



SNAMP Fisher Integration Team Meeting Notes
July 22nd 2010, 10am – 4pm, Fresno – UC Merced Center

In Attendance:

Daniel Applebee – CA Dept of Fish & Game
Mike Bacca – Cal Fire
Jason Banaszak – USFS PSW
Reg Barrett – UC Berkeley
Matthew Bissell – Yosemite Mountain Ranch
Sue Britting – Sierra Forest Legacy
John Buckley – CSERC
Esther Burkett - CA Dept of Fish & Game
Stephen Byrd – Southern California Edison
Mike Chapel – USFS Regional Office
Jeff Cordes – USFS Sequoia NF
Kent Duysen – Sierra Forest Products
Allison Eichele – USFS PSW
Tom Eliason – Sierra Club
Laure Finley – USFWS
Pamela Flick – Defenders of Wildlife
Jo Ann Freemire – local resident
Mourad Gabriel – UC Davis
Danny Gammons – National Park Service
Nathan Graveline – CA Dept of Fish & Game
Rebecca Green – USFS PSW
Lisa Gymer – CA Dept of Fish & Game
Jeannie Habben – Central Sierra Watershed Committee
Ann Huber – UC Berkeley
Jerry Jensen – Society of American Foresters
Richard Kangas – Sierra Club
Leonard Kelly – resident
Linda Kelly – resident
Susie Kocher – UC Cooperative Extension
Tom Kroeker – CA Dept of Fish & Game
Anne Lombardo – UC Cooperative Extension
Theresa Lowe – USFS Sierra National Forest
Diane Macfarlane – USFS
Marc Meyer – USFS
Neil McDougald – UC Cooperative Extension
Ryan Milling – USFS

Lindsey Myers – CSERC
Ane Otto – USFS Sierra NF
Vance Peyson – Tule River Natural Resources
Kathryn Purcell – USFS PSW
Mark Reid – local resident
Adele Reid – local resident
Susan Roberts - USGS
Kim Rodrigues – UC Cooperative Extension
Deb Romberger – USFS Stanislaus NF
Brian Rueger – Tule River Tribe
Tom Sandelin – Cal Fire
Michelle Schroeder – DF&G
Greg Schroer – USFS
Mark Smith - resident
Kim Sorini-Wilson – USFS
Kim Squires – USF&W
Burt Stalder – USFS
Jerre Ann Stallcup – Conservation Biology Institute
Jennifer Stanley – Yosemite Sequoia RCD
Rick Sweitzer – UC Berkeley
Ryan Tebo – USFS PSW
Craig Thompson – USFS PSW
Denise Tolmie – USFS Sierra NF
Richard Truex – USFS PSW
Kerri Vera – Tule River Tribe
Wes Watts – USFS PSW
Jeannette Warnett – UC Cooperative Extension
Greta Wengert- UC Davis
Harold Werner – National Park Service
Tom Wheeler – Madera County Supervisor
Scott Yaeger – USFWS Yreka

By webcast: Adriana Sulak, Darca Morgan, Roy Bridgeman, Bill Zolinski, Kim Ingram, Rebecca Ferkovitch, Katie Moriarty

The **power point presentations** from this meeting are posted on the SNAMP website at <http://snamp.cnr.berkeley.edu/teams/fisher>

I. Introduction: Kim Rodrigues welcomed the group and asked everyone to introduce themselves. She gave a brief overview of the Sierra Nevada Adaptive Management Project and where the project is within the adaptive management cycle.

II. Sugar Pine Fuel Treatment update: Denise Tolmie from the Sierra National Forest gave an update on the Sugar Pine Project. The final Environmental Impact Report on the service project was released in February. There were two appeals but the decision was upheld by the regional forester. The bidding period is now over and a contract will be awarded with the hope to start work this fall. The work may be more preparatory this year with actual treatments starting in spring or summer of next year, depending on the limited operating periods.

III. Introduction to the Fisher Study: Dr. Reg Barrett gave an overview of the fisher study hypotheses. In addition to the original hypothesis that fisher population is retracting southward and that SPLAT treatments will exacerbate this contraction, the team is also looking at whether survival is more important than reproduction or dispersal and whether predation, disease, or car accidents is the most limiting factor to fisher population.

IV. Fisher Study Year Three Update: Dr. Rick Sweitzer gave an in depth report on the status of the research project in year three. So far, 64 fishers have been captured including 38 females and 26 males. Most fishers are found between 4500 and 6500 feet in elevation. Home range varies between sexes, and between the mating season and other periods of the year for males. SNAMP has found larger home ranges than any other fisher study, likely related to being able to locate animals in hard to access areas using the fixed-wing airplane. Male survival seems a little lower than female survival.

