

Bureau of Land Management

Interagency Agreement No. BGI01-0002

PSW Agreement No. 01-IA-11272164-149

Case Mountain California Spotted Owl Inventory 2001  
Final Report

The USDI Bureau of Land Management (BLM) requested the USDA Forest Service, Pacific Southwest Research Station (PSW) conduct California spotted owl (*Strix occidentalis occidentalis*) surveys in the Case Mountain Giant Sequoia Grove Complex area. BLM and PSW subsequently entered into an Interagency Agreement (No. BGI-OI0002). PSW committed to conduct surveys to locate spotted owls in the grove complex and surrounding areas, and to make recommendations on protocol to be followed when constructing handlines and pre-prescribed burn thinning.

Reintroduction of fire in sequoia groves in the southern Sierra Nevada through prescribed burns serves the dual purpose of reducing the chance of catastrophic fire and returning fire as an element in the natural processes of these groves. One of the major concerns for spotted owls in the conifer forests of the Sierra Nevada is the threat of high intensity fires created by years of fire suppression activities and selective logging (Verner et al. 1992). Since California spotted owl nests in the southern Sierra Nevada have been associated with high canopy cover (North et al. 2000), and suitable habitat for spotted owls appears to have canopy cover of 40 percent or greater (Zabel et al. 1992), a stand replacing fire could snake an area generally unsuitable for the owls. Prescribed burns producing low to moderate intensity fires may be beneficial to spotted owls by reducing fuels, thus reducing the chance of stand-replacing, high intensity fires.

However, prescribed burns may have some negative impacts on spotted owls. Activities conducted in preparation for prescribed burns, such as handline construction and pre-burn thinning, may disturb owl reproductive efforts or reduce canopy cover in main roosts, which may reduce the location's usefulness as an owl roost. The purpose of this survey effort was to document owl presence and find roost and nest locations and make recommendations on how to minimize the potential for impact by pre-burn activities on California spotted owls in the burn areas.

Additional areas outside the grove complex area were added to the survey effort at the request of BLM. These surveys were intended to provide BLM with information on California spotted owls in the area.

## STUDY AREA

The Case Mountain Spotted Owl Survey Area (CMSA) is located on Case Mountain in Tulare County, California, approximately 26 miles east of Visalia, California. It includes the Case Mountain Giant Sequoia Grove Complex which consists of six giant sequoia groves: the Case Mountain, Nutmeg, Monache Tubs, Ladybug, Salt Creek Ridge,

and Coffee Pot units (Figure 1). These groves are on BLM land and adjacent private land. CMSA also includes the area ~1 mile beyond the proposed prescribed burn and handline construction areas except where permission to access private property was not obtained. Additional survey areas included the Salt Creek drainage, the western fork of Salt Creek, and Cinnamon Gap south to the BLM boundary line. A canyon live oak stand that was separate from the main portion of the survey area was also included. These additional areas were below the mixed conifer zone. In the drainages, canyon live oak (*Quercus chrysolepis*) formed dense stands.

## METHODS

A series of survey points was established to ensure that the entire CMSA would be surveyed (Figure 1). Surveys were conducted at each point by imitating spotted owl vocalizations. [Spotted owls are territorial and will vocalize in response to vocal imitations of their calls (Forsman 1983)]. Surveys continued for at least 10 minutes or until a pair of owls was detected. Walk-in surveys were conducted during the day by imitating spotted owl vocalizations while walking to and around known roost sites and in areas where owls had previously been detected at night.

We attempted to finish six complete surveys of each of the burn areas. When owls were detected during night surveys, follow-up visits were made in an attempt to determine roost location, social status, and nesting and reproductive status (see below). If detected owls were determined to be paired, then complete surveys were discontinued.

An owl's social status was single, paired, or unknown. A single owl was detected at least twice, with a minimum of seven days between detections, without the detection of an owl of the opposite sex in an area completely surveyed six times. Owls were paired when a male and female were seen or heard within one-quarter mile of each other on two occasions at least seven days apart; or a male was observed giving prey to a female or delivering prey to a nest, a female was observed on a nest, copulation was observed, or young were present. Owls which did not meet paired or single requirements were classified as unknown.

