

2014 ANNUAL REPORT

Northern Spotted Owl Monitoring, Banding and Status Report on
Usal Redwood Forest Company Ownership

Submitted to

Usal Redwood Forest Company

by

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Introduction

In 2014, Campbell Global (CG), LLC completed 25 years of northern spotted owl (*Strix occidentalis caurina*) surveys and monitoring on industrial timberlands owned by Usal Redwood Forest Company (URFC). URFC ownership, comprised of approximately 49,636 ac (79 mi²), is located in Mendocino County, California (Figure 1). CG's northern spotted owl (spotted owl) monitoring program is one of the most long-term studies conducted on an industrially managed forest. Continuous annual spotted owl territory monitoring has resulted in a substantial amount of data collected on the species' occupancy status, pair status, nesting attempts, and number of young fledged. This report summarizes results from our 2014-spotted owl survey, monitoring, and banding efforts. Gragg and Ambrose (1998) give an overview of the spotted owl monitoring effort conducted on the ownership prior to 1997.

Study Area

The study area is located in Mendocino County, California on Usal Redwood Forest Company, LLC property consisting of 20,096 ha (Figure 1). The USAL ownership is located in the Coast Range physiographic province and the California Coastal Steppe, Mixed Forest, and Redwood Forest Province (Bailey 1994). The property is located west of the communities of Piercy and Leggett, California, encompassing the majority of Usal Creek and multiple tributaries to the South Fork Eel River. Most of the ownership lies within 15 km of the Pacific Ocean (Figure 1).

The climate of the Coast Range physiographic province is temperate, characterized by hot, dry summers with frequent early morning fog, and wet winters (Saywer et al. 2000). Annual precipitation along the South Fork Eel River drainage averages 62 cm based on data from the monitoring station in Leggett, California while annual precipitation along the coastal drainages averages approximately 49 cm. (Western Regional Climate Center, Desert Research Institute; <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?caftbr+nca>). Most precipitation occurs during the winter months in the form of rain, although snow along the higher elevations (over 300 m) is not uncommon. Fog is also an important contributor to the coast redwood hydrologic budget, contributing from 25-50 percent of the total water input annually, especially during dry summer months (Saywer et al. 2000).

Elevations of the study area range from less than 13 m at the junction of the North and South Forks of Usal Creek to over 780 m along the ridge above Low Gap Creek south of Leggett. The topography is characterized by moderate to very steep terrain with slopes ranging from 10% along narrow ridge tops, midslope benches and valley bottoms to greater than 80% along local steep streamside slopes and upper headwater areas of the smaller drainages, with aspects facing in all directions.

The study area is composed primarily of a mixture of conifer dominated coast redwood (*Sequoia sempervirens*), Douglas-fir (*Pseudotsuga menziesii*), and conifer-hardwood mixture with native hardwoods, principally tanoak (*Lithocarpus densiflorus*) and Pacific madrone (*Arbutus menziesii*) comprising a significant portion of the species composition in many stands, especially at higher elevations and on xeric sites. The forest is primarily second growth, with older, residual conifer and hardwood concentrated along watercourses or located individually or in small clumps across the landscape.

The property has historically been used for timber production. Lower Usal Creek was first harvested in the late 1800s. However, the majority of the property was first harvested during the post-World War II time period (e.g., around 1950). As a result of management techniques practiced over the past century in addition to poor soils, native hardwoods have become dominant in mid-story canopies at higher elevations and on interior portions of the property.



Figure 1. Study area in the north-central coastal redwood region comprising the Usal Redwood Forest Company ownership, Mendocino County, California.

Methods

Spotted Owl Surveys and Territory Monitoring

Timber Harvest Plan Surveys

Since the listing of the spotted owl, the ownership has operated under U.S. Fish and Wildlife Service (USFWS 1991, 1992, and 2011) “no take” provisions. All Timber Harvest Plans (THPs) and adjacent suitable habitat within 0.7 mi (1.1 km) require spotted owl surveys under guidelines set forth by the USFWS protocol. When spotted owls are detected during surveys, follow-up monitoring is initiated (USFS 1988) and standard protection measures for the spotted owl territory are applied.

