State of Washington
Department of Fish and Wildlife

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M E M O R A N D U M

To: **Forest Practices Board**

From: **David Whipple, Forest Policy Coordinator**
Washington Department of Fish and Wildlife

SUBJECT: LANDSCAPE LEVEL WILDLIFE ASSESSMENT PROJECT

Recall that the Landscape Level Wildlife Assessment project (LLWA) constitutes Element 2 of the Board's Wildlife Work Plan. The project is intended to determine the extent the Forests and Fish rules and other regulatory and voluntary features on the landscape contribute to the needs of forest-dependent wildlife, and to determine if there are any major gaps. On February 10, you will receive a fairly in-depth presentation of the LLWA project, including a demonstration of the type of information it could provide relative to current and expected future upland wildlife habitat.

As outlined at your August meeting, the project has not been completed, and no funds are available to continue work on it. However, the Technical Group has produced many draft products as well as a project draft interim report (please see the attached summary; the interim report is currently being finalized). Preliminarily results suggest that the LLWA can inform such questions as; which species are likely to find abundant habitat in managed forest landscapes, and which species will not; what management activities tend to support the most at-risk species; where on the landscape species will be supported, etc. It should be noted however, that because the project has not been completed (e.g. habitat models have not been peer-reviewed), the preliminary results should not be utilized in decision-making processes. Although the project is not finished, we now have a list of significant deliverables that can be used to demonstrate the project's capabilities, and hopefully garner additional funding in the future:

- Literature reviews for 30 guilds (groups of species) covering 85 species
- Detailed, quantitative habitat models for 28 guilds covering 77 species
- Qualitative habitat models for 154 individual species
- Landscape assessment software that automates the habitat assessment process within a geographic information system

- A demonstration habitat assessment from a set of randomly selected western Washington landscapes
- An interim report to the Washington Forest Practices Board (currently being finalized)

The multi-caucus Wildlife Work Group, which oversees the Board's Wildlife Work Plan, was briefed on the technical accomplishments to-date, and the group discussed issues relative to the project. One identified issue is that the project has not yet examined how Habitat Conservation Plans and federal land management, in addition to the Forest Practices Rules, contribute to wildlife habitat in the state. Work to understand this question will be addressed in the future. The obvious larger issue is a lack of funding. The project will essentially be "moth-balled" until additional funds are secured. It was decided the current economic climate is not conducive to a budget request during the 2010 legislative session. WDFW will strive to publish the cutting-edge methodologies developed within the LLWA project, which may help attract future financial support.

Finally, the multi-caucus Technical Group deserves a great deal of recognition for the amount of work they have completed, as well as how well they have worked together.

The Board is respectfully encouraged to read the attached project summary.

Thank you.

Washington Landscape-level Wildlife Assessment: Summary for the Washington State Forest Practice Board

The Landscape Level Wildlife Assessment Technical Group
October 19, 2009

Introduction

In 2006, the Washington Forest Practices Board (the Board) identified an important information need: to understand the extent existing forest practices rules and other regulatory and voluntary measures contribute to the conservation of forest-dependent wildlife. To address this need, the Washington Department of Natural Resources (DNR), with support from the multi-caucus Wildlife Work Group, requested and received 3 years of funding to conduct he Landscape-level Wildlife Assessment Project, or LLWA (the Project), which is led by the Washington Department of Fish and Wildlife (WDFW). The project was not fully funded by the legislature, and WDFW and DNR contributed dollars to supplement the appropriations. In addition, WDFW, DNR, Washington Forest Protection Association (WFPA) and Washington Farm Forestry Association (WFFA) supported the project with in-kind contributions. The Project was scheduled for completion in June 2011; however, it does not appear it will be completed on time, due to past budget shortfalls and the fact it was not funded in the 2009-2011 state budget.

Project work was conducted by a multi-stakeholder group of scientists (the LLWA Technical Group) representing various Timber/Fish/Wildlife stakeholders: state agencies, tribes, private forest owners, and conservation interests. The purpose of this summary is to describe the accomplishments of the Technical Group at this point in time, as well as the additional efforts needed to complete the Project.

During the past two years, the LLWA Technical Group made considerable progress toward addressing the Board's information need. We have shown that stakeholders can work cooperatively toward a common goal of developing high quality scientific information. Most importantly, we have produced the following deliverables:

- Literature reviews for 30 guilds (groups of species) covering 85 species
- Detailed, quantitative habitat models for 28 guilds covering 77 species
- Qualitative habitat models for 154 individual species
- Landscape assessment software that automates the habitat assessment process within a geographic information system
- A demonstration habitat assessment of a set of randomly selected landscapes from western Washington
- An interim report to the Washington Forest Practices Board

The interim report is only a demonstration of the Project's capabilities and utility to policy makers. Some aspects of the Project are incomplete, and therefore, the results should not be used to draw any inferences about the quality of habitats in private commercial forests.

A Demonstration

The Technical Group was asked to answer three questions: 1) How do industrial forests and small forest landowners, in combination with other forest land ownerships (e.g., public and tribal lands), contribute to wildlife habitats? 2) How do industrial and small forest landowners forests that are managed according to Forest Practices Rules function as wildlife habitats now and into the future? 3) How do industrial and small forest landowner forests on the suburban fringe contribute to wildlife habitats now and into the future?

The interim report demonstrates the following:

1. Habitat assessments of commercial forest landscapes in western Washington for multiple species and guilds;
2. Habitat assessments of commercial forest landscapes under different management scenarios;
3. Separate habitat assessments of riparian management zones and upland management units;
4. Habitat assessments using two types of models: Bayesian belief networks and a species-habitat matrix model; and
5. The functionality and utility of the assessment software created specifically for this Project.

