NOTE: This is an example of very similar letters that the Board of Forestry and Fire Protection received in excess of 250 copies of.

"Dear Board members:

I urge you to adopt the proposed 45-day noticed rulemaking petition for Northern Spotted Owl Protection Amendments, 2013. I urge you to move to formally delete 14 CCR 919.9(g)[939.9(g)] ("Option 'g'").

Deletion of option 'g' will result in more habitat for spotted owls and less regulations for the agencies and the industry. Furthermore, deletion of option 'g' will relieve the state of making complicated and difficult decisions related to the protection of spotted owls. The Forest Practice Rules already contain equally feasible, alternatives to option 'g,' a regulation that has been shown to harm owls and increase regulatory cost and burden.

I urge the Board to adopt the rulemaking to delete option 'g' immediately and without delay.

Sincerely,

Pia Mustonen
Satamakatu 8 E 48
Tampere, ot 33200"

ATTN: Mr. Eric Huff

Dear Mr. Huff:

RE: Proposal to eliminate Title 14 919.9 (g): Northern Spotted Owl OPPOSE

ACL represents the largely family-owned, multi-generational loggers and log truckers of California.

Loggers and log truckers are the infrastructure for timber harvesting in California, and can provide the workforce for coming developments in the battle against global warming, in the development of woody biomass alternative fuel, and in forest fire prevention, firefighting and clean-up.

But we are losing an increasing number of the hard-working and skilled people who perform these tasks. The timber harvesting season is short, existing regulatory requirements are costly, and loggers must look to make a living and pay for government regulation in a short window of time to continue in the trade.

Against this background, our loggers in areas of Northern Spotted Owl habitat or even potential habitat, have struggled mightily in recent years to
meet the strict regulatory criteria for timber harvesting in such areas. Given how short the California logging season is in general, owl calling requirements and the wait time on "No Take" letters(if appropriately granted) **already** severely impact exactly how long a Licensed Timber Operator can work in a season(if weeks are lost, money is lost) and if that operator can earn a living, year to year.

California is facing a crisis in rural timber counties of unemployment far beyond that of most urban California counties. Health and quality of life are among the lowest in the state in these counties, and in many counties, environmentally destructive "illegal drug growing operations" have become an underground economy with impact on animal and plant species alike, not to mention water and air quality. These businesses are often criminal and do not subject themselves to any government environmental regulation.

Consequently, Associated California Loggers is at a loss to determine why this petition to further exacerbate this economic and social devastation – without a corresponding environmental need – was filed with the Board of Forestry and accepted as a rule proposal.

Given the stringent laws and regulations already in place regarding the Northern Spotted Owl in California that our followed by our LTOs, RPFs, and landowners, and given the safeguards presented BY "Option (G)" to Northern Spotted owls and in "processing benefits" to the small and large landowners who use it, this petition seems almost "beside the point."

"Option (G)" has been a helpful and necessary component of any rational approach to managing timber harvest in NSO lands when the proof is available that take will not occur and that harvest can and should proceed. This option is not "antiquated," but is, rather, part of an ongoing, fully reviewed and negotiated process by which it was determined that the option is good and should continue. This option is used often on THPs and without it, any number of THPs may not have moved forward. CALFIRE would still have "take avoidance" responsibilities in the absence of the option, but can help review THPs on a more timely basis with Option (G) in place.

These are tough years for our licensed timber operators in general. We are "secondary victims" of the slowdown in the housing market and the increase in fuel costs, and we are facing low prices for lumber and logs, along with numerous costs on our membership from increased government regulation. One way in which our members can try to overcome these hurdles is to have as long a timber harvesting season in as acceptably large a harvest region as possible.

The EPIC proposal before you is an unnecessary and painful further assault on that harvesting season, with no commensurate environmental benefit given the lack of supporting evidence provided by the proponents. We urge the Board of Forestry to REJECT this proposal.

Sincerely,

Eric Carleson
Executive Director
Associated California Loggers
(916) 441-7940
(916) 441-7942 Fax
www.calog.com

Keeping Northwest California wild since 1977

July 2, 2013

California Board of Forestry and Fire Protection
Attn: Eric Huff
Regulations Coordinator
P.O. Box 944246
Sacramento, CA 94244

RE: Northern Spotted Owl Protection Measures Amendments 2013 – Rulemaking to Delete of Title 14 CCR §919.9(g)[939.9(g)]

Dear Responsible Officials,

The Environmental Protection Information Center (EPIC), a nonprofit organization that works to protect and restore ancient forests, watersheds, coastal estuaries, and native species in northern California, respectfully submits the following comments to the California Board of Forestry and Fire Protection (hereinafter "Board") regarding the above captioned rulemaking proposal.

EPIC asserts that the only the legally viable action for the Board to take on this rulemaking proposal is to immediately delete Title 14 CCR §919.9(g)[939.9(g)] (hereinafter "Option g") of the Forest Practice Rules as requested in EPIC's original petition dated February 6, 2013. This is the only action that is supported by the available evidence and in compliance with applicable state and federal law. In addition, deleting Option "g" will relieve the Board and the Department of Forestry and Fire Protection (hereinafter "CAL FIRE") from liability for illegal "take" of Northern Spotted Owls as prohibited by state and federal law. EPIC hereby incorporates by reference the original petition and all supporting materials into this comment letter on the rulemaking proposal.

The Northern Spotted Owl and illegal taking under the Endangered Species Act

The Northern Spotted Owl, (*Strix occidentalis caurina*), is listed as "threatened" under the Endangered Species Act ("ESA"). Under the ESA, "take" means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 16 U.S.C. § 1532(19). The statutory definition of the term "take" is further defined by regulations promulgated by the U.S. Fish and Wildlife Service ("USFWS") which define the

terms “harm” and “harass,” as used in the Act’s definition of “take.” The USFWS regulations define “harm” to mean:

> [a]n act that actually kills or injures wildlife. Such acts may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

50 C.F.R. § 17.3. The United States Supreme Court upheld this definition of “harm” specifically for Northern Spotted Owls and establishing the precedent for all ESA-listed species in *Babbitt v. Sweet Home Chapter of Communities for a Greater Oregon*, 527 U.S. 687 (1995). “Harass” is defined to mean “an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns, including breeding, feeding or sheltering.” *Id*.

The destruction of habitat relied upon by ESA-listed species constitutes “take.” *See Marbled Murrelet v. Babbitt*, 83 F.3d 1060, 1069 (9th Cir. 1996) (activity could be enjoined before take occurs and “a habitat modification which significantly impairs the breeding and sheltering of a protected species amounts to ‘harm’ under the ESA”); *Marbled Murrelet v. Pacific Lumber Co.*, 880 F. Supp. 1343, 1367 (N.D. Cal. 1995) (timber harvesting during breeding season could “harass” marbled murrelets by “annoying them to such an extent that it will significantly disrupt their normal behavior patterns”).

Deletion of Option “g” is absolutely essential for the Board and the Department to comply with the federal ESA to avoid “take” and by extension to comply with relevant state law to avoid “take” of Northern Spotted Owl. To be clear, every time a timber harvest plan (“THP”) is approved by CAL FIRE under Option “g” the Board and CAL FIRE are taking on liability for illegal “take” of Northern Spotted Owls. In particular, Option “g” does not meet the USFWS habitat retention requirements for “take” avoidance as set forth in the “take” avoidance guidelines. See attached USFWS 2009. Therefore, CAL FIRE is put in the position of making a determination on whether or not “take” will occur under the ESA whenever the agency approves a THP under Option “g” and can be prosecuted for this violation of the ESA.

The available evidence as detailed by USFWS (2009) conclusively shows that THPs approved by CAL FIRE over the last 10-15 years has resulted in significant habitat loss and most importantly, the loss of active nesting pairs, impairing the ability of the species to persist on private forests in California. This is a critical point that must not be lost by the Board in its deliberations.

Option “g” Threatens Northern Spotted Owls

Option “g” has been demonstrated, through actual implementation and monitoring by owl biologists, to result in “take” of Northern Spotted Owls. Evidence of this is demonstrated from years of analysis and review conducted by the USFWS while providing Technical Assistance on individual THPs as described in USFWS (2009). In this document, the expert agency, USFWS, clearly shows that Northern Spotted Owls and their habitat have not been adequately protected

by implementation of THPs approved under Option "g."

The USFWS (2009) analysis provides the following statement regarding the effectiveness of Option "g" to prevent "harm" to NSO:

> …our combined experience with hundreds of THPs indicates that the cumulative effects of repeated entries within many NSO home ranges has reduced habitat quality to a degree causing reduced occupancy rates and frequent site abandonment. In a large proportion of technical assistance letters to CAL FIRE and industrial timberland owners during the past five years, we noted the lack of NSO responses at historic territories, and described habitat conditions considered inadequate to support continued occupancy and reproduction.

(USFWS 2009 at 11 (emphasis added). The same document advises that:

> …the strong differences in trends observed on private versus federal lands supports the contention that management on private timberlands is creating habitat conditions that do not support sustained occupancy by [Northern Spotted Owl].

(USFWS 2009 at 12). These are very strong statements from the expert agency on Northern Spotted Owls, and these statements and experience should not be ignored by the Board.

Conflict of Interest

EPIC asserts that one member of the Board of Forestry, Richard Wade, has a conflict of interest that requires recusal from the final vote on this matter. Section 737(a) of the Public Resources Code prohibits any board member with "a direct personal financial interest" from participating in a board action [as described in Articles 8 or 9 of the Forest Practice Act]. In general conflicts of interest are governed by Political Reform Act, § 87100 *et seq*. of the Government Code, and the agency-specific conflicts of interest codes required by § 87300. Under § 87103, a public official has a conflicting "financial interest" when it is "reasonably foreseeable that the decision will have a material financial effect, distinguishable from its effect on the public generally" upon that official or entities closely linked to the official, including "[a]ny business entity in which the public official is a director, officer, partner, trustee, employee, or holds any position of management." A board member employed at any entity benefiting from Option "g" falls under § 87103.

Because member Richard Wade is a manager for Sierra Pacific Industries, an entity that heavily relies on Option "g", it is very clear that member Wade has a "financial interest" in the outcome of this rulemaking proposal, and therefore recusal is required for this matter.

Conclusion

In order to comply with state and federal law, there is only one viable action for the Board to take at this time: immediately delete Option "g" from the Forest Practice Rules and

work with the expert agency, USFWS, to ensure compliance with the ESA.

Sincerely,

Andrew J. Orahoske, Conservation Director
Environmental Protection Information Center
145 G Street, Suite A
Arcata, California 95521
Office: (707) 822-7711

Attachments:

EPIC 2013. Petition to delete Option "g" to the California Board of Forestry including all supporting materials. Submitted on February 6, 2013.

USFWS. 2009. Regulatory and Scientific Basis for U.S. Fish and Wildlife Service Guidance for Evaluation of Take for Northern Spotted Owls on Private Timberlands in California's Northern Interior Region.

Keeping Northwest California wild since 1977

February 6, 2013

Mr. Stan Dixon, Chairman
California Board of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 94244

Re: PETITION FOR ADMINISTRATIVE RULEMAKING (Gov. Code §§ 11340.6, 11340.7, 11346.1, 11346.4): Delete Title 14 California Code of Regulations § 919.9(g)[939.9(g)]

Dear Responsible Officials,

The Environmental Protection Information Center ("EPIC") hereby petitions the California Board of Forestry and Fire Protection ("Board") to amend the California Code of Regulations ("CCR"), Title 14 §919.9 [939.9] to eliminate subsection (g), as provided herein.

EPIC makes this request pursuant to Government Code section 11340.6, which states that "any interested person may petition a state agency requesting the adoption, amendment, or repeal of a regulation . . . ." Further, Government Code section 11340.7, subsection (a), provides that:

> Upon receipt of a petition requesting the adoption, amendment, or repeal of a regulation pursuant to Article 5 (commencing with Section 11346), a state agency shall notify the petitioner in writing of the receipt and shall within 30 days deny the petition indicating why the agency has reached its decision on the merits of the petition in writing or schedule the matter for public hearing in accordance with the notice and hearing requirements of that article.

EPIC requests that this matter be placed on the Board's agenda for adoption as promptly as possible, so that the Board may immediately begin a 45-day notice and comment period pursuant to Government Code section 11346.4, for the purpose of adopting the proposed amendments as permanent regulations at the Board's regular May 2013 meeting.

Purpose

The purpose of this petition is to bring the California Forest Practice Rules ("FPRs"), particularly Title 14 CCR 919.9 [939.9] into compliance with applicable federal guidelines for "take"

Environmental Protection Information Center
145 G Street, Suite A, Arcata, CA 95521
(707) 822-7711
www.wildcalifornia.org

avoidance of Northern Spotted Owl, (*Strix occidentalis caurina*), a species listed as "threatened" under the Endangered Species Act ("ESA"), by deleting the provisions of Title 14 CCR §919.9(g)[939.9(g)]. Under the ESA, "take" means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 16 U.S.C. § 1532(19). The statutory definition of the term "take" is further defined by regulations promulgated by the U.S. Fish and Wildlife Service ("USFWS") which define the terms "harm" and "harass," as used in the Act's definition of "take." The USFWS regulations define "harm" to mean:

> [a]n act that actually kills or injures wildlife. Such acts may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

50 C.F.R. § 17.3. The United States Supreme Court upheld this definition of "harm" specifically for Northern Spotted Owls and establishing the precedent for all ESA-listed species in *Babbitt v. Sweet Home Chapter of Communities for a Greater Oregon*, 527 U.S. 687 (1995). "Harass" is defined to mean "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns, including breeding, feeding or sheltering." *Id.*

The destruction of habitat relied upon by ESA-listed species constitutes "take." *See Marbled Murrelet v. Babbitt*, 83 F.3d 1060, 1069 (9th Cir. 1996) (activity could be enjoined before take occurs and "a habitat modification which significantly impairs the breeding and sheltering of a protected species amounts to 'harm' under the ESA"); *Marbled Murrelet v. Pacific Lumber Co.*, 880 F. Supp. 1343, 1367 (N.D. Cal. 1995) (timber harvesting during breeding season could "harass" marbled murrelets by "annoying them to such an extent that it will significantly disrupt their normal behavior patterns").

Deletion of subsection "g" (otherwise referenced as "Option g") results in eliminating but one of several options under the FPRs for avoiding "take" of Northern Spotted Owls. The California Department of Forestry and Fire Protection ("CAL FIRE") and proponents of individual Timber Harvest Plans ("THPs") will still be left with Title 14 CCR 919.9[939.3] options (a)-(f). THP submitters will still have the opportunity to consult with the USFWS via the programmatic Technical Assistance process pursuant to 14 CCR §919.9(e) [939.9(e)].

Existing Regulations Fail to Adequately Protect Northern Spotted Owls

The provisions of Title14 CCR § 919.9(g) [939.9(g)] have been demonstrated through actual implementation and monitoring to be inadequate to prevent "harm" to Northern Spotted Owls and implementation of "Option g" in the FPRs has resulted in "take" of Northern Spotted Owls. Evidence of this is taken from years of analysis and review conducted by the USFWS while providing Technical Assistance on individual THPs as described in the "*Regulatory and Scientific Basis for U.S. Fish and Wildlife Service Guidance for Evaluation of Take for Northern Spotted Owls on Private Timberlands in California's Northern Interior Region*" (hereinafter "USFWS 2009"). In this document, the expert agency, USFWS, clearly shows that Northern

Spotted Owls and their habitat have not been adequately protected by implementation of the provisions of Title14 CCR §919.9(g) [939.9(g)]. A copy of this document is incorporated by reference herein and provided in the list of attachments to this petition.

The USFWS Regulatory and Scientific Basis document provides the following statement regarding the effectiveness of Title 14 CCR§ 919.9(g) [939.9(g)] to prevent "harm" to NSO:

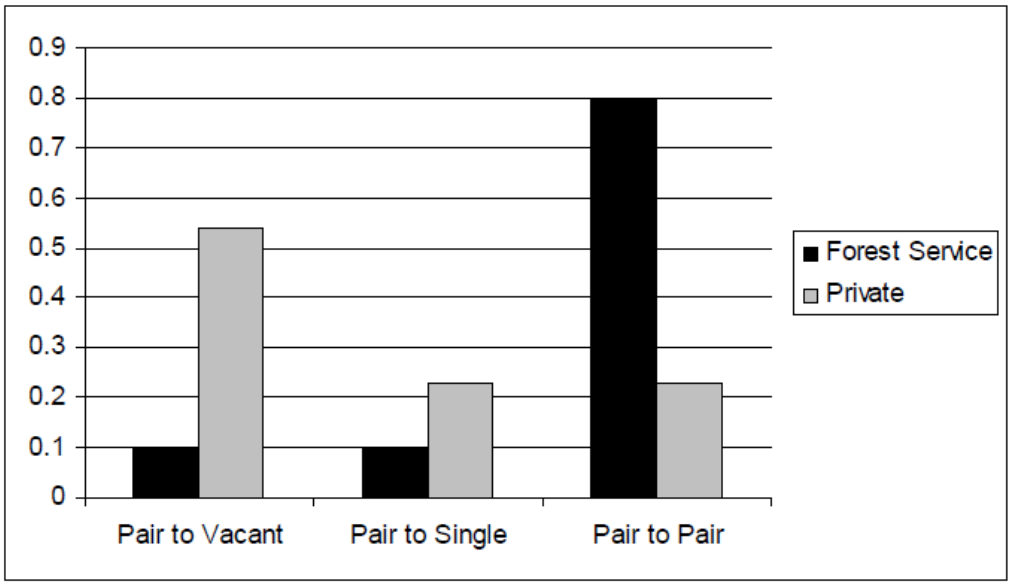
> …our combined experience with hundreds of THPs indicates that **the cumulative effects of repeated entries within many NSO home ranges has reduced habitat quality to a degree causing reduced occupancy rates and frequent site abandonment**. In a large proportion of technical assistance letters to CAL FIRE and industrial timberland owners during the past five years, we noted the lack of NSO responses at historic territories, and described habitat conditions considered inadequate to support continued occupancy and reproduction.

(USFWS 2009 at 11 (emphasis added). The same document advises that:

> …the strong differences in trends observed on private versus federal lands supports the contention that management on private timberlands is creating habitat conditions that do not support sustained occupancy by [Northern Spotted Owl].

(USFWS 2009 at 12). The graph reproduced below developed by the USFWS illustrates the trends of Northern Spotted Owl occupancy on public versus private ownerships in northern California

Figure I.B.1. Status of valid historical northern spotted owl activity centers (pair sites only) when resurveyed after 5-10 years. Data are from U.S. Fish and Wildlife Service technical assistance records and USFS monitoring records



Only a little less than one quarter of Northern Spotted Owl pairs present on private lands in California at the beginning date of the analysis persisted to the end, by contrast to 80% of such pairs that persisted on federal National Forest lands. These striking differences in Northern Spotted Owl occupancy rates on public versus private lands in California are the direct result of habitat modification and removal permitted by the State of California pursuant to the provisions of Title14 CCR § 919.9(g) [939.9(g)].

The USFWS notes several reasons why the current FPRs are not adequate to evaluate or avoid "take." These reasons include new information available since the FRPs were enacted (which have changed the amount required, the habitat definitions, and spatial arrangement criteria), the USFWS' experience with the Technical Assistance process, and analysis indicating loss of territories under the FPRs. The USFWS discussed some of the deficiencies of the current FPRs:

> When the FPR guidelines were adopted in 1992, data relating habitat variables to occupancy, reproduction, and survival of [Northern Spotted Owl] were limited. The FPR guidelines for avoiding incidental take of [Northern Spotted Owl] were therefore based on comparison of proposed post-harvest habitat conditions with the amount and of quality of habitat observed at occupied [Northern Spotted Owl] sites described in various studies. Under this standard, habitat modification potentially could result in substantial reduction of reproduction, survival, and occupancy at [Northern Spotted Owl] activity centers without the appearance of take, because habitat conditions resemble other low-quality [Northern Spotted Owl] territories. [Northern Spotted Owls] are known to occupy low-quality sites where their reproduction and survival are substantially reduced (Franklin et al. 2000, Dugger et al. 2005); the existence of these low quality sites suggests that reliance on habitat conditions corresponding to the presence or of owls at historic territories represents a low bar for determining habitat thresholds and take.

(USFWS 2009 at 5). In response to these findings, the USFWS issued its own set of Northern Spotted Owl "take" avoidance guidelines as part of its issuance of the Regulatory and Scientific Basis document, stating that these new guidelines were more effective in avoiding "take."

One significant difference between the FPRs and the USFWS "take" avoidance guidelines is the use of different definitions for each type of habitat. The USFWS Guidelines contain habitat definitions that are far more detailed and specific than the habitat definitions provided in 14 CCR § 895.1. The magnitude of the difference between the two is demonstrated by the fact that what qualifies as roosting habitat under the FPRs would at best qualify for low-quality foraging habitat under the USFWS' definitions.

The USFWS further expounds on the inadequacies of the FPR definitions and the implications for NSO:

> Service staff in the Yreka Fish and Wildlife Office believe that application of the FPRs **typically does not avoid or reduce the likelihood of take of NSO**. This is because the habitat definitions and retention standards in the FPRs represent minimum values that are below the habitat parameters associated with reasonable levels of territory occupancy, survival, and reproduction by NSO.

(E-mail from Brian Woodbridge, USFWS to Chris Browder, CALFIRE. April 22, 2009).

Another significant difference between the USFWS' guidance and the provisions of Title 14 CCR § 919.9(g) [939.9(g)] is the amount and specific configuration of habitat required for retention within an Northern Spotted Owl home range (1.3 mile radius) required to avoid "take." Currently, the provisions of Title 14 CCR§ 919.9(g) [939.9(g)] do not require that specific amounts of individual habitat types be retained. Rather, "Option g" currently relies on an aggregate habitat retention strategy that allows for reduction of habitat quality and quantity to uniformly low values, increasing the likelihood of "harm" or "take." To put it simply, "Option g" treats all owl habitats as equal, and fails to provide sufficient nesting and roosting habitat, which is the primary limiting factor for the species.

Finally, there are currently no provisions to prevent the damaging effects of repeated and successive entries into individual Northern Spotted Owl home ranges, resulting in "take" via cumulative impacts. The USFWS' programmatic guidance addresses this issue by establishing core areas of use (generally 0.5 miles in the interior, 0.7 miles on the coast) in which timber harvest activities are restricted, and specific amounts of high-quality habitat are to be retained.

Practical Effect of Proposed Rulemaking

To date, CAL FIRE has been encouraging project proponents to implement the provisions of the USFWS' programmatic guidance pursuant to Title 14 CCR § 919.9(e)[939.9(e)] but cannot require use of the USFWS guidance because they are not codified in regulation. Nonetheless, most landowners and THP submitters have voluntarily moved away from application of Title14 CCR §919.9(g) [939.9(g)]. Thus, the deletion of "Option g" would simply nullify an antiquated set of Rules that have been shown to be inadequate and that very few operations are using.

The benefits of adopting the proposed rulemaking petition are clear. First, deletion of Title14 CCR § 919.9(g) [939.9(g)] would reconcile remaining FPRs with the guidance of the USFWS with respect to Northern Spotted Owl "take" avoidance. Furthermore, adoption of this petition to remove "Option G" would relieve CAL FIRE of any discretionary duties of making so-called "take avoidance determinations" on a project by project basis. It is and has been EPIC's position that CAL FIRE does not have the legal authority to make such determinations. Deletion of Title14 CCR § 919.9(g)[939.9(g)] would relieve CAL FIRE of these duties and reduce liability for prosecution of illegal "take" for both the Department and the Board of Forestry. Finally, the deletion of Title14 CCR § 919.9(g) [939.9(g)] would benefit Northern Spotted Owl and the environment as a whole by raising the standards for protection, thus leading to older, healthier forests.

Evidence in Support of This Rulemaking Petition

In support of this petition, EPIC provides an extensive volume of peer-reviewed and published studies regarding Northern Spotted Owls and the threats posed by irresponsible habitat destruction. EPIC incorporates by reference all the following documentation contained on an

electronic media device submitted with the petition and detailed in the "Supporting Evidence" section at this end of this document.

Conclusion

The proposed rulemaking in this petition is a feasible measure that can be taken by the Board at this time to address a glaring deficiency and inconsistency in the FPRs. Complying with federal standards to protect Northern Spotted Owls is desperately needed as the species is continuing a downward spiral towards extinction. EPIC believes that only a small number of landowners and THP submitters will be affected by the deletion of "Option g" as requested. In contrast, failure to act on this petition could have substantial consequences for Northern Spotted Owls on private lands in California. Furthermore, failure to act leaves both CAL FIRE and the Board of Forestry at risk of legal challenges, and would fail to serve the Board's responsibilities to protect, enhance, and restore native wildlife.

Authority

The Board has authority to adopt the following regulatory amendments pursuant to Public Resources Code sections 4551, 4551.5, 4553, 4562.7. . The proposed amendments are directly necessary to effectuate the goals of the Z'Berg-Nejedly Forest Practices Act of 1973, including, but not limited to its goals to "to protect the soil, air, fish, and wildlife, and water resources, including, but not limited to, streams, lakes, and estuaries" (§ 4551), and of "[p]roviding watershed protection and maintaining fisheries and wildlife" (§ 4512, subd. (b)). The Board may adopt these amendments promptly, as there is substantial evidence documenting the need to eliminate "Option g." There is an urgent need to provide necessary protection for Northern Spotted owls impacted by private timber operations that utilize "Option g" as permitted by the State of California in defiance of clear conflicts with federal law.

Sincerely,

Rob DiPerna
Industrial Forestry Reform Advocate

Environmental Protection Information Center
145 G Street, Suite A
Arcata, California 95521
Office: (707) 822-7711
Email: rob@wildcalifornia.org

Amendments

EPIC request that the Board amend California Code of Regulations, Title 14, § 919.9[939.9] in the following manner:

919.9, 939.9 Northern Spotted Owl [Coast, Northern]
Every proposed timber harvesting plan, NTMP, conversion permit, Spotted Owl Resource Plan, or major amendment located in the Northern Spotted Owl Evaluation Area or within 1.3 miles of a known northern spotted owl activity center outside of the Northern Spotted Owl Evaluation Area shall follow one of the procedures required in subsections (a)-~~(g)~~ (f) below for the area within the THP boundary as shown on the THP map and also for adjacent areas as specified within this section. The submitter may choose any alternative (a)-~~(g)~~(f) that meets the on-the-ground circumstances. The required information shall be used by the Director to evaluate whether or not the proposed activity would result in the "take" of an individual northern spotted owl.

When subparagraphs (a), (b), (c) or (f) are used, the Director, prior to approval of a THP, shall consult with an SOE and conduct an independent review. ~~An SOE may aid the RPF in fulfilling the requirements within subdivision (g).~~ The SOE may make written recommendations regarding whether the retained habitat configuration and protection measures proposed in the THP will prevent a take of the owl.

~~**(g)** Where an activity center has been located within the plan boundary or within 1.3 miles of that boundary, the RPF shall determine and document in the plan: **(i)** activity center-specific protection measures to be applied during timber operations and **(ii)** owl habitat, including habitat described in (1)-(5) below, that will be retained after the proposed operations are completed:~~

~~**(1)** Within 500 feet of the activity center the characteristics of functional nesting habitat must be maintained. No timber operations shall be conducted in this area during the northern spotted owl breeding season unless reviewed and approved by the Director as not constituting a take. Timber operations may be conducted in this area outside the breeding season if appropriate measures are adopted to protect nesting habitat.~~

~~**(2)** Within 500-1000 feet of the activity center, retain sufficient functional characteristics to support roosting and provide protection from predation and storms. No timber operations shall be conducted in this area during the breeding season unless reviewed and approved by the Director as not constituting a take.~~

~~**(3)** 500 acres of owl habitat must be provided within a .7 mile radius of the activity center, unless an alternative is reviewed and approved by the Director as not constituting a take. The 500 acres includes the habitat retained in subsections (1) and (2) above and should be as contiguous as possible. Less than 50% of the retained habitat should be under operation in any one year, unless reviewed and approved by the Director as not constituting a take.~~

~~**(4)** 1336 total acres of owl habitat must be provided within 1.3 miles of each activity center, unless an alternative is reviewed and approved by the Director as not constituting a take. The 1336 acres includes the habitat retained within subsections (1)-(3) above.~~

~~**(5)** The shape of the areas established pursuant to subsections (1) and (2) shall be adjusted to conform to natural landscape attributes such as draws and streamcourses while retaining the total area required within subsections (1) and (2) above.~~

Supporting Evidence

All documents listed below are incorporated by reference into EPIC's petition for rulemaking to the California Board of Forestry requesting deletion of Title 14 California Code of Regulations § 919.9(g)[939.9(g)].

Anthony, R.G., E.D. Forsman, A.B. Franklin, D.R. Anderson, K.P. Burnham, G.C. White, C.J. Schwarz, J. Nichols, J.E. Hines, G.S. Olson, S.H. Ackers, S. Andrews, B.L. Biswell, P.C. Carlson, L.V. Diller, K.M. Dugger, K.E. Fehring, T.L. Fleming, R.P. Gerhardt, S.A. Gremel, R.J. Gutiérrez, P.J. Happe, D.R. Herter, J.M. Higley, R.B. Horn, L.L. Irwin, P.J. Loschl, J.A. Reid, and S.G. Sovern. 2006. Status and trends in demography of northern spotted owls, 1985–2003. Wildlife Monograph No. 163.

Bailey, L.L., J.A. Reid, E.D. Forsman and J.D. Nichols. 2009. Modeling co-occurrence of northern spotted and barred owls: Accounting for detection probability differences. Biological Conservation 142: 2983-2989.

Barrowclough, G.F. and R.J. Gutierrez. 1990. Genetic variation and differentiation in the spotted owl (Strix occidentalis). The Auk 107: 737-744.

Barrowclough, G.F., R.J. Gutiérrez, and J.G. Groth. 1999. Phylogeography of spotted owl (*Strix occidentalis*) populations based on mitochondrial DNA sequences; gene flow, genetic structure, and a novel biogeographic pattern. Evolution 53:919–931.

Barrowclough, G.F., J.G. Groth, and R.J. Gutiérrez RJ. 2005. Genetic structure, introgression and a narrow hybrid zone between northern and California spotted owls (*Strix occidentalis*). Molecular Ecology 14:1109–1120.

Bart, J, and E.D. Forsman. 1992. Dependence of Northern Spotted Owls, *Strix occidentalis caurina*, on Old-Growth Forests in the Western United States. Biological Conservation 62:95-100.

Berg, K., S.Cantrell, M. Doumit, K. Godbout, D. Halabisky, C. Lipton, R. Meier, V. Musselman, M. Perez-Gibson, T. Robinson, P. Swedeen, C. Turley, and D. Whipple. 2009. Final Report to Forest Practices Board, Northern Spotted Owl Policy Working Group. Including: November 10, 2009 Report and December 31, 2009 Report.

Blakesley, J.A., W. LaHaye, J.M.M. Marzluff, B.R. Noon, and S. Courtney. 2004. Demography. Chapter 8 in S. Courtney (editor), Scientific evaluation of the status of the northern spotted owl. Sustainable Ecosystems Institute, Portland, Oregon.

Blakesley, J.A., B.R. Noon, and D.R. Anderson. 2005. Site occupancy, apparent survival, and reproduction of California spotted owls in relation to forest stand characteristics. Journal of Wildlife Management. 69:1554-1564.

Bond, M.L., R.J. Gutierrez, A.B. Franklin, W.S. LaHaye, C.A. May and M.E. Seamans. 2002. Short-term effects of wildfires on spotted owl survival, site fidelity, mate fidelity and reproductive success. Wildlife Society Bulletin 30 (4): 1022-1028.

Bond, M.L., D.E. Lee, R.B. Siegel, and J.P. Ward. 2009. Habitat use and selection by California Spotted Owls in a postfire landscape. Journal of Wildlife Management 73: 1116-1124.

Bosakowski and Smith 1992. Comparative diets of sympatric nesting raptors in the eastern deciduous forest biome. *Can. J. Zool.* 70:984–992.

Boyce, M.S., L.L. Irwin, and R. Barker. 2005. Demographic meta-analysis: synthesizing vital rates for spotted owls. Journal of Applied Ecology 42:38.

Buchanan, J., and P. Swedeen. 2005. Final Briefing Report to the Washington State Forest Practices Board regarding Spotted Owl Status and Forest Practice Rules. Washington Department of Fish and Wildlife. Olympia, Washington.

Buchanan, J.B., L.L. Irwin, and E.L. McCutchen. 1995. Within-stand nest site selection by spotted owls in the eastern Washington Cascades. Journal of Wildlife Management 59:301–310.

Buchanan, J.B., T.L. Fleming, and L.L. Irwin. 2004. A comparison of Barred and Spotted Owl nest-site characteristics in the eastern Cascade Mountains, Washington. *J. Raptor Res.* 38:231–237.

Buchanan, J.B., R.J. Gutierrez, R.G. Anthony, T. Cullinan, L.V. Diller, E.D. Forsman, and A.B, Franklin. 2007. A synopsis of suggested approaches to address potential competitive interactions between barred owls and spotted owls. Biol. Invasions 9:679-691

Caffrey C. 2003. Determining impacts of West Nile Virus on crows and other birds. American Birds 57:12–13.

California Forest Practice Rules. 2012. Available at: http://www.fire.ca.gov/resource_mgt/downloads/2012_California_Forest_Practice_Rules.pdf

Campbell, S., K. Waddell, and A. Gray, tech. eds. 2010. Washington's forest resources, 2002–2006: five-year Forest Inventory and Analysis report. Gen. Tech. Rep. PNW-GTR-800. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 189 p. http://www.fs.fed.us/pnw/pubs/pnw_gtr800.pdf

Campbell, R.W. 1973. Coastal records of the barred owl for British Columbia. The Murrelet 54:25.

Carey, A.B. 1999. Red Tree Vole: *Arborimus longicaudus*. Pages 620-622 in D.E. Wilson and S. Ruff, eds. The Smithsonian Institute Press, Washington, D. C.

Carey, A.B. 2000. Ecology of northern living squirrels: implications for ecosystem management in the Pacific Northwest, USA. in R. Goldingay and J. Scheibe (eds.) Biology of Gliding Mammals. Filander Press: Fürth, Germany.

Carey, A.B, S.P. Horton, and B.L. Biswell. 1992. Northern spotted owls: influence of prey base and landscape character. Ecol. Monographs 62:223–250.

Carey, A.B., B.R. Lippke, and J. Sessions. 1999. Intentional ecosystem management: managing forests for biodiversity. Journal of Sustainable Forestry 9:83–125.

Carey, A.B. and K.C. Peeler. 1995. Spotted owls: resource and space use in mosaic landscapes. Journal of Raptor Research 29:223-239.

Carrete, M.J., J.A. Sanchez-Zapata, J.F. Calvo, and R. Lande. 2005. Demography and habitat availability in territorial occupancy of two competing species. Oikos 108:125-136.

Carroll, C. and D.S. Johnson. 2008. The importance of being spatial (and reserved): assessing northern spotted owl habitat relationships with hierarchical Bayesian models. Conservation Biology 22: 2:1026-1036.

Chutter, M., I. Blackburn, D. Bonin, J. Buchanan, B. Costanza, D. Cunnington, A. Harestad, T. Hayes, D. Heppner, L. Kiss, J. Surgenor, W. Wall, L. Waterhouse, & L. Williams. 2004. National recovery strategy for the Northern Spotted Owl. Report. Recovery of Nationally Endangered Wildlife Committee, Ottawa, ON.

Clark, D.A. 2007. Demography and habitat selection of northern spotted owls in post-fire landscapes of southwestern Oregon. M.S. thesis. Oregon State University, Corvallis.

COSEWIC. 2008. COSEWIC assessment and update status report on the Spotted Owl *Strix occidentalis caurina*, *Caurina* subspecies, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 48 pp. www.sararegistry.gc.ca/status/status_e.cfm

Courtney, S.P., J.A. Blakesley, R.E. Bigley, M.L. Cody, J.P. Dumbacher, R.C. Fleischer, A.B. Franklin, J.F. Franklin, R.J. Gutiérrez, J.M. Marzluff, and L. Sztukowski. 2004. Final Report: Scientific evaluation of the status of the Northern Spotted Owl. Sustainable Ecosystems Institute, Portland, Oregon.

Courtney, S.P., A.B. Carey, M.L. Cody, K. Engel, K.E. Fehring, J.F. Franklin, M.R. Fuller, R.J. Gutiérrez, J.F. Lehmkuhl, M.A. Hemstrom, P.F. Hessburg, S.L. Stephens, L.A. Sztukowski, and L. Young. 2008. Scientific Review of the Draft Northern Spotted Owl Recovery Plan and Reviewer Comments. Sustainable Ecosystems Institute, Portland, Oregon.

Crozier, M.L., M.E. Seamans, R.J. Gutiérrez, P.J. Loschl, R.B. Horn, S.G. Sovern, and E.D. Forsman. 2006. Does the presence of barred owls suppress the calling behavior of Spotted Owls? Condor 108:760–769.

Dark, S.J., R.J. Gutiérrez, and G.I. Gould Jr. 1998. The barred owl (*Strix varia*) invasion in California. Auk 115(1):50-56.

Davis, R. and J. Lint. 2005. Habitat status and trends. Pages 21–82 in J. Lint (technical coordinator), Northwest Forest Plan—the first 10 years (1994–2003): status and trends of northern spotted owl populations and habitat. Gen. Tech. Rep. PNW-GTR-648, USDA Forest Service, Pacific Northwest Research Station, Portland, Oregon. http://www.fs.fed.us/pnw/publications/pnw_gtr648

Davis, Raymond J.; Dugger, Katie M.; Mohoric, Shawne; Evers, Louisa; Aney, William C. 2011. Northwest Forest Plan—the first 15 years (1994–2008): status and trends of northern spotted owl populations and habitats. Gen. Tech. Rep. PNWGTR- 850. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 147 p.

Dellasala, D. 2011. Comments on the 5-year status review for Northern Spotted Owl submitted to the U.S. Fish and Wildlife Service.

Diller, L.V. and D.M. Thome. 1999. Population density of northern spotted owls in managed young-growth forests in coastal northern California. Journal of Raptor Research 33:275–286.

Doak, D.F. 1994. Declaration of Daniel Doak in Support of SAS' Motion for Summary Judgment. Declaration in the United States District Court for the Western District of Washington. October 3, 1994. 22 pp.

Dugger, K.M., F. Wagner, R.G. Anthony, and G.S. Olson. 2005. The relationship between habitat characteristics and demographic performance of northern spotted owls in southern Oregon. Condor 107:863–878.

Dugger, K., R.G. Anthony and E.D. Forsman. 2009. Estimating northern spotted owl detection probabilities: updating the USFWS Northern Spotted Owl Survey Protocol. Final Report. Dept. of Fisheries and Wildlife, Oregon State University, Corvallis.

Dugger, K., R.G. Anthony, L. S. Andrews. 2011. Transient dynamics of invasive competition barred owls, spotted owls, habitat, and demons of competition present. Ecol. Applications.

Dunbar, D.L., B.P. Booth, E.D. Forsman, A.E. Hetherington, and D.J. Wilson. 1991. Status of the spotted owl, *Strix occidentalis*, and barred owl, *Strix varia*, in southwestern British Columbia. Canadian Field-Naturalist 105:464–468.

Environmental Protection Information Center (EPIC). 2012a. Notice of Intent to Sue Sierra Pacific Industries for Violations of the Endangered Species Act; Actions Threatening the Northern Spotted Owl.

EPIC. 2012b. Petition to the California Fish and Game Commission to List the Northern Spotted Owl as "Endangered" under the California Endangered Species Act.

Elderkin, M.F. 1987. The breeding and feeding ecology of a Barred Owl population in Kings County, Nova Scotia. M.S. thesis, Acadia University, Wolfville, Nova Scotia, Canada.

FEMAT (Forest Ecosystem Management Assessment Team). 1993. Forest Ecosystem Management: an ecological, economic, and social assessment. USDA Forest Service, USDI Fish and Wildlife Service, National Marine Fisheries Service, USDI National Park Service, USDI Bureau of Land Management, Environmental Protection Agency, Washington, D.C.

Fitzgerald, S.D., J.S. Patterson, M. Kiupel, H.A. Simmons, S.D. Grimes, C.F. Sarver, R.M. Fulton, B.A. Fulton, B.A. Steficek, T.M. Cooley, J.P. Massey, and J.G. Sikarskie. 2003. Clinical and pathological features of West Nile Virus infection in native North American owls (family *Strigidae*). Avian Diseases 47:602–610.

