and met sites, recalibrate and reinstall the YSI sonde at Bear Trap that was damaged, do any possible preparations related to ISCO installations. Power failures at the stream sites and met stations, along with moisture inside the instrument boxes, have been issues and are being addressed with larger batteries and new desiccant packs.