Sierra Nevada Forest Plan Monitoring Accomplishment Report for 2009

Sierra Nevada Forest Plan Implementation

In 2009 the Forest Service, Pacific Southwest Region, which includes California, Hawaii, Guam, and the Trust Territories of the Pacific Islands, continued several long term monitoring studies in the Sierra Nevada. The studies focus on developing scientifically valid assessments of the status of several species and increasing understanding of how forest and rangeland management under direction in the Sierra Nevada Forest Plan Amendment Record of Decision 2004 (SNFPA ROD) may affect species, ecosystems, and processes.

Contents

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Websites that may be of interest:

www.fs.fed.us/r5/snfpa
www.fs.fed.us/psw
http://snamp.cnr.berkeley.edu

California Spotted Owl – Eldorado Study Area

The Eldorado spotted owl study has been a long-term monitoring project that began in 1986, which makes it the longest extant study of California spotted owls. Our study methods are consistent with all other spotted owl population studies; therefore, the results are directly comparable in meta-analysis (Blakesley et al. *in press*). In addition to providing critical information about the status of the owl population in the central Sierra Nevada, our study facilitates land management planning by providing information about the location and reproductive activities of owls inhabiting USFS lands. The Eldorado study has also become essential to the success of the Sierra Nevada Adaptive Management Project (SNAMP), a project designed to assess the effects of USFS forest fuels treatments under the 2004 SNFPA ROD.

How monitoring information could be used by USFS

The SNAMP project maintains a neutrality agreement among participating scientists in order to maintain the integrity of the SNAMP research design; this neutrality extends to comments, opinions, or application of preliminary results to the SNAMP projects. Thus, we cannot offer specific suggestions about the location, design, or execution of SPLATs or other activities under the ROD on public land managed by the USFS within either the Eldorado Study Area or the SNAMP Owl Study Area. *[Editor's note: The neutrality agreement is a SNAMP governance policy of the University of California and its cooperating universities. Although merging the Eldorado study and SNAMP is a good scientific decision, they remain separate projects with different objectives, agreements, and deliverables.]* However, we remain committed to advising the USFS on general owl issues, providing training, and interpreting research results (see "technology transfer" below). To that end we have provided the USFS with monthly and annual summary data of owl locations, their reproductive and social status, and our banding activity. In addition, we held a general training workshop about owl habitat use and ecology that would facilitate the USFS in their development of plans under the ROD (see technology transfer below). We also have not provided explicit advice on any specific project during these field trips due to our obligations as neutral, third-party SNAMP scientists. During this and future field workshops, biologists can ask specific questions about our research and any inferences we have drawn from it to increase their understanding of owl biology and our work.

Of particular interest, last year we conducted a simple analysis of owl nest locations found over the 23-year Eldorado owl study. The genesis of this analysis was stakeholder comments expressed at SNAMP meetings over the past couple of years asserting that owl nesting data from private land showed that owls nest next to edges of forest stands. Such a finding, if generalized, has important implications, so we assessed this hypothesis with respect to Eldorado data and found that no such relationship exists. In fact, it appears that owls on public land in the central Sierra Nevada nest further from edges than expected by chance (Phillips et al. *in press*). These results suggest that forest treatments that do not leave hard edges would be the preferred prescription with respect to owls. It also suggests that contiguous areas of core nesting habitat for owls, as suggested by CASPO (Verner 1992) and prescribed in the 2004 ROD, are defensible management prescriptions. Thus, we concluded that either fragmentation or modifying existing habitat to create distinct edges to enhance nesting habitat configuration may not be warranted.

Our 2009 analysis of owl vital rates was similar to that reported in previous years. First, reproduction is variable among years and likely affected by temporal processes. Second, survival also is variable but much less so than reproduction, and we noted no substantial deviations from typical survival patterns in the past year. Third, the finite rate of population change (λ) indicated that the population has been stable over the course of our study. However, we noted a high proportion of territories occupied by subadult males in contrast to previous years. This may be a reflection of the high natural mortality observed in 2007 and the subsequent reoccupation of vacant territories by young birds.

Currently, Douglas Tempel is evaluating the relationship between occupancy and λ for evaluating owl population trends on the Eldorado study area as part of his doctoral dissertation. We have proposed incorporating occupancy analysis into the Eldorado and SNAMP owl studies because it may provide additional, and perhaps more broad, application for USFS monitoring of spotted owls throughout the Sierra Nevada.

Technology Transfer

We conducted three field trips, a workshop, a research poster session, and participated in two meetings that allowed us to exchange information with stakeholders and other scientists in 2009. Most of these activities occurred because of our involvement with SNAMP. We include these events as relevant to the Eldorado study because it became necessary to include Eldorado owls in the SNAMP study to increase the sample size of treatment owls (i.e., there were insufficient owls on the SNAMP study area to provide reliable information of SPLAT effects on owls).

We held three one-day field trips to familiarize the attendees with our study and research protocols and to provide our insights on owl habitat selection. Attendees on these trips included Foresthill high school students, other interested members of the public, USFS personnel from the American River Ranger District (Tahoe NF), and the USFS biologist and her technicians from the Georgetown Ranger District (Eldorado NF). Two of these trips assisted USFS personnel with planning, while maintaining our required neutrality under SNAMP.

We held a SNAMP public participation workshop for stakeholders interested in spotted owl population viability. Stakeholders at this meeting were from the USFS, USFWS, private land owners, and concerned citizens. During this workshop we presented information from our recently completed radio-telemetry study of owls in territories where SPLATs occurred, and we discussed plausible hypotheses about the effects of SPLATs on owls.

We presented a poster at a meeting of foresters held at Blodgett Forest during the winter of 2009. This poster session provided an opportunity for technology and information transfer to stakeholders.