An owl's nesting status was nesting, non-nesting, or unknown. A pair of owls was classified as nesting when a female or young was observed in a nest or a male delivered prey to a nest. If the first observation of nesting occurred before May 1, then a second observation at least seven days after the first observation was required to confirm nesting status. A pair of owls was non-nesting when two observations were made, at least three weeks apart, where one or both members of the pair were offered mice and the owl(s) ate or cached at least two of them. An attempt was made to give the owls at least four mice. If the fates of the first four mice taken were either "eaten" or "cached", the visit qualified as a non-nesting observation. The female of a pair observed roosting for at least one hour on two occasions at least three weeks apart also qualified the pair as non-nesting. The first non-nesting observation must have been made before 01 JUN. If the observations on a pair of owls did not meet nesting or non-nesting requirements, then the pair was classified as unknown nesting status.

An owl's reproduction status was reproductive, non-reproductive, or unknown. A pair of owls was reproductive when fledged young were found. The number of fledglings were determined by offering one or both of the members of the pair at least 4 mice and counting the number of fledglings as the owls delivered prey to the young. A thorough visual search of the roost area was also conducted. If owls did not take mice, a thorough visual search sufficed. Fledglings were counted twice (at least seven days apart if the first was before 15JUN), and the largest count was used as the number of young fledged. If the fledgling counts found no young, then the owls were classified as non-reproductive. When the observations on a pair of owls did not meet reproductive or non-reproductive requirements, then reproduction status of the owls was unknown.

## RESULTS

Surveys for California spotted owls were conducted within the Case Mountain survey area between 24MAY01 and 21AUG01. However, six surveys were conducted from all call points except those near areas where pairs were found. At least four of these surveys were at night. Survey points near owl pair areas were eliminated to reduce disturbance to owls. Two non-reproductive pairs of California spotted owls (nesting status unknown) were found within Case Mountain Grove Complex units. One pair (the Cinnamon Gap pair) of reproductive owls (nesting status unknown) was found outside the units but within the general survey area. Surveys for this pair (and all pairs) occurred too late in the breeding season (i.e., after the young had fledged) to determine nest location. An additional male and female (the Homer's Nose owls) were detected outside of the CMSA (Table 1). These owls appeared to roost on BLM land near the Sequoia National Park boundary. Surveys on BLM land also detected a male on adjoining private property (the Private Prospect male). Owls were observed in roost sites on 12 occasions (Table 2.)

### Grove Units:

#### Case Mountain Unit (Unit 1)

The burn area and  $\frac{1}{4}$  mile radius surrounding area for the Case Mountain unit was completely surveyed six times. A survey was considered complete when points 1 through 8 were surveyed within seven days. During the fifth survey on 09AUG01 a female was detected within the unit and a male was detected near the northern unit boundary (Table 1, Figure 2). The subsequent survey and follow-up visit failed to detect the female, although a male was detected within the unit on the 21 AUGO1 (Table 1, Figure 2). The identity of these owls remains unknown. These detections may possibly be the Nutmeg pair, or they could be unique owls not previously counted.

#### Nutmeg Unit (Unit 2)

A male and female owl were detected in the Nutmeg unit (Figure 3). Pair status was established by observations on 1 8JUN01 and 23JUN01 of a male and female (Tables 1). This pair was non-reproductive as established on 1 9JUN01 and 28JUNO 1 and confirmed on 23JULO 1.

### Monache Tubs Unit (Unit 3)

A male and a female owl were detected in the Monache Tubs unit (Figure 4), and pair status was established by observations on 24MAY01 and 18JUN01 (Tables 1). This pair was non-reproductive as established on 11JUN01 and 18JUN01. The male had a color band and U.S. Fish and Wildlife Service band. The color band (yellow with a black stripe) indicated that the owl had been banded as a juvenile. On 02AUG01 the male was captured. The U.S. Fish and Wildlife Service band number indicated that the owl had fledged in 1992 on the Sequoia National Park near Crystal Cave Road (approximate nest location: 338170E 4048590N, 5440 ft elevation). This is a movement of over 11 miles. A male (the Case Mountain West male) was detected on 27JUN01 from point 1 (Figure 5). It is not known if this was the Monache Tubs male, the Case Mountain male, or a unique individual. Owls were not detected in that area again.

