



**MANAGING NORTHERN SPOTTED OWL HABITAT
IN DRY FOREST ECOSYSTEMS WORKSHOP
SYNTHESIS REPORT**

**Report prepared by:
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See website: <http://www.fws.gov/oregonfwo/> for Appendices and Powerpoint presentations

Appendix A: Workshop summary (Overview and summary of exercises)

Appendix B: Raw notes from interagency notetakers, exercises, questionnaires and evaluations.

Acknowledgements

We would like to express our gratitude to a number of people who provided considerable time and effort in the planning and implementation of the Managing Northern Spotted Owl Habitat in Dry Forest Ecosystems Workshop. We would like to thank our cooperating agencies, the U.S. Forest Service and the Bureau of Land Management for their cooperation and support in putting on this workshop. Thank you to the U.S. Fish and Wildlife Service's Oregon Fish and Wildlife Office for providing the funding and support to hold this workshop. In particular we want to thank all of the speakers who provided excellent thought provoking presentations. And finally, a special thanks to the Fish and Wildlife Service staff Jim Thraikill, Doug Laye, Jeff Krupka, Sandra Ackley, and Jennifer O'Reilly for all of their efforts to plan and carry out this workshop.

I. Introduction

The Fish and Wildlife Service in cooperation with the Forest Service and the Bureau of Land Management (BLM), convened a two-day workshop in May 2005, titled “Managing Northern Spotted Owl Habitat in Dry Forest Ecosystems” (Workshop). The Workshop was intended to address the complex issues of forest and fuels management within and adjacent to northern spotted owl (spotted owl) habitat. The Workshop was directed at dry forest resource specialists (biologists, silviculturist and fuels/fire planners) and land managers from Federal and State agencies, Tribes, non-profit organizations, and educational research facilities.

The loss of late-successional or old growth forest due to timber harvest was recognized as a major threat to the northern spotted owl, leading Federal land management agencies to adopt the 1994 Northwest Forest Plan (NWFP). Since its inception, the NWFP has achieved several important goals for spotted owl conservation. Most notably, the NWFP has protected the majority of existing suitable owl habitat on federal lands from timber harvest through the establishment of Late Successional Reserves (LSR) (i.e., large blocks of mature and old-growth forest) (Courtney et al. 2004).

The NWFP Record of Decision (ROD) recognized that there were areas of the warmer, drier physiographic provinces (i.e., the Washington and Oregon Eastern Cascades, the California Cascades and the Oregon and California Klamath Provinces) where decades of fire suppression and timber harvest had resulted in changes to forest composition and structure, increasing the potential for stand-replacing wildfires in areas that had been reserved for late-successional species. Standards and Guidelines (C-12 and 13) in the ROD addressed management of LSRs within these provinces to reduce the risk of large-scale disturbances such as wildfire (USDA and USDI. 1994).

Despite provisions in the NWFP to actively manage LSRs in the dry provinces, few acres have been treated within reserves to reduce uncharacteristic fuel accumulations (Courtney et al. 2004). Recent reports that assess the status of the spotted owl and its habitat (Courtney et al. 2004 and Lint 2005) confirm the importance of late-successional dry forest ecosystems in the Eastern Cascades and Klamath Provinces to spotted owl conservation. These reports also indicate that owl habitat loss will continue as long as the fuels reduction provisions of the NWFP remain under-applied.

In addition to the lack of active management in LSRs, few acres of habitat mapped as suitable for spotted owl outside of LSRs in the dry provinces have been treated. Much of this habitat developed recently due to fire suppression, and is currently at risk to stand-replacement fires, pests and pathogens (Irwin and Thomas 2002). Active management is necessary to reduce these risks and protect the late-successional forest structure. To date, active management and implementation of silvicultural and fuels treatments in and adjacent to owl habitat within and outside of reserves have been delayed due to factors such as inadequate funding, competing management priorities, potential public controversy, and uncertainty regarding the potential impact of treatments (i.e., positive or negative) on the spotted owl and its habitat.