Forest Practice Notes. 1994. Oregon Department of Forestry, No. 8 (Revised), Dec. 1994. Available at: http://www.oregon.gov/ODF/privateforests/docs/SpottedOwl.pdf

Forsman, E.D. 1976. A preliminary investigation of the Spotted Owl in Oregon. M.S. thesis, Oregon State University, Corvallis, OR.

Forsman, E.D., E.C. Meslow, and H.M. Wight. 1984. Distribution and biology of the spotted owl in Oregon. Wildlife Monographs 87:1–64.

Forsman, E.D., S. DeStefano, M.G. Raphael, and R.J. Gutierrez (eds). 1996. Demography of the northern spotted owl. Studies in Avian Biology 17:1-122.

Forsman, E.D., I.A. Otto, S.G. Sovern, M. Taylor, D.W. Hays, H. Allen, S.L. Roberts, and D.E. Seaman. 2001. Spatial and temporal variation in diets of Spotted Owls in Washington. *J. Raptor Res.* 35:141–150.

Forsman, E.D., R.G. Anthony, J.A. Reid, P.J. Loschl, S.G. Sovern, M. Taylor B.L. Biswell, A. Ellingson, E.C. Meslow, G.S. Miller, K.A. Swindle, J.A. Thrailkill, F.F. Wagner, and D.E. Seaman. 2002. Natal and breeding dispersal of northern spotted owls. Wildlife Monographs

Forsman, E.D., R.G. Anthony, K.M. Dugger, E.M. Glenn, A.B. Franklin, G.C. White, C.J. Schwarz, K.P. Burnham, D.R. Anderson, J.D. Nichols, J.E. Hines, J.B. Lint, R.J. Davis, S.H. Ackers, L.S. Andrews, B.L. Biswell, P.C. Carlson, L.V. Diller, S.A. Gremel, D.R. Herter, J.M. Higley, R.B. Horn, J.A. Reid, J. Rockweit, J. Schaberel, T.J. Snetsinger, and S.G. Sovern. 2011. Population Demography of the northern spotted owls: 1985-2008. Studies in Avian Biology. In Press.

Franklin, A.B., K.P. Burnham, G.C. White, R.G. Anthony, E.D. Forsman, C. Schwarz, J.E. Nichols, and J. Hines. 1999. Range-wide status and trends in northern spotted owl populations. Colorado Cooperative Fish and Wildlife Research Unit, USGS, Biological Resources Division, Colorado State University, Ft. Collins, CO, and Oregon Cooperative Fish and Wildlife Research Unit, USGS, Biological Resources Division, Department of Fish and Wildlife, Oregon State University, Corvallis, OR.

Franklin, A.B., D.R. Anderson, J.R. Gutiérrez, and K.P. Burnham. 2000. Climate, habitat quality, and fitness in northern spotted owl populations in northwestern California. Ecological Monographs 70:539–590.

Franklin J. and S. Courtney. 2004. Evolution and effectiveness of strategies for conservation of northern spotted owl. Chapter 9 in S. Courtney (editor), Scientific evaluation of the status of the northern spotted owl. Sustainable Ecosystems Institute, Portland, Oregon.

Funk, W.C., E.D. Forsman, T.D. Mullins, and S.M. Haig. 2008. Introgression and dispersal among spotted owl (*Strix occidentalis*) subspecies. Evolutionary Applications 1:161-171.

Funk, W.C., E.D. Forsman, M. Johnson, T.D. Mullins, and S.M. Haig. 2010. Evidence for recent population bottlenecks in northern spotted owls (*Strix occidentalis caurina*). Conservation Genetics 11:1013-1021.

Glenn, E.M. 2009. Local Weather, Regional Climate, and Population Dynamics of Northern Spotted Owls in Washington and Oregon. PhD Dissertation Oregon State University.

Glenn, E.M., M.C. Hansen, and R.G. Anthony. 2004. Spotted owl home-range and habitat use in young forests of western Oregon. Journal of Wildlife Management 68:33–50.

Glenn, E.M., R.G. Anthony, and E.D. Forsman. 2010. Population trends in northern spotted owls: Associations with climate in the Pacific Northwest. Biological Consevation *in press.*

Gutiérrez, R.J., M. Cody, S. Courtney, and D. Kennedy. 2004. Assessment of the potential threat of the northern barred owl. Pp. 7-1 – 7-51, In: S. Courtney, Ed. Scientific evaluation of the status of the northern spotted owl. Portland, OR. Sustainable Ecosystems Institute.

Gutiérrez, R.J. and G.E. Barrowclough. 2005. Redefining the distributional boundaries of the Northern and California Spotted Owls: Implications for Conservation. The Condor 107:182-187.

Gutiérrez, R.J., M. Cody, S. Courtney and A.B. Franklin. 2007. The invasion of barred owls and its potential effect on the spotted owl: a conservation conundrum. Biological Invasions 9:181–196.

Haig, S.M., T.D. Mullins, and E.D. Forsman. 2004. Subspecific relationships and genetic structure in the spotted owl. Conservation Genetics 5:683–705.

Hakkarainen, H., V. Koivunen, and E. Korpimaki. 1997. Reproductive success and parental effort of Tengmalm's Owls: effects of spatial and temporal variation in habitat quality. Ecoscience 4:35–42.

Hamer, T.E. 1988. Home range size of the Northern Barred Owl and Northern Spotted Owl in western Washington. M.S. thesis, Western Washington University, Bellingham, WA U.S.A.

Hamer, T.E., E.D. Forsman, A.D. Fuchs, and M.L. Walters. 1994. Hybridization between barred and spotted owls. Auk 111:487–492.

Hamer, T. E., E. D. Forsman, and E. M. Glenn. 2007. Home range attributes and habitat selection of barred owls and spotted owls in an area of sympatry. Condor 109:750–768.

Hanson, C.T., D.C. Odion, D.A. DellaSala, and W.L. Baker. 2009. Overestimation of fire risk in the northern spotted owl recovery plan. Conservation Biology 23: 1314-1319.

Hanson, C.T., D.C. Odion, D.A. DellaSala, and W.L. Baker. 2010. Comprehensive management of northern spotted owls in dry forest provinces: response to Spies et al. Conservation Biology 24: 334-337.

Harrison, S., A. Stahl, and D. Doak. 1993. Spatial models and spotted owls: exploring some biological issues behind recent events. Conservation biology 7:950-953.

Hershey, K.T., E.C. Meslow, and F.L. Ramsey. 1998. Characteristics of forests at spotted owl nest sites in the Pacific Northwest. Journal Wildlife Management 62:1398-1410.

Horn, H.S. and R.H. MacArthur. 1972. Competition among fugitive species in a harlequin environment. Ecology 53:749-752.

Irwin, L.L., T.L. Fleming, and J. Beebe. 2004. Are spotted owl populations sustainable in fire-prone forests? Journal of Sustainable Forestry 18:1-28.

Ishak, H.D., J.P. Dumbacher, N.L. Anderson, J.J. Keane, G. Valkiūnas, S.M. Haig, L.A. Tell, and R.N.M. Sehgal. 2008. Blood Parasites in Owls with Conservation Implications for the Spotted Owl (*Strix occidentalis*). PLoS ONE 3(5): e2304. doi:10.1371/journal.pone.0002304

Johnson, K.N. and J.F. Franklin. 2009. Restoration of federal forests in the Pacific northwest: strategies and management implications. Oregon State University, Corvallis.

Kelly, E.G. 2001. The range expansion of the northern barred owl: an evaluation of the impact on spotted owls. M.S. thesis, Oregon State University, Corvallis, OR.

Kelly, E.G., E.D. Forsman, and R.G. Anthony. 2003. Are barred owls displacing spotted owls? Condor 105:45–53.

Korpimäki, E. 1992. Fluctuation food abundance determines the lifetime reproductive success of male Tengmalm's owls. Journal of Applied Ecology 61:103-111.

LaHaye, W.S. and R.J. Gutiérrez. 1999. Nest sites and nesting habitat of the northern spotted owl in northwestern California. Condor 101:324-330.

Lehmkuhl, J.F., K.D. Kistler, J.S. Begley, and J. Boulanger. 2006. Demography of northern flying squirrels informs ecosystem management of western interior forests. Ecological Applications 16:584-600

Leskiw, T. and R.J. Gutiérrez. 1998. Possible predation of a spotted owl by a barred owl. Western Birds 29:225–226.

Levins, R. and D. Culver. 1971. Regional coexistence of species and competition between rare species. Proceedings of the National Academy of Science 68:1246-1248.

Lint, J. 2005. Population status and trends. Pages 7–19 in J. Lint (technical coordinator), Northwest Forest Plan—the first 10 years (1994–2003): status and trends of northern spotted owl populations and habitat. Gen. Tech. Rep. PNW-GTR-648, USDA Forest Service, Pacific Northwest Research Station, Portland, Oregon.

Livezey, K.B., M.F. Elderkin, P.A. Cott, J. Hobbs, and J.P. Hudson. 2008. Barred owls eating worms and slugs: the advantage in not being picky eaters. Northwestern Naturalist 89: 185-190.

Livezey, K.B. 2009a. Range Expansion of Barred Owls, Part I: Chronology and Distribution. Am. Midl. Nat. 161:49–56

Livezey, K.B. 2009b. Range Expansion of Barred Owls, Part II: Facilitating ecological changes. Am. Midl. Nat. 161:323–349.

Manning, T., J.C. Hagar and B.C. McComb. 2011. Thinning of young Douglas-fir forests decreases density of northern flying squirrels in the Oregon Cascades. Forest Ecology and Management 264: 115-124

Marra, P.P., S. Griffing, C. Caffrey, A.M. Kilpatrick, R. McLean, C. Brand, E. Saito, A.P. Dupuis, L. Kramer, and R. Novak. 2004. West Nile Virus and wildlife. BioScience 54:393–402.

Mazur, K.M., P.C. James, and S.D. Frith. 1997. Barred Owl (*Strix varia*) nest site characteristics in the boreal forest of Saskatchewan, Canada. Pages 267–273 *in* J.R. Duncan, D.H. Johnson, and T.H. Nicholls [EDS.], Biology and conservation of owls of the northern hemisphere: proceedings of a symposium held in Winnepeg, Manitoba. USDA Forest Service Gen. Tech. Rpt. NC-190, North Central Forest Experiment Station.

Mazur, K.M., Frith, S.D. and P.C. James. 1998. Barred Owl home range and habitat selection in the boreal forest of central Saskatchewan. *The Auk* 115:746–754.

Moeur, M., T.A. Spies, M. Hemstrom, J.R. Martin, J. Alegria, J. Browning, J. Cissel, W.B. Cohen, T.E. Demeo, S. Healey, and R. Warbington. 2005. Northwest Forest Plan—the first 10 years (1994–2003): status and trend of late-successional and old-growth forest. Gen. Tech. Rep. PNW-GTR-646. U.S.Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, Oregon.

Mote, P.W. and E.P. Salathé EP. 2009. Future climate in the Pacific Northwest. Chapter 1 in The Washington Climate Change Impacts Assessment: Evaluating Washington's Future in a Changing Climate, Climate Impacts Group, University of Washington, Seattle, Washington.

Noon, B.R. and J.A. Blakesley. 2006. Conservation of the northern spotted owl under the Northwest Forest Plan. Conservation Biology 20:288–296.

Olson, G.S., E.M. Glenn, R.G. Anthony, E.D. Forsman, J.A. Reid, P.J. Loschl, and W.J. Ripple. 2004. Modeling demographic performance of northern spotted owls relative to forest habitat in Oregon. Journal of Wildlife Management 68:1039–1053.

Olson, G.S., R.G. Anthony, E.D. Forsman, S.H. Ackers, P.J. Loschl, J.A. Reid, K.M. Dugger, E.M. Glenn, and W.J. Ripple. 2005. Modeling of site occupancy dynamics for northern spotted owls, with emphasis on the effects of barred owls. Journal of Wildlife Management 69:918–932.

Oregon Administrative Rules Guidance Manuals, Division 665. 2009. Available at: http://www.oregon.gov/ODF/privateforests/docs/guidance/OARDiv665.pdf

Oregon Forest Practice Act Rulebook. 2010. Oregon Department of Forestry.

Pearson, R.R. and K.B. Livezey. 2003. Distribution, numbers, and site characteristics of spotted owls and barred owls in the Cascade Mountains of Washington. Journal of Raptor Research 37:265–276.

Peterson, A.T. and C.R. Robins. 2003. Using ecological-niche modeling to predict barred owl invasions with implications for spotted owl conservation. Conservation Biology 17:1161-1165.

Pierce, D.J., J.B. Buchanan, B.L. Cosentino, and S. Snyder. 2005. An assessment of the status of spotted owl habitat on non-federal lands in Washington between 1996 and 2004. Washington Department of Fish and Wildlife, Olympia, WA, USA.

Rohner, C. 1996. The numerical response of great horned owls to the snowshoe hare cycle: consequences of non-territorial “floaters” on demography. Journal of Animal Ecology 65:359-370.

Rosenberg, D.K. and R.G. Anthony. 1992. Characteristics of northern flying squirrel populations in young second- and old-growth forests in western Oregon. Canadian Journal of Zoolology 70:161-166.

Salathé, E.P. 2006. Influences of a shift in North Pacific storm tracks on western North American precipitation under global warming. Geophysical Research Letters33, L19820, doi:10.1029/2006GL026882, 2006.

Singleton, P.H., S. Graham, W.L. Gaines, and J.F. Lehmkuhl. 2005. The ecology of Barred Owls in fire-prone forests: 2005 progress report. Pacific Northwest Research Station, Wenatchee, WA U.S.A.

Staus ,N.L., J.R. Strittholt, D.A. DellaSala, and R. Robinson. 2002. Rate and pattern of forest disturbance in the Klamath-Siskiyou ecoregion, U.S.A. *Landscape Ecology* 17:455-470.

Strittholt, J.R., D.A. DellaSala, and H. Jiang. 2006. Status of mature and old-growth forests in the Pacific Northwest, USA. Conservation Biology 20: 363:374.

Swedeen, P.2006. Declaration of Dr. Paula Swedeen in Case No. C06-1608 MJP. Declaration in the United States District Court for the Western District of Washington. November 7, 2006. 28 pp.

Swindle, K.A., W.J. Ripple, E.C. Meslow, and D.J. Schafer. 1999. Old-forest distribution around spotted owl nests in the central Cascade Mountains, Oregon. Journal Wildlife Management 63:1212-1221.

Thomas, J.W., E.D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon, and J. Verner. 1990. A conservation strategy for the northern spotted owl. Interagency Scientific Committee to Address the Conservation of the Northern Spotted Owl. USDA Forest Service, USDI Bureau of Land Management, USDI Fish and Wildlife Service, and USDI National Park Service. Portland, Oregon. 458 pp.

USDA Forest Service and USDI BLM. 1994. Record of decision for amendments to Forest Service and Bureau of Land Management planning documents within the range of the northern spotted owl. USDA Forest Service and USDI Bureau of Land Management, Washington, D.C. 74 pp + attachment.

USFWS (U.S. Fish and Wildlife Service). 1990. Endangered and threatened wildlife and plants; determination of threatened status for the northern spotted owl. Federal Register 55:26114–26194.

USFWS. 1992. Recovery plan for the Northern Spotted Owl. Unpublished Report. U.S. Department of Interior, Washington, DC.

USFWS. 2004. Northern spotted owl: Five Year Review Summary and Evaluation. USDI Fish and Wildlife Service, Portland, Oregon. 73 pp.

USFWS. 2009. Regulatory and Scientific Basis for U.S. Fish and Wildlife Service Guidance for Evaluation of Take for Northern Spotted Owls on Private Timberlands in California's Northern Interior Region..

USFWS. 2011. Revised recovery plan for the northern spotted owl (*Strix occidentalis caurina*). U.S. Fish and Wildlife Service, Portland, Oregon.

USFWS 2012. Experimental Removal of Barred Owls to Benefit Threatened Northern Spotted Owls. Draft Environmental Impact Statement, March 2012. U.S. Fish and Wildlife Service, Portland, Oregon.

Van Gelder, J.J. 2003. Variation in four-note location calls of male spotted owls (Strix occidentalis). M.S. Thesis. Humboldt State University.

Wagner, F.F., E.C. Meslow, G.M. Bennett, J.L. Larson, S.M. Small, and S. DeStefano. 1996. Demography of northern spotted owls in the Southern Cascades and Siskiyou Mountains, Oregon. Studies in Avian Biology 17:67-76.

Ward, J.P. 2006. Declaration of Dr. James Patrick Ward, Jr. in Case No. C06-1608 MJP. Declaration in the United States District Court for the Western District of Washington. November 13, 2006. 87 pp.

Wiens, J.D., R.G. Anthony, and E.D. Forsman. 2011. Barred owl occupancy surveys within the range of the northern spotted owl. Journal of Wildlife Management 75(3): 531-583.

Woodbridge, B. 2009. Email to Chris Browder, CAL FIRE, describing "take" of Northern Spotted Owls and Inadequacy of CA Forest Practice Rules.

Washington State Forest Practice Rules. 2012.

Zabel, C.J., M. Brown, T. Hines, D. Thome, A. Wright, J.R. Dunk, C. Organ, and L. Leeman. 2001. Habitat associations of the northern spotted owl in the Coos Bay BLM District, Oregon. Final Report. USDA For. Serv. Pac. Southwest Res. Sta., Redwood Sciences Lab, Arcata, CA.

Zabel, C.J., J.R. Dunk, H.B. Stauffer, L.M. Roberts, B.S. Mulder, and A. Wright. 2003. Northern spotted owl habitat models for research and management application in California (USA). Ecological Applications 13:1027-1040.

Additional Supporting Evidence

To demonstrate the use of Title 14 California Code of Regulations § 919.9(g)[939.9(g)] and its impacts on individual Northern Spotted Owl territories, EPIC includes our comments on THPs utilizing "Option g" since 2009, as well as the relevant accompanying sections from the THPs. In addition, for several THPs, we include correspondence from U.S. Fish and Wildlife Service to the THP submitter demonstrating that "take" of Northern Spotted Owls would occur under the implementation of the THP as allowed under "Option g." Here we list the THPs for which we include relevant documentation:

--1-09-054HUM, 1-09-061HUM, 1-10-025HUM, 1-12-042HUM, 2-09-010TRI, 2-09-038TRI, 2-09-085TRI, 2-09-091TRI, 2-09-041TRI, 2-09-042SHA, 2-09-043TRI, 2-09-068SHA, 2-09-078LAS, 2-10-011TRI, 2-10-019TRI, 2-10-074TRI, 2-10-075TRI, 2-11-004TRI, 2-11-014TRI, 2-11-035TRI, 2-11-061TRI, 2-11-064TRI, 2-11-076SHA, 2-11-078SHA, 2-11-080TRI, 2-12-055TRI, 2-12-064TRI, 2-12-069TRI

Regulatory and Scientific Basis for U.S. Fish and Wildlife Service Guidance for Evaluation of Take for Northern Spotted Owls on Private Timberlands in California's Northern Interior Region

Introduction

Section I: Regulatory and operational aspects of take evaluation guidelines
A. – Regulation and definition of "take" under Endangered Species Act
Regulatory authority
Regulatory definition of take
Process for estimating the likelihood of incidental take and establishing habitat retention guidelines
B. – Evidence indicating that regulatory guidance in the current Forest Practice Rules are not adequate to avoid incidental take of northern spotted owls
New information available
FWS experience in technical assistance process
Analysis indicating loss of territories under Forest Practice Rules

Section II: Summary of the FWS take evaluation guidelines

Section III: Scientific basis for NSO take evaluation guidelines
A. – Fundamentals of northern spotted owl habitat relationships
B. – Analysis areas
Home range
Core area
C. –Quantity, distribution, and configuration of habitat
Home range
Core area
D. – Habitat definitions
Nesting/roosting habitat
Foraging habitat
Abiotic habitat characteristics
E. – Conclusions

Introduction

In 1999, the California Department of Forestry and Fire Protection (CALFIRE) requested that the U.S. Fish and Wildlife Service (FWS) review timber harvest plans (THP) and Non-industrial Timber Management Plans to ensure that such plans would not result in incidental take of northern spotted owls (NSO). For nearly a decade, the FWS

provided this technical assistance. At first, the criteria and thresholds employed by the FWS to make our take evaluations were based on habitat retention regulations in the California Forest Practice Rules (Title 14, California Code of Regulations) (FPRs), which were originally developed collaboratively by the FWS, California Department of Fish and Game (CDFG), CALFIRE, and the California Board of Forestry. However, as knowledge of the habitat relationships of this species increased after 1992, the FWS increasingly made use of new scientific information to guide our evaluations of the potential for incidental take. The accumulation of published research results, combined with direct field experience with management of NSO and their habitat, resulted in substantial changes in the quantity and quality of habitat the FWS considered necessary to maintain continued occupancy and reproduction at NSO territories.

In 2008, the FWS returned responsibility for THP review to CALFIRE, the authorized agency under the California Environmental Quality Act. As a part of this transfer, the FWS provided CALFIRE with documentation of the criteria and thresholds currently used by the FWS in making take evaluations. This documentation, hereafter called the FWS guidelines, represents the best scientific information available to the FWS upon which to base evaluations of the likelihood of incidental take resulting from timber harvest operations in the Northern Interior Region. The FWS guidelines are not regulations and are not intended to substitute for regulations; they do, however, provide the scientific and biological foundation for reviewing proposed projects and determining the likelihood of incidental take of NSO. In this report, we provide the scientific basis for the FWS guidelines.

The habitat descriptions within the FWS guidelines were developed to enable CALFIRE personnel (who may not have extensive experience with NSO biology and habitat associations) to evaluate the likelihood of take posed by a proposed THP. This process contrasts with the technical assistance process formerly conducted by the FWS, wherein NSO experts conducted detailed evaluations of stand structure, habitat quantities, and NSO survey results to support a determination of the likelihood of take. While the FWS believes that expert review should play a central role in these evaluations, it is also true that robust habitat retention guidelines may be used to avoid take. Application of habitat retention guidelines in the absence of expert review, however, may limit managers' flexibility to classify habitat based on specific local conditions and to design harvest proposals based on these conditions.

Evaluation of the scientific bases of the FWS guidelines for NSO in the Interior Region of California (Klamath Province) is dependant on understanding the concept and regulatory definition of take, the practical and operational considerations of determining the likelihood of take, and the information supporting our conclusion that existing habitat guidelines in the FPRs are not sufficient for avoiding take. It is also important to recognize the difference between the use of habitat guidelines in the determination of take versus descriptions of desired habitat conditions for conservation of NSO.

Section I: Regulatory and operational aspects of take evaluation guidelines

A. Regulation and definition of take under Endangered Species Act

Regulatory Authority

Section 9(a)(B) of the Endangered Species Act of 1973 (ESA) prohibits the take of listed species within the United States, except as provided in section 10 of the ESA, which allows for permitted incidental take on private lands. Section 9 is intended to protect individual members of listed species.

Regulatory definition of take

The ESA defines "take" as "…to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." The term "harm" is further defined in 50 CFR 17.3:

> "Harm" in the definition of "take" in the Act means an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Process for estimating the likelihood of incidental take and establishing habitat retention guidelines

Although the regulatory definition of take clearly expresses the intent of the ESA's Section 9, it does not provide any metrics or criteria upon which a determination of take should be made. Because our reviews of proposed projects under section 9 are

typically conducted prior to project implementation, our determination is an estimate of the likelihood of take, based on the predicted effects of the project. Habitat retention guidelines such as those in the FPRs are intended to provide guidance as to the amount and quality of habitat that must be retained in order to avoid incidental take of NSO at sites where the species is known to occur. When the FPR guidelines were adopted in 1992, data relating habitat variables to occupancy, reproduction, and survival of NSO were limited. The FPR guidelines for avoiding incidental take of NSO were therefore based on comparison of proposed post-harvest habitat conditions with the amount and quality of habitat observed at occupied NSO sites described in various studies. Under this standard, habitat modification potentially could result in substantial reduction of reproduction, survival, and occupancy at NSO activity centers without the appearance of take, because habitat conditions still resemble other lower-quality NSO territories. NSO are known to occupy low-quality sites where their reproduction and survival are substantially reduced (Franklin *et al*. 2000, Dugger *et al.* 2005); the existence of these low-quality sites suggests that reliance on habitat conditions corresponding to the presence or absence of owls at historic territories represents a low bar for determining habitat thresholds and take.

Recent results from demographic studies of NSO in the Klamath Province provide new insights into the relationships between habitat and NSO population rates (e.g., occupancy, reproduction, and survival). By developing predictive models of these relationships, Franklin *et al*. (2000) and Dugger *et al*. (2005) introduce the concept of habitat fitness potential (HFP); "the fitness conferred on an individual occupying a territory of certain habitat characteristics" (Franklin *et al.* 2000:558). Habitat fitness

potential is a function of both the survival and reproduction of individuals within a given territory. Evaluation of habitat parameters influencing these rates provides a more rigorous measure of "significant impairment of essential behavioral patterns such as breeding, feeding, or sheltering" that is readily incorporated into review of timber harvest plans. By incorporating the concept of HFP, the FWS can evaluate the predicted effects of habitat modification on fitness of NSO potentially affected by a project. Evaluation of incidental take based on habitat modification that measurably and significantly reduces the fitness of NSO within the project area (as estimated by HFP models) provides a quantitative element to our estimation of "significant impairment of breeding, feeding and sheltering" in Section 9 of the ESA. Furthermore, HFP models also provide information allowing determination of significant thresholds that may occur, such as average habitat conditions corresponding to HFP < 1.0 (territorial pair not replacing themselves).

Description of the structural characteristics of NSO habitat and delineation of the range of habitat conditions corresponding to essential activities such as nesting, roosting, and foraging is a critical element of developing guidelines for evaluating the likelihood of incidental take. Determination of the amount of suitable habitat that must be retained in order to avoid incidental take of NSO is strongly influenced by the range of forest conditions that are classified as suitable habitat. The HFP models of Franklin *et al.* (2000), Olson *et al.* (2004), and Dugger *et al.* (2005) contain a limited number of habitat variables and relatively coarse definitions of NSO habitat, and therefore must be supplemented with additional information on forest structural parameters that support classification of forest habitat as suitable for nesting and foraging. Because the

structural attributes of habitat immediately surrounding nests are easily quantified, data supporting classification of nesting habitat are readily available (see section III.C). Foraging habitat, on the other hand, is more variable and spatially extensive, requiring intensive radio-telemetry studies to measure use of various habitat conditions by NSO. In recent studies by the National Council for Air and Stream Improvement (NCASI), correlations between habitat data from detailed forest inventories and nocturnal locations of radio-tagged NSO and California spotted owls were used to estimate resource selection function (RSF) models (Irwin et al. 2007a,b) that quantify complex relationships between the owls and their environment. These models allow evaluation of the relative use of specific forest structural variables, such as tree size class distribution and stand density, by foraging NSO. The studies of Irwin *et al.* (2007), combined with other telemetry studies (Solis and Gutierrez 1990), provide the basis of our definitions of suitable foraging habitat for NSO in the Northern Interior Region.

Criticism of the THP review process is frequently focused on the use of "thresholds" that simplify complex gradients of habitat quality into a single value (e.g., 40% suitable habitat within 1.3 mile radius, or 185 ft^2 of basal area). The FWS has long recognized that many different combinations of habitat structure and amount may support a viable NSO territory; evaluation of these combinations by technical experts has been our primary role in technical assistance. However, to maintain consistency and incorporate new information it is necessary to implement unambiguous habitat standards and criteria (i.e., thresholds) that delineate conditions under which take is deemed unlikely. Thresholds do not represent arbitrary lines through consistent data sets; rather, they represent the preponderance of evidence derived from careful evaluation of the

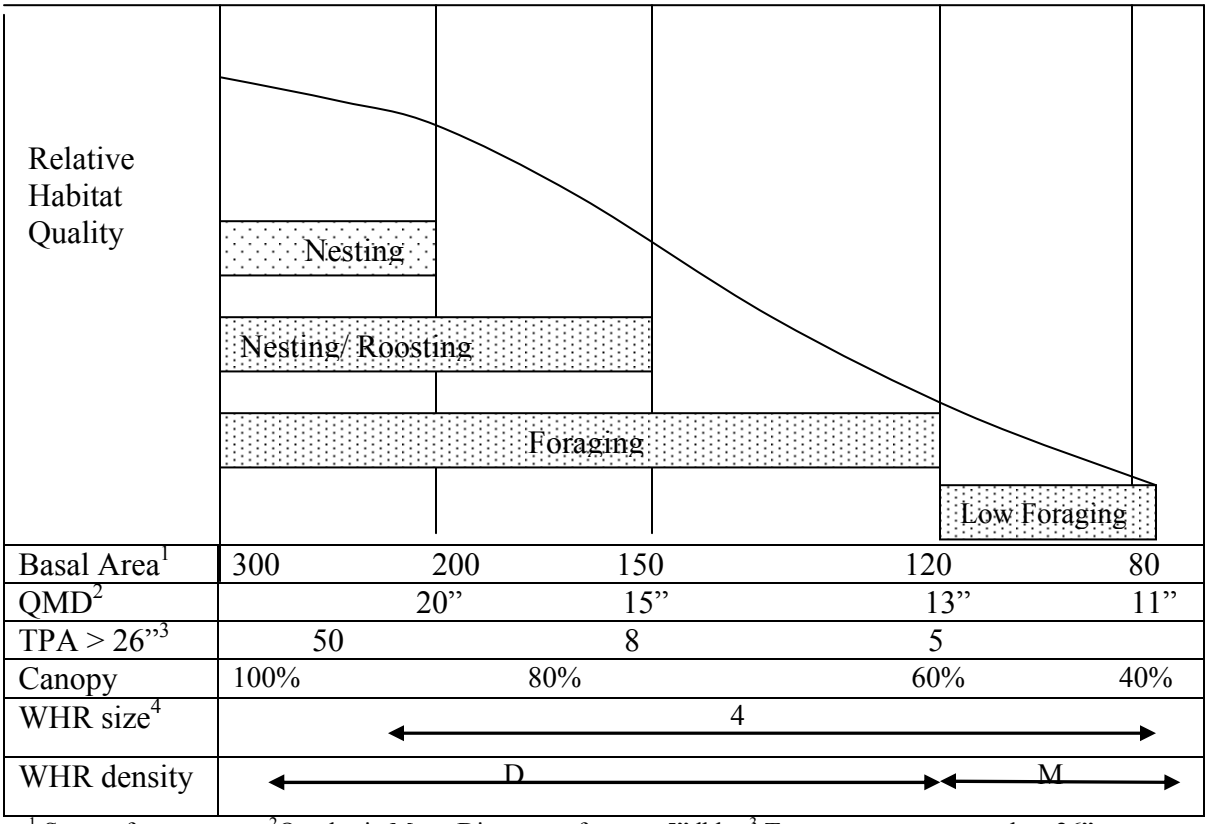
results and conclusions of many published studies, supplemented by data sets from credible sources.

Derivation of habitat thresholds from published studies consists of two consecutive steps. First, we consider the relationship or trend between habitat features and spotted owls. For example, most studies show that habitat use by foraging NSO is positively correlated with increasing tree size. These consistent, statistically significant relationships then serve as the foundation for subsequent choice of habitat values that correspond with viable NSO territories. We emphasize habitat parameters that receive disproportionate use by NSO, or are correlated with fitness. In this second step, we evaluate the pattern and distribution of data from a wide range of sources and attempt to identify ranges of values that correspond to consistent use. Deriving the central tendencies within complex, inconsistent data is a difficult task, and often requires input from the researchers responsible for published studies.

Despite consistent patterns of habitat selection by NSO, structural conditions of forest habitats occupied by NSO are highly variable, particularly in the diverse conifer-hardwood forests of the Klamath Province. We recognize that habitat retention guidelines must incorporate the range of habitat conditions used by NSO for nesting, roosting, and foraging, while at the same time ensuring that habitat conditions are not degraded to the point where significant impairment of breeding, feeding, and sheltering occurs. The FWS guidelines achieve this balance and provide a robust method for evaluating the likelihood of take because they describe a range of habitat conditions representing the central tendency for high-quality nesting habitat, nesting roosting

habitat, foraging habitat, and low-quality foraging habitat that may provide prey resources (Fig. I.A.1).

Figure I.A.1: Conceptual model of spotted owl habitat functions, relative habitat quality, and associated forest structural conditions.



[1] Square feet per acre, [2]Quadratic Mean Diameter of trees >5"dbh, [3] Trees per acre greater than 26" diameter at breast height, [4] California Wildlife Habitat Relationships System

This process must be distinguished from the simple application of "minimum habitat standards" that correspond to the lowest denominator of observed habitat use. To illustrate this, Figure I.A.1 depicts the relationship between California Wildlife Habitat Relationships system (WHR) class 4M and relative use of habitat by NSO. The FPRs classify 4M stands as suitable for nesting, roosting, and foraging by NSO. Although 4M encompasses a wide range of stand conditions, some of which may be suitable as

foraging habitat, it largely consists of stand conditions rarely used by NSO. For this reason, the use of existing minimum habitat standards such as those currently in the FPRs may result in take of NSO and are insufficient for programmatic use in take avoidance reviews of THPs.

B. Evidence indicating that regulatory guidance in the current Forest Practice Rules is not adequate to avoid incidental take of NSO

New information available

The current FPRs governing habitat retention for NSOs were developed in 1992 and predate much of the published research used in the FWS guidelines. In particular, studies correlating habitat and NSO fitness measures, and radio-telemetry studies of habitat use by foraging NSO (Irwin *et al*. 2007b) provide information directly applicable to evaluation of timber harvest-related impacts to NSO. During the past decade, the FWS has incorporated the results of new research into Technical Assistance on a plan by plan basis. However, with the February 2008 return of THP review to CALFIRE, the large number of recently published studies requires that a full synthesis of current knowledge be conducted and incorporated into updated take evaluation guidelines. This synthesis, and the habitat retention guidelines that it supports, are presented in section III of this report.

FWS experience in technical assistance process

The FWS' primary source of information regarding habitat conditions and NSO status on industrial timberlands in the Northern Interior Region has been our review of

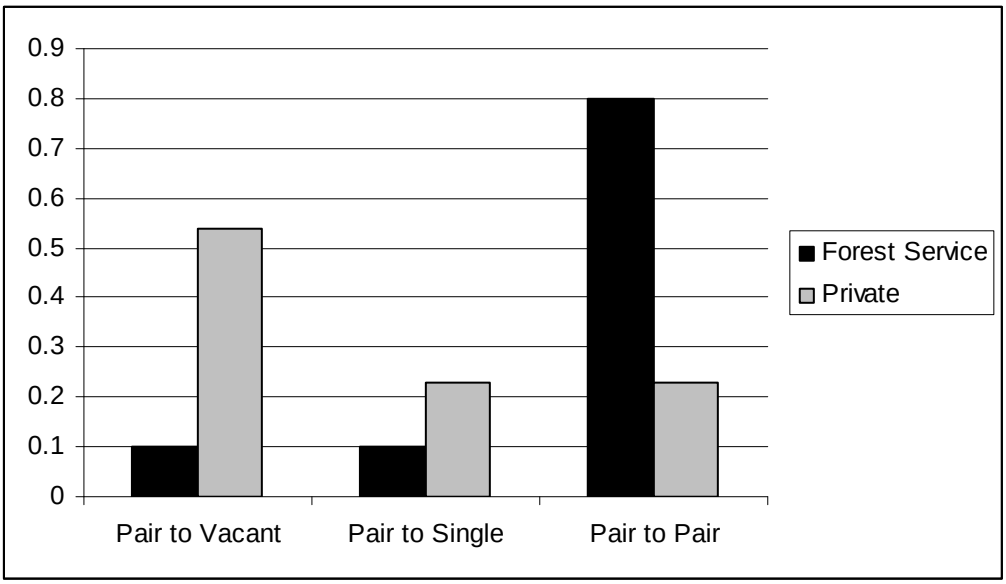
THPs. In the THP review process, FWS staff carefully evaluated historical NSO records and results of current surveys conducted in the plan area, as well as the habitat data provided in support of the THP. In cases where timber harvest was proposed in close proximity to an NSO activity center, the FWS evaluated habitat conditions in the field. The THP review process was conducted on a plan-by-plan basis, which does not permit systematic assessment of habitat conditions and NSO status across an entire ownership. However, our combined experience with hundreds of THPs indicates that the cumulative effects of repeated entries within many NSO home ranges has reduced habitat quality to a degree causing reduced occupancy rates and frequent site abandonment. In a large proportion of technical assistance letters to CALFIRE and industrial timberland owners during the past five years, we noted the lack of NSO responses at historic territories, and described habitat conditions considered inadequate to support continued occupancy and reproduction. This highlights the need for refined, objective criteria to determine the likelihood of NSO take when assessing THPs.

Analysis indicating loss of territories under Forest Practice Rules

To quantify the pattern of territory loss identified during the technical assistance process, we compared results of protocol surveys conducted at verified NSO territories supporting at least one year of occupancy by paired owls on Forest Service lands (N=196) with similar data from private timberlands (N=75) in Shasta and Trinity counties. The data set consisted of activity center status records in the California Department of Fish and Game's Spotted Owl Database (CDFG-NSO database), supplemented with territory locations and recent survey records received during technical

assistance. We first evaluated the validity of activity center records in the CDFG-NSO database, and eliminated 18 sites on private lands due to lack of verification of status. The remaining 57 private-land activity centers had verified NSO status in at least one year between 1989 and 2007; 44 of these sites had supported pairs during at least one year. Of these verified pair sites, 54% declined from pair status to no response, and an additional 23% declined from pair status to a territorial single owl during subsequent protocol surveys (Figure I.B.1). On Forest Service-administered lands, 80% of pair sites did not change status during the same time periods. While we recognize that annual variation in survey effort and results at this relatively coarse scale of resolution may influence this type of analysis, the strong differences in trends observed on private versus federal lands supports the contention that management on private timberlands is creating habitat conditions that do not support sustained occupancy by NSO.

Figure I.B.1. Status of valid historical northern spotted owl activity centers (pair sites only) when resurveyed after 5-10 years. Data are from U.S. Fish and Wildlife Service technical assistance records and USFS monitoring records



Section II: Summary of the FWS NSO Take Evaluation Guidelines

The FWS guidelines provide a step-by-step process for evaluation of the likelihood of incidental take posed by proposed THPs (Appendix A). The steps include: (1) verifying the accuracy of NSO activity center location and status; (2) reviewing survey coverage and results to determine whether protocol has been met; and (3) evaluating the quantities and quality of habitat to be retained at each NSO home range potentially affected by the proposed THP. To assist the reader, this section briefly summarizes the analysis areas, habitat quantities, and habitat definitions used in step (3) of the FWS guidelines. See Appendix A for the full take avoidance analysis guidance provided to CALFIRE.

The FWS guidelines specify three spatial scales that form appropriate analysis areas for evaluation of habitat at NSO home ranges. The fourth analysis area, the 'outer core' represents the area between the core area and the total home range area (Table II.1). Within each analysis area, the FWS guidelines describe the quantities of habitat that must be retained in each of four functional habitat categories to avoid incidental take of NSO. These categories are: (1) high-quality nesting/roosting habitat; (2) nesting/roosting habitat; (3) foraging habitat; and (4) low-quality foraging habitat (Table II.2). Descriptions of the stand structural attributes corresponding to each functional habitat category are given in Table II.3. Table II.4 provides additional considerations for use in prioritizing habitat areas for retention.

