

Gray Vireo

Vireo vicinior

REGULATORY STATUS

USFWS: Migratory Bird
USFS R2: No special status
USFS R4: No special status
Wyoming BLM: No special status
State of Wyoming: Protected Bird

CONSERVATION RANKS

USFWS: Bird of Conservation Concern
WGFD: NSSU (U), Tier II
WYNDD: G5, S1
Wyoming Contribution: LOW
IUCN: Least Concern
PIF Continental Concern Score: 14

STATUS AND RANK COMMENTS

Gray Vireo (*Vireo vicinior*) has no additional regulatory status or conservation rank considerations beyond those listed above.

NATURAL HISTORY

Taxonomy:

Vireos are monophyletic, with all species belonging to the genus *Vireo*. No subspecies of Gray Vireo are currently recognized ¹.

Description:

Gray Vireo is a medium sized vireo. The sexes are monomorphic in both plumage color and pattern, but the bill, wings, and tail of males are slightly larger than females ¹. Males are 130–148 mm long and weigh 11.5–13.5 g. Adult Gray Vireos have dull gray cheeks and upperparts; white lores; a complete, thin, white eye ring; blackish bill; lighter gray chin, throat, and chest; white abdomen and undertail coverts; dark grayish-black wings; one whitish wing bar; and white edges on the outer rectrices ¹. The plumage of juvenile Gray Vireos is more brownish and the wing bars are more distinct ². Similar sympatric species in Wyoming include Bell's Vireo (*V. bellii*) and Plumbeous Vireo (*V. plumbeus*); however, these species have incomplete eye rings, two wing bars, and shorter tails ³. Gray Vireo may also be distinguished from some other vireo species by its behavior of cocking and flicking its long tail, similar to gnatcatchers (*Polioptila* spp.), although several other vireo species (e.g., Plumbeous Vireo) also exhibit this behavior ⁴.

Distribution & Range:

During the breeding season, Gray Vireo is found primarily in montane regions and adjacent arid scrubland in the southwestern United States and northern Baja California, Mexico ^{5,6}. The species winters in parts of Texas, Arizona, and Mexico, although more information on the wintering range is needed ¹. In Wyoming, Gray Vireo has been found in the southwestern corner

of the state in areas where Utah Juniper (*Juniperus osteosperma*) occurs^{7, 8}. Observations of Gray Vireo have only been documented and confirmed as accepted by the Wyoming Bird Records Committee (WBRC) in 2 of Wyoming's 28 latitude/longitude degree blocks, both in Sweetwater County⁷⁻¹¹. To date, there are no confirmed breeding records for Gray Vireo in Wyoming⁸. However, 3 to 4 different individuals were first reported in southwestern Wyoming from 26 June to 27 July 1982, with a singing male documented from 2 to 6 June 1982⁹.

Habitat:

Gray Vireo is associated with arid shrubland and scrub habitats during all seasons, but occurs at higher elevations during the breeding season¹. The species is considered a thicket forager¹². In Wyoming, the species is restricted to mature Utah Juniper woodlands with moderate canopy closure and ample amount of Mountain Mahogany (*Cercocarpus montanus*) or other deciduous shrubs in the understory or in nearby clearings⁸⁻¹⁰. No Gray Vireo nests have been described from Wyoming, but elsewhere nests are supported by a horizontal fork among the branches of shrubs or small trees, and suspended 0.9–3.7 m above the ground¹⁰.

Phenology:

Gray Vireo is a short-distance migrant, leaving its wintering grounds from late February to mid-April¹. Two separate spring observations of Gray Vireo in Wyoming were both reported on 29 May in different years^{7, 8, 11}. Males are reported to arrive on their breeding grounds a few days before females, with pair formation completed within a day of the arrival of females, and nest building initiated 1–2 days following pair formation¹. Typically, 4 eggs are laid (range 3–5), one each day for 4 days or until the clutch has been completed^{1, 4, 13}. Eggs are incubated for 13–14 days, and nestlings fledge 13–14 days after hatching¹. There are no reports from Wyoming of Gray Vireo fall migration; however, the species is known to leave Colorado and southern California by the second week of August^{14, 15}.