Wildfire resulted in the loss of 2.3 percent of suitable habitat for the spotted owl within the first decade of the NWFP (Courtney et al. 2004). Although the loss of spotted owl habitat due to such uncharacteristically large stand-replacement fires has not been widespread range-wide, it has been locally extensive. For example, on the Deschutes National Forest in the eastern Oregon Cascades Province, large uncharacteristic wildfires in 2003 resulted in the loss of 14,530 acres of suitable habitat for the spotted owl. The acreage of owl habitat lost to these fires in 2003 was greater than all of the acres consulted on for harvest in the eastern Oregon Cascades Province since 1994.

The paradox land managers face today is a need to treat spotted owl habitat in order to save it. Management and regulatory agencies recognize and are attempting to address the fuels treatment in dry forests. However, it will take much time, planning, financial resources, and interdisciplinary and interagency collaboration to overcome almost a century of effective fire suppression to return the landscape to within its natural range of variability.

There is a recognized need for additional information gathering and exchange on methods to treat owl habitat in the dry forests. The Service, BLM and USFS provided an opportunity to begin this exchange with the workshop: Managing Northern Spotted Owl Habitat in Dry Forest Ecosystems. Objectives of the Workshop were to: 1) enhance the science – management dialogue, 2) improve future forest management in the dry forest provinces based on the Workshop discussions, and 3) produce information for a synthesis report that includes recommendations for use by the Federal agencies.

II. Workshop

The two-day Workshop disseminated information on science related to treatment of spotted owl habitat in dry forest ecosystems and provided interactive exercises to promote discussion. On the first day of the Workshop, both researchers and land management personnel presented applied research and case studies of silvicultural and fuel treatments within dry forest habitats. The presentations listed in Figure 1 provided:

- A science foundation for the current status of the spotted owl in dry forest ecosystems,
- research on fuels reduction and re-introduction of fire into dry forests ecosystems, and
- case examples of treatments to conserve dry forest biodiversity and implement landscape-level approaches to treatments.

The science session provided an overall context of why resource managers and decision-makers should be concerned about the current fire-risk and forest-health situation in the dry provinces within the spotted owl's range. Speakers talked about the historic range of variability in dry forests, considerations for fuels treatments at the stand and landscape level, and NWFP implications. Presentation topics also included habitat management considerations for the spotted owl. The speakers suggested that the impacts of thinning and burning can be predicted (to some degree), and may have some negative environmental consequences. These impacts need to be evaluated against the option of "no action", recognizing that "no action" is not a risk-free option. Speakers also indicated that the landscape challenge is to define how much of a landscape needs to be treated, and where strategic fuels treatment will be most effective at reducing the risk of extreme wildfires.

Figure 1. Workshop Agenda

**MANAGING NORTHERN SPOTTED OWL HABITAT IN DRY FOREST ECOSYSTEMS
A WORKSHOP FOR FEDERAL LAND RESOURCE SPECIALISTS AND MANAGERS**

May 24 & 25, 2005, Eagle Crest Resort, Redmond, OR U.S. Fish and Wildlife Service