Table II.1: Spatial scales used to evaluate habitat conditions at northern spotted owl activity centers in the Northern Interior Region

Analysis Area	Radius	Area
Nest Site	1000 feet	70 acres
Core Area	0.5 mile	502 acres
Outer Ring	0.5 – 1.3 mile	2,908 acres
Home Range	1.3 miles	3,410 acres

Table II.2: Minimum quantities of habitat to be retained within four functional habitat types to avoid incidental take of northern spotted owls on private timberlands in the Northern Interior Region

Analysis Area	Functional Habitat Type				
	High-quality NR	Nesting/ Roosting	Foraging	Low-quality Foraging	Total Suitable
Core area	100 acres	150 acres	100 acres	50 acres	300 acres
Outer 'ring'			655 acres	280 acres	935 acres
Home range (total)	100 acres	150 acres	755 acres	330 acres	1335 acres

Table II.3: Values for selected stand structural parameters used to classify nesting/roosting and foraging habitat for northern spotted owls in the Northern Interior Region

Parameter	Functional Habitat Type			
	High-quality NR	Nesting/Roosting	Foraging	Low-quality Foraging
Basal area	≥ 210 ft^2 /acre	Mix ranging from 150 to ≥180 ft^2 /acre	Mix ranging from 120 to ≥180ft^2 /acre	Mix ranging from 80 to ≥120ft^2 /acre
Quadratic mean diameter	≥ 15 inches	≥ 15 inches	≥ 13 inches	≥ 11 inches
Large trees per acre	≥ 8	≥ 8	≥ 5	NA
Canopy closure	≥ 60%	≥ 60%	≥ Mix ranging from 40 to 100%	≥ 40%

Table II.4: Guidelines for prioritizing habitat to be retained to avoid incidental take of northern spotted owls on private timberlands in the Northern Interior Region

Tree Species composition	Mixed conifer stands should be selected over pine-dominated stands
Abiotic considerations	
Distance to nest	Nesting/roosting and foraging habitat closest to identified nest trees, or roosting trees if nest unknown
Contiguity	Nesting/roosting and foraging habitat within the 0.5 mile radius must be as contiguous as possible
	Minimize fragmentation of foraging habitat as much as possible
Slope position	Habitats located on the lower 1/3 of slopes provide optimal microclimate conditions and increased potential for intermittent or perennial water sources
Aspect	Habitats located on northerly aspects provide optimal vegetation composition and cooler microclimates
Elevation	Habitat should be at elevations < 6000 feet, lower elevations are preferred

Section III: Scientific Basis for NSO Take Evaluation Guidelines

A. Fundamentals of spotted owl habitat relationships

Northern spotted owls exhibit clear, consistent patterns of habitat association, and these associations must provide the foundation of habitat management guidelines. In the 1990 *Conservation Strategy for the Northern Spotted Owl,* the Interagency Scientific Committee (Thomas *et al.* 1990) stated that:

"With the exception of recent studies in the coastal redwoods of California, all studies of habitat use suggest that old-growth forests are superior habitat for northern spotted owls. Throughout their range and across all seasons, spotted owls consistently concentrated their foraging and roosting in old-growth or mixed-age stands of mature and old-growth trees....Structural components that distinguish superior spotted owl habitat in Washington, Oregon, and northwestern California include: a multilayered, multispecies canopy dominated by large (>30 inches dbh) conifer overstory trees, and an understory of shade-tolerant conifers or hardwoods; a moderate to high (60-80 percent) canopy closure; substantial decadence in the form of large, live coniferous trees with deformities- such as cavities, broken tops, and dwarf mistletoe infections; numerous large snags; ground cover characterized by large accumulations of logs and other woody debris; and a canopy that is open enough to allow owls to fly within and beneath it."

Fifteen years later, the conclusions of the Interagency Scientific Committee were echoed in the *Scientific Evaluation of the Status of the Northern Spotted Owl* (Courtney *et al.* 2004), who found that the habitat attributes identified by Thomas *et al.* (1990) remain important components of NSO habitat. Notably, positive relationships were found with the aforementioned attributes whether the samples of owl and random locations were

within old-growth forest, non-old growth forest, National Parks, public land, private land, or an Indian Reservation. In 2008, the *Recovery Plan for the Northern Spotted Owl* (USFWS 2008) again reiterated the association of NSO with older forest conditions, stating; "Spotted owls generally rely on older forested habitats (Carroll and Johnson 2008) because such forests contain the structures and characteristics required for nesting, roosting, and foraging." A major advance in our understanding of NSO habitat relationships from Thomas et al. (1990) to the present is that we now have a much better understanding of the spatial scale of habitat selection (Hunter et al. 1995), Meyer et al. 1998, Zabel et al. 2003) and relationships of habitat to owl fitness (Franklin et al. 2000, Dugger et al. 2005).

III.B: Analysis Areas

Management guidelines for territorial organisms are typically spatially explicit; that is, they apply to an area corresponding to the movements and activity patterns of the individuals occupying a territory. Spotted owls are territorial raptors that range widely in search of prey but are 'anchored' during the breeding season to a nest site (central-place forager). Evaluations of NSO habitat are usually conducted at two spatial scales; the home range and core areas. The home range is the "area traversed by the individual in its normal activities of food gathering, mating, and caring for young" (Burt 1943:351). Within home ranges, areas receiving concentrated use, typically surrounding the nest site and favored foraging areas, are called core areas. Because the size and pattern of NSO space use are typically unknown, estimates of use areas are derived from radio-telemetry studies. The analysis areas employed in the FWS guidelines are based on a subset of

estimates that describe the outer perimeter of NSO activity areas, thus incorporating the areal extent most likely to contain important resources. In this section we review and summarize information related to home range size and patterns of space use within home ranges by NSO.

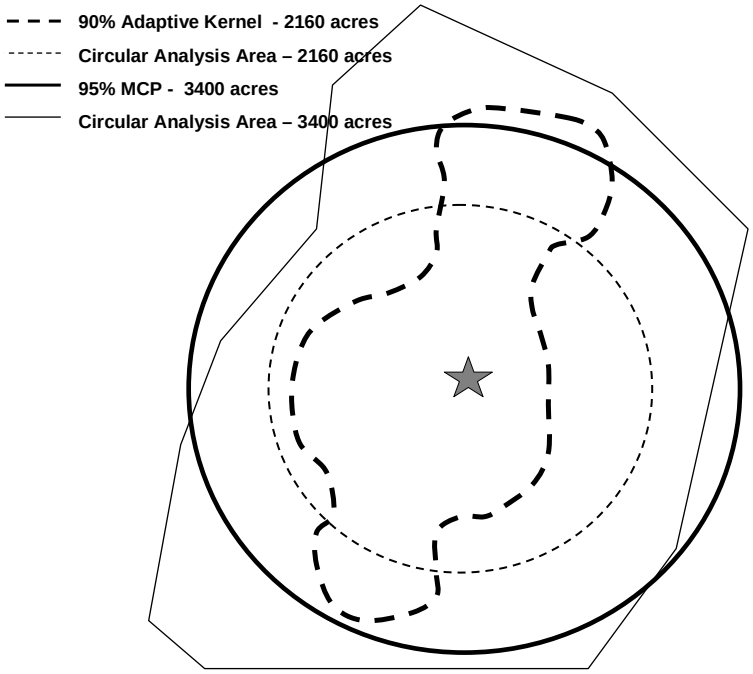
Home Range (1.3-Mile-Radius, 3,410-Acre) Analysis Area

The FPR guidelines for avoiding take of NSOs during timber operations in the Klamath Province indicate the amount of habitat to be retained within 1.3 miles of activity centers. The size of this area was originally based on estimated median annual home range sizes for NSO pairs in northern California, Oregon, and Washington (Thomas *et al.* 1990, USFWS 1992). There are numerous analytical techniques for estimating home range sizes based on animal locations (reviewed in Powell 2000). One of the most commonly used classes of home range estimators is the minimum convex polygon (MCP). Because MCP consists of a single polygon encompassing all or the majority of telemetry locations, this method may be viewed as providing a representation of the area *containing* the home range, including unused and infrequently used areas (Powell 2000, Laver and Kelly 2008). Generally biased large, MCP home range estimates provide relatively conservative values on which to base the size of habitat-analysis areas. Other home range estimators such as utilization distributions (e.g., kernel density estimates: see Powell 2000) de-emphasize areas less frequently used and typically yield smaller home range estimates that, when converted into circular analysis areas, may exclude distant, but potentially important, patches of habitat (see Figure 2.b.1). At the upper end of utilization distributions (e.g.; 90-100%), however, kernel estimates may resemble MCP polygons and circular analysis areas (Anthony and Wagner 1999).

Estimates of home range size are also important for developing management prescriptions and evaluating impacts of human activities on NSO. For the purpose of quantifying habitat and the impact of proposed modification of habitat, median home range estimates from radio telemetry studies are transformed into circular 'analysis areas' that are used as surrogates for actual home ranges (Fig. 2.b.1). Based on the median MCP home range estimate for NSO pairs in the Klamath Province, the FWS currently uses a circular analysis area of 1.3 mile radius (3,398 acres; Thomas *et al.* 1990, USFWS 1992). While this practice provides a practical and uniform method for quantifying NSO habitat, circular analysis areas will generally not correspond directly with areas actually used by NSO. Landscape pattern, both in terms of topographic features and vegetation pattern; prey distribution, abundance and availability; as well as distribution and/or abundance of competitors and predators are all likely to influence NSO territory and home range shape (Anthony and Wagner 1999).

Our understanding of space use by NSO is limited by lack of comparability among published studies due to variation in estimation methods, duration and seasonality of data collection, and whether estimates are for individuals or pairs. By looking for commonalities among studies and using a "strength of evidence" approach, however, we can evaluate whether the available information provides broadly modal values that are useful for conservation planning. Because the primary purpose of this review is to evaluate appropriate spatial scales for evaluation of effects to territorial paired NSO, we have focused on conservative estimates of year-round (annual) space use by NSO pairs.

Figure III.B.1: Comparison of MCP and adaptive kernel home range estimates with corresponding circular analysis areas at an actual northern spotted owl home range.



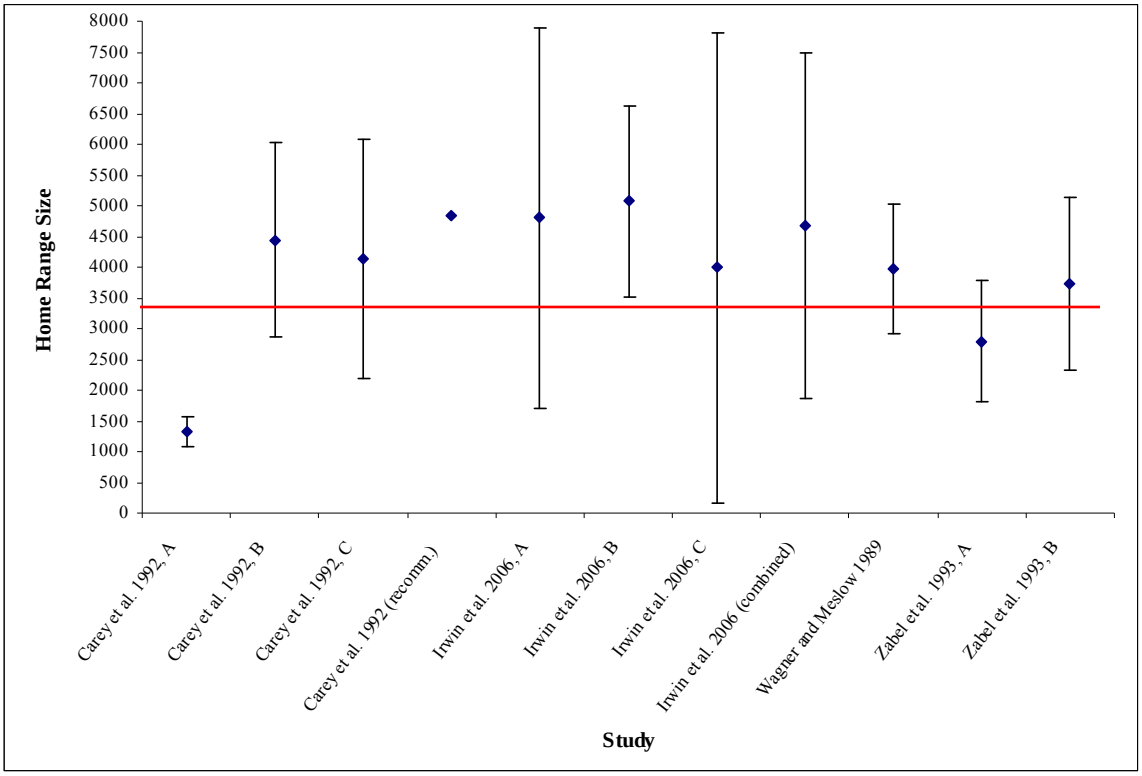
The sizes of NSO home ranges are influenced by a variety of factors, including geographic differences in diets and habitat characteristics (Carey *et al.* 1992, Zabel *et al.* 1995). Therefore, we restricted our assessment of the validity of the 1.3-mile-radius analysis area to home range studies conducted within the Klamath Province. Because the outer analysis area should be large enough to include habitat needed to meet all major life history requirements and should accommodate areas important to both members of most pairs, we largely restricted our evaluation to studies that provided MCP estimates of the sizes of home ranges used year-round by pairs or paired individuals.

Home range studies conducted in the Klamath Province after the FPR guidelines were formulated support the use of a 1.3 mile radius analysis area, as this distance is encompassed by the confidence intervals of nearly all the home range studies we

compiled. (see Figure III.B.2). Carey *et al.* (1992) found that the sizes of NSO pairs' home ranges were related to the type of forest and the degree of forest fragmentation (Table III.B.1). Pairs' home ranges in clumped, old forest were substantially smaller than the 1.3-mile-radius analysis area, whereas those in fragmented forest were somewhat larger than the analysis area. The authors suggested that management areas should be slightly larger than 1.3 miles, however, to encompass oblong-shaped home ranges. Zabel *et al.* (1993) provided estimates of 21 pairs' home ranges in two different study areas in the region (see Table III.B.2). They did not report the sizes of pairs' annual home ranges, but the average sizes of pairs' nonbreeding season home ranges were similar to the size of the FWS guidelines' outer analysis area. Pairs' annual home ranges would likely be larger than these values because their breeding- and nonbreeding-season home ranges probably do not completely overlap. In a different study, the mean cumulative pair MCP home range size for 9 pairs in the Medford, Oregon area was 3,971 acres (SD=1,063 acres), which is also similar to the 1.3-mile radius analysis area (Wagner and Meslow 1989). A fourth study by Irwin et al. (2006) showed greater mean home range sizes for 3 study areas in the region than the 1.3-mile radius analysis area used in the existing FWS guidelines (see Table III.B.3). The FWS recognizes that because of differences in methodology between these studies and those originally used to support the 1.3-mile radius analysis area (see Thomas *et al.* 1990, USFWS 1992), the results cannot be rigorously compared (see Powell 2000, Laver and Kelly 2008). Nonetheless, mean MCP values for home range area from more recent studies suggests that the outer analysis area should be somewhat larger than the 1.3-mile (3,410-acre) guideline (Figure III.B.2). We elected to retain the current guideline because, 1) the high degree of variability in MCP

estimates in Figure III.B.2 does not compel us to reject the home range estimate in our existing guidelines in exchange for any particular alternative size, and 2) disproportionately high use of habitats closer to nest sites by NSO (see core areas, below) leads us to emphasize habitat conditions closer to nests, rather than expanding home range area.

Figure III.B.2: Mean Minimum Convex Polygon home range sizes (acres) for northern spotted owls in the Klamath Province, CA and OR. Error bars represent ±1 standard deviation. Horizontal line shows the size of the Fish and Wildlife Service guidelines' outer analysis area (3,410 acres).



Carey et al. 1992 = pairs' annual home ranges, A = Klamath Mountains, clumped forest, B = Klamath Mountains, fragmented forest, C = Umpqua, fragmented forest; Irwin et al. 2006 = paired-individuals' annual home ranges, A = Hilt, B = Medford, C = Yreka; Zabel et al. 1993 = pairs' nonbreeding-season home ranges, A = Mad River, B = Ukonom.

Table III.B.1: Minimum Convex Polygon estimates of annual home range sizes (acres) for northern spotted owl pairs within different types of forest in the Klamath Province, Oregon (Carey *et al.* 1992)

Area*	No. Pairs	Mean	SE
MCC	3	1317	143
MCF1	5	4139	870
MCF2	6	4438	645
Recommended	-	4843	-

*MCC = mixed-conifer, clumped, Klamath Mountains old forest; MCF1 = mixed-conifer, fragmented, Umpqua River Valley, old forest; MCF2 = mixed-conifer, fragmented, Klamath Mountains old forest.

Table III.B.2: Minimum Convex Polygon (100%) estimates of home range sizes (acres) for northern spotted owls in the Klamath Province, California (Zabel *et al.* 1993)

Study Area	Mad River		Ukonom	
	Mean	SD	Mean	SD
Individuals				
NB*	1989	890	2572	857
B*	1043	447	1460	578
A*	2456	1124	2847	1374
Pairs				
NB*	**2787**	986	**3721**	1409
B*	1436	368	1900	756

*NB = nonbreeding season home range; B = breeding season home range; A = annual home range.

Table III.B.3: Estimated cumulative (100%Minimum Convex Polygon) home range sizes (acres) for selected* territorial individual northern spotted owls in the Klamath Province, California (Irwin *et al.* 2006)

Study Area	Yreka	Medford	Hilt	Combined
No. Individuals	7	9	10	26
Mean	3987	5073	4805	4678
SD	3819	1557	3098	2816

*Excludes owls that did not exhibit normal ranging behavior (i.e., moved to new territory, or influenced by active timber harvest).

Core Area (0.5-Mile-Radius, 500-Acre) Analysis Area

The FPR guidelines for avoiding take of NSO during timber operations specified the amounts of habitat to be retained within 0.7 mile (986 acres) of activity centers. The 0.7-mile-radius scale was adopted in the FPR guidelines based on a study by Thomas *et al.* (1990), who found that circles of this size surrounding NSO nest sites contained significantly more suitable habitat compared with random circles. This study, however, only illustrated the importance of suitable habitat, rather than the amount of habitat required by NSO or the appropriate scales for evaluating and managing habitat (Bart 1995). The results of studies conducted after the FPR guidelines were formulated (see below) have indicated that a 0.5-mile-radius (500-acre) area around activity centers is a more appropriate scale at which to evaluate the amounts of habitat required by breeding NSO in the Klamath Province. These studies provide three primary lines of support for the core area size used in the FWS guidelines; distribution of locations of radio-telemetered NSO, territorial spacing of NSO, and studies comparing relative habitat selection at different scales.

Resources such as food and breeding and resting sites are patchily distributed in heterogeneous landscapes, such as those prevalent within the Klamath Province. In such landscapes, animals are likely to disproportionately use areas that contain relatively high densities of important resources (Powell 2000). These disproportionately used areas are referred to as core areas. One of the most influential studies of wildlife core areas was focused on NSOs in northern California (Bingham and Noon 1997). Although this study's sample size was small, it used an unusually rigorous method for determining the sizes of core areas (Powell 2000). Bingham and Noon (1997) noted that the combined

size of NSO pair members' core areas is probably more meaningful than the sizes of individuals' core areas. Bingham and Noon (1997) estimated core areas by evaluating the ratio of total home range area to the area encompassing different adaptive kernel utilization distributions (UD), and found that individual NSO in northern California spent 60 to 75% of their time in their core areas, which comprised only 21 to 22% of their home ranges. The mean core area size for NSO pairs in the Klamath Province was 411 acres (166 ha; SE=26 ha; range=168-455 acres [68-184 ha]; n=7 pairs). Bingham and Noon (1997) also recommended that management guidelines attempt to meet the area requirements of most individuals in a population by accounting for variability in core area size; for example, by using the mean core area size plus one standard error. The addition of one standard error to the mean size of pairs' core areas totaled 475 acres (192 ha) for the Klamath Province data set. NSO core areas had diverse shapes due to variation in the distribution of foraging and roosting locations (Bingham and Noon 1997). However, assuming a circular shape for the purposes of evaluating and managing habitat, an area this size would have a radius of 0.49 mile. Carey and Peeler (1995) found remarkably similar results outside the Klamath Province, in southern Oregon.

We evaluated home range estimates from other studies in the Klamath Province in light of these patterns. By approximating Bingham and Noon's (1997) methodology, we evaluated kernel estimates in Irwin et al. (2004; Table 2) to estimate core area size (only 50%, 75% and 95% UD estimates were available). The 75 percent fixed kernel estimate accounted for 21 to 27 percent of the total (95%) home range, and the 75 percent adaptive kernel accounted for 23 to 30 percent, suggesting that a UD somewhat lower than 75 percent would yield core area estimates very similar to those obtained by Bingham and

Noon (1997). The addition of one standard error to individuals' mean 50 percent and 75 percent kernel density home range estimates from three different study areas in the province suggested that 500-acre analysis areas would include much of the important habitat for most breeding NSOs (Irwin *et al.* 2004, Table 2.b.4). Application of the same criteria to the results of a telemetry study in southwestern Oregon suggested that pairs used somewhat larger core areas than in other parts of the Klamath Province (Anthony and Wagner 1999, Table 2.b.5). Much of this study area is comprised of a checkerboard of public lands and industrial timberlands (Anthony and Wagner 1999, Dugger *et al.* 2005). To the extent that the amounts, quality, or contiguity of habitat have been reduced on these timberlands due to timber harvesting, NSO in this area may have larger area requirements than in parts of the province with less harvesting (Carey *et al.* 1990, 1992, Zabel et al. 1992, 1995).

Table III.B.4: Fixed kernel and adaptive kernel cumulative home range estimates (acres) for individual NSOs in the Klamath Province (Irwin *et al.* 2004).

Study Area	**Yreka**	**Medford**	**Hilt**	**Combined**
No. Individuals	9	10	11	30
No. Telemetry Points	3151	5041	2414	10606
50% Fixed Kernel				
Mean	128	210	147	162
SE	18	26	22	14
Mean + 1 SE	146	236	169	**176**
75% Fixed Kernel				
Mean	364	510	435	439
SE	38	47	54	29
Mean + 1 SE	402	557	489	**468**
50% Adaptive Kernel				
Mean	239	303	262	269
SE	47	39	42	24
Mean + 1 SE	286	342	304	**293**
75% Adaptive Kernel				
Mean	584	706	673	657
SE	124	68	91	54
Mean + 1 SE	708	774	764	**711**

Table III.B.5: Adaptive kernel home range estimates (acres) for NSO pairs in southwestern Oregon (Anthony and Wagner 1999).

Utilization Distribution	**50%**	**75%**
Mean	413	1443
SE	67	259
Mean + 1 SE	**480**	**1702**

The territorial spacing of NSO provides additional support for using a 0.5-mile-radius core area to evaluate and manage habitat for NSO in the Klamath Province. An individual's territory is thought to be the portion of the home range that both contains important resources and is economically defensible (Meyer *et al.* 1998). Therefore, average territory size provides a useful scale at which to evaluate core area habitat.

Wildlife biologists frequently use half the mean or median nearest neighbor distance to estimate the size of the defended portions of home ranges, or the portions of home ranges that are used exclusively by resident pairs (e.g., Reynolds and Joy 1998). Half the mean and median nearest neighbor distances for nesting NSO near Willow Creek were 0.49 mile (0.79 km: Hunter *et al.* 1995) and 0.44 mile (0.71 km: Franklin *et al.* 2000), respectively.

A third line of support for using a 0.5-mile-radius area for evaluating and managing habitat is provided by studies that modeled the habitat relationships of NSOs in the Klamath Province. Two studies in the region found that habitat within a 0.5-mile radius of nests differed more strongly from the general landscape compared with larger areas around nests (Hunter *et al.* 1995, Meyer *et al.* 1998, Zabel et al. 2003). While these results do not necessarily indicate that NSO are most selective of habitat at the 0.5-mile-radius scale, they do show that evidence of habitat selection by NSO is weaker at scales larger than this. Stronger support for the validity of assessing and managing habitat at the 0.5-mile-radius scale is provided by studies that modeled habitat-based fitness (Franklin *et al.* 2000, Dugger *et al.* 2005) and presence (Zabel *et al.* 2003) for NSO in the region. These studies found that important NSO-habitat relationships were well-captured at scales of 0.44 to 0.50 mile around activity centers.

III.C: Quantity, Distribution, and Configuration of Habitat

The FPR take-avoidance guidelines required that 40% of the 1.3-mile-radius analysis area and 50% of the 0.7-mile-radius analysis area be retained as suitable habitat. The FWS guidelines kept the 40% requirement because it is consistent with the results of

research in the Klamath Province. However, the FWS guidelines require greater concentration of habitat near the nest or activity center than did the FPR guidelines. This concentration occurs through: (1) a decrease in the size of the inner analysis area (from 0.7- to 0.5-mile radius; see *Analysis Areas*) and (2) requirement that part of the total amount of foraging habitat (see *Habitat Definitions*) in the home range be retained within the inner analysis area. These changes are supported by studies conducted in the Klamath Province after the FPR guidelines were formulated.

Several types of information are available for evaluating the quantities, distribution, and configuration of habitat that must be retained in order to avoid take of NSO. The strongest type of information relevant to evaluation of take relates the fitness of NSO to characteristics of their habitat (Franklin *et al.* 2000, Olson *et al.* 2004, Dugger *et al.* 2005). Habitat-based fitness, or habitat fitness potential (HFP), is "the fitness conferred on an individual occupying a territory of certain habitat characteristics" (Franklin *et al.* 2000:558). HFP is a function of both the survival and reproduction of individuals within a given territory. Habitat-based modeling that accurately predicts the presence ("occupancy") of breeding NSO (Zabel *et al.* 2003) is another important tool for evaluating the species' habitat relationships. This modeling assumes that NSO gravitate toward areas likely to confer high fitness but does not directly relate habitat characteristics to the survival and reproduction of owls. Descriptions of areas around nests, and comparisons between them and random areas, are additional sources of information for investigating NSO-habitat relationships. This approach provides information about the habitat associations and preferences of NSO but must be cautiously considered because it does not relate habitat descriptions to the fitness of owls. For

example, the average quantity of habitat around a sample of NSO nests could be higher than what is available around random locations, but still be lower than what is required for persistence of individuals or the population.

Comparisons among habitat studies can be problematic because researchers often define habitat differently and use different source data to classify vegetation (see Table III.C.1). Nonetheless, all studies in the Klamath Province have found that NSO exhibit strong relationships with older, more structurally complex, conifer-dominated forest classes. The concordance of these findings enabled the FWS to evaluate the guidelines relative to the quantities, distributions, and configurations of older forest within analysis areas. Spotted owls also forage within intermediate (younger and/or more open) forest classes (see *Habitat Definitions*, below). One study (Zabel *et al.* 2003; see below) found a positive association between NSO in the Klamath Province and moderate amounts of intermediate forest (see Table III.C.1) at the core area scale. This habitat class was based on conditions known to be used by foraging NSO. Other studies in the region have described the proportions of analysis areas comprised of intermediate forest classes but have not found positive associations between them and NSO. These forest classes often included conditions that receive little or no use by NSO, however, and are therefore not directly comparable with foraging habitat as defined by Zabel *et al.* (2003) and the FWS guidelines (see *Habitat Definitions*, below). There is currently no information for evaluating the proportion of intermediate forest that should be retained at the home range scale in order to avoid take of NSO in the Klamath Province.

Table III.C.1: Descriptions of suitable or selected habitat from studies of northern spotted owl-habitat relationships in the Klamath Province

Study	Location	Classification Method	Description of Selected or Suitable Habitat
USFWS 1992, Bart 1995	Washington, Oregon, northern California	research synthesis (various methods)	conifer-dominated forest with a multi-layered canopy, average DBH[1] >30 inches, ≥60% canopy cover, decadence (snags, logs, deformed trees)
Anthony and Wagner 1999	southwestern Oregon	aerial photographs, ground reconnaissance	conifer-dominated forest with a multi-layered canopy, ≥40% canopy cover, decadence, large snags and logs; characterized by trees ≥30 inches DBH and ≥200 yrs
Carey *et al.* 1992	southwestern Oregon	aerial photographs, forest inventory data, ground reconnaissance	multi-layered canopy, average DBH of dominant trees >39.4 inches, large snags and logs
Dugger *et al.* 2005	southwestern Oregon	aerial photographs, ground reconnaissance	conifer or mixed forest, ≥100 yrs; characterized by trees ≥13.8 inches DBH
Franklin *et al.* 2000	northwestern California	satellite imagery	forest comprised of ≥40% conifers, conifer QMD[2] ≥21 inches, hardwood QMD ≥6 inches, canopy cover ≥70%
Gutiérrez *et al.* 1998	northwestern California	satellite imagery	≥30% canopy cover, >50% of conifer basal area comprised of trees ≥21 inches DBH
Hunter *et al.* 1995	northwestern California	satellite imagery	≥30% canopy cover, >50% of conifer basal area comprised of trees ≥21 inches DBH
Meyer *et al.* 1998	western Oregon	aerial photographs	conifer-dominated forest, trees ≥80 yrs and/or multi-layered canopy
Ripple *et al.* 1997	southwestern Oregon	aerial photographs	conifer-dominated forest, average DBH ≥19.7 inches, canopy cover ≥60%
Solis and Gutiérrez 1990	northwestern California	timber type classification	average DBH >20.7 inches
Zabel *et al.* 1993	northwestern California	topographic maps, aerial photographs, and orthophotoquads	stands dominated (in terms of basal area) by trees >20.9 inches DBH; >20% canopy cover of dominant trees and >70% canopy cover of trees >5.1 inches DBH
Zabel *et al.* 2003	northwestern California	modified timber type classification, varied geographically	nesting-roosting habitat: for most locations average DBH ≥17 inches and average conifer canopy cover ≥60%; foraging habitat: in all locations average DBH ≥9.8 inches and average conifer canopy cover ≥40%, additional criteria in some locations

[1] DBH: Diameter at breast height
[2]QMD: Quadratic mean diameter

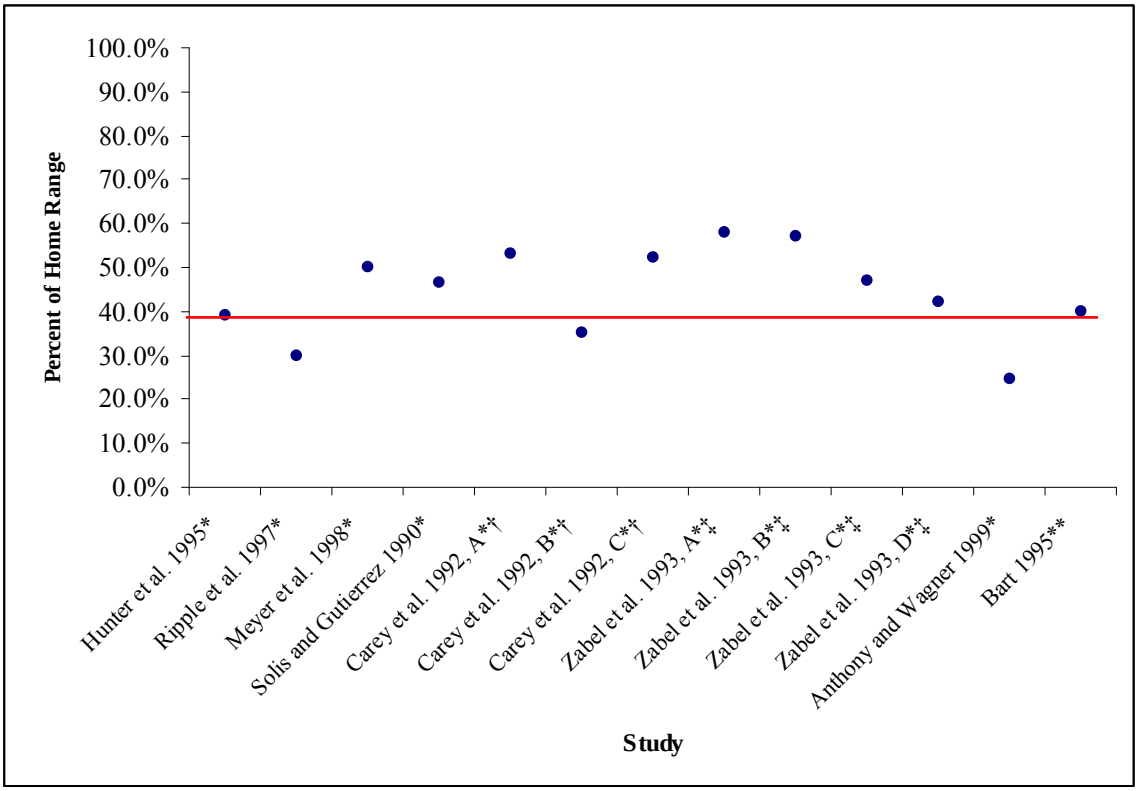
H*ome Range (1.3-Mile Radius)*

Bart (1995) evaluated the 1992 draft recovery plan's (USFWS 1992) requirement that at least 40 percent of the estimated home range be retained as suitable habitat. Using demographic data from throughout the NSOs' range, including the Klamath Province, he calculated that populations are stable when the average proportion of suitable habitat in home ranges is 30 to 50 percent. In a related comment on the FPR take-avoidance guidelines, Bart (1992:3) noted that "…lambda probably reaches 1.0 (stable population) when suitable habitat declines to somewhere between 40 and 55 percent. Since the Service must have good evidence that take did occur, not just that it might have occurred, using a value of 40 percent seems reasonable." Bart's (1992) conclusions continue to be supported by the results of recent research.

Studies have reported a wide range of mean proportions of older forest (ca. 24 - 58 percent; see Figure III.C.1) in home range-sized areas around NSO nests or roosts in the Klamath Province and adjacent areas (Solis and Gutiérrez 1990, Carey *et al.* 1992, Zabel *et al.* 1993, Hunter *et al.* 1995, Ripple *et al.* 1997, Meyer *et al.* 1998, Anthony and Wagner 1999). Variation in proportions of habitat was likely due to multiple factors, particularly differences in habitat classification (see Table III.C.1), but also including sizes of analysis areas and study season (i.e., breeding versus non-breeding), as well as geographic differences in the abundance and quality of habitat. Regardless, the central tendency of these means is about 45 percent; a somewhat higher percentage than the FWS guidelines. We retained the 40 percent threshold, however, because; 1) the FWS guidelines specify amounts of high-quality habitat, rather than a single 'suitable habitat'

category, and; 2) FWS guidelines incorporate a higher standard for classifying forest habitat as 'suitable' than was used in many of the studies in Figure III.C.1, and; 3).

Figure III.C.1: Proportions of older forest (see Table III.C.1) at home range scales around northern spotted owl territory centers in the Klamath Province, CA and OR. Horizontal line shows the proportion of older forest required by the Fish and Wildlife Service guidelines (40 percent).

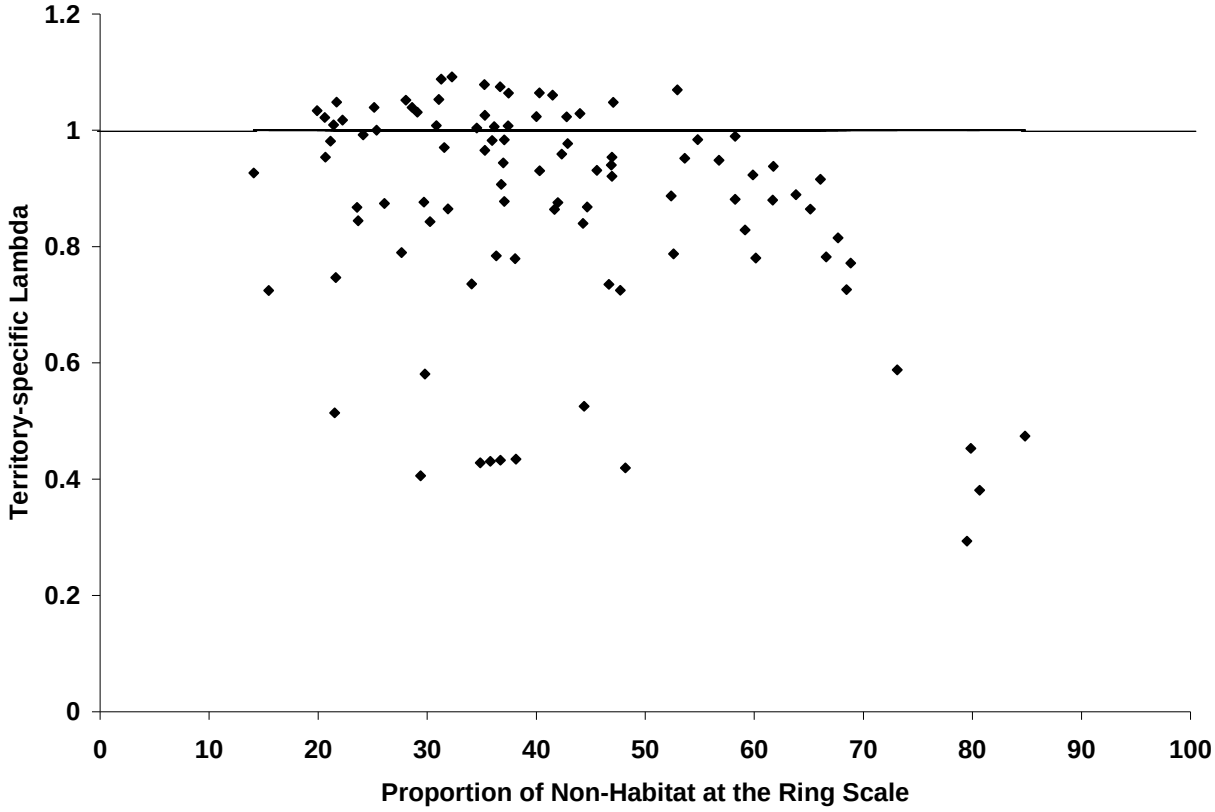


*Mean proportion. **Recommendation for take-avoidance guidelines. †Carey et al. 1992: A = Klamath Mountains, clumped forest, B = Klamath Mountains, fragmented forest, C = Umpqua, fragmented forest. ‡Zabel et al. 1993: A = Ukonom, breeding season, B = Ukonom, nonbreeding season, C = Mad River, breeding season, D = Mad River, nonbreeding season.

Research in the Klamath Province and adjacent areas indicates that NSO habitat should be concentrated at the core area scale around nests and interspersed with other land cover classes in the rest of the home range. For this reason, the FWS guidelines require retention of a higher proportion of the home range's total suitable habitat

(particularly nesting/roosting habitat) to be within the core area, and allow a wider range of forest conditions in the outer ring. A study in southwestern Oregon showed that HFP was optimal for NSO when the estimated home range beyond the core area (3,430-acre ring) was comprised of large amounts of forest (young, mature, and old classes) and an intermediate amount (ca. 38%) of "nonhabitat" (nonforest, early seral forest, heavily harvested forest) (Dugger *et al.* 2005; see Figure III.C.2). At this scale, HFP was below 1.0 at all territories with >50 percent nonhabitat. A similar study just outside the Klamath Province in southern Oregon found that high survival of NSO usually occurred with large proportions (ca. 70 percent was optimal) of conifer forest (average DBH >9.5 inches) in estimated home ranges (1,747 acres), whereas high reproduction was associated with large amounts of edge between "nonforest" (average diameter at breast height (DBH) <9.5 inches) and other vegetation classes (Olson *et al.* 2004). These findings suggest that HFP is highest when home ranges consist of large amounts of both forest and forest-edge. Zabel *et al.* (2003) found that the best large-scale (2,224-acre) model for probability of occupancy by NSO in northwestern California was an intermediate amount of old forest (≥24 inches DBH and ≥70 percent canopy cover) edge. Thus, both the demography and presence of NSO in the Klamath Province appear to be positively associated with an intermediate amount of horizontal heterogeneity at the home range scale.

Figure III.C.2: Association between habitat fitness potential (territory-specific lambda) and proportion of "nonhabitat" (nonforest, early seral stages, older forest receiving timber harvest entries removing >40 percent basal area in the portion of the estimated home range outside the estimated core area (3,430-acre ring) in southwestern Oregon (Dugger *et al.* 2005).



Core Area (0.5-Mile Radius)

The disproportionate importance of habitat conditions within NSO core areas is indicated by the species' concentrated use of areas close to the territory center (see *Analysis Areas* and *Habitat Definitions*). The core area's relevance has also been demonstrated by strong associations between habitat patterns and the demography (Franklin *et al.* 2000, Dugger *et al.* 2005) and occurrence (Zabel *et al.* 2003) of NSO.

