Gray Vireo

Vireo vicinior

Photo by Martin Meyers

Habitat Use Profile

Main Habitats Used in Nevada	Pinyon-Juniper
Key Habitat Use Parameters	Mostly restricted to open Pinyon-Juniper woodland with a shrub understory moderate rocky slopes [p1, s1, i6] Favors high proportion of juniper / pinyon pine; mountain mahogany and oak may also be present [p1, s, (Schlossberg 2006)] Preferred height for shrub understory 0.5 – 2 m [p1] More likely to occur along shallow drainages or at base of slopes and escarpments [EO] No apparent relationship with distance to water [s1]
Minimum Patch Size	Territory size: 2-10 ha [p1]

Conservation Profile

Priority Status	Conservation Target
Reasons for Priority Status	High Stewardship Responsibility Regional Declines
Other Rankings	Continental PIF: Watchlist Audubon Watchlist: Yellow Natural Heritage: S3B USFWS: Bird of Conservation Concern (Mojave), Migratory Bird BLM: Sensitive Species NDOW: Conservation Priority
Trends	Historical: Unknown Recent: Stable in West according to BBS [i1]; unknown or declining according to other analyses [p8, p3]; NV trend not known
Population Size Estimates	Nevada (NBC): 78,000 Nevada (PIF): 300 Global: 360,000 Percent of Global: 22% (Based on NBC estimate)
Population Objective	TBD
Monitoring Coverage	Source: Nevada Bird Count Coverage and Adequacy: Very good
Key Conservation Areas	TBD

Natural History Profile

Seasonal Presence in Nevada	Spring – summer
Known Breeding Dates in Nevada	Late March– mid-July [p4, EO, p3]
Nesting Habits	Nest well-concealed nest in dense pinyon or juniper, often facing west or north in forked lateral branches that are well-concealed [p1, i6] Average nest height about 2 m; average height of nest tree about 3 m [p1] Fidelity to breeding territories probably high (Shuford and Gardali (2008))
Food Requirements	Arthropods gleaned in thickets (1-4 m height) [p1]

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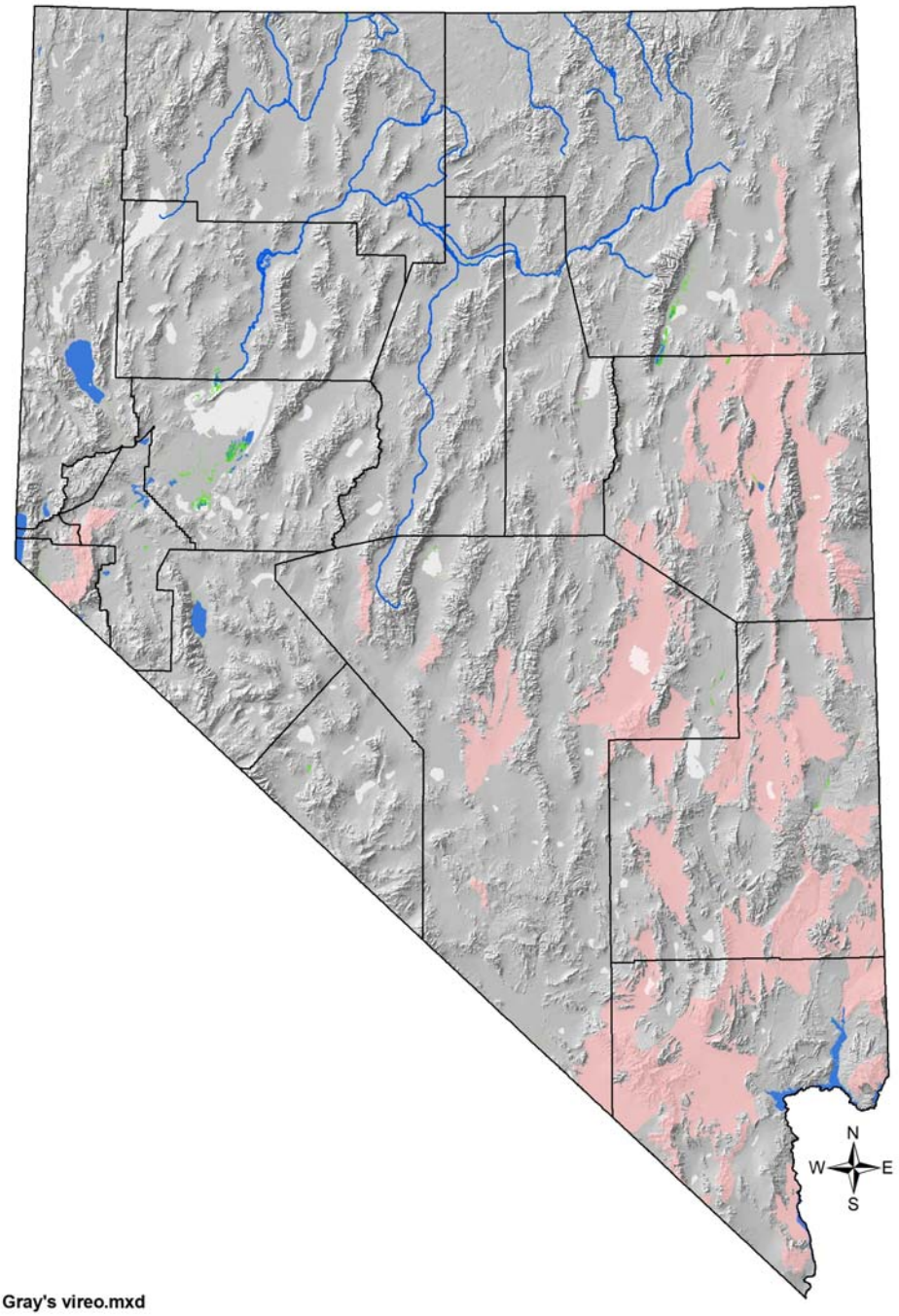