Tuesday, May 24, 2005	
Welcome Nancy Gilbert, USFWS Field Supervisor, Bend Field Office	8:00 – 8:05
Introduction Sarah Madsen, USFS Region 6 TES Program Manager	8:05 - 8:15
Current Situation of Northern Spotted Owls in Dry Forest Ecosystems Jim Thraillkill, USFWS, Oregon State Office	8:15 – 8:45
Reintroduction of Fire to Dry Forest Ecosystems: The How, Where and Why Dr. Jim Agee, University of Washington	8:45 - 9:30
Current Research on Fuels Reduction in East Side Forests Dr. Andrew Youngblood, USDA PNW Research Station, LaGrande	9:30 – 10:00
Conserving Old Forest Biodiversity in Dry Fire-Prone Landscapes: Implications for the Northwest Forest Plan Dr. Tom Spies, USDA PNW Research Station, Corvallis	10:15 – 10:45
Northern Spotted Owl Considerations for Managing Dry Forest Habitat Dr. Eric Forsman, USDA PNW Research Station, Corvallis	10:45 – 11:15
A Landscape Level Approach to Managing Dry Forest Northern Spotted Owl Habitat: A Working Concept Dr. Norm Johnson, Oregon State University (speaker) Dr. Jerry Franklin, University of Washington (by telephone)	11:15 – Noon
An Effective Approach to ESA Consultation and Planning for Projects in Northern Spotted Owl Habitat Doug Laye, USFWS, Klamath Falls Fish and Wildlife Office	1:15 – 1:45
Landscape Treatment Prioritization to Reduce Northern Spotted Owl Habitat Loss from Wildfire: A Test Case Using Fire Regime and Condition Class on the Klamath RD Dr. Gregg Riegel, Ecologist, Central Oregon Ecology Program, Deschutes NF (co-authors Jane Kertis, Sarah Malaby, John Foster, and Lois Shoemaker)	1:45 – 2:15
Habitat Treatments on the Deschutes National Forest Joan Kittrell and Jim Stone, Crescent RD, Deschutes National Forest	2:15 – 2:45
Habitat Treatments on the Mt. Hood National Forest Rich Thurman, Mt. Hood National Forest	3:00 – 3:30
Habitat Treatments on the Wenatchee National Forest Jeff Krupka, USFWS, Wenatchee Field Office and Dr. William Gaines, Wenatchee NF	3:30 - 4:00
Habitat Treatments and a Northern Spotted Owl Habitat Conservation Strategy Brian Tandy, Sisters RD, Deschutes National Forest	4:00 – 4:30
Panel/Speaker Discussion and Q&A/Wrap-up	4:30 – 5:00
Wednesday, May 25	
Developing an Analytical Approach to Managing Northern Spotted Owl Habitat in Dry Forest Ecosystems. Utilizing core principles, practices, and techniques learned from Day 1, workshop participants will work through processes to develop and implement stand and landscape treatments in northern spotted owl habitat.	8:00 - 3:00

Case studies of habitat treatments within dry forest owl habitat were also presented. The case study session illustrated the realities of planning and implementing silvicultural and fuels treatment projects in the dry forest provinces. The presenters were most concerned about achieving larger, landscape scale objectives. Currently, there is no framework at a landscape scale to suggest priority treatment areas from a forest health or spotted owl habitat perspective. Overall, Workshop speakers indicated that a primary challenge is to develop socially acceptable treatments to sustain these dry forest landscapes into succeeding centuries.

The second day of the Workshop provided interactive exercises to promote discussion amongst resource management professionals from multiple disciplines. An interagency group (Forest Service, Bureau of Land Management, Fish and Wildlife Service, and the Oregon Department of Forestry) of note takers presented key points from the first day of the workshop to the audience. Details about the Workshop, group exercises, raw notes and evaluations may be accessed via the following Fish and Wildlife Service website: <http://www.fws.gov/oregonfwo/>. Powerpoint presentations from the Workshop are also posted at this website.

Following the overview, Workshop participants engaged in three exercises aimed at exploring approaches to manage dry forest spotted owl habitat. Two exercises divided the audience into working groups. The first exercise organized participants into working groups arranged by specialty (i.e., biologists, managers, silviculturists, and fuels planners) to address questions that focused on the theme of the Workshop. Each specialist group reported their ideas to the greater audience after completing the exercise. The second exercise reorganized participants into interdisciplinary groups to conduct a hypothetical analysis of a project area with the intent to manage owl habitat, protect an owl activity center, and reduce forest fuel accumulations. Each interdisciplinary group reported their ideas to the audience. The third exercise promoted group discussion amongst all Workshop participants by asking the audience to answer and discuss questions addressing spotted owl habitat management in dry forest ecosystems.

Workshop Attendance and Evaluations

Attendees of this Workshop represented multiple disciplines from Federal and State agencies, Tribal, non-profit organizations, and educational research facilities. Geographically, participants traveled from central Washington, eastern and western Oregon, and from northern California. The viewpoints of participants were diverse, which facilitated energetic workshop discussions and interactive breakout sessions.