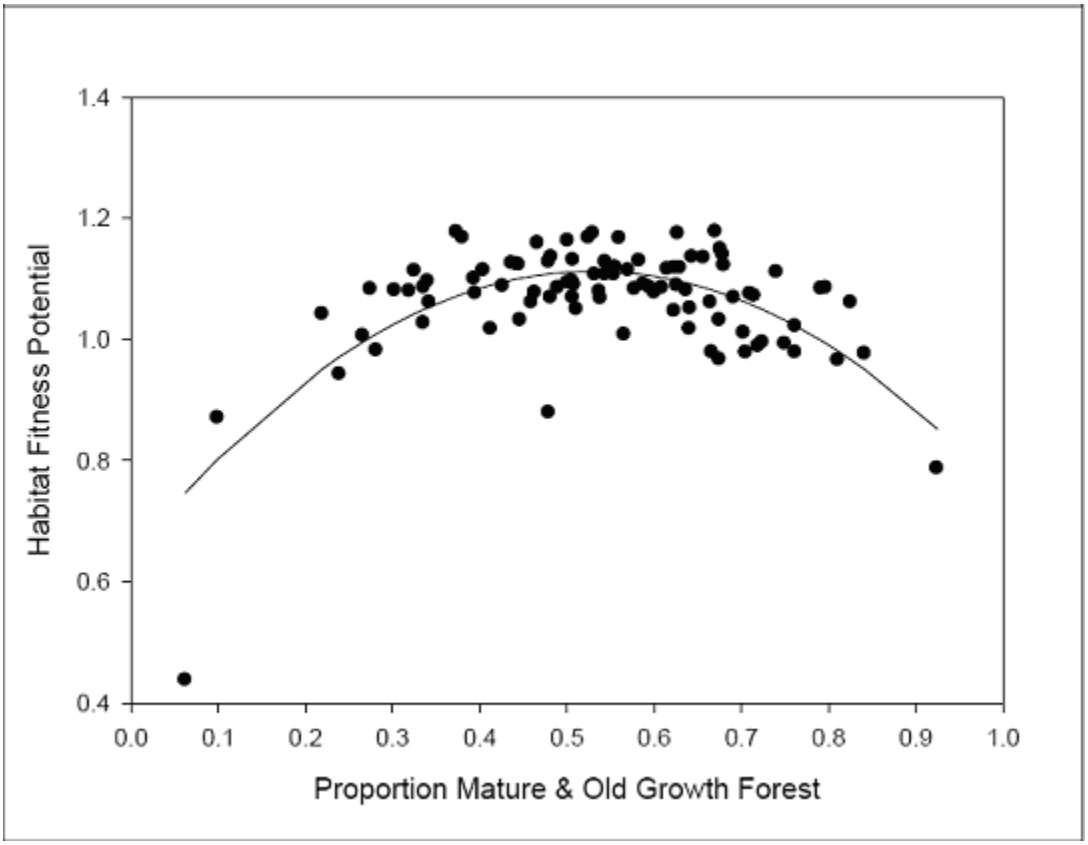
The results of two rigorous demographic studies of NSO in the Klamath Province (Franklin *et al.* 2000, Dugger *et al.* 2005) provide strong, consistent inferences regarding the relationship between habitat conditions and measures of NSO fitness such as adult survival and HFP at the core area scale. Although the habitat-based fitness models of Franklin *et al.* (2000) and Dugger *et al.* (2005) differ somewhat, both studies indicated that HFP for NSO in the Klamath Province was most likely to be $\geq$1 when at least 50% of the estimated core area was comprised of older forest (see Table III.C.1 for habitat criteria). An HFP of $\geq$1 indicates that a territory has the characteristics required for breeding females to replace themselves or contribute a surplus to the population (Franklin *et al.* 2000).

Franklin *et al.* (2000) found that territory-specific adult survival was strongly associated with the amounts of interior older forest in addition to the amount of edge between older forest and other vegetation types (see Table 7 in Franklin *et al*. 2000) at the core area scale (390 acres, 158 ha). Interior older forest was the amount of older forest 328 feet (100 m) from an edge and is not equivalent to the simple amount of older forest within a core. Interestingly, HFP declined overall when the core area contained more interior old forest. This was apparently due to a tradeoff between habitat characteristics associated with survival (amount of interior habitat and length of habitat edge) and reproduction (amount of habitat edge). High quality territories typically had core areas comprised of large patches of older forest with convoluted edges. Estimates of the amount of interior older forest that correlated with HFP >1 were provided to the FWS by Dr. Franklin (personal communication, September 19, 2005). The minimum proportion of interior older forest corresponding to HFP >1 was 41 percent; addition of

the older forest area within the 328-foot "edge buffer" yielded a proportion of 62 percent ("total core": Franklin 1997). Based on this evaluation, Dr. Franklin recommended that 60 percent of the core area be comprised of older forest (Franklin, personal communication, September 19, 2005). The FWS guidelines incorporate the apparent positive influence of moderate amounts of edge by 1) requiring that retention of high-quality habitat be concentrated at the core scale and 2) specifying amounts of older forest and foraging habitat in the core.

Data sets used in Franklin *et al.* (2000) were recently re-analyzed to evaluate the relationship between HFP and the simple proportion of older forest within NSO core areas (Franklin 2006). The results of this analysis, proposed in Appendix D of the 2007 Draft Recovery Plan for the Northern Spotted Owl (USFWS 2007), indicated a quadratic relationship between HFP and older forest, with optimum HFP occurring when 53 percent of the estimated core area consisted of older forest (Franklin *et al.* 2000; Figure III.C.3). More than half (55 percent) of the high-quality (HFP $\geq$1) territories had core areas comprised of 50 to 65% older forest. This pattern is consistent with the previously described recommendations of Dr. Franklin and the habitat retention guidelines developed by the FWS.

Figure III.C.3: Relationship between habitat fitness potential for northern spotted owls and proportion of older forest (see Table III.C.1) within 0.44 mile of territory centers in northwestern California (courtesy A. Franklin)



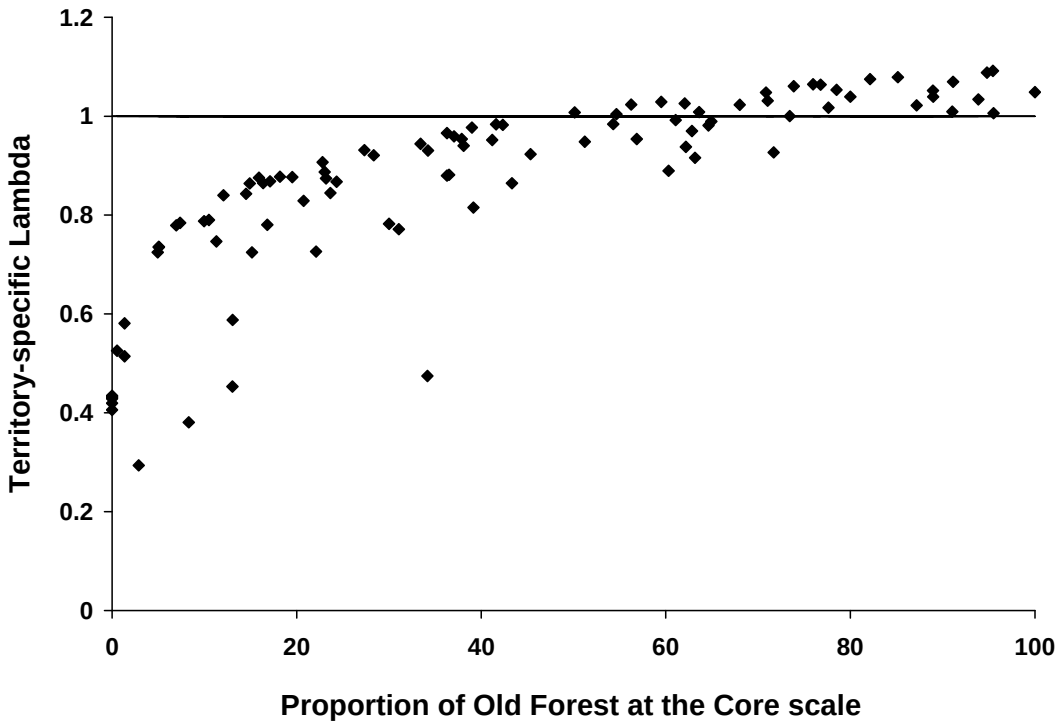
Because roughly 29 percent of high-quality territories (HFP ≥1) (Figure III.C.3) contained less than 50 percent old forest, some have suggested that a substantially lower habitat retention guideline would be adequate to avoid incidental take in timber harvest operations. Use of Franklin (2006) as the sole means of support for habitat retention guidelines is inappropriate (Franklin 2007) however, because the model estimating survival based on simple amounts of older forest was not well-supported and had only 3 percent of the weight in the model set (as opposed to 42.7 percent for the best-supported model which included interior old forest and amount of edge; see Table 7 in Franklin *et*

al. 2000). Use of the simple amount of older forest for evaluating take of NSO is inappropriate because it ignores the model selection process used in Franklin *et al.* (2000), which found that simple amounts of older forest alone did not explain variation in survival nearly as well as amounts of interior older forest and edges (Franklin 2007). Nichols and Pollock (2008) reviewed the use of HFP in the draft NSO Recovery Plan and concurred with Franklin (2007), stating that plots based on a single variable (percent old forest) instead of multiple covariates in the model of Franklin *et al.* (2000) are potentially misleading. Consequently, the analysis using solely percent old forest was deleted from the final 2008 NSO Recovery Plan, and was not used by the FWS to develop recent NSO habitat retention guidelines.

In a similar study in southern Oregon, Dugger *et al.* (2005) found that HFP was positively related to the proportion of older forest in the estimated core area (413 acres, 167 ha), although it became decreasingly sensitive to increased proportions (see Figure III.C.4; Dugger, unpub. data). Roughly 72 percent of core areas with HFP greater than 1.0 had more than 50 percent older forest; whereas cores with HFP less than 1.0 never contained more than 50 percent older forest. In contrast to the conclusions of Franklin *et al.* (2000), the correlation of HFP with proportion of older forest in the estimated core area was roughly linear; HFP did not decline at high levels of older forest. It is unclear why these studies found differences in the nature of the NSOs' relationships with quantities of older forest in the core area. Possible reasons for this dissimilarity include differences in the availability and quality of habitat in the study areas and in the studies' classifications of habitat (see Table III.C.1). For example, the area studied by Dugger *et al.* (2005) was strongly fragmented by industrial timberlands in a checkerboard pattern,

whereas the area studied by Franklin *et al.* (2000) was dominated by less-intensively managed federal lands. Regardless, both studies found that high quality territories typically had core areas comprised of at least 50 percent older forest.

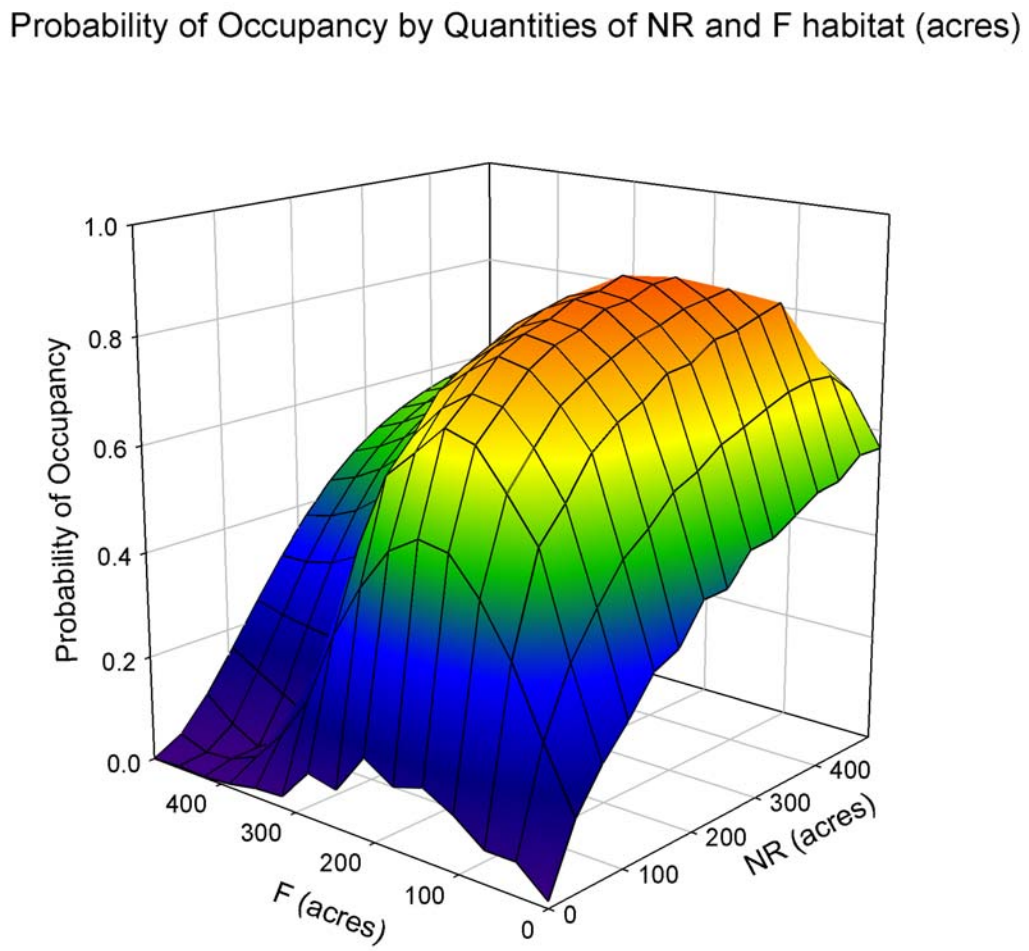
Figure III.C.4: Relationship between habitat fitness potential (territory-specific lambda) for northern spotted owls and proportion of older forest (see Table III.C.1) within 413 acres around territory centers in southwestern Oregon (courtesy K. Dugger)



Zabel *et al.* (2003) modeled the probability of occupancy for NSO in the Klamath Province based on habitat conditions at the core area scale (500 acres). The overall best model in this study indicated that the probability of NSO occurring in a given location was positively, albeit diminishingly, influenced by increased amounts of nesting-roosting habitat and by intermediate amounts of foraging habitat at the core area scale (see Table

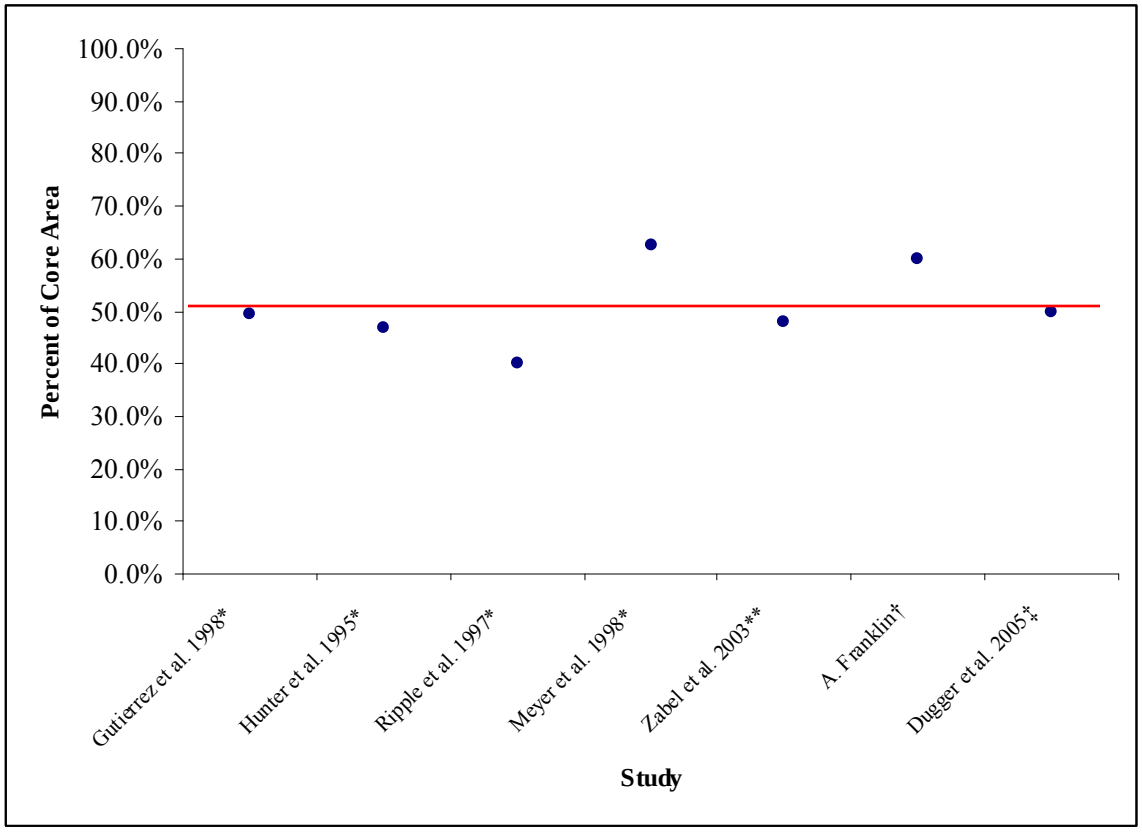
III.C.1 for habitat definitions). The highest probability of occupancy occurred when the core area scale consisted of 60 to 70 percent nesting-roosting habitat and 30 to 40 percent foraging habitat (see Figure III.C.5). The averages for all combinations of habitat associated with a high probability (≥0.70) of occupancy were 48 percent nesting-roosting habitat and 28 percent foraging habitat.

Figure III.C.5: Probability of northern spotted owl occupancy in the Klamath Province associated with amounts of nesting-roosting (NR) and foraging (F) habitats (see Table III.C.1) at the 500-acre (200 ha) scale (Zabel *et al.* 2003)



Researchers have reported a wide range of mean proportions of older forest (ca. 35-60 percent; see Figure III.C.6) at the core area scale around NSO nests in the Klamath Province and adjacent areas (Hunter *et al.* 1995, Ripple *et al.* 1997, Gutiérrez *et al.* 1998, Meyer *et al.* 1998). It is difficult to assess how much of this variation was due to differences in ecological setting, spatial scale, habitat classification, and individual variation among owls. Nonetheless, the central tendency of these results was roughly 50-60 percent, which is consistent with the FWS guidelines' requirement for proportion of nesting and roosting habitat (see *Habitat Definitions*) in the core area (see Figure III.C.6). The mean proportions of older forest at core area scales were higher than those around locations chosen for comparison (random or "unused" locations). Thus, NSO in the Klamath Province appear to select home ranges with large amounts of older forest concentrated around suitable nest locations.

Figure III.C.6: Proportions of older forest (see Table III.C.1) at core area scales around northern spotted owl territory centers in the Klamath Province, CA and OR. Horizontal line shows the proportion of older forest required by the FWS guidelines (50 percent)



*Mean proportion. **Mean proportion associated with ≥70% probability of occupancy. †Recommendation based on the combined proportions of interior and edge-buffer older forest associated with a habitat fitness potential greater than 1 (Franklin et al. 2000). ‡Approximate proportion of older forest associated with a habitat fitness potential of at least 1.

Taken together, the results of studies conducted in the Klamath Province support the conclusion that at least 50 percent of the core area should consist of older forest. Older forest is more likely than other vegetation classes to provide NSO with suitable structures for perching and nesting, a stable, moderate microclimate at nest and roost sites, and visual screening from both predators and prey (see *Habitat Definitions*).

Franklin *et al.* (2000) found that survival and HFP were highest when older forest occurred as large patches in the core area. Larger patches of forest likely buffer NSO from wind and heat associated with forest-opening edges (Chen *et al.* 1995) and predators and competitors associated with open or fragmented forest (e.g., great horned owls [*Bubo virginianus*]: Johnson 1993). Modeling by Franklin *et al.* (2000) also indicated that a balance of interior older forest and edge habitat in the core area is important to NSO in the region. The value of habitat edges for NSO might be related to the availability of woodrats and other prey species associated with more open, early-seral vegetation. The positive influence of large-bodied prey species such as woodrats on NSO reproductive success has been described in northwestern California (White 1996). However, habitat edges in the Franklin *et al.* study occurred wherever habitat was juxtaposed with other land cover classes, and was not necessarily related to the presence of woodrat habitat. In fact, the survival and reproduction of NSO did not appear to be influenced by woodrat habitat in the core area. Zabel *et al.* (2003) found that probability of occupancy by NSO was highest when the core area scale contained some foraging habitat, as well as nesting-roosting habitat. This result suggests that horizontal heterogeneity in the core area should be partially provided by a range of forest conditions suitable for use by NSO, dominated by older forest conditions, (see *Habitat Definitions*, below), not simply the juxtaposition of suitable and unsuitable habitat.

III.D: Habitat Definitions:

Determination of the amount of suitable habitat that must be retained in order to avoid incidental take of NSO is strongly influenced by the range of forest conditions that

are classified as suitable habitat. The HFP models of Franklin *et al.* (2000), Olson *et al.* (2004), and Dugger *et al.* (2005) contain a limited number of habitat variables and relatively coarse definitions of NSO habitat, and therefore must be supplemented with additional information on forest structural parameters that support classification of forest habitat as suitable for nesting and foraging. Description of the structural characteristics of NSO habitat and delineation of the range of habitat conditions corresponding to essential activities such as nesting, roosting, and foraging is a critical element of developing guidelines for evaluating the likelihood of incidental take. Because the structural attributes of habitat immediately surrounding nests are easily quantified, data supporting classification of nesting habitat are readily available (see section III.C).

Foraging habitat, on the other hand, is more variable and spatially extensive, requiring intensive radio-telemetry studies to measure use of various habitat conditions by NSO. In recent studies by the National Council for Air and Stream Improvement (NCASI), correlations between habitat data from detailed forest inventories and nocturnal locations of radio-tagged NSO and California spotted owls were used to estimate resource selection function (RSF) models (Irwin *et al.* 2007a,b) that quantify complex relationships between the owls and their environment. These models allow evaluation of the relative use of specific forest structural variables such as tree size class distribution and stand density by foraging NSO. The studies of Irwin *et al.* (2007a, b), combined with other telemetry studies (Solis and Gutiérrez 1990), provide the basis of our definitions of suitable foraging habitat for NSO.

NSO are generally associated with structurally complex conifer or mixed-conifer forests containing dense, multilayered canopies and significant components of large-

diameter trees and decadence in the form of deformed trees, snags, and down wood (Thomas *et al.* 1990, Gutiérrez 1996, Courtney *et al.* 2004, USFWS 2008). Variation in seral stage association has been reported for individuals within study areas and for populations in different study areas (Gutiérrez 1996). However, extensive use of younger forests by spotted owls tends to be reported in unusually productive forest types in coastal areas (Folliard *et al.* 1993, Thome *et al.* 1999) or in stands containing structural complexity retained from previous stands (Blakesley *et al.* 1992, Zabel *et al.* 1993, Carey and Peeler 1995, Irwin *et al.* 2000). In particular, NSO have been shown to nest and forage successfully in young redwood forests; in such areas their densities are among the highest on record (Diller and Thome 1999). Young redwood forests have also been associated with high reproduction in spotted owls (Thome et al. 1999). The ability of NSO to successfully occupy young redwood forests has been attributed to resource availability; young forests have been found to produce the highest abundance of woodrats in Douglas-fir/tanoak forests (Sakai and Noon 1993), and in the redwood/Douglas-fir zone, woodrats were most abundant in stands 5 to 20 years of age (Hamm et al. 2007: USDA Forest Service Gen. Tech. Rep. PSW-GTR-194). Ward et al. (1998) described the benefit of an energy rich woodrat diet; and White (1996) describes the positive influence of woodrat consumption on nesting success. The value of younger forest to NSO in the drier portions of the Klamath Province is poorly understood, whereas numerous studies in the Klamath Province and adjacent regions have demonstrated that NSO selectively use older, denser forest at a variety of spatial scales (e.g., Solis and Gutiérrez 1990, Bart and Forsman 1992, Blakesley *et al.* 1992, Carey *et al.* 1992, Hunter *et al.* 1995, Ripple *et al.* 1997, LaHaye and Gutiérrez 1999, Zabel *et al.* 2003) and that such forest is positively

associated with measures of reproduction and survival (e.g., Ripple *et al.* 1997, Meyer *et al.* 1998, Franklin *et al.* 2000, Olson *et al.* 2004, Dugger *et al.* 2005).

Although spotted owls are generally associated with and preferentially select older, denser forest, suitable habitat for the species can be viewed as a continuum of structural conditions. Owls tend to use parts of this continuum more frequently than others, and to focus their activities within certain parts of it for meeting particular life history needs. The FWS has classified this continuum into habitat categories based on the conditions' primary function and apparent quality for NSO (nesting/roosting or foraging habitat, high or low quality habitat; see Table III.D.1 and Figure III.D.1). The FWS recognizes that conditions within a habitat category may be used by NSO to meet multiple life history needs; for example, NSO may forage in nesting/roosting habitat or roost in foraging habitat. We also acknowledge that rigorous classification of habitat quality requires an understanding of the relationships between habitat conditions and the demography of NSO. However, because NSO are mobile animals with large home ranges, most studies have used low-resolution vegetation data and broad habitat categories to explore their habitat relationships (see Table III.C.1). These studies have greatly improved our understanding of NSO-habitat relationships but provide limited insight into the specific structural conditions used by owls.

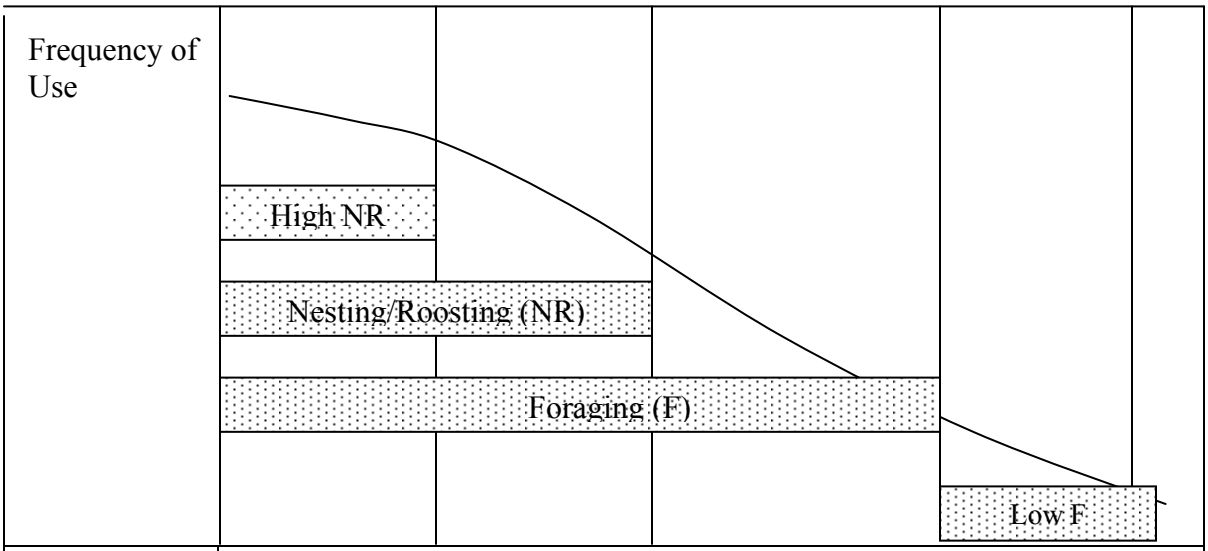
Table III.D.1: Values for selected structural parameters used in the Fish and Wildlife Service guidelines to classify nesting/roosting and foraging habitat for northern spotted owls.

Habitat category	Tree Size (QMD)[1]	Basal Area[2]	Trees > 26"dbh	Canopy closure
High nesting/roosting	≥ 15"	≥ 210 ft^2	8 per acre	≥60%
Nesting/roosting	≥ 15"	150–180+ ft^2	8 per acre	≥ 60%
Foraging	≥ 13"	120-180+ ft^2	5 per acre	≥ 60%
Low foraging	≥ 11"	80-120+ ft^2		≥ 40%

1: Quadratic Mean Diameter (inches) of trees > 5" diameter
2: Square feet per acre, trees > 5"

A few studies have provided plot-level descriptions of areas used by NSO. Habitat definitions in the FWS guidelines are primarily based on the statistical distributions of habitat parameters correlated with use by owls in these studies. Yet, the average conditions in small study plots around owl locations may poorly represent the inherent variability of stands and landscapes in owl territories. Therefore, the FWS guidelines distribute habitat categories in terms of ranges of values within analysis areas, rather than as stand averages. This approach ensures that a range of suitable habitat conditions is well-distributed at appropriate spatial scales, without being unrealistically or unreasonably prescriptive.

Figure III.D.1: Conceptual model of northern spotted owl habitat functions and associated forest structural conditions.



Basal Area	300+	200	150	120	80
QMD[1]	20”		15”	13”	11”
TPA > 26”[2]	50		8	5	
Canopy[3]	100%		60%		40%
Structure	Large tree/dense	Large/open to medium/dense		small/dense to open/brushy	

1: QMD= quadratic mean diameter of trees > 5 inches dbh
2: TPA>26”= trees per acres of trees >26 inches dbh
3: Canopy= percent cover of overstory trees

The FWS guidelines use a suite of structural metrics to classify NSO habitat (basal area, quadratic mean diameter, large-diameter [>26 inches DBH] trees per acre, and canopy cover) (Table III.D.1). We chose these metrics because they describe different aspects of stand structure that appear to be important to NSO and because they are commonly used by silviculturists to evaluate forest conditions. The FWS discourages the use of broad vegetation classification categories for defining habitat for NSO in the Klamath Province. These classification schemes are inappropriate for defining habitat in take-avoidance guidelines because they encompass broad ranges of vegetation parameters that often do not correspond to habitat used by NSO. For example, habitat class 4M in the CWHR system (average DBH 11 - 24 inches and average canopy cover 40-59 percent)

might describe anything from infrequently-used foraging habitat to nesting and roosting habitat. Furthermore, use of broad habitat classification schemes can mask the effects of habitat modification. For example, timber harvests could remove important habitat elements (e.g., snags, deformed trees, dense groups of large trees) while maintaining the minimum average canopy cover and tree diameter values in a given habitat category and masking the loss of habitat quantity and quality.

Habitats Used for Nesting and Roosting

The 2008 NSO Recovery Plan (USFWS 2008:50) stated that: "Features that support nesting and roosting typically include a moderate to high canopy closure (60 to 90 percent); a multi-layered, multi-species canopy with large overstory trees (with diameter at breast height [dbh] of greater than 30 inches); a high incidence of large trees with various deformities (large cavities, broken tops, mistletoe infections, and other evidence of decadence); large snags; large accumulations of fallen trees and other woody debris on the ground; and sufficient open space below the canopy for spotted owls to fly." The validity of applying this rangewide habitat definition to the Klamath Province has been supported by numerous studies in and adjacent to the region (e.g., Solis and Gutiérrez 1990, Blakesley *et al.* 1992, Carey *et al.* 1992, Hershey *et al.* 1998, LaHaye and Gutiérrez 1999), including on private timberlands (Self *et al.* 1991, SPI 1992, Farber and Crans 2000).

The characteristic structure of nesting/roosting habitat probably serves a variety of functions for NSO. NSO may partly favor older, more decadent forest for nesting because it frequently contains suitable nest structures. Nests are usually located in older, larger-

diameter, deformed, decadent, or diseased trees containing cavities or platforms (Forsman *et al.* 1984, Hershey *et al.* 1998, LaHaye and Gutiérrez 1999, North *et al.* 2000). Northern spotted owls may also nest and roost in older, denser forest because it tends to provide a more moderate, stable microclimate compared with other kinds of forest. NSO are less able to dissipate body heat than other owls and appear to compensate by nesting and roosting in relatively cool, humid sites (Barrows 1981, Ganey *et al.* 1993, Ting 1998, Weathers *et al.* 2001). NSO also appear to use dense, multilayered canopies for protection from cold, wet weather (Forsman *et al.* 1984, North *et al.* 2000). Northern spotted owls may also prefer nesting and roosting in denser forest because it provides visual screening from predators (Carey 1985, Buchanan *et al.* 1995).

High-quality nesting/roosting habitat

As defined by the FWS guidelines, high-quality nesting/roosting habitat occurs where structural conditions resemble or exceed those of most observed NSO nest sites in northern California (see Table III.D.2). To date, no Klamath Province study has directly compared plot-level vegetation data for nest and roost sites to the demography of NSO, so it is unknown if the average structural conditions used by owls in the region are associated with high reproduction and survival. Therefore, a definition of high-quality nesting/roosting habitat must account for variability in habitat-use patterns among individuals by ensuring that the range of habitat values associated with owl use are well-represented, rather than prescribing a single criterion based on mean values.

Nesting/roosting habitat

The FWS' definition of nesting/roosting habitat is similar to high-quality nesting/roosting habitat, but is intended to reflect both variability in the structure of sites used by nesting and roosting owls and the variability typical of forest stands or patches encompassing denser nest and roost sites (see Table III.D.1and III.D.2). The FWS guidelines' requirement for a mix of basal areas in nesting/roosting habitat allows land managers some operational flexibility but also discourages homogenization of stands during harvesting. Although it is more stringent than that used in the FPR guidelines, the FWS guidelines provide definitions of habitats used for nesting and roosting that consistent with the range of conditions found at many spotted owl nest cores on private timberlands.

Table III.D.2: Mean structural characteristics of areas used by spotted owls for nesting, roosting, and foraging (rounded to the nearest whole number). The habitat variables are basal area (BA), quadratic mean diameter (QMD), large trees per acre (TPA), and canopy cover (CC)

Source **Location**	**FWS Guidelines** Klamath Province	**White 1996** Klamath National Forest*	**Self et al.**** Klamath Province and So. Cascades	**Farber and Crans 2000** Klamath Province and So. Cascades	**Irwin et al. 2007** Northern Sierra Nevada (CSOs)	**L. Irwin, unpubl.** Medford, Klamath Province
Habitat Type **Plot Size** **BA (ft2/ac)** **QMD (in)** **TPA >26"** **TPA >35"** **CC%**	High-Quality Nesting/ Roosting - ≥210 ≥15 ≥8 - ≥60	Nest & Roost Sites 0.2-0.3 ac 246† 8 73	Nest Sites 1 ac 212‡ 16‡	Nest Sites 0.1 ac, 2.5 ac 210, 166† 14, 12† 70, 67	Roost Sites 216† 16† 8 75	
Habitat Type **BA (ft2/ac)** **QMD (in)** **TPA >22"** **TPA >26"** **TPA >32"** **CC%**	Nesting/ Roosting (High-Quality Foraging) mix >150 ≥15 - ≥8 - ≥60		Nest Patches 173‡ 16 4	Nest Stands 124† 13†	Foraging Locations 190 14 7 69	Foraging Locations 180† 20† 8
Habitat Type **BA (ft2/ac)** **QMD (in)** **TPA >26"** **CC%**	Foraging mix >120 ≥13 ≥5 mix ≥40					Foraging Locations (Lower 25%) 120 14 0
Habitat Type **BA (ft2/ac)** **QMD (in)** **CC%**	Low-Quality Foraging mix >80 ≥11 ≥40					Foraging Locations (Lower Values) See Figure III.D.2 See Figure III.D.3

*Excludes data from the Goosenest Ranger District in the southern Cascade Range. **SPI = Self *et al.* 1991, SPI 1992, and Table III.D.2. †All trees >5" DBH (lower cutoff reported for QMD, assumed for BA). ‡All trees >6" DBH (lower cutoff reported for QMD, assumed for BA).

Foraging Habitat

Foraging habitat encompasses nesting and roosting habitat but includes a broader range of structure and might not support successful nesting by NSO (Gutiérrez 1996, USFWS 2008). Foraging NSO generally use older, denser, and more complex forest than expected based on its availability, but they also use younger forest (Solis and Gutiérrez 1990, Carey *et al.* 1992, Zabel *et al.* 1993, Carey and Peeler 1995, Anthony and Wagner 1999, Irwin *et al.* 2007b). The FWS guidelines incorporate this structural variability by specifying retention of habitat in four functional categories of habitat suitable for NSO. High-quality nesting/roosting and nesting/roosting habitat provide the upper range of stand structure selected by foraging NSO; foraging habitat encompasses a broad range of structure, and low-quality foraging habitat includes younger and more open habitats that may be important for prey production (Tables III.D.1 and III.D.2; Figure III.D.1). Northern spotted owls may prefer older, denser forest for foraging because it often contains both abundant prey and suitable structural characteristics for hunting. Several important prey species, including flying squirrels (*Glaucomys sabrinus*) and western red-backed voles (*Clethreionomys californicus*) tend to be most abundant in older, denser forest (Carey *et al.* 1992; Waters and Zabel 1995, 1998). Other important prey species, such as woodrats, have been found to be most abundant in young sapling stands (Sakai and Noon 1993), but can also reach high abundances in dense, old forest (Carey *et al.* 1992, Sakai and Noon 1993). Spotted owls usually hunt by listening and scanning for prey from elevated perches (Forsman *et al.* 1984). Dense, multilayered forest might provide owls with hunting perches at a variety of canopy levels (North *et al.* 1999). Dense vegetation might also visually screen foraging NSO from predators and prey

(Carey 1985, Buchanan *et al.* 1995). Conversely, spotted owls require space for flying, which could place an upper limit on the understory density of suitable habitat (Irwin *et al.* 2007b).

Descriptions of habitat structure used by foraging NSO are typically based on studies employing radio telemetry to monitor owl movements. While the habitats associated with nocturnal telemetry locations are commonly termed 'foraging locations', some researchers point out that the owl locations simply indicate the distribution of movements, and may not correspond to sites and habitats actually used by actively foraging NSO. During radio telemetry studies in northwestern California, Diller (unpub. data), found that owls moved frequently during monitoring periods (7.5 minutes/perch for 6 males; 17.0 minutes/perch for 4 females), suggesting that the process of triangulating azimuths for each location was unlikely to detect a specific site used for foraging. Conversely, owls in this study also were stationary for long periods of time, possibly resting, preening, or other activities not associated with active foraging. For these reasons, the FWS recognizes that our descriptions of NSO foraging habitat likely represent the range of habitat conditions used by owls at night, and may not represent the specific habitat qualities of sites where NSO successfully obtain prey.

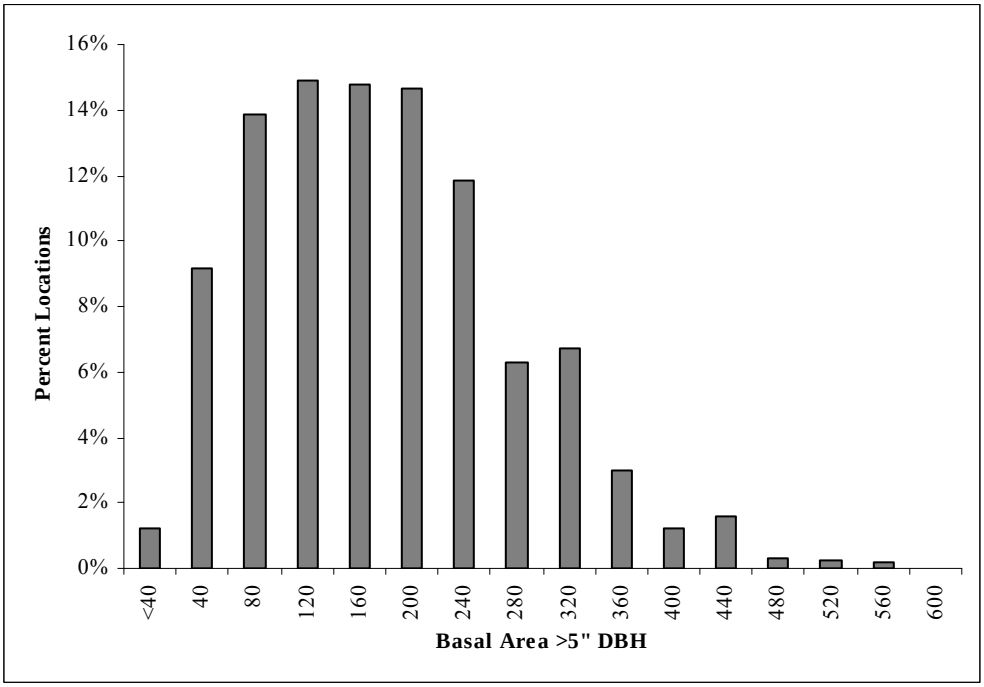
There are currently no published plot-based descriptions of NSO foraging habitat in the Klamath Province. We therefore strongly considered the results of both unpublished studies of NSO and a published study of California spotted owls (*Strix occidentalis occidentalis*, CSOs) in the northern Sierra Nevada (Irwin *et al.* 2007b) while formulating these habitat definitions. Much of the CSO study was conducted in a mixed-conifer/hardwood forest similar to forest types used by NSO in the Klamath Province.

Although spotted owls often selectively foraged in older forest, these telemetry studies show that they also use a relatively wide range of forest structure (Irwin *et al*. 2004, 2007).

The range of forest structure specified in the FWS guidelines is also based on the distribution of habitat use by foraging NSO in the Klamath Province. Analysis of radio-telemetry data from NSO in southern Oregon (L. Irwin, unpublished data) indicates that roughly 46 percent of nocturnal (foraging) locations occurred in nesting/roosting habitat (basal area ≥210 ft^2/acre), and 76 percent occurred in stands classified as foraging, nesting, and roosting habitat (Figure III.D.2). Only 14% of locations were in stands classified as low-quality foraging habitat. Thus, the functional habitat categories specified in the FWS guidelines capture about 90 percent of the observed distribution of actual use by NSO, but also require retention of the full range of structural conditions corresponding to nesting, roosting, and foraging.

