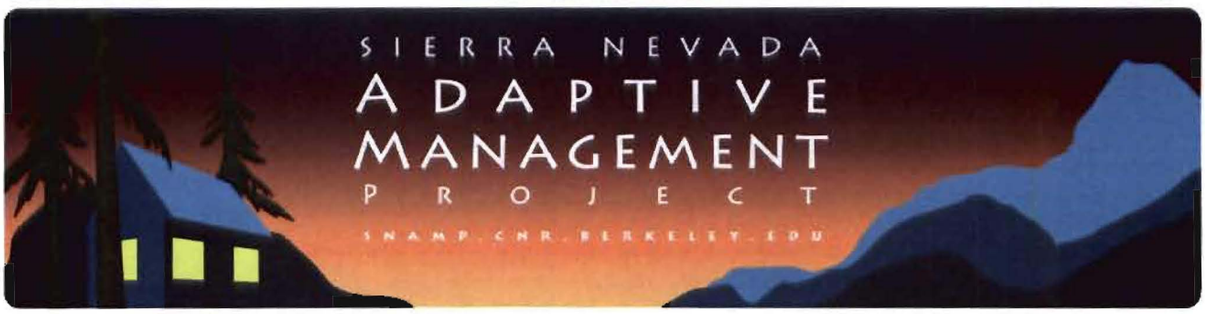
2008 Spring Edition | Forest & Fire Team | Vol. 1 No. 2



A Newsletter from the SNAMP Public Participation Science Team - Volume 1, Number 2 February 2008

SNAMP Highlight: Fire & Forest Ecosystem Health Team Field Season

The SNAMP fire and forest health team has finished their first summer of field work. Gary Roller, the research forester that managed the Sagehen project, is now leading a field crew of six undergraduates and recently graduated students to collect data in the two SNAMP sites (Foresthill in the north and Sugar Pine in the south). Crews are collecting information on forest structure and composition, shrubs and fuels. The first two years of the project (2007 and 2008) are focused on collecting pre-treatment data, with treatments beginning in 2010. Initial results were presented at the Nov. '07 SNAMP quarterly meeting, and are summarized on page 2.

As an example of how the multiple SNAMP teams will collaborate, the fire and forest health team has also completed a more extensive fire history and age structure survey – coring every tree and completing fire scar analysis – within two subwatersheds of the Oakhurst study area. These same subwatersheds will be monitored by the water quality team to better understand how fuel treatments impact water quality.

Brandon Collins, a post-doctoral researcher working with Scott Stephens on the project, notes that this effort is particularly significant because of the large spatial scale: previous research focused on understanding the impacts of fuel treatments across tens of hectares, while SNAMP will cover an area of thousands of hectares. Researchers hope that this focus on reducing fire hazard across the landscape, as well as the emphasis on an adaptive management approach that integrates important ecosystem variables and public participation, will provide resource agencies with an effective means for addressing large scale forest/fire management throughout the Sierra Nevada. – *This section written by Faith Kearns, Academic Coordinator of the UC Berkeley Center for Fire Research and Outreach: http://firecenter.berkeley.edu.*

the SIERRA NEVADA *Adaptive Management Project* newsletter

Welcome to our second SNAMP newsletter! The previous newsletter had information on all the teams, some great pictures of our sites, and some background information. To read that newsletter and for more information, please visit our project website at: http://snamp.cnr.berkeley.edu. In this and our upcoming newsletters, we will highlight the work of the individual science teams. This issue focuses on the Fire and Forest Ecosystem Health Science Team.

The SNAMP Science Teams

The science teams are made up of researchers from the University of California Berkeley, the University of California Merced, University of California Cooperative Extension, and the University of Minnesota. The science teams study fire and forest health, wildlife (focusing on fisher and spotted owl), water, and public participation. All science teams are supported by spatial analysis and GIS.

Fire and Forest Ecosystem Health Team. The Fire and Forest Health Team will investigate effects of strategic fuel treatments on fire behavior, tree morbidity and mortality, and forest health. Dr. Scott Stephens and Dr. John Battles at UC Berkeley lead the research/monitoring activities. Gary Roller, M.S. is the project manager for the team, and Post-Docs Dr. Brandon Collins and Dr. Adrian Das at UC Berkeley are also a part of the team.

