



Identifying Management Strategies for Reversing Declines of Neotropical Landbirds of Conservation Concern on Military Installations

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Background:

The Department of Defense (DoD) manages approximately 29 million acres of land on 420 military installations. Many installations are a part of neotropical bird breeding ground habitats, stopover habitats for migration, and are largely diverse areas. The Monitoring Avian Productivity and Survivorship (MAPS) Program uses long-term monitoring of select species to identify population trends and potential management actions. Neotropical migratory bird populations are declining. It is important to understand the survival rate and productivity of these species in order to preserve their habitats and their existence. DoD has directed land management to mitigate the adverse impacts of encroachment on DoD lands and to enhance military Readiness and Range Sustainment (R&RS). This has resulted in new (or proposed) land management actions, many of which reduce the risk of wildfire in shrubland or grassland adjacent to military ranges, or reduce understory fuel loads in forested areas. This research assesses the effects of management actions on local bird communities and the reproductive success and population sizes of many species of landbirds. These include 10 FWS Birds of Conservation Concern (BCC) and Migratory Bird Program focal species (e.g. Wood Thrush and Painted Bunting).



Wood Thrush (*Hylocichla mustelina*) (left) and Painted Bunting (*Passerina ciris*) (right) images from Fish and Wildlife Service

Objective:

This project, funded by the Legacy Resource Management Program, used eight years of research to complete the identification and organization of management plans on 13 DoD installations to protect and manage declining target species populations. Data collection, models and analysis of information, and formulations of management plans were used to achieve the project's goal. The

objective was to provide land management recommendations for landbird species of conservation concern by maintaining productive populations, reversing local population declines, and creating more high quality breeding habitat.



Photo credit Fort Bragg Natural Resource Division
Wetland Habitat on Fort Bragg, NC

Summary of Approach:

In 1991, the DoD Partners in Flight Strategic Plan prompted the establishment of about 100 MAPS stations on 32 DoD installations. A total of 78 of these stations were operated from 1994 to 2002. The project was focused on multiple breeding species of conservation concern. If a population decline was detected in historical data (starting 1994) for a BCC species at an individual installation it was designated a “species of management concern”. Collaboration with base commanders, natural resource managers, and GIS specialists was conducted to a) identify areas where the species was successfully breeding, b) monitor productive populations, and c) monitor the effects of implementing management intended to benefit declining populations. Information from eight years of MAPS data from the 78 stations on DoD installations in Virginia, North Carolina, Maryland, Indiana, Kentucky, Missouri, Kansas, Texas, were used to assess spatial variations in the population trends of target species. Modeling of this information was used to identify the causes of low productivity and/or low survivorship of target species. Analytical model improvements enabled the inclusion of GIS-based spatial habitat and weather data. Ultimately the spatial and other information gathered aided in the creation of landscape level habitat data in analytical models. These models distinguished what habitats were promoting survival and

productivity and which habitats were not. Management actions included the creation and/or restoration of high quality habitats for declining bird species. Generalized management plans and multi-use strategies were created from models in order to reverse declining populations. Further years of study will provide feedback on success rates of management actions.



Photo by DoD Legacy Tech Notes

Prairie Warbler used for Mark and Recapture during this study

Benefit:

The (MAPS) Program provided critically needed demographic data for 100+ species including many of continental and regional conservation concern. This project's research provided information regarding populations declines and proposed management tools to bring about productivity in neotropical migratory and residential landbird species on military installations. This information provided methods to understanding factors that influence bird populations such as habitat types, amount of forest cover, and degree of habitat fragmentation. The results of this study were ultimately used to create an adaptive ecosystem management strategy that allows habitat preservation to coexist with the use of land for military training.



Photo by DoD Legacy Tech Notes

Management of Early Succession Habitat through Prescribed Burning

Accomplishments:

This project reported avian demographics for station-, installation- and regional-scale demographics using banding data collected at up to 78 MAPS stations since

1994. It developed useful species-landscape models, and subsequent management guidelines, for ten BCC species breeding on DoD installations, including five forest/woodland species Acadian Flycatcher, Wood Thrush, Worm-eating Warbler, Louisiana Waterthrush, Kentucky Warbler, and five successional/scrub species, Bewick's Wren, Blue-winged Warbler, Prairie Warbler, Field Sparrow, and Painted Bunting (western population). For six of the ten species, species-landscape models were used to predict the numbers of individuals expected to be caught at each of eight new or recently managed stations located on the installations. Three models predicted adult numbers to within two individuals of the observed numbers. The other seven models underestimated the number of birds banded by between 10 and 40%; much of these differences are attributed to the effects of weather. Overall, the models appear to be useful in predicting the effects of management on species of conservation concern. However, more years of data are required to test predictions of reproductive success.



Frequent spring burning of a shrub community surrounding a MAPS station (nets shown in blue) at Fort Leonard Wood, Missouri is expected to a) contribute to a firebreak, b) restore native oak savannah, and c) create habitat for Field Sparrows.

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