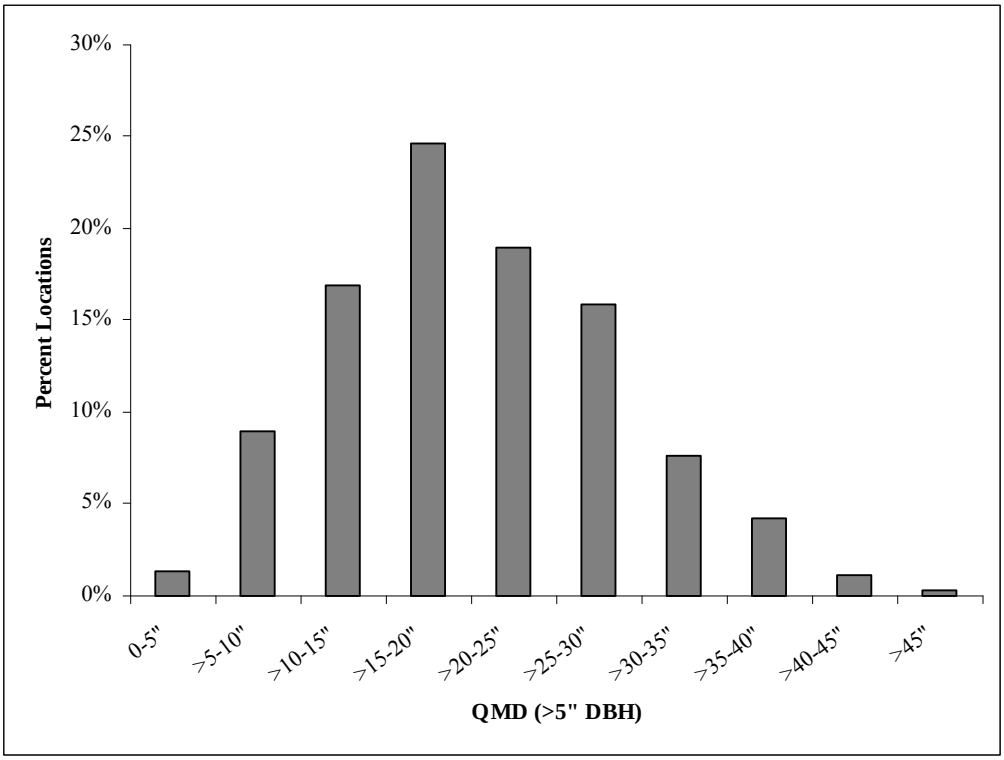
In addition to the structural characteristics addressed in the FWS guidelines, studies have indicated that certain conifer species such as Douglas-fir, as well as hardwoods and dead woody materials are important features of spotted owl foraging habitat (North *et al.* 1999, Irwin *et al.* 2000, Glenn *et al.* 2004, Irwin *et al.* 2007).

Figure III.D.2: Distribution of basal area at inventory plots near nocturnal telemetry locations for northern spotted owls in the Medford area of the Klamath Province (L. Irwin, unpublished data). This figure shows some of the range of basal area values used for foraging; it is does not show selection or avoidance of particular values since available conditions were not described.



DBH: diameter at breast height, in inches

Figure III.D.3: Distribution of quadratic mean diameter (QMD) at inventory plots near nocturnal telemetry locations for northern spotted owls in the Medford area of the Klamath Province (L. Irwin, unpublished data). This figure shows some of the range of QMD values used for foraging; it is does not show selection or avoidance of particular values since available conditions were not described.



DBH: diameter at breast height, in inches

Abiotic Habitat Characteristics

Habitat selection by breeding NSO is strongly influenced by spatial and topographic features such as proximity to nest, distance to water, slope position, and elevation. Termed 'abiotic considerations' in the FWS guidelines, these factors act to influence the habitat value of forest stands, and subsequently the importance of retaining habitat based on landscape position as well as stand structure. Abiotic considerations are explicitly incorporated into the FWS guidelines through a prioritization system that ranks habitat retention areas based on distance to nest, contiguity, slope position, aspect, and elevation.

Because the guidelines for abiotic considerations are less prescriptive than the guidelines for stand structure, they are more easily applied during habitat evaluations on a case by case basis.

Habitat selection by breeding NSO is strongly associated with proximity to the nest, as well as with vegetation characteristics (Carey and Peeler 1995, Rosenberg and McKelvey 1999, Glenn *et al.* 2004, Irwin *et al.* 2007b). Spotted owls appear to be central-place foragers, disproportionately using areas near the nest in order to minimize travel costs and maximize their energetic return from foraging (Carey and Peeler 1995, Rosenberg and McKelvey 1999). Home range studies have also indicated the importance of the territory center to spotted owls (see *Analysis Areas*). Combined, spatial patterns of habitat selection and habitat use suggest that NSO may be more sensitive to reductions of habitat in their core areas than in other parts of their home ranges. The FWS guidelines therefore emphasize retention of habitat at the core area scale.

Topography also appears to influence habitat use by NSO; which use lower slope positions more frequently than higher ones (Forsman *et al.* 1984, Blakesley *et al.* 1992, Hershey *et al.* 1998, LaHaye and Gutiérrez 1999, Irwin *et al.* 2007b). Lower slopes likely provide cooler, more humid microclimates for nesting and roosting and favor growth of the denser forest structure preferred by spotted owls. Furthermore, lower slope positions tend to have less frequent and severe fire regimes, potentially allowing trees to attain greater density, sizes and ages than on higher slopes (Beaty and Taylor 2001, Skinner *et al.* 2006). Spotted owls also appear to prefer areas close to streams, which often occur at the bottoms of slopes (Solis and Gutiérrez 1990, LaHaye and Gutiérrez 1999, Irwin *et al.* 2007b). Areas near streams likely tend to be more productive and have cooler, more

humid microclimates than upland areas. Additionally, prey abundance can be high in riparian areas (Carey *et al.* 1992, Anthony *et al.* 2003) and NSO may use streams for drinking and bathing (Forsman *et al.* 1984). Some studies have found that NSO in the Klamath Province selectively use northerly aspects, but others found different patterns or no pattern at all (Solis and Gutiérrez 1990, Blakesley *et al.* 1992, Carey *et al.* 1992, Zabel *et al.* 1993, Farber and Crans 2000). Suitable microclimates for nesting and roosting, and for the vegetation structure preferred by NSO, may occur more frequently on north-facing slopes than on other aspects. However, aspect does not appear to influence vegetation distribution as strongly in some areas as in others (e.g., Zabel *et al.* 1993). Elevation also seems to influence habitat-use by spotted owls (Solis and Gutiérrez 1990, Blakesley *et al.* 1992, Hershey *et al.* 1998, LaHaye and Gutiérrez 1999, Irwin *et al.* 2007b). This might be related both to spotted owls' disproportionate use of lower slope positions and to the influence of elevation on vegetation distribution. The productive vegetation types favored by NSO, such as mixed-evergreen forest, primarily occur at lower elevations in the Klamath Province (Sawyer 2007).

III. E. Conclusions:

The FWS has conducted a thorough review and synthesis of published literature, unpublished data sets, and direct communication with NSO researchers in support of a rigorous process for evaluating the effects of habitat management on NSO. It is important to recognize that the habitat conditions described in the document are intended for use in estimating the likelihood of take of individual NSO under the ESA; they do not represent habitat conditions required for population growth or recovery. The FWS

guidelines focus solely on individual NSO territories and do not incorporate larger-scale issues such as connectivity and dispersal habitat, wintering habitat, or longer-term habitat disturbance patterns. The FWS habitat evaluation guidelines that this science review document supports are complex; reflecting the complex nature of forest environments in the Klamath Province and the forest products industry's requirement to retain maximum flexibility to conduct timber harvests in the vicinity of occupied NSO territories.

Literature Cited

Anthony, R.G., M.A. O'Connell, M.M. Pollock, and J.G. Hallett. 2003. Associations of mammals with riparian ecosystems in Pacific Northwest forests. Pp. 510-563 *In* C.J. Zabel and R.G. Anthony (eds.), Mammal community dynamics: Management and conservation in the coniferous forests of western North America. Cambridge University Press, New York.

Anthony, R.G. and F.F. Wagner. 1999. Reanalysis of northern spotted owl habitat use on the Miller Mountain Study Area. Unpublished report. Submitted to Bureau of Land Management, Medford District and Forest and Rangeland Ecosystem Science Center, Biological Resources Division, U.S. Geological Survey.

Barrows, C.W. 1981. Roost selection by spotted owls: an adaptation to heat stress. Condor 83:302-309.

Bart, J. 1992. Comments on the guidelines for avoiding take. Comment provided to the Northern Spotted Owl Recovery Team, March 29, 1992.

Bart, J. 1995. Amount of suitable habitat and viability of northern spotted owls. Conservation Biology 9(4):943-946.

Bart, J. and E.D. Forsman. 1992. Dependence of northern spotted owls *Strix occidentalis caurina* on old-growth forests in the western USA. Biological Conservation 62:95-100.

Beaty, R.M. and A.H. Taylor. 2001. Spatial and temporal variation in fire regimes and forest dynamics in a mixed conifer forest landscape, southern Cascades, California. Journal of Biogeography 28:955-966.

Bingham, B.B. and B.R. Noon. 1997. Mitigation of habitat "take": application to habitat

conservation planning. Conservation Biology 11(1):127-139.

Blakesley, J.A., A.B. Franklin, and R.J. Gutiérrez. 1992. Spotted owl roost and nest site selection in northwestern California. Journal of Wildlife Management 56(2):388-392.

Börger, L., N. Franconi, G. de Michele, A. Gantz, F. Meschi, A. Manica, S. Lovari, and T. Coulson. 2006. Effects of sampling regime on the mean and variance of home range size estimates. Journal of Animal Ecology 75:1393-1405.

Buchanan, J.B., L.L. Irwin, and E.L. McCutchen. 1995. Within-stand nest site selection by spotted owls in the eastern Washington Cascades. Journal of Wildlife Management 59(2):301-310.

Burt, W.H. 1943. Territoriality and home range concepts as applied to mammals. Journal of Mammalogy 24:346-352.

CALFIRE (California Department of Forestry and Fire Protection). 2008. Important information for timber operations proposed within the range of the northern spotted owl. Department of Forestry and Fire Protection, Sacramento, CA.

Carey, A.B. 1985. A summary of the scientific basis for spotted owl management. Pp. 100-114 *In* R.J. Gutiérrez and A.B. Carey (tech. eds.), Ecology and management of the spotted owl in the Pacific Northwest, Arcata, California, June 19-23, 1984. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, General Technical Report PNW-185.

Carey, A.B., S.P. Horton, and B.L. Biswell. 1992. Northern spotted owls: influence of prey base and landscape character. Ecological Monographs 62(2):223-250.

Carey, A.B. and K.C. Peeler. 1995. Spotted owls: resource and space use in mosaic

landscapes. Journal of Raptor Research 29(4):223-239.

Carey, A.B., J.A. Reid, and S.P. Horton. 1990. Spotted owl home range and habitat use in southern Oregon Coast Ranges. Journal of Wildlife Management 54(1):11-17.

Carroll and Johnson 2008

Chen, J., J.F. Franklin, and T.A. Spies. 1995. Growing-season microclimatic gradients from clearcut edges into old-growth Douglas-fir forests. Ecological Applications 5(1):74-86.

Courtney, S.P., J.A. Blakesley, R.E. Bigley, M.L. Cody, J.P. Dumbacher, R.C. Fleischer, A.B. Franklin, J.F. Franklin, R.J. Gutiérrez, J.M. Marzluff, and L. Sztukowski. 2004. Scientific evaluation of the status of the northern spotted owl. Sustainable Ecosystems Institute, Portland, OR.

Dugger, K.M., F. Wagner, R.G. Anthony, and G.S. Olson. 2005. The relationship between habitat characteristics and demographic performance of northern spotted owls in southern Oregon. The Condor 107:863-878.

Farber, S. and R. Crans. 2000. Habitat relationships of northern spotted owls (*Strix occidentalis caurina*) on Timber Products forestlands in northern California. Unpublished report. Prepared for: the U.S. Fish and Wildlife Service for their review of management activities conducted in compliance with the spotted owl management plan.

Folliard, L.B., L.V. Diller, and K.P. Reese. 1993. Occurrence and nesting habitat of

northern spotted owls in managed young-growth forests in northwestern California. Journal of Raptor Research 27(1):69.

Forsman, E.D., R.G. Anthony, E.C. Meslow, and C.J. Zabel. 2004. Diets and foraging behavior of northern spotted owls in Oregon. Journal of Raptor Research 38(3):214-230.

Forsman, E.D., E.C. Meslow, and H.M. Wright. 1984. Distribution and biology of the spotted owl in Oregon. Wildlife Monographs 87:1-64.

Franklin, A.B. 1997. Factors affecting temporal and spatial variation in northern spotted owl populations in northwest California. Ph.D. Dissertation, Colorado State University, Fort Collins, CO. 185 pp.

Franklin, A.B., D.R. Anderson, R.J. Gutiérrez, and K.P. Burnham. 2000. Climate, habitat quality, and fitness in northern spotted owl populations in northwestern California. Ecological Monographs 70(4):539-590.

Franklin, A. B. 2005. Notes from meeting with Dr. Alan Franklin, Colorado State University, in Salyer, California, (September 19, 2005).

Franklin, A. B. 2006. Analysis of relationship between territory-specific lambda and amounts of mature forest habitat. Letter dated September 20, 2006 to the Northern Spotted Owl Recovery Team.

Franklin, A. B. 2007. Comments on the Draft Recovery Plan for the Northern spotted Owl. Letter dated June 25, 2007, to Dr. Paul Phifer, Project Manager, Northern Spotted Owl Recovery Plan.

Ganey, J.L., R.P. Balda, and R.M. King. 1993. Metabolic rate and evaporative water loss of Mexican spotted and great horned owls. Wilson Bulletin 105(4):645-656.

Glenn, E.M., M.C. Hansen, and R.G. Anthony. 2004. Spotted owl home-range and habitat use in young forests of western Oregon. Journal of Wildlife Management 68(1):33-50.

Gutiérrez, R.J. 1996. Biology and distribution of the northern spotted owl. Studies in Avian Biology 17:2-5.

Gutiérrez, R.J., J.E. Hunter, G. Chávez-León, and J. Price. 1998. Characteristics of spotted owl habitat in landscapes disturbed by timber harvest in northwestern California. Journal of Raptor Research 32(2):104-110.

Hershey, K.T., E.C. Meslow, and F.L. Ramsey. 1998. Characteristics of forests at spotted owl nest sites in the Pacific Northwest. Journal of Wildlife Management 62(4):1398-1410.

Hunter, J.E., R.J. Gutiérrez, and A.B. Franklin. 1995. Habitat configuration around spotted owl sites in northwestern California. The Condor 97(3):684-693.

Irwin, L.L., D.F. Rock, and G.P. Miller. 2000. Stand structures used by northern spotted owls in managed forests. Journal of Raptor Research 34(3):175-186.

Irwin, L.L., D. Rock, and S. Rock. 2002. Adaptive management monitoring of northern and California spotted owls. Annual progress report. National Council for Air and Stream Improvement, unpublished report.

Irwin, L.L., D. Rock, and S. Rock. 2004. Adaptive management monitoring of northern and California spotted owls. Annual progress report. National Council for Air and Stream Improvement, unpublished report.

Irwin, L.L., D. Rock, and S. Rock. 2005. Adaptive management monitoring of spotted Owls. Annual progress report. National Council for Air and Stream

Improvement, unpublished report.

Irwin, L.L., D. Rock, and S. Rock. 2006. Adaptive management monitoring of spotted Owls. Annual progress report. National Council for Air and Stream Improvement, unpublished report.

Irwin, L.L., D. Rock, and S. Rock. 2007a. Adaptive management monitoring of spotted owls. Annual progress report. National Council for Air and Stream Improvement, unpublished report.

Irwin, L.L., L.A. Clark, D.C. Rock, and S.L. Rock. 2007b. Modeling foraging habitat of California spotted owls. Journal of Wildlife Management 71(4):1183-1191.

Irwin, L.L. 2009. Forest structure at nocturnal radio telemetry locations of northern spotted owls in the Medford Study Site. Unpublished data provided to U.S. Fish and Wildlife Service.

Johnson, D.H. 1993. Spotted owls, great horned owls, and forest fragmentation in the central Oregon Cascades. M.S. thesis. Oregon State University, Corvallis.

LaHaye, W.S. and R.J. Gutiérrez. 1999. Nest sites and nesting habitat of the northern spotted owl in northwestern California. The Condor 101:324-330.

Laver, P.N. and M.J. Kelly. 2008. A critical review of home range studies. Journal of Wildlife Management 72(1):290-298.

Meyer, J.S., L.L. Irwin, and M.S. Boyce. 1998. Influence of habitat abundance and fragmentation on northern spotted owls in western Oregon. Wildlife Monographs 139:1-51.

North, M.P., J.F. Franklin, A.B. Carey, E.D. Forsman, and T. Hamer. 1999. Forest stand

structure of the northern spotted owl's foraging habitat. Forest Science 45(4):520-527.

North, M., G. Steger, R. Denton, G. Eberlein, T. Munton, and K. Johnson. 2000. Association of weather and nest-site structure with reproductive success in California spotted owls. Journal of Wildlife Management 64(3):797-807.

Olson, G.S., E.M. Glenn, R.G. Anthony, E.D. Forsman, J.A. Reid, P.J. Loschl, and W.J. Ripple. 2004. Modeling demographic performance of northern spotted owls relative to forest habitat in Oregon. Journal of Wildlife Management 68(4):1039-1053.

Nichols, J. D. and K. H. Pollock. 2008. Review of habitat fitness potential. Pages 97—98 *In* Scientific Review of the Draft Northern Spotted Owl Recovery Plan and Reviewer Comments. Sustainable Ecosystems Institute. March 2008.

Powell, R.A. 2000. Animal home ranges and territories and home range estimators. Pp. 65-110 *In* L. Boitani and T.K. Fuller (eds.), Research techniques in animal ecology: controversies and consequences. Columbia University Press, New York.

Reynolds, R.T. and S.M. Joy. 1998. Distribution, territory occupancy, dispersal and demography of northern goshawks on the Kaibab Plateau, Arizona: final report. Heritage Project No. I94045. Arizona Game and Fish Department, Phoenix, Arizona, USA.

Ripple, W.J., P.D. Lattin, K.T. Hershey, F.F. Wagner, and E.C. Meslow. 1997. Landscape composition and pattern around northern spotted owl nest sites in southwest Oregon. Journal of Wildlife Management 61(1):151-158.

Rosenberg, D.K. and K.S. McKelvey. 1999. Estimation of habitat selection for central-

place foraging animals. Journal of Wildlife Management 63(3):1028-1038.

Sakai, H.F. and B.R. Noon. 1993. Dusky-footed woodrat abundance in different-aged forests in northwestern California. Journal of Wildlife Management 57(2):373-382.

Sakai, H.F. and B.R. Noon. 1997. Between-habitat movement of dusky-footed woodrats and vulnerability to predation. Journal of Wildlife Management 61(2):343-350.

Sawyer, J.O. 2007. Forests of northwestern California. Pp. 253-295 *In* M.G. Barbour, T. Keeler-Wolf, and A.A. Schoenherr (eds.), Terrestrial vegetation of California. University of California Press, Berkeley.

Self, S.E. and E.C. Murphy. 1995. Five year review of northern spotted owl performance for home ranges containing either deficit or excess habitat, as defined by Sierra Pacific Industries spotted owl management plan. Unpublished report.

Self, S.E., S. Warner, and E. Murphy. 1991. A performance based definition and description of suitable spotted owl habitat. Unpublished report.

Skinner, C.N., A.H. Taylor, and J.K. Agee. 2006. Klamath Mountains bioregion. Pp. 170-194 *In* N.G. Sugihara, J.W. van Wagtendonk, J. Fites-Kaufman, K.E. Shaffer, and A.E. Thode (eds.). Fire in California's ecosystems. University of California Press, Berkeley.

Solis, D.M., Jr. and R.J. Gutiérrez. 1990. Summer habitat ecology of northern spotted owls in northwestern California. The Condor 92:739-748.

SPI (Sierra Pacific Industries). 1992. Sierra Pacific Industries spotted owl management plan review of implementation and effectiveness. Unpublished report. Prepared for Sierra Pacific Industries' foresters and biologists.

Thomas, J.W., E.D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon, and J. Verner. 1990. A conservation strategy for the northern spotted owl. A report by the Interagency Scientific Committee to address the conservation of the northern spotted owl. USDA Forest Service, and US Department of the Interior, Fish and Wildlife Service, Bureau of Land Management, and National Park Service. Portland, OR.

Thome, DM., C.J. Zabel, and L.V. Diller. 1999. Forest stand characteristics and reproduction of northern spotted owls in managed north-coastal California forests. Journal of Wildlife Management 63(1):44-59.

Ting, T.F. 1998. The thermal environment of northern spotted owls in northwestern California: possible explanations for use of interior old growth and coastal early successional stage forest. M.S. thesis. Humboldt State University, Arcata, CA.

USFWS (U.S. Fish and Wildlife Service). 1992. Draft Recovery Plan for the Northern Spotted Owl. USDI Fish and Wildlife Service, Portland, OR.

USFWS (U.S. Fish and Wildlife Service). 2007. Draft Recovery Plan for the Northern Spotted Owl (*Strix occidentalis caurina*). Region 1, U.S. Fish and Wildlife Service, Portland, OR.

USFWS (U.S. Fish and Wildlife Service). 2008. Recovery plan for the northern spotted owl (*Strix occidentalis caurina*). Region 1, U.S. Fish and Wildlife Service, Portland, OR.

Wagner, F.F. and E.C. Meslow. 1989. Spotted owl monitoring: Medford segment: Miller Mountain Study Area. Supplement number PNW 86-390 to master memorandum of understanding no. PNW 80-87.

Ward, J.P., Jr., R.J. Gutiérrez, and B.R. Noon. 1998. Habitat selection by northern spotted

owls: the consequences of prey selection and distribution. The Condor 100:79-92.

Waters, J.R. and C.J. Zabel. 1995. Northern flying squirrel densities in fir forests of northeastern California. Journal of Wildlife Management 59(4):858-866.

Waters, J.R. and C.J. Zabel. 1998. Abundances of small mammals in fir forests in northeastern California. Journal of Mammalogy 79(4):1244-1253.

Weathers, W.W., P.J. Hodum, and J.A. Blakesley. 2001. Thermal ecology and ecological energetics of California spotted owls. The Condor 103:678-690.

White, K. 1996. Comparison of fledging success and sizes of prey consumed by spotted owls in northwestern California. J. Raptor Res. 30(4):234-236.

White, A.E. 1996. Nest-site microhabitat of the spotted owl in the Klamath National Forest, California. M.S. thesis. University of Arkansas, Little Rock, AR.

Zabel, C.J., J.R. Dunk, H.B. Stauffer, L.M. Roberts, B.S. Mulder, and A. Wright. 2003. Northern spotted owl habitat models for research and management application in California. Ecological Applications 13(4):1027-1040.

Zabel, C.J., K. McKelvey, P.W.C. Paton, B.B. Bingham, and B.R. Noon. 1993. Home range size and habitat use patterns of northern spotted owls in northwestern California and southwestern Oregon. Unpublished manuscript.

Zabel C.J., K.S. McKelvey, and J.P. Ward, Jr. 1995. Influence of primary prey on home-range size and habitat-use patterns of northern spotted owls (*Strix occidentalis caurina*). Canadian Journal of Zoology 73(3):433-439.

Appendix A: Full text of U.S. Fish and Wildlife Service Guidance for Evaluation of Take for Northern Spotted Owls on Private Timberlands in California's Northern Interior Region

I. Accuracy of NSO activity center location and status

1) Location
    a. Confirm plotted activity center location accuracy
        i. CDFG Reports 2 and 3
        ii. Data from adjacent landowners
        iii. Recent surveys
    b. Document deviations from CDFG locations
    c. Update habitat analysis maps as necessary
2) Status
    a. Valid site
        i. Review page 11 of protocol to determine
        ii. If not valid, report to CDFG for inclusion in next database update
    b. Current occupancy status
    c. Current reproductive status, if determined

II. Survey Effort

1) Coverage
    a. Surveys of nesting/roosting habitat out to 0.7 miles from THP boundary
        i. Use THP habitat map(s) to verify
2) Protocol survey
    a. Time of day
    b. Spacing between visits
    c. Number of surveys
    d. Survey dates
    e. Time spent at each call point
3) Follow up visit(s)
    a. Confirm that the area searched covers suitable habitat within response location/last known location within a logical distance.
    b. Time of follow up and duration of follow up
    c. Additional night surveys
        i. Review page 10 of protocol

III. Habitat

1) Typing
    a. Verify habitat typing with aerial photos, equivalent imagery, or field visits

b. Changes to typing need to be reflected in the NSO habitat acres table and habitat analysis maps
c. Post harvest typing
    i. Post-harvest habitat typing must agree with the silviculture prescription

2) Definitions
    a. Nesting/roosting
        i. High Quality Nesting/roosting Habitat
            1. Basal Area = 210+ square feet, **and**
            2. ≥ 15" quadratic mean diameter (QMD) , **and**
            3. ≥ 8 trees per acre (TPA) of trees ≥ 26" in diameter at breast height (DBH) , **and**
            4. ≥ 60% canopy closure
        ii. Nesting/roosting Habitat
            1. A mix of basal areas ranging from 150-180+ square feet, **and**
            2. ≥ 15" QMD, **and**
            3. ≥ 8 TPA of trees ≥ 26" DBH, **and**
            4. ≥ 60% canopy closure
    b. Foraging
        i. Foraging Habitat
            1. A mix of basal areas ranging from 120-180+ square feet, **and**
            2. ≥ 13" QMD, **and**
            3. ≥ 5 TPA of trees ≥ 26" DBH, **and**
            4. A mix of ≥ 40%-100% canopy closure
        ii. Low Quality Foraging Habitat
            1. A mix of basal areas ranging from 80-120+ square feet, **and**
            2. ≥ 11" QMD, **and**
            3. ≥ 40% canopy closure

3) Quantities
    a. Within 1000 feet of activity center
        i. Outside breeding season (September 1 through January 31): no timber operations other than use of existing roads
        ii. During the breeding season (February 1 through August 31): no timber operations other than the use of existing, permanent, year-round roads

    b. Within 0.5 mile radius (502 acres) centered on activity center
        i. Retention of habitat should follow Section III. 4 of this document
        ii. At least 250 acres nesting/roosting habitat present, as follows:
            1. 100 acres High Quality Nesting/roosting Habitat, **and**
            2. 150 acres Nesting/roosting Habitat

        –AND–

        iii. At least 150 acres foraging habitat must be present, as follows:
            1. 100 acres Foraging Habitat, **and**
            2. 50 acres Low Quality Foraging Habitat
        iv. No more than 1/3 of the remaining suitable habitat may be harvested during the life of the THP

c. Between 0.5 mile radius and 1.3 miles radius circles centered on activity center
    i. Retention of habitat should follow Section III. 4 of this document
    ii. ≥935 acres suitable habitat must be present, as follows:
        1. At least 655 acres Foraging Habitat, **and**
        2. At least 280 acres Low Quality Foraging, **and**
        3. No more than 1/3 of the remaining suitable habitat may be harvested during the life of the THP

4) Priority Ranking of Habitat Retention Acres
    a. Tree species composition
        i. Mixed conifer stands should be selected over pine dominated stands
    b. Abiotic considerations
        i. Distance to nest
            1. Nesting/roosting and foraging habitat closest to identified nest trees, or roosting trees if no nest trees identified
        ii. Contiguous
            1. Nesting/roosting habitat within the 0.5 mile radius must be as contiguous as possible
            2. Minimize fragmentation of foraging habitat as much as possible
        iii. Slope position
            1. Habitats located on the lower 1/3 of slopes provide optimal micro-climate conditions and an increased potential for intermittent or year-round water sources
        iv. Aspect
            1. Habitats located on northerly aspects provide optimal vegetation composition and cooler site conditions
        v. Elevation
            1. Habitat should be at elevations of less than 6000 feet, though the elevation of some activity centers (primarily east of Interstate 5) may necessitate inclusion of habitat at elevations greater than 6000 feet.

IV. Determination

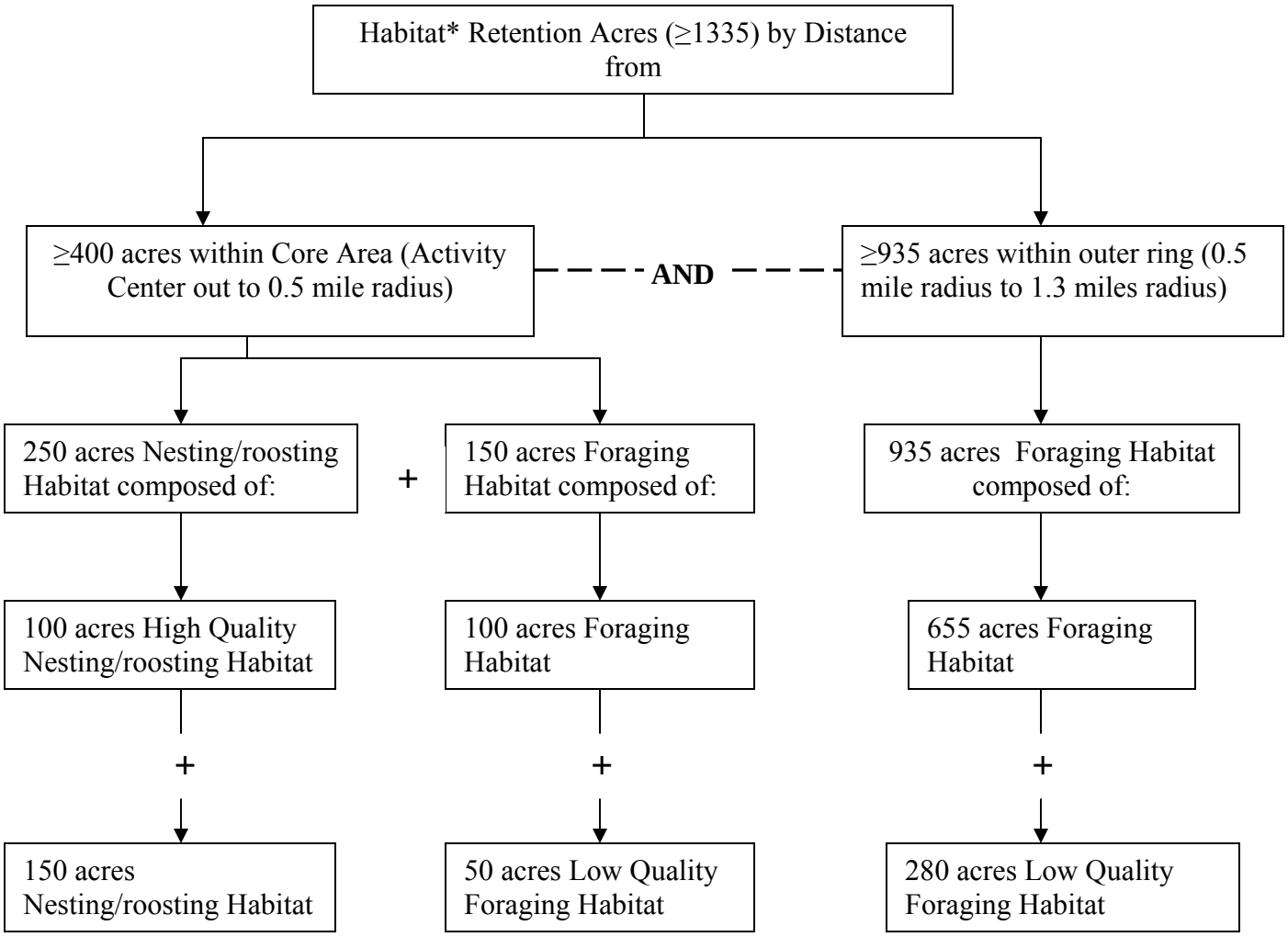
1) If surveys are inadequate or do not meet the intent of protocol, take determination may not be possible.
2) If habitat typing is inadequate, take determination may not be possible.
3) If NSO home range habitat acres are below desired conditions (Section III. 2, 3, and 4), additional loss of suitable habitat can lead to take.
4) If NSOs are nesting, utilize seasonal restriction within 0.25 mile of nest (February 1 through August 31).
5) If effects are limited to noise disturbance, a modified seasonal restriction may be used from February 1 through July 9

a. Harvest of unsuitable habitat, with unsurveyed suitable within 0.25 of unit boundary

6) Multiple THPs located within a given NSO territory need to be considered collectively or a take determination may not be possible.

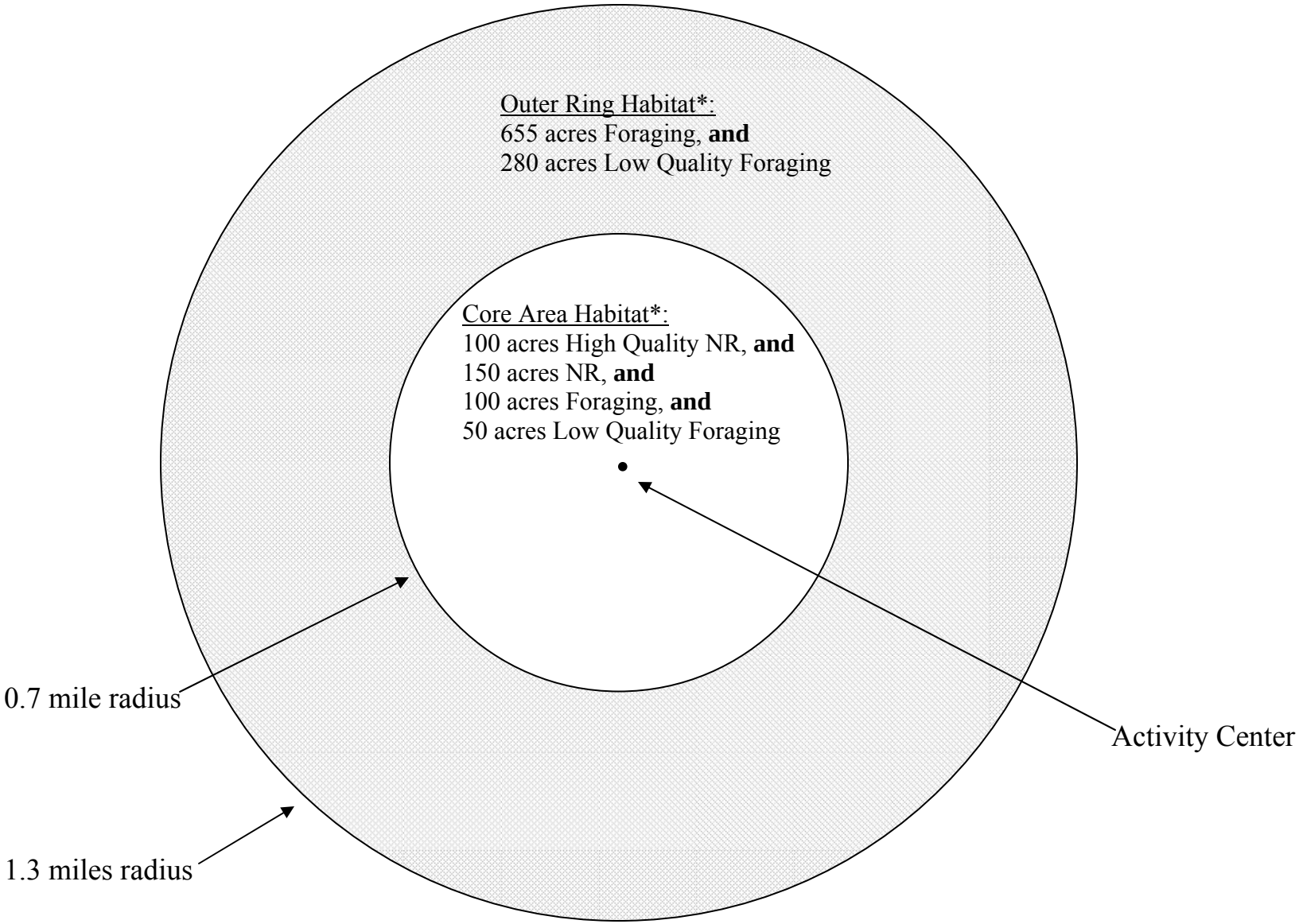
V. TA Letter Contents

1) Date of written TA request
2) Date request received
3) Note if previous TA(s) provided in past
4) Number of acres within THP units
5) Amounts and types of silviculture prescriptions
6) Location of THP
    a. Township, Range, and Section
    b. Meridian
    c. County
7) Identify NSO activity centers returned by CDFG reports
8) Surveys conducted and activity center status
9) Logic behind take determination
    a. Habitat considerations
        i. Acres, quality, and location of suitable habitat pre- and post-harvest
        ii. Effects of timber operations on suitable habitat
            1. Degrade: suitable habitat is harvested but still functions in the capacity it did pre-harvest (i.e. Foraging habitat before harvest functions as foraging habitat post-harvest, nesting/roosting habitat pre-harvest functions as nesting/roosting habitat post-harvest)
            2. Downgrade: pre-harvest nesting/roosting habitat becomes foraging habitat post-harvest
            3. Remove: nesting/roosting or foraging habitat is harvested such that it no longer functions as habitat post-harvest
    b. Proximity of activity center to operations
    c. Survey data
10) Sunset date and seasonal restrictions
    a. If 2 year protocol and surveys are current and negative, additional TA needed if operations not completed by February 1, *YEAR* (review protocol page 3).
    b. If 1 year protocol and surveys are current and negative, additional TA needed if operations not completed by February 1, *YEAR* (review protocol page 3).
    c. If NSOs detected in previous surveys and operations are not complete before February 1, surveys are required to determine location and status of NSOs prior to operations during each breeding season that operations are ongoing.
    d. If no owls within 1.3 miles of THP (CDFG reports) and no suitable habitat within units or 1.3 miles of units, additional technical assistance may not be required.
11) Name of agency person to contact if there questions regarding TA



*See Section III.2 for habitat definitions

Habitat Retention within Core Area and 1.3 mile Home Range–Interior



*See Section III.2 for habitat definitions

July 2, 2013

Mr. Keith Gilless, Chairman
State Board of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 94244-2460

Re: Option G elimination proposal

Dear Chairman Gilless,

Practicing forestry in California's regulatory environment is very difficult. The rules pertaining to northern spotted owls often cause a month or more delay in what is already a shortened logging season. Under the best of circumstances, a week or more is lost to agency review and processing after the field work is done. **The some annual agency reviews have been difficult in the past so it is not hard to imagine circumstances (see below) where Option G would be the only option under which timber operations could proceed in California**.

- More than once agencies have simply said they didn't have staff or time to review annual owl surveys. Other agencies have stepped in but there could come a time when Option G is the only viable option.
- It has been common for agency reviewers to take extended vacations at exactly the time thousands of loggers are trying to start work.
- There have been times that agency reviewers have been arbitrary and capricious resulting in serious injury to particular companies. Since no effective personnel oversight was available in those instances, Option G could act as a safety valve.

And, since I am writing about owls, I feel compelled to point out some of the absurdities that still exist;

- There are more northern spotted owls in California now than there were peregrine falcons or wolves in the lower 48 states when they were delisted.
- Early successional forests are the favored habitat for dusky footed wood rats, the owl's main prey. Early successional forests are not considered to be foraging habitat under the forest practice rules.
- In reporting owl habitat acres around an activity center, we have been required to classify as non-habitat a stand with an active nest in it because it was not wide enough.
- On the 30,000 acres I manage, we should only have ten pairs of owls. In fact we have had a stable population of 20 owl pairs since we started surveying in the early 1990s.

The northern spotted owl is well protected under all of the existing options including Option G. Landowners need protection from the inefficiencies and capricious behavior of state and federal agencies. Only Option G provides that protection.

Sincerely

Henry Alden
Gualala Redwoods, Inc.
P.O. Box 197
39951 Old Stage Road
Gualala, CA 95445
Phone 707-884-4226
Fax 707-884-1942

Jason Poburko, RPF

P.O. Box 244
Weaverville, CA
96093

Telephone:(530) 623-3105
E-mail:jpoburko@gmail.com

June 25, 2013

Board of Forestry and Fire Protection
Attn: Eric Huff
Regulations Coordinator
P.O. Box 944246
Sacramento, CA 94244-2460

Attention: Board of Forestry and Fire Protection
Re: Public Comment regarding Northern Spotted Owl Protection Measures Amendments, 2013

My name is Jason Poburko and I am offering public comment as a Registered Professional Forester (RPF), a unique qualification only held by approximately **1,230** persons in the State of CA. An RPF is a person knowledgeable in a wide range of studies such as biology, ecology, entomology, geology, hydrology, dendrology, silviculture, engineering, business administration, forest economics, and other natural resource subjects. RPFs use their well-rounded education and experience to maintain the sustainability of forest resources like timber, forage, **wildlife**, water, and outdoor recreation to meet the needs of the people while protecting the biological integrity and quality of the forest environment. Additionally as it pertains to the matter at hand, I am one of the 33 Spotted Owl Experts designated by CAL FIRE to fulfill the requirements of 14 CCR § 939.9(a).