File: Gray's vireo.mxd

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Temporary Map Key

Pink: Breeding range
Hot pink / magenta: For some birds, breeding data was limited, and was supplemented by extrapolation to include likely breeding range. In these cases, hot pink represents known breeding range, and lighter pink the extrapolated breeding range.
Blue: Winter range
Yellow: Important migration stopover areas
Purple: Year-round range
Green: In some maps, wetlands mapped by SWReGAP are shown in green for interpretational purposes
Dot symbols: In cases where breeding records were isolated or very restricted in extent, they are represented by a pink dot symbol rather than a shaded area.
Arrows: Major migration routes. These are shown only for birds for which there are migration-associated conservation issues.

OVERVIEW

Grav Vireos have a restricted global range, and Nevada hosts over 20% of their known breeding population. The Nevada Bird Count and the Nevada Breeding Bird Atlas project extended the known breeding range of Gray Vireos significantly northward into eastern and central Nevada (White Pine County and southern Elko county, northern Nye County, and southern Eureka County), and also resulted in a drastic uptick in the estimated Nevada population size. In the Mojave region, habitat preferences restrict Gray Vireos to higher elevations (Spring Mountains and Sheep Range), but they occur at lower elevations further north [i6], often in relatively narrow mid-elevation bands [p2]. Much remains to be clarified about this bird, including whether or not Nevada populations are in fact stable.

ABUNDANCE AND OCCUPANCY BY HABITAT

- NBC data

Gray Vireo

	Primary Habitat Type Present at Transect	No. Transects with Sightings	Nevada Bird Count Sightings per 40 ha			
				average	95% confidence interval**	% transects occupied
Great Basin	Coniferous Forest	1		2.5	n/a	n/a
	Montane Shrub	1		0.6	n/a	0.11 (1/9)
	Mountain Mahogany	1		0.6	n/a	0.11 (1/9)
	Pinyon-Juniper	15		4.1	2.2 - 6.0	0.28 (17/61)
Mojave	Coniferous Forest	1		3.0	n/a	0.75 (3/4)
	Joshua Tree	2		0.8	-4.5 - 6.2	0.15 (3/20)
	Lowland Riparian	2		0.9	-0.1 - 1.8	0.11 (4/36)
	Mojave Scrub	1				0.5 (1/22)
	Montane Riparian	4		4.4	-2.8 - 11.6	0.44 (4/9)
	Montane Shrub	3		2.0	0.0 - 4.0	1.0 (5/5)
	Pinyon-Juniper	9		3.2	1.4 - 4.9	0.75 (9/12)

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NEVADA-SPECIFIC STUDIES AND ANALYSES

Habitat Requirements (NBC data)

- In comparison with other pinyon-juniper stands, sites with Gray Vireo detections had less bare ground and sagebrush cover, but sagebrush height was similar.
- Detection sites also showed a tendency to have fewer trees per hectare, more juniper trees, and fewer pinyon pines than the average pinyon-juniper stand, though confidence intervals overlapped.