Plans for 2010

We plan to continue monitoring owls for survival and reproduction during the 2010 field season. We are also measuring vegetation characteristics at sites where SPLATs will be implemented and we will re-measure those sites once treatment has been completed. We anticipate that treatment on some sites will commence in 2010 and be completed in 2011. We plan to hold another spotted owl workshop

(probably in 2011) to discuss techniques that the USFS can use to monitor owls on other project areas. We also plan to present another poster session for forests at Blodgett during winter 2011.

Publications

Blakesley, J. A., M. E. Seamans, M. M. Conner, A. B. Franklin, G. C. White, R. J. Gutiérrez, J. E. Hines, J. D. Nichols, T. E. Munton, D. W. H. Shaw, J. J. Keane, G. N. Steger, and T. L. McDonald. *In press.* Population dynamics of spotted owls in the Sierra Nevada, California. Wildlife Monographs (submitted in 2008).

Chatfield, A. H., R. J. Gutiérrez, and M. E. Seamans. Nesting and roosting habitat of a California spotted owl population: resource selection at a landscape scale. Journal of Wildlife Management (submitted in 2009 and reviewed; revision in process).

MacKenzie, D. I., J. D. Nichols, M. E. Seamans, and R. J. Gutiérrez. 2009. Modeling species occurrence dynamics with multiple states and imperfect detection. Ecology 90:823-835.

Phillips, C. E., D. J. Tempel, and R. J. Gutiérrez. *In press.* Do California spotted owls select nest trees close to forest edges? Journal of Raptor Research (submitted in 2009, reviewed and revised; anticipate acceptance and publication in late 2010).

Williams, P. J., R. J. Gutiérrez, and S. A. Whitmore. *In press.* Home range and habitat selection of spotted owls in the central Sierra Nevada. Journal of Wildlife Management (submitted in 2009, reviewed, and revised; anticipate acceptance and publication in 2010).

Willow Flycatcher Demography Study

The willow flycatcher demography study is scheduled to be completed in 2010. In anticipation of a final report after the 2010 field season, an annual report was not prepared for 2009. Results of the 2009 field season generally continue the results reported for 2008.

Fisher Status and Trend Monitoring

The fisher status and trend monitoring study was initiated in 2002. In 2009, fisher monitoring again focused on three geographic areas (Figure 1). Genotypes of hair collected from 127 fishers during 2006-2009 were analyzed to identify genetic population structure using cluster analyses, implemented in the programs GENELAND and STRUCTURE. We identified three primary genetic clusters roughly corresponding to areas north of the Kings River, between the Kings River and Middle Fork of the Tule River, and the southern Sequoia National Forest and Kern Plateau (Figure 2) and found low-moderate levels of gene flow among all three clusters. Results of the 2009 field season generally conform to the results reported for 2008 with no dramatic change in fisher occupancy.

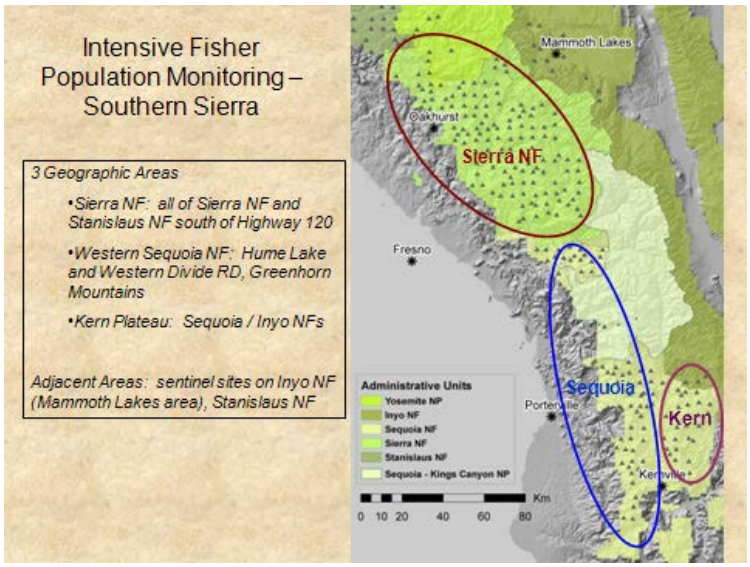

Figure 1. Location of southern Sierra fisher occupancy monitoring sites in three geographic areas.

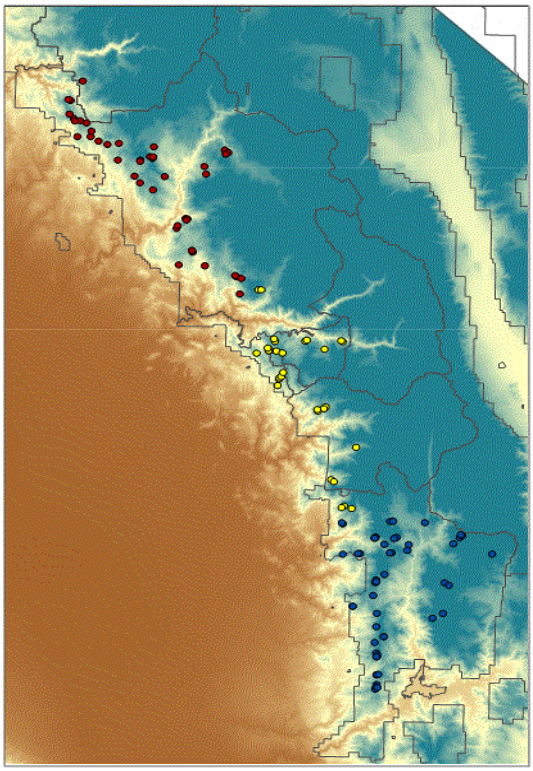

Figure 2. Location of three genetic clusters within the southern Sierra Nevada fisher population: North of Kings River (Red); between Kings River and the Middle Fork of Tule (Yellow); and Southern Sequoia NF and Kern Plateau (Blue).

