Northern Spotted Owl Resource Plan: A Spotted Owl Toolbox

California Department of Fish and Wildlife
Northern Spotted Owl Stakeholder Forum

January 30, 2018

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290,000 acres of forest and range land

Forest Stewardship Council (FSC) certified

NSO Evaluation Area 14 CCR 895.1

USFWS Guidance regarding Southern and Eastern Boundaries
Technical Assistance 81333-2008-TA0058
May 28, 2008

USFWS Guidance
regarding Southern and Eastern Boundaries

Technical Assistance
81333-2008-TA0058
May 28, 2008
NSORP: A Spotted Owl Toolbox

Examples of Toolboxes:

- Habitat Conservation Plans
- Spotted Owl Management Plans
- Technical Assistance (*single tool*)
- Spotted Owl Resource Plans (*14 CCR § 939.9(a)*)

- Scientific-based approach
- Programmatic
- Adaptable and Flexible (*Adaptive Management*)
NSORP

- Consulted with CALFIRE and USFWS in 2010 and approved by CALFIRE in 2011

- Amended three times between 2011 and 2015

- CDFW reviewed during candidacy, 2015

- CDFW reviewed following listing, 2017
Surveys

- Barred owls can influence spotted owl detection probabilities \textit{Olson et al. 2005}

- Barred owls may influence spotted owl occupancy \textit{Anthony et al. 2006}

- Assumed per-visit detection probability for protocol surveys (USFWS 1992) may be less than 0.65 in landscapes with high barred owl densities. \textit{Olson et al. 2005, Kroll et al. 2010, Dugger et al. 2009}
Surveys

<table>
<thead>
<tr>
<th>No. visits</th>
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$p_{ij}$ USFWS (1992) 0.65

USFWS (2012) 0.40
Surveys

- 14 years of surveys from 1995 to 2009

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Population Ecology

Site Occupancy Dynamics of Northern Spotted Owls in Managed Interior Douglas Fir Forests, California, USA, 1995–2009

STUART L. FARKER, W&M. Bayt & Associates, P.O. Box 968598, Redding, CA 96099, USA
ANDREW J. KROLL, Weyerhaeuser Company, WTC LFS, P.O. Box 9777, Federal Way, WA 98063, USA

ABSTRACT: Northern spotted owls (Strix occidentalis caurina) have received intense research and management interest since their listing as a threatened species by the United States Fish and Wildlife Service in 1990. For example, public and private forest managers in the Pacific Northwest, USA, conduct surveys to determine presence or absence of spotted owls prior to timber harvest operations. However, although recently developed statistical methods have been applied to presence-absence data collected during research surveys, the effectiveness of operational surveys for detecting spotted owls and evaluating site occupancy dynamics is not known. We used spotted owl survey data collected from 1995 to 2009 on a study area in interior northern California, USA, to evaluate competing occupancy models from Program PRESENCE using Akaike’s Information Criterion (AIC). During 1,282 individual surveys, we recorded 480 spotted owl detections (37.4%) and 13 barred owl (1.0%) detections. Average per visit detection probability (95% CI) for single and paired spotted owls was 0.93 (0.90–0.96) for informed daytime, stand-based searches and 0.47 (0.43–0.51) for nighttime, station-based surveys (estimated from the best model); the average per visit detection probability from the null model was 0.67 (0.64–0.70). Average pair-only detection probabilities were 0.86 (0.81–0.90) for informed daytime, stand-based searches and 0.23 (0.18–0.29) for nighttime, station-based surveys; the average per visit detection probability from the null model was 0.63 (0.58–0.68). Site occupancy for any owl declined from 0.81 (0.59–0.93) in 1995 to 0.50 (0.39–0.60) in 2009; pair occupancy declined from 0.75 (0.56–0.87) to 0.46 (0.31–0.61). Our results suggest that a combination of 1 informed stand and 2 station-based operational surveys can support determinations of spotted owl site status (either a single or a pair) at desired levels of confidence. However, our information was collected in an area where barred owls were rarely detected. Surveys conducted in areas that support well-established barred owl populations are likely to be less effective for determining presence or absence of spotted owls and may require more surveys and/or different survey methods to determine site status with confidence. © 2012 The Wildlife Society.

