



# Modeling Overwintering Survival of Declining Landbirds on DoD Installations by Habitat

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## Background:

Many landbird species that overwinter in temperate North America are declining in numbers. Among these are many species that prefer early-successional shrubland and edge habitats. Because these habitats are also typically favored for military training activities, a unique opportunity exists to integrate avian winter habitat management and the goal of military readiness and range sustainment. Little is known, however, regarding what factors influence the quality of winter habitats for declining landbird species. With funding from the DoD Legacy Program, The Institute for Bird Populations initiated the Monitoring Avian Winter Survival (MAWS) program on four military installations during winter 2003-04 in an effort to identify factors that affect habitat quality for overwintering birds.



Banders collecting data on overwintering birds at a MAWS station on Camp Joseph T. Robinson, Arkansas (Photo by Margaret Muenich).

## Objective:

Overall goals of the MAWS program are the identification of factors that affect avian winter habitat quality and the development of habitat management strategies to reverse bird population declines. Specifically, the program aims to: (1) provide estimates of apparent winter survival (site persistence) rates and indices of physical body condition for a suite of 25 target landbird species at multiple spatial and temporal scales; (2) construct models of apparent overwintering survival rates and body condition of these species as functions of local and landscape-scale habitat variables; and (3) develop avian management guidelines.

## Summary of Approach:

Six monitoring stations were established on each of four military installations: Fort Bragg, NC; Fort Benning, GA;

Camp Robinson, AR; and Fort Chaffee, AR. Stations span a continuum of habitat types, from mostly-forested, to predominantly grassland or shrubland. At each station, mist-net sites were established, and birds were banded during monthly 3-day pulses of field work between November and March of 2003-04, 2004-05, and 2005-06. A few target species have been color-banded, and re-sighting efforts and behavioral observations have been conducted for them. The residency status of all bird species encountered at each station each winter has been recorded. Detailed vegetation data have also been collected. State-of-the-art analytical methods are being used to link avian survival rates and body condition to habitat variables. Analyses of the first four years of the MAWS program and the development of management guidelines will occur after the 2006-07 field season.

## Benefit:

Model results and avian management guidelines deriving from this project will aid in the development of Integrated Natural Resources Management Plans (INRMP) for each military installation. INRMPs aim to ensure that military operations and natural resource conservation are integrated and consistent with stewardship and legal requirements.

## Accomplishments:

As of 2006, nearly 15,000 birds have been banded on these installations as part of the MAWS program. We have estimated apparent survival rates for target landbird species at installation- and/or station-levels. Age-specific analyses and analyses that incorporate local habitat variables have also been completed. Initial results suggest that many bird species of conservation concern may benefit from maintenance of early-successional habitats favored for military training. For example, winter site persistence of field sparrows (*Spizella pusilla*) appears to increase with higher ground cover and lower canopy and shrub cover. Future analyses will build on these initial results by incorporating landscape-scale habitat variables.

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