



Habitat Use at Multiple Scales by Pinyon-Juniper Birds on Department of Defense Lands III: Landscape, Territory/Colony, and Nest Scales

Project # 12-425

Background:

Pinyon-juniper woodlands cover approximately 40 million hectares of the western US and represent the dominant woody vegetation and most biodiverse terrestrial habitats on at least six Department of Defense (DoD) installations. Pinyon-juniper habitats on DoD installations are currently threatened by drought, insects, disease, and fire, all of which can be exacerbated by climate change. We are modeling



pinyon-juniper habitat use by two sensitive species, Pinyon Jay (*Gymnorhinus cyanocephalus*) and Gray Vireo (*Vireo vicinior*), at three scales (landscape, territory/colony, and nest) on three DoD installations.

Pinyon Jays are year-round residents across the southwestern US and in ID, MT, WY, and central OR, where they inhabit woodlands and scrublands containing ponderosa pine, juniper, and chaparral vegetation. They nest colonially on traditional nesting grounds. Pinyon Jays are omnivorous, taking pine seeds, acorns, juniper berries, arthropods, and small vertebrates, but they especially depend on the seeds of pinyon pines. Pinyon Jays are the main long-distance seed disperser for pinyon trees, and cached pinyon seeds sustain Pinyon Jays over winter, support successful breeding, and increase jay population viability. Due to its unique keystone mutualism with pinyon trees, the Pinyon Jay is an important indicator of pinyon woodland productivity. The Pinyon Jay is a US Fish and Wildlife Service Bird of Conservation Concern (BCC), NM Partners in Flight (PIF) Level 1 Species of Concern, and DoD PIF priority species. Populations of Pinyon Jays range-wide have been declining significantly for over 40 years. Despite these declines, their habitat use has barely been studied.

Gray Vireos are short-distance migrants that breed in the southwestern US and northwest Mexico. Throughout their range, Gray Vireos use pinyon-juniper, scrubland, or chaparral habitats in arid, mountainous terrain or high plains. Their diet includes large arthropods, such as grasshoppers, cicadas, and caterpillars, and fruit in winter.



Distribution of the Gray Vireo in NM is patchy, and many occupied habitats contain fewer than 10 territories. Territory size is not well known, but a few studies have reported territories ranging from 2–10 ha, and singing males have been reported every 300 m in TX and AZ. Gray Vireos are commonly parasitized by Brown-headed Cowbirds (*Molothrus ater*), but the impact on vireo population viability is not well understood. The Gray Vireo is a DoD Species at Risk (SAR), DoD PIF priority species, threatened in the state of NM, a US Forest Service Sensitive Species (Region 3), and a NM PIF Level 1 Species of Concern.

Objectives:

The objectives of Year 3 of the project were to: 1. collect additional nest and paired random plot data for Pinyon Jays at Kirtland Air Force Base (KAFB) and Gray Vireos at White Sands Missile Range (WSMR), for finalizing nest-scale models; 2. create territory-scale models for vireos at WSMR; 3. revise and field test Pinyon Jay colony-scale models at KAFB; and 4. use improved imagery and additional field data to refine landscape-scale models and make them consistent across study sites.

Summary of Approach:

We are investigating pinyon-juniper habitat use by



Pinyon Jay and Gray Vireo at multiple scales (landscape, territory/colony, and nest) and across multiple installations: WSMR, KAFB, and Camel Tracks Training Area (CTTA). We are providing management recommendations for pinyon-juniper habitats in light of military activities and climate change.

Benefit:

This project:

- supports installation Integrated Natural Resource Management Plans and pinyon-juniper management;
- assesses potential impacts of military activities on two SAR;
- shares research protocols and management information with other DoD installations and non-DoD land managers who have responsibility for these two SAR;
- supports implementation of the DoD/ US Fish and Wildlife Service (USFWS) Memorandum of Understanding for Migratory Bird Conservation and the USFWS Final Rule for Take of Migratory Birds by the Armed Forces; assists in compliance with the North American Migratory Bird Treaty Act and Sikes Act; helps avoid listing of both species under the Endangered Species Act;
- supports priorities of several national conservation plans to which DoD is a partner;
- through improved management, can benefit other DoD sensitive pinyon-juniper species and SAR: *Oscura Mts. Colorado chipmunk*, (*Neotamias quadrivittatus oscuraensis*), Black-throated Gray Warbler (*Dendroica nigrescens*), and Juniper Titmouse (*Baeolophus ridgwayi*).