My working career spans over 13 years of practice within the jurisdiction of this Board. I am also a member and past president of the Board of Directors of the California Licensed Foresters Association (CLFA), representing many of the RPFs that work within the jurisdiction of the Board.

I have been involved in the development of over 30 THPs that have been specifically designed to avoid take of northern spotted owls (NSO), via the avoidance of harm and harassment. The administrative record of these THPs and administrative records held by the Service can support this claim. I have conducted numerous habitat assessments of NSO activity centers and provide these to the United States Fish and Wildlife Service (USFWS), both in Arcata and Yreka Field Offices (AFO& YFO). These habitat assessments have been confirmed and supported by the USFWS and have been used as the base supporting evidence for many Technical Assistance (TA) letters issued by these offices.

Though these are my personal comments, I am sure that they would be echoed by many other foresters, small private landowners, and industry representatives.

Please do not take these comments as confrontational, as this is not my intent. They are intended to provide a review of the appealed regulation in the same fashion, as a THP is reviewed against the written law and regulations that govern the process.

I clearly recognize that the Board was required to accept the complete petition pursuant to Government Code Section 11340.6, however, this has created a potential precedent where portions of the FPRs can be requested to be deleted under a 45-day notice, solely based on a unsupported claim contained in a petition. Prior to the rule making procedure ever being initialed, it would have been more appropriate for the Board to have held additional evidentiary hearings regarding the merits of claims and to determine if any actual problem exists.

I find that the petition is without merit and request that the Board vote to deny the repeal of 14 CCR 919.9, 939.9 based on the following;

- The petitioner's evidence is limited a single USFWS document prepared by the Yreka Field Office (YFO) and pertains solely to the evaluation of interior THPs. No similar documentation has been relayed to the BOF, CAL FIRE, or the public from the Arcata Office suggesting that any short fall exists with 919.9(g). **There is no valid basis in the administrative records to suggest any problem exists that would require the repeal of 14 CCR 919.9 (g).**

- Epics claims, "*The provisions of Title14 CCR § 919.9(g) [939.9(g)] have been demonstrated through actual implementation and monitoring to be inadequate to prevent "harm" to Northern Spotted Owls and implementation of "Option g" in the FPRs has resulted in "take" of Northern Spotted Owls*. The evidence claimed by EPIC is, "*from years of review conducted by the USFWS while providing Technical Assistance on individual THPs*." However, no documentation of even one actual *take* of NSO has been included in the administrative record in these proceedings. While the Service has taken legal action claiming pending and or actual "take" in other states, no such actions have ever (never even been threatened) over the 23 years since listing in California. I would note that during the time the Service was claiming that NSO sites where declining in status, they were was directly reviewing each THP and they issued letters indicating that "take" and or "jeopardy to the species" was unlikely for each THP.

- The documentation provided by the Service fails to meet any standard of evidence based on credible science. Though credible science is not defined in FPRs or PRC, it is has been defined by in the Fish and Game code under Section 33 and is defined as follows;

  *Credible science means the best available scientific information that is not overly prescriptive due to the dynamic nature of science, and includes the evaluation principles of relevance, inclusiveness, objectivity, **transparency**, timeliness, **verification**, **validation**, and **peer review** of information as*

*appropriate. Credible science also recognizes the need for adaptive management, as defined in Section 13.5, as scientific knowledge evolves. (**Bold added for emphasis**)*

The document prepared by the USFWS Yreka Office, "*Regulatory and Scientific Basis for U.S. Fish and Wildlife Service Guidance for Evaluation of Take for Northern Spotted Owls on Private Timberlands in California's Northern Interior Region,"* Fails the tests of transparency, verification, validation, and/or peer review and includes figures that could be misleading to those not familiar with the subject matter.

Case in point, Figure I.B.1 cited in the petition provides a biased and potentially misleading application of science and data collection. The Forest Service data referenced is primarily from the Willow Creek study area. This study represents a full demographic study with continuous annual presence or absence surveys, including for every site determinations of AC status and reproductive monitoring. The data for private land is based on "project" based surveys which under the 1992 protocol were limited to presence or absence surveys, did not require determination of AC status or monitoring of reproduction or success, and may at a minimum represent a single year of survey effort under a 1 year 6-pass methodology.

In plain language, for private surveys, once an NSO was identified in the activity center, so long as the project proponent was willing to accept a Limited Operating Period (LOP) in the plan under 939.9(g)(2) or under TA, further investigations were not conducted.

The survey methodology between these two data sets makes them completely incompatible to be used in any such comparative analysis, as is attempted to be demonstrated in Figure I.B.1 of the petition. This effort is truly comparing apples to tomatoes. To be clear, there is no credible scientific comparison between pair status from predominately demographic study areas(USFS data) to occupancy only surveys (private THP data), conducted to assure that the owl is simply at home and therefore previously designed protection will be adequate to avoid take.

- Credible science is verifiable and repeatable. Before the Board takes any further action, it should request full disclosure of the data used in the USWFS analysis, including which ACs were used in the analysis, and the survey records supporting the Services' Figure. Because the "science" in this report has not been made public it lacks transparency and rebuttal/peer review.

- The petition cites an E-mail from Brian Woodbridge, USFWS to Chris Browder, CALFIRE. April 22, 2009, which stated "Service staff in the Yreka Fish and Wildlife Office believe that application of the FPRs **typically does not avoid or reduce the likelihood of take of NSO**. This is because the habitat definitions and

retention standards in the FPRs represent minimum values that are below the habitat parameters associated with reasonable levels of territory occupancy, survival, and reproduction by NSO."

Again this in not credible science, but is a statement of staff "belief", unsupported by peer reviewed, and transparent science. It is a staff position and does not necessarily reflect the formal position of the Agency until such time as this statement is published on Agency letterhead. **Email is not peer reviewed science, and in no manner represents a valid basis to repeal 939.9(g).**

- A take avoidance determination is invalidated if new information reveals effects to NSO in a manner or to an extent not considered in the original analysis. SPI's landscape level survey represents real data that demonstrates that the USFWS "staff belief" is unsupported by actual measurement. The extensive survey effort represents a significant component of data that was not available at the time that the YFO prepared their guidance document. In this case, new information has been acquired and the Service should apply the principles of adaptive management and revisit many of its out of date hypothesis unsupported by credible science. The Board should likewise give bearing to the data collected after the release of the USFS guidance, which was deemed necessary at the time, based on a faulty hypothesis.

- As to the argument that the current habitat definitions are insufficient there is no valid argument to be made in this regard. The habitat descriptions in 14 CCR 895.1 describe the stand conditions in which NSO are locally observed in the applicable zone of 939.9(g). The definitions of High quality Nesting and Nesting/Roosting as suggested by the USFWS describe stands that are not common on lands outside of USFS Late Seral Reserves (LSR-100s) and are not common on private managed timberlands with a 80 year plus history of management or areas without "old growth." However NSO may be both present and successfully reproducing in stand conditions that fail to quailify as HQN or NR.

These habitat descriptions were clearly developed without a demonstrated understanding of measuration and forest stand inventory methodologies. It its completely inappropriate to base the habitat definitions on the conditions of small plots 1-2.5 acres around the nest tree (see page 54 of the Regulatory and Scientific Basis for USFWS Guidance for Evaluation of Take of NSO on Private Timberlands in CA's Northern Interior Region) and expand those to the acreages of the suggests core habitats.

Case in point, the YFO defined HQ Nesting as a stand with a QMD of 20" dbh, > 200 sq. ft. basal area, 80% Canopy and greater than 8 TPA > 26"and requires retention of at least 100 acres of this stand condition to qualify under programmatic guidance to fulfill 14 CCR 939.9(e). This definition goes above

and beyond the FPR definitions of both late successional forest stands and late seral forest. The THP administrative records can demonstrate that there is virtually no stands on private lands that meet this definition, yet private land still maintains significant numbers of breeding pairs of NSO where most plans are submitted under 939.9(g).

Nesting opportunities are a function of available structural elements in a stand and are not a function of basal area or number of trees > 26" DBH.

- No real data pertaining to the FPR 895.1 definitions of functional habitat have been submitted to this board for consideration to support the claim that the existing rule is inadequate and results in *take*.

- It is claimed by the petitioners the currently various (g+) options designed and utilized by RPFs and SOEs do not exist in regulation. However 939.9(g) should be understood by all to represent the CEQA baseline for review, prior to approval. The existing rule 14 CCR 939.10 prohibits the Director from approving any plan that will cause take via harm or harassment, much in the same fashion that a plan cannot be approved if it with would result in violation of the provisions of a local Basin Plan. **14 CCR 939.10 is the safeguard that ensures that all projects submitted under any 919.9, 939.9 option avoids take, via the complete process of the FPRs, plan filing and review, the multi-disciplinary review process and public comment.**

  In many cases, the site specific protection measures to comply with all of CA's overlapping regulations may require the RPF, SOE or landowners to do more, or require the Director to require more than the FPRs, to demonstrate total compliance. This is how a CEQA review works.

- The USFWS has stated, "…*the use of the existing minimums of 939.9(g) may result in take of NSO and are insufficient for programmatic us in take avoidance reviews of THPs avoid take*. It is therefore important to consider what the minimum protections of 939.9(g) would look like under a habitat assessment. This would represent a 72 acre core of the best habitat within 1000' 939.9(g)(2) or as modified by 939.9(g)(5) (similar to protections required by both WA DPR and ODF) surrounded by 1264 acres of WHR3M/D.

  If and when individual projects are submitted that propose the *use of this minimum* level of retention, additional review can be assumed to be triggered by CAL FIRE based on the application 14 CCR 939.10, the record of comments from the Service, and public comment, such as those provided by the petitioners. However the continued use of 939.9(g) should never be in doubt, in its ability to avoid take when site specific review demonstrates the proposed habitat retentions levels greatly exceed the minimums. **There is no valid basis to repeal 939.9(g) as it must be evaluated in its context of its association to 14 CCR 939.10, which is a rule pertaining to the actions of the Director and CAL FIRE.**

- The decision by many RPFs to submit a modified option (g) has not been a function of belief that it cannot be used in most cases to demonstrate the avoidance of take, but rather a conscious decision to bolstering the protection measures under various (g+) methodologies, in light of comments by the YFO and groups such as the petitioners. The use of (g+) by myself and other has been engaged to developed an alternative methodology that provide a clear path for CAL FIRE review, such that the Director can clearly make a determination based on 939.10 that is not based on the use of the minimums of the FPRs.

- The petitioners also claim that deletion of subsection (g) will have little practical effect because it is only used by a small number of timber producers. However, no verifiable numbers from the CAL FIRE administrative records have been produced to support this claim. I personally use (g) as the base for most of my take avoidance demonstrations, as the robust habitat retentions standards suggested by the YFO guidance documents are not present around most NSO sites on private lands in the interior.

- The petitioners assert that subsection (g) is not aligned with federal "take avoidance guidelines" designed by the United States Fish and Wildlife Service (USFWS). However petitioners have failed to understand the function of that guidance. The Service's guidance was supplied to CAL FIRE to serve as a tool for CAL FIRE Review Team Staff to evaluate when take was clearly avoided and when additional site specific review by expert staff was not required. The supporting documentation for the guidance document clearly states on page two, "*The FWS guidelines are not regulations and are not intended to substitute for regulation*." There is no identifiable legal requirement for alignment.

- The Service has clearly stated, "*While the FWS believes that expert review should play a central role in these evaluations, it is also true that robust habitat retention guidelines may be used to avoid take.* The robust habitat retention levels identified in the guidelines are clearly a surrogate for the absence of expert review given the contraction of participation in review by the Service. The guidelines state, "*Application of habitat retention guidelines in the absence of expert review, however, may limit managers' flexibility to classify habitat based on specific local conditions and to design harvest proposals based on these conditions*." It is therefore obvious that guidelines not are representative of a one-size-fits all solution and that there are additional methodologies that may be applied to demonstrate site specific demonstration of the avoidance of take. It is also useful to consider that the USFWS itself has decided that other issues are more immediate and pressing to reassign their staff efforts, rather than continue their review individual THPs.

I think it is commendable that the concerned public is raising its concerns at the Board level verses the project level. This is the venue for meaningful professional debate regarding the functionality of the Forest Practice Rules. I know the petitioners have brought this petition forward with the best of intentions, but it should be obvious to all that the only portions of the complete administrative record in this matter have been ”selectively chosen” based upon lack of understanding of the information by individuals lacking the experience and credentials necessary to understand the science.

This is additionally evident in a similar petition brought forward by the petitioners regarding their desire to list the NSO as a CESA species under the CA Fish and Game Code.

In their review of that petition, CDFW has stated that much of the evidence in EPIC’s petition to the FGC, “contained *a number of inaccuracies and poorly supported conclusions… Some sections of the Petition included statements and conclusions for which the supporting information was absent or poorly presented. Referenced owl and habitat survey data were not included in the Petition. In some instances, the Petitioners support conclusions with studies from 2 other states that may not be applicable to California due to differences in habitats, prey, climate, competitors, and other factors.*”

The Board has inappropriately noticed a 45-day repeal of 14 CCR 919.9, 939.9 due to a lack of evidence supported by credible science that there is any problem with the existing regulation. When the vote is taken, I strongly request the members of this Board to reject the repeal of 919.9, 939.9(g) based upon a lack of evidence based on credible science indicating there is any problem with the rule.

Furthermore, I would suggest to the Board that its actions with regard to a total repeal of 919.9, 939.9 may be fairly challenged to fall within the definition of “Major Regulation” (Government Code *SECTION 1. Section 11342.548)* and require compliance with chaptered law as approved under SB 617, signed by the Governor on October 5, 2011.

This law states; *SECTION 1. Section 11342.548 is added to the Government Code, to read:*

11342.548. “Major regulation” means any proposed adoption, amendment, or repeal of a regulation subject to review by the Office of Administrative Law pursuant to Article 6 (commencing with Section 11349) that will have an economic impact on California business enterprises and individuals in an amount exceeding fifty million dollars ($50,000,000), as estimated by the agency.

The impacts of eliminating 14 CCR 919.9, 939.9 (g) would result in the potential encumbrance of an additional 328 acres (400 acres under USFWS guidance – 72 acres under 919.9,939.9(g)(2)) of habitat for every activity center affecting non-federal land previously covered by 939.9(g). The value of the private property, its potential

associated resource values, and downstream impacts to the CA economy, can conservatively be assumed to exceed fifty million dollars. Current claims that the repeal's impacts are unknown greatly discounts the losses expected from non-federal landowners' land being encumbered by the robust retentions standards that have not been demonstrate to be necessary to avoid take of NSO.

SEC. 2. Section 11346.2 of the Government Code, as added by Section 2 of Chapter 398 of the Statutes of 2010, is amended to read:

11346.2. Every agency subject to this chapter shall prepare, submit to the office with the notice of the proposed action as described in Section 11346.5, and make available to the public upon request, all of the following:
(b) An initial statement of reasons for proposing the adoption, amendment, or repeal of a regulation. This statement of reasons shall include, but not be limited to, all of the following:
(1) A statement of the specific purpose of each adoption, amendment, or repeal, the problem the agency intends to address, and the rationale for the determination by the agency that each adoption, amendment, or repeal is reasonably necessary to carry out the purpose and address the problem for which it is proposed. The statement shall enumerate the benefits anticipated from the regulatory action, including the benefits or goals provided in the authorizing statute. The benefits may include, to the extent applicable, nonmonetary benefits such as the protection of public health and safety, worker safety, or the environment, the prevention of discrimination, the promotion of fairness or social equity, and the increase in openness and transparency in business and government, among other things.

It is an invalid argument to claim that in the published, *Initial Statement of Reasons* (ISOR*)* that the **reason** for the proposed amendments, "*are in response to a petition for rule making brought before the Board by the Environmental Protection Information Center (EPIC) pursuant to Government Code Section 11340.6"*. The existence of, "*the problem that agency intends to address*," has not been stated or demonstrated that a problem even exists. The only problem is the Board is forced to accept the petition, regardless of its merits. This entire debate is predicated on the "claim of a problem" by an individual group and has not been formally recognized as a "problem" by the lead agency. In the future the Board should accept petitions and then send them to the appropriate Board committee for analysis and discussion; if a real issue/problem exists, the Board committee can then recommend actions to the full Board.

Additionally the published, ISOR fails to enumerate any real benefits anticipated from the regulatory action, and instead relies on statements of EPIC's believed benefits, many of which are only supported by opinion and not relevant analysis. The agency has not clearly enumerated any real benefits.

(3) An identification of each technical, theoretical, and empirical study, report, or similar document, if any, upon which the agency relies in proposing the adoption, amendment, or repeal of a regulation.

The list of technical, theoretical, and empirical studies, reports, or similar documents, upon which the agency relied upon in proposing the repeal of the subject regulation is incomplete and would be considered by many to be inadequate to support a decision of this nature. It would appear inappropriate that the Boards decision to propose the repeal for this subject regulation would be based on such a limited scope of information and it would behoove the Board to expand its reference documentation.

(5) (A) A description of reasonable alternatives to the regulation and the agency's reasons for rejecting those alternatives. Reasonable alternatives to be considered include, but are not limited to, alternatives that are proposed as less burdensome and equally effective in achieving the purposes of the regulation in a manner that ensures full compliance with the authorizing statute or other law being implemented or made specific by the proposed regulation. In the case of a regulation that would mandate the use of specific technologies or equipment or prescribe specific actions or procedures, the imposition of performance standards shall be considered as an alternative.
(5)*(B) A description of reasonable alternatives to the regulation that would lessen any adverse impact on small business and the agency's reasons for rejecting those alternatives.*

The claim, "*The Board of Forestry finds that the adoption of these regulations would not have a significant adverse economic impact on small businesses"*, is without technical merit and demonstrates a failure to understand the potential economic impacts of the proposed repeal. If a small family business maintains a tree farm and is required to retain an additional 328 acres of habitat to demonstrate take avoidance of NSO, I do not believe that they would accept that to be an insignificant adverse economic impact. Now expand this impact across the number of Activity Center contained in the CDFW database.

(6) Facts, evidence, documents, testimony, or other evidence on which the agency relies to support an initial determination that the action will not have a significant adverse economic impact on business.

These appear to be completely absent in the ISOR.

Demonstrated compliance with SB 617 must be achieved prior to any further action by the board. The EPIC petition advises the Board and *CAL FIRE* of the "risk of legal challenges" should the Board fail to act on the petitioners' demands, similarly the Board and *CAL FIRE*, leave themselves open to the additional risk of legal challenges by countless private landowners should it fail to conduct the repeal of this potentially major regulation in a manner consistence with existing state law.

The removal of a working piece of the FPRs eliminates options available for RPFs to comply with the "*take*" avoidance of NSOs and reduces the regulatory assurance

of private landowners seeking to manage their lands in face of overwhelming pressure to convert timberland to other uses, most of which are less compatible with NSO then the option of responsible timberland management. With the removal of (g), landowners regardless of size will be limited to demonstrating the avoidance of take in the absence of an HCP 939.9(d), via

- 939.9 (a) the use of SORPs which can only be submitted with the intended use across multiple projects, or and are not viable for NTMPs or small landowners that may only submit THPs periodically.
- *939.9 (*b) or (f) SOE pre-consultation, with additional costs to the landowner. Furthermore, there are only 33 individual in the entire state that have demonstrated this level of qualification and many of them are employed by larger companies an unavailable to provide consulting support to the large number of small private ownerships.
- 939.9 (c) RPF certification of NSO absence, (which is uncommon in the area of 939.9(g) applicability), and will always be problematic when a common species in California is listed as threatened or endangered, or
- 939.9 (e) the use of the extremely prescriptive and robust habitat retention standards of the Service Guidance documents, which were intended to replace expert review with an "easy" button for CAL FIRE staff which may or may not have the experience reviewing NSO habitat. These are clearly not the threshold levels at which take occurs, but a level at which take is obviously avoided. In many cases, the past management foot print of both public and private land manager have created conditions where compliance with these robust retention standards cannot be met, thereby prohibiting its use as a viable option. If (g) is repealed it will results in landowners being forced to seek technical assistance through CAL FIRE from a Federal service agency that has too many other more pressing issues to successfully provide service in a timely fashion.

In closing I urge the Board members to vote down the demands of the accepted petition and its proposed repeal of 14 CCR 919.9, 939.9, based on the lack of any identifiable problem as required by Government Code SEC. 2. Section 11346.2 (b)(1) ***and*** **lack of evidence based on credible science.**

Thank-you for opportunity to provide these comments.

Sincerely,

Jason S. Poburko
SOE & RPF#2769

PROFESSIONAL FORESTER
JASON S. POBURKO
No. 2769
STATE OF CALIFORNIA

July 2, 2013

Board of Forestry and Fire Protection
Attn: Eric Huff
Regulations Coordinator
P.O. Box 944246
Sacramento, CA 94244-2460

RE: **Reject proposal to eliminate "Option G" from the California Forest Practice Rules**

Dear Chairman Gilless and members of the Board of Forestry and Fire Protection (Board),

The California Forestry Association (Calforests), California Farm Bureau Federation, California Chamber of Commerce, California Cattlemen's Association, California Licensed Foresters Association, Associated California Loggers, Rural County Representatives of California, and Forest Landowners of California strongly recommends that the Board vote to reject the proposal to eliminate section 919.9 [939.9] (g), hereafter referred to as "Option G "from the California Forest Practice Rules ("FPRs"). This rule currently provides a critically important option for millions of acres of timberlands owned by small and large landowners alike for protection for the Northern spotted owl (NSO) while conducting sustainable forest management.

The petition, as presented, lacks any credible information on NSO population or population trends that would support elimination of Option G. Demanding such a radical change to the Board's longstanding regulation without providing any substantive data to support it invites uncertainty and potential arbitrary action into a process that has successfully protected owls for decades.

We cite the following justification for the rejection of EPIC's proposal to eliminate Option G:

NSO distribution and population data for California indicate a healthy, stable and dynamic population with a substantial increase in known occupied habitat. Using recent and historic data from the Department of Fish and Wildlife (DFW) NSO database, the

known population of NSO pair territories has been actually increasing in California. In 1988, there were an estimated 950 known NSO pair territorial sites in California. By 1992, that estimate had increased to 2,061 and by 2003, that estimate had increased to 2,699. By 2012, this number has increased to 3,061 NSO pair territorial sites. In addition, the acres of NSO habitat protected pursuant to the California Forest Practice Rules and U.S. Fish and Wildlife Service (USFWS) guidance have increased over this same period. (See Attachment A and maps.)

Moreover, the data from California forest landowner NSO surveys for more than 20 years substantiate these population trends (see landowner letters to the Fish and Game Commission (FGC) included in Attachment C). These forest owners have been surveying pursuant to established USFWS survey protocols. This information is being submitted to the DFW database, and is often shared with the USFWS and other agencies. Unlike the information presented by the petitioner in their petition, the population data gathered by these forest landowners are accurate, current, and specifically relevant to the California population of Northern spotted owls. This information shows, once again, that the NSO population on California's private forestlands is stable.

Contrary to assertions made in the petition, the best available scientific data on NSO population numbers indicate a stable NSO population in areas currently using Option G for NSO protection. Using current and credible NSO population data for large regions currently using Option G for NSO protection, the actual population numbers show a stable and robust NSO population. Large, private landowners who use Option G have been conducting either project-level NSO surveys or landscape-wide NSO population and demographic surveys for years, often for decades. These data indicate that the overall numbers of NSO have been stable for not only for the past several years, but over decades for these areas using Option G as the standard NSO protection. This actual data directly contradicts EPIC's assertions that the NSO populations on private lands are declining rapidly.

It is also significant to note that according to the USFWS, the overall NSO population range-wide (between Washington, Oregon and California) has been declining by an average annual rate of 2.9%. Given these declining population trends range-wide, the fact that the NSO populations on private lands employing Option G have remained stable is a testament to the overall effectiveness of Option G in protecting NSO and their habitat.

Furthermore, a detailed presentation made at the June Board of Forestry meeting presented the results from years of landscape-level NSO surveying conducted by Sierra Pacific Industries (SPI) biologists. This extensive, long-term survey is the only population density study conducted entirely on forest land to which Option G was applied, and was conducted and coordinated at the request of the USFWS, employing the latest survey techniques and protocols recommended by the USFWS. The SPI/USFWS combined objective was specifically to test the stability of the population within a specifically defined

area, so that density at the landscape level could be determined. This 300,000-acre monitoring tract in Trinity County, which uses Option G exclusively for project-level NSO protection, has shown a statistically stable NSO population over the past 10 years. This study is nearing completion and will be provided to the Board as soon as it is published.

Option G is a strong baseline designed for standard NSO protection: actual protection measures are enhanced on a project-by-project basis. As is common with most of the Forest Practice rules, Option G was never intended to be the final protective standard for NSO on a project-level basis. Rather, it represents a regulatory "starting point" from which site-specific NSO protection measures can and have been tiered. In practice, this is exactly what happens. Using site-specific habitat information, additional protection measures can be incorporated into projects employing Option G. These can range from additional habitat retention standards to increased protection measures around Activity Centers. During site evaluations conducted as a part of Plan review, additional site-specific provisions are proposed and incorporated into Timber Harvesting Plans (THP). A review of THPs on the CAL FIRE website indicates that those THPs that propose using Option G routinely have additional NSO protection measures added, either initially upon THP submittal or during THP review. Again, the actual numbers of NSO in areas employing Option G attest to the effectiveness of Option G, the Forest Practice Rules in general and the multi-agency THP review process.

The petition submitted by EPIC contains no credible NSO population or habitat data. The EPIC petition attempts to make sweeping generalizations of NSO population trends and habitat suitability without submitting any current or credible NSO population numbers. Without providing the actual numbers of NSO or without providing some minimal measure of landscape-level habitat suitability analysis, it would be impossible to ascertain if current protection measures (such as those provided by Option G) are actually working. Knowing full well that providing these basic population and habitat numbers would contradict their assertions, EPIC has cleverly diverted attention from actual population and habitat numbers to a cursory analysis of Activity Centers and Activity Center use by NSO. This analysis provides no real information on actual NSO populations or habitat, which are the only two issues that would require evaluation by the Board.

EPIC has failed to provide NSO population data in other NSO-related regulatory petitions. It is important to note that a related petition has been recently submitted by EPIC to the FGC proposing to list the NSO under the California Endangered Species Act. In their petition, EPIC once again failed to provide any NSO population numbers. In the Department of Fish and Wildlife's "Evaluation of Petition Report" (DFW Report), the Department questioned EPIC's failure to provide any meaningful NSO population numbers. Quoting the DFW Report:

- "The Petition does not assess the species' current population trend in California specifically."
- "The California map is not current and shows northern spotted owl distribution

based on CDFG data dated February, 1996."

- "The Petition (pages 12-15) does not include direct information on the abundance of northern spotted owl populations in California, nor does it discuss abundance range-wide."

The Evaluation Report cites other important deficiencies in the petition, including the use of very small sample areas to project population trends, the use of out-dated population data, as well as the failure to discuss important habitat requirements.

The DFW Evaluation of Petition report, which lists these and other deficiencies with EPIC's CESA listing petition for NSO can be viewed at: http://www.fgc.ca.gov/regulations/2012/index.aspx#nso.

The Option G petition incorrectly correlates certain NSO Activity Center data with NSO population trends. The petition submitted by EPIC contains NSO Activity Center information. EPIC then EPIC makes an unsupported attempt to correlate Activity Center occupancy changes with NSO population trends. This is simply scientifically unsupportable. The total number of NSO Activity Centers in areas employing Option G for NSO protection has been increasing steadily over time as more biologists survey for NSO for project-level compliance. It is well-known that NSO will use different nest sites from year to year, which is an inherent characteristic of NSO. As they use more nest sites, these sites become occupied "Activity Centers" and those locations are recorded in the DFW BIOS (Bio-geographic Information and Observation System) database. This reporting causes the number of Activity Centers to increase, regardless of the actual number of NSO present. Associated with this issue, it is almost impossible to remove an Activity Center from the database, no matter how long it has been abandoned or inactive. If the actual population of NSO is steady and there are an increasing number of reported Activity Centers, then the percentage of Activity Centers actually used in any given year declines. This misleading mathematical reality is the sole basis of EPIC's petition. Once again, this percentage totally ignores whether there are actual reductions in overall numbers of NSO, or changes to the NSO population over time, or the viability of the local NSO population. The only credible scientific evidence linked to Option G, SPI's NSO Study, shows this approach is nothing more than misrepresentation via misuse of statistics. The SPI study data demonstrates there are no measured changes in NSO population density, and clearly identifies the fallacy of EPIC's claim that their approach demonstrates "take" and their claimed failure of the regulatory agencies to protect NSO.

Purportedly supporting documentation provided by EPIC with its petition has little or no relevance to California private lands, NSO protection in general, or EPIC's petition to eliminate Option G. Along with EPIC's petition, there were numerous studies, journal articles and other information. A review of this information indicates that virtually nothing pertains to the issue raised by EPIC, i.e., the effectiveness of Option G to sustain NSO. Most of the studies pertained to issues only remotely related to NSO, often pertained to studies

conducted outside California or pertained exclusively to federal lands, or were out-of-date. This information was provided to the Board to give the appearance that the scientific community supports the removal of Option G from the Forest Practice Rules. In reality, it only shows that EPIC has little current, credible information of any relevance to present to support its petition.

It is imperative that the Board maintain the full range of options under 919.9 [939.9], including Option G. It is important that the Board continue to provide rules with the goal of the Forest Practice Act in mind:

> **4513. Intent of Legislature.** It is the intent of the Legislature to create and maintain an effective and comprehensive system of regulation and use of all timberlands so as to assure that:
>
> **(a)** Where feasible, the productivity of timberlands is restored, enhanced, and maintained.
>
> **(b)** The goal of maximum sustained production of high-quality timber products is achieved while giving consideration to values relating to sequestration of carbon dioxide, recreation, watershed, wildlife, range and forage, fisheries, regional economic vitality, employment, and aesthetic enjoyment.

In this light, it is important for the Board to continue to provide an effective and comprehensive system of regulations and use of all timberlands. This is especially true when a species is one of the most common raptors found in the forest, as is the NSO. Given there are likely more than 3,000 NSO pairs in the forests of California, it is necessary that an effective and complete set of options continue to be provided, recognizing the NSO is likely to be involved with 50% or more of all THPs in the state.

Should there be a disruption of timber harvest resulting from crippling lawsuits or a failure to retain effective NSO options for forest owners of all sizes, the grave impact of such situations on timber companies, their employees, and timber-dependent local economies is obvious. Of the approximate 4¼ million acres of industrial forest land in California, 2.3 million acres fall within the range of the Northern Spotted Owl. Of equal importance, there is more than twice the acreage of small private owners (approximately 5½ million acres) that fall within the range of the Northern Spotted Owl. Of the 1.13 billion board feet of lumber produced sustainably from private forest lands in 2011, approximately 600 million board feet were produced from private forests within the range of the NSO. Should the forest industry timber activities be negatively impacted in any significant way, the net impact on statewide wood production could be up to $132 million, 7,500 rural jobs, with dozens of rural communities and hundreds of forest businesses being devastated; this at a time when the industry is just beginning to recover from the worst economic recession in modern times.

In conclusion: We urge the Board to reject the proposal to eliminate Option G from the Forest Practice Rules. Option G remains an important tool for forest landowners, and provides a strong baseline on which additional site-specific NSO protections can be tiered.

The data collected from countless thousands of hours of NSO survey on private lands provide current and credible evidence that NSO populations are stable across its range in California, and specifically in areas currently employing Option G. In other words, Option G works. EPIC's unsupported petition uses a misleading mathematical analysis of "Activity Centers" in an attempt to show that Option G is not working. In the absence of any credible NSO population or habitat data, EPIC has only demonstrated that their petition is unjustified.

Again, we strongly urge the Board of Forestry to reject the proposal to eliminate Option G from the Forest Practice Rules.

Thank you for the opportunity to comment on this very important matter.

Sincerely,

California Forestry Association	California Licensed Foresters Association
California Farm Bureau Federation	Associated California Loggers
California Chamber of Commerce	Forest Landowners of California
California Cattlemen's Association	Rural County Representatives of California

Attachments

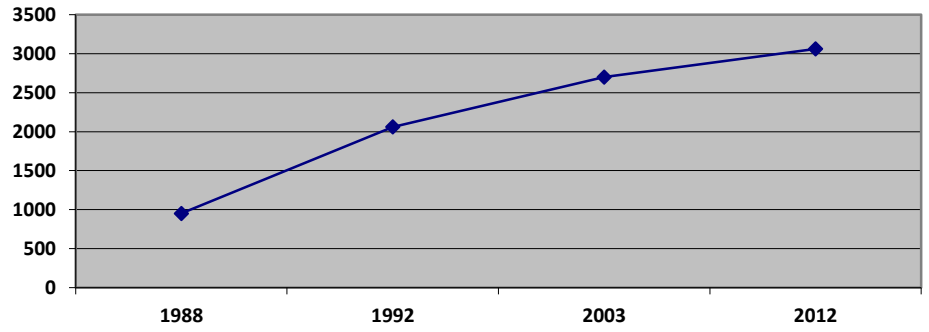
Attachment A

California's Total Forest Acres within the Northern Spotted Owl Range

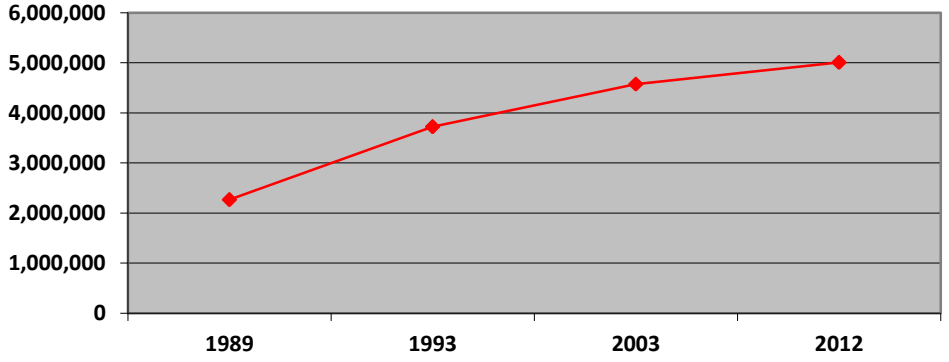
Public Forests	6.42 million acres
Private Non-industrial	5.51 million acres
Industrial Forests	2.33 million acres
TOTAL	14.27 million acres

California Dept. of Fish & Wildlife Northern Spotted Owl Data

NSO Territorial Sites

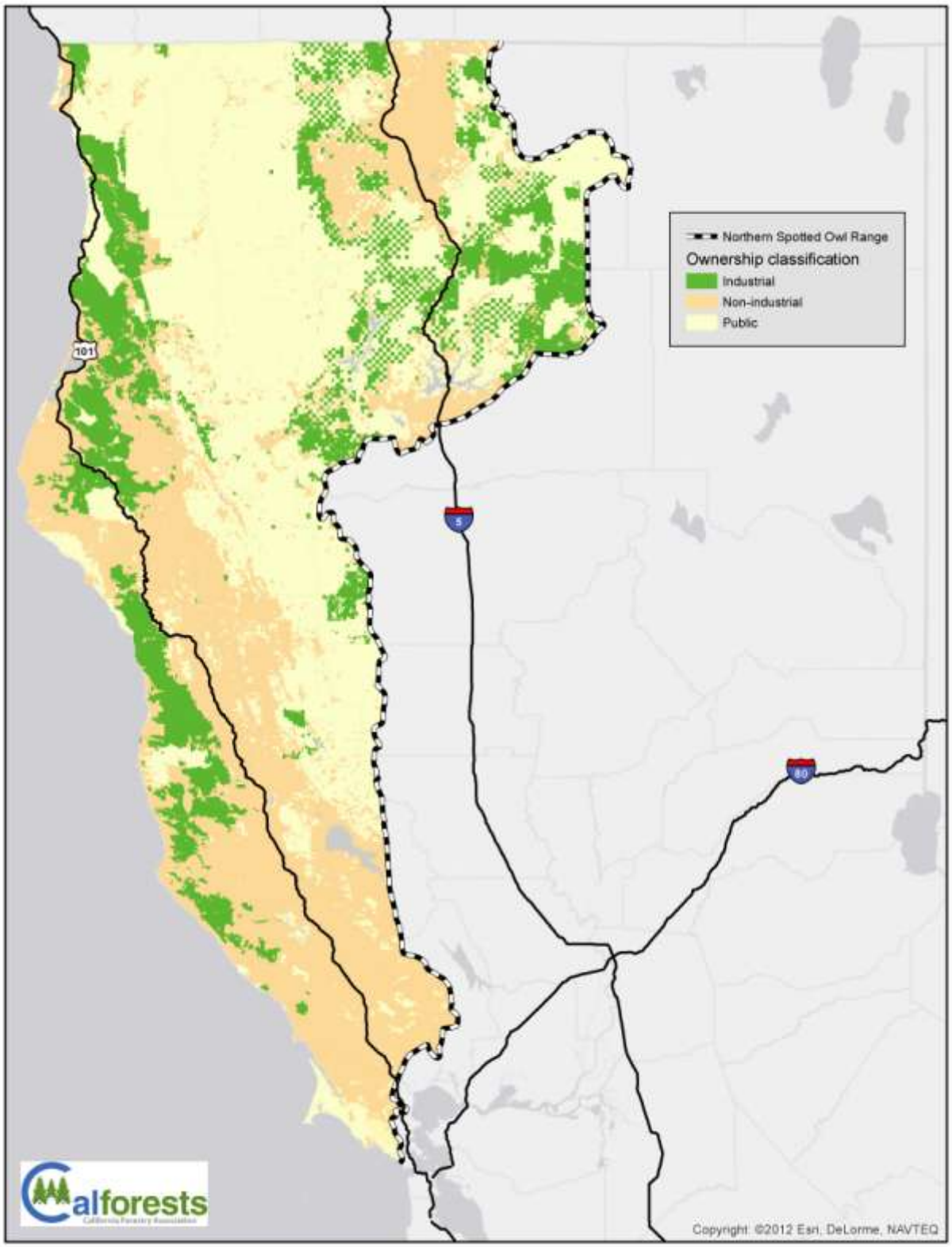


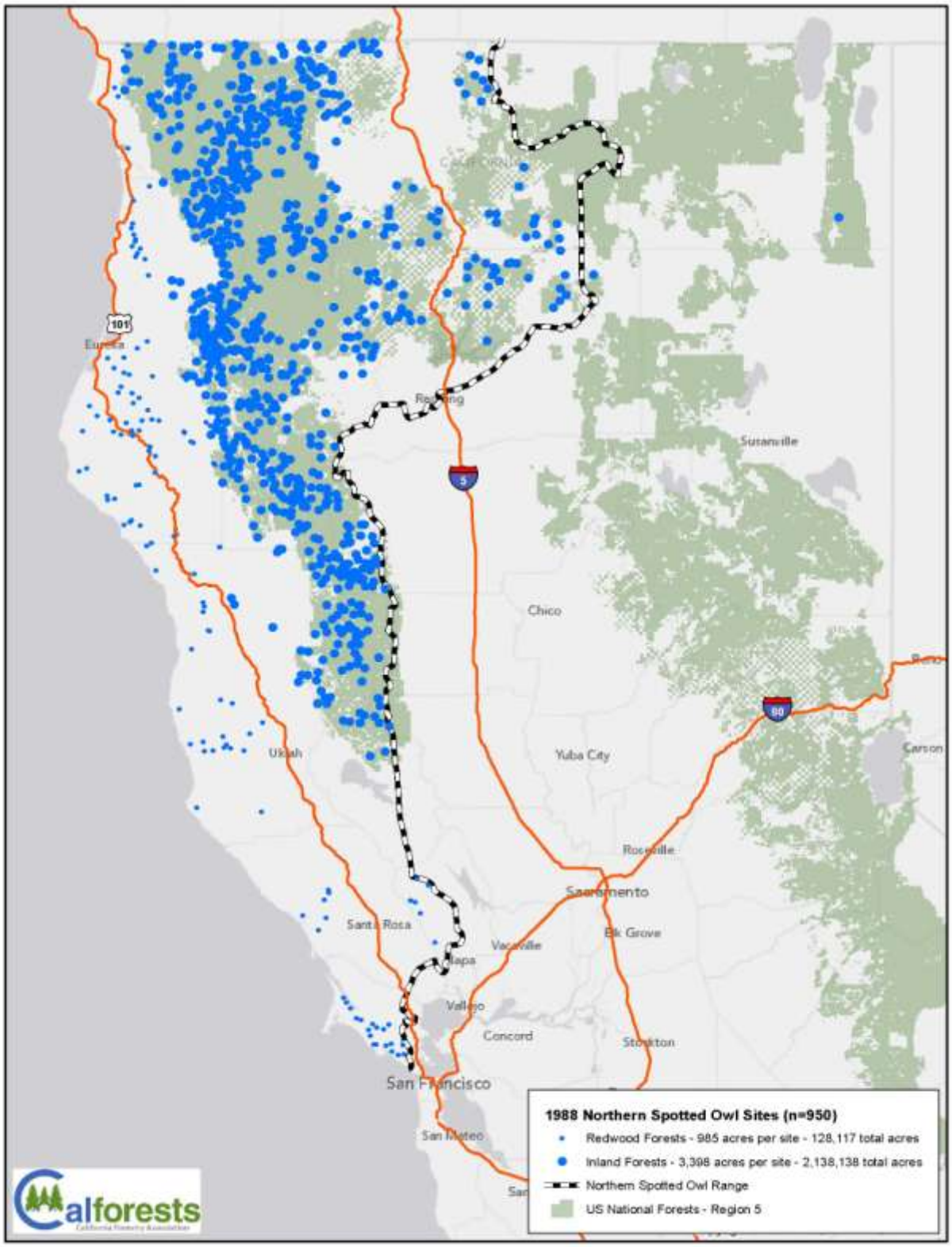
Acres of Habitat within USFWS Designated Owl Circles