Submitted by Susie Kocher #1

at Board Hearing of 1/27/09

1/27/09 #1 Susie Kocher

Recent Field Results

The Fire and Forest Ecosystem Health Team reported on their summer/fall 2007 field data at the last SNAMP quarterly public meeting in Auburn CA in November 2007. All results can be found on the SNAMP website, and they are summarized here. SNAMP field plots (1/20th of a hectare) are established at 500m and 250m grids in both the treatment and control watersheds in each site. There are 200 plots in the Foresthill site; 115 plots in the Sugar Pine site; and 122 plots in the Cedar Valley site (which is scheduled for immediate treatment). The average canopy cover across the plots is mixed. In the Foresthill site, overstory species include (in order of dominance) white fir (*Abies concolor*), Douglas fir (*Pseudotsuga menziesii*), sugar pine (*Pinus lambertiana*), followed by incense cedar (*Calocedrus decurrens*), California red fir (*Abies magnifica*) and black oak (*Quercus kelloggii*). Overall canopy cover in the Foresthill site is 51% and the average basal area (the area of the cross section of all trees in a stand) is 178 ft²/acre. In the Sugar Pine site, overstory species include white fir, ponderosa pine, black oak, sugar pine, with small amounts of the live oaks, incense cedar, and California red fir. Overall canopy cover is 64% in the Sugar Pine site, and average basal area is 234 ft²/acre. We highlight five of these tree species below. Shrub cover in our sites is also mixed, and includes a range of manzanita species (*Arctostaphylos nevadensis* and *Acrctostaphylos patula*), chinquapin (*Chrysolepis sempervirens*), shrub oaks (*Quercus vaccinifolia*), tan oaks (*Lithocarpus densiflorus*), snowberry (*Symphoricarpos mollis*), ribes shrubs (like currant, gooseberry, etc.), mountain misery (*Chamaebatia foliolosa*) and whitethorn (*Ceanothus cordalatus*).

Selected Trees from our Sites

Sugar Pine

(*Pinus lambertiana*; family Pinaceae). This is the largest species of pine, growing 100 - 210 ft in height, 3 - 7 ft in diameter; at maturity a tall, straight-trunked tree with relatively few long, horizontal branches forming a wide, flat crown. *Bark*: 2 - 4 in thick, vertically ridged with a surface of loose purple or cinnamon scales. *Needles*: grow in fives, 2 - 3.5 in long, rigid, sharp pointed. *Cones*: Sugar Pine has the longest cones of any conifer; cones hang from stalks at ends of higher branches, 13 - 18 in long and 4 - 6 in diameter when open. *Distribution:* Mainly in mixed Conifer Belt on west slope at 3,500 - 6,500 ft (northern Sierra) and 4,500 - 9,000 ft (southern Sierra).

Ponderosa Pine

(*Pinus ponderosa; family* Pinaceae). 60 -225 ft high to 8 ft diameter. *Bark*: on older trees, 2 - 4 in thick, yellowish or reddish tan, divided into large scaly-surfaced plates. The bark has a smell similar to vanilla. *Needles:* grow in threes, 5 - 10 in, persisting about three years. *Cones:* near ends of branches, 2 - 5 in, by 2.75 - 3.5 in, reddish brown. *Distribution:* On west slope of Sierra Nevada at 1,500 - 5,000 ft (north), 3,000 - 6,000 ft (center), and 5,000 - 7,000 ft (south); the trees grow as scattered individuals and patches.

California Black Oak

(*Quercus kelloggii;* family Fagaceae). Deciduous tree, typically growing from 30 - 80 ft high, 1 - 4.5 ft diameter, with a broad, rounded crown. *Bark:* smooth and gray on young trees, becoming dark and narrowly fissured on older trees. *Leaves:* 4 - 10 in by 2.5 - 6 in, deeply and irregularly lobed, each lobe ending in one to three (or more) course teeth. *Acorn:* 1 - 1.5 in by .75 in. deep in large thin-scaled cup, maturing in second season. *Distribution:* common on west slope in Mixed Conifer Belt at 3,000 - 7,500 ft; on slopes and in valleys on good to rocky soil; on east slope in the far northern Sierra, and at scattered sites in the southern Sierra. California Black oak occupies more total area in California than any other hardwood species and is important for food and cover for many species.

White Fir

(*Abies concolor;* family Pinaceae). 60 - 200 ft high, 4 ft diameter, crown is narrowly cylindrical or spire-like. *Bark:* on young trees is smooth, whitish and on old trees is 2 - 4 in thick broken into rounded vertical ridges, gray or drab brown branches in whorls around trunk. *Needles:* .5 - 2.5 in flat, often grooved on upper surface. *Cones:* nearly cylindric, 2 - 5 in by 1 - 1.75 in, erect on upper branches, cone scales fan shaped, wider than long. *Distribution:* Mixed Conifer and Upper Montane Belts along length of the Sierra; widespread and on both slopes in the northern Sierra but in narrow, fragmented belt on the west slope of southern Sierra; 2,500 to 7,400 ft in north and 5,000 - 8,000 ft in south; favors moist and shaded sites.

Douglas Fir

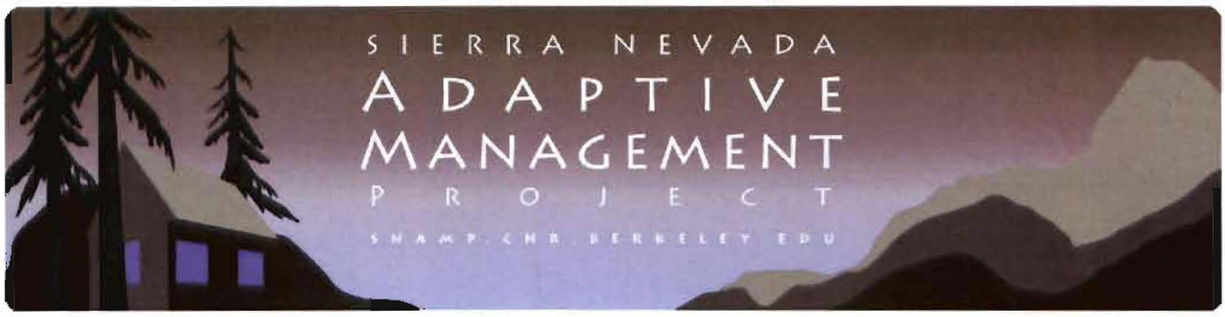
(*Pseudotsuga menzeiesii;* family Pinaceae). 70 - 110 ft high or more, 6 ft or larger diameter. A straight trunked tree that in some parts of its range can grow to over 300 ft high and 14 ft in diameter. *Bark*: on young tress is thin, smooth, ashy born; on old trees it is thick, soft dark brown, with broad ridges and deep furrows. *Needles:* .5 - 1.5 in long and narrow. *Cones:* mature in first fall 1.75 - 3.0 in by 1.25 to 1.75 in when open, red brown. *Distribution:* Mixed Conifer Belt of the west slope of the Sierra Nevada to San Joaquin River; at 2,000 - 7,000 ft; mainly on shaded slopes and canyons.

All tree information from Storer, et al. 2004. Sierra Nevada Natural History. UC Press.

Newsletter Photographs courtesy of Flickr Creative Commons.

SNAMP Newsletter created by Maggi Kelly

2008 FALL EDITION OWL SCIENCE TEAM VOL. 2 NO. 2



A Newsletter from the SNAMP Public Participation Science Team - Volume 2, Number 2; October 2008

the SIERRA NEVADA Adaptive Management Project newsletter

Welcome to our newest SNAMP newsletter! To read previous newsletters and for more information, please visit our project website at: http://snamp.cnr.berkeley.edu. This issue focuses on the Owl Science Team.

THE SNAMP SCIENCE TEAMS

How do forest vegetation treatments to reduce wildfire risk affect fire behaviors, wildlife, forest health and water? Forests throughout the Sierra Nevada are at risk from severe wildfires. The USDA National Forest Service's 2004 Sierra Nevada Forest Plan Amendment calls for managing the forest using the best available information to protect forest resources and homes. Vegetation management treatments are planned or being conducted at many sites in the Sierra Nevada where fire risk is high, and a team of university scientists has agreed to act as an independent third party, monitoring the effects of vegetation management treatments in two locations. The science teams are made up of researchers from the University of California Berkeley, the University of California Merced, University of California Cooperative Extension, and the University of Minnesota. The science teams study fire and forest health, wildlife (focusing on fisher and spotted owl), water, and public participation. All science teams are supported by spatial analysis and GIS.

OWL TEAM PEOPLE. Dr. Rocky J. Gutiérrez at the University of Minnesota is the Lead Investigator for the Spotted Owl research and monitoring activities. Doug Tempel, a PhD candidate at the University of Minnesota, is the Project Leader for the owl research. Sheila Whitmore is the Assistant Project Leader for the owl research.

OWL TEAM PLAN. California spotted owls are habitat specialists: they select habitats that have larger trees, higher canopy cover (percent of area directly beneath trees) and more vertical structure (trees of various heights) than other available habitats. They nest in mature trees (see the example on the following page), and hunt from the vantage point of large trees. High intensity fire that leaves very few

SNAMP HIGHLIGHT: THE CALIFORNIA SPOTTED OWL

The California Spotted Owl (*Strix occidentalis*) is an uncommon resident in the Mixed Conifer belt of the west slope of the Sierra Nevada. It is a State and Federal Species of Special Concern. It is found mainly in mature conifer forests, but also in oak woodlands. They primarily nest in the cavities or broken tops of large trees. CA spotted owls are generally nonmigratory, remaining within the same home ranges year round. However, in the Sierra Nevada, some individuals migrate downslope to winter ranges. They hunt primarily by selecting an elevated perch, detecting prey by sight or sound, and swooping from the perch to

capture the prey with their talons. They forage primarily at night, but have been observed hunting during the day, especially while raising young. Spotted owls prey mainly on northern flying squirrels and dusky-footed woodrats. Other prey species include gophers, mice, squirrels, shrews, moles, bats, birds, frogs, lizards and insects.

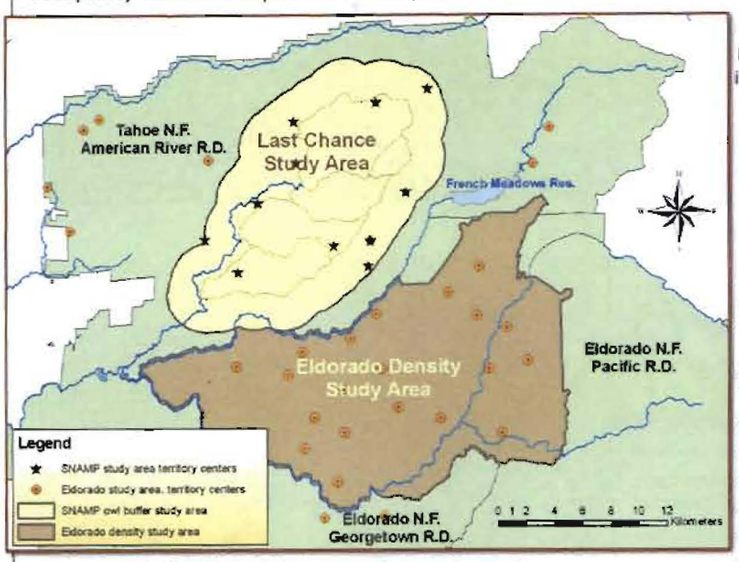
Owl form: About 19 inches in length with a 40 in wing span, a rounded head, no ear tufts, eyes dark, bill pale yellow, plumage soft brown with many white spots in crosswise row. Above is an adult with two young, photographed by owl SNAMP team member Sheila Whitmore. -- *This section taken from Storer et al, 2004. Sierra Nevada Natural History. CA Natural History Guide Series No. 73. Univ of CA Press.*

Submitted by Susie Kocher #1

at Board Hearing of 1/27/09

1/27/09 #1 Susie Kocher

trees alive has a negative impact on owl habitat, but forest fuel reduction treatments remove canopy cover and vertical structure of the trees. Thus, we need to understand how forest treatments might affect California spotted owls in the Sierra Nevada. To this end, we will assess the impacts of forest fuel treatments on owl territory, occupancy rates and reproductive output.



Above: our study area in the Tahoe and Eldorado National Forests.
Below: The owl banding process..

Right: the dead tree is a spotted owl nest tree in the Last Chance study area.

Owl Field Plan

Study Area:

The Owl SNAMP study area consists of three components (see map at left):

(1) The Last Chance study area, which incorporates the core study area (i.e. the area being used by the other science teams), plus a 1.5-mile buffer zone around the core study area.

(2) The Eldorado density study area, which is the site of Dr. Gutiérrez's long-term spotted owl population study that began in 1986.

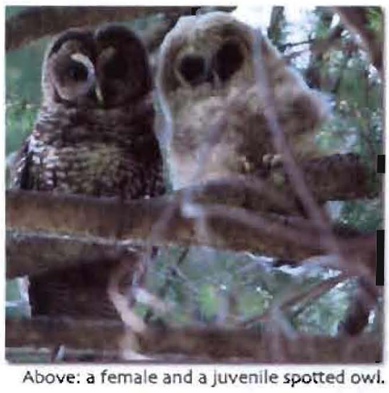
(3) The Eldorado regional study area, which consists of owl territories outside of the density study area that have been surveyed since 1998. We included the Eldorado study area to obtain sufficient sample sizes for our SNAMP research.

Owl Banding:

We are surveying the entire Owl study area for territorial owls. When owls are detected, we attempt to "color band" each owl, monitor its breeding status, and recapture the owl in subsequent years by re-sighting its color band. This provides the information needed to assess territory occupancy and reproductive output. Our prior experience on the Eldorado study area suggests that banding has no short-term or long-term negative effect on owls. The banding process is illustrated above.

Analysis and Modeling:

Before analyzing the owl data, we will construct a set of predictive models containing important variables that may affect territory occupancy or reproductive output. Each predictive model is essentially a stated hypothesis. For example, we could hypothesize that the more treatments there are in an area, the fewer owls there will be in that area. Development of the candidate set of models offers an opportunity for stakeholder input through participation in Owl- and SNAMP-related public meetings (see our website for more information). Using well-tested model selection techniques, we can identify the best model(s) from the candidate set of models.



Above: a female and a juvenile spotted owl.

Why this research is critical:

Under the guidelines of the 2004 Sierra Nevada Framework, forest fuel treatments are proposed for widespread implementation on U.S. National Forests. Our research will provide information to assess the impact of forest fuel treatments on owl populations.

SNAMP Newsletter created by Maggi Kelly & Doug Tempel
Newsletter photographs courtesy of the SNAMP Owl Science Te