



**STATE OF CALIFORNIA  
DEPARTMENT OF FISH AND GAME  
NONGAME BIRD AND MAMMAL SECTION**

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**SPOTTED OWL DISTRIBUTION AND ABUNDANCE IN YOSEMITE NATIONAL PARK,  
1988-89**

**by**

Gordon I. Gould, Jr. and Kathleen M. Norton

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State of California  
THE RESOURCES AGENCY  
Department of Fish and Game

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**ABSTRACT**

Surveys and inventories to determine the distribution and abundance of Spotted Owls (*Strix occidentalis*) were conducted in Yosemite National Park from April through August of 1988 and 1989. Surveys covered 577.4 km<sup>2</sup> of forest habitat at elevations between 1220 m and 2465 m. Owls were seen or responded to imitated Spotted Owl calls at 58 sites over the two seasons. This included finding owls at 12 of 15 previously known sites. U.S. Forest Service protocol was used to establish pair occupancy at 10 of 13 sites checked in 1988 and at 12 of 18 sites checked in 1989. Reproductive activity was observed serendipitously. Two nest trees and four sites with young were observed in 1988, and four nest trees and two sites with young were observed in 1989. There was a greater rate of presence of Spotted Owls at elevations from 1295 m to 2055 m than at higher and lower elevations. Combined crude densities were estimated to be 0.18 owls/km<sup>2</sup> and 0.10 territories/km<sup>2</sup>.

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## INTRODUCTION

The California Department of Fish and Game (DFG) initiated a two year study in 1988 to gain better understanding of the distribution and quantity of Spotted Owls (*Strix occidentalis*) on National Park Service (NPS) lands. This study was conducted in Yosemite National Park (YONP) and was designed to be a companion study to one being conducted in Sequoia and Kings Canyon National Parks. Hopefully information from this study can be used to compare owl abundance and distribution on NPS lands with U.S. Forest Service (USFS) land. Also, the information gathered from this study would help verify the protocol procedures created by the USFS to determine site occupancy, establish a standard rate of occurrence for the Spotted Owl for NPS lands, and aid the USFS in the management planning for Spotted Owl Habitat Areas (SOHAs).

The Spotted Owl is a forest dweller and is known to depend heavily on old-growth and mature forests. Much of this habitat has been subject to logging pressures and its amount has been greatly reduced. For this reason the Spotted Owl was classified by the DFG as a species of special concern in 1978 (Remsen 1978). This classification does not add to the owl's legal protection, but recognizes that it has the potential to become endangered if current conditions continue.

Yosemite was discovered in 1851, designated a state park in 1864, and became a national park in 1890 (U.S. Dept. of Interior 1953). Within the National Park the Spotted Owl is not threatened by habitat loss due to logging. Federal regulations prohibits such action (Drury 1949) and it appears that no logging historically occurred in the park. Therefore, YONP lands provide pristine habitats of old-growth forest for the Spotted Owl.

A total of 1460 sites containing Spotted Owls were found in California between 1970 and 1985 (Gould 1985). In 1985 the Forest Service set a goal for managing 500 pairs of Spotted Owls in California (Carey 1985). Gould (1985) estimated that 89% of the known Spotted Owl sites occur on USFS lands and only 3% of the sites were on NPS lands. With habitat declining on USFS lands, it was estimated that by 2035, NPS lands will support 11% of the remaining Spotted Owl population (Gould 1985). This planned reduction establishes the importance and necessity of a sizeable and stable Spotted Owl population on NPS lands. These reserve populations could act to replenish owl populations that have been reduced due to habitat loss (USDA Forest Service 1986).

In 1973 and 1974 initial surveys conducted for Spotted Owls in California by the DFG, USFS, and the NPS established that owls inhabited much of the forested mountains of California (Gould 1974a). Owls were found in Muir Woods National Monument, Point Reyes National Seashore, Sequoia, Kings Canyon, and Yosemite National Parks as well as on commercial forest lands managed by the USFS and private timber companies. These surveys identified 26 sites with Spotted Owls on NPS lands (Gould 1974b). Five of these sites were in YONP: southeast of Ackerson Meadow, along Crane Creek, in Yosemite Valley, and at both Mariposa and Tuolumne Groves. Thirteen sites also were found in Sequoia and Kings Canyon National Parks, and four were identified in Redwood National Park. Sites were determined by areas where one or more owls were heard defending an area. In 1985 three sites in Redwood National Park, initially discovered by Gould in 1974, were resurveyed and six additional sites were found by LaHaye (1984). Six additional historical sites in YONP and ten in Sequoia National Park have been reported by other sources.

This report summarizes information obtained during a two year study in YONP which ran from 1 April to 31 August 1988 and 14 April to 25 August 1989.

## STUDY AREA

YONP is located in Toulumne and Mariposa counties in the central Sierra Nevada, approximately 190 km (118 mi) southeast of Sacramento, California (Figure 1). Inventory and survey work was done in and adjacent to YONP. This work was conducted in the western portion (826 km<sup>2</sup>; 319 mi<sup>2</sup>) of the park within the elevational range of 915 m to 2135 m (3000-7000 ft). This elevation band extends in a north-south direction through the park and is from 2.4 to 12.8 km (1.5-8 mi) wide.

Mixed conifer forest is the primary vegetation type in the study area (Munz 1970, Scharff 1967). The major tree species are white fir (*Abies concolor*), red fir (*A. magnifica*), ponderosa pine (*Pinus ponderosa*), sugar pine (*P. lambertiana*), Jeffrey pine (*P. jeffreyi*), and incense cedar (*Libocedrus decurrens*). In mesic areas at elevations from 1065 m to 2440 m (3500-8000 ft) white fir is common. Sugar pine is abundant throughout the forest up to 2285 m (7500 ft) in elevation (Scharff 1967). At the lower elevations, 610 m to 1830 m (2000-6000 ft) on the more xeric sites, chaparral and ponderosa pines are the dominant vegetation. Jeffrey pine ranges from 1830 m to 2745 m (6000-9000 ft) in elevation (Munz 1970). Incense cedar occurs from 730 m to 2500 m (2400-8200 ft). Other vegetative components in the study area include: Douglas-fir (*Pseudotsuga menziesii*) below 1525 m (5000 ft) and California black oak (*Quercus kelloggii*) from 915 to 1525 m (3000-5000 ft; Munz 1970). The giant sequoia (*Sequoiadendron giganteum*) occurs in the study area. Sequoias are thought to be among the largest and oldest living things on earth and only reside in 26 groves in the Sierra Nevada at elevations from 1220 m to 2440 m (4000-8000 ft; Munz 1970, Scharff 1967). Three of these groves occur in YONP: Tuolumne, Mariposa, and Merced.

The climate of YONP is greatly influenced by the Sierra Nevada (Munz 1970, Schaffer 1978). This region is usually dry and warm during the summer and the winter is cold with moderate precipitation. In the 1220 to 2375 m (4000-7800 ft) elevation range where Spotted Owls were found in this study, average summer maximum temperatures vary from 22°C to 32°C (72°-90°F) and winter minimums range from -8°C to -4°C (17°-25°F). This translates to an average annual temperature of 6°C to 12°C (43°-53°F). The growing season is from 4 to 6 months and some of the average precipitation of 94 cm to 115 cm (37-45 in) falls as snow.

## METHODS

Surveys were conducted at night along roads and trails, and cross-country using the methods described by Forsman (1983). Vocal imitations of Spotted Owl calls were used to elicit a response from the owls. Usually night surveys began within two hours of sunset (approx. 1800 hrs) and seldom lasted beyond 0200 hrs, PDT.

Three types of survey methods were used: point, leapfrog, and cruise (Forsman 1983). Point surveys consisted of stopping at approximately 0.8 km (0.5 mi) intervals along a road and imitating Spotted Owl calls for 10 to 15 minutes at each stop. Both leapfrog and cruise methods involved continuously walking along a road or trail while calling. Imitated four-note, contact, agitated series and crowbark calls were given at 5 to 60 second intervals. When a Spotted Owl response was evoked, presence was determined. If no Spotted Owls were previously known from the area being surveyed, a unique site designation number was assigned to the area. Survey work was conducted strictly at night and no determination of pair verification was made during survey work, but the presence of more than one owl was noted. From one to four survey visits were made at each site (Appendices 1 and 2). The area covered during a survey was calculated by establishing a 1.6 km (1 mile) band that was centered along each survey route. Adjustments in total area covered were made for the overlap between surveys caused by the shape of the survey routes.