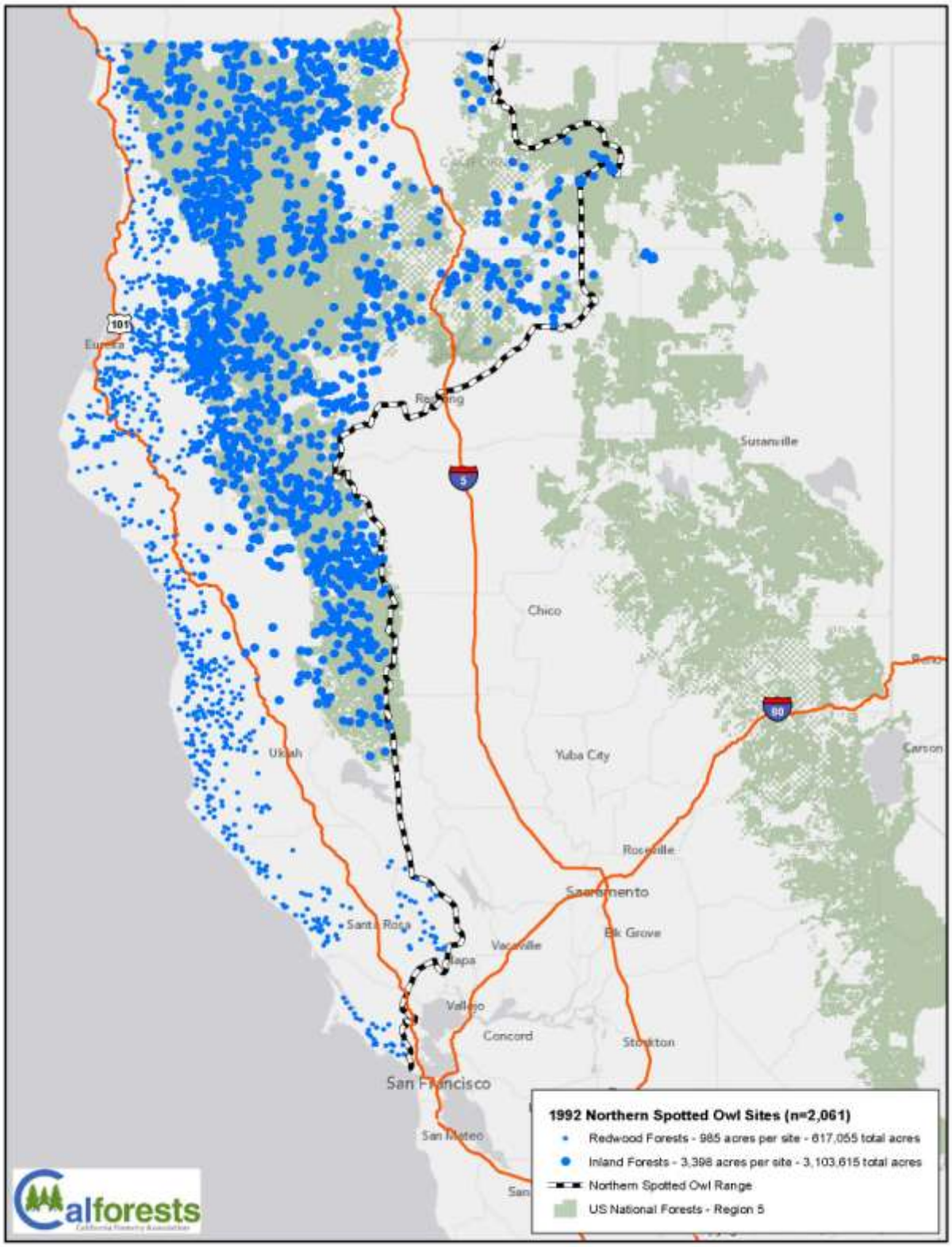


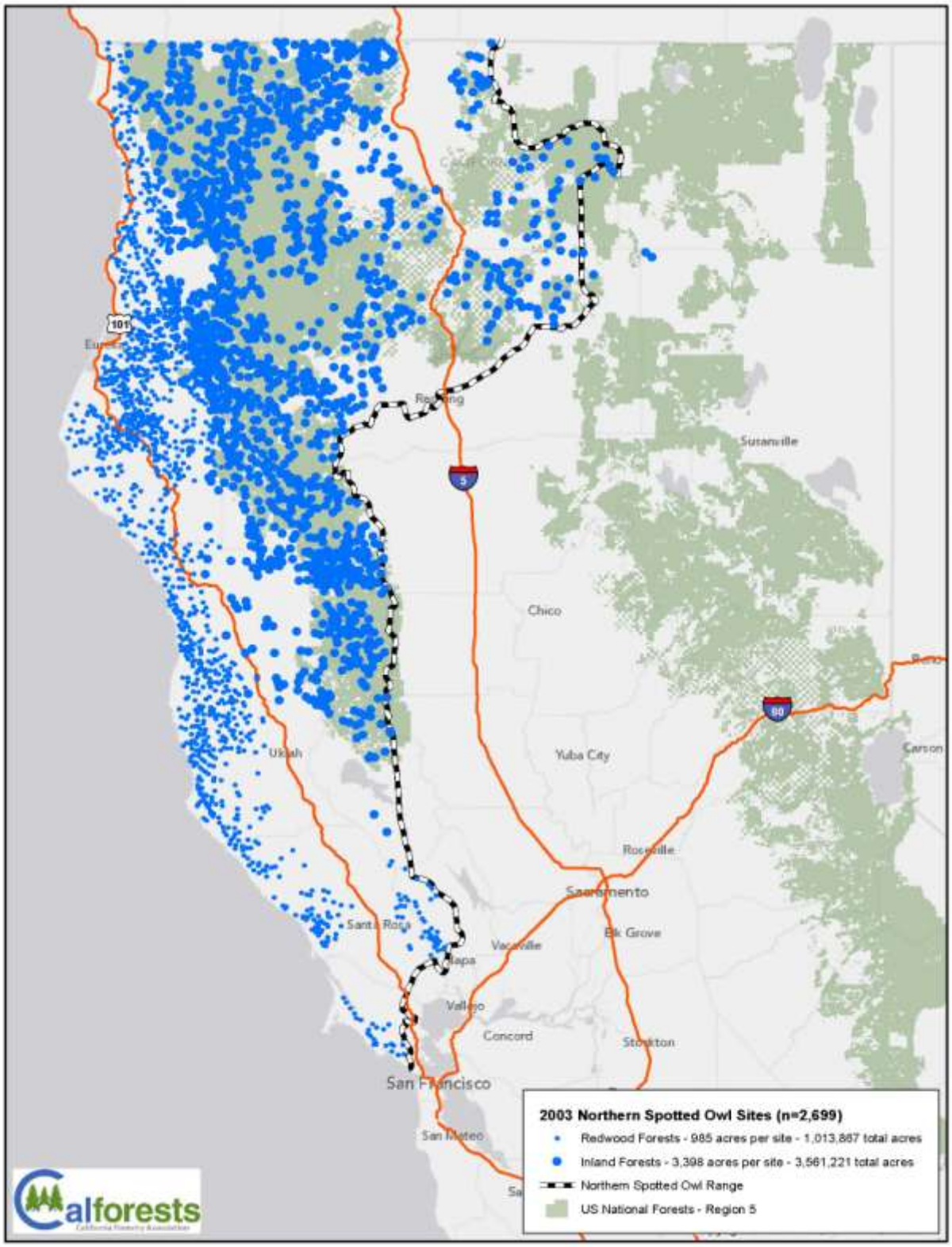
Individual Forest Owner Survey / Data (reference Attachment C forest owner letters)

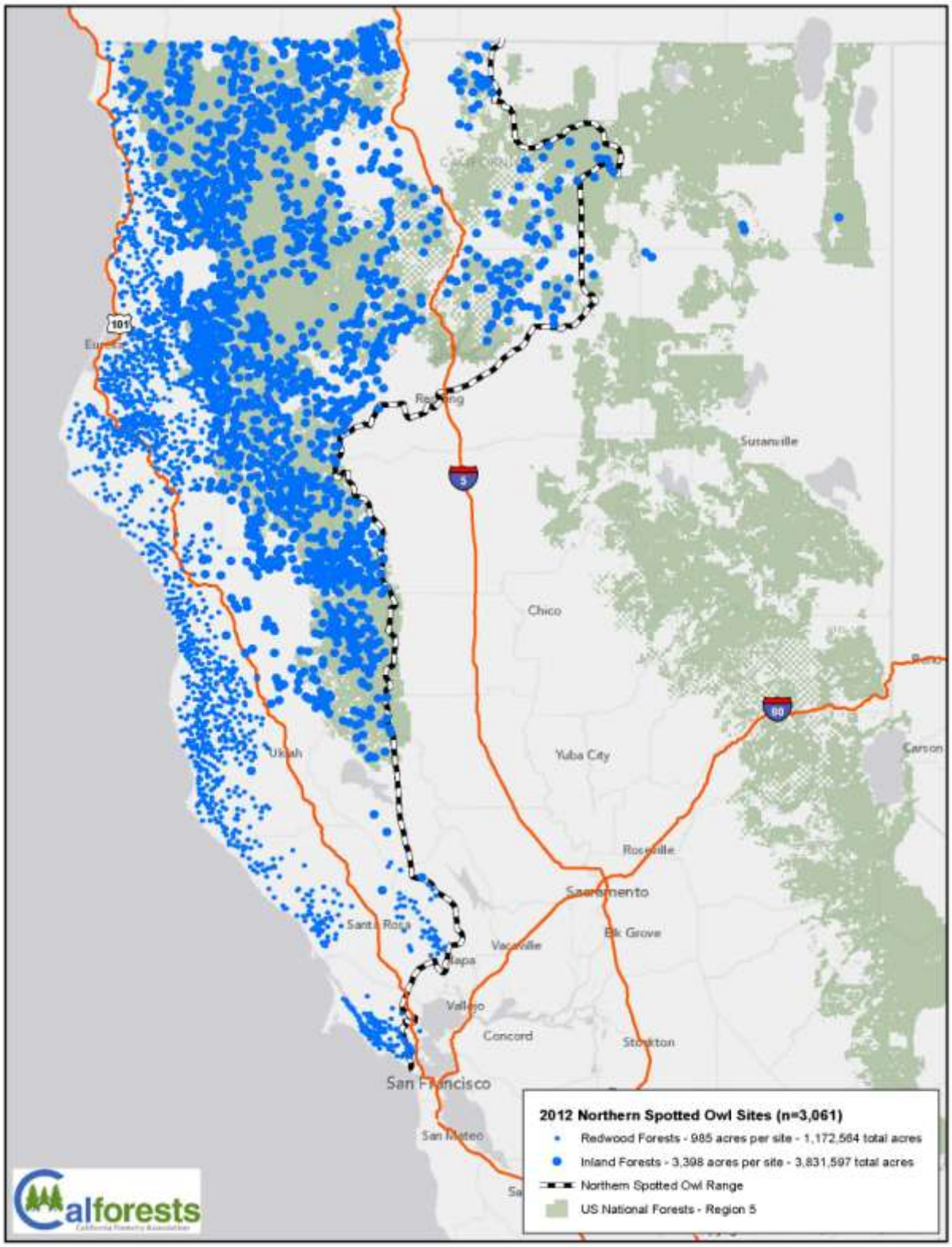
Forest Owner	County	Ownership Acres W/In Surveyed Areas	NSO Occupied Activity Centers 2000	2003	2012	Status
Humboldt Redwood Co.	Humboldt	208,000	N/A	182	203	stable
Sierra Pacific Ind.	Trinity	170,000	42	47	46	stable
Campbell Timberlands	Mendocino	165,000	62		70	stable
Michigan-California Lumber	Siskiyou	194,300	11		12	stable
Mendocino Redwood Co.	Mendocino	228,500	100		137	stable
Crane Mills	Tehama	68,000	33		37	stable


Northern Spotted Owl Range
Ownership classification
Industrial
Non-industrial
Public
101
5
80
Calforests
Copyright: ©2012 Esri, DeLorme, NAVTEQ


101
Eureka
Susanville
5
Chico
80
Carson
Yuba City
Ukiah
Roseville
Sacramento
Santa Rosa
Elk Grove
Vacaville
Napa
Vallejo
Concord
Stockton
San Francisco
San Mateo
1988 Northern Spotted Owl Sites (n=950)
Redwood Forests - 985 acres per site - 128,117 total acres
Inland Forests - 3,398 acres per site - 2,138,138 total acres
Northern Spotted Owl Range
US National Forests - Region 5
Calforests


Susanville
Chico
Yuba City
Roseville
Sacramento
Elk Grove
Vacaville
Napa
Vallejo
Concord
Stockton
San Francisco
San Mateo
Ukiah
Carson
101
5
80
1992 Northern Spotted Owl Sites (n=2,061)
Redwood Forests - 985 acres per site - 617,055 total acres
Inland Forests - 3,398 acres per site - 3,103,615 total acres
Northern Spotted Owl Range
US National Forests - Region 5
Calforests


Susanville
Chico
Yuba City
Roseville
Sacramento
Elk Grove
Vacaville
Napa
Vallejo
Concord
Stockton
San Francisco
San Mateo
Santa Rosa
Ukiah
Carson
101
5
80
2003 Northern Spotted Owl Sites (n=2,699)
Redwood Forests - 985 acres per site - 1,013,867 total acres
Inland Forests - 3,398 acres per site - 3,561,221 total acres
Northern Spotted Owl Range
US National Forests - Region 5
Calforests


2012 Northern Spotted Owl Sites (n=3,061)
Redwood Forests - 985 acres per site - 1,172,564 total acres
Inland Forests - 3,398 acres per site - 3,831,597 total acres
Northern Spotted Owl Range
US National Forests - Region 5
Susanville
Chico
Yuba City
Roseville
Sacramento
Elk Grove
Vacaville
Vallejo
Concord
Stockton
San Francisco
San Mateo
Santa Rosa
Ukiah
Carson
101
5
80

Attachment B

Regulatory Background

The NSO has been listed as a threatened species under the federal Endangered Species Act (ESA) since 1990. As a result, take of NSO is prohibited unless authorized by the U.S. Fish and Wildlife Service (USFWS) consistent with the ESA. The FPR contains a robust regime for conducting timber harvesting operations to avoid take of NSO.

The Forest Practice Rules require the Director to disapprove a THP if its implementation would result in a taking of a protected species. FPR § 898.2(d) ("The Director shall disapprove a plan as not conforming to the rules of the Board if … [i]mplementation of the plan as proposed would result in either a 'taking' or finding of jeopardy of wildlife species listed as rare, threatened or endangered by the Fish and Game Commission, the National Marine Fisheries Service, of Fish and Wildlife Service…."). The FPRs contain a more specific rule for NSO, requiring the Director to disapprove a THP if "[i]mplementation of the plan as proposed would result in the taking[1] of an individual Northern Spotted Owl prohibited by the Federal Endangered Species Act." FPR § 898.2(f).

The FPRs have their own detailed provisions for the protection and conservation of NSO and their habitat. These rules have been updated to reflect changes in the procedures used by the involved federal and state agencies to ensure that take of NSO is not likely to result from timber operations. In addition, the rules have continuously been supplemented by guidance from USFWS and the other involved agencies as new information about NSO and their habitat has been generated and knowledge of NSO habitat needs has evolved. The whole purpose of these rules and the NSO program they establish is to ensure and enable compliance with the federal ESA's take prohibition which, of course, is broader (and, thus, imposes greater restrictions) than the definition of "take" under CESA. Accordingly, the FPRs rely upon federal ESA definitions and requirements with respect to NSO.

The FPRs are replete with technical definitions concerning NSO and their habitat. *See* FPR §895.1 (definitions, including "activity center," "functional foraging habitat," "functional nesting habitat," "functional roosting habitat," "northern spotted owl breeding season," "northern spotted owl evaluation area," "owl habitat," "spotted owl expert," "spotted owl resource plan," "type A owl habitat," "type B owl habitat," "type C owl habitat"). The FPRs require the plan submitter to follow certain procedures and provide information for the Director to use in making the take determination. FPR §§ 919.9, 939.9. If a timber operator proposes operations within the range of the Northern spotted owl or within 1.3 miles of a

[1] The FPRs have adopted the ESA's definition of "take." FPR § 895.1 ("Take for Federally Listed Species means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture ,or collect, or to attempt to engage in any such conduct as stated in 16 United States Code 1532(19)."). CESA defines "take" more narrowly than does the federal ESA. Under CESA, "take" means "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." *Cal. Fish & Game Code* § 86.

known Northern spotted owl activity center, the proposed THP must includes certain mandatory measures to ensure against any unlawful take of the species. FPR §§ 919.9, 939.9. The FPRs provide the plan submitter a number of options for demonstrating compliance with the Endangered Species Act each specifying measures and requirements to ensure that the proposed operations will not result in unlawful take of NSO. FPR §§ 919.9(a)-(g), 939.9(a)-(g). These, too, were developed in collaboration with USFWS and the California Dept. of Fish & Wildlife (DFW or Department).

These different approaches for demonstrating that proposed operations will not result in unlawful take of NSO are known as options (a) through (g). They are all used, to varying degrees, by forest owners to conduct timber operations. Several of them require the involvement of a Spotted Owl Expert (SOE) to ensure that CAL FIRE has the information necessary to determine if proposed operations, as conditioned by numerous measures to avoid impacts to NSO and their habitat, are likely to avoid take. As provided by FPR sections 919.9(a)-(g), 939.9(a)-(g):

(a) If the project proponent requests preliminary review of the proposed operation or Spotted Owl Resource Plan prior to filing, the proponent shall consult with an SOE to evaluate whether the proposed operation would result in the taking of an individual Northern spotted owl. This evaluation is preliminary to and separate from the final "take" determination to be made under 14 CCR § 919.10 [939.10]. In making that evaluation:

(1) The SOE shall apply the criteria set forth in 14 CCR § 919.10 [939.10].

(2) The SOE may request that the submitter provide additional information which the SOE finds necessary to evaluate if a "take" would occur, provided that the SOE states the type of information needed, the purpose of the information, and the level of accuracy necessary to meet the stated purpose.

(3) If the SOE concludes that no prohibited taking would occur, the SOE shall inform the submitter as soon as practicable and shall document the decision and the information which was relied upon by the SOE in the above evaluation. Reference data shall be readily available for the Director's review upon request;

(4) If the SOE concludes that the proposed timber operation or Spotted Owl Resource Plan would result in a taking, he or she shall inform the submitter as soon as practicable and shall comply with 14 CCR § 919.10(c) [939.10(c)] within 10 working days of making this determination.

(5) Requests for pre-filing consultation shall be handled in the order in which received.

(b) The RPF shall include the following information:

(1) On a planimetric or topographic map of a minimum scale of 1:24,000, provide the following:

(A) The location and acreage of owl habitat. This information shall be shown for the area within the boundary both as it exists before and after timber operations. The Director shall determine if timber typing maps may qualify as showing owl habitat.

(B) Identify any adjoining owl habitat by type within .7 miles of the boundary.

(C) When mapping functional owl nesting, roosting, and foraging habitat, include additional information which helps define those areas such as: location of topography features, riparian vegetation, hardwood component, water, potential nest and roost sites, and potential suitable forage areas.

(D) All known owl observations, identified by location and visual or nonvisual confirmation within 1.3 miles of the boundary. This information shall be derived from the landowners and RPF's personal knowledge, and from the Department of Fish and Game's spotted owl data base.

(2) Discussion on how functional characteristics of owl habitat will be protected in terms of the criteria stated within 14 CCR § 919.10 subsections (a) and (b) [939.10 subsections (a) and (b)].

(3) As adjacent landowners permit and from other available information, a discussion of adjacent owl habitat up to .7 mile from the proposed boundary and its importance relative to the owl habitat within the boundary.

(4) Describe any proposals for monitoring owls or owl habitat which are necessary to insure their protection. Monitoring is not required for approval.

(5) Discussion of any known owl surveys that have been conducted within 1.3 miles of the THP boundary. Include the dates, results and methodologies used if known.

(6) A proposed route that will acquaint the SOE and other reviewers with the important owl habitat.

(7) Attach aerial photos of the area, if available. (Aerial photos are not required.)

(c) Where certification is made by the RPF and adequate records are kept showing that owl surveys were conducted sufficient to demonstrate the absence of owls from an area, the THP will be reviewed on a high priority basis. The THP shall contain verification that:

(1) The surveys have been conducted throughout the area within .7 miles of the boundary in accordance with the USFWS approved protocol ("Protocol For Surveying Proposed Management Activities That May Impact Northern Spotted Owls"; USFWS; March 17, 1992).

(2) The surveys were conducted during the current or immediately preceding survey period as prescribed by the previously cited USFWS approved protocol.

(3) The surveys reveal no nest sites, activity centers or owl observations in the area surveyed; and

(4) The surveys reveal no activity center or repeated observations indicating the presence of mates and/or young within 1.3 miles of the boundary based on a review of the landowner's and RPF's personal knowledge and the Department of Fish and Game's spotted owl data base.

(d) If the plan submitter proposes to proceed under an "incidental taking" permit or any other permit covering the northern spotted owl issued by the U.S. Fish and Wildlife Service

or the Department of Fish and Wildlife, the submitter shall supply a copy of the permit upon the Department's request.

(e) If the submitter proposes to proceed pursuant to the outcome of a discussion with the U.S. Fish and Wildlife Service, the submitter shall submit a letter prepared by the RPF that the described or proposed management prescription is acceptable to the USFWS.

(f) If:

(1) the submitter's proposed operations were reviewed by a SOE under 14 CCR § 919.9, subsection(a) [939.9, subsection(a)]; and

(2) the SOE recommended minimum modifications to the proposed operations which would be necessary to bring the impacts to a level at which no "take" would occur and the submitter has adopted those recommendations; and

(3) the proposed operations remain substantially the same as the operations which the SOE reviewed, the submitter shall provide a copy of the recommendations made by the SOE and the submitter shall explain how the proposed operations comply with those recommendations.

(g) Where an activity center has been located within the plan boundary or within 1.3 miles of that boundary, the RPF shall determine and document in the plan: (i) activity center-specific protection measures to be applied during timber operations and (ii) owl habitat, including habitat described in (1)-(5) below, that will be retained after the proposed operations are completed:

(1) Within 500 feet of the activity center the characteristics of functional nesting habitat must be maintained. No timber operations shall be conducted in this area during the northern spotted owl breeding season unless reviewed and approved by the Director as not constituting a take. Timber operations may be conducted in this area outside the breeding season if appropriate measures are adopted to protect nesting habitat.

(2) Within 500-1000 feet of the activity center, retain sufficient functional characteristics to support roosting and provide protection from predation and storms. No timber operations shall be conducted in this area during the breeding season unless reviewed and approved by the Director as not constituting a take.

(3) 500 acres of owl habitat must be provided within a .7 mile radius of the activity center, unless an alternative is reviewed and approved by the Director as not constituting a take. The 500 acres includes the habitat retained in subsections (1) and (2) above and should be as contiguous as possible. Less than 50% of the retained habitat should be under operation in any one year, unless reviewed and approved by the Director as not constituting a take.

(4) 1336 total acres of owl habitat must be provided within 1.3 miles of each activity center, unless an alternative is reviewed and approved by the Director as not constituting a take. The 1336 acres includes the habitat retained within subsections (1)-(3) above.

(5) The shape of the areas established pursuant to subsections (1) and (2) shall be adjusted to conform to natural landscape attributes such as draws and streamcourses while retaining the total area required within subsections (1) and (2) above.

For example, one of the prescribed approaches used in THPs submitted to CAL FIRE—the "option (g)" procedure, refers to subsection (g) of section 919.9, 939.9 of the FPRs, which applies when "an activity center has been located within the plan boundary or within 1.3 miles of that boundary." FPR §§ 919.9(g), 939.9(g). Subsection (g) requires the RPF to determine and document in the THP those activity center-specific protection measures to be applied during timber operations and the owl habitat that will be retained after operations are completed. FPR § 919.9(g). These standards are intended to ensure that modification of NSO habitat by timber operations does not result in take by requiring the creation and maintenance of "owl circles" around known NSO sites within which habitat of sufficient quality and quantity will retained so that take does not occur.

In regards to evaluating the use of option (g), and pursuant to U.S Fish and Wildlife Service request, a forest owner in Trinity County conducted a long-term NSO population density study on 170,000 acres of their ownership over the 5-year period from 2003-2007, the survey effort is being extended to include the period 2011-2013. The study results (currently in review) indicated over the 23 years of total survey to date since 1989, the study area started with 42 NSO occupied activity centers, in 2003-2007 there were 47 occupied ACs and the latest estimate is that there are 46 NSO occupied activity centers, demonstrating a stable population while using option (g) pursuant to the current FPR options. In 2011 and 2012, while most other study areas in California showed very poor reproductive success due to bad spring weather, of these 46 occupied ACs 18 (remarkably 2 of these 18 reproduced two years in a row so there were 20 nesting efforts) were determined to have successful reproduction (producing a minimum observed count of 33 young). A note one of the 47 was burned in a wildfire so that the 46 vs. 47 are essentially the same value.

Another example of prescribed approaches used in THPs submitted to CAL FIRE is the "option (e)" procedure, refers to subsection (e) of section 919.9, 939.9 of the FPRs, which applies when the THP submitter proposes to proceed pursuant to the outcome of a discussion with the U.S. Fish and Wildlife Service; the submitter shall submit a letter prepared by the RPF that the described or proposed management prescription is acceptable to the USFWS. A 114,700-acre forest owner in Siskiyou County under this option via a USFWS approved Spotted Owl Management Plan (SOMP). This forest ownership has been operating successfully pursuant to their SOMP since 1995. They have been involved in a number of collaborative research projects and published papers regarding NSO. Their estimate of owls recorded on their ownership in the year 2000 was 21, while the recorded owls on their ownership in 2012 were 22, nearly identical. As they indicate, "we have concluded that our owl population is dynamic, yet stable."

Another example of prescribed approaches used in THPs submitted to CAL FIRE is the "option (d)" procedure, refers to subsection (d) of section 919.9, 939.9 of the FPRs, which applies when the THP submitter proposes to proceed pursuant to an "incidental take" permit. There are currently three forest owners with a combined ownership of 820,000 acres operating pursuant to "option [d]." These forest owners have federal Habitat Conservation Plans approved by the USFWS that provide for ultimate recovery of the NSO on their ownerships.

Forest owners provided these and other population density estimates to the Fish and Game Commission (Commission), which are attached hereto as Attachment C.

All of the FPR sections 919.9(a)-(g), 939.9(a)-(g) approaches and standards are intended to ensure that timber operations do not result in unauthorized take.

The Director does not exercise unfettered discretion in determining if a plan will cause take. The FPRs require the Director to find that proposed habitat modification would result in "harm" if feeding, breeding, nesting, or sheltering would be "significantly impaired." FPR §§ 919(a), 939.10(a). The FPRs require the Director to find that "an individual northern spotted owl would be 'harassed' by the proposed timber operations if there is a likelihood that feeding, breeding, nesting, or sheltering would be "significantly disrupted." FPR §§ 919.10(b), 939.10(b). If the Director concludes that proposed operations will result in a taking of the owl, he will provide recommendations for modifications to the THP necessary to reduce impacts to a level at which take would not occur. FPR §§ 919.10(c), 939.10(c). It is important to note that the FPRs' use of the federal ESA's take standard – which encompasses habitat modification and harassment – means the FPRs' NSO program goes beyond what would be necessary to comply with CESA's take prohibition and, thereby, already affords the NSO greater protection than it would enjoy if advanced to candidacy or, ultimately, listed under CESA.

Of course, the FPR requirements only function as a floor. Through the site-specific, multi-agency THP review and approval process, including field inspections, habitat retention and other measures are considered and required before THPs are approved. The U.S. Fish and Wildlife Service continue to be involved in this process by providing technical assistance when requested by CAL FIRE or the public, when unique circumstances arise.

Notwithstanding the fact that the NSO is already protected under federal law, in September 2012 the Commission received a petition to also list the NSO as threatened or endangered under CESA. As required by CESA, the Commission referred the petition to CDFW for evaluation. In February 2013, CDFW completed its petition evaluation report, which concluded that the petitioned action may be warranted and that the petition should be accepted. The Commission received the CDFW evaluation report at its March 2013 meeting. the Commission considered the listing petition at its April 17-18, 2013 meeting,

and decided to postpone the decision until its August meeting to allow further time to review the data submitted by forest owners and forestry professionals.

Should the petition ultimately be accepted, it would confer "candidate" status on the NSO under CESA until such time as CDFW completes a full status review of the species and the Commission determines whether to list the species as threatened or endangered. *See* Cal. Fish & Game Code §§ 2070-2079. The CESA take prohibition (section 2080) applies fully to a candidate species, even though the Commission has yet to determine whether that species should be listed as threatened or endangered. *Id.* § 2085. Under CESA, the taking of a candidate species is prohibited unless authorized consistent with CESA. *Id.*

Attachment C
Forest Owner NSO population Status Letters to the Fish and Game Commission

P.O. Box 318
Corning, CA 96021

CRANE MILLS

Phone: (530) 824-5427
FAX (530) 824-3157

April 11, 2013

Mr. Sonke Mastrup, Executive Director
Calif. Fish & Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

Dear Mr. Mastrup, & Commission Members:

According to the published agenda for the meeting on April 17, 2013 in Santa Rosa, the Commission will be considering whether listing the Northern Spotted Owl (NSO) as a Threatened or Endangered Species under the California Endangered Species Act (CESA) is warranted. As part of that consideration you will be looking at EPIC's petition, DFW's report, and any public comments received. Crane Mills would like to provide comments for your consideration as a forest landowner within the range of the Northern Spotted Owl.

Crane Mills is a third-generation family-owned forest products company based in Tehama County. We own and manage 92,000 acres of mixed-conifer timberland in the Interior Coast Range (E of the Coast Range crest) and southeastern portion of the Klamath Province, primarily in western Tehama and Shasta Counties. Almost all of our timberland has been managed under uneven-aged silvicultural systems using Alternative Prescriptions (per the Forest Practice Rules). Ninety-nine percent of our total ownership is within the defined range of the NSO. Our main block of ownership in Tehama County consists of about 68,000 acres and it is this ownership block that we have been surveying for NSO since 1989. Precipitation patterns on the Main Block exhibit a strong rain shadow effect as you move from W to E. As a result, mixed conifer stands are ponderosa pine dominated on S aspects, and Douglas-fir dominated on N aspects. Generally speaking, NSO activity centers tend to be found on N facing slopes or lower down and closer to watercourses on S facing slopes.

Based upon our 24 years of experience with the NSO, we believe that listing of the NSO under CESA is **not warranted** and we would urge you to **not accept** the listing petition. There are three reasons why we make that recommendation:

1. The NSO population on our main ownership block is stable as demonstrated by 24 years of surveying;
2. The DFW does not adequately make the case for listing the owl in California;
3. The NSO is already listed under the federal ESA and is protected under CEQA and the Forest Practices Act and Rules.

NSO Population on Ownership is Stable

Ownership-wide surveys were conducted in 1989 and 1990 prior to the federal listing to determine our "exposure" to regulatory taking of our property through habitat set-asides for the NSO. In 1992 the USFWS published protocols for surveying and take avoidance. Since that time, our survey efforts have been focused on THP's and the 1.3 mile buffer around them. Since we are on a 20 year cutting cycle,

there is not a need to survey the entire ownership block every year, so there may be 10-20 year gaps in-between detections and/or status determinations. We have never conducted demographic studies or banded birds for tracking, but we do have 24 years of experience with the birds on or adjacent to our property.

In order to prepare our comments, we analyzed the DFW NSO database and our own company NSO database and survey records. Our database includes survey data collected by Louisiana Pacific/Pioneer Resources, whose land we acquired in 2001. Some USFS survey information is contained in the DFW NSO database, but most of it dates from 1981 to 1992 when almost all timber harvest activity ceased on the Mendocino National Forest. As a result, almost all USFS survey work also came to halt. However, in the last two years, we have coordinated with the Mendocino NF on owl surveys in a few areas.

In the early 90's we estimated that there were 30 to 35 occupied activity centers (then called territories). Based upon the above described analysis, we have 37 occupied activity centers. The acquisition of LP/Pioneer in 2001 probably added 4 to 5 occupied activity centers that were not previously included in the early 1990's estimate because they were outside the 1.3 mile buffer around company land.

The table below summarizes some basic information about the 37 occupied activity centers on our Main Block. Of the 37 occupied activity centers, 41% are on public land, 27% are on Crane Mills property, and the remaining 32% are a combination of both public and private land that the owls are using for nesting and roosting. Our experience over 24 years of surveying has shown that the owls use our land for roosting and foraging whether it fits the current definition of suitable habitat or not. It should be noted that the definition of suitable habitat has changed several times since 1990. In the table below, MNF = Mendocino National Forest and CM = Crane Mills.

AC Ordinal	# Yrs Detected	Date Range of Surveys	Landowner
2	5	1992-2012	MNF
9	4	1992-2012	MNF/CM
10	3	1991-1999	MNF
11	4	1994-2003	MNF
12	13	1989-2012	MNF/CM
13	4	1987-2012	MNF
15	7	1991-2006	MNF
16	7	1994-2007	MNF
17	7	1992-2005	MNF
18	5	1992-2012	MNF
19	7	1996-2004	CM
20	2	1992-2002	MNF
21	8	1992-2012	CM/MNF
22	7	1988-2012	MNF/CM
23	4	1993-2011	MNF
24	9	1992-2012	MNF/CM
27	4	1998-2002	CM/MNF
29	3	1994-2002	CM/MNF
31	5	1994-2013	CM

37	1	1996	MNF
38	1	1992	CM
41	2	1990-1999	CM
43	9	1989-2009	CM
45	4	1998-2012	CM/MNF
47	2	1992-1997	CM
48	5	1992-2004	MNF/CM
53	3	1995-1998	CM
56	6	1991-2012	MNF
57	3	1998-2002	MNF
58	2	1991-1999	MNF/CM
59	3	1996-2012	MNF
61	5	1994-2002	MNF/CM
63	2	1999-2002	CM
70	3	1991-2006	CM
72	1	1998	MNF
73	5	1998-2002	CM
74	2	2001-2002	CM/MNF

Only one barred owl has been located on our main block and this individual owl has remained in the same location for the last five years. This owl is in the upper NE corner of our Main Block at the lower end of timberline adjoining an area that was severely burned in 1976. We have never picked up an NSO in this area since we started surveying in 1989.

Based upon our analysis, we can safely conclude that the NSO population in and around our Main Block ownership is stable and has been over the last 24 years. If our original population had sustained the 2% annual decline cited by the petitioners, the number of occupied activity centers would be in the 20 to 24 range. The barred owl has not constituted a threat to the NSO on our Main Block up to now.

DFW Report Does Not Make Adequate Case That the Petitioned Action is Warranted

The DFW evaluated 12 factors that were identified in EPIC's petition. These factors are summarized in the table below.

Factor	DFW Comment/Conclusion
Population Trend	Some studies, with limited data specific to California, suggest a 2-3% annual decline
Range	Insufficient evidence to suggest any change in range
Distribution	No evidence of change
Abundance	Uncertain connection between apparent declining trend and species abundance
Life History	Uncertainty about the requirements in California populations
Habitat Necessary for Survival	Existing science is varied and complex, and therefore, needs further evaluation
Factors Affecting Survival	Comprehensive analysis and criteria specific to California are absent
Degree and Immediacy of Threat	All of the studies presented are from outside California

Impact of Existing Mgmt Efforts	Uncertain
Suggestions for Future Mgmt	None of the suggestions are specific to California and no scientific support is provided by the petitioners for the recommended actions
Distribution Map	Outdated
Availability and Sources of Information	Not accessible to DFW reviewers at time of petition submission

In the Executive Summary, the Department bases its recommendation to accept the petition upon the information presented regarding population trends and degree of threat. We disagree with that recommendation for the following reasons:

1. Most of the population trend studies are from outside of California where forest types, climate, and regulations governing timber harvest are different. It also appears that those studies were focused primarily on public land, whose management direction, as embodied in the Northwest Forest Plan, differs from that on private land;
2. DFW misrepresents and/or misinterprets population trend data from several California companies (please refer to their individual comment letters which have been submitted to the Commission);
3. Our company experience over the last 24 years demonstrates a stable population;
4. Threats cited are mostly out of the control of both private landowners and government agencies, namely barred owls and catastrophic wildfire. Habitat loss and/or fragmentation is regulated through the ESA and through the THP review process (i.e. through take avoidance by retention of suitable habitat). It should be noted that the definition of suitable habitat has changed over time.

NSO is Already Protected by Federal Listing Under ESA and Existing State Regulations

The most significant reason for rejecting the petition is that the NSO is already protected by the federal Endangered Species Act (ESA). Petitioners fail to demonstrate how a state listing would provide more or better protection than is already afforded the NSO through the ESA and existing state regulations and regulatory processes (i.e. the Forest Practices Act and Rules). At the very least, a state listing would duplicate time and money spent by all of the parties involved with no demonstrable additional benefit for the protection of the owl. The definition of "take" under the ESA is broader than the definition under CESA in that it includes "harm and harass" as prohibited activities whereas the state definition does not. "Harm and harass" includes modification of habitat, therefore, a state listing would do nothing to increase habitat protection.

The Forest Practice Act and Rules in conjunction with CEQA have provided process and protection for NSO take avoidance that has been successful on private forestland in the state. The USFWS has been and is involved in consultations with private companies. The USFWS has also provided guidelines for and is providing consultation to the Department of Forestry & Fire Protection in the THP review process.

In conclusion, we believe that the Fish and Game Commission needs to ask the following questions before making a decision to accept or reject the petition to list the NSO:

1. What additional protection for the NSO would be gained by listing under CESA that is not currently provided by the existing listing under the federal ESA?
2. If you accept the petition, does DFW have the budget, expertise, personnel, and time to thoroughly evaluate the existing information?
3. If you accept the petition, to what extent will DFW have to reorder current program priorities in order to evaluate the petition within the statutory candidacy period?
4. How would CESA listing mitigate the identified threats to NSO more so than existing regulatory programs given that many of the threats are beyond the authority and ability of landowners, FGC, and DFW to control or influence?
5. What is our fiduciary responsibility with regard to the taxpayer's money if we spend it on a duplicative listing petition evaluation?

It is our recommendation that the Commission take the prudent action of rejecting the petition to list the Northern Spotted Owl under the California Endangered Species Act. Thank you for the opportunity to comment.

