



# Integrated Assessment of Breeding Bird Populations and Habitat Needs on DOD Installations

Project # 14-768

## Background:

The presence of avian species which are potential candidates for listing may result in restrictions on activities and military training exercises; potentially impeding the DoD's mission of maintaining military readiness. In order to determine which avian species are present, compare the status of those species with the surrounding landscape, identify vegetation structure leading to strong populations of priority species, and to map priority species densities across participating installations we conducted avian monitoring on Camp Guernsey, Fort Carson, US Air Force Academy, Pueblo Chemical Depot, and Pinon Canyon Maneuver Site in Wyoming and Colorado. This information will improve management of avian communities on the participating installations and ensure that training activities required for the safe defense of our country can continue.

## Objective:

We conducted avian monitoring on participating installations, used those monitoring data to produce robust installation-specific population estimates, and developed habitat-relationship models to help predict important habitat for priority species on participating installations. This information will help ensure healthy bird populations and continued training activities on DoD lands now and in the future.

## Summary of Approach:

We conducted avian surveys on five DoD installations using a survey design and methods consistent with a large-scale, integrated avian monitoring program (<http://www.birdconservancy.org/what-we-do/science/monitoring/imbc-program/>). We collected data during the summer of 2015 and used those data to estimate avian densities and occupancy rates for avian species on participating DoD installations. We then used avian occurrence and vegetation data collected during the surveys to model species' densities as a function of vegetation structure. Finally, we used the avian occurrence data, and remotely sensed expected vegetation, to predict avian densities across the participating installations.

## Benefit:

We provided avian density estimates, occupancy estimates, habitat-relationship information, and predicted density maps to DoD installation managers to

facilitate a more detailed understanding of the occurrence and status of species on participating installations. The integrated nature of the project allows DoD managers to compare avian population metrics from their installation to other nearby installations or to the surrounding landscape. This allows managers to assess habitat quality within the participating installations. The habitat-relationship models we produced allow DoD managers to infer how habitat changes will impact priority bird species on the installations. The predictive density maps provide DoD managers with spatially-explicit information on where priority species are likely to occur in high densities within installations. This information will assist managers in steering disturbances away from high quality habitat for priority species, targeting areas with marginal habitat for habitat restoration, and identifying potential impact areas which do not represent quality avian habitat. Together, these products provides DoD managers with information necessary to ensure that DoD training activities can continue concurrently with appropriate land stewardship.

## Accomplishments:

We have completed all deliverables associated with our project. The density and occupancy estimates we produced will help provide DoD managers with more detailed information regarding the species present on their installations, the relative habitat quality across installations, and background status level for these species for future comparisons. The habitat-relationship models we produced for seven priority bird species show spatially-explicit predicted avian densities on each of the five installations where sampling occurred. These maps can be used to identify marginal habitat for habitat enhancement, high-quality habitat for preservation, and low quality habitat where vegetation reducing training procedures would not impact priority species. In addition, the habitat relationship maps for Pueblo Chemical Depot may be used to inform land zoning as the installation is decommissioned.

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