RED SPRUCE RESTORATION MODELING IN LANDIS

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Scenarios for the restoration of red spruce (*Picea rubens*)-dominated forests on the Monongahela National Forest were created in the landscape simulation model LANDIS. The resulting landscapes were compared to existing habitat suitability index models for the Virginia northern flying squirrel (VNFS) and Cheat Mountain salamander (CMS) as a measure of successful restoration. Four restoration scenarios were included: 1) succession without active management; 2) active management of red spruce only in low probability VNFS or CMS habitat; 3) active restoration of red spruce on all feasible sites; and 4) active management in spruce and spruce-northern hardwood dominated forests only. In scenario 2, direct effects to rare wildlife species will largely be avoided. Although scenario 3 represents a maximum restoration scenario, planting of red spruce is not included in the model. In scenario 4, restoration efforts avoid forested stands with substantial components of high-value hardwood timber species such as black cherry.

The objectives of this research are to develop feasible restoration scenarios involving active and passive management and compare the resulting landscape structure and composition. With a landscape-level analysis, an assessment can be made of the ability of the restoration scenarios to benefit endangered species, including the length of time to reach restoration goals.

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