This Workshop was well received by attendees. Of returned evaluations, 82 percent stated they will actually practice on-the-ground implementation of the concepts heard at the Workshop. Seventy-nine percent of the participants placed the Workshop's value to their job position in the moderate-to-very valuable category. Participants provided valuable recommendations on the daily evaluation sheets for future Workshops. One repetitive theme voiced by attendees is that future interagency gatherings need to occur. Participants recognized that Workshops such as this play a key role in distributing new information, sharing management implementation techniques, and provide an opportunity for resource professionals

from different backgrounds to explain their specialty roles, listen to those from other disciplines and discuss promising methodologies.

III. Workshop Themes

The following text represents themes that emerged from the Workshop. The themes were developed by evaluating the repetition of answers to questionnaires, flip chart notes, and common discussion threads encountered during the presentations and group discussions. What follows are the core points of the conversations conducted during the Workshop. The themes capture the context of Workshop discussions and set the stage for recommendations. For a complete accounting of the Workshop group discussions and responses to questionnaires, please see the Appendices A and B on website <http://www.fws.gov/oregonfwo/>.

The major themes include:

- Owl habitat is at risk in the dry forests and is declining due to high fuel loads, mortality associated with insects and disease and stand-replacing fire events. Treatments should be employed to conserve the owl and to achieve overall forest health objectives. There was consensus that “no action” threatens the long-term sustainability of owls and their habitat.
- A recovery plan is needed for the spotted owl to provide specific objectives, goals, and tasks to facilitate the design, prioritization and implementation of dry forest restoration and maintenance projects.
- Provincial plans are needed to provide context for local Forest Plans and watershed plans and to tier ongoing restoration plans to larger provincial spatial and temporal priorities. Provincial plans would identify restoration, maintenance and at-risk areas, and facilitate prioritization of management objectives. Provinces could serve as recovery units for a spotted owl recovery plan.
- Fuels treatments must be prioritized across the landscape in and adjacent to owl habitat at multiple scales. (Provincial, Forest, District, fire regime, and watershed).
- Management needs to occur across the entire landscape to achieve ecological goals. Forest types (e.g., mixed wet conifer) that are most likely to sustain spotted owl habitat should be managed for spotted owls regardless of the land use allocation boundaries. Dry forest types (e.g., Ponderosa pine) should be managed to allow for short fire return intervals and low-intensity fires.
- Spotted owl habitat naturally varies in composition and structure in dry forest areas. Because of this variability there is a need to have an understanding of what constitutes owl habitat (i.e., nesting, roosting, foraging and dispersal) at a local scale. Biological components of this habitat need to be defined in silvicultural terms to facilitate the implementation of treatments that promote development of quality habitat.

- Spotted owl survey information is necessary pre and post treatment. Spotted owl surveys should be conducted in unsurveyed suitable habitat to facilitate prioritization of treatment projects.
- Fuel treatment objectives need to state how forest health will be promoted and the ecological reasons for treatments. Ecological condition should be used to guide fuel treatment objectives. These conditions include Historic Range of Variability, Fire Regime Condition Class, and desired future conditions.
- Determine where fuels treatment and owl habitat management objectives intersect to prioritize projects and maximize limited resources.
- Successful fuels and fire risk reduction to protect and maintain owl habitat will require significant commitment of funding for project planning and implementation, monitoring, and adaptive management. A successful fuel and fire risk reduction effort will require funding for projects outside the wildland urban interface (WUI).
- Interdisciplinary teams need to be interagency and include the Fish and Wildlife Service in early project development. Collaboration should occur at all levels and across agency and non-governmental boundaries.
- Research is needed to improve knowledge where there are gaps in existing information. Workshops should be held to disseminate research results to agency staff and managers. Priority research recommendations include:
 - Post-fire habitat recovery for dry forests and owls.
 - Focus on issues with uncertainty – barred owl, West Nile Virus, population trends, etc
 - Synthesis of information on the existing body of knowledge of prey habitat associations.
 - Need to understand how to develop and manage for owl and prey habitat.
 - Test owl, vegetation, and prey response to various treatments.
 - Adaptive management needs to be implemented (not just talked about).
 - Work with the new Prineville PNW Research Station to address forest fuels and owl issues.

