

CHANGES IN MIXED DECIDUOUS FOREST FROM RESIDENTIAL DEVELOPMENT DRIVE NATIVE FOREST BIRD SPECIES TO HIGHER ELEVATIONS

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Abstract

Predicting future landscape change is essential to informing natural resource management and conservation methods. We applied landscape ecological concepts in developing models of landscape change that link models of urban development, land cover change, and bird species richness to explore potential futures for the Seattle, USA, metropolitan region - a region undergoing rapid urbanization. We combined output from an economic development model (UrbanSim) and measures of composition and spatial pattern of development, land cover, and biophysical elements to develop land cover change models that predict landscape change 25 years into the future. Predicted land cover and land use provide input for predictive models of bird diversity derived from five years of field surveys across the urban gradient. Predictions of future bird diversity indicate that loss of forests in the suburban fringes will negatively affect native forest bird species and push these species to remaining habitats at higher elevations. Development of agricultural lands will negatively affect early successional species. Both landscape changes privilege already abundant synanthropic species. A single landscape composition and configuration objective will not meet the needs of the breadth of species in peril from urbanization. Maintaining habitat for the diverse suite of species found in the region will require planners and policy makers to develop multi-objective landscape plans.

[Abstract Only]

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