### Ladybug Unit (Unit 4)

The Ladybug unit received six complete surveys. A survey was considered complete when point 20 was surveyed. No owls were detected within the unit, and detections near the unit (Figure 4) were most likely the Monache Tubs owls, given that these were nighttime locations in relatively proximity (< 0.5 miles) to the roost area.

### Salt Creek Ridge Unit (Unit 5)

The Salt Creek Ridge unit received six complete surveys. A survey was considered complete if points 21, 22, 23, and 34 were surveyed within seven days. A male and female were detected from points 19 and 22 (Figure 1), respectively. These birds were probably the Monache Tubs owls, given that these were nighttime locations less than 0.5 miles from the roost area. No other detections occurred within the site.

The burn area east of the Monache Tubs Unit (including the Ladybug unit and the Salt Creek unit) and the area within  $\frac{1}{4}$  mile of the proposed handline probably should have been treated as a single survey area. If they are treated as such, then the initial survey did not meet the requirements to be considered complete. Point 29 was surveyed 8 days after some of the other points, and this violates the seven day requirement. However, the area called by point 29 that was not covered within the seven day time allotment was fairly small. Five complete surveys were therefore finished for that area. All detection within that area were probably the Monache Tubs owls.

### Coffeepot Unit (Unit 6)

The Coffeepot unit received six complete surveys. A survey was considered complete if points 24, 27, and 28 were surveyed within seven days. This unit was treated as part of a larger survey site which included the burn area within the handline and the  $\frac{1}{4}$  mile survey area outside of it. Five complete surveys of this larger area were conducted. An incomplete survey resulted when points 25 and 26 were not called on the third survey attempt. These points were later surveyed to ensure that all points were called a minimum of six times.

Surveys of the Ladybug unit, the Salt Creek **Ridge unit**, and the Coffeepot unit produced a number of owl detections. Assigning identity of owls to nighttime detections away from roost areas can be problematic and is at best somewhat uncertain. The sizes of

spotted owl home ranges in coniferous forests of the southern Sierra Nevada during the breeding period averaged 2367 (sd 740) acres (Zabel et al. 1992). The entire Ladybug unit is within 0.5 mile of the main roost of the Monache Tubs pair, as were the detections from points surveying the Salt Creek Ridge unit. These detections, therefore, are well within the potential foraging range of these owls and are most likely attributed to them.

#### Other Detections

##### Cinnamon Gap

On 12JUN01 a pair and one fledgling (as determined by visual search of the roost area) were found (Figure 6). The female had a color band (blue with white stripe) and a U.S. Fish and Wildlife Service band. The owl was captured, and the U.S. Fish and Wildlife Service band number indicated that the bird had been banded as a juvenile in 1991 on a demographic study area on the Sierra National Forest. Its natal area was over 42 miles north-northwest of Cinnamon Gap. A second visit on 27JUN01 to verify the number of young was conducted. The female ate four mice without delivering prey to young, and fledglings were not seen or heard. This second visit indicates that the fledgling may have died between reproduction visits.

##### Homer's Nose

Detections of the Homer's Nose male and female (Figure 7) at dusk on 08AUGO 1 indicate that these owls roost probably roosted in the drainage east of the Coffeepot unit. The social and reproductive status of these owls was unknown. Locations are the same for different days (Table 1) because responses were coming from the same general area. These estimated locations are not precise due to observer distance from the owls.

##### Private Prospect

On 31JUL01 and again on 09AUGO 1, the Private Prospect male was detected from point 68 (Table 1). This male responded from a drainage on private land south of the southwest boundary of the survey area (Figure 8). The social and reproductive status of this male was unknown.

##### Salt Creek Drainage

Owls were not detected in the Salt Creek drainage north west of the Case Mountain unit.

##### Northeast Oaks

The small, separate area off the northeast edge of the main grove was surveyed from points 63 through 66 (Figure 1). It received six complete surveys (5 night surveys and 1 day survey). There were no owl detections in this area.