IV. Recommendations

The following recommendations were developed by synthesizing information from the Workshop presentations, group exercises, questionnaires and evaluations. It is evident from the Workshop's questionnaires and discussions that there was a broad spectrum of participants (and their associated values) who attended the Workshop. The spectrum ranged from those that have been and continue to implement fuels treatments/restoration projects to those that were only considering implementation of treatments. These recommendations reflect a diversity of resource disciplines. A summary of the Workshop and group exercises

can be found in Appendix A. See Appendix B, posted on website <http://www.fws.gov/oregonfwo/>, for all details on the workshop exercises and responses to evaluations.

The recommendations below are presented as next-steps and realistic actions that could be taken to address the situation of restoring and maintaining spotted owl habitat in dry forest ecosystems. These recommendations are not in order of priority, however, there is scale associated with them.

- 1. “No action is not an option”. We must continue to move forward.** There was an overwhelming level of agreement that spotted owl habitat is at risk and declining in the dry forests due to high fuel loads, mortality associated with insects and disease, and stand-replacing fire events. Silvicultural treatments should be employed to conserve spotted owl habitat and to achieve overall forest health objectives. Despite uncertainty and potential risk to spotted owl habitat from the effect of treatments there is likely a greater risk of a stand-replacing fire in dry forest habitat where silvicultural treatments are not implemented. A natural fire regime across the landscape should be restored to manage for late-successional forests. The participants indicated that they need to have guidance on where and how to design their projects to fit into the broader context of spotted owl recovery.
- 2. Convene a recovery team to develop a spotted owl recovery plan.** The need for a spotted owl recovery plan was one of the most cited recommendations from Workshop participants. A recovery plan would provide explicit objectives, goals, and tasks that would assist in the design and implementation of dry forest restoration and maintenance of spotted owl habitat.
- 3. Establish interagency provincial teams with the role of setting a provincial context for where fuel reductions would facilitate maintenance and restoration of spotted owl habitat.** Having a provincial context for spotted owl recovery and habitat restoration would enable local administrative units to tier their ongoing restoration projects to the larger provincial spatial and temporal priorities. Workshop participants indicated that they do not know if the restoration activities they are proposing and conducting are necessarily where the priority areas are for spotted owl habitat recovery. Knowing provincial habitat priorities would facilitate developing spotted owl habitat restoration projects at the scale of the local administrative unit.

Although the Workshop did not address the development of the provincial teams, a possible approach to assembling the teams is to establish a Regional Core Team. The Regional Team would consist of wildlife biologists from the Forest Service, Bureau of Land Management, and the Fish and Wildlife Service, and a silviculturist and fuels planner from both the Forest Service and the Bureau of Land Management. The Regional Team should also include a GIS specialist and representatives from the State Forestry Departments. The Regional Core Team would work with local Forest and District level interagency teams (Fish and Wildlife Service, Forest Service, BLM, and State Fish and Wildlife and Forestry Departments) comprised of owl biologists, silviculturalists, and fuels planners. Tribal governments should be invited to

participate in the Interagency Teams. The teams could utilize existing local spatial data and NWFP monitoring report data to develop provincial scale maps that identify priority areas for maintaining and restoring spotted owl habitat. In addition to producing the provincial maps, the teams could establish general silvicultural practices that promote owl habitat development for the respective provinces.

Products generated by the provincial teams would include provincial-scale maps that depict priority areas for restoration and protection in and adjacent to owl habitat through the use of silvicultural and fuels treatments. The provincial-scale maps may be generated using the following map layers: plant association groups, fire regime condition class/fire risk assessment, spotted owl site and suitable habitat (i.e., nesting, roosting and foraging). A broad temporal outline of treatments by an appropriate landscape unit (e.g., landform, 5th field watershed, etc) would be prepared by the Team. The Regional Core Team may dissolve after fulfilling their temporary obligations but could continue to coordinate informally to discuss and report on the progress of implementation.

In addition to producing the provincial maps, the Teams could establish general silvicultural practices that promote owl habitat development for the respective provinces. These treatment practices may be utilized by the local administrative units in developing and implementing their projects. Each administrative unit would retain flexibility in the treatment of stands.

