ABUNDANCE OF BLACK-BACKED WOODPECKERS AND OTHER BIRDS IN RELATION TO DISTURBANCE AND FOREST STRUCTURE IN THE BLACK HILLS AND BEAR LODGE MOUNTAINS OF SOUTH DAKOTA AND WYOMING

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ABSTRACT

Natural disturbances, such as wildfire and beetle infestations, are two sources of large-scale disturbance that can significantly alter forest structure in the Black Hills. The Black-backed Woodpecker (*Picoides arcticus*), American Three-toed Woodpecker (*Picoides dorsalis*), Brown Creeper (*Certhia americana*), Red-breasted Nuthatch (*Sitta canadensis*), and White-winged Junco (*Junco hyemalis aikeni*) are some species of regional conservation concern or are sensitive to forest management practices. Our objectives were to determine densities of our five species in relation to vegetation characteristics and disturbance and provide a population estimate for Black-backed Woodpeckers in the Black Hills and Bear Lodge Mountains of South Dakota and Wyoming. We conducted point-counts between late-March and late-June in 2015 and 2016. We estimated species density and determined relationships with GIS derived and point-level vegetation characteristics using *a priori* models. Black-backed Woodpeckers, Brown creepers, and Red-breasted Nuthatch had mixed responses to 1- to 5-year-old wildfires. With the exception of American Three-toed Woodpeckers, all species were positively related to percent cover of beetle killed trees. Brown Creepers, White-winged Juncos, and Red-breasted Nuthatches had mixed responses to percent overstory canopy cover. White-winged Juncos were positively related to percent ground vegetation and Brown Creepers were strongly linked with the white spruce. Mean density of Black-backed Woodpeckers was 0.00528 birds/ha and 0.00626 birds /ha and an estimated 2,920 (LCL: 1,449; UCL: 5,917) and 3,439 (LCL: 1,739; UCL: 6,908) individuals in the Black Hills in 2015 and 2016, respectively. Management that maintains or permits some level of disturbance and heterogeneity within stands and at the landscape-level will benefit the diverse needs of birds in the Black Hills.