

Introduction

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The Gray Vireo (*Vireo vicinior*) is a small, gray songbird found in the dry foothills and bajadas west of the Great Plains in New Mexico, and, despite the fact that “few birds are as plain as the Gray Vireo” (Kaufman 2001:505), the species draws considerable management and conservation attention in the State. Three reasons explain this attention: 1) the bird breeds throughout most of the State in one type of tree, juniper (*Juniperus* spp.); 2) its populations are geographically scattered and very small; and 3) it is little studied.

The Gray Vireo ranges from 13.0–14.8 cm (5.1–5.8 in) in total length and from 11.5–13.5 g (0.4–0.5 oz) in mass. Aptly named, the bird is entirely gray, paler on its chin, chest, and belly, and possesses the longest tail of any vireo in proportion to body size. Among the vireos, the Gray Vireo’s closest relative is the Plumbeous Vireo (*V. plumbeus*).

The Gray Vireo is known to breed only in the southwestern United States, northern Mexico, and Baja California Norte, Mexico. Its wintering range is Baja California Sur, Mexico, coastal and lowland areas of Sonora, Mexico, and north into southwestern Arizona and southeastern California. A separate population winters in the Big Bend region of Texas, and might be present there year-round. Within New Mexico, the species is found throughout the State west of the Great Plains, but with an extremely patchy distribution often composed of small populations each supporting less than 10 territories. Over 80 percent of the known Gray Vireo breeding territories in New Mexico are found in just 12 sites, the largest site found in the Guadalupe Mountains west of Carlsbad, New Mexico. Other important sites include Navajo Lake, Caja del Rio near Santa Fe, and along the Sandia Mountains on Kirtland Air Force Base in Albuquerque.

Gray Vireos are found in hot, arid regions, most often associated with juniper trees, piñon (*Pinus* spp.), or oak (*Quercus* spp.). The vireo makes use of primarily three vegetation communities in New

Mexico (DeLong and Williams 2006). In the northern part of the State, the species uses piñon-Utah juniper (*J. osteosperma*) stands at elevations of 1768–2195 m (5800–7200 ft). In central New Mexico, the Gray Vireo typically uses oneseed juniper (*J. monosperma*) savannas at 1676–2134 m (5500–7000 ft), although the species can occasionally be found in juniper savannas above 2195 m (7200 ft) in west-central New Mexico. In southern parts of New Mexico, the bird uses juniper-oak woodlands and desert riparian communities at 1311–2012 m (4300–6600 ft).

The Gray Vireo is insectivorous during the breeding season, but tends to be primarily frugivorous during winter, taking fruits from the Elephant Tree (*Bursera microphylla*) in southwestern Arizona, southern California, and Sonora and, likely, Baja, Mexico.

Nesting Gray Vireos are territorial, with males maintaining the territory through song and patrolling of the territory perimeter. Male Gray Vireos arrive on the breeding grounds a few days before females and begin singing. Pairs are formed within the first day of the females’ arrival and pairs normally remain monogamous during the breeding season. In New Mexico, breeding commences in late April and can continue into July if nest failure has occurred. Nests are often on west or north-facing trees. Nesting trees in Colorado ranged from 1.8–4.8 m (5.9–15.6 ft) in height, with the nests ranging from 1.3–3.4 m (4.3–11.2 ft) above ground. In New Mexico, nests are placed primarily in juniper trees (DeLong and Williams 2006). The nest is typical of the vireo family in that it is a cup nest hanging from forks in the tree. Both sexes sit tightly on the nest (Barlow et al. 1999). Gray Vireos lay an average of 3 eggs, generally one egg per day until the clutch is complete, with incubation beginning after the second egg is laid. Incubation lasts 12–14 days. Nestlings are altricial, with eyes beginning to open after five to six days. All fledglings tend to leave the nest on the same day. In New Mexico, of

44 nests examined, young fledged per territory ranged from 0.7 to 3.0 fledglings (DeLong and Williams 2006). Parents will feed the fledglings 5–10 days after they leave the nest, with the young staying within 15.0–20.0 m (49.2–65.6 ft) of the nest. Subsequent dispersal by immature birds is little studied.

Brood parasitism by Brown-headed Cowbirds (*Molothrus ater*) is a threat to Gray Vireo nests and could be a major limiting factor of the vireo in New Mexico. Both sexes of the Gray Vireo will chase off a cowbird, but, if the nest is parasitized, the parents will normally abandon the nest and try again elsewhere.

The primary threat to the Gray Vireo is alteration of its breeding habitat, mainly juniper-dominated habitat. Such activities include, but are not limited to, thinning and control of juniper, firewood collection, use of trees for biofuel energy production, and removal of trees to facilitate oil and gas production. The species will not use areas lacking trees. A second concern is the scattered, sparse distribution of the bird, leaving it vulnerable to perturbation. Due to the number of threats, the Gray Vireo was listed as endangered, group 2 (which is now termed “threatened” with changes in terminology), by the New Mexico Department of Game and Fish (NMDGF) in 1983, and as a Species of Greatest Conservation Need under the Comprehensive Wildlife Conservation Strategy of New Mexico (NMDGF 1990, 2005). In 2006–2007,

with the aid of an extensive advisory committee composed of both private and government officials, NMDGF developed a recovery plan for the species (NMDGF 2007). Key recommendations for the recovery of the species were to manage it both on a statewide basis and in four management units within the State; to improve the knowledge of the biology and status of the bird; to improve communication among management agencies, such as providing guidelines for and sharing information on the management of the species; and to improve the knowledge of the impact of anthropogenic habitat alterations on the biology of the Gray Vireo.

An overriding concern throughout the development of the recovery plan was the lack of biological information about the species. While charismatic species like Bald Eagle (*Haliaeetus leucocephalus*) and Peregrine Falcon (*Falco peregrinus*) are well studied, the Gray Vireo is not. At the inaugural meeting of the Gray Vireo Recovery Team, the top recommendation for how to recover the species was to gather together all known information about the bird in New Mexico. An opportunity developed whereby researchers on the Gray Vireo could come together to present their current findings in a symposium held on 12 April 2008 in conjunction with the 46th Annual Meeting of the New Mexico Ornithological Society. These proceedings are a result of that symposium.