Sincerely,

Frank Barron

Frank Barron, RPF #2007
Chief Forester

Campbell
TIMBERLAND MANAGEMENT LLC

April 5, 2013

Mr. Michael Sutton, President
California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

RE: Consideration of Candidacy Status of the Northern Spotted Owl

Dear President Sutton and Members:

It is our understanding that on April 17, 2013 the California Fish and Game Commission will consider action on the potential candidacy status of the northern spotted owl (hereafter NSO) based on the recent EPIC petition to list the NSO as threatened or endangered in California and the CDFW evaluations of the petition's report (Agenda Item 6). We reject the California Department of Fish and Wildlife contention that there is sufficient information to accept the petition and that the petitioned action may be warranted. We therefore request the Commission to not accept the petition and establish NSO as a candidate species under California Endangered Species Act until appropriate available and accurate scientific information can be evaluated. Our position is partially based on additional information regarding the status of NSOs on our industrial timberlands in Mendocino County, California, as well as consideration of potential impacts of listing the NSO as a candidate species under CESA.

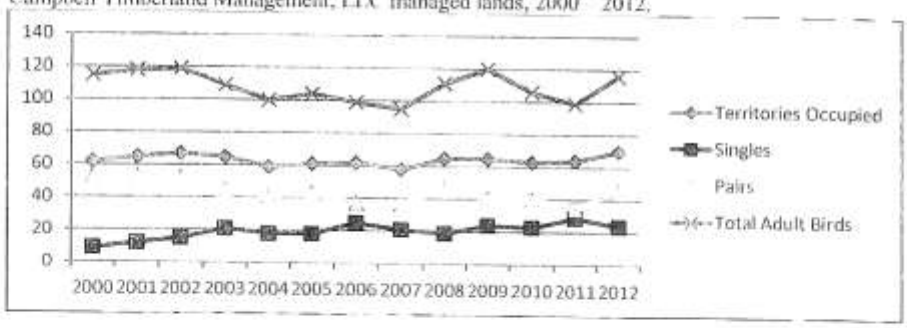
Campbell Timberland Management, LLC (CTM) manages two separate ownerships of approximately 165,000 acres (259 mi^2) of industrial timberlands in the Redwood Coastal Province in Mendocino County, California. The private timberlands consist primarily of mixed second growth/third growth coast redwood and Douglas-fir and native hardwoods. Our NSO (NSO) monitoring program is a long-term study resulting in over 23 years of data on NSO ecology and vital rates such as territorial occupancy, productivity, survival rates, and habitat associations. No known barred owl territories are located on the ownerships even though they have been sporadically detected since 1992.

Although we have not conducted an analysis of annual rates of population change for the NSO on the ownerships, other analyses have been conducted suggesting the populations of NSOs occurring on the ownerships are stable. It is important to note that 1989 and 1990 was the initiation period of the survey effort across the managed landscape and that by 1999 most of the ownerships had been surveyed and NSO territories located. CTM began their survey efforts in 2000 and due to consistency in survey methodology; we considered 2000 as the first year for our analysis (Figure 1). Figure 1 exhibits occupancy trends at known NSO territories with annual numbers of adults, pairs, and single NSOs. Note the fluctuations in numbers of occupied territories and NSOs through time. CTM believes, based on their studies of factors influencing NSO detection probabilities and occupancy dynamics, that these fluctuations are influenced by annual, region wide reproductive trends, which in turn may be influenced by annual variation in weather, as observed in other studies conducted elsewhere for the NSO. For example, we found that positive nesting status of NSO had the greatest influence on pair detection probabilities while detection probabilities was lowest for non-nesting pairs during night surveys. Note the

relatively lower number of NSO pairs detected in 2006 and 2007, where we observed much lower than average nesting attempts in those years.

In addition, no change in NSO crude density was observed across the landscape. In 2000, crude density was approximately .444 NSOs mi^2 while in 2012 crude density of NSOs was approximately .448 mi^2. Even though our analyses are not robust indicators of annual rates of population change as they do not consider contributions of variables such as immigration, productivity, and other vital rates in open populations, it provides evidence of no discernible decline of NSOs in the study area regardless of contributory effects.

Figure 1. Occupancy trends of NSO territories and total numbers of adult, pairs, and single NSOs on Campbell Timberland Management, LLC managed lands, 2000 – 2012.



Our concerns of listing the NSO as a candidate species under CESA also include the following:

- Potential impacts to landowners with existing or developing programmatic letters of Technical Assistance from the USFWS, NSO Resource Plans, NSO Management Plans, HCPs and Safe Harbor Agreements.
- The potential lack of a 2084 Incidental Take Permits once the owl is listed as a candidate species under CESA thereby impacting NSO survey, monitoring, and research programs across our ownerships and the state.
- Potential significant interruption of timber harvesting, maintenance and restoration projects resulting in adverse direct and indirect economic effects.

Thank you for the opportunity to comment on this matter.

Sincerely,

Douglas Meekins
Wildlife Resource Manager
Campbell Timberland Management, LLC

MICHIGAN-CALIFORNIA
TIMBER COMPANY

P.O. Box 766
Yreka, CA 96097
Phone: (530) 842-2310
Fax (530) 842-3825

April 11, 2013

Sonke Mastrup
Executive Director
California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

RE: NSO Occupancy and Population Information, Michigan-California Timber Company

Dear Mr. Mastrup,

The Michigan-California Timber Company manages approximately 114,700 acres in Siskiyou, Trinity, and Shasta counties, California. The entire ownership lies within the range of the federally Threatened northern spotted owl (*Strix occidentalis caurina;* NSO). Since 1995, the Company has successfully operated under a Spotted Owl Management Plan (14 CCR 939(e)). In addition to completing annual surveys and monitoring, the Company has been involved in a number of research projects and published papers regarding NSOs. As discussed below, according to the DFG NSO database (CNDDB BIOS Database Version 4.18) there are 55 historic NSO activity centers located within 0.5 miles of the ownership.

In an attempt to detect changes in owl numbers and site occupancy near the ownership over time, we compiled and evaluated data associated with the 55 NSO activity centers located within 0.5 miles of the ownership from year 2000 through 2012 (13 years). This assessment included review of DFG's NSO database, survey and monitoring data forms, data provided by adjacent landowners and the Forest Service, and data in our in-house NSO GIS data base. Although this analysis was coarse due to annual variation in survey effort (not all sites are surveyed every year) and results, and did not account for differences in the detectability of owls during good reproductive years versus poor reproductive years, it does indicate a more or less stable population in terms of site occupancy, and clearly shows that owls near the ownership are not experiencing the approximate three percent annual decline purported elsewhere within their range. A 3% annual decline would represent a cumulative decline of approximately 32% over the last 13 years.

Site Occupancy

Site occupancy is based on the results of protocol surveys and the presence of a pair or resident single owl, as defined by the protocol for the sites beginning in year 2000. Site occupancy does not reflect breeding status. Sites with nighttime detections only, sites that were surveyed by the U.S.D.A. Forest Service, but they did not provide the data, along with sites that weren't surveyed, were excluded from

the analysis for those year(s). Sites where barred owls (*Strix varia*) were detected were also excluded from this analysis for that particular year as this could have negatively affected response rates of NSOs or reflect the potential displacement of NSOs by barred owls which the company has no control over (barred owls were only detected at three sites between 2000 and 2012). Verified status includes confirmed pairs, territorial singles, and confirmed vacant. The percent occupied is simply the number of verified occupied sites divided by the total number of verified sites. Although this is fairly coarse analysis, and assumes equal detectability in all years, it does show a fairly steady occupancy rate of owls on the ownership over the past 13 years.

For example, in year 2000, 22 sites were surveyed (that met the criteria discussed above) of which 11 (50%) were occupied by one or more owls (10 pairs, 1 single; 21 adults owls total). In 2012, 24 sites were surveyed (that met the criteria discussed above) of which 12 (50%) were occupied by one or more owls (10 pairs, 2 singles; 22 adult owls).

Owl Numbers

The number of adult owls recorded in the vicinity of the ownership has ranged from a low of 21 in 2000 (22 sites surveyed), to a high of 36 in 2002 (31 sites surveyed). In 2012, 22 adult owls were recorded (24 sites surveyed). The number of owls recorded each year is dependent on a number of factors, including the amount of area surveyed, the number of activity centers surveyed, barred owls, and the detectability of owls in good reproductive years vs. poor reproductive years. Using the number of owls per site surveyed as an index shows a low of 0.60 adults owls/site in 2009 and 0.77 in 2004, to a high of 1.17 and 1.16 in years 2001 and 2002, respectively. In 2000, there were 0.95 adult owls per site surveyed (21 owls vs. 22 sites surveyed) while in 2012, there were 0.92 adult owls per site surveyed (22 owls vs. 24 sites surveyed). The 13 year mean was 0.86 adult owls/site surveyed.

Summary

Based on our review of available data associated with the 55 historic NSOs activity centers located within 0.5 miles of the MCTC ownership, we have concluded that our owl population is dynamic, yet stable. As shown in the attached table, specific site occupancy is variable for some sites, while others show high levels of consistency. Should you have any questions, please contact me at the number above.

Sincerely,

Dirk Embree
Wildlife Biologist

Sierra Pacific Industries

Forestry Division • P.O. Box 496014 • Redding, California 96049-6014
Phone (530) 378-8000 • FAX (530) 378-8139

April 7, 2013, June 27, 2013

Sonke Mastrup
Executive Director and the
California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

Re: NSO Petition for listing under the California Endangered Species Act.

Dear Mr. Mastrup, Commissioners:

Sierra Pacific Industries owns forestland in the Coast and Cascades Ranges as well as the western edge of the Modoc Plateau which contains suitable habitat for the Northern Spotted Owl, (*Strix occidentalis caurina)(NSO)*. We believe the management of our forestland provides sustainable habitat for all wildlife species, including the NSO.

After reviewing the petition to list the species, the Department of Fish and Game's (Department) evaluation of the petition, our analysis of the literature, and the statutory criteria which qualifies a species for listing, we conclude a reasonable person would choose to not list the species.

The NSO is not in serious danger of becoming extinct throughout all or a significant portion of its range in California due to loss or change of habitat. Throughout the majority of its range in California, even the Barred Owl is not currently a significant impact. The petitioner's most unsupportable claim is that timber harvesting in California is the most significant threat. This claim is completely unsupported by the fact that timber harvest has been regulated to prevent take for the last 23 years. In that effort every timber harvest proposal over that time period has been subject to analysis by appropriate agencies and been determined to not take under the federal definition of take. In fact the USFWS, the responsible agency for oversight on such actions has not even tried to enforce or make a claim that prohibited take of the NSO has ever occurred in California in the 23 years since listing under the ESA (note: the Service has undertaken such actions outside of California).

Other decision criteria in the endangered species statute call for analysis of exploitation, predation, competition, or disease. The petition does not address these issues and the Department does not cite them as being significant in their analysis of the petition. We conclude there is no affect to NSO from exploitation, predation, competition, or disease.

We urge the Commission to reject the petition.

Spotted Owl Populations Stable

In the unlikely situation that the commission does proceed to candidacy status for the NSO, SPI would like to summarize recent efforts to document if impacts to the species maybe occurring at scales greater than the individual harvest plan. SPI in cooperation with and at the request of the USFWS undertook a 5 year landscape survey strategy to look at potential NSO density changes over time. The study area, 170,000 acres of SPI ownership, was surveyed to protocol standards over the 5 year period from 2003-2007, the survey effort is currently being extended to cover the period 2011-2013(to meet the 3 year protocol requirement). The detailed results of that effort will be presented to the Department and to the Commission if a status review of the NSO is begun. The study results (currently in review) indicated over the 23 years to date since 1989, the study area started with an estimated 42 NSO occupied activity centers, and the latest estimate is that there are 46 NSO occupied activity centers, demonstrating a stable population while using option 939.9(g) pursuant to the current FPRs. In 2011 and 2012, while most other study areas in California showed very poor reproductive success due to bad spring weather, of these 46 occupied ACs 18(two reproduced both years for a total of 20 nests) were determined to have successful reproduction (producing a minimum observed count of 33 young).

Potential Health and Welfare Impacts

If the Commission were to proceed to candidacy without providing the CFA requested 2084 protection for activities conducted pursuant to the Forests Practice Act with a 23 year record of never causing ESA defined take, the potential impact on our company employees, our contractors and the rural economies of California within the NSO range would be devastating. As the Commission is well aware, EPIC, CBD and other groups look for every opportunity to challenge CALFIRE's approvals of THPs in the superior courts of California. In so doing, they invariably seek preliminary injunctive relief or a stay to prevent the approved harvesting from going forward pending resolution of their suit. If such preliminary relief is granted, timber harvesting may not go forward. If that were to occur 125 million board feet (MMBF) of SPIs annual sustainable harvest level that originates within the NSO range could be impacted. Such an SPI volume reduction alone would result in a $45.5 million dollar impact to SPI sawmill employees ($17.5 million), its contractors ($27.3 million) and the rural county yield taxes ($.7 million) forgone. If similar impacts were to occur to other landowners that we purchase logs from as well, 3 SPI sawmills with approximately 750 employees would be curtailed.

Sincerely,

Edward C. Murphy, RPF # 2066
Manager, Resource Information Systems
Sierra Pacific Industries

MENDOCINO

▸ Mendocino Redwood Company, LLC

UKIAH FORESTRY
P.O. Box 996
850 Kunzler Ranch Road
Ukiah, CA 95482
(707) 463-5110
FAX (707) 463-5530

FORT BRAGG FORESTRY
P.O. Box 489
32601 Holiquist Lane
Fort Bragg, CA 95437
(707) 962-2800
FAX (707) 964-8828

NAVARRO ROAD DEPT.
P.O. Box 315
1000 Masonite Road
Navarro, CA 95463
(707) 895-2730
FAX (707) 895-3314

www.mrc.com

Mr. Michael Sutton, President
California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

April 5, 2013

Subject: Potential Candidacy Status of the Northern Spotted Owl and Spotted Owl Population Trends for Mendocino Redwood Company Forestlands

Dear President Sutton and Members:

Thank you for the opportunity to provide northern spotted owl (*Strix occidentalis caurina*; NSO) population trend information for Mendocino Redwood Company (MRC) forestlands as the commission considers the NSO for candidacy under the California Endangered Species Act (CESA). A primary issue for MRC concerns several statements in the California Department of Fish and Wildlife's (DFW) petition evaluation claiming that spotted owl populations are declining on MRC lands (mentioned on pages 3 and 5). In fact, our survey and monitoring information indicates that a stable population of spotted owls resides on MRC lands. MRC has contacted the DFW at several levels regarding these statements and provided their staff with spotted owl population trend information that is routinely provided to other agencies such as the United Stated Fish and Wildlife Service (Service). It is our understanding that the DFW will correct the record by disclosing errata in their petition evaluation before the commission.

MRC owns 228,500 acres of timberlands in Mendocino and Sonoma counties, and was formed in 1998 with the idea that it is possible to run a profitable business and simultaneously adhere to high stewardship and conservation standards. While MRC's business is centered on timber products, it is equally focused on improving habitat for terrestrial and aquatic species (both listed and non-listed) through habitat restoration projects and by voluntarily implementing numerous forestry policies and practices—above-and-beyond current regulatory requirements—that safeguard important natural resources on its landscape. MRC voluntarily sought third-party validation of its sustainable forestry practices by requesting certification from the Forest Stewardship Council ("FSC") in 2000 and has maintained this certification every year since.

For the past 11 years MRC has been developing a joint federal/state multi-species Habitat Conservation Plan/Natural Communities Conservation Plan (HCP/NCCP) with the Service and the DFW. This document covers nine species, including the NSO, and was recently released for public review. Over the past decade in which the HCP/NCCP has been developed, MRC has voluntarily implemented population-level NSO surveys across its landscape and has used the NSO habitat definitions that MRC developed with the USFWS and DFW for inclusion in the HCP/NCCP. MRC has codified its current interim approach to NSO conservation with a Planning Agreement with the DFW (required as part of the NCCP) and a Spotted Owl Resource Plan (SORP), approved by CAL FIRE and formally acknowledged by the Service.

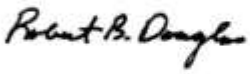
MRC forestlands have a rich spotted owl survey history dating back to 1989, a year before the owl was listed as threatened under the federal Endangered Species Act. MRC's predecessor, the Louisiana-Pacific Corporation, conducted spotted owl surveys from 1989 to 1998, but their survey effort was highly variable at this time and declined substantially several years prior to the creation of MRC. Because MRC has been working on an HCP/NCCP for many years, it was necessary to maintain a consistent level of survey effort of its ownership to have adequate baseline information on spotted owl population trends prior to plan implementation. Occupancy estimates for spotted owl territories show at, minimum, a dynamically stable population trend over the past 13 years (see attached figure), with a few dips and spikes in the annual number of total adult birds, pairs, and singles. Although the total number of birds was influenced by annual fluctuations in the number of pairs and single birds found during a season, territory occupancy remained relatively constant over this time and increased slightly during past three years. Fluctuations in the number of pairs and single birds may be partly

influenced by the population-level reproductive trends in a given year (e.g. higher reproduction in years with warm and dry conditions during early nesting period). Possible reasons for a decrease in occupancy in 2003 may have been due to the cold, wet spring during the spotted owl breeding season, which brought snow to coastal areas in mid-April. In contrast, 2009 was thought to be an above-average reproductive year for spotted owls, but our data show a decline in occupancy because spotted owl survey effort dropped off suddenly in May as a result of employee layoffs precipitated by the national recession. During the past three years nocturnal survey effort has increased slightly and the number of single birds has increased relative to the number of pairs, which have remained stable. Overall, spotted owl occupancy patterns on MRC lands show no indication of declining trends over the past 13 years, and are further corroborated by similar population trends documented on adjacent lands managed by Campbell Timberlands Management.

Finally, considering a species as a potential candidate for listing under CESA should be based on current and accurate biological information for the appropriate jurisdiction. As the DFW noted in their petition evaluation, the petitioners do not provide current population and distribution data for the northern spotted owl in California. At the same time, DFW incorrectly interpreted past annual reports from MRC as showing a declining NSO population trend. The data presented in these reports actually indicate that the spotted owl population on MRC land is, at minimum, stable. Based on the insufficiency of the information presented by the petitioners, and the incomplete review of all available NSO data by the DFW, MRC requests that the commission deny candidacy status to the northern spotted owl, or at least delay such a decision until all relevant information can be properly evaluated and considered.

If you have any questions about the information presented in this letter, please feel free to contact me by phone (707-962-2908) or email (rdouglas@mendoco.com).

Sincerely,

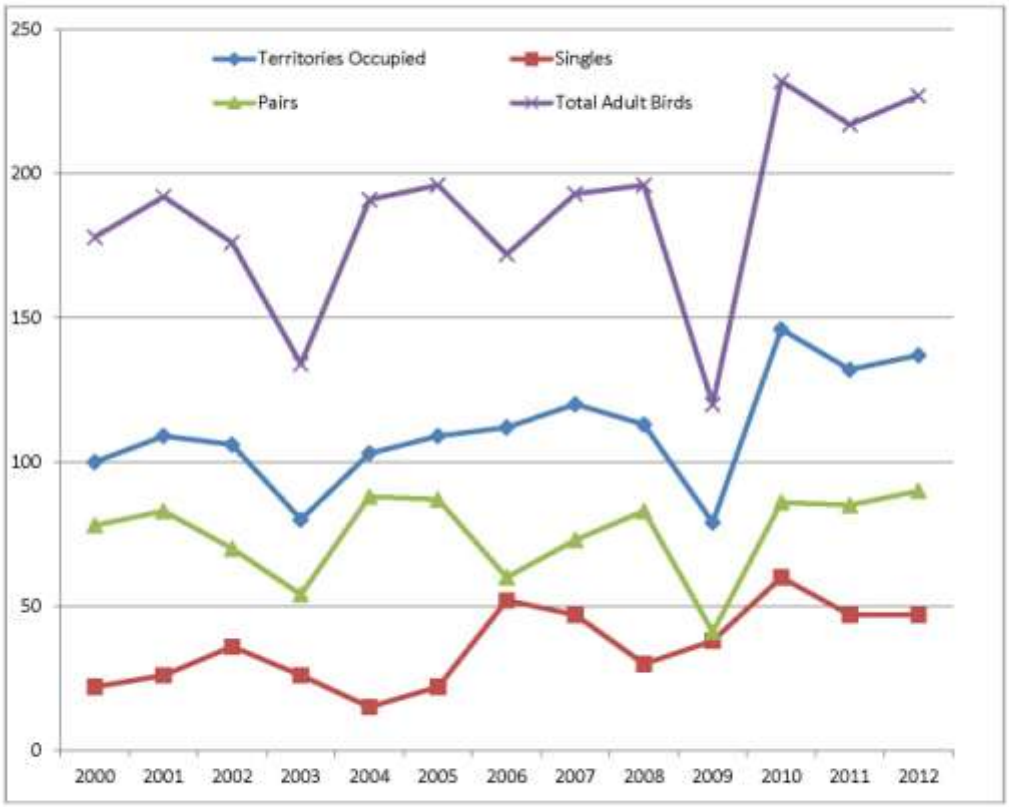


Robert B. Douglas
Forest Science Manager
Fort Bragg Forestry Office

Enclosure

ec: Mike Miles and Mike Jani

Northern spotted owl occupancy trends for Mendocino Redwood Company forestlands, 2000-2012. The numbers reflect the total numbers of territories occupied, which are further broken down into total number of adults, pairs, and single birds.



Humboldt Redwood™

Main Office
P.O. Box 37
Scotia, CA 95565
(707) 764-2222

Forest Operations
P.O. Box 712
Scotia, CA 95565
(707) 764-2330

4 April 2013

Mr. Sonke Mastrup
Executive Director
California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

RE: Petition to List the Northern Spotted Owl as Threatened or Endangered Under the California Endangered Species Act

Dear Mr. Mastrup:

This letter is to provide you with information regarding surveys, monitoring, and current population status of the Northern Spotted Owl (*Strix occidentalis caurina*, NSO) on approximately 208,000 acres of Humboldt Redwood Company (HRC) forestlands in Humboldt County, CA, relative to the subject petition.

Simply put, we do not believe that the subject petition does its job of providing sufficient information to demonstrate that listing the NSO is warranted. Similarly, we do not believe that the Department of Fish and Wildlife's (Department) evaluation accurately summarizes the available information on NSO population trends on HRC lands in reaching a conclusion that the petitioned action may be warranted.

Chief among our concerns is that, among the factors considered in evaluation of the petition, the Department relies upon information discussed in the petition and evaluation to conclude that the abundance of NSO "may have declined". More specifically, the Department states that annual reports from HRC, Mendocino Redwood Company (MRC), and Green Diamond Resource Company (GDRCo) "show a steady decline in population for these regions". However, based upon the measures of NSO population discussed in HRC annual reports, there does not appear to be evidence of a steady decline, and to the contrary there appears to be a stable or slightly increasing number of NSO.

Briefly, as background, HRC (and its predecessor, the Pacific Lumber Company) have conducted extensive surveys and monitoring of the NSO since the federal listing of the species in 1990. Early efforts focused on U.S. Fish and Wildlife Service (Service) endorsed protocol surveys of potential habitat that were intended for harvest. From the listing of the NSO until 1999, consultation with the Department of Fish and Wildlife (Department) and/or the Service was conducted in order to avoid prohibited take of the NSO when conducting timber harvest operations. Numerous consultations were completed successfully without resulting in the take of NSO.

HRC's multi-species Habitat Conservation Plan, which conserves the habitat of the NSO and other species (HCP) was approved by the Service in 1999. For the past 14 years, HRC (and the Pacific Lumber Company) have implemented the conservation measures in the HCP, including extensive survey measures to avoid take, and application of more than 27,000 acres of no harvest zones, including NSO core areas, riparian management zones, and old growth/second growth set-asides. In addition, the HCP established more than 20,000 acres of limited harvest, high canopy retention zones on the HRC lands. Other take avoidance measures include seasonal buffers around all known NSO sites, pre-harvest NSO surveys, and an extensive monitoring program that includes annual reports for federal and state agencies.

HRC has, through our surveys and monitoring over time, found that HRC's forestlands contain a very high density of NSO occurring on the managed landscape. We currently have approximately 203 NSO activity sites[1] on the forestlands. While the total number of activity sites shows annual variation, it has

[1] An activity site or center is the location where a pair, or single, NSO nests or roosts, roughly equivalent to their territory.

Humboldt Redwood™

Main Office
P.O. Box 37
Scotia, CA 95565
(707) 764-2222

Forest Operations
P.O. Box 712
Scotia, CA 95565
(707) 764-2330

remained fairly stable over time. The Department's evaluation of the listing petition[2] contains a statement that annual reports from HRC and others indicate a steady decline in population in this region over at least a 10-year period. HRC's annual reports include two simple measures of the population: total NSO activity sites and total number of NSOs based on our surveys (number of NSO pairs, single adults, and juveniles).

Prior to HCP implementation the level of survey effort was dependent on harvest acreage and was therefore somewhat inconsistent. Since HCP implementation in 1999 the level of effort has been more consistent, and has followed the same sampling strategy since 2003. Thus, the information on the HRC NSO population presented below is shown from 2003 to 2012 for purposes of consistency, and, more importantly, addresses the 10-year period referenced by the Department in their evaluation.

The total annual number of NSO sites is shown in Figure 1, with a linear trend line indicating a slightly increasing trend (range 173 – 203, mean = 187.3).

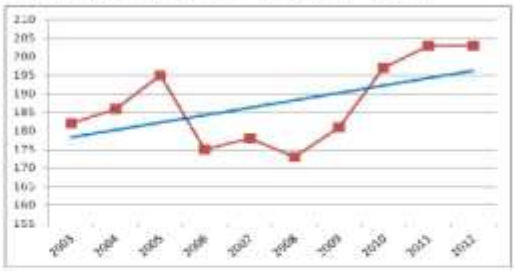


Figure 1. Total NSO sites by year on HRC lands, 2003 - 2012.

The second measure of population size that we report annually is the total number of NSO for those sites that are visited to determine occupancy using the current sampling approach. Figure 2 shows the annual total number of NSO, with a linear trend line that is stable. From 2003 to 2012 the range was from 210 – 280 NSO, with a mean of 245.3.

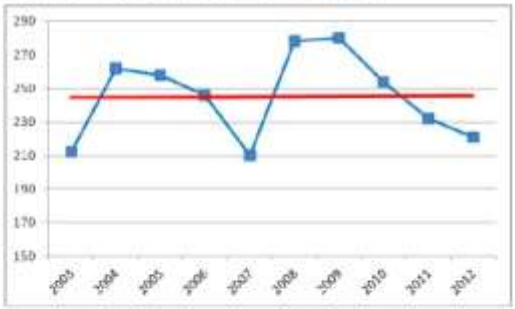


Figure 2. Total NSO by year on HRC lands, 2003 - 2012.

[2] Report to the Fish and Game Commission: Evaluation of the Petition from the Environmental Protection Information Center to List the Northern Spotted Owl as Threatened or Endangered under CESA (January 2013).

Humboldt Redwood™

Main Office
P.O. Box 37
Scotia, CA 95565
(707) 764-2222

Forest Operations
P.O. Box 712
Scotia, CA 95565
(707) 764-2330

As illustrated by the figures above, information presented in the HRC annual reports does not indicate a declining population over the last ten years.

In addition to the NSO population trend in California, the Department's evaluation focuses on several other factors, including range, distribution, abundance, and life history requirements in reaching their conclusion that the petitioned action may be warranted. For each factor considered, the Department acknowledges that there is uncertainty, or weak to no evidence that the NSO population in California is likely to be in serious danger of extinction throughout all, or a significant portion of its range.

Therefore, in summary, we believe that neither the petitioners nor the Department has clearly shown that the petitioned action is warranted, and the petition should be denied, or a decision on the petition should be postponed, until such time as sufficient information can be gathered and evaluated.

Please contact me at 707-764-4299 or schinnici@hrcllc.com if you have any questions about this information.

Sincerely,

Humboldt Redwood Company, LLC

Sal Chinnici
Forest Sciences Manager

Enclosure

ec: Mssrs. Michael Jani and Michael Miles, HRC

GREEN DIAMOND
RESOURCE COMPANY

California Timberlands Division
P.O. Box 1089 Arcata, California 95518-1089
T (707) 888-4400
F (707) 888-3710
greendiamond.com

April 12, 2013

Sonke Mastrup
Executive Director
California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

Re: Comment Urging Rejection of Petition to List the Northern Spotted Owl for Protection Under the California Endangered Species Act

Dear Mr. Mastrup:

In September 2012, the California Fish and Wildlife Commission was presented with a petition to list the northern spotted owl (*Strix occidentalis caurina*) ("NSO") for protection under the California Endangered Species Act ("CESA"). Pursuant to Fish & Game Code Section 2072.3 and 14 CCR 670.1, the Commission will determine whether the petition contains sufficient information to determine whether the petitioned action may be warranted.

Green Diamond Resource Company ("Green Diamond") urges the Commission to reject the petition because it does not contain sufficient information to determine whether NSO listing may be warranted. The petition fails to provide the Commission with sufficient information on: (1) the status of the NSO in California; (2) the impact of existing management efforts that protect and conserve the NSO in California; and (3) suggestions for future management to protect and conserve NSO in California.

Status of the NSO in California

The petition broadly addresses the status of and threats to the NSO throughout its range, but simply fails to provide the Commission with sufficient information on the status of the NSO in California.

In its *Report to the Fish and Game Commission: Evaluation of the Petition from the Environmental Protection Information Center To List Northern Spotted Owl (Strix occidentalis caurina) As Threatened or Endangered Under the California Endangered Species Act* (January 2013), the California Department of Fish and Wildlife correctly finds that the petition addresses the range-wide status of the NSO based, in large part, on data from Washington and Oregon, but fails to provide sufficient information on many of the factors that must be considered under the CESA to evaluate the NSO as a native California species. For example:

"The Petition does not assess the species' current population trend in California specifically."(p. 4)

"The Petition does not discuss a recent restriction or contraction of the species range, or any changes or stability of the range in California." (p.5).

The Petition does not include direct information on the abundance of northern spotted owl populations in California . . . ." (p. 6).

"The Petition does not specifically describe habitats that exist in California, nor how available habitat types influence northern spotted owl populations fund here." (p. 7).

"While the Petition suggests certain hypotheses, the Department believes, due to the absence of comprehensive analysis and criteria specific to California, that there remains uncertainty at this time regarding the extend of any given northern spotted owl population that these factors, or some combination of them, affect the ability of northern spotted owls to survive and reproduce." (p.. 9).

"The Petition does not discuss historic or recent habitat loss for California." (p. 10).

"The Petition describes habitat loss and decline of preferred prey species range-wide, but does not focus on California habitats or prey species, nor does it present how habitat loss within California may impacrt prey abundance." (p. 11).

*"The Petition does not provide support for its assertion that these two recommended management and recover actions [*listing and recovery plan*] are needed to sustain northern spotted owl populations in California."* (p. 13).

The Commission cannot conclude that the petitioned action may be warranted without sufficient information on multiple factors that must be addressed in a CESA listing petition. Two of those factors are of particular concern to Green Diamond because a finding that the petition action may be warranted will be harmful to NSO conservation if consideration for existing management efforts and opportunities for suggested additional measures are based on deficient information.

Existing Management Efforts.

The petition to list NSO under the CESA fails to recognize existing measures for the protection and conservation of the NSO in California attributable to the requirements of the federal Endangered Species Act ("ESA") that already address threats to the survival, habitat, and conservation of NSO. Existing management efforts to protect and conserve the NSO in California have been and continue to be effective because of the direct requirements of the ESA, and because of the response of the State of California and landowners to the federal ESA listing of the NSO that has been in place for over 20 years.

The NSO has been listed as a threatened species under the federal ESA since 1990. As a result, "take" of NSO (i.e. killing, injuring, wounding, capturing, hunting, harassing or harming of NSO) is prohibited under ESA Section 9 unless authorized by the U.S. Fish and Wildlife Service ("USFWS") under Section 7 or Section 10 of the ESA.

Listing of the NSO under the CESA offers no more protection against NSO take than is already provided by the federal ESA. Under the CESA, "take" is defined as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" a listed species. The definition

of "take" under the federal ESA and the rules implementing that definition encompass the definition of take under the CESA and also include the prohibition of "harm" and "harassment." Harm is defined to include significant habitat modification that results in the death or injury of a listed species by significantly impairing essential behavior such as breeding, feeding, and sheltering. Harass is defined as intentional or negligent acts that create the likelihood of injury to listed species through significant disruption of essential behavior. The take prohibition in the federal ESA is at least as strong as that of the CESA. Furthermore, the federal ESA's take prohibition may be enforced by citizen suit as well as by the United States. Indeed, the petitioners have been a party to such citizen suits and notices of intent to file such suits under the ESA. Listing of the NSO under the CESA will not provide any additional protection against take of NSO nor will it provide an additional opportunity for petitioners or any other person to prevent NSO take by citizen suit under California law.

Section 7 of the federal ESA provides additional protection for NSO in California. It requires that all federal actions that may affect NSO be subject to a consultation between the federal action agency and the USFWS to determine whether the action might jeopardize the continued existence of NSO or adversely affect its critical habitat designated by the USFWS.[1] In the federal consultation process, the USFWS may issue a biological opinion and incidental take statement with mandatory measures and alternatives for the protection of NSO. This process applies to a broad array of federal actions such as federal permits issued to private land owners, any project with federal funding, and management of federal lands.

As a consequence of ESA Section 7 consultation and the National Environmental Policy Act (and other federal land management statutes), federal lands in California with NSO habitat are managed subject to a comprehensive Northwest Forest Plan. The listing of the NSO under the federal ESA was the impetus for the Northwest Forest Plan and national forests, national parks, and other federal lands in California are managed with NSO protection and conservation as a key objective. Listing of the NSO under the CESA will not improve the long-standing federal land management commitments to NSO conservation.

The CESA does not include a consultation requirement similar to ESA Section 7, and listing of the NSO under the CESA would not, therefore, trigger a CESA consultation under state law. However, California law already requires that impacts to the federally listed NSO be considered, avoided, and mitigated under the California Environmental Quality Act (CEQA), which applies to all discretionary state and local government actions in California. In its *Report to the Fish and Game Commission: Evaluation of the Petition from the Environmental Protection Information Center To List Northern Spotted Owl (Strix occidentalis caurina) As Threatened or Endangered Under the California Endangered Species Act* (January 2013), the California Department of Fish and Wildlife recognizes the substantial protection for the NSO in California that already exists under CEQA:

> *The Department currently has no special status classification assigned to the northern spotted owl in California. However, governmental entities and land managers are required to evaluate any potential impacts to native biological resources during CEQA review. Projects that have the potential to impact*

[1] The USFWS designation of critical habitat for the NSO in California was recently updated in 2012. The CESA does not provide for designation of critical habitat.

> *northern spotted owls are required to comply with the California Environmental Quality Act (CEQA) or an equivalent Certified Regulatory Program such as the Forest Practices Act. Not only do projects need to avoid "take" under the federal ESA, CEQA dictates they must be developed to identify and mitigate significant direct and cumulative impacts. The California Department of Forestry and Fire Prevention (CALFIRE) has also developed guidance specific to California to avoid take to northern spotted owls by timber harvest (CALFIRE 2012).*
>
> (pp. 12-13).

Simply put, listing of the NSO under the CESA will not improve on the existing procedures and standards for the protection and conservation of NSO that apply to federal actions and state and local projects in California. However, a listing of the NSO under the CESA does have the potential to interfere with existing conservation efforts dedicated to NSO in California.

In response to Section 10 of the ESA, private land owners in the State of California provide additional and substantial existing management commitments for the NSO through federally-approved habitat conservation plans and incidental take permits (HCPs). Over 700,000 acres of timberlands are currently managed under HCPs specifically developed for the conservation of the NSO and another 200,000 acres are currently proposed for inclusion in such an HCP. A listing of the NSO under the CESA cannot enhance these efforts, but it may interfere with the implementation of HCPs because the covered activities under HCPs, including monitoring and mitigation measures, will require incidental take authorization from the State of California if the NSO is a candidate or listed species under the CESA.

Suggestions for Future Management

Because existing management efforts under the federal ESA and in response to the ESA already protect and conserve the NSO in California, the petition is unable to offer any meaningful and substantive suggestions for future management of NSO and NSO habitat. With no opportunity to improve on existing management measures, petitioners only recommend that the NSO be listed under the CESA and vaguely recommend that the State of California prepare a recovery plan for NSO.

As demonstrated above, listing of the NSO under the CESA provides no protection or conservation benefit beyond existing management measures and it may even disrupt and interfere with implementation of existing HCPs benefiting the NSO. Further, the recommendation of a recovery plan for the NSO is entirely pointless when the USFWS recently completed a comprehensive Revised Recovery Plan for the NSO after an exhaustive analysis and public process. As a result of the Revised Recovery Plan, the USFWS updated its designation of critical habitat for the NSO and federal actions to promote recovery, including the development of a strategy to address the significant threat that the barred owl poses to NSO. The federal barred owl management strategy with the proposed range-wide removal experiments is fundamental for the survival and recovery of the NSO, and it will not be aided or improved by NSO listing under the CESA or a long-term project to develop a California plan for NSO recovery. The USFWS Revised Recovery Plan addresses not only federal lands and actions, but it specifically addresses coordination with state agencies and cooperation with private

landowners implementing or considering HCPs and other conservation commitments. There is nothing to be gained by treating the NSO as a candidate or listed species under the CESA.

Conclusion

Green Diamond does not doubt the sincerity and dedication of the petitioners in their efforts to conserve and protect the NSO, but their petition will provide no benefit to NSO in California. Treatment of the NSO as a candidate or listed species under the CESA will merely create costly regulatory duplication that works against the public resources and private efforts already dedicated to NSO protection and conservation. Green Diamond urges the Commission to weigh the missing facts on existing management efforts identified in this comment letter and reject the petition because it does not provide sufficient information on the status of the NSO in California to find that the petition action may be warranted.

Sincerely,

Neal Ewald, Vice President and General Manager, California Timberlands

July 2, 2013

Mr. Stan Dixon, Chairman
California State Board of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 94244-2460

Re: Northern Spotted Owl Protection Measures Amendments, 2013; Public Hearing 7/10/13

Dear Chairman Dixon,

Campbell Timberland Management, on behalf of Hawthorne Timber Company, strongly opposes the proposal to delete subsection (g) from14 CCR 919.9 [939.9]. Hawthorne Timber Company owns 115,000 acres of timberland in coastal Mendocino County. This ownership is entirely within the range of the Northern Spotted Owl (NSO). Northern Spotted Owls have been monitored and surveyed for over 20 years on nearly all the property Hawthorne Timber Company currently owns.

On February 28, 2013 we sent the Board a letter (incorporated by reference) strongly opposing the Environmental Protection Information Center petition to delete subsection (g) from14 CCR 919.9 [939.9] from the California Forest Practice Rules. Our position remains steadfast that referenced subsection (g) should be retained. The current range of regulatory subsections (a-g) of 14 CCR 919.9 [939.9], in effect since 1990, has resulted in NSO populations that are stable across its range in California, including areas employing use of referenced subsection (g)(see multi-association coalition comment letter).

Retaining subsection (g) within14 CCR 919.9 [939.9] is also extremely valuable for operational reasons. Without referenced subsection (g) there is no other viable mechanism that would allow the plan submitter to provide alternative measures for the protection of the NSO within a THP. While we have not formally used referenced subsection (g) it remains as the procedure most often utilized to provide site-specific protection for NSO that may deviate in some way from standardized or programmatic U. S. Fish and Wildlife Service (USFWS) NSO take avoidance guidance. The flexibility inherent in the application of referenced subsection (g) is appropriate given the range of site conditions and environmental variables associated with providing protection for NSOs in the THP process. The USFWS NSO Take Avoidance Scenarios (2/1/08) also states "while we believe this is the most effective manner in avoiding take, it is likely not the only manner in which take can be avoided. The below scenarios are recommended tools to avoid take, but are not required approaches imposed by the Fish and Wildlife Service." Remember, the requirements specified in referenced subsection (g) are the minimum standards and essentially a framework upon which additional protections measures are incorporated to address site-specific conditions. CAL FIRE over time has provided plan submitter's guidance on additional information that would improve and expedite review. We believe the rigorous analysis and review required by referenced subsection (g) is consistent with CEQA and ensures that CAL FIRE bases its decision regarding potential take of NSO on substantial evidence in light of the whole record.

Therefore, referenced subsection (g) is an integral procedure for providing NSO protection within the THP process and we strongly advocate for its retention.

Thank you for the opportunity to comment on this proposed rule package.

Sincerely,

Peter F. Ribar

Peter F. Ribar
Resource Manager

90 West Redwood Avenue ● P.O. Box 1228 ● Fort Bragg, California 95437 ● 707-961-3302 ● Fax: 707-964-3966 ● www.campbellgroup.com