Gray Vireo (*Vireo vicinior*)

NMPIF level: Species Conservation Concern, Level 1 (SC1)

NMPIF assessment score: 18

NM stewardship responsibility: Low-Moderate

National PIF status: Watch List

New Mexico BCRs: 16, 34, 35

Primary habitat(s): Pinyon-Juniper Woodland, Montane Shrub

Other habitats used: Great Basin Shrub, Chihuahuan Desert Shrub

Summary of Concern

Gray Vireo is strongly associated with pinyon-juniper and scrub-oak habitat across its small breeding range in the southwestern United States and northern Mexico. Although population trends are generally positive, this species is vulnerable due to its small range and population size. It may be threatened by ongoing loss of pinyon-juniper habitat, and is vulnerable to brood parasitism by Brown-headed Cowbirds.

Associated Species

Cassin's Kingbird (SC2), Western Scrub-Jay (SC2), Juniper Titmouse (SC1), Bushtit, Blue-gray Gnatcatcher, Mountain Bluebird (SC2), Northern Mockingbird, Spotted Towhee, Scott's Oriole

Distribution

Gray Vireo breeds in mid-elevation woodland and scrubland habitats of the southwestern United States and northern Mexico. Most the species' range falls within the states of Utah, Colorado, Arizona and New Mexico. Small populations also occur in southern portions of California, Nevada and Texas, and extend into the Mexican states of Sonora and Chihuahua. The species is a short distance migrant, wintering mostly in coastal and lowland desert areas of Sonora and in Baja California (Barlow et al. 1999).

In New Mexico, Gray Vireos are locally distributed across the western two-thirds of the state. They may be found in the Guadalupe and southern Sacramento mountains; the Organ and San Andres mountains; the southern Peloncillo mountains; the Silver City area; in the foothills of the Magdalena, Manzanita,

and Sandia mountains; western Santa Fe county; a few canyons in the western Zuni mountains; and in San Juan and Rio Arriba counties in appropriate habitat. The species may be more widespread within the state than is currently known (DeLong and Williams 2006).

Ecology and Habitat Requirements

Gray Vireos typically prefer open pinyon-juniper woodland or juniper savannah with a shrub component. In New Mexico, the species occurs in chaparral-juniper, pinyon-juniper and pinyon-madrone associations (Hubbard 1970, Barlow 1978). It also occurs in mid-elevation montane shrub habitats with rocky slopes and scattered conifers (Barlow et al. 1999). In northwest New Mexico, Gray Vireos are found in broad-bottomed, flat or gently sloped canyons, in areas with rock outcroppings, or near ridgetops. In these areas, antelope brittlebrush, mountain mahogany, Utah serviceberry and big sagebrush are often present. Gray vireos are often found in areas of moderate shrub cover (35-45%) with large amounts of bare ground between herbaceous plants (Reeves 1999). In southern New Mexico, Gray Vireos may associate more with oak, madrone, or desert shrub species.

Habitat selection limits the distribution of Gray Vireos across altitudinal gradients. The species generally occurs at lower elevations than Plumbeous and Hutton's Vireos, and at higher elevations than Bell's Vireo (Oberholser 1974, Barlow et al. 1999). In the breeding season, the species is often patchily distributed, with areas of apparently good habitat left unoccupied. Nests are placed in small forks in low trees or shrubs, often less than 10 feet off the ground. In Colorado, 26 of 27 nests were located in junipers (Barlow et al. 1999). In southern New Mexico, oaks are also often used (Hawks Aloft 2005). The species appears to show considerable breeding site fidelity. In Texas, 20 of 22 banded birds returned to the same site the following year, and in Colorado, a banded male occupied the same territory for three years (unpublished data cited in Barlow et al. 1999).

Gray Vireos arrive in New Mexico from mid to late-April, and generally depart by mid-August. They may raise one or two broods, with a clutch size of 3 or 4. Nests are sometimes parasitized by Brown-headed Cowbirds, though information concerning effects of cowbird parasitism on this species is limited. Nests containing cowbird eggs are often abandoned. Gray Vireos are mostly insectivorous during the breeding season, foraging on the ground and in shrubs and trees up to 16 feet. In winter, the species shifts to a predominantly frugivorous diet (Barlow et al. 1999).

Conservation Status

Species Assessment

DISTRIBUTION	5
THREATS	4

GLOBAL POPULATION SIZE	4
LOCAL POPULATION TREND	3
IMPORTANCE OF NEW MEXICO TO BREEDING	2
COMBINED SCORE	**18**

Gray Vireo is a Species Conservation Concern, Level 1 species for New Mexico, with a NMPIF combined score of 18. From NMPIF, it receives moderate vulnerability scores of 3 for threats to breeding in the state and local population trend. Gray Vireo is a national PIF Watch List Species. It receives a maximum vulnerability score of 5 from PIF for its small distributional range, and scores of 4 for population size and threats during the breeding and non-breeding season. Gray Vireo is listed as threatened in the state of New Mexico. Gray Vireo is also a U.S. Fish and Wildlife Service (2002) national Bird of Conservation Concern.

Population Size

Total population for the state is unknown. PIF estimates a global population of 410,000, and that New Mexico holds about 5% of the global population, or around 22,000 birds.

