Black-throated Gray Warbler

Setophaga nigrescens

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: No special status
WGFD: NSS4 (Bc), Tier II
WYNDD: G5, S2
Wyoming Contribution: LOW
IUCN: Least Concern
PIF Continental Concern Score: 11

STATUS AND RANK COMMENTS

Black-throated Gray Warbler (*Setophaga nigrescens*) does not have any additional regulatory status or conservation rank considerations beyond those listed above.

NATURAL HISTORY

Taxonomy:

There are no subspecies recognized for Black-throated Gray Warbler [1-3], although Unitt (2004) recommends a range wide analysis of plumage variation [4], despