Relationships Among Ungulate Browse, Willow Community Structure, and Migratory Landbirds at Red Rock Lakes National Wildlife Refuge

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Critical relationships exist between vegetation structure and avian diversity and abundance. Browsing by herbivores can lead to changes in the structural heterogeneity and species composition of plant communities, resulting in decreased use of heavily browsed habitats by avian species. We assessed the current levels of browse by native ungulates and resulting effects on composition and structure of willow communities on Red Rock Lakes National Wildlife Refuge in southwestern Montana. We also determined abundance and community composition of breeding land birds in these habitats and related these to willow structure. Bird counts and vegetation sampling were conducted along two riparian corridors and one fen habitat during the summers of 2006-2007. Our results indicate current levels of ungulate browsing on the Refuge are low to moderate. Species composition of willow communities varied between riparian and fen habitats and contributed to differences in willow volume and structural heterogeneity. Five species of birds (Yellow Warbler, Common Yellowthroat, Lincoln's Sparrow, White-crowned Sparrow and Song Sparrow) were used for examining relationships between avian abundance and willow vegetation characteristics. Additional vegetation sampling in conjunction with improved monitoring of ungulate populations utilizing the Refuge will allow managers to make informed decisions concerning ungulate harvest limits and conservation of willow communities.