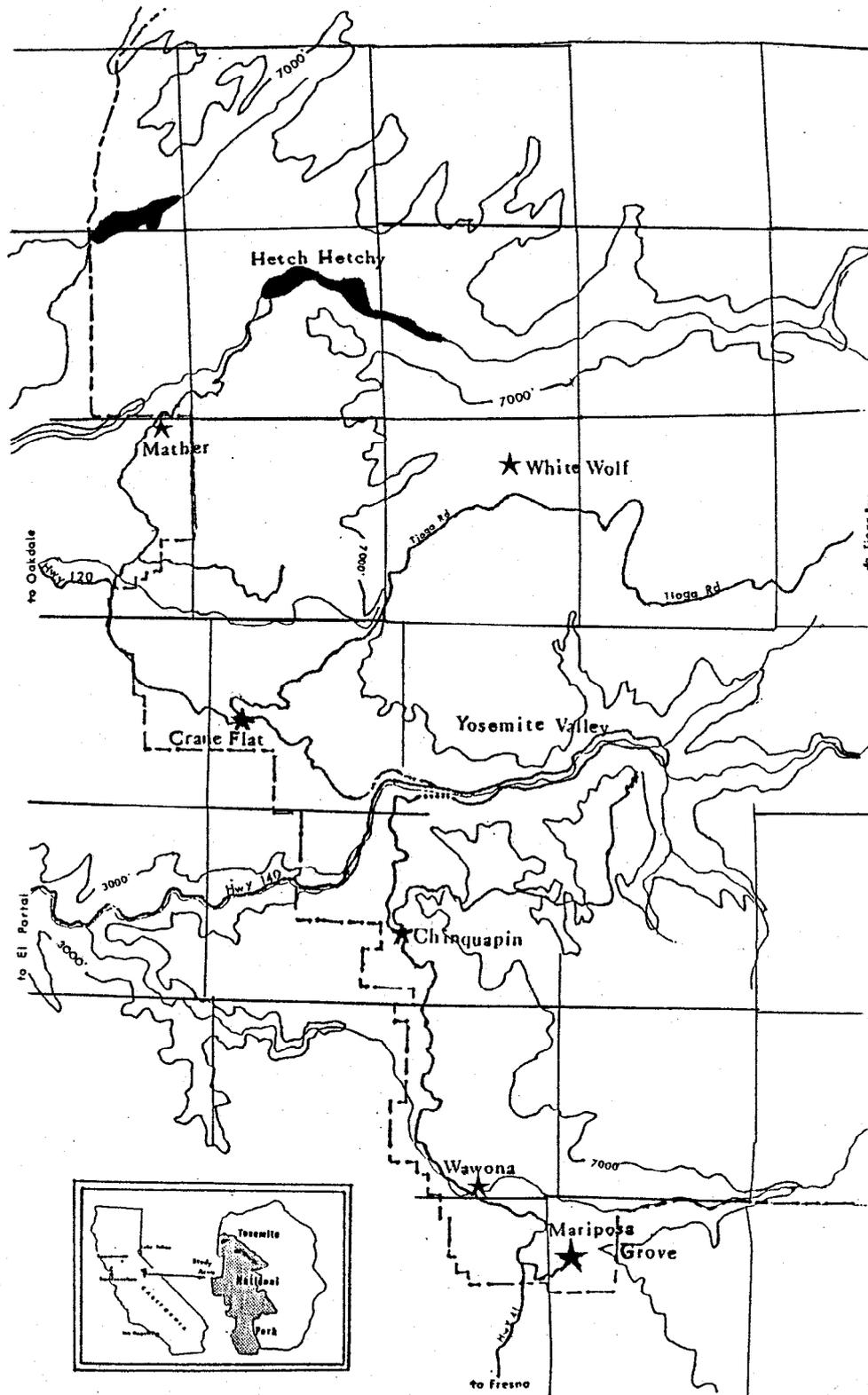


Figure 1. Yosemite National Park Study Area and Vicinity, 1988 and 1989.

Inventories to determine pair occupancy were based on the inventory and monitoring protocol developed by the USDA Forest Service (1988). This methodology consists of a combination of night (survey) and day (usually early morning follow-up) work. Generally, before an attempt was made to verify a pair during the day, a night survey was conducted in the area to determine the presence and general location of the owl(s). If an owl was located, the following morning it was relocated and fed up to four mice (*Peromyscus* spp.) in an effort to get the owl to disclose if there was a mate or young present, and/or the location of the nest site or nest grove. Pair occupancy was verified by meeting one of the following criteria: 1) if both male and female owls were observed roosting within 200 yards of each other, 2) if within a 10 minute period, one owl was seen and the other of the pair is heard calling within 200 yards of the observed owl, or 3) if male and female are not seen, but are heard vocalizing within 200 yards of each other (USDA Forest Service 1988). Information on the location of nests and number of young produced was not a priority; such information gathered during this study was coincidental. These procedures did not involve the capture or marking of owls. As many as seven inventory visits were made to any one site to verify occupancy.

Field notes were kept containing the date, time, location of each survey and inventory, and the type of response or observation of an owl. For each Spotted Owl located, the location, using the Township, Range, and Section system, was recorded as well as sex (if possible) and number of owls detected. Survey routes and owl sightings also were plotted on copies of 7½' U.S. Geological Survey topographic maps.

## RESULTS

### Surveys

Surveys conducted in 1988 involved 128.8 person-hours, spanned 367 km (228.2 mi) of survey route, and covered an area of 404 km<sup>2</sup> (156 mi<sup>2</sup>; Roberts et al. 1988; Figure 2). In 1989, surveys required 59.2 person-hours, spanned 142.1 km (88.3 mi), and covered an area of 189.4 km<sup>2</sup> (73.1 mi<sup>2</sup>).

Seventy-six site visits were made to 61 different locations in 1988 (Appendix 1). Eight-two owls were found at 50 of the 61 sites surveyed (Figure 3). Of the 48 areas that were only surveyed, a single female was detected at 9 sites, a single male at 13 sites, a female and a male at 14 sites, and in one site a bird of unknown sex was detected (Table 1). Owls did not respond at 11 sites.

In 1989, 31 site visits were made, of which 20 were made to sites not previously checked for Spotted Owls (Appendix 1). Fifteen individual owls were identified at eight of the 22 sites only surveyed (Figure 4); both a male and a female were observed at seven sites and a single male was found at the eighth (Table 1). No owls were found at 14 of the 22 sites and a single male was found at a previously known site coincidentally checked while surveying for new sites.

One time surveys of an area proved to be fairly successful in determining if owls were present. In 1988, at least a single owl was found at 10 of 14 previously known sites on the first visit. Owls were detected on the first visit at 13 of 21 previously known sites in 1989.

Historical sites were surveyed or inventoried during both years. In 1988, owl presence was established in 12 of the 14 (86%) historical sites studied. In 1989, owls were present at eight of nine (89%) areas where owls were known previous to this study. Cumulatively, owl presence was reaffirmed at 12 of the 15 historical sites checked during this study. However, only one visit was made to each of the three sites where owls were not found. All of these sites were on National Forest lands and were surveyed incidental to surveys in the park.

Survey Routes in 1988.



Additional Survey Routes in 1989.

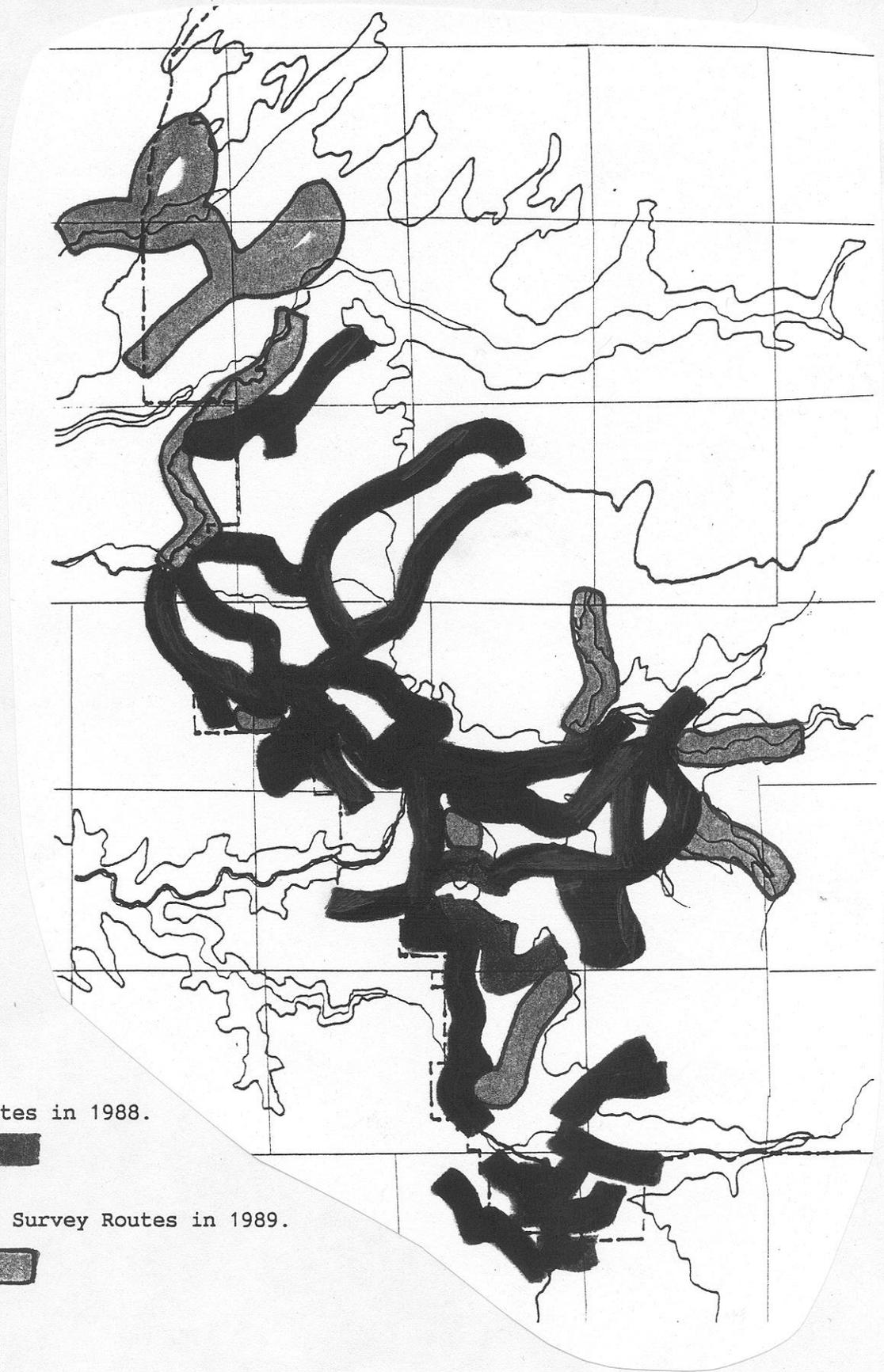


Figure 2. Survey Routes within Yosemite National Park Study Area during 1988 and 1989.