Question: How many cameras do we have in the field?

Answer: The team has 65 cameras and has only lost four in three years. They are password protected so are not usable by those who might take them.

Question: From camera surveys, have you gotten a probability of detection? Does occupancy data take into account different individuals?

Answer: Yes, our estimated probability of detection using a standardized protocol with Reconyx® digital cameras is 0.98, that does not identify the individual, just occupancy by a fisher.

Question: Are you tracking fishers on private land?

Answer: Yes, we track our fishers using a fixed-wing airplane, and the airspace over the study areas is not restricted based on public versus private ownership. We also track collared animals from the ground, especially during the denning season. Although most of the study area is Forest Service land, there is one large private property owner in the area who has granted the Fisher Team access to radiocollared fisher on its land when needed.

Question: Are you detecting pine martens with cameras?

Answer: Yes, and they are always found at the higher elevations, typically above 7000 feet, but one detection occurred at around 6500 feet.

Question: Have any fisher been found in the Cascadel Woods area near North Fork?

Answer: We have detected some fishers and tracked radiocollared fishers in this general area, but haven't done research on private property in Cascadel Woods.

Question: Do you really fly 6 days a week?

Answer: Yes, we have flown for 5 or 6 days a week for 3 years, and only fly fewer than 6 days a week when weather is an issue or when the airplane has mechanical problems. We are fortunate to have excellent support for our aerial telemetry from the Forest Service.

Question: Are you pulling teeth of specimens for aging? Are you collecting and analyzing scat?

Answer: We do not extract teeth from sedated animals during immobilization, partly because our UC Berkeley Animal Care Protocol prohibits doing so. We do extract teeth for aging from all fishers that die, which will provide information on population age structure. Yes, we do collect fisher scat during captures and from traps; the scats are analyzed for information on diets.

Question: Is there a database somewhere about fisher?

Answer: Rick Truex recommends the US Fish and Wildlife office in Yreka, and Forest Service Pacific Northwest website for all current rare carnivores:

<http://maps.fs.fed.us/carnivore/Modules/application/home.html>

Question: What do the terms fisher "source" and "sink" refer to?

Answer: A population source area produces enough fisher to allow for dispersal elsewhere. A sink area is just the opposite, conditions in the area are less than ideal and few if any surplus animals ever disperse out of the area. Both the Sugar Pine and Nelder Grove areas and the Chowchilla Mountain area appear to be source areas for fisher in the study.

Question: Does the study still maintain the idea of a control and treated watershed?

Answer: Because the fisher ranges so far it has been necessary to work in a much larger area for the fisher study (440 square miles) than for other research studies in SNAMP. Fisher home ranges are 25 square miles for females and up to 100 square miles for males. There are only eight or nine individuals in the key watersheds and only two or three overlap the Sugar Pine treatments. The original untreated and treated areas within SNAMP will be used but the team is collecting more information on other treated areas including Sunny Meadow in the north and Grand Mountain east of Bass Lake where fisher live as well.

Question: How will SNAMP integrate the forest vegetation data with fisher work?

Answer: The fisher team will work with the spatial and forest team to further investigate areas of interest including the location clusters identified by GPS collars. We also intend to work with the Spatial Team and the Lidar data for characterizing habitats around den trees. Finally, when we characterize habitats around den trees, the methods used are derived from the protocol used by the Forest Health Team for collecting data at Core Plots. This approach will allow us to contrast habitats used by fishers at den trees with nearby habitats not used for denning.

Question: How many kits do fishers have?

Answer: Fishers bear up to four kits with two being more the norm. SNAMP and the Forest Service Pacific Southwest Research Station Kings River groups combined have observed two different litters with 3 kits, but most females in the area produce litters of 1 or 2.

Question: What types of trees are used for dens? Do fisher reuse natal and maternal trees?

Answer: Female fishers are using cedar, oaks and white fir. Some of the trees are very impressive in size. Fishers in the Kings River research area appear to be using mostly oaks as natal and maternal den trees. We're not really sure why this is the case. It is possible that there are fewer large sized oaks in this part of the Sierra National Forest, but this is difficult to quantify. Yes, we have documented three different female fishers using the same trees as natal or maternal trees between last year and this year.

Question: Could the fact that the fisher reuse dens trees create the need for Limited Operating Periods (LOPs) to extend for multiple years?