KEY WORDS: California, colonization, detection probability, local-extinction, managed forests, northern spotted owls, occupancy, operational surveys, Strix occidentalis caurina.

Presented at TWS Western Section Annual Meeting, 2011 and at TWS National Conference, 2012
Manuscript accepted for publication in 2012
NSORP Surveys *(Section 5.0)*

- Results indicate a 3-visit, 2-year survey would produce confidence intervals greater than 0.95
- Barred owls occurred infrequently
- Scientific inference limited to repeated detections (more than once) of barred owls within 0.5 mile core use area
- 6-visit, 2-year survey required in landscapes outside scientific inference
Surveys

- Hunter et al. 1995, Franklin et al. 2000, Zabel et al. 2003 predicted low occupancy when no nesting and roosting habitat occurred within 0.5 mile
NSORP Surveys *(Section 5.1 and 5.2)*

- Uneven-aged silviculture may retain suitable habitat type post-harvest

  Surveys conducted within 0.5 miles of THP area

- Some uneven-aged and even-aged silviculture result in a change suitable habitat type post-harvest

  Surveys conducted within 1.3 miles of THP area
Abiotic favored habitats

- Franklin et al. 2000
- Zabel et al. 2003
- Clark, L. 2002
  Irwin et al. 2007
- USFWS 2008
- Underwood et al. 2010
- Irwin et al. 2012
Abiotic favored habitats

Irwin et al. 2012 (NCASI and landowners)

- 5 years (1998 to 2003)
- 71 individuals owls
- 10,242 telemetry locations
- 8,305 forest inventory plots
Abiotic favored habitats
(In order of importance)

1. Distance to nest
2. Distance of stream
3. Lower third of slope
4. Basal area of both conifer and hardwood species
5. Basal of conifer over 26” dbh
NSORP Site-Specific Assessment *(Section 4.4.3 and 4.4)*

- Site-specific assessment is completed in lieu of a one-size-fits-all approach.
- Site-specific information taken into account in order:
  - Distance to nest
  - Distance to water
  - Lower third of slope
  - Informed Use
  - Suitable Habitat
  - Aspect
  - Elevation
Disturbance Measures and Guidelines


Table: Estimated Harassment Distance Due to Elevated Sound Levels

<table>
<thead>
<tr>
<th>Existing (Ambient) Sound Level (dB)</th>
<th>Moderate (71-80 dB)</th>
<th>High (81-90 dB)</th>
<th>Very High (91-100 dB)</th>
<th>Extreme (101-110 dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Ambient (&lt;= 50 dB)</td>
<td>165 feet</td>
<td>500 feet</td>
<td>1,320 feet</td>
<td>1,320 feet</td>
</tr>
<tr>
<td>Very Low (51-60 dB)</td>
<td>0 feet</td>
<td>330 feet</td>
<td>825 feet</td>
<td>1,320 feet</td>
</tr>
<tr>
<td>Low (61-70 dB)</td>
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</table>
Disturbance Measures and Guidelines

Noise Disturbance Only Operations *(Section 6.1)*

- U.S. Fish and Wildlife Service (2006)
  *(Estimating the Effects of Auditory and Visual Disturbance)*
- U.S. Fish and Wildlife Service (2008)
  *(Take Avoidance Scenarios)*

Haul Disturbance *(Section 6.2)*

- Within 0.25 miles then conduct assessment
- Consider ambient and project sound, use patterns and topographic and vegetative screening.
Annual Reporting *(Section 9.0)*

Summary of previous years:

- THP’s filed under the NSORP
- Site-specific habitat assessments filed under the NSORP
- Operations conducted under the NSORP
- Summary of surveys conducted and results amended into THP's
- One-stop summary for CALFIRE *(Compliance monitoring)*
NSORP: A Spotted Owl Toolbox

What has worked well?

- Adding new science to the toolbox takes collaboration and consultation
- Application of science in form of amendment approved by CALFIRE
- Programmatic plans improve consistency and efficiency
NSORP: A Spotted Owl Toolbox

What has worked well?

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Lessons learned?

- NSORP and adaptive management is not a free lunch
- NSORP (14 CCR § 939.9(a)) and the Spotted Owl Expert (SOE) are valuable options for forest managers and biologists
QUESTIONS?