Diet:

Gray Vireo is primarily insectivorous, although it may also become frugivorous on its wintering grounds¹. Gray Vireo consumes a variety of arthropods from the Orders Orthoptera (grasshoppers), Homoptera (cicadas), and Lepidoptera (caterpillars). It takes prey from leaves, twigs, and branches of small trees and shrubs; from trunks of small trees; and from the ground¹⁶. Most prey is taken by gleaning, stalking, and hawk-capturing (70%), with 25% taken by flycatching and 5% by pouncing^{17, 18}. Gray Vireo forages from the ground up to 9 m above the ground, with most foraging occurring at 1–4 m^{17, 18}.

CONSERVATION CONCERNS

Abundance:

Continental: WIDESPREAD BUT PATCHY

Wyoming: VERY RARE

Using Breeding Bird Survey (BBS) data, the Partners in Flight Science Committee estimated the global population of Gray Vireo to be 400,000 birds¹⁹. Currently, there are no robust population estimates for Gray Vireo in Wyoming. The statewide rank of VERY RARE is based on the rather small area of the state known to be occupied in any given season, and the small coverage of suitable habitat within that area. However, within suitable habitat in the occupied area, Gray Vireo appears to be rare, as it occupies only a small percentage of preferred habitat within its range and may not be readily detected during surveys expected to indicate its presence⁸.

Population Trends:

Historic: UNKNOWN

Recent: UNKNOWN

Historic and recent population trends of Gray Vireo are not known in Wyoming due to limited distribution in the state and low detection rates during monitoring. Currently, there are no robust North American BBS trend data for Gray Vireo in Wyoming. BBS trend data for Gray Vireo in Utah from 1968–2013 suggest a slight annual population decline (-0.44%, $N = 37$ routes, 95% CI -4.04–3.34)²⁰. However, these data fall within a credibility category with ‘deficiencies’ due to low relative abundance and number of routes with Gray Vireo detections²⁰.

Intrinsic Vulnerability:

HIGH VULNERABILITY

Gray Vireo has somewhat specialized habitat requirements, especially in Wyoming where it is restricted to a narrow area of Utah Juniper in extreme southern Sweetwater County⁸⁻¹⁰. Other life history characteristics may predispose the species to declines from changes in environmental conditions (e.g., fire suppression, climate change).

Extrinsic Stressors:

MODERATELY STRESSED

Gray Vireo requires mature junipers (> 100 years) for nesting, and a shrubby understory and shrub/juniper habitat interspersion for foraging¹⁰. Threats to preferred habitat include extensive tree removal; soil erosion; isolation from adjacent populations of Gray Vireo in the neighboring states of Utah and Colorado; and a lack of stand rejuvenation¹⁰. Furthermore, the availability of Utah Juniper habitat remains limited in Wyoming and may be negatively impacted through fragmentation, disruption of historic fire regimes, climate change, energy development, and removal and thinning programs^{21, 22}. Therefore, the future availability and suitability of this habitat in Wyoming is uncertain. A lack of information regarding the outcome of disturbance on Utah Juniper habitat can complicate successful management for this species¹⁰. Although little information is available on specifics, Gray Vireo is a common cowbird (*Molothrus* spp.) host. Most parasitized nests are abandoned within of days of egg-laying by the parasite¹. In California, Gray Vireo range contraction may be partly due to cowbird parasitism^{23, 24}. The introduction of livestock to areas occupied by Gray Vireo may attract cowbirds and cause a local increase in numbers and parasitism rates¹.