Answer: It's too early to say, but it is possible that LOPs will need to protect the same general areas over several years as long as female fishers continue to use those areas over multiple consecutive years. Reused den sites may merit some kind of special designation. Foraging areas around these trees are very critical to nursing mothers as they cannot travel far for food during this time.

Question: Is there any evidence that males hangs around den trees? Is there any evidence of infanticide?

Answer: Males loiter on or near den trees during mating period which is 4 or 5 days after female fishers give birth to kits. Cases of male infanticide have not been documented. The den cavities tend to be very small, restricting entrance. Also, there is no real evolutionary advantage to infanticide for males since killing infants does not speed a female's readiness to mate.

Question: Are you collecting data on den structures?

Answer: Yes we are. Also, Rebecca Green, from the Kings Canyon project has been working on characterizing habitat characteristics associated with den trees for her dissertation. She is measuring opening size, depth, habitat around the tree both small and large scale.

Question: What is the fisher prey base?

Answer: Tree squirrels, lizards, and small rodents make up their diet here. Dr. Pat Manley from the Forest Service Pacific Southwest Research Station is beginning a small animal survey in the Oakhurst/fisher area. This is an important study that links up well with questions that have arisen in SNAMP discussions. Historically, fishers preyed on porcupines, which are now almost completely gone from the Sierra National Forest. The team would be very interested in any porcupine sightings in the area. One was mentioned in Cascadel Woods area.

Question: Is there any evidence that ground squirrels might bring the plague with them as they migrate upslope and that it may be transferable to fishers?

Answer: Not that we are aware of based on the work being done in association with our collaborators at UC Davis. We are collecting ectoparasites (fleas and ticks) from fishers during captures, which are the primary vector for cross species transmission of sylvatic plague.

Question: Is there an estimate to the number of squirrels harvested by Hmong hunters every year as they have a cultural affinity of squirrel hunting?

Answer: No, we have no way to track the harvest of tree squirrels by hunters. Also, to the best of our knowledge, the California Department of Fish and Game does not attempt to track harvest of small game like squirrels and rabbits.

Question: There were two fairly cool fires within the fisher study area several years ago, the Westfall and Silver Knob fires. These fires killed small trees but not many large ones. Have you found evidence that fisher are back using this area yet?

Answer: Yes, collared fishers are regularly found in this area. The fire was a fairly minor event, maybe even good for the landscape.

V. Sources of Mortality: Rick Sweitzer went over a powerpoint presentation “SNAMP Fisher Study: Sources of Mortality” posted at <http://snamp.cnr.berkeley.edu/teams/fisher>. To date the team has determined the causes of mortality for 31 fishers (24 collared, 7 non-collared). They have been able to do this by collecting carcasses as soon as a mortality signal is detected through airplane survey. All carcasses are sent to UC Davis for a full necropsy, even if the immediate cause of death seems obvious. So far the top the causes of mortality are predation (14), road kill (8), and disease (4).

Question: How do you send dead fisher to the necropsy lab at Davis?

Answer: Fisher carcasses are frozen and packed with ice packs for overnight shipping, unless someone is driving up to Davis when they can be packed into ice chests. Necropsies are also completed on road kill fishers because there is the possibility that disease has weakened them and contributed to them being stuck by cars on the local highways. One predator killed by a coyote was found to have distemper and could have made the coyote a carrier.

Question: What does intra-guild competition mean?

Answer: It refers to animals that eat or use the same resources the same way. Competitors for food, shelter etc. Other medium-sized predators like bobcats and coyotes may be killing fishers as part of intra guild competition.

Question: Is it mostly females killed through intra-guild predation?

Answer: Females have been killed mostly by bobcat and coyote, while males can be killed by mountain lions.

Question: Can you tell us more about the death due to rodenticide?

Answer: Yes, based on analyses of tissues and stomach contents of this fisher, the lab was able to identify the type of poison that had been consumed and that the death was due to secondary exposure to rodenticide. What this means is that the fisher very likely consumed a squirrel or other small mammal that itself had consumed poison bait. It is not uncommon and is completely legal for homeowners to purchase and use relatively mild poisons around their homes as a way to discourage/prevent mice/squirrels from nesting in attics and other indoor areas during winter.

Question: Do you always take blood samples and test for infections on the collared fisher? Do you look for antibodies in the blood samples that might indicate prior exposure or infections?

