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Demographic Parameters of the California Spotted Owl
on the Lassen National Forest,
Preliminary Results (1990-1993)

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All of the following data were collected on or adjacent to the Lassen National Forest; even though a few sites occur outside the Forest boundaries, the following tables all say "on the Lassen National Forest". Owls at Gold Run Creek and Gold Run Creek East were found on BLM land in 1990 and 1991. The owls at Dyer Mountain have been found each year within an 80 acre parcel of land which was traded to a private timber company (Roseburg) between the 1990 and 1991 field seasons. The Last Chance campground spotted owls were also on Roseburg land, as were the Rocky Point SOHA owls in 1992 and 1993. The Roop Mt owls were on land managed by Beatty and Associates. The Baxter Creek owls were on non-commercial private land in 1992 and 1993. Wheeler Sheep Camp is in the Greenville Ranger District of the Plumas National Forest. The Willow Lake SOHA overlaps Lassen Volcanic National Park and the Lassen National Forest; the owls have been found within the Park each year. All other sites occur within the Almanor and Eagle Lake Ranger Districts of the Lassen National Forest, with the exception of the Heart Lake SOHA, which is in the Hat Creek District. Elevations at the sites range from 4000 to 7000 feet.

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Table 1A. Social status of California spotted owls at 91 sites on the Lassen National Forest, 1990, 1991, 1992 and 1993.

SITE NAME	SOCIAL STATUS ^a			
	1990	1991	1992	1993
ALDER CREEK SOHA	N.S.	PAIR	PAIR	PAIR
ASHURST MOUNTAIN	MRS	N.S.	N.S.	N.S.
BATHTUB LAKE	N.S.	PAIR	N.S.	N.S.
BAXTER CREEK SOHA	PAIR	PAIR	PAIR	PAIR
BEAR FLAT IGA	N.S.	MRFP	0	FP
BENNER CREEK SOHA	PAIR	PAIR	PAIR	PAIR
BENNER SPRINGS	0	0	0	FR
BENNETT KNOLL	TX	TX	MP	PAIR
BIG BEND SOHA	MPFP	MPFP	N.S.	N.S.
BLUE LEAD GULCH	N.S.	N.S.	N.S.	MRFR
BOGARD BUTTES SOHA	PAIR	PAIR	PAIR	PAIR
BUTT CREEK	PAIR	MRFR	PAIR	PAIR
BUTT MOUNTAIN NORTH	PAIR	PAIR	PAIR	PAIR
BUTT MOUNTAIN WEST	PAIR	PAIR	PAIR	PAIR
CAIRN BUTTE SOHA	PAIR	PAIR	PAIR	PAIR
CARIBOU PEAK	PAIR	PAIR	PAIR	0
CARTER CREEK	N.S.	N.S.	PAIR	PAIR
CHRISTIE HILL	FRS	MRFR	PAIR	MR
COLD CREEK	PAIR	PAIR	PAIR	PAIR
CONE LAKE	N.S.	MR	N.S.	0
COPPERVALE/101	PAIR	PAIR	PAIR	PAIR
CRAZY HARRY GULCH	PAIR	PAIR	PAIR	PAIR
CUB CREEK SOHA	MRS	PAIR	MPFP	MRFP
CUMMINGS SOHA	TX	TX	TX	MP
DYER MOUNTAIN	PAIR	PAIR	PAIR	PAIR
EAGLE ROCKS	N.S.	MRFP	PAIR	N.S.
ELAM CREEK EAST	N.S.	N.S.	PAIR	PAIR
ELAM CREEK SOHA	PAIR	PAIR	PAIR	PAIR
FANANI MEADOW	MRFP	PAIR	MRS	PAIR
FANANI SOUTH	N.S.	N.S.	N.S.	PAIR
FEATHER RIVER HOMESITE	N.S.	N.S.	N.S.	MP
FLEISCHMANN LAKE	PAIR	MR	PAIR	MRFP
GOLD RUN CREEK	PAIR	PAIR	PAIR	PAIR
GOLD RUN EAST	N.S.	FP	0	0
GRIZZLY CREEK SOHA	PAIR	PAIR	PAIR	MPFP
GURNSEY CREEK	N.S.	MRFP	PAIR	PAIR
HAMILTON MT. SOHA	PAIR	PAIR	PAIR	PAIR
HAMPTON BUTTE	MPFP	MP	N.S.	N.S.
HEART LAKE SOHA	PAIR	PAIR	MR	MRFP
HOLE IN GROUND SOHA	PAIR	PAIR	PAIR	PAIR
HOMER LAKE	MP	N.S.	N.S.	N.S.
HUMBOLDT SUMMIT	MRFP	FP	N.S.	MPFP
JENNIE MT SOHA	TX	TX	PAIR	MRFR
KAY TIMBER SALE	PAIR	PAIR	PAIR	PAIR
KEDDIE RIDGE SOHA	N.S.	MPFP	N.S.	N.S.
KEDDIE RIDGE T. SALE	PAIR	PAIR	N.S.	N.S.
LAST CHANCE CAMPGROUND	N.S.	PAIR	PAIR	PAIR
LAST CHANCE CREEK	N.S.	MR	PAIR	TX