At the end of the 2009 field season (the eighth year), we decided to transition to a new design, partially due to safety concerns for field workers and because detection methods have evolved since the study was initiated. Thus, 2002-2009 constitutes phase I of this study. Analysis is ongoing, and we anticipate a

final phase I report and several publications. Phase II will commence in 2011, with 2010 as a transition year to test new methods and design and to facilitate completion of phase I results.

Amphibian Status and Trend Monitoring

The Yosemite toad is endemic to the Sierra Nevada, and the majority of the mountain yellow-legged frog's range falls within the Sierra Nevada. Populations of both species have declined. Assessments from the mid-1990s found that both the Yosemite toad and mountain yellow-legged frog had disappeared from more than half the sites where they were known to occur historically (Jennings 1996). A recent assessment suggests a decline of more than 93% for the mountain yellow-legged frog (Vredenburg et al. 2007). Current population sizes for both species are thought to be small relative to historic numbers. Both species are candidate species for listing as threatened or endangered by the United States Fish and Wildlife Service, California state species of special concern, and Forest Service sensitive species. In 2007, monitoring the Pacific chorus frog in montane meadows was added to the program's goals (USDA Forest Service 2007).

Yosemite toad male and female in amplexus during the spring breeding period. The male is lighter-colored than the female.

All three species are found in high elevation aquatic systems. The Yosemite toad is most commonly found in shallow, warm water areas including wet meadows, small ponds, shallow grassy areas adjacent to lakes, and slow-flowing streams. Because of its multi-year tadpole life stage, the mountain yellow-legged frog is most commonly found in larger, deeper lakes that do not freeze during the winter. The Pacific chorus frog is found in a variety of aquatic habitats including wet meadows, lakes, and ponds and is a management indicator species (MIS) for wet meadows.

In this long-term monitoring program, we quantify trends in amphibian population status and habitat quality across the range of each species in the Sierra Nevada (10 National Forests). The monitoring was designed to combine extensive components for all species and intensive Yosemite toad monitoring in one integrated design. Extensively, occupancy is monitored in small watersheds (2-4 km^2) throughout

the range of the species in the Sierra Nevada. An unequal probability sample was selected based on historical occupancy: most of our samples were from watersheds that were recently occupied (recent) and a smaller proportion from watersheds that were historically occupied (historic) or where occupancy was unknown (unknown). We assumed that if either Yosemite toad or mountain yellow-legged frog occurred in a watershed, the Pacific chorus frog probably did as well and defined the historical categories to be likely historically occupied and unknown. Within each watershed, all wet meadows and lakes and a sample of streams were surveyed. Intensively, more detailed abundance and habitat data were collected in two small watersheds for the Yosemite toad.

2009 Accomplishments

In 2009, for the extensive component, 80 watersheds were surveyed, completing the first monitoring cycle. Within these watersheds, 1537 lakes, ponds, meadows, and stream reaches were surveyed, and 1368 had available or potentially available aquatic habitat. All sample watersheds have now been surveyed at least once, and 20% of the sample has been surveyed at least six years. The original design called for this cycle to be completed in five years. At year five, we conducted a preliminary analysis and found that, because the sample size was small, precision was very poor. As a result, we decided that collecting the full sample was more important to improve the precision than beginning the second cycle with a small sample size.

For the intensive component of the monitoring program, we conducted mark-recapture surveys of breeding Yosemite toad males and egg mass counts during spring breeding in three meadows in each of two watersheds on the Stanislaus and Sierra NFs. However, repeat surveys for tadpoles and metamorphs to measure recruitment were conducted only in the Bull Creek watershed on the Sierra NF. These surveys were conducted in a collaborative study with the Sierra National Forest, PSW Research Station (Kings River Experimental Watershed study), and a UC Davis graduate student who is radio-tracking of adult toads.

Preliminary Monitoring Results

Results from the first cycle of monitoring provide information about status of the three species. Rangewide occupancy (percent of all watersheds occupied) differed for the three target species, the mountain yellow-legged frog, Yosemite toad, and Pacific chorus frog (Figure 3). Occupancy for the mountain yellow-legged frog was lowest. An estimated 47% of recent (where we expected to find the species because they had been observed there since 1990) watersheds were occupied by breeding and 63% were occupied by any life stage. For the Yosemite toad, an estimated 86% of recent watersheds were occupied by breeding and any life stage. Finally, occupancy for the Pacific chorus frog was high. An estimated 95% of likely historically occupied (observed since 1990) watersheds were occupied by both breeding and any life stage. Adult Yosemite toads and Pacific chorus frogs are not commonly found outside of breeding.

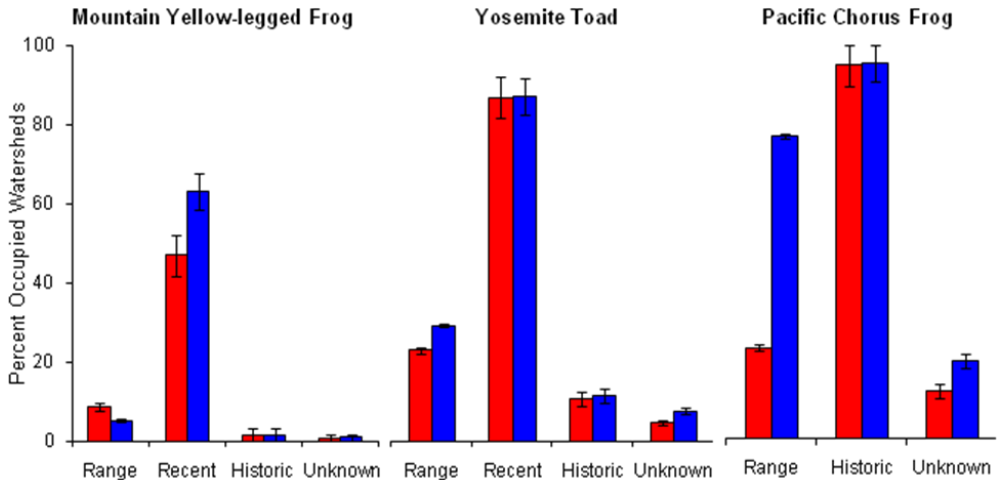

Figure 3. Percent of surveyed watersheds occupied by mountain yellow-legged frog, Yosemite toad, and Pacific chorus frog from 2002-2009 for two life stage categories and three historical occupancy categories (Range, Recent, Historic, Unknown). Red bars are occupancy by a breeding stage (egg, tadpole, or metamorph) and blue bars are occupancy by any life stage.

Ideally, abundance data would supplement the extensive occupancy data providing further insight into the species' status. However, collecting precise abundance data generally is not feasible at the scale of the species range. Nonetheless, because all life stages of mountain yellow-legged frog remain near water during the summer and are relatively easy to find, counts made during the extensive surveys provide an estimate of relative abundance. We found that mountain yellow-legged frog abundances are low: an estimated 57% of watersheds had only a few mountain yellow-legged frogs (<10 tadpoles and <10 adults or subadults), and only 9% had numbers of animals similar to historic levels.

For the Yosemite toad, intensive monitoring is designed to estimate numbers of breeding males and egg masses during spring breeding, the narrow window of time these life stages are reliably found. Estimates of adult males using mark-recapture models and egg mass counts for the two intensive watersheds suggest population sizes are small in these watersheds (Figure 4).

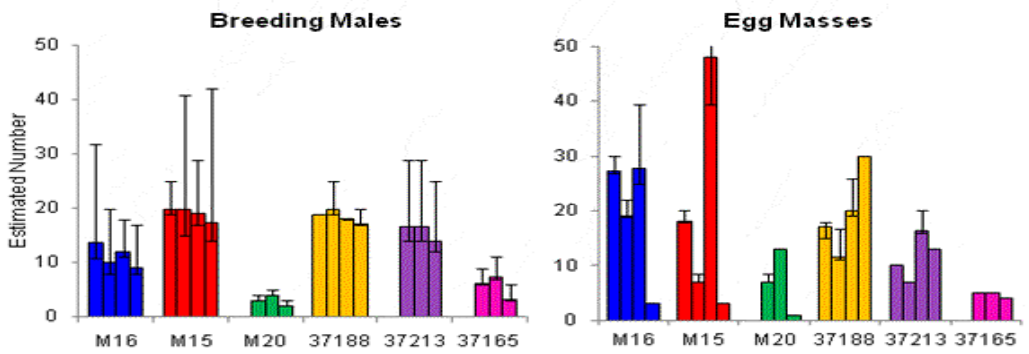

Figure 4. Yosemite toad adult male and egg mass abundance estimates in two intensive watersheds. Bull Creek (meadows M16, M15, M20) is on the Sierra National Forest and Highland Lakes (meadows 37188, 37213, 37165) is on the Stanislaus National Forest. Each group of bars (different color) represents a meadow and each bar within the meadow represents a year (2006-2009). Some meadows were not monitored in 2006. Overall, numbers of males and egg masses were small.

2010 Program of Work

Ultimately, the long term data from the monitoring program will help determine whether we are maintaining long-term viability of these species. Data collected during the next monitoring cycle, to be initiated in 2010, will address questions about trend.

The program objectives for fiscal year 2010 are to

- collect population data in watersheds surveyed annually,
- continue adult male and egg mass counts in the two Yosemite toad intensive basins,
- finalize the 5-year population status analysis,
- continue the habitat-relationship analysis,
- time permitting, begin compiling data for analyses of relationships between occupancy and management activities.

References

Jennings, M. R. 1996. Status of amphibians. Pages 921-944 *in* Sierra Nevada ecosystem project: final report to Congress. University of California, Davis.

USDA Forest Service. 2007. Sierra Nevada forests management indicator species amendment FEIS. Pacific Southwest Region, R5-MB-159, 410pp. http://www.fs.fed.us/r5/snfmisa/

Vredenburg, V.T. et al. 2007. Concordant molecular and phenotypic data delineate new taxonomy and conservation priorities for the endangered mountain yellow-legged frog. Journal of Zoology. 271:361-374.

Effects of Livestock Grazing on Yosemite Toads

The general concern driving this study is that Yosemite toad populations and their meadow breeding habitat are declining in part due to grazing in accordance with Riparian S&Gs 120 and 121 and that reduction in grazing intensity will halt or reverse that decline. This study is conducted by researchers from the University of California and the Pacific Southwest Research Station (PSW).

As described in the 2005 Study Plan, we initiated two complementary experiments to address these concerns. One experiment was a manipulation of meadow grazing management using three different fencing treatments proposed and implemented by the USFS (**Phase II**). This experiment was designed to specifically test for differential toad and habitat response to the three distinct meadow grazing treatments over time. The **Phase I** experiment was a longitudinal survey of toad occupancy across 24 meadows representing a gradient of meadow hydrologic conditions and ambient cattle grazing intensity. This survey was designed to determine associations among meadow scale grazing intensity, toad occupancy, and hydrologic condition within the context of allotment scale grazing management.

This report, like our 2008 report, focuses on results for 2006-2008 data from these two experiments (Phase I and Phase II). As proposed in the 2008 annual report, we scaled back in 2009 on meadow environmental and cattle utilization data collection. Phase I meadows were not sampled in 2009. The 2009 data will be included in the final report, to be completed in 2010.

Meadow grazing manipulation experiment (Phase II)

This experiment tested three grazing treatments:

- Grazing in accordance with Riparian S&Gs 120, 121 (2004 ROD) across the entire meadow (**GRZ** treatment);
- Exclusion of livestock from breeding (i.e., wet) areas within a meadow (S&G 53; **FBA** treatment); and
- No grazing within the meadow (**FWM** treatment)

Phase II field data collection by PSW continued to focus on quantifying toad populations and their habitat associations. We also continued work at two reference meadows in Yosemite National Park because long-term (>10 years) un-grazed reference meadows could not be found on the Stanislaus and Sierra National Forests. The same set of toad population data is collected at these reference meadows as in the Phase II meadows. Total grazing season herbaceous biomass production and utilization by cattle were measured across all Phase II meadows.

We consistently found high utilization (36-52%) outside fences in FBA treatment meadows. This treatment reduced the area of meadow available for grazing, concentrated cattle and thus annual utilization in the remaining areas of FBA treatment meadows.

At the meadow scale, Yosemite toad young of the year (YOY) density (Figure 5) and breeding pool occupancy (Figure 6) responses to treatments for 2006-2008 did not support the original hypothesis.

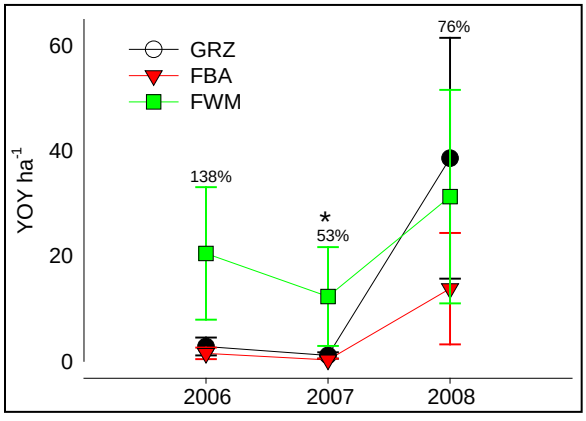

Figure 5. YOY ha^{-1} by treatment across years. Percent of average annual water year precipitation is noted above the data for each year. The FWM treatment had greater mean YOY densities relative to the other two treatments in 2006. Asterisk above 2007 data points denotes that there was a significant difference among treatments (i.e., resulting in significant year by treatment interaction in the final model): FBA treatment had significantly lower YOY densities than the other two treatments. YOY increased across all treatments in 2008, with grazed meadows exhibiting an apparently greater increase in YOY densities.

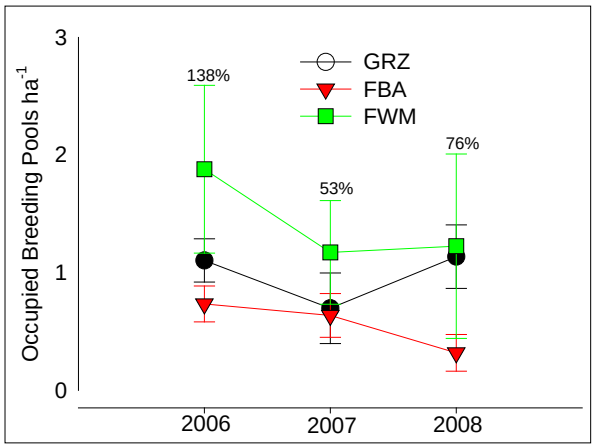

Figure 6. Occupied breeding pools ha^{-1} by treatment across years. Percent of average annual water year precipitation is noted above the data for each year. The FWM treatment had greater mean number of occupied breeding pools compared to the other two treatments in 2006. Over the course of the study, FWM and FBA meadows exhibited apparent declines, while GRZ meadows appeared relatively stable.

Conclusions from phase II:

1. Observed YOY and occupied breeding site patterns over the course of the study do not support the study hypothesis (Figures 5 & 6). Fencing treatments do not result in increases in YOY density or number of occupied breeding pools.

2. There was no detectable pattern of YOY density or number of occupied breeding pools response to grazing management treatments for the study period (2006-2008).

3. YOY densities significantly increased in 2008, regardless of grazing treatment.

4. YOY densities were negatively correlated with mean water table.

5. Number of occupied breeding pools was positively correlated with annual water year precipitation (or year).

6. Based on the 2006-2008 data, we do not recommend partial meadow fencing (FBA treatment) due to potential meadow degradation by concentration of grazing in the unfenced portion of the meadow and no apparent benefit to Yosemite toads.

Grazing intensity, meadow hydrology, and toad occupancy survey (Phase I)

Phase I was an observational, cross-sectional, longitudinal survey of Yosemite toad occupancy, cattle use intensity, and meadow hydrology across 24 meadows over 3 years on the Sierra National Forest. The experiment was designed to quantify ambient relationships among intensity of cattle use, meadow plant and hydrologic characteristics, and toad occupancy. This section addresses questions raised about grazing-toad relationships, complements the manipulative grazing experiment (Phase II), and provides allotment scale context for the entire project (e.g., ambient use patterns among meadows under open grazing conditions).

Intensity of cattle use (herbaceous vegetation consumed, fecal deposition), vegetation attributes (composition, biomass, cattle forage quality), and hydrologic condition (wetness) were measured in 24 meadows with potential to support Yosemite toad. All meadows were open to grazing by cattle under ambient allotment scale grazing management. Meadows were stratified across 3 allotments (Dinkey, Patterson, and Blasingame). The study was conducted 2006 through 2008. Five monitoring sites were selected in each meadow, representing the major plant community - water table associations found within the meadow. At each site we measured cattle use intensity, vegetation attributes, and hydrologic conditions throughout the study (n=120 monitoring sites; 5 sites per meadow).

Intensity of cattle use was measured as percent herbaceous vegetation utilized by cattle and as cattle fecal deposit density. Vegetation attributes measured included herbaceous biomass production and forage quality (acid detergent fiber-digestibility, crude protein, phosphorus). Each site locality was categorized along a relative wetness scale ranging from dry (grass and forb dominated) to wet (wet *Carex* spp. dominated). Meadow scale toad occupancy surveys were conducted prior to (2003-2005, Sierra NF district biologists) and during the study (2007-2008, UC Davis survey crews) for all 24 meadows.