Answer: Yes, the team takes blood, fecal, ocular and nasal swabs from all animals at captures. The samples then tested exposure and active infection by a large list of diseases (please refer to slide show for a comprehensive list). We know that Parvovirus exposure/infection is present among fishers in the area, as is canine distemper virus (CDV) and Toxoplasmosis.

Question: Are viruses always fatal or do the fisher recover?

Answer: CDV has a much higher mortality rate, about 95 to 100 percent. Parvo tends to cause malabsorption that decreases the animal's fitness and health making them more vulnerable. Toxoplasmosis waits for the animal's health to decline and then manifests as a disease.

Question: Could a coyote get distemper from the fisher?

Answer: Yes, if the coyote bit or fed on a carcass that carried it. Distemper affects a wide variety of mammalian carnivores and can have a wave effect. It's a density dependent disease so it can blink in and out. A major outbreak would be quite a problem if it reached a source population.

Question: Does it make sense to immunize collared fisher to CDV?

Answer: Our collaborators at UC Davis and the California Department of Fish and Game Wildlife Investigations Lab in Rancho Cordova are currently testing a vaccine and vaccination regimen on four orphaned fisher kits that were rescued by SNAMP Fisher back in late April-early May. If the testing indicates that the vaccine produces antibodies in the blood of fishers, it may be possible to inoculate fishers for CDV in areas where CDV is known to be present.

Question: You are finding road kill to be the second leading cause of mortality for fisher. Are the non-collared road kill being turned over by Yosemite National Park biasing the rates? Isn't it more likely that someone finds a road kill rather than a bobcat kill?

Answer: Yes, road kill is easier to find than predation or disease. But roadkill events are probably underestimated due to the fact that only the animals that die immediately on the highway are found. For example, an unknown number of animals are likely struck and injured, but then crawl off the side of the road into vegetation and die; these animals will not be found and reported.

Question: Two of the fisher road kills were relatively far north and close to the Merced River, is that the furthest north that you have had detections?

Answer: Yes. The Merced River appears to be the current northern range boundary for fishers in the southern Sierra Nevada. Camera surveys north of the Merced River have been initiated by Yosemite National Park. There is some concern that the many roads into the park in that area may create a significant barrier. Notably, four reproductive females have been killed on Highway 41 over the last three years, three of those were within Yosemite National Park. The death of a mother fisher during spring-summer also results in the death of dependent kits, which cannot survive on their own until September.

Question: Were some of your captures using the recalled drugs successful?

Answer: Yes, we purchased a large supply of ketamine in December 2007, and used vials from this purchase for all of our captures up until we learned of the recall. So, we had many successful captures using ketamine from the lot that was eventually recalled. It may have been

that there was just a single vial in the batch that had the problem, which we were using when the two animals that experienced the adverse reactions were exposed to. As a result, for every capture we now track the individual vial of ketamine that was used for immobilizations.

VI. Current Year Data on Management Indicators for Key Watersheds: Rick Sweitzer gave a powerpoint presentation titled “The SNAMP Fisher Study: Indicators for Fisher Management” which is posted on the website: <http://snamp.cnr.berkeley.edu/teams/fisher>. The team has proposed the following indicators: occupancy in key watersheds, adult female survival rate and population size in key watersheds. Occupancy in the key watersheds was 61%, 54%, and 58% in 2007-8, 2008-9 and 2009-110 respectively. Overall adult female survival was 83.6% (higher than the 77.6% in the Kings River study). Population consisted of 8.5 adults using the key watersheds area in year two and 7.1 adults in year three.

Question: What do we know about the home range size of bobcat? From DNA swabs can we tell if more than one bobcat is responsible for the many fisher killings?

Answer: Not much is known about bobcat ecology in California, including home range sizes. DNA analyses have determined that there are at least five different bobcat phenotypes among the fishers that were known killed by bobcats, and it is possible to determine the sex of the bobcat as well. We do know that one bobcat was responsible for two different predation events on SNAMP radiocollared fisher, and possible a 3rd.

Question: Is there a relationship between bobcat detection and bobcat mortality?

Answer: We can track bobcat detections using our camera survey/stations. Although we have documented bobcat detections across a large part of the study area, the bobcat predation events for radiocollared fishers have not been not limited only to areas where we have had bobcat detections.

Question: Can you estimate the population of bobcats and mountain lions in the area?

Answer: It is very hard to know but perhaps 15 to 20 bobcats and five or six lions. In late winter of this year, Greta Wengert spent about 1 month attempting to trap bobcats in the SNAMP Study Area, so that several bobcats could be radiocollared. Unfortunately, the trapping was not successful, but we are hoping to try again later this fall.

