



Background:

Grasslands associated with airfields in the eastern United States (both military and civilian) often support large numbers of regionally rare grassland birds. As grassland habitat area in the region continues to shrink, the role that large airfields play in maintaining populations of these species is likely to increase. However, relatively little is known regarding the reproductive success of grassland birds on airports, and whether these habitats act as population sources or sinks. This is particularly of concern because vegetation management on these sites often involves regular mowing during the summer breeding season, a practice known to be harmful to nesting success.



Photos: Mike Allen

Checking nests at Patuxent River Naval Air Station. Inset: Eastern Meadowlark nest.

Objective:

Funded by the DoD Legacy Program, the purpose of this study was to investigate grassland bird reproductive success on regional military airfields, and to examine possible factors that may be affecting productivity. We were particularly interested in the effects of mowing and vegetation structure on nest survival of Grasshopper Sparrows (*Ammodramus savannarum*) and Eastern Meadowlarks (*Sturnella magna*), species of conservation concern in the region.

Summary of Approach:

From mid-April to mid-July in 2009, 2010, and 2012 we searched for and monitored grassland bird nests on three military airfields: Westover Air Reserve Base (Massachusetts), Joint Base McGuire-Dix-Lakehurst (New Jersey), and Patuxent River Naval Air Station (Maryland). At each nest we quantified vegetation

characteristics and other factors such as distance to an active runway. Through cooperation with mowing crews, we were also able to determine 1) whether a nest was located in an actively mowed area, 2) whether a nest was passed over by a mower while active, and 3) the condition of all nests immediately following mowing. We calculated daily nest survival rates and examined the effects of various predictor variables using logistic modeling in program MARK.

Benefit:

This study will allow airfield habitat managers to better understand how mowing and other management activities on their lands may affect sensitive grassland bird populations. It will also provide basic knowledge of grassland bird nesting success on airfields that is currently lacking. Ultimately, data and methods developed by this project can be used to formulate best management practices for minimizing impacts on sensitive species, and will be useful in the development of Integrated Natural Resource Management Plans.

Accomplishments:

This three-year study generated information on grassland bird nesting microhabitat, phenology, nest survival, and productivity at the three sites. In 2009-2012, we located and monitored 194 Grasshopper Sparrow nests and 131 Eastern Meadowlark nests across all site, along with over 200 nests of six other species. However, direct mower-caused nest mortality affected 8-19% of nests in mowed areas. Grasshopper Sparrow and Eastern Meadowlark and had lower nest survival and fledged fewer young per successful nest in mowed versus non-mowed areas of Westover, the only partially-mowed site; nest survival at Patuxent, the entirely-mowed site was lower in areas of shorter vegetation. Overall, nest survival rates at all three airfields were comparable to or higher than those reported at non-airfield grasslands, suggesting that airfields may not be population sinks for grassland birds. Incorporating (or increasing) areas of taller grassland vegetation and modifying mowing regimes during the late spring and early summer may have substantial conservation benefits.

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