Assessing the Mitigated Loss of Grassland Bird Habitat Through Conservation Easements and Leases in Eastern Montana

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Land set-aside programs have been identified as key to the future of wildlife populations. Conservation easements and leases, both of which function to minimize habitat conversion for a typically decades-long period, impact wildlife populations through prevention of potential habitat loss. The conservation benefits of easements and leases are thus relative to the site-specific risk of habitat loss and the duration on the landscape. We combined spatially explicit data on conservation easements and leases with models of habitat conversion risk, wildlife density, and population trend – while also accounting for the growing impact of easements/leases with time – to approximate the loss of wildlife populations that has been averted by conservation easements and leases. We applied this framework to grassland songbird species (Baird's sparrow, chestnut-collared longspur, Sprague's pipits, thick-billed longspur) in Eastern Montana. We estimated that rangewide populations are 5-7% greater now due to the potential loss mitigated by conservation easements/leases. We also used population projections to assess the impact of additional anticipated investment in easements/leases across focal areas in eastern Montana. We found that the relative contribution of Montana easements and leases towards maintaining core populations of grassland bird species is expected to grow over time and play a critical role in reducing extinction risk. This work provides a spatially and temporally explicit framework for considering how investments in land set-aside programs is anticipated to impact wildlife populations.