Yosemite toad occupancy was directly and cattle use (mean annual herbaceous vegetation use and fecal pat density) was inversely related to meadow wetness (Figure 7). We hypothesized that drier meadows support higher forage quality species than wetter meadows, which could drive cattle use. Forage quality analysis showed a direct relation between cattle use of biomass production and forage quality metrics at both the meadow (Figure 8) and site scales.

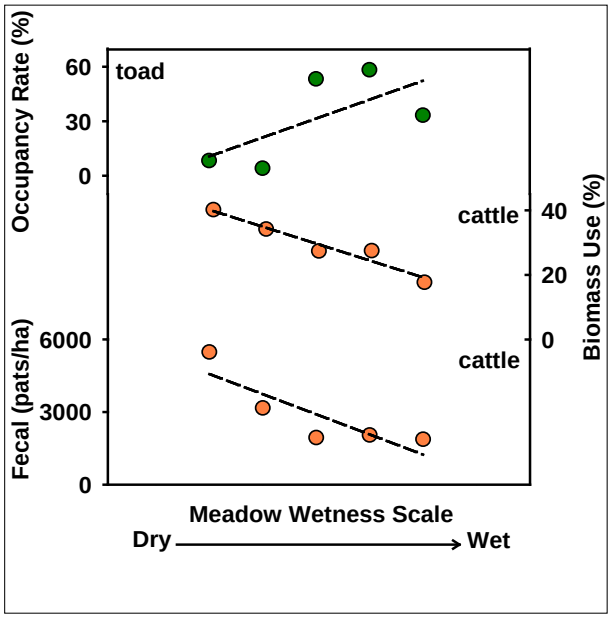

Figure 7. Toad occupancy and annual livestock use along meadow wetness gradient. Toad occupancy rate is calculated as percent of surveys (3 total) each meadow was occupied. Increases in meadow wetness correspond with increases in toad occupancy, decreases in cattle use, and decreases in cow fecal accumulation.

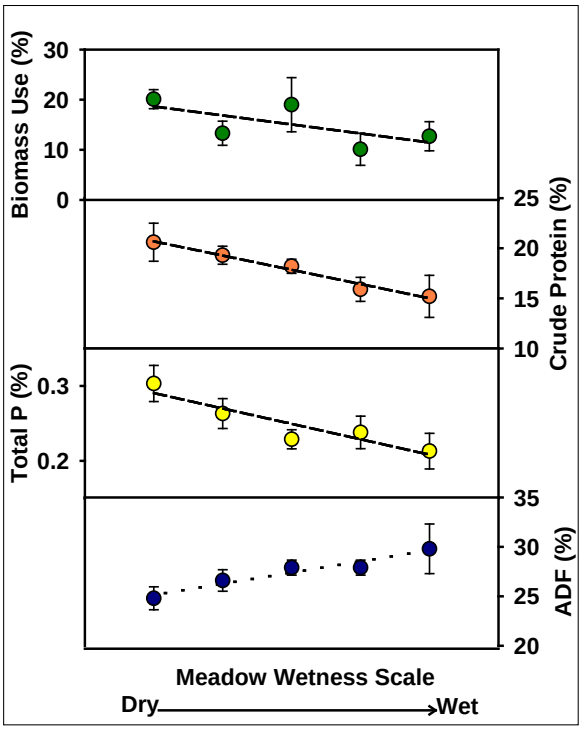

Figure 8. Meadow livestock use and forage quality along meadow wetness gradient. Livestock use, as measured by early season percent utilization of biomass production, and forage quality (crude protein, total P, ADF) decline with increasing meadow wetness.

Conclusions from phase II:

1. Cattle use and Yosemite toad occupancy are inversely related to meadow hydrology.
2. Toads prefer habitat associated with wetter meadows.
3. Cattle select a nutritious diet associated with drier meadows.
4. Cattle grazing (~20% use during early season) and Yosemite toads mainly overlap in moderately wet meadows.

Summary of Results to Date

Phase II analyses showed no significant pattern of YOY density or number of occupied breeding pools response to grazing management treatments. There was also no detectable change in breeding pool water quality and cover habitat in fenced meadows (FBA and FWM treatments) relative to grazed meadows (GRZ). The FBA treatment concentrated cattle use outside fenced portions of the meadow; we do not recommend this management strategy due to potential meadow degradation and no apparent benefit to the Yosemite toad. In the Phase I survey, we found an inverse relationship between Yosemite toad occupancy and cattle use, with toads selecting wetter meadows and cows selecting drier meadows. It appears cattle and toads mainly overlap in moderately wet meadows during the early season (late May - mid June).

Next steps and technology transfer activities

We presented a project update to the USFS Region 5 Rangeland Manager's Workshop on February 25, 2009 in Grass Valley, CA. We made two oral presentations and a poster presentation at the Society for Range Management Annual Meeting (February 2010) in Denver, CO.

PSW plans to continue data collection on the Sierra National Forest, Stanislaus National Forest, and Yosemite National Park in 2010.

UC will conduct field trainings with Forest Service employees during the summer of 2010 to transfer responsibility of annual herbaceous biomass, use by cattle, and water table depth measurement to district staff.

Forest Monitoring Summary

October 1, 2008 to September 30, 2009 (FY 2009)

This summary is based on reports from eight of ten national forests and the Lake Tahoe Basin Management Unit (LTBMU). Nearly all Sierra Nevada NFs in California have completed FACTS (Forest Activity Tracking System) data base entry for projects through FY09. The forests conduct landscape-level assessments in designing most fuel treatments.

Fuel treatments in California Spotted Owl and Northern Goshawk Protected Activity Centers (PACs) and in the wildland urban interface (WUI) during FY09 are summarized in Table 1. Treated acres represent 0.4% of California Spotted Owl PACs and 0.9% of Northern Goshawk PACs.