The need for treatment practices, as mentioned above, was raised by some participants of the Workshop. However, other participants were comfortable in how they are approaching stand treatments. It was noted many times during the Workshop that silvicultural prescriptions need to include the habitat requirements for spotted owl prey, which consists primarily of small mammals (See research needs below). Additionally, it was suggested by participants that, whenever possible, silvicultural terminology (e.g., trees/acre, relative density, basal area, diameter distribution, crown volumes, etc) should be utilized to describe existing and desired stand conditions pre and post project implementation. Use of silvicultural terminology could help alleviate some mis-communication problems.

- 4. Establish interagency Forest level teams to prioritize where to protect existing owl habitat and cores, restore areas most likely to sustain owl habitat, and enhance existing owl habitat through the use of silvicultural and fuels treatments.** This prioritization effort, conducted at the Forest and smaller scales (District and watershed), would facilitate planning and implementation of fuel treatments across the landscape. Additionally, this effort could contribute to and complement the provincial level efforts.
- 5. Implement interagency planning for projects.** Many participants commented that having the Fish and Wildlife Service representation on Interdisciplinary Teams (IDTs) was beneficial to the projects in terms of planning and streamlining consultation. Common themes for successful projects included: early and often (at project initiation) communication between the Fish and Wildlife Service and the land

management agencies, along with collaborative interagency and interdisciplinary project planning. Workshop participants indicated that the “upfront” interagency time invested in project planning provided less cost and increased time dividends later on. It is recommended that IDTs and out-year planning teams include the participation of the Fish and Wildlife Service in these efforts, starting at the initiation of the proposed projects.

- 6. Manage for long-term sustainability of owl habitat regardless of land use allocation.** Manage the most productive sites with the highest sustainability for spotted owl habitat regardless of the land use allocation boundaries. Manage surrounding areas to allow for low severity fire.
- 7. Conduct pilot treatment projects.** Workshop participants recommended that conducting pilot treatment projects would be beneficial in terms of learning what treatments work or don’t work in reducing fire risk. Pilot projects that have the specific objectives to treat and protect spotted owl habitat should be implemented. Pilot projects should be designed cooperatively with the PNW research community and the NWFP Interagency Regional Monitoring Team utilizing an adaptive management framework. Pre, during, and post project monitoring is an essential component to evaluate the effectiveness of treatments. Monitoring of pilot projects may help answer key questions such as: 1) what is spotted owl use pre and post treatment; 2) what is prey availability pre and post treatment; 3) what are the effects of different treatment options; and 4) at what scale should the treatments be applied?
- 8. Conduct up-to-date surveys and assess habitat conditions for spotted owl.** The Workshop participants affirmed that having up-to-date survey/site information for spotted owls was very beneficial to immediate and out-year project planning. Existing level of survey effort varied by administrative unit. The following reasons were provided as to why surveys were conducted: 1) track spotted owl response pre and post treatment; 2) prioritize habitat restoration treatments; 3) track spotted owl response where habitat is affected by insects, disease and wildfire; and 4) facilitate Section 7 consultation. Workshop participants commented on the need to conduct surveys where owl habitat has experienced stand replacement due to disturbances (insects, disease and wildfire). There may be a need to survey adjacent or nearby habitat that is suitable for spotted owls. Some participants said that surveying historic locations for baseline occupancy data was also essential.
- 9. Dedicate funding to treatment of habitat outside of the Wildland Urban Interface (WUIs) areas.** Many Workshop participants indicated that most resources were being dedicated to the WUIs. Although there is an immediate need to reduce fuel loads within the WUIs, a greater proportion of forest area outside of the WUIs, including suitable owl habitat, is equally in need of treatment to lower the risk of stand-replacing fire. The current approach to treating the WUI as a priority may be exacerbating the overall fire severity risk to the majority of forest resources outside of the WUI. Workshop participants recommended that monetary resources be allocated to treat forested areas beyond WUIs.