Due to the comprehensive nature of the monitoring effort, the density of active spotted owl territories across the study area, and the intensity of timber management on the ownership, surveys of individual THPs were conducted using 2 survey methods; point calling and walk-in surveys. For THPs and adjacent forestlands with no known spotted owl territories, surveys were typically done by point calling from established stations. The placement of these stations ensured complete coverage of the THP and its surrounding watershed(s). When established spotted owl territories were located within 0.7 mi of the proposed THP, point calling was conducted in areas topographically separate from the known territory. THP surveys located near the property boundary were coordinated with neighboring landowners to avoid repetitious calling and harassment of known spotted owls.

Spotted owl surveys were conducted from 1 March to 30 August. Most THP level surveys were completed by 31 July. Point calling was initiated after sunset using imitation spotted owl vocalizations. Each call point was visited for at least 10 minutes to locate potential spotted owls in the area. Depending upon the intensity of the previous year’s survey efforts, 3 to 6 surveys were conducted in each THP area. For example, if the THP area was surveyed on 3 or more occasions during the previous year, a minimum of 3 current year surveys was considered adequate for determining the presence of spotted owls. To adjust for the revised 2011 NSO protocol, THPs initiated in 2011 and thereafter were surveyed 6 times for NSO presence. When spotted owls were detected during point surveys, daytime walk-in surveys were conducted in the general area of the detection(s) (see below for a description of walk-in surveys).

Spotted Owl Territory Surveys

All known active spotted owl territories occurring on the ownership were surveyed to determine activity status, nesting/reproductive status, and number of young fledged. We also surveyed inactive territories occurring within 0.7 mi (1.4 km) of proposed THPs to determine continuing inactive status of that territory. Inactive (e.g. historic) territories are defined as those territories where spotted owl(s) have not been detected after 3 years of surveys. We also conducted walk-in surveys to obtain banding resight/recapture data and to band un-banded spotted owls. Walk-in surveys were done in the spotted owl’s historic site center(s) or in areas where spotted owls were detected during point calling surveys. Spotted owls were monitored on adjacent ownerships if they were located within 0.7 mi of THPs and/or the current landowner did not intend to monitor the site. Spotted owl territory surveys occurred from 1 March to 30 August. Since spotted owls may disperse later in the breeding season, we attempted to fully survey (determine reproductive

status) all known territories by 30 July. Walk-in surveys generally begin approximately 2 hours before sunset to increase the probability of spotted owl detections. A visit consisted of surveyors eliciting imitation spotted owl calls and searching the site for evidence of spotted owl presence (e.g. white-wash and pellets).

Spotted owls located during walk-in surveys were fed live mice to determine territory status and reproductive activity (e.g. nesting). Non-nesting spotted owls typically cache or eat offered prey, whereas nesting spotted owls will normally take the prey to the nest. Up until 15 May, spotted owls were considered non-nesting if one bird cached or ate 4 mice on a minimum of 2 visits and were considered nesting if the spotted owl took a mouse to a nest. If a pair was found to be nesting, follow-up visits were conducted to determine reproductive output. After 30 May, territory monitoring was suspended for non-nesting owls, with the exception of banding visits for un-banded birds. Reproductive output was determined when owls took mice to the young.

Banding Capture/Recapture

For our banding program, spotted owls were baited into range with a mouse and then captured with a noose pole or by hand. Once captured, a band was attached to each leg: a blue-anodized aluminum USGS number band and a color/pattern-coded plastic band. For monitoring purposes, band combinations were uniquely assigned to individual adult birds on specific territories. To avoid overlap, band patterns/colors were coordinated with adjacent landowners. Fledglings received a year-coded (cohort) plastic band, with colors predetermined and standardized throughout the spotted owl's range (Franklin 1995). Once a banded fledgling matured, it was recaptured and the cohort band was replaced with a new 'adult' color-coded band. To assure that the cohort band colors were current, we coordinated with the USFWS, Arcata Fish and Wildlife Office on an annual basis.

Using plumage characteristics as outline in Forsman (1981), we assigned spotted owls to 1 of 3 age classes: juvenile (less than 1 year old), sub-adult (1–2 years old), and adult (3 or more years old). Juvenile spotted owls were not sexed. Call pitch and/or behavior were used to determine the sex of sub-adult and adult spotted owls.

Re-sighting of banded spotted owls during territory site visits allowed for the monitoring of individual birds. If a band was present, its color and pattern were identified with the aid of binoculars and high-powered flashlights. Un-banded owls were documented and scheduled for banding once it was determined that they were either non-nesting or had completed their nesting/reproductive cycle.