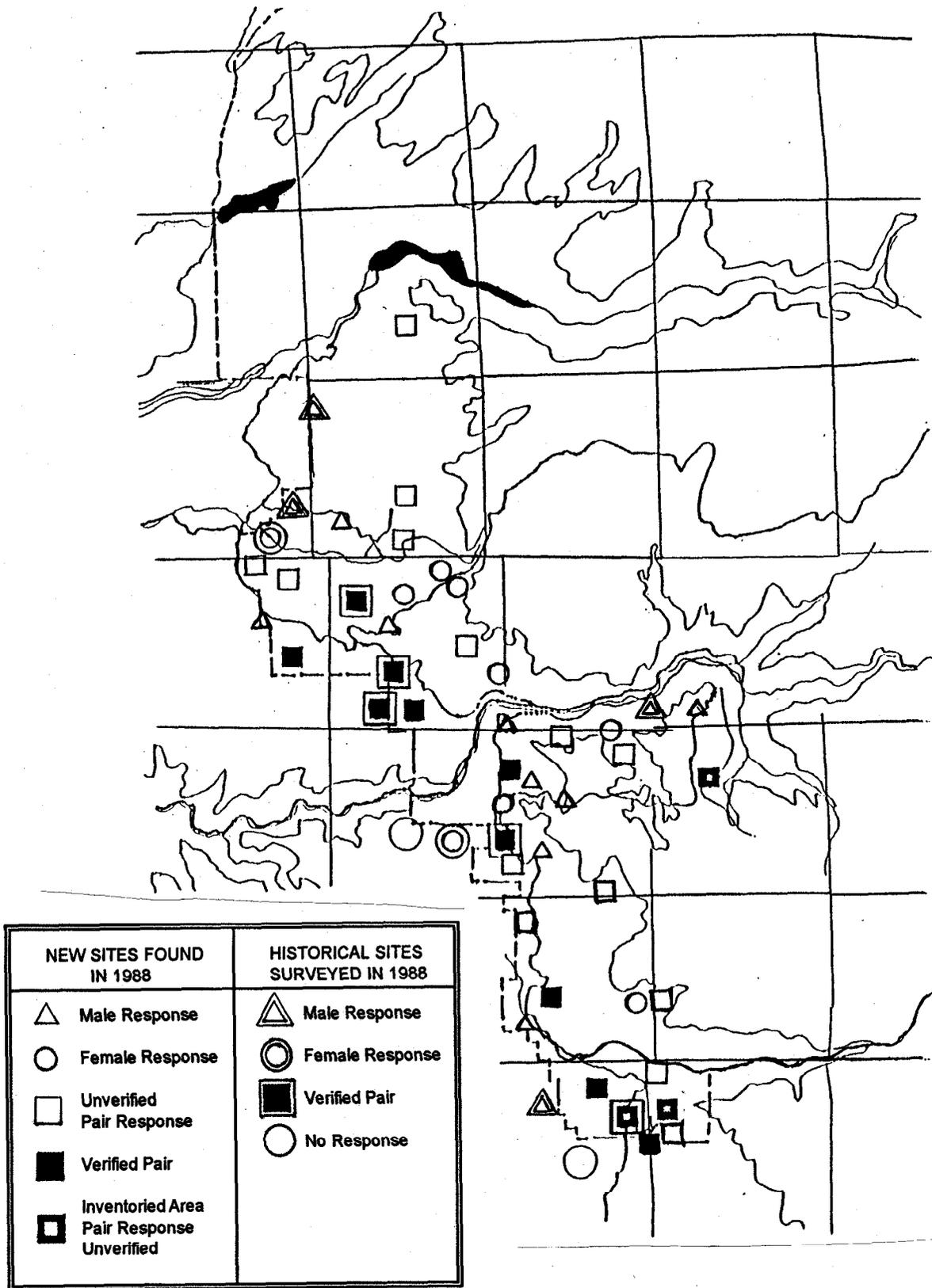


Figure 3. Locations of 48 Spotted Owl Territories within Yosemite National Park Study Area during 1988.

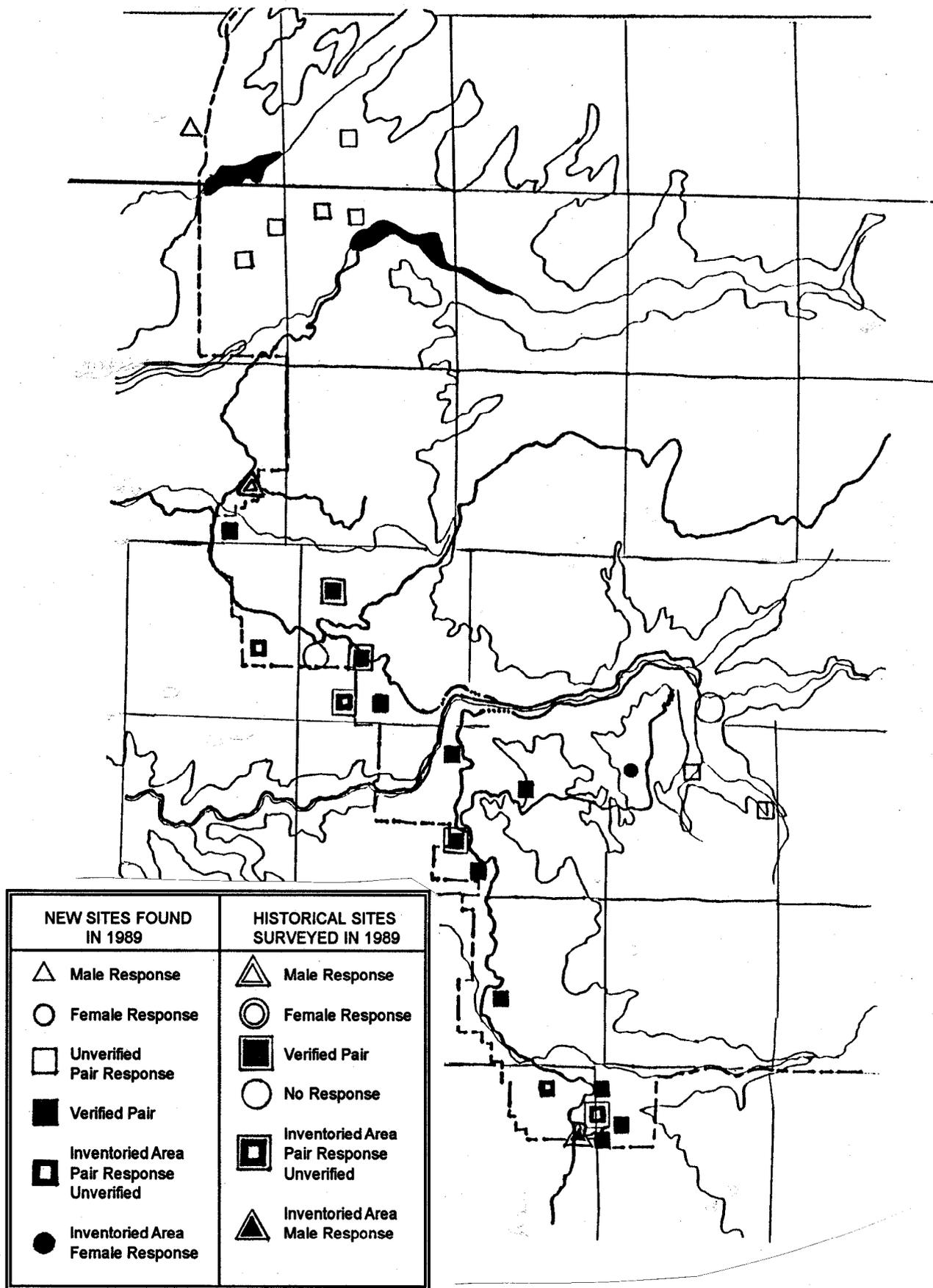


Figure 4. Locations of 27 Spotted Owl Territories within Yosemite National Park Study Area during 1989.

