

# **Bison Restoration to Temperate Grasslands is Associated with Similar Biodiversity Outcomes in upland Habitats but Strong Positive Effects in Riparian Areas in Comparison to Seasonal Cattle Grazing**

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Temperate grassland biomes are globally imperiled, and species that rely on them are in precipitous decline as a result. The majority of North America's grasslands are designated as rangelands and are occupied by domestic cattle, but reintroductions of bison to restore evolutionary grazing patterns are increasingly common. Grassland landscapes in western North America have undergone drastic changes since millions of bison occupied this landscape, and the biodiversity effects of bison on modern rangelands remain poorly understood. Here, we test the biodiversity effects of native versus non-native grazers in the context of a highly diverse grassland ecosystem on the Northern Great Plains of North America. We compared the effects of 2 different grazing treatments common across the region on avian diversity: seasonally grazed and manually rotated domestic cattle, and year-round, free-moving bison. We used a variety of techniques including point counts, camera-trapping and time-series remotely sensed vegetation sampling to evaluate the effects of these two treatments on grassland biodiversity in upland and riparian habitats. We found roughly equivalent bird diversity and species-specific abundance in upland habitats, at sites occupied year-round by bison and seasonally by cattle. In riparian zones, we found that woody vegetation, and native grasses/forbs increased more rapidly over time in bison pastures, and that these changes in vegetation structure were associated with increased bird diversity and cervid occupancy. Our results suggest that both native and non-native grazers can create habitat for a highly diverse assemblage of grassland birds in uplands, but year-round bison grazing has strong positive biodiversity effects on riparian habitats compared with seasonal cattle grazing.