Additionally, it was suggested that a performance credit system be developed for project implementation in the more difficult and costly treatment areas. That is, more emphasis is applied and credited to resource managers for treating high fire risk areas as opposed to treatments in lower risk areas. There should be a focus on fuels treatments toward a desired future dynamic, not necessarily condition.

10. Conduct additional and more frequent workshops on managing dry forest ecosystems within the NWFP area. Workshop evaluations and recommendations cited the need for additional and more frequent workshops on this and similar topics. Specifically, participants indicated that more workshops covering topics related to “Dry Forest Ecosystems” are needed. Suggested topics for these workshops included but are not limited to: 1) restoration treatments for spotted owl habitat; 2) application of NWFP management direction for fire prone dry forests; and, 3) providing for owl prey in dry forests including the development of silvicultural prescriptions that support owl prey species. It was not a purpose of the Workshop to set the stage for another workshop. However, upon review of the recommendations, it is evident that many participants would like further discussion specific to application of the NWFP in fire-prone forests.

11. Facilitate information, education and public involvement. Given the potentially controversial nature of treatments within LSRs and owl habitat it was recommended that early involvement of the public occur in the project development phases. Additional time conducting outreach with stakeholder groups to develop communication, trust, and hopefully buy-in, in advance of project implementation would be beneficial.

It was recommended that another way to encourage public involvement was to have very broad, continuous public discussions on whether, and how to treat LSRs. The thought being that this is a controversial topic and that much public education is needed on the management of natural resources in advance of any specific project proposals. One way to handle this outreach is to have a local neutral organization sponsor a field trip and include technical specialists from the agencies and any public interest groups. The primary objective of having a neutral organization facilitate the field trip is to promote dialogue, and raise awareness of the issue and the consequences of management actions. Having discussion forums organized by neutral parties helps integrate the agencies into more of the education arena, which could help build public trust and successful project implementation. There is a recognition that this type of effort takes time to build.

12. Review and establish local habitat definitions. Spotted owl habitat varies in composition and structure in dry forest areas. Because of this natural variability and based on information within the SEI report (Chapter 5: Habitat Associations), administrative units should review their local definitions to see if the recent science in these reports indicates a change should occur in their local definitions of spotted owl habitat. Biologists and silviculturists should work together to define owl habitat in silvicultural terms to facilitate implementation of treatments that benefit spotted owl.

13. The Forest Service, BLM and Fish and Wildlife Service should evaluate and make recommendations on the potential use of the NWFP BIOMapper to map suitable owl habitat in dry forests ecosystems. The issue of needing to ensure consistency related to spotted owl habitat baseline tracking was raised. For example, a few National Forests and BLM Districts have their own internal spotted owl vegetation layer which may be different than the FEMAT layer, which can complicate tracking effects both for the Fish and Wildlife Service and the respective agencies. During the Workshop, habitat maps from the NWFP Northern spotted owl monitoring module were briefly presented. Although a specific recommendation was not made during the Workshop, given the identification of the problem, the monitoring module maps have the potential to serve as a consistent baseline for tracking habitat. The agencies should evaluate and make recommendations on the potential use of the NWFP BIOMapper product to map spotted owl suitable habitat in dry forest areas. Additionally, the accuracy of the module must be tested and evaluated through a comparison with existing habitat baselines.

14. Address key research questions. Workshop participants generated a broad list of important research questions with the most frequently mentioned research needs listed below. It was recognized at the Workshop that the PNW researchers are developing research questions related to dry forest systems. It is anticipated that this list will compliment the PNW effort mentioned above.

- What is the post-fire habitat recovery for dry forests and owls? Conduct a retrospective study.
- Address the barred owl issue (interactions study, controlled removal, examine existing data).
- How should we promote NRF components (e.g., snags, downed wood, etc).
- What prescriptions should we be using in treating NRF?
- How do owls respond to treatments?
- How do prey respond to treatments?
- What is the historic range of variability or desired future condition we should manage for?
- How should we develop prey habitat?
- How should we be prioritizing treatments and maintaining existing habitat?
- How can stand exams of existing owl habitat be used to promote development of suitable habitat for the owl through silvicultural prescriptions?

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