Table 1. Occupancy status of areas surveyed and inventoried for Spotted Owls, Yosemite National Park, 1988 and 1989.							
	Verified Pairs	Presence of:					Sample Size
		Male/Female	Male	Female	unknown	None	
Survey Areas: 1988 Historical	--	0	4	2	0	2	8
<b>New</b>	--	14	9	7	1	9	40
<b>Inventory Areas</b>	<b>10</b>	3	0	0	0	0	13
1988 Totals	10	17	13	9	1	11	61
Survey Areas: 1989 Historical	--	0	1	0	0	2	3
New	--	7	1	0	0	12	20
Inventory Areas	12	3	2	1	0	0	18
1989 Totals	12	9	4	1	0	17	43

### Inventories

Thirteen sites were chosen to carry out protocol procedures to verify pair occupancy in 1988. Five additional sites were added to the original 13 in 1989. In 1988, 42 inventory visits were made to 13 sites, requiring a total of 94.7 hours. Total time spent at each site varied from 1.6 to 25.9 hours. In 1989, 65 inventory visits were made to 18 sites, requiring a total of 286.7 hours. Total time spent at each site ranged from 1.4 to 35.5 hours. Site visits for inventory work included both night and day work.

Pairs were verified at ten of 13 sites inventoried in 1988, and 12 of 18 in 1989 (Table 1, Figure 3, Appendices 1 & 2). In 1988, the three remaining sites had both a male and female present, but pairs were not verified according to USFS protocol (1988). At the remaining sites in 1989, three had both a male and female present, two had a male, and one had a female. The number of visits per site varied from one to seven, one more than the protocol requirements (Figure 5). Of the 18 sites inventoried both years or surveyed in 1988 and inventoried in 1989, at least one owl was present at all 18 sites both years.

### Distribution

Surveys and inventories conducted in YONP were at elevations from 1220 m to 2465 m (4000 - 8080 ft). Most sites with Spotted Owls (91%) were located at elevations from 1295 m to 2110 m (4250 - 7250 ft), where 89% of the surveys were done (Figure 6, Appendix 3). Relatively more sites had owls below 1295 m (4250 ft) than above 2210 m (7250 ft), 67% versus 50%. However, 71% of the sites checked in the 1295 m to 2210 m (4250- 7250 ft) elevation range contained Spotted Owls.

Figure 5. Number of inventory visits to determine pair occupancy of Spotted Owls in Yosemite National Park during 1988 and 1989.

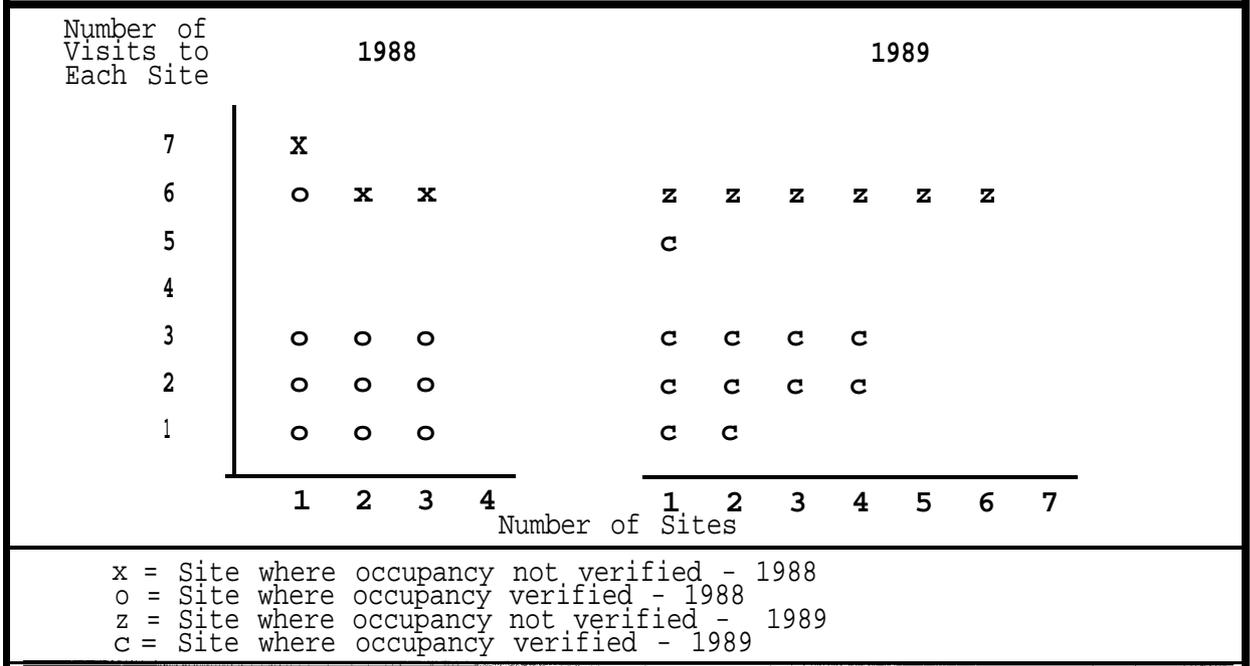
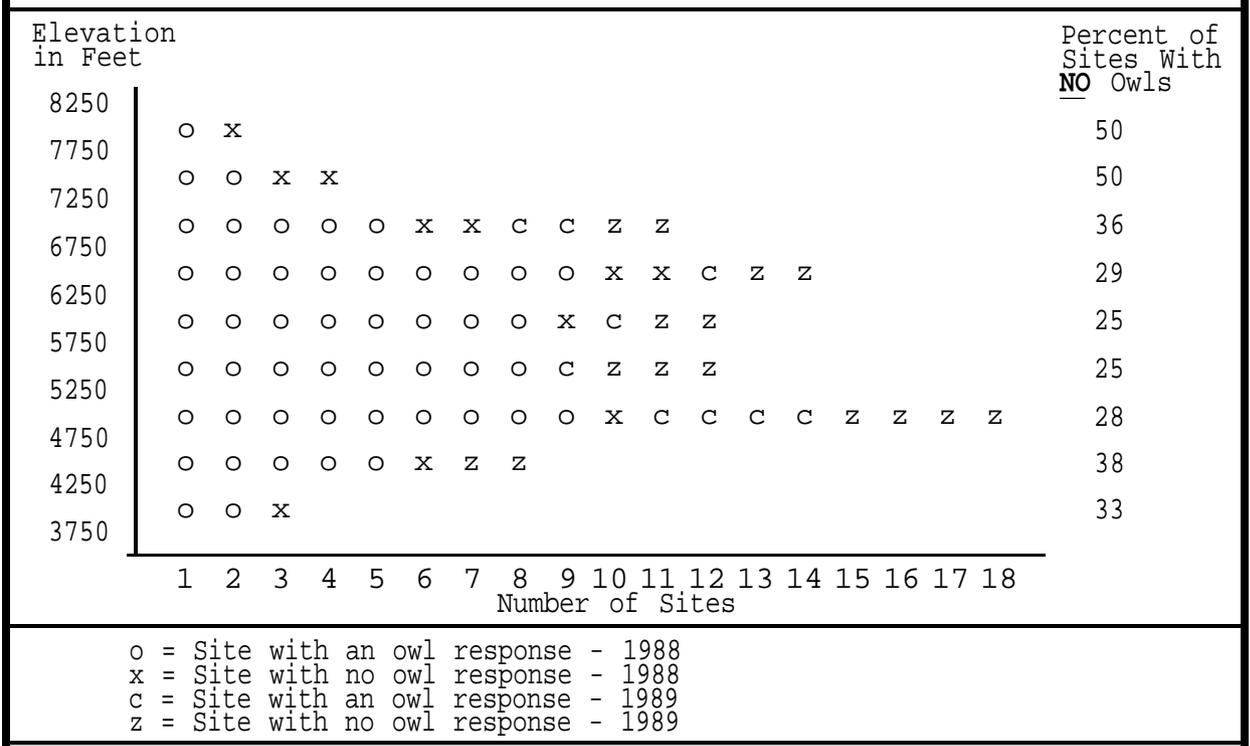


Figure 6. Elevational distribution of survey sites checked for the presence of Spotted Owls within Yosemite National Park during 1988 and 1989.



### Density

YONP contains approximately 826 km<sup>2</sup> (319 mi<sup>2</sup>) at elevations between 915 m and 2135 m (3000-7000 ft). In 1988, an area 404 km<sup>2</sup> (156 mi<sup>2</sup>) was surveyed and inventoried and in 1989 an additional 173.2 km<sup>2</sup> (67 mi<sup>2</sup>) was surveyed; the total for both years was 577 km<sup>2</sup> (223 mi<sup>2</sup>). Crude density was estimated at 0.10 sites and 0.18 owls per km<sup>2</sup> (0.26 sites and 0.45 owls per mi<sup>2</sup>; Table 2). At elevations above 2135 m (7000 ft), crude density was 58% of that estimated for areas between 1220 m and 2135 m (4000-7000 ft).