Treatments within California spotted owl (CSO) Protected Activity Centers (PACs) have occurred on eight of the National Forests in the Sierra Nevada Bioregion since 2004:

- 1,988 acres on the Eldorado NF,
- 944 acres on the Lake Tahoe Basin Management Unit,
- 111 acres on the Lassen NF,
- 77 acres on the Plumas NF,
- 1,556 acres on the Sequoia NF,
- 3,005 acres on the Sierra NF,
- 2,411 acres on the Stanislaus NF, and
- 395 acres on the Tahoe NF.

Table 1. Summary of California Spotted Owl and Goshawk PAC and WUI treatments for 2009.

Forest	Treatment Acres in California Spotted Owl PAC*	Treatment Acres in Goshawk PAC*	Acres treated in WUI**	Percent of total treated in WUI**
Eldorado	65	97	399	2
Inyo	0	0	2,504	49
Lake Tahoe Basin	304	0	5,334	22
Lassen	100	216	12,246	100
Modoc	0	330	9,499	79
Plumas	13	0	3,919	63
Sequoia	241	19	2,162	17
Sierra	831	88	4,274	31
Stanislaus	0	198	9,451	39
Tahoe	229	52	3,305	100
Total acres treated	**1,783**	**1,001**	**53,093**	
TOTAL acres in PACs	**421,780**	**108,158**		

* Data extracted from FACTS database in April, 2010.

** Data extracted from Performance Accountability System (PAS) for FY2009.

The total of 10,487 acres treated within CSO PACs since 2004 is 2.5% of the 421,780 acres of CSO PACs designated within the Sierra Nevada. The ROD for SNFPA limits vegetation treatments to no more than 5% of the acres in CSO PACs per year (page 61).

A number of treatments have been conducted in Northern Goshawk PACs since 2004:

- 371 acres on the Eldorado NF,
- 200 acres on the Humboldt-Toiyabe NF (but reporting is incomplete),
- 3 acres on the Inyo NF,
- 83 acres on Lake Tahoe Basin Management Unit,

- 321 acres on the Lassen NF,
- 1,064 acres on the Modoc NF,
- 200 acres on the Plumas NF,
- 191 acres on the Sequoia NF,
- 370 acres on the Sierra NF,
- 753 acres on the Stanislaus NF, and
- 343 acres on the Tahoe NF.

The total of 3,899 acres treated in goshawk PACs since 2004 is less than 4% of the approximately 108,158 acres in Northern Goshawk PACs -- the ROD for SNFPA limits vegetation treatments to no more than 5% of the acres in Northern Goshawk PACs per year (page 61).

In 2009, fuel treatments were conducted on 131,203 acres on the Region 5 Sierra Nevada National Forests. Of those acres, 40% were located in the wildland-urban interface (WUI) (Table 1). The regional goal was to have 50% of all initial fuel treatments in the WUI (SNFPA ROD, page 5), and we have completed most of the feasible initial treatments.

The ROD requires evaluation of CSO PACs after potentially stand replacing fires to determine whether PACs or PAC acres that may have become unsuitable should be replaced (SNFPA ROD, page 37). For FY 2008:

- On the Lassen NF, 199 acres in one CSO PAC were affected by fire; replacement acres have not been identified.
- On the Plumas NF, 359 acres in one CSO PAC were affected by fire; replacement acres were not available.
- On the Sequoia NF, 901 acres in two CSO PACs were affected by fire; replacement acres have not been found.
- On the Sierra NF, three CSO PACs were affected by fire: 202 acres, 218 acres, and 322 acres (the entire PAC; changed to nonsuitable for a portion). No replacement acres have been found.
- On the Stanislaus NF, one CSO PAC (4.7 acres) was affected by fire; replacement acres are available, but revision has not yet been made.
- On the Tahoe NF, eight CSO PACs (275 acres) were affected by wildfire and replacement acres were found. *[NB: This was erroneously reported in the 2008 report as having occurred in 2007.]*

The Sierra Nevada national forests identified only one vegetation management treatment in Great Grey Owl PACs and none in fisher den site buffers or marten den site buffers:

- Stanislaus treated 91 acres in great gray owl PACs.

The ROD allows some vegetation treatments in these areas (SNFPA ROD, pages 61-62).

Forests used the flexibility in S&G #71 to change California spotted owl and goshawk PAC boundaries to implement projects during 2009:

- Lake Tahoe MU modified about 15 acres in the High Meadows goshawk PAC.

Implementation monitoring was conducted on all projects during 2008 except as follows:

- Lassen NF, about 25% of projects.
- Lake Tahoe Basin Management Unit (100% of projects were monitored) provides a summary of its entire monitoring program in an annual report posted at http://www.fs.fed.us/r5/ltbmu/.
- Plumas NF, 44% of projects.
- Stanislaus NF, about 20% of projects.

Forest Relations with Tribes

The Sierra National Forests maintain Government-to-Government relationships with the tribes in the region. They consult and cooperate with tribes on culturally important vegetation, prescribed burning and fuel reduction, and other forest management activities. Forests protect and provide access to sacred and ceremonial sites and tribal traditional use areas. Some new instances where the forests worked with tribes on projects in 2009 include:

Inyo NF:

- The forest consulted with local tribes about the Jordan pepperweed noxious weed eradication project on the effectiveness of various noxious weed eradication methods. Prior to weed treatments (scheduled for the summer of 2010) forest botanists and archaeologists will take tribal representatives on field trips to the treatment area to ensure avoidance of traditional gathering species.
- Members of the Bishop Paiute Tribe employed as firefighters by the Inyo NF aided in archaeological surveys completed prior to the Casa Diablo prescribed burn. Twenty new sites were recorded as part of these surveys. Prior to igniting the burn, the zone archaeologist briefed firefighters on the importance of protecting cultural resources and explained why some sites were flagged and to be avoided during burning operations.
- The Forest consulted with ten local tribes during the development of several watershed enhancement projects (Mammoth meadow restoration, Garnet meadow restoration, Iceberg Lake trail restoration). Tribal leaders were called and traditional gathering areas in these meadows and riparian areas were discussed so that the projects would not adversely affect the tribes' access or use of these areas.
- Local tribes were contacted regarding the Forks fire.
- Tribal input was sought on several fuels projects, including Portal fuel reduction projects, Whitney Portal prescribed fuels project, Crowley fuels, Crowley communities fuel project, and Tollhouse Pinyon public fuelwood.