Landscape Associations (NBC)

- Logistic regression p-values for the 313 transects in the South and East regions:

Veg Type (Proportion)	**Coef**	**S,E only (logit)**	**Controlling for P-J**
Mojave Scrub	+	**0.065**	<0.001
Mesquite-Catclaw	+	0.270	0.556
Salt Desert	-	0.122	
Sagebrush	-	0.022	0.062
Pinyon-Juniper	+	**<0.001**	
Mt. Mahogany	-	0.144	0.107
Montane Sage	-	0.095	0.113
Montane Ripar+Aspen	-	0.176	0.153
MontaneRiparian		0.753	
Aspen	-	0.253	
Coniferous Forest	+	**0.310**	0.088
Lowland Riparian	-	0.163	
Wetland	-	0.432	
Agricultural	-	0.182	
Cheatgrass	-	0.140	
DISTANCE TO WATER		0.790	

- The well-known association of Gray Vireos with Pinyon-Juniper habitat is obvious in this analysis.
- Gray Vireos were also often associated with Mojave Scrub, but this mainly occurred on transects that also contained a substantial proportion of Pinyon-Juniper cover. It may also be related to an association of the species with Joshua Tree stands [investigate further] that occur just below the pinyon-juniper zone (although we did not currently have the ability to map them adequately).
- Similarly, the weaker association with Coniferous Forest or Mesquite-Catclaw is likely related to the availability of interspersed Pinyon-Juniper woodland. Interestingly, it appears that Gray Vireos may be avoiding Mountain Mahogany, though the negative association is not quite statistically significant. They were present on only one of the 50 transects with > 1% Mountain Mahogany cover.
- Distance to water does not influence the distribution or density of this species.

Other

- Estimated density 0.064 birds / ha in northern Arizona and southern Utah (Schlossberg 2006)

MAIN THREATS AND CHALLENGES

The nature and severity of threats to this bird are not well studied, and are somewhat conjectural [p8]. They include:

- Increasing closure of the Pinyon-Juniper woodland canopy within this bird's preferred elevation range as a function of altered fire regimes
- Heavy grazing, if applicable [p4]
- Invasive plants
- Cowbird parasitism may have negative impacts on reproductive output, but this has not been confirmed or quantified [p3]

CONSERVATION STRATEGIES

Habitat Strategies

- General Pinyon-Juniper conservation strategy
- Until better information is available (see below), suggested interim habitat strategies include:
    - Limit or manage grazing in areas where Gray Vireos occur in high densities
    - Conduct Pinyon-Juniper habitat improvements according to recommendations below

Research, Planning, and Monitoring

- A fundamental need is to gather additional information about this bird's population trends and habitat requirements. Priorities include:
    - Continue monitoring through Nevada Bird Count to determine Nevada population trend
    - Conduct additional study to better understand detailed habitat requirements, to quantify the impact of grazing and invasive plants, and to create acceptable threshold levels for these impacts, as well as for pinyon-juniper canopy closure.
    - In particular, existing information about preferred density of understory, especially sagebrush, is contradictory (NBC data vs. Schlossberg (2006)) and needs to be resolved
    - Determine level of cowbird parasitism [EO]

Other

- Where Pinyon-Juniper thinning or removal is contemplated, the following guidelines are provided:
    - Areas that are suitable for habitat improvement efforts:
        - Tree (i.e. Pinyon-Juniper) canopy closure exceeds established threshold (not currently quantified, but 35% is our suggested interim threshold level)
        - Desirable shrub communities are present that would benefit from canopy thinning
        - Potential for invasive plants is minimal or manageable
    - Treat these areas with tree thinning / removal and/or prescribed fire, following the parameters suggested in the Pinyon-Juniper habitat conservation strategy
    - Monitor responses of shrub community and birds

OTHER PRIORITY SPECIES WITH SIMILAR CONSERVATION STRATEGIES

- Black-chinned Sparrow

FURTHER READING

- Schlossberg 2006

Temporary codes for standard references
[p1] Birds of N. America account for this species
[p2] NV Bird Conservation Plan ver. 1 (Neel 1999)
[p3] NV Wildlife Action Plan
[p4] Nevada Breeding Bird Atlas
[p5] PIF N. American Landbird Conservation Plan (Rich et al 2004) (NOTE:
[p6] Intermountain West Regional Shorebird Plan (Oring et al 2003)
[p7] Pacific Flyway reports
[p8] Shrubsteppe Landscapes in Jeopardy (Dobkin and Sauder 2004)
[p9] Birds in a Sagebrush Sea (Paige and Ritter 1999)
[s1] NBC-based population size estimates
[s2, s3] NBC-based habitat relationship analysis
[s4] Breeding Bird Atlas breeding phenology data
[i1] BBS trends analysis (Sauer et al 2005)
[i2] NV Upland Game Management Plan (Espinosa et al in prep.)
[i3] Western Quail Management Plan (Zornes et al 2008)
[i4] NDOW Shorebird and Waterbird monitoring data (Neel)
[i5] Brad Andres IMJV Shorebird / Waterbird data set
[i6] GBBO Technical Report 08-01 (2008)
[EO] Expert opinion from NVPIF group members
[IWWCP] Intermountain West Waterbird Conservation Plan
[NAWCP] North American Waterbird Conservation Plan

[LBCUSACP] Long-billed Curlew Status Assessment and Conservation Plan
[USSCP] U.S. Shorebird Conservation Plan
[WHSRN] Western Hemispheric Shorebird Regional Network