Elevation in Meters	Number of Owls	Number of Sites	Area (km <sup>2</sup> )	Crude Density (#/km <sup>2</sup> )	
				Owls	Sites
1220-2135	92	52	487.9	0.19	0.11
2135-2465	10	6	89.4	0.11	0.07
1220-2465	102	58	577.4	0.18	0.10

### Nests and Young

Six nests were discovered during this study. In 1988, nests were found at the Chinquapin and Grouse Creek sites. Nests were observed at Crane Creek, Lower Mariposa Grove, Monroe Meadow, and Chinquapin-South in 1989. All nests were in white firs except for the Lower Mariposa Grove nest which was in a sugar pine (Table 3). Average tree height was 38.6 m (126.7 ft) with a diameter at breast height (DBH) of 1.41 m (4.63 ft). The mean nest height was 22.0 m (72.2 ft) and canopy closure varied from 25% to 80%.

	1988		1989			
	MP029	MP045	MP008	MP039	MP047	MP051
<b>Nest Tree Height</b>	21.4 m	36.6 m	45.7 m	45.7 m	32.7 m	39.6 m
<b>Height of Nest</b>	16.8 m	27.5 m	13.7 m	19.2 m	24.4 m	30.8 m
<b>DBH</b>	1.7 m	1.5 m	1.7 m	1.1 m	1.4 m	1.1 m
<b>Slope Aspect</b>	45°	45°	30°	290°	30°	90°
<b>Canopy Cover</b>	50%	70%	60%	80%	25%	85%
<b>Tree Species</b>	WF	WF	WF	SP	WF	WF

Young were observed serendipitously at the Grouse Creek, Alder Creek, Merced Grove, and Meadow Brook sites in 1988. The Meadow Brook site was not an inventory site, but the young were discovered on a survey. In 1989, owls at Alder Creek and Lower Mariposa Grove were observed to have young. Both the Alder Creek (1988) and Lower Mariposa Grove pairs fledged two young per pair, and one young was observed for each of the remaining pairs. No specific effort was spent

to verify or locate nests or young at any site. However, using the data from inventory sites, a minimum of 30% of the pairs nested and fledged young in 1988. The minimum mean number of fledged young per pair was 0.40, and the minimum productivity of this sample was 1.33 in 1988. For 1989, a minimum of 17% of the pairs nested and fledged young. The minimum productivity was 1.5 with a minimum mean number of fledged young per pair of 0.25. Combining years, the minimum mean number of fledged young per pair was at least 0.32, and the minimum productivity was 1.4.

#### DISCUSSION

California Spotted Owls exist at a minimum of 58 sites. Although this number is not the result of a complete survey of YONP, we found more Spotted Owls than we initially expected. Fewer owls were expected because, only 11 sites were previously known within the Park (Gould 1985), the area between the 915 m and 2135 m (3000-7000 ft) only forms a narrow band of potentially suitable habitat, and that habitat is further reduced by extensive outcrops of rock and brush fields at lower elevations. Also, there undoubtedly were more individual Spotted Owls in areas that were surveyed because once a response was heard from an owl, we would stop calling and move on to the next area and most survey sites were only called once. In comparison, we detected 1.81 territorial owls per inventory site where we tried to locate all owls using the USFS protocol procedures. This was considerably more than the 1.08 owls per site found through surveys.

Additionally, we expect that we did not locate all owls even in areas where we surveyed. Normally we surveyed areas only once, but we located owls at 65.7% of the previously known sites on the first visit. This is consistent with the first visit success that Department studies have achieved in other studies of the California Spotted Owl (Table 4).

Study Location	Study Year	Total known sites visited	Sites where owls were located on first visit (Percent in parenthesis)
Yosemite	1988	14	10 (71%)
Yosemite	1989	21	13 (62%)
Sequoia & Kings Canyon	1988	21	12 (57%)
Sequoia & Kings Canyon	1989	35	22 (63%)
Southern California	1987	53	30 (57%)

There were fewer new owl sites located during surveys in 1989 than in 1988. We made a greater effort to inventory more sites in 1989 and the majority of easily accessible sites and sites in larger expanses of suitable habitat were surveyed in 1988, leaving the sites requiring more time or in more fragmented habitat for 1989. These reasons also limit our ability to estimate the potential number of sites in the park. We do not feel that a potential population size can be derived through calculations involving the total area in the 915 m to 2135 m (3000 - 7000 ft) band, the amount of that band that we surveyed, and the success rate we had in finding owl sites.

The known sites do provide a basis. to calculate density. The density we found in this study is equal to that found in Sequoia and Kings Canyon National Parks, and slightly less than that calculated for the Northern Spotted Owl in Humboldt County (Table 5). However, it is higher than the density reported in a study of owls on commercial and national forest lands in the central Sierra Nevada.

Location	Province	Year	Crude Density		Source
			owls/km <sup>2</sup>	terr/km <sup>2</sup>	
Six Rivers N.F.	Klamath	1985	0.22	0.12	Franklin et al. 1986
	Klamath	1986	0.22	0.11	Franklin et al. 1987
Eldorado N.F.	Sierra	1986	0.14	0.09	Bias & Gutierrez 1987
	Sierra	1987	0.12	0.07	Bias & Gutierrez 1988
Yosemite N.P.	Sierra	1988	0.18	0.10	This Study
Sequoia & Kings Canyon National Parks	Sierra	1989	0.17	0.09	Roberts 1990

In 1988, all inventoried sites had pairs present, with ten of 13 sites with verified pair occupancy. In 1989, 15 of 18 sites had pairs present and 12 of those had pairs verified. This rate of site occupancy by pairs was similar to that found at Sequoia and Kings Canyon National Parks but higher than that found on managed forest lands on the Eldorado National Forest (Table 6).

Location	Study Year	Sample Size	Pairs (%)	Singles	Source
Yosemite N.P.	1988	13	13 (100%)	0	This Study
	1989	18	15 (83%)	3	This Study
Sequoia N.P.	1988	27	19 (70%)	5	Roberts 1990
	1989	27	22 (81%)	1	Roberts 1990
Eldorado N.F.	1986	34	18 (53%)	12	Bias & Gutiérrez 1987
	1987	33	19 (58%)	7	Bias & Gutiérrez 1988
	1988	39	23 (59%)	7	Lutz & Gutiérrez 1989

Like all species, Spotted Owls are distributed in correlation with their habitat. Old-growth, mixed conifer forest is most abundant in YONP in the 1295 m to 2210 m (4250-7250 ft) elevation band. Outside the general distribution of this habitat type, the number of potential sites and the percentage of sites with owls goes down because the land is less capable of providing for the needs of the spotted Owl.

Gathering reproductive information was not a goal of this study. However, chance sightings of young and nests demonstrated that some pairs were reproductively active and successful.

#### ACKNOWLEDGEMENTS

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Appendix 1. Location, Status, and date of survey/inventory of Spotted Owl territory sites within Yosemite National Park during 1988.

Terr.No.	Terr.Name	Township/Range		
Visit Date	Results Time	Legal Location	Mousing Results	Protocol Results

INVENTORY SITES

<b>MP007*</b>	<b>Little Crane Creek</b>				<b>2S 20E</b>
4/16 p	v-m	nsw33	-	S	
5/21 p	x		-	S	
6/3 p	v-m	sw33	-	I 1	
6/4 a	vo-m	sww33	1/I	I 1	
6/27 p	v-m	sesw29	-	I 2	
6/28 a	x		-	I 2	
7/20 p	v-m	ne32	-	I 3	
7/21 a	x		-	I 3	
7/25 p	v-m	sese32	-	I 4	
7/26 a	vo-m	sesene32	4/EEEE	I 4	
8/19 p	x		-	I 5	
8/24 p	v-m	nsw33	-	I 6	
8/25 a	vo-p	wnsw33	-	I 6 0	
<b>MP008*</b>	<b>Crane Creek</b>				<b>2S 20E</b>
4/16 p	v-m	nwnw28	-	S	
5/20 p	x		-	S	
6/2 p	v-m	sese20	-	I 1	
	vo-f	nene29	-	I 1	
6/3 a	x		-	I 1	
6/27 p	vo-m	sese20	-	I 2	
	v-f	sese20	-	I 2	
6/28 a	vo-p	wsese20	-	I 2 0	
<b>MP014*</b>	<b>Mariposa Grove</b>				<b>5S 22E</b>
4/22 p	v-m	nenw18 & sesw7	-	S	
5/22 p	v-fm	sesw7	-	I 1	
5/23 a	vo-f	nwnesw7	2/EI	I 1	
6/23 p	v-mf	sw7	-	I 2	
6/24 a	o-u	nesw7	3/EEE	I 2	
6/29 p	v-mf	nesw7	-	I 3	
6/30 a	x		-	I 3	
7/21 p	v-mf	senw7	-	I 4	
7/22 a	x		-	I 4	
7/27 p	v-f	sesw7	-	I 5	
7/28 a	x		-	I 5	
8/17 p	v-mf	nwse7	-	I 6	
8/18 a	v-f	senw7	-	I 6	
8/22 p	v-mf	senw7	-	I 7	
8/23 a	vo-f	nsw7	-	I 7	
<b>MP029*</b>	<b>Cinquapin</b>				<b>3S 20E</b>
4/30 p	v-f	sese24	-	S	
5/14 p	v-fm	sww20	-	I 1	
5/15 a	vo-p	sww20	2/NN	I 1 0 N	