- The forest continues to maintain an information sharing agreement with the Big Pine Tribe of Owens Valley Paiutes. In FY 2009, we shared requested information on sensitive pinyon collecting sites of special cultural significance to the tribe.

Lassen NF:

- The forest continued an on-going agreement with the Pit River Tribes for trail maintenance on the Pacific Crest Trail and enhances our relationship with Pit River Tribes.
- The forest continues to maintain access and facilitates tribal use of sacred and ceremonial sites. The forest is additionally working with the tribes, law enforcement, and other personnel on the protection of these areas. All culturally significant areas are managed confidentially.
- Extra efforts were employed in 2009 on the Hat Creek Ranger District during several wildland fires. The District Archaeologist and other staff worked diligently with tribal representatives during fire suppression, fire protection, and associated fuels management activities to coordinate fire and fuels management and cultural resource concerns.
- Collaborated with Susanville Indian Rancheria on the renewal of an MOU that defines communication protocols. The Eagle Lake District developed an MOU with the Honey Lake Maidu regarding procedural protocols for an annual special event.

Plumas NF:

- The Forest finalized a consultation protocol MOU with the Mechoopda Indian Tribe of Chico Rancheria in 2009.
- The Forest finalized two fire MOUs in 2009:
    - Participating Agreement executed with the Mechoopda Indian Tribe of Chico Rancheria covering consultation for wildfire events and the use of tribal cultural monitors during fire suppression and post-fire assessments.
    - An MOU has been executed with the Greenville Rancheria that covers the same as above; in addition, this MOU includes protocols for cooperation in support of fire suppression activities (using tribal suppression resources) and for forest fuels reduction projects.
- Implemented multiple vegetation enhancement projects in collaboration with both Federally recognized and un-recognized tribal groups, focused on fire management and plants culturally important to tribal groups :
    - Two projects are specifically aimed at enhancing the viability and health of bear grass by the use of prescribed fire.
    - Consultations with traditional practitioners for replanting willow and other culturally important plants in areas where watershed restoration activities have recently been accomplished.
    - Participating Agreement with the Susanville Indian Rancheria to treat 30 acres of aspen within the Clarks Creek Aspen Restoration Project.
- Consulted with appropriate tribes during NEPA development for the Tall Whitetop EA, which proposed use of herbicides for treatment of the noxious weed, Tall Whitetop.
- The Forest heritage resource staff, in ongoing consultation with local tribal members, has completed on-site protection measures for the Chandler Roundhouse Site. Public interpretation of this unique cultural resource will be designed and installed in 2010.

Sierra NF:

- The Sierra Tribal Relations program (TRP) hosted 3 Tribal Forums that included participants from local federally recognized Tribal governments, unacknowledged tribal governments, state and

federal agencies and NGOs. We work in a true collaborative process. Agenda topics and presentations featured:

- Tribal Consultation Memoranda of Understanding (MOU)
- Access Travel Management (ATM)
- Marijuana Eradication Update to the Tribes
- Special Forest Products (Gathering policy)
- Americas Recovery and Reinvention Act (ARRA)
- Farm Bill of 2008
- Native American Graves Protection and Repatriation Act (NAGPRA)
- Schedule of Proposed Actions (SOPA) Updates
- Campground Prospectus
- Caltrans – Transportation Enhancement Act

- Made a presentation "How to Apply for a Federal job" at a training session coordinated with North Fork Mono Rancheria - Tribal - Technical Assistance for Needy Families (TANF) officials to over 30 program participants in attendance.
- Coordinated a trail walk for 19+ people from four tribes on April 4th on the Horseshoe Bend Trail along the San Joaquin River. The group discussed re-route strategies to maintain the trail and preserve and protect the cultural resources identified along the trail route.
- In response to a request from the tribal community, the Sierra TRP Manager and the Province Contracting Officer's staff jointly facilitated a "Federal Contractor Information Session" that featured speakers from SBA, CHP, DOL and USFS. Fourteen tribal representatives were in attendance, and information was shared at the Sequoia NF Tribal Forum.

Sequoia NF:

- Coordinated several Tribal consultation meetings on various subjects covering areas of tribal interest with Tule River Indian Tribe on the Giant Sequoia National Monument. Visited areas of interest and clarified responsibilities in the revision of the Giant Sequoia National Monument land management plan.
- A team met with Kern Valley tribes, groups, and organizations to share information and develop or strengthen working relationships;
- Western Divide RD officials and TRP presented future management plans for the Uhl work center area to the Tule River Elders Committee. Ongoing site visits to the area are planned for 2010.
- Forest and tribal representatives from the Santa Rosa Rancheria -Tachi Yokuts, and Tubatulabals of Kern Valley visited key museum officials at the University of California Berkeley (UCB) to discuss museum collections related to NAGPRA items within the Sequoia NF. The purpose of the visit was to review the inventories of the museum, discuss the next steps to repatriate the known collections, and strengthen the working relationships between the USFS and tribal community.
- At the request of the Tule River Indian Reservations Fire Management and Natural Resources staff, provided "Team Building**"** and "Leadership Tips on keeping your Team Ready and Motivated" training sessions to over 30 attendees. The sessions were well-received and were coordinated with the Dunlap Band of Mono Indians Tribal Chairman, a former USFS Hotshot Crew Superintendent.