

ABSTRACT

Analysis of Preferred Nesting Area of Grassland Birds in Relation to Tree Lines
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There has been a steady decline in the populations of Henslow's Sparrows (*Ammodramus henslowii*), Grasshopper Sparrows (*Ammodramus savannarum*), Bobolinks (*Dolichonyx oryzivorus*), Eastern Meadowlarks (*Sturnella magna*), and Dickcissels (*Spiza americana*) caused by the decrease in grasslands. These grassland birds are area-dependent species, preferring to nest in large, contiguous grasslands. There is research suggesting that grassland birds prefer not live within 50 meters of tree lines. In several of the grasslands at Fermilab, there are groupings of trees that could dramatically decrease the amount of preferred nesting habitat for these birds. The purpose of this study is to determine whether or not the presence of these clusters of trees is detrimental to the populations of these grassland birds. The findings from this study will help the Fermilab Ecological Land Management Committee determine if cutting down these trees to provide a larger nesting area is a feasible option. We randomly walked through the fields and listened for the calls of the Henslow's Sparrows, Grasshopper Sparrows, Bobolinks, Eastern Meadowlarks, and Dickcissels. Once heard, visual confirmation was required, and their Global Positioning System (GPS) location was recorded. These GPS locations were superimposed over a satellite image map of the fields, which allowed us to look for patterns in nesting, specifically at the areas around trees. The average distance the grassland birds were located from a tree is 128 m, with species averages: Bobolinks, 104 m; Dickcissels, 125 m; Eastern Meadowlarks, 72 m; Grasshopper Sparrows, 216 m; and Henslow's Sparrows, 126 m. Using chi-square test for distribution of distances from nearest tree, grassland bird distribution from trees was significantly altered by trees ($p = 4.31 \times 10^{-46}$). The distribution of distances were also significant ($p = 2.8 \times 10^{-5}$ and $p = 2.9 \times 10^{-9}$ respectively); however, Dickcissel and Eastern Meadowlark distributions for Henslow's Sparrows and Bobolinks were not ($p = .13$ and $p = .41$ respectively). Therefore, we suggest removal of trees by cutting based on the statistical significance of our results. This will increase amount of habitable land, causing an increase in population of grassland birds.