<b>MP033*</b>	<b>South Entrance Station</b>					<b>5S 21E</b>
4/22 p	v-m	cswse12	-		S	
5/23 p	v-m	swse2	-		S	
6/24 p	x		-		I 1	
6/29 p	v-mf	cs12	-		S	
	v-m	sesw11	-		S	
7/21 p	v-u	ssesw11	-		I 2	
7/22 a	x		-		I 2	
7/27 p	v-f	nwnw12	-		I 3	
7/28 a	x		-		I 3	
8/17 p	x		-		I 4	
8/22 p	x		-		I 5	
8/30 p	v-m	snwne14	-		I 6	
8/31 a	x		-		I 6	
<b>MP035</b>	<b>Merced Grove</b>					<b>2S 19E</b>
4/15 p	v-f	nnese23	-		S	
5/20 p	v-m	swne23	-		I 1	
5/21 a	vo-m	sww24	-		I 1	
5/21 p	v-m	wsw13	-		S	
6/2 p	v-m	se14	-		I 2	
6/3 a	v-m	nw24	-		I 2	
6/28 p	v-m	ne23	-		I 3	
6/29 a	vo-p	esene23	1/Y		I 3 O Y	
<b>MP036</b>	<b>Foresta</b>					<b>2S 20E</b>
4/16 p	v-f	nsw33	-		S	
5/21 p	v-f	nse33	-		I 1	
	vo-m	nse33	-		I 1	
5/22 a	vo-p	nwnw34	1/E		I 1 O	
8/19 p	v-p	f-nswne33	-		S	
		m-senwse33	-		S	
<b>MP039</b>	<b>Lower Mariposa Grove</b>					<b>5S 21E</b>
4/23 p	v-m		-		S	
5/23 p	v-m	nese13	-		I 1	
	vo-f	swne13	-		I 1	
5/24 a	v-f	nwse13	-		I 1	
	v-m	swse13	-		I 1	
6/23 p	v-f	nwnw13	-		I 2	
6/24 a	vo-p	nene13	-		I 2 O	
<b>MP040</b>	<b>Wawona - South</b>					<b>5S 21E</b>
4/23 p	vo-m	cne2	-		S	
5/23 p	v-m	swnw2	-		S	
	v-f	sene2	-		S	
6/24 p	vo-f	nwnw2	-		I 1	
6/25 a	vo-p	swnwse2	-		I 1 O	
7/27 p	v-f	nwnw12	-		S	
<b>MP042</b>	<b>Alder Creek</b>					<b>4S 21E</b>
4/23 p	v-m	snwnw21	-		S	
5/24 p	v-mf	nenw21	-		I 1	
5/26 a	v-u	nenw21	-		I 1	
6/25 p	v-f	cee17	-		I 2	
6/26 a	x		-		I 2	
7/22 p	v-mf	swne21	-		I 3	
7/23 a	v-p	sswne21	-		I 3 O 2Y	

<b>MP045</b>	<b>Grouse Creek</b>					<b>3S 20E</b>
4/30 p	v-m	snese1	-		S	
	v-f	nswnw8 (3S 21E)	-		S	
5/25 p	v-m	nene12	-		I 1	
5/26 a	vo-p	sene12	3/NEN		I 1 O N	
7/28 a	vo-y	sene12	-		- Y	
<b>MP049</b>	<b>Mono Meadow**</b>					<b>3S 22E</b>
5/13 p	vo-mf	wnenw17	-		S	
6/25 p	x		-		I 1	
7/23 p	x		-		I 2	
7/26 p	x		-		I 3	
8/18 p	x		-		I 4	
8/23 p	x		-		I 5	
8/29 p	x		-		I 6	
8/30 a	x		-		I 6	
<b>TL013*</b>	<b>Tuolumne Grove</b>					<b>2S 20E</b>
4/15 p	x		-		S	
5/7 p	vo-f	nesw7	-		I 1	
5/8 a	x		-		I 1	
6/1 p	v-m	nse7	-		I 2	
6/2 a	vo-p	nsws8	-		I 2 O	

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 \*\*MP049's site name, Mono Meadow, was changed to Ostrander Rocks in 1989 to better describe the location in relation to other observations made in 1989.  
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#### GENERAL SURVEY AREAS

<b>MP011*</b>	<b>Indian Creek</b>					<b>3S 21E</b>
8/24 p	x		-		S	
<b>MP012*</b>	<b>Indian Creek</b>					<b>3S 21E</b>
8/24 p	v-f	esesw22	-		S	
<b>MP013*</b>	<b>Cathedral Spires</b>					<b>2S 21E</b>
4/16 p	x		-		S	
4/28 p	v-m	sesw25	-		S	
<b>MP026*</b>	<b>Rush Creek</b>					<b>5S 21E</b>
5/22 p	v-m	nenw9	-		S	
5/24 p	x		-		S	
<b>MP027*</b>	<b>Fish Camp</b>					<b>5S 21E</b>
5/24 p	x		-		S	
<b>MP037</b>	<b>Meadow Brook</b>					<b>2S 21E</b>
4/16 p	v-m	sw33	-		S	
8/23 p	v-f	nenw4 (3S 21E)	-		S	
	vo-y	nenw4 (3S 21E)	-		S	
<b>MP038</b>	<b>Wawona - Southeast</b>					<b>2S 20E</b>
5/23 p	v-mf	sene1	-		S	
<b>MP041</b>	<b>Bishop Creek</b>					<b>4S 21E</b>
4/23 p	v-m	ssene5	-		S	
6/26 p	v-m	sww4	-		S	
	v-f	nene8	-		S	

MP043	South Fork Merced River					4S 21E
4/23 p	v-m	cns29	-		S	
MP044	Turtleback Dome					2S 20E
4/30 p	v-m	esese36	-		S	
MP046	Avalanch Creek					3S 21E
5/14 p	v-f	enws17	-		S	
MP047	Monroe Meadows					3S 21E
5/14 p	v-m	swsese16	-		S	
	v-u	ne16	-			
MP048	Upper Grouse Creek					3S 21E
5/14 p	v-u	sesw8	-		S	
	v-u	nwnw16	-		S	
MP050	Sentinel Creek					2S 22E
5/13 p	v-m	nsw29	-		S	
MP051	Chinquapin - South					3S 21E
5/25 p	v-m	nsw29	-		S	
6/26 p	v-m	sene29	-		S	
	v-f	swnw29	-		S	
	v-f	nesw29	-		S	
MP052	Gin Flat					2S 20E
5/31 p	v-m	swnw16	-		S	
MP053	Tamarack Flat					2S 20E
5/31 p	v-mf	swse14	-		S	
MP054	Cascade Creek					2S 20E
5/31 p	v-f	sese24	-		S	
MP055	Upper Tamarack Creek					2S 20E
6/5 p	v-f	nwnw11	-		S	
MP056	Elevenmile Creek					3S 21E
6/26 p	v-m	swnw28	-		S	
MP057	Empire Meadow					3S 21E
6/26 p	v-mf	sesw35	-		S	
MP058	Mariposa Grove #2					5S 22E
7/27 p	v-mf	nwne18	-		S	
7/28 a	v-p	nwne18	-		S	
8/22 p	v-m	sese7	-		S	
8/23 a	x		-		S	
MP059	Chilnualna Creek					4S 22E
8/21 p	v-f	swsw20	-		S	
	v-m	nenesw19	-		S	
MP060	Chilnualna Falls					4S 21E
8/21 p	v-f	senws24	-		S	
MP061	McGurk Meadow					3S 22E
8/23 p	v-mf	sesw2	-		S	
MP062	Dewey Point					3S 22E
8/23 p	v-f	swnw2	-		S	

TL012*	Ackerson					1S 20E
5/6 p	v-m	snw25	-		S	
TL040*	Middle Fork Tuolumne River					1S 20E
7/24 p	v-m	sww6	-		S	
TL044*	Carlton					1S 19E
5/7 p	v-f	nnwsw35	-		S	
TL073	Hazel Green Creek					2S 19E
4/15 p	v-f	ssenw2	-		S	
5/21 p	v-m	nne10	-		S	
TL074	Old Tioga Road					1S 20E
5/6 p	v-m	nenw32	-		S	
TL075	South Fork Tuolumne River					1S 20E
5/6 p	v-m	nesw33	-		S	
TL076	Aspen Valley - South					1S 20E
5/6 p	v-m	nwnw34	-		S	
8/19 p	v-f	nenwsw34	-		S	
8/20 p	v-m	nwnesw27	-		S	
TL077	Hazel Green Ranch					2S 19E
5/21 p	v-m	wne15	-		S	
TL078	Hodgdon Meadow					2S 19E
5/21 p	v-mf	nwnw3	-		S	
TL079	Gin Flat - North					2S 20E
6/1 p	v-f	swne9	-		S	
TL080	Tioga Road					2S 20E
6/1 p	v-f	se3	-		S	
TL081	Smith Meadow					1N 20E
7/24 p	v-f	sese22	-		S	
	vo-m	nene27				
TL082	Aspen Valley - North					1S 20E
8/20 p	v-m	swwne22	-		S	
	v-f	nenwse22				
....	Upper Yosemite Valley					2S 22E
4/29 p	x	20, 21, nw28, ne29			S	
....	South Fork Merced River					5S 22E
6/22 p	x	nw4, n5, 6			S	
....	Upper Tioga Road to White Wolf					1S 21E
6/28 p	x	15, s16, 20, 30, nw31			S	
....	Illilouette Creek					2S 22E
7/23 p	x	sw29, 32			S	
		sw4, ne5, 9, nw10 (3S 22E)				
....	Lost Bear Meadow					3S 22E
7/23 p	x	19, sw29, 30			S	
....	Peregoy Meadow					3S 22E
8/18 p	x	13			S	

