

LANDSCAPE AND HABITAT PREDICTORS OF CANADA WARBLER
WILSONIA CANADENSIS) AND NORTHERN WATERTHRUSH
(SEIURUS NOVEBORACENSIS) OCCURRENCE
IN RHODE ISLAND SWAMPS

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ABSTRACT

Canada Warblers (*Wilsonia canadensis*) and Northern Waterthrushes (*Seiurus noveboracensis*)—both forest-interior, neotropical migrants—are the only breeding bird species in Rhode Island restricted to forested wetlands. Despite continuing alterations of wetlands and surrounding upland landscapes, primarily as a result of urbanization, the factors affecting the distribution of these two species have not previously been investigated. The need for such research is urgent, especially given the long-term decline in Canada Warbler populations in the Northeast. I examined the relative influence of forest habitat characteristics and landscape context on the presence of both species in 80 survey plots located in 44 Rhode Island forested swamps during 1997 and 1998. I used both univariate and forward stepwise logistic regression analysis to create models for predicting the probability of occurrence, or incidence, of each species. Canada Warbler presence was more strongly linked to landscape features than to habitat characteristics. Incidence of this species was > 0.5 at points > 300 m from paved roads, in swamps > 6 ha, where forest covered $> 50\%$ of the land within 2 km, and where that forest contained < 22 km of paved roads. Swamps were unlikely to support Canada Warblers where the regional cover of urban and agricultural land was unusually high. At the habitat scale, Canada Warbler incidence exceeded 0.5 when *Sphagnum* moss cover exceeded 6% and when there was $< 30\%$ deciduous foliage cover within 0.5 m of the ground. Incidence of the Northern Waterthrush exceeded 0.5 in swamps > 1.5 ha and increased with the abundance of additional swamp habitat nearby. Waterthrushes seemed to prefer swamps with $> 10\%$ cover of saturated substrates, with high foliage cover in all strata below 4 m,

and with high *Sphagnum* moss cover. The probability of occurrence of this species generally increased with increasing evergreen canopy cover, tree diversity, and basal area of snags. Multivariate models suggested that the occurrence of Canada Warblers in forested wetlands may be predicted accurately from landscape characteristics alone. To accurately predict Northern Waterthrush occurrence, landscape and swamp habitat characteristics must be considered in combination. Current state and Federal laws regulate land use in forested wetlands, but they do not adequately address cumulative permitted losses; nor do they consistently consider the impacts of land use changes in surrounding uplands. Landscape context must be considered in any attempts to conserve these swamp-dependent species.