Population Trend

BBS data showed a significantly increasing trend for Gray Vireos range-wide during the 1980s and 1990s, although this may, in part, reflect increased ability by survey personnel to detect this easily overlooked species (Barlow et al. 1999). Current range-wide BBS data still show an increasing trend, but with insufficient sample size and data quality for a reliable estimate to be made. BBS coverage of this species in New Mexico is minimal. The highly negative trend shown for New Mexico reflects a drop in detections on a small number of routes in the northwest part of the state. NMPIF assigns a score of 3 for local population trend, indicating uncertainty. BBS data for 1966-2004 are:

	Annual Trend (%)	P-value	Number of Routes
New Mexico	-16.2	0.61	6
FWS Region 2	1.6	0.58	20
Western BBS	0.4	0.86	39

Threats

Primary threats to Gray Vireos are the loss or alteration of suitable nesting habitat and wintering habitat. In some areas, juniper habitat for Gray Vireos may have increased as a result of long-term overgrazing of grasslands. More generally across the breeding range of the species, however, pinyon-juniper woodlands have been cleared for livestock production, and further reduced by both legal and illegal cutting for firewood. Currently, Gray Vireo habitat might be reduced by die-off of pinyon-juniper woodland, the result of a combination of persistent drought and widespread bark beetle infestation. This has occurred over large areas, particularly in northern New Mexico, affecting a considerable percentage of the state's pinyon-juniper habitat.

Because of their limited winter distribution, Gray Vireos may also be at risk due to habitat loss or alteration in northwest Mexico, but little information is available. Brood parasitism by Brown-headed Cowbirds is thought to be the cause of range reductions in southern California; however, in Texas, cowbird activity appears not to have affected overall vireo reproductive success (Barlow and Flood 1990). In one recent study in southeast New Mexico, more than two-thirds of nests located (N=19) were parasitized (Hawks Aloft 2005, Stake 2005). The extent to which brood parasitism impacts Gray Vireos may vary regionally, and requires further study.

Management Issues and Recommendations

Management for Gray Vireos in New Mexico should focus on the protection of existing healthy pinyon-juniper woodlands, in order to minimize the impacts of recent and ongoing loss of this habitat to drought and beetle infestation. Areas containing only juniper and a shrub component may provide suitable habitat for Gray Vireos and should be conserved.

NMPIF Recommendations

- Restrict clearing or wood cutting in areas of healthy and intact pinyon-juniper habitat.
- When and where feasible, initiate restoration of pinyon-juniper habitat. (Note however that where pinyon trees have been eliminated, this will be a long-term endeavor.)
- Maintain 35-45% shrub cover over large areas in middle-aged stands of juniper or pinyon-juniper.

Species Conservation Objectives

PIF Objectives

The PIF North American Landbird Conservation Plan designates Gray Vireo as a Long-Term Planning and Responsibility species, and sets an objective of maintaining or slightly increasing the present species population over the next 30 years.

NMPIF Objectives

- Maintain or establish at least 10 self-sustaining populations of Gray Vireo in the Colorado Plateau, 5 in the Mogollon Rim, 4 in the Chihuahuan Desert, and 1 in the Mexican Highlands.
- Develop and implement a census methodology for more accurate assessment and monitoring of Gray Vireo populations in New Mexico.

Sources of Information

Barlow, J. C. 1978. Effects of habitat attrition on vireo distributions and population density in the northern Chihuahuan Desert. Pp 391-596 *in* Transactions of the symposium on the resources of the Chihuahuan Desert region--U.S. and Mexico (R. H. Wauer and D. H. Riskind, eds.) USDI, Natl. Park Serv., Trans. Proc. Ser 3.

Barlow, J. C., and N. Flood. 1990. Factors influencing the bird population dynamics in the northern Chihuahuan Desert. Pp. 31-40 *in* Third symposium on the resources of the Chihuahuan Desert region--U.S. and Mexico (A. M. Powell et al. eds.). Chihuahuan Desert Res. Inst., Alpine, TX.

Barlow, J. C., S. N. Leckie, and C. T. Baril. 1999. Gray Vireo (*Vireo vicinior*). *In* The Birds of North America, No. 447 (A Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

DeLong, J. P., and S. O. Williams. 2006. Status report and biological review of the Gray Vireo in New Mexico. New Mexico Department of Game and Fish, Santa Fe, NM.

Hawks Aloft. 2005. Gray Vireo population monitoring in southeast New Mexico. Report submitted to New Mexico Department of Game and Fish. Hawks Aloft, Inc., Albuquerque, NM.

Oberholser, H. C. 1974. The bird life of Texas. Vol. 2. Univ. of Texas Press, Austin, TX.

Reeves, T. 1999. Gray Vireo distribution on BLM Farmington District lands in McKinley, Rio Arriba, San Juan Counties, New Mexico: 1999 results and final report on three-year study. Bureau of Land Management, Farmington, NM.

Stake, M. 2005. Colorful grays. Aloft: the journal of Hawks Aloft Inc. 12: 3-4.

U.S. Fish and Wildlife Service. 2002. Birds of conservation concern 2002. Division of Migratory Bird Management, Arlington, VA. 99 p.