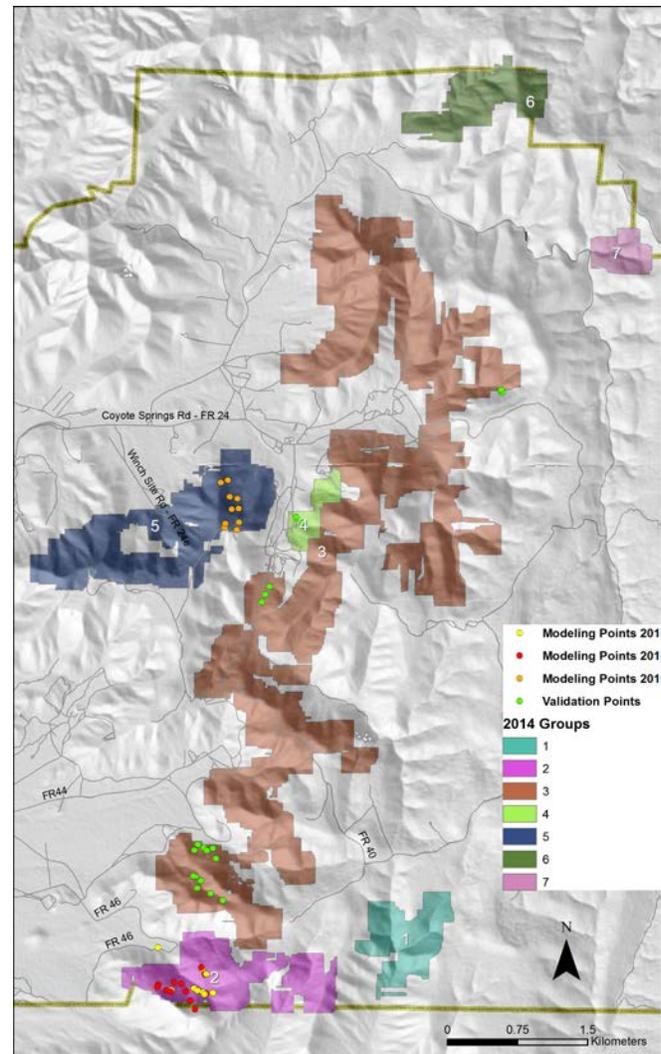
Accomplishments:

In Year 3 we collected additional nest plot data for vireos at WSMR and jays at KAFB, revised and field validated the KAFB Pinyon Jay colony-scale model, created a territory-scale model for WSMR Gray Vireos, and revised and finalized landscape-scale models for both species. The Year 3 report includes final models for both bird species at the nest, territory/colony, and landscape scales.

Management for Pinyon-Juniper Birds:

We recommend that KAFB and CTTA continue to restrict training activities in the Gray Vireo nesting areas during the breeding season and that all three installations avoid constructing new roads or infrastructure closer to territories than what currently

exists. Fire and thinning are not recommended management practices for Gray Vireo habitat. We did not find that Pinyon Jays avoided roads or buildings at the nest scale, but they did avoid people on foot. We recommend that no new roads or infrastructure be constructed any closer to traditional Pinyon Jay colonies than what currently exists. We recommend that ground training activities not be conducted within 2 km of traditional Pinyon Jay colony sites from March-July or in seed harvesting areas in the fall in past years. Fire is not recommended in Pinyon Jay habitat, and thinning should be strictly experimental and tightly controlled.



Pinyon Jay colony-scale predictive habitat model for KAFB.

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