Our approach was to create models relating forest conditions (not forest age) to habitat quality for species. We purposefully avoided using forest age because: 1) species respond to forest characteristics, not age, per se; 2) we were looking for simple stand-level manipulations that could improve habitat for certain species; and 3) we wanted to understand how forest conditions under private forest management contribute to wildlife habitat. We adopted two modeling approaches that require different levels of effort. For species of greater conservation concern we developed detailed quantitative models that incorporate uncertainty. For species of lesser concern, we created more qualitative models based on generalized habitat types.

Model development consisted of three basic stages: (1) an extensive in-depth review of the scientific literature pertaining to the habitat requirements of the species or guild (species group), (2) construction of a preliminary habitat model, and (3) a repeated cycle of critiques and improvements to the model by the Technical Group. The Technical Group has reviewed and approved 28 detailed, quantitative habitat models and 154 qualitative models.

To demonstrate the Project's utility, we ran 13 of the 28 detailed, quantitative models and 103 of the 154 qualitative general models on five semi-artificial landscapes in western Washington. We simulated three management scenarios: old forest practices rules (pre-Forests & Fish Rules), current rules, and an "enhanced management" scenario, which retained additional larger snags and larger live trees in upland harvest units.

Conclusions

Given that this assessment is only a demonstration and that we quantitatively assessed habitat quality for only 13 species/guilds, generalizations regarding the effects of forest management on wildlife habitats must be avoided until we complete the work. However, we can make some generalizations about the Project's *capabilities* and *utility* to policy makers.

First, we can rank species according to the habitat quality found in commercial forests. According to our habitat models, average habitat quality in commercial forests varied widely among the species/guilds we assessed. Several species had high average probabilities of habitat being present in the landscape and

several had rather low average probabilities. In our limited demonstration, species that did most poorly in commercial forests depended on large snags.

Second, we can rank different forest management scenarios according to their ability to provide habitats for a variety of species. For the majority of species/guilds that we assessed, there was a clear ranking of the three management scenarios (old forest practices rules, current rules, and enhanced management). In a similar manner, other forest management scenarios could be explored. In fact, one of the most useful capabilities of our assessment is the ability to compare different management scenarios or different stand-level habitat manipulations.

Third, our assessment can identify which habitat elements have the greatest effect on habitat quality for species deemed most at risk (those that have more detailed, quantitative habitat models). For example, the three species/guilds with the lowest average probability of habitat being present included large snags as an influential variable in their habitat model. On the other hand, four other species/guilds that use snags had moderate average probabilities of habitat being present, because in their habitat models: 1) they could use smaller snags and/or 2) the density of live trees was an influential variable that compensated for the lack of snags.

Fourth, we can explore how forest practices rules interact with landscape-level characteristics to affect habitat quality. Our results showed that landscapes with higher than average amounts of certain fixed features, such as streams and unstable slopes, will have higher than average habitat quality for some species (relative to other landscapes). For most of the species we modeled, the increased habitat quality was due to larger snags and higher snag densities in riparian management zones. The utility of this type of finding is that it could inform us on snag levels important at the landscape-level. For example, landscapes with high stream densities or steep, unstable slopes may need fewer snags in harvest units to meet a certain landscape-level snag target.

Fifth, we can explore the potential *long-term* habitat benefits of the Forests & Fish Rules. The projections done for this demonstration covered only 50 years of forest management. We can simulate forest management scenarios of longer time periods and project when forests will become high quality habitat for each species/guild.

Finally, our assessment *cannot* answer questions about how much habitat is enough. Determining how much habitat or what quality of habitat is enough would require a different process.

Next Steps

We anticipate that the quantity and quality of wildlife habitats on private forest lands will remain an important issue for the Forest Practices Board. If the LLWA Project is resumed, the following major tasks must be completed before we will be ready to conduct a valid and thorough habitat assessment.

First, develop a process and complete an external review of the detailed, quantitative models. The models were thoroughly reviewed and approved by the LLWA Tech Group. However, the Tech Group had limited expertise on many species, reptiles, amphibians and mammals in particular, and Tech Group membership had a west-side bias.

Second, develop methods for accurately projecting snag densities over time. For our work, accurate predictions of forest composition and structure were limited to the live tree portion of the forest. Other important features, such as snags, logs, and shrubs, were difficult to accurately predict with available data and current forest growth models.

Third, the Technical Group should reengage with policy makers. When completed, the tools developed can be used to answer a variety of questions regarding the quantity and quality of habitats in private forests. During the past three years since the LLWA Project was initiated, the concerns and information needs of policy makers may have shifted. In the future, both policy makers and technical experts must clarify the questions to be answered and the form in which the answers should be delivered.

The Landscape-Level Wildlife Assessment (LLWA) Technical Group consisted of the following members:

Timothy Quinn (Project Leader)	WDFW
George Wilhere (Lead Scientist)	WDFW
Bob Altman	American Bird Conservancy
Joe Buchanan	WDFW
Kevin Ceder	University of Washington
Steve Desimone	WDFW
Heather Fuller	WDFW
Joshua Halofsky	Washington Dept. of Natural Resources
Gerry Hayes	WDFW
Jeff Kozma	Yakama Indian Nation
A.J. Kroll	Weyerhaeuser Company
Steven McConnell	Upper Columbia United Tribes
Jim MacCracken	Longview Fibre Inc.
Nicole Maggiulli	WDFW
Dan Varland	Rayonier Inc.
Marty Vaughn	Biota Pacific Environmental Sciences, Inc.

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