



# Habitat Use at Multiple Scales by Pinyon-Juniper Birds on Department of Defense Lands: Landscape Scale

Project # 09-425

## 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 studying



pinyon-juniper habitat use by two Species At Risk (SAR), Pinyon Jay (*Gymnorhinus cyanocephalus*) and Gray Vireo (*Vireo vicinior*), at three scales (landscape, territory/colony, and nest) and 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. Able to carry up to 50 pinyon seeds at a time, Pinyon Jays are the main long-distance seed disperser for pinyon trees. In return for seed dispersal services, the trees provide mast crops of abundant, highly nutritional seeds. Cached 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 SAR and a NM Partners in Flight (NMPHF) Level 1 Species of Concern. Populations of Pinyon Jays range-wide have been declining significantly for over 40 years. In spite of these declines, their habitat use in pinyon-juniper 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. Diet includes large arthropods, such as grasshoppers, cicadas, and caterpillars, and fruit in winter.



Distribution of the Gray Vireo in New Mexico is patchy, and most 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 Texas and Arizona. 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 (*Vireo vicinior*) is a DoD SAR, listed as threatened by the state of New Mexico, a US Forest Service Sensitive Species (Region 3), and a NM PIF Level 1 Species of Concern.

## Objective:

The objective of this project is to create GIS habitat models to inform management for both species, in light of military activities and infrastructure. A study of two SAR that differ in seasonal movements, social structure, and foraging habits, viewed at multiple scales and several installations, will provide a broad perspective on the management of pinyon-juniper woodlands for avian SAR.

## Summary of Approach:

For this project, we are investigating pinyon-juniper habitat use by Pinyon Jay and Gray Vireo. We are collecting and comparing data on habitat use at multiple scales (landscape, territory, and nest) and across multiple installations: White Sands Missile Range, Kirtland Air



Force Base, and Camel Tracks Training Area. We are creating GIS models of habitat use for both species at the landscape and territory scales and analyzing microhabitat variables at the nest scale. We will interpret results in light of military activities and provide habitat management recommendations for both species.

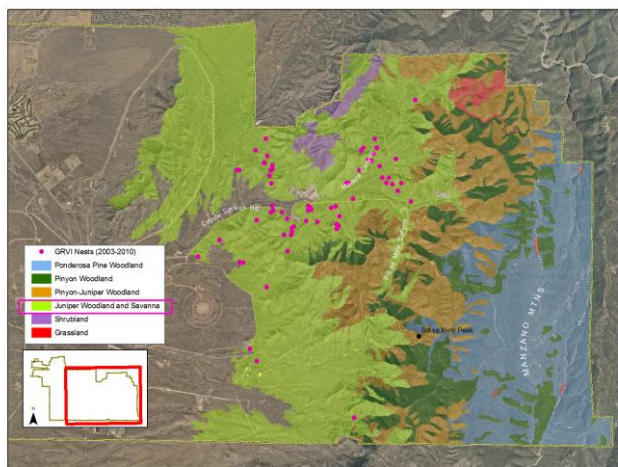
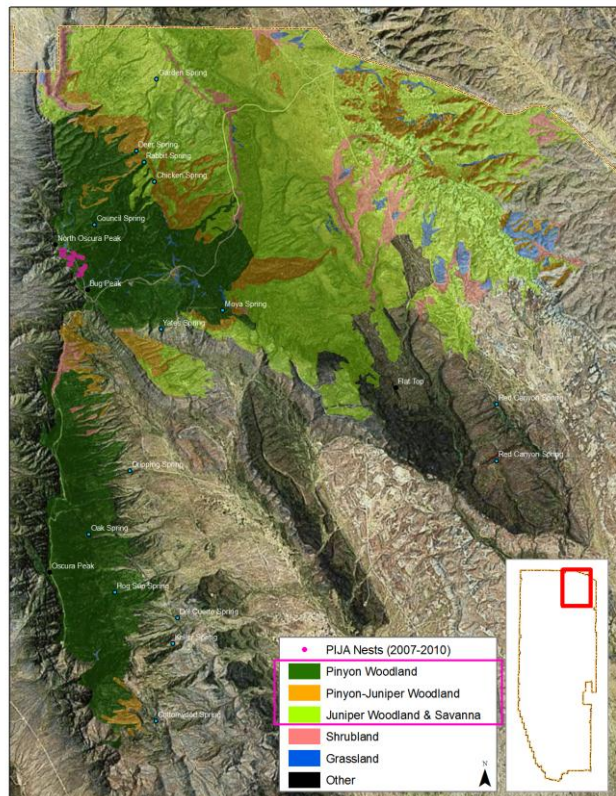
**Benefit:**

This project will

- support installation Integrated Natural Resource Management Plans and pinyon-juniper management;
- assist in assessing potential impacts of military activities on two SAR and their habitats and identify complementary and/or conflicting ecosystem management needs;
- share research protocols and management information with other DoD installations and non-DoD land managers who have responsibility for these two SAR;
- support implementation of the DoD/US Fish and Wildlife Service (USFWS) MOU for Migratory Bird Conservation and the USFWS Final Rule for Take of Migratory Birds by the Armed Forces; assist in compliance with the North American Migratory Bird Treaty Act and Sikes Act; help avoid listing of both species under the Endangered Species Act;
- support priorities of several national conservation plans to which DoD is a partner/cooperator;
- through improved ecosystem management, potentially benefit other pinyon-juniper sensitive species and SAR, such as Oscura Mts. chipmunk, Black-throated Gray Warbler, and Juniper Titmouse, on DoD lands.

**Accomplishments:**

In year one, we captured and banded 62 Pinyon Jays, attached radio transmitters to eight, and used location data to delineate breeding, nonbreeding, and year-round home ranges and two breeding colonies. We banded 29 Gray Vireos and delineated 38 territories. We began collecting nest-scale habitat data on both species at all three installations. We created landscape-scale GIS habitat models for Gray Vireo at Camel Tracks Training Area and Kirtland Air Force Base and for Pinyon Jay at Kirtland Air Force Base and White Sands Missile Range.



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