## DISCUSSION

Activities in preparation for prescribed burns, such as fire line construction and pre-burn thinning, and the burns themselves, may directly impact California spotted owls. It is assumed that prescribed burns discussed herein will generally produce a low to moderate intensity fire. Before pre-burn and burn activities begin, surveys for spotted owls should be conducted and nesting status of pairs should be determined. If pairs are nesting, the pre-burn activities and actual burning within a quarter-mile radius of nests should be restricted to a period beginning September 1 and ending before March 1, as practiced by National Forests of the Sierra Nevada (U. S. Department of Agriculture 2000). This time restriction can be lifted when pairs that had nested are subsequently found to be non-reproductive.

With the presence of non-reproductive pairs and the absence of historical nest trees in the proposed burn areas of Case Mountain Giant Sequoia Grove Complex, we believe construction of fire line as proposed (see burn boundaries in Figure 1) may proceed this year (2001) with minimal impact to the owls. If fire line construction or burning will be continued in subsequent years, then additional surveys of the Monache Tubs pair and the Nutmeg pair should be conducted during the year(s) of management activity to determine nesting and reproductive status. If either pair is nesting, then fire line construction, preburn thinning, and prescribed burning should not be conducted within a quarter-mile radius of the nest tree. If historical nest trees are at risk of burning (e.g., snags), fuels should be removed from the base and a fire line constructed around the tree. Maintain prescribed fire at a low intensity in roost and nest areas.

California spotted owls in the southern Sierra Nevada have been found nesting in large giant sequoia trees (North et al. 2000). Large giant sequoia trees have smooth boles for much of their height. Spotted owl nest cavities in these trees are often below the first branches but at still a considerable height. [North et al. (2000) found the average height of 19 nests in giant sequoia trees was 131 ft.] When young owls fledge from nests, they often do not have the ability to fly, but at best can manage a slow "flying" descent. Some can manage to "fly" into a nearby tree. Others land on the ground and must climb up tree trunks to reach perches that may be more protected from predators than being on the ground. Fledging spotted owls may be at increased risk of post-fledging predation if thinning removes all neighboring trees around a giant sequoia nest tree. We recommend that if a nest is found in a giant sequoia tree prior to thinning operations, then several trees be left near the nest tree to provide fledglings access to climb back into the canopy .

Spring burns may negatively effect reproductive success in the year of the burn. If spring burns are conducted in a sequoia grove unit with a history of owl occupancy, surveys should be conducted prior to the burn to determine presence and nesting status of owls. If the owls are non-nesting, then we recommend proceeding with the burn.

As part of the Kings River Ecosystem Project on the Sierra National Forest, spring prescribed burns have been conducted on portions of a spotted owl demography study area. During one of these burns, a nesting pair was detected. The only recourse to protect the nest was to construct a line approximately 100 m around the nest tree (a snag) to prevent its destruction. Although the nest failed, most pairs that nested on the demographic study area failed to produce young in that year. The effect of the fire on the

nesting status of the owls was therefore uncertain. However, the owls did stay in the nest area during and after the burn, indicating that the area remained suitable for the owls during the burn. The owls in this sites were closely monitored during the burn as part of the demographic study. The prescribed fire was considered a low intensity burn, backing down hill at its own pace with few if any ignition points that would cause the fire to run up hill (Steger, personal comm.).

If nesting owls are found after the initiation of a prescribed burn, then we recommend constructing a fire line around the nest tree to protect the nest. The fire line should be a minimum of 100 yds from the nest tree on all sides. However, this may be adjusted outward based on topography and projected fire behavior in the nest area. Since this recommendation is based on a single occurrence, we suggest that any nesting owls in such a situation be monitored closely to determine the effectiveness of this strategy. Late summer and fall burns have less potential to interrupt breeding effort. Most juvenile spotted owls can fly well enough to move out of a locally burning area by late August, and usually by mid September or October in the southern Sierra Nevada are dispersing from natal territories (Tibstra 1999, unpublished data). However, given that temperatures may be higher and fuel moisture lower for summer and fall burns, a higher intensity fire may be produced. This may decrease canopy cover and basal area by killing larger trees than would a spring burn. This may reduce the site quality for spotted owls, and this may have a greater negative impact on the population of owls than the interruption of reproduction in a single year.

We support the use of prescribed fire in spotted owl territories. Potential short-term negative impacts are outweighed by the reduced risk of future catastrophic wildfires. Such wildfires can convert suitable spotted owl habitat into unsuitable habitat. The resulting landscape might take many decades to return to a condition that is suitable for spotted owls.

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