Question: Are you getting pictures of lions or other predators near den trees with den cameras?

Answer: Yes, we have had photos of two mountain lions at one of our fisher den trees. Importantly, however, there had also been a large group of mule deer passing through the camera area the day before. Because of this, I think the mountain lions were there investigating the mule deer scent and not attempting to kill the denning female fisher.

Question: Are predation events within 50% fixed-kernel home range or outside?

Answer: Yes, female fisher F31 was killed by a bobcat within her 50% core use den season contour. Not all bobcat predation occurs during the den season, however, and more detailed analyses of bobcat predation within fisher home ranges will be done soon.

Question: Would you care to make any management recommendations regarding the heavy bobcat predation? Is there any evidence that our bobcat numbers might be inflated due to historic management decisions such as large scale clear cutting? Is there and evidence of increased predation in these open areas?

Answer: No, not at this time. Not enough is known about the bobcat. Limited efforts to capture and collar them in the study area have not yet been successful.

VII. GPS radio collar technology: Rick Sweitzer went over his presentation titled “Overview of GPS Radiocollar Technology & Pacific Fishers” posted at <http://snamp.cnr.berkeley.edu/teams/fisher>. Rick has found that the GPS collars are useful but cannot fully replace VHF radiocollars, especially for tracking survival. So far the GPS collars have not been able to consistently fix locations in forest areas with high canopy cover, which could bias the information for analysis of patterns of habitat use. The GPS radiocollars are still a bit too heavy and bulky for use on female fishers. Also, the GPS battery life is much shorter than the normal VHF collars we use on most of our fishers, which requires recapturing animals more frequently. When the GPS collars work well they provide many location readings we cannot get any other way, which allows the team to identify location clusters. It is very likely that a good number of location clusters represent fishers at resting sites (often large trees/snags).

Question: Is there a pattern to the loss of GPS signal? Is there any pattern between lost signal and mobility of animal?

Answer: Initial indications suggests that loss of GPS signals can occur both when animals begin moving, as well as when they move into high canopy, or tree cavities.

Question: Have you recovered failed GPS collars to know why they fail?

Answer: Yes, water is often an issue through the small USB port used to program the collar. Some collars had a short in them from the manufacturing process. The collars do retain location records in memory when they fail, which prevents complete loss of data.

Question: Within a 12 hour cycle how many resting clusters does the GPS collar provide?

Answer: It tends to be one. This may enable the team to understand how many resting structures a fisher needs in a day and how many need to be present with a home range. Rest and den trees tend to be large, decadent trees with mistletoe ledges. We do have good evidence that resting trees are reused.

Question: Have you done any field visits to investigate clusters?

Answer: Not yet, but this is planned for the near future.

Question: Will you be able to apply resting site information to behavior patterns?

Answer: Yes, within key watersheds where there is LiDAR data they will be able to quantify conditions that fisher prefer.

Question: In three years of pre-treatment research, have you seen that fisher spend more time in young stands, brush fields or any other particular feature? Are any patterns developing?

Answer: What we do see is that the Conservation Biology Institute (CBI) model for suitable fisher habitat is quite good. They need lots of biomass and big trees. Our data agrees with that.

Question: The whole purpose of baseline information is to prepare for response to treatments at the project site, but from what you have so far are there any key observations that would have value to share now with USFS land managers, to help them understand why fisher use some areas and not others?

Answer: No, none of planned treatments the SNAMP study is designed to study have been applied, and pre to post treatment analyses are not yet possible. We have amassed a large body of data on fisher biology, including locations of den trees. Some of these data have been shared with the Forest Service as part of their need for the best available data for management.

Question: Do survival rates of pretreatment data alarm you?

Answer: It is evident that basic survival is a challenge, especially when disease has occurred in the area. Last year we had what appeared to be high levels of mortality linked to an outbreak of canine distemper in the area. Fortunately, the disease didn't impact animals in the Sugar Pine area, otherwise the population might have been put at significant risk. The good news is that the population seems to be holding steady this year.

Question: For adaptive management, do you have an idea of the type of threshold or rate of change that might cause concern?

Answer: No, not yet. Before last year, the team might have said a 15 to 20% reduction in population. However, that happened in the project's second year with a large die off in the spring but the population bounced back in year three.

