

SPECIES DISTRIBUTION AND RICHNESS PATTERNS OF AVIAN COMMUNITIES IN THE HIGH-ELEVATION FORESTS OF VIRGINIA

Heather Lessig, William J. McShea, and Jeffrey R. Walters¹

The southern Appalachians support a unique forest ecosystem at higher elevations in which the breeding distribution of several bird species of conservation concern extends to unusually southern latitudes. The dual threats of rising global temperatures and potential wind energy development may impact these forests by reducing or fragmenting preferred habitat. A better understanding of which bird species are sensitive to change and how habitat composition and configuration drive species richness across all elevations is essential for deriving local management plans and preserving regional diversity. We conducted bird surveys and corresponding site and landscape level habitat surveys at multiple high elevation sites on public forests in Virginia from 2005-2007. We detected 101 species at 1,341 points, including 12 species of state or federal conservation concern. We generated multiple models using 10 species whose presence increased with elevation to determine the relative contribution of habitat characteristics at the local and landscape levels. These models indicate that elevation sensitive species respond to multiple habitat scales in a species-specific manner and that management plans should consider more than habitat type. In addition, we show that species richness declines with increasing elevation throughout the region until the highest elevations, where the trend reverses and richness begins to increase. This pattern is driven by differences between migratory guilds and may be caused by more than habitat associations alone. Results highlight the importance of considering scale when determining species distribution and richness and the need to consider multiple habitat factors in conservation planning and management of high-elevation forests.

¹ Heather Lessig, Virginia Polytechnic Institute and Smithsonian's Conservation and Research Center; William J. McShea, Smithsonian's Conservation and Research Center; Jeffrey R. Walters, Virginia Polytechnic Institute; Corresponding author: Heather Lessig, Dept. of Biology, Box 7617, North Carolina State University, Raleigh, NC 27695; 919-513-0948; Email: heather_lessig@ncsu.edu