

Effects of Forest Thinning on Bird-vegetation Relationships in Young Douglas-fir Forests

Svetlana Yegorova

Poster Abstract

Forest thinning has been widely used in the Pacific Northwest as a technique to accelerate late-successional vegetation characteristics and promote mature forest habitats for wildlife. Thinning treatments affect tree and understory vegetation development. The effects of thinning on bird abundance and occurrence vary by bird species and change over time, presumably as a result of changes in understory and overstory vegetation after thinning. However, this assumption has rarely been tested. Vegetation characteristics, such as canopy cover, understory density and composition are frequently used in habitat modeling because they are likely to constitute both proximate cues to habitat selection and ultimate resources that contribute to fitness. However, a disturbance event, such as forest thinning, may decouple habitat selection cues from fitness variables. This study investigates the potential of such decoupling for eight bird species by examining dynamics in bird occurrence or abundance in relation to changes in vegetation characteristics within Douglas-fir (*Pseudotsuga menziesii*) stands over 10 years since thinning. Our objectives are to: 1) determine if specific vegetation characteristics account for bird species occurrence or abundance in thinned and unthinned forests; and 2) explore whether the relationships between vegetation characteristics and bird occurrence changes over time. We conducted bird surveys at 58 point-count stations during six breeding seasons in a 10-year period following forest thinning. We obtained detailed local- and landscape-level vegetation characteristics for all bird sampling points. We accounted for imperfect detection and modeled occurrence or abundance of eight avian species as a function of local and landscape-scale vegetation characteristics with generalized linear mixed models. Preliminary results suggest that for some species vegetation is a good predictor of occurrence and that relationship to vegetation remains consistent over 10 years. However, for other species these relationships vary.

Bird-vegetation relationships appear to be highly dynamic, even in a system characterized by relatively low-impact disturbance. We hypothesize that this variability is best explained by intrinsic population processes rather than plasticity in avian habitat selection.

Keywords: thinning, understory vegetation, overstory structure and composition, birds, habitat selection.

Svetlana Yegorova was a master's degree student, Department of Forest Ecosystems & Society, Oregon State University, Corvallis, OR 97331.