KEY ACTIVITIES IN WYOMING

Little work has been done specific to Gray Vireo in Wyoming since it was first noted in the state in 1982^{9, 10}. Initial work and written species accounts on avian Utah Juniper obligate species, including Gray Vireo, occurred in 1988¹⁰. However, higher priorities and limited personnel and funding precluded conducting additional work on these species. Gray Vireo is classified as a Species of Greatest Conservation Need (SGCN) in Wyoming due to restricted habitat distribution and a lack of information on the breeding status and population trends in the state. The species is not adequately monitored by current national or regional avian monitoring efforts in Wyoming, including the Integrated Monitoring in Bird Conservation Regions (IMBCR) program initiated in 2009 (0 detections)²⁵ or the BBS program conducted on 108 established routes since 1968²⁰. Gray Vireo is a species for which the WBRC requests documentation on all sightings. Observations of this species are reported to the Wyoming Game and Fish Department (WGFD) and vetted through the WBRC. In 2016 and 2017, the WGFD will be conducting a project focused on addressing data deficiencies for Utah Juniper obligate species, including Gray

Vireo, in southwestern Wyoming. This project will address a number of objectives, including evaluating species distribution and richness, estimating relative abundance and occupancy rates, and quantifying and evaluating habitat characteristics.

ECOLOGICAL INFORMATION NEEDS

In Wyoming, assessment of the status of Gray Vireo is hampered by a lack of ecological and population data. Additional information is needed on distribution and habitat use, and estimates of abundance and occupancy rates are needed to assess status, monitor populations, and evaluate trends. Research is needed on the effects of habitat alterations and the impact of brood parasitism on Gray Vireo, and to determine distinctive geographic variation in disjunct populations. Traditional state-wide survey efforts do not tend to detect Gray Vireo, suggesting targeted, species-specific monitoring efforts are needed. Because only two confirmed records are available for the species in Wyoming, additional work is needed to determine the frequency of these events in the state, including breeding status. Additionally, the distribution of juniper forests in Wyoming is greater than the distribution of Gray Vireo, and a better understanding of habitat use and requirements at this northernmost range boundary is needed.

MANAGEMENT IN WYOMING

This section authored solely by WGFD; Andrea C. Orabona. Gray Vireo is classified as a SGCN in Wyoming due to unknown population status and trends in the state; a need for robust information on breeding status; limited distribution of required breeding habitat; loss, degradation, and fragmentation of Utah Juniper habitat due to industrial developments; and incompatible management practices. Two separate but compatible survey programs are in place to monitor populations of many avian species that breed in Wyoming; the BBS²⁰ and IMBCR²⁵. While these monitoring programs provide robust estimates of occupancy, density, or population trends for many avian species in Wyoming, survey efforts do not tend to detect Gray Vireo at adequate levels, suggesting targeted, species-specific monitoring efforts are needed. Best management practices to benefit Gray Vireo are similar to those for sympatric Utah Juniper obligate species and include implementing a sufficient monitoring technique; maintaining mature stands of Utah Juniper habitat where Gray Vireo nests, including herbaceous vegetation and shrubs for foraging; implementing prescribed and natural fire management to maintain savannah-like stands of juniper woodlands in areas occupied by Gray Vireo; and coordinating Utah Juniper management to provide a mosaic of juniper woodland conditions²¹.

CONTRIBUTORS

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Figure 1: Adult Gray Vireo in Colorado National Monument outside of Grand Junction, Colorado. (Photo courtesy of Shawn Billerman)



Figure 2: North American range of *Vireo vicinior*. This map does not accurately reflect the species' range in Wyoming. (Map courtesy of Birds of North America, <http://bna.birds.cornell.edu/bna>, maintained by the Cornell Lab of Ornithology)



Figure 3: Gray Vireo habitat in southwestern Wyoming, dominated by Utah Juniper. (Photo courtesy of Leah H. Yandow, WGFD)



SOURCE: Digital maps of ranges for Wyoming Species of Greatest Conservation Need: Sept. 2016.
Wyoming Game and Fish Department and Wyoming Natural Diversity Database, University of Wyoming, Laramie, Wyoming.
Note that brown indicates the predicted distribution of the species;
heavy black lines indicate outermost boundaries of possible occurrence.

Figure 4: Range and predicted distribution of *Vireo vicinior* in Wyoming.