Data Analysis

Spotted Owl Monitoring

A descriptive analysis was conducted across the entire study area on our spotted owl survey and monitoring data conducted in 2014. The summaries presented here include:

- Number of monitored and active sites
- Number of new or previously unmonitored sites
- Number of pairs, single males, females, and sex uncertain

Number of young per pair
 Number of new or previously unmonitored sites
 Number of sites inactive this year but confirmed active last year
 Number of spotted owls banded and resights
 Crude density: Calculated by dividing the total number of located spotted owls by the study area size. As the entire ownership was not systematically surveyed, the actual spotted owl crude density may be higher than those presented here.

Results

Spotted Owl Monitoring

A total of 23 spotted owl territories occurring on or immediately adjacent to the study areas were monitored in 2014 (Table 1). Eighteen of these territories (78%) were active, while 5 (22%) were determined inactive. Of the 5 inactive territories, 3 were classified as inactive in 2013 and 2 were determined to be active in 2013. Spotted owl pairs occupied 8 (35%) of the active territories. Single males were detected at 8 territories (35%), single females at 1 territory (4%), and single spotted owls of uncertain sex were found at 1 territory (4%). Of the 8 spotted owl pairs, none attempted to nest in 2014.

Table 1. Northern spotted owl monitoring results for 2014.

Number of:	URFC (Usal)
Monitored Sites	23
Active Sites	18
Inactive Sites	5
New or Previously Unmonitored Sites	0
Confirmed Pairs	8
Sites with Single Males	8
Sites with Single Females	1
Sites w/ Single Uncertain Sex	1
Nests Attempted	0
Nests Successful	0
Young Produced	0

For 2014, Crude densities of spotted owls by subunit 0.329 spotted owls/mi² for URFC.

Banding

In 2014, no spotted owls were banded on URFC managed lands. A total of 5 banded spotted owls were resighted in the study area in 2014 (Table 2).

Table 2. Northern spotted owl banding effort (URFC), 2014.

Year	Total Captures	Initial Banding	Cohort Recaptures	Adult Recaptures	Total Resights ¹	Age Class
2014	0 0	0 0	-	-	5	Adult Young

Discussion

Spotted Owl Monitoring

Results from the seasons monitoring data indicate the third year for zero nest attempts on URFC. Nest attempts were less than 50% of the average for a given season; this year, along with 2003, 2012 and 2013, were the least amount of nest attempts recorded since 2002. This season is an anomaly when compared to 2006, with similar rainfall totals; where one might expect an above average number of nests attempted. From the years 2002- 2014, other nesting seasons that were at or below 50% of average were the years 2003, 2006, 2007, 2011, 2012 and 2013 (Table 3). Four of these six poor nesting years can be directly attributed to substantial rainfall totals during, at least, one of the months in the critical nesting period. Seasons 2003, 2006, 2011 and 2012 (identified with bold font in Table 3) resulted in rainfall totals that were 2-3 times more than the average rainfall for that given month. The poor nesting attempts in 2007 were attributed extreme cold temperatures during the critical nesting period of March and April (Annual Report 2007).

Table 3. Annual NSO Nest totals compared with spring rainfall totals, 2002-2014.

Year	*Rainfall Totals		NSO- Nest Totals	
	March	April	**N(a)	**N(s)
2014-	8.46"	1.71"	0	0
2013-	3.19"	1.58"	0	0
2012-	11.71"	2.94"	0	0
2011-	13.55"	2.05"	4	4
2010-	6.19"	7.49"	2	2
2009-	3.66"	0.79"	5	5
2008-	2.56"	0.84"	4	4
2007-	1.53"	3.17"	1	1
2006-	12.64"	7.32"	3	2
2005-	6.79"	3.73"	8	6
2004-	1.86"	1.58"	3	3
2003-	5.86"	11.64"	0	0
2002-	3.51"	1.20"	5	5

* Rainfall data from NOAA website for Ft. Bragg, Ca.

** N(a)= Nests attempted, N(s)= Nests successful

Barred Owls (BDOW) were detected within one mile of one historic NSO activity centers. One new BDOW was detected in an area that had not been surveyed for over 15 seasons. No NSO'

were detected in this area. The other BDOW location was near a historic BDOW location and located adjacent to a separate landowner. Of the NSO's located near the BDOW detections, all NSO activity centers proved to be active

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