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Table 1A (cont.)

SITE NAME	SOCIAL STATUS ^a			
	1990	1991	1992	1993
LITTLE GRIZZLY CAMPGRND	N.S.	PAIR	PAIR	PAIR
LOCHERMAN SOHA	PAIR	PAIR	PAIR	PAIR
LOGAN MOUNTAIN	MRFR	N.S.	N.S.	N.S.
LONGVILLE	N.S.	PAIR	PAIR	PAIR
LOST TOM TIMBER SALE	PAIR	PAIR	PAIR	PAIR
MARTIN CREEK SOHA	PAIR	PAIR	PAIR	PAIR
MILL CREEK	N.S.	PAIR	PAIR	PAIR
MILLER RAVINE	MP	MP	MR	MRFR
MOONLIGHT PASS	PAIR	PAIR	N.S.	0
MORGAN MT. SOHA	MRFP	PAIR	PAIR	PAIR
MOSQUITO SPRINGS	PAIR	PAIR	PAIR	PAIR
MUD CREEK SOHA	PAIR	TX	PAIR	PAIR
MUD CREEK SOUTH	N.S.	N.S.	N.S.	FR
PACIFIC CREST TRAIL	MPFP	MPFR	PAIR	MRFR
PEACOCK POINT NORTH	MRFR	MRFR	N.S.	N.S.
PEACOCK POINT SOHA	PAIR	MRFP	PAIR	MPFR
PEGLEG MT. SOHA	PAIR	MRFP	PAIR	PAIR
PHILBROOK SOHA	PAIR	PAIR	PAIR	PAIR
PINE CREEK	N.S.	N.S.	N.S.	MRFR
REESE FLAT SOHA	MPFP	MRFP	MP	N.S.
RICE CREEK	MP	PAIR	PAIR	PAIR
ROCK CREEK	TX	TX	PAIR	PAIR
ROCKY POINT SOHA	PAIR	PAIR	PAIR	PAIR
ROOP MOUNTAIN	N.S.	N.S.	PAIR	MRFP
RUFFA RANCH	N.S.	MRFP	0	N.S.
SCENIC LOOP	PAIR	PAIR	PAIR	MRFR
SHANGHAI CREEK	MRFP	MRFR	0	0
SHANGHAI NORTH	N.S.	N.S.	PAIR	PAIR
SODA RIDGE SOHA	MR	MRFP	N.S.	N.S.
SQUIRREL CREEK	N.S.	MP	N.S.	FP
STAR BUTTE SOHA	TX	TX	TX	TX
SUSAN RIVER SOHA	PAIR	PAIR	PAIR	PAIR
TURNER MOUNTAIN	MR	PAIR	PAIR	PAIR
TWIN TIMBER SALE	PAIR	MRFR	PAIR	MPFR
UPPER STEPHENS MDW	PAIR	TX	N.S.	PAIR
UPPER YELLOW CREEK	PAIR	PAIR	PAIR	PAIR
WARNER TIMBER SALE	MRFR	PAIR	PAIR	PAIR
WHEELER SHEEP CAMP	N.S.	N.S.	PAIR	0
WILD CATTLE MT. SOHA	PAIR	PAIR	PAIR	PAIR
WILLARD CREEK SOHA	MPFP	MPFP	N.S.	N.S.
WILLOW LAKE SOHA	PAIR	PAIR	PAIR	PAIR
WILLOW LAKE SOUTH	PAIR	PAIR	PAIR	PAIR
WILSON MEADOW	MPFR	0	0	MRFR