VIII. Orphaned Fisher Kits: Rick Sweitzer gave a power point presentation on the status of the five fisher kits rescued by the SNAMP team in late April-early May 2010. Three were rescued near Central Camp and two more a few days later when their mother was hit by a car on Highway 41 near Fish Camp. There have been other kit rescues in the past. The Kings River project rescued one male kit that was raised in a pen near Shaver and survived about 3 months in the wild before being killed by a predator. The Hoopa Study in northwestern California rescued and raised a female kit. This female was radiocollared and released, and then tracked for about 4 months before her collar fell off.

One of the five fisher kits the SNAMP Fisher Team rescued died after developing a bladder blockage and urinary tract infection. The four surviving kits are being pen reared under the care of a wildlife rehabilitation organization based out of Fresno. The pens are located on a private property near Oakhurst, where they are being fed dead turkey chicks, venison, chicken and mice. The animals are now being trained to kill live prey, and it is hoped that they will have learned some basic hunting skills and how to kill live squirrels before they are released in mid September. The animals have been given 2 shots of a 3 shot regimen of pre-exposure distemper vaccine, and already have pit tag inserted under the skin for permanent identification. The plan is that they will be immobilized by veterinarians from the California Department of Fish and

Game Wildlife Investigations Lab for surgical insertion of implant radiotransmitters in late August. At that time they will be given their final CDV shot. It has not yet been determined precisely where the 4 kits will be released, or even if they will all be released back into the wild. A number of possible areas for release of the fisher kits have been proposed to the Southern Sierra Nevada Fisher Working Group and the Department of Fish and Game, which are being evaluated for conflicts with other studies prior to reaching a final determination on where to release them.

Question: Should areas north of Yosemite at the limits of their northern range be considered?

Answer: Yes, there has been suggestions from several biologists that the fisher kits be released in Yosemite NP north of the Merced River, or in the Stanislaus NF (also north of the Merced River). These ideas for possible release are under active consideration.

IX. Discussion/ Question and Answer/ Next Steps:

Fisher research coordination: The Southern Sierra Nevada Fisher Working group is a small group of active fisher researchers that has formed to share information on fisher ecology and to chart future plans. The group met the day before this Fisher IT meeting to work on and discuss a number of issues such as what to do with orphaned fisher kits. The orphaned fisher kits are a high priority because they will need to be released in the early fall; this means we have about two months to get the details figured out. They are just scratching the surface of coordination issues at this point and have a lot to do.

Fisher research meta-analysis: Meta-analysis involves combining data and results from several studies on the same question to get a broader answer. The maintenance of similar scientific processes is important to allow for meta-analysis later. SNAMP owl and forest teams have been conducting meta-analysis efforts. There has been support from the Pacific Southwest Research station and the national forest system for meta-analysis of fire research.

Rick Sweitzer and Craig Thompson from Pacific Southwest Research's King's River Fisher Study are pooling demographic data for population modeling. SNAMP Fisher and the Kings River Fisher Study have data to make estimates of population, survival and fecundity. There is also good information which may allow understanding of source and sink locations. When data from both projects are combined, we will be able to make important inferences on the health and long term persistence probability of fishers in the southern Sierra Nevada. Meta-analysis applied to data from several fisher studies in California will happen, it is just a matter of timing and support. Between SNAMP and Kings River and the larger scale work that Richard Truex is doing, researchers are approaching the ability to extrapolate and develop a clearinghouse of fisher information.

Adaptive management: The study design parameters set up for SNAMP called for the UC Science Team not to affect the treatment design of the USFS forest fuels reduction projects. However, information sharing is an essential part of SNAMP so locations of den trees discovered by UC were shared with the Forest Service. This affected the Sugar Pine treatments since the Forest Service is required to use the best available data. There was concern expressed about the ability of UC researchers to contribute their knowledge to fisher management practices in the

Sierra because of the larger study area involved in the fisher project. The fisher study area is much larger than the SNAMP control and treatment watersheds in order to get a large enough population of animals. SNAMP's study design forbids UC scientists from commenting on Forest Service management practices in SNAMP treatment areas until after the project is completed. There was a concern that this might tie up the SNAMP team's ability to suggest best practices in many areas for eight years.

Suggested Next Steps:

- Combine den information and resting location clusters with LiDAR and vegetation information over the next year.
- The Southern Sierra Working Fisher Group will work to provide kit handling recommendation by Sept.
- Pursue road kill signs for fisher along Highway41 within Yosemite National park.

Meeting Evaluation: There were many thanks for all the great work and information. The location and facility were good. The later start time so people could travel and having lunch so people could stay were appreciated. It would be good to have more breaks and time to interact with each other. Also, try to embed discussion time earlier because some people need to leave after lunch.