.... 8/20 p	Lower White Wolf/Aspen Valley Trail x                    13, se14, nw23	S	1S 21E
.... 8/20 p	Upper White Wolf/Aspen Valley Trail x                    sw3, 4, se5, se7, nw8, nw18	S	1S 20E
.... 8/23 p	Upper Pohono Trail x                    se1, n12, nw6 (3S 22E) s30, w31 (2S 22E)	S	3S 21E

**Key - Appendix 1**

\* = site known before 1988

**Time:**

a = am. (usually 0400-1000)

p = pm. (usually 1800-0200)

**Results:**

v = vocal response

o = owl observed

f = female

m = male

p = confirmed pair

u = sex unknown

x = no owl response

y = young observed

**Protocol:**

S = general survey

P = presence observed

I = formal inventory visit

# = inventory visit number  
for that site

O = pair occupancy confirmed

N = nest site located

Y = young observed

# = number of young  
observed

**Mousing:**

- = mousing not attempted

# = number of mice offered to owl

C = owl caches mouse

E = owl eats mouse

H = owl holds mouse until observer leaves

I = owl ignores mouse until observer leaves

L = owl leaves with mouse, returns or is located without it

N = owl takes mouse to nest and leaves it there

T = owl takes mouse to another owl

Y = owl takes mouse to young

X = owl leaves with mouse, not relocated

Appendix 2. Location, Status, and date of survey/inventory of Spotted Owl territory sites within Yosemite National Park during 1989.

Terr.No.	Terr.Name	Township/Range				
Visit Date	Time	Results	Legal Location	Mousing Results	Protocol Results	
<b>INVENTORY SITES</b>						
<b>MP007*</b>	<b>Little Crane Creek</b>					<b>2S 20E</b>
5/19	p	x			I 1	
5/20	p	x			I 1	
6/4	p	v-m	swnw33		I 2	
6/5	a	x			I 2	
7/1	p	v-m	nesene32		I 3	
7/2	a	x			I 3	
7/27	p	vo-m	csene32		I 4	
7/28	a	vo-m	csne32		I 4	
8/11	p	v-m	swne32		I 5	
8/12	a	vo-m	sene32	2/EI	I 5	
8/17	p	v-mu	sene32 & swnw33		I 6	
8/18	a	o-u	sene32	1/I	I 6	
<b>MP008*</b>	<b>Crane Creek</b>					<b>2S 20E</b>
4/28	p	v-fm	swse20		I 1	
4/29	a	vo-m	sese20	4/CCCI	I 1	
5/19	p	v-fm	sww21 & nenene29		I 2	
5/20	a	vo-p	wsese20	3/CCX	I 2	
<b>MP014*</b>	<b>Mariposa Grove</b>					<b>5S 22E</b>
4/15	p	x			I 1	
4/17	a	x			I 1	
4/30	a	v-f	sesw7		I 2	
5/1	p	x			I 2	
7/26	p	v-mf	sswse7		I 3	
7/27	a	x			I 3	
8/7	p	v-m	sww8		I 4	
8/8	a	x			I 4	
8/13	p	v-f	sene7		I 5	
8/14	a	x			I 5	
8/21	p	v-m	nese7		I 6	
8/22	a	x			I 6	
<b>MP029*</b>	<b>Chinquapin</b>					<b>3S 20E</b>
4/22	p	v-f	nwse24		I 1	
4/23	a	x			I 1	
5/7	p	v-fm	sesese24		I 2	
5/8	a	vo-p	wsww20		I 2 0	
<b>MP033*</b>	<b>South Entrance Station</b>					<b>5S 21E</b>
5/5	p	x			I 1	
6/28	p	v-mm	swse12 & swnesw12		I 2	
6/29	a	x			I 2	
7/26	p	x			I 3	
7/27	a	x			I 3	
8/1	p	x			I 4	
8/2	a	x			I 4	
8/7	p	x			I 5	
8/15	p	x			I 6	

<b>MP035</b>	<b>Merced Grove</b>						<b>2S 19E</b>
5/15	p	v-f	nnene23			I 1	
5/16	a	x				I 1	
6/2	p	v-u	nene23			I 2	
6/3	a	vo-u	seese14	5/EEEEI		I 2	
7/1	p	v-fm	nesesw14			I 3	
7/2	a	x				I 3	
7/28	p	v-f	nenene23			I 4	
7/29	a	x				I 4	
8/10	p	v-m	nene23			I 5	
8/11	a	x				I 5	
8/16	p	v-f	sene23			I 6	
8/17	a	x				I 6	
<b>MP036</b>	<b>Foresta</b>						<b>2S 20E</b>
4/28	p	x				I 1	
4/29	a	v-m	enwnw34			I 1	
5/20	p	v-fm	wwnw34			I 2	
5/21	a	vo-p	eenene33	1/E		I 2 0	
<b>MP038</b>	<b>Wawona - South East</b>						<b>5S 21E</b>
5/6	p	v-fm	sesese1 & nsese1			I 1	
5/7	a	x				I 1	
5/21	p	v-fm	swse1			I 2	
5/22	a	vo-p	sesese1	3/EEE		I 2 0	
6/29	p	v-fm	senw12 & nenw12			S	
8/8	a	v-m	nwn12			S	
<b>MP039</b>	<b>Lower Mariposa Grove</b>						<b>5S 21E</b>
4/15	p	v-fm	ese13			I 1	
4/16	a	vo-p	nese13	1/T		I 1 0 N	
7/26	p	v-m	nese13			S	
8/1	p	v-m	seswne13			S	
8/2	a	vo-my	nese13	2/EED		S 2Y	
<b>MP040</b>	<b>Wawona - South</b>						<b>5S 21E</b>
4/16	p	v-m	cece2			I 1	
4/17	a	x				I 1	
5/5	p	v-fm	enwnw12 & swsw1			I 2	
5/6	a	v-f	enwnw12			I 2	
5/21	p	v-f	nwnene12			I 3	
5/22	a	x				I 3	
6/29	p	v-m	swsw1			I 4	
6/30	a	x				I 4	
7/31	p	v-f	seswne2			I 5	
8/1	a	x				I 5	
8/8	p	v-m	sene3			I 6	
8/9	a	x				I 6	
<b>MP042</b>	<b>Alder Creek</b>						<b>4S 21E</b>
4/17	p	v-fm	ncnc21 & scns21			I 1	
4/18	a	vo-m	esenw21	1/X		I 1	
5/1	p	v-m	esenw21			I 2	
5/2	a	vo-fm	esenw21	6/LEELLX		I 2	
5/8	p	v-m	sesenw21			I 3	
5/9	a	vo-fm	wswnw21	1/I		I 3	
5/22	p	v-m	senw21			I 4	
5/23	a	v-fm	sesenw21	1/X		I 4	
6/29	p	v-f	senw21			I 5	
7/1	a	vo-py	senw21	1/Y		I 5 0 Y	
8/20	p	v-fm	nwnw27 & nwn28			S	

<b>MP045</b>	<b>Grouse Creek</b>					<b>3S 20E</b>
4/23 p	x				I 1	
4/24 a	v-m	esene12			I 1	
5/13 p	vo-f	sesene12			I 2	
5/14 a	v-fm	sesene12			I 2	
6/5 p	v-fm	sesene12			I 3	
6/6 a	vo-p	wswnw8	2/EED		I 3 0	
<b>MP047</b>	<b>Monroe Meadows</b>					<b>3S 20E</b>
4/21 p	v-m	wsese16			I 1	
4/22 a	v-m	eenese16			I 1	
5/12 p	v-f	cese16			I 2	
5/14 a	x				I 2	
6/6 p	v-fm	nenese16 & wnsw15			I 3	
6/7 a	vo-p	wnsw15	3/LNN		I 3 0 N	
<b>MP049</b>	<b>Ostrander Rocks</b>					<b>3S 22E</b>
4/21 p	x				I 1	
4/22 a	x				I 1	
5/12 p	v-f	cccw8			I 2	
5/13 a	x				I 2	
6/6 p	x				I 3	
6/7 a	x				I 3	
6/30 p	x				I 4	
7/29 p	v-f	nnesw7			I 5	
7/30 a	x				I 5	
7/31 p	x				S	
8/14 p	x				I 6	
8/15 a	x				I 6	
<b>MP051</b>	<b>Chinquapin - South</b>					<b>3S 21E</b>
5/7 p	v-m	nwsesw29			I 1	
5/8 a	x				I 1	
6/7 p	v-fm	swwse29 & snwne32			I 2	
6/8 a	vo-p	sesenw32 & nenese32	2/NI		I 2 0 N	
<b>MP058</b>	<b>Mariposa Grove #2</b>					<b>5S 22E</b>
4/14 p	v-m	swnw17			I 1	
4/15 a	vo-p	sesw8			I 1 0	
4/15 p	v-m	nwnw18 & sesw7			S	
<b>TL013*</b>	<b>Tuolumne Grove</b>					<b>2S 20E</b>
4/29 p	v-f	nwse7			I 1	
4/30 a	x				I 1	
5/14 p	x				I 2	
5/15 a	x				I 2	
6/1 p	v-m	nnsww7			I 3	
6/2 a	vo-p	nwswe7	2/EED		I 3 0	
<b>TL044*</b>	<b>Carlton</b>					<b>1S 19E</b>
4/24 p	v-fm	sswnw35			S	
5/14 p	v-m	swnw35			I 1	
5/15 a	vo-fm	swnw35	1/I		I 1	
5/31 p	v-m	wnesw35			I 2	
6/1 a	vo-m	snesw35	4/EEEE		I 2	
7/2 p	v-fm	swnsw35 & swnsw35			I 3	
7/3 a	vo-p	swnesw35	4/EEEE		I 3 0	

