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FEATURE ARTICLES

RIPARIAN BIRD COMMUNITY STRUCTURE IN PORTLAND, OREGON: HABITAT, URBANIZATION, AND SPATIAL SCALE PATTERNS

LORI A. HENNINGS¹ AND W. DANIEL EDGE

Department of Fisheries and Wildlife, Nash 104, Oregon State University, Corvallis, OR 97331-3803

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¹Present address: Metro Regional Services, 600 NE Grand Avenue, Portland, OR 97232-2736. E-mail: hennings@metro.dst.or.us

Abstract. In 1999, we surveyed breeding bird and plant communities along 54 streams in the Portland, Oregon, metropolitan region to link bird community metrics with structural and spatial characteristics of urban riparian areas. Canonical Correspondence Analysis produced two explanatory axes relating to vegetation and road density. Total and non-native bird abundance was higher in narrow forests. Native bird abundance was greater in narrow forests surrounded by undeveloped lands; native species richness and diversity were greater in less-developed areas. Native resident and short-distance-migrant abundance was higher in narrow forests, and diversity was positively associated with developed lands. Neotropical migrant abundance, richness, and diversity were greater in open-canopied areas with fewer roads. We examined spatial relationships by regressing bird variables on satellite-derived forest canopy cover, area of undeveloped lands, and street density in a series of 50-m buffers within a 500-m radius around study sites. Non-native bird abundance decreased with increasing canopy cover within 450 m, but most other relationships were strongest at smaller scales (50–100 m). Our results suggest that increasing urban canopy cover is the most valuable land management action for conserving native breeding birds. A hierarchical scheme for Neotropical migrant conservation might include increasing forest canopy within 450 m of streams to control non-native species and cowbirds; reducing street density within a 100-m radius of streams; and conserving or planting onsite native trees and shrubs.

Key words: edge effects, Neotropical migrant, non-native species, riparian, spatial scale, urban.