

## Issue Paper: Modeling Resource Management Plans for Western Oregon

### **Background:**

The planning team used three different models to simulate vegetation growth, northern spotted owl habitat, and northern spotted owl populations: Woodstock, MaxEnt, and HexSim. The models were used together, with the outputs of Woodstock used for MaxEnt, and the outputs of MaxEnt used for HexSim. The results gave the planning team the ability to evaluate which management strategies provided meaningful benefits to spotted owl populations. The U.S. Fish and Wildlife Service used the MaxEnt and HexSim models in the development of its own northern spotted owl critical habitat rule.

### **Key Points:**

**Why did we need these models?** The BLM needed all three of these models to evaluate how different spotted owl habitat outcomes affected spotted owl populations. Otherwise, our spotted owl analysis would have been limited to evaluating habitat alone, and we would not have been able to account for the influence of barred owl competition on spotted owl populations. These models gave us the ability to evaluate which additional or specific habitat protections would provide meaningful benefit to spotted owl populations. We used MaxEnt and HexSim similarly to how the US Fish and Wildlife Service used them in the development of their critical habitat rule, but with improvements made possible by data and modeling results available for BLM-administered lands.

**Woodstock:** The BLM used the Woodstock model to simulate forest development over time on BLM-administered lands. Woodstock simulated the application of management practices and forest development assumptions to assess timber harvest levels and characterize the forest condition into the future. We also incorporated into Woodstock a scenario for future wildfires based on recent wildfire occurrence and wildfire susceptibility. We used Woodstock to model forest development only on the BLM-administered lands; we made assumptions about forest development based on continuation of current trends on other land ownerships. We provided to Woodstock stand-specific information and the land use allocations and management prescriptions (i.e., the timber harvest that could occur for an individual stand) for each alternative.

**MaxEnt and HexSim:** The BLM used MaxEnt to model northern spotted owl relative habitat suitability. MaxEnt is a predictive model of species geographic distributions based on the environmental conditions of sites of known occurrence. MaxEnt has been used for modeling habitat suitability values for northern spotted owl, as well as other species. We used outputs from the Woodstock vegetation model as inputs for MaxEnt. The BLM used HexSim to model spotted owl population response to changes in habitat and the influence of barred owl competition.

The Resource Management Plans (RMP) for Western Oregon will determine how the BLM-administered lands in western Oregon will be managed to further the recovery of threatened and endangered species, to provide for clean water, to restore fire-adapted ecosystems, to produce a sustained yield of timber products, to coordinate management of lands surrounding the Coquille Forest with the Coquille Tribe, and to provide for recreation opportunities.

For more information, please visit the BLM's Resource Management Plans of western Oregon website at <http://www.blm.gov/or/plans/rmpswesternoregon/index.php>.