GENERAL SURVEY AREAS

TL012*	Ackerson				1S 19E
4/24 p	v-m	nwse26		S	
TL030*	Wilson Meadow				1N 20E
7/3 p	x	w3, se4, 9, n16		S	
MP064	Illilouette Creek				3S 22E
7/30 p	v-fm	nenw24 & nwnw24		S	
MP065	Mono Meadow - Northeast				3S 22E
7/30 p	vo-fm	sese9		S	
TL078	Big Oak Flat Entrance				2S 19E
5/14 p	x	nw3, ne4		S	
TL087	Kibbie Ridge				2N 19E
7/3 p	v-m	senw22		S	
TL088	Miguel Meadow				1N 19E
7/4 p	v-fm	sesese11		S	
7/5 p	v-mf	nesw12, nwswn12, wwsenw12		S	
TL089	Laurel Lake				2N 20E
7/5 p	v-fm	nene32 & swne32		S	
TL090	Condon				1N 20E
7/5 p	v-mf	nwnwnw8 & senw8		S	
TL091	Gravel Pit Lake				1N 20E
7/5 p	v-fm	cwce7		S	
TL092	North Mountain - North East				1N 19E
7/4 p	v-mf	sensw23 & nswse14		S	
....	Road & Trail North of Mather Ranger Station				1N 19E
6/3 p	x	s20, 29, se30, w32, 31		S	
....	Mather Ranger Station				1S 19E
6/3 p	x	2, 36 (1N 19E)		S	
....	Road South of Mather Ranger Station				1S 19E
6/3 p	x	nw11, e10, ne15, sw14		S	
....	Lake Eleanor - West				2N 20E
7/3 p	x	se27, 34, nw3 (1N 20E)		S	
....	Upper Kibbie Creek				2N 19E
7/3 p	x	s11, w12, nw13, e14		S	
....	Clark Fork Illilouette Creek				3S 22E
7/30 p	x	e10, 11, sw12, n13, w18 (3S 23E)		S	
....	Deer Camp				4S 21E
8/20 p	x	s2, se3		S	
....	Alder Creek				4S 21E
8/20 p	x	10, w15		S	

.....	Vernal Falls/Happy Isles			
8/22 p	x	s27, e28	S	2S 22E
.....	Yosemite Falls			
8/23 p	x	w18, 19, 24 (1S 21E)	S	2S 21E
.....	Yosemite Creek			
8/23 p	x	12, 1, 36 (1S 21E)	S	2S 21E
.....	E. Br. Moss Creek			
8/24 p	x	24, 19 (2S 20E)	S	2S 19E

**Key - Appendix 2**

\* = site known before 1988

**Time:**

a = am. (usually 0400-1000)

p = pm. (usually 1800-0200)

**Results:**

v = vocal response

o = owl observed

f = female

m = male

p = confirmed pair

u = sex unknown

x = no owl response

y = young observed

**Protocol:**

S = general survey

P = presence observed

I = formal inventory visit

# = inventory visit number  
for that site

O = pair occupancy confirmed

N = nest site located

Y = young observed

# = number of young  
observed

**Mousing:**

- = mousing not attempted

# = number of mice offered to owl

C = owl caches mouse

E = owl eats mouse

H = owl holds mouse until observer leaves

I = owl ignores mouse until observer leaves

L = owl leaves with mouse, returns or is located without it

N = owl takes mouse to nest and leaves it there

T = owl takes mouse to another owl

Y = owl takes mouse to young

X = owl leaves with mouse, not relocated

Appendix 3. Elevational distributions of areas and sites surveyed and inventoried during the 1988 Yosemite National Park study.

Territory Name	Territory Name	Elev. (ft)	Results 1988	Results 1989
MP007	Little Crane Creek	4500	p	m
MP008	Crane Creek	6000	p	p
MP011	Indian Creek	4500	x	-
MP012	Indian Creek	5200	f	-
MP013	Cathedral Spires	4050	m	-
MP014	Mariposa Grove	6150	m f	m f
MP026	Rush Creek	5300	m	-
MP027	Fish Camp	5900	x	-
MP029	Chinquapin	6000	p	p
MP033	South Entrance Station	5100	m f	m f
MP035	Merced Grove	5600	p y	m f
MP036	Foresta	4750	p	p
MP037	Meadow Brook	5600	m f y	-
MP038	Wawona - southeast	4650	m f	p
MP039	Lower Mariposa Grove	5400	p	p 2y
MP040	Wawona - south	4350	p	m f
MP041	Bishop Creek	5200	m f	-
MP042	Alder Creek	5200	p 2y	p y
MP043	South Fork Merced River	4000	m	-
MP044	Turtleback Dome	5000	m	-
MP045	Grouse Creek	5200	p y	p
MP046	Avalanch Creek	6400	f	-
MP047	Monroe Meadows	7200	m	p
MP048	Upper Grouse Creek	6300	u	-
MP049	Ostrander Rocks**	7250	m f	f
MP050	Sentinel Creek	7800	m	-
MP051	Chinquapin - south	5700	m f	p
MP052	Gin Flat	6800	m	-
MP053	Tamarack Flat	6500	m f	-
MP054	Cascade Creek	5800	f	-
MP055	Upper Tamarack Creek	6700	f	-
MP056	Elevenmile Creek	5900	m	-
MP057	Empire Meadow	6300	m f	-
MP058	Mariposa Grove - 2nd	5800	p	p
MP059	Chilnualna Creek	6800	m f	-
MP060	Chilnualna Falls	6900	f	-
MP061	McGurk Meadow	7300	m f	-
MP062	Dewey Point	7300	f	-
MP064	Illiloutte Creek	7000	-	f m
MP065	Mono Meadow	6800	-	f m
TL012	Ackerson	4900	m	m
TL013	Tuolumne Grove	5700	p	p
TL040	Middle Fork Tuolumne River	5300	m	-
TL044	Carlton	4500	f	p
TL073	Hazel Green Creek	4800	m f	-
TL074	Old Tioga Road	5600	m	-
TL075	South Fork Tuolumne River	6000	m	-
TL076	Aspen Valley - south	6000	m f	-
TL077	Hazel Green Ranch	5600	m	-
TL078	Hodgdon Meadow	4700	m f	x
TL079	Gin Flat - North	6400	f	-
TL080	Tioga Road	6500	f	-
TL081	Smith Meadow	6400	m f	-
TL082	Aspen Valley - north	6300	m f	-

TL030	Wilson Meadow	4600	-	x
TL087	Kibbie Ridge	6200	-	m
TL088	Miguel Meadow	4900	-	f m
TL089	Laurel Lake	6400	-	f m f
TL090	Condon	5200	-	m f
TL091	Gravel Pit Lake	5200	-	f m f
TL092	North Moutain - NE	5200	-	m f
....	Upper Yosemite Valley	4000	x	-
....	South Fork Merced River	4800	x	-
....	Upper Tioga Road to White Wolf	7800	x	-
....	Illilouette Creek	6400	x	-
....	Lost Bear Meadow	7000	x	-
....	Peregoy Meadow	7300	x	-
....	Lwr White Wolf/Aspen Vly Trl	6600	x	-
....	Upper White Wolf/ Aspen Vly Trl	7200	x	-
....	Upper Pohono Trail	7500	x	-
....	N-Mather Ranger St. Rd & Trail	5000	-	x
....	Mather Ranger Station	4900	-	x
....	Road Mather Ranger St. -South	4600	-	x
....	Upper Kibbie Creek	6500	-	x
....	Lake Eleanor -West	5000	-	x
....	Illilouette Creek/Clark Fork	7000	-	x
....	Deer Camp	6600	-	x
....	Alder Creek	5400	-	x
....	Vernal Fall/Happy Isles	5000	-	x
....	Yosemite Falls (& below ave elev)	5500	-	x
....	Yosemite Creek	7000	-	x
....	E-tributary Moss Creek	6000	-	x

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**Boldface** = Inventory site

f = female

m = male

p = verified pair

y = young

u = adult, unknown sex

x = no response

\*\*MP049's site name, Mono Meadow, was changed to Ostrander Rocks in 1989 to better describe the location in reference to new sites.

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