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^a KEY: MR = MALE RESIDENT (detected at least 2 times, separated by a week)
MP = MALE PRESENT
FR = FEMALE RESIDENT (detected at least 2 times, separated by a week)
FP = FEMALE PRESENT
PAIR = MALE AND FEMALE RESIDENT, FOUND TOGETHER AT LEAST TWICE
S = RESIDENT OWL IS CONFIRMED TO BE SINGLE (no owl of the opposite sex
detected after 6 visits)
TX = TELEMETRY SITE; NOT USED FOR DEMOGRAPHICS
N.S. = NOT SURVEYED
O = SURVEYED AND NO OWLS DETECTED

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Table 1B. Summary of social status of California spotted owls on the Lassen National Forest, 1990, 1991, 1992 and 1993.

SOCIAL STATUS	1990	1991	1992	1993
PAIR	39	44	56	47
SINGLE MALE	2	0	1	0
SINGLE FEMALE	1	0	2	0
MALE & FEMALE RESIDENT/PRESENT	13	17	1	15
MALE RESIDENT/PRESENT	5	6	4	3
FEMALE RESIDENT/PRESENT	0	2	0	4
TOTAL SITES WITH OWLS DETECTED	<u>60</u>	<u>69</u>	<u>64</u>	<u>69</u>

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Table 2. Sex and age class distribution of California spotted owls identified to age class on the Lassen National Forest, 1990, 1991, 1992 and 1993.

Year	Age Class	Male		Female		Both Sexes	
		N	%	N	%	N	%
1990	Adult	38	86.4	32	82.1	70	84.3
	Subadult	6	13.6	7	17.9	13	15.7
	Combined	44	100.0	39	100.0	83	100.0
1991	Adult	55	93.2	48	92.3	103	92.8
	Subadult	4	6.8	4	7.7	8	7.2
	Combined	59	100.0	52	100.0	111	100.0
1992	Adult	52	88.1	52	92.9	104	90.4
	Subadult	7	11.9	4	7.1	11	9.6
	Combined	59	100.0	56	100.0	115	100.0
1993	Adult	46	78.0	42	75.0	88	76.5
	Subadult	13	22.0	14	25.0	27	23.5
	Combined	59	100.0	56	100.0	115	100.0

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Table 3. Proportion of female California spotted owls nesting on the Lassen National Forest, 1990, 1991, 1992 and 1993.

YEAR	Age Class	n	Females checked for nesting	
			Proportion Nesting	
			p	(95% CI)
1990	Adult	21	0.76	(0.58 - 0.95)
	Subadult	4	0.00	
	Total	25	0.64	(0.45 - 0.83)
1991	Adult	28	0.39	(0.21 - 0.58)
	Subadult	2	0.00	
	Total ^a	31	0.35	(0.18 - 0.53)
1992	Adult	37	0.97	(0.92 - 1.00)
	Subadult	1	1.00	
	Total	38	0.97	(0.92 - 1.00)
1993	Adult	29	0.66	(0.48 - 0.83)
	Subadult	6	0.17	(0.00 - 0.49)
	Total	35	0.57	(0.41 - 0.74)

^aTotals are the sum of adults, subadults, and owls of unknown age class.

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Table 4. Proportion of nesting female California spotted owls which fledged young on the Lassen National Forest, 1990, 1991, 1992 and 1993.

YEAR	Age Class	Number Nesting (n)	Proportion of Nesting Females Which Fledged Young	
			p	(95% CI)
1990	Adult	16	0.69	(0.45 - 0.92)
	Subadult	0		
	Total	16	0.69	(0.45 - 0.92)
1991	Adult	11	0.55	(0.24 - 0.85)
	Subadult	0		
	Total	11	0.55	(0.24 - 0.85)
1992	Adult	36	0.92	(0.83 - 1.00)
	Subadult	1	0.00	
	Total	37	0.89	(0.79 - 0.99)
1993	Adult	19	0.68	(0.47 - 0.90)
	Subadult	1	1.00	
	Total	20	0.70	(0.49 - 0.91)

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Table 5. Proportion of female California spotted owls checked for reproduction by 15 July which fledged young on the Lassen National Forest, 1990, 1991, 1992 and 1993.

YEAR	Age Class	Number Checked (n)	Proportion of All Females Checked Which Fledged Young	
			p	(95% CI)
1990	Adult	28	0.46	(0.28 - 0.65)
	Subadult	4	0.00	
	Total	34 ^a	0.38	(0.22 - 0.55)
1991	Adult	35	0.23	(0.09 - 0.37)
	Subadult	3	0.00	
	Total	39 ^a	0.21	(0.08 - 0.33)
1992	Adult	49	0.92	(0.84 - 1.00)
	Subadult	2	0.50	(0.00 - 1.00)
	Total	51	0.90	(0.82 - 0.98)
1993	Adult	33	0.48	(0.31 - 0.66)
	Subadult	9	0.11	(0.00 - 0.33)
	Total	43 ^a	0.40	(0.25 - 0.54)

^aTotals are the sum of adults, subadults, and owls of unknown age class.

Table 6. Fecundity of California spotted owls checked for reproduction by 15 July on the Lassen National Forest, 1990, 1991, 1992 and 1993. Fecundity is defined as the mean number of female young fledged per female^a.

YEAR	Age Class	Number Checked (n)	Mean Number of Female Young / Female	
			$\bar{x}$	(95% CI)
1990	Adult	28	0.32	(0.18 - 0.47)
	Subadult	4	0	
	Total ^b	34	0.26	(0.14 - 0.39)
1991	Adult	35	0.19	(0.06 - 0.31)
	Subadult	3	0	
	Total ^b	39	0.17	(0.06 - 0.28)
1992	Adult	49	1.09	(0.95 - 1.23)
	Subadult	2	0.25	(0.00 - 0.74)
	Total	51	1.06	(0.92 - 1.20)
1993	Adult	33	0.38	(0.23 - 0.53)
	Subadult	9	0.06	(0.00 - 0.16)
	Total ^b	43	0.30	(0.18 - 0.42)

^aWe assumed that half of the juveniles fledged were female.

^bTotals are the sum of adults, subadults, and owls of unknown age class.

Table 7. Productivity of California spotted owls checked for reproduction by 15 July on the Lassen National Forest, 1990, 1991, 1992 and 1993. Productivity is defined as the mean number of female young fledged per female that fledged young^a.

YEAR	Age Class	No. Females Successful	Mean Number of Female Young / Female	
			$\bar{x}$	(95% CI)
1990	Adult	13	0.69	(0.55 - 0.83)
	Subadult	0	0	
	Total	13	0.69	(0.55 - 0.83)
1991	Adult	8	0.81	(0.63 - 0.99)
	Subadult	0	0	
	Total	8	0.81	(0.63 - 0.99)
1992	Adult	45	1.19	(1.08 - 1.30)
	Subadult	1	0.50	
	Total	46	1.17	(1.06 - 1.29)
1993	Adult	16	0.78	(0.66 - 0.91)
	Subadult	1	0.50	
	Total	17	0.76	(0.64 - 0.89)

^aWe assumed that half of the juveniles fledged were female.

JUVENILE SURVIVAL

22 Juveniles were banded in 1990; 1 female was recaptured in 1991, 35 km away, mated to a transmitters owl ("Reno"), whose mate is known to have died in December 1990. Another female was recaptured in 1992 on the Plumas National Forest, 23 km from its natal site. She was paired.

13 Juveniles were banded in 1991; 2 were dead before the end of the field season. Two were resighted on the Plumas National Forest in 1992 (1 male, 1 female) but were not recaptured. The male moved 47 to 85 km from his natal site. The female moved 18 to 72 km from her natal site. The female was paired and produced 1 offspring in 1992; the male was solitary. One male was recaptured in 1993, 10 km from his natal site. He was paired.

72 Juveniles were banded in 1992. In addition, 5 juveniles were captured and taken to UC Davis by Peter Hodum for a study of spotted owl energetics. One juvenile was found in the field with a broken leg and was taken to UC Davis for rehabilitation. It died in captivity. Three females were recaptured in 1993, 12, 20, and 22 km from their natal sites. One male was resighted in 1993 but was not recaptured. All 4 were paired. Four of the juveniles from UC Davis were released in July 1993. The fifth died in captivity.

23 Juveniles were banded in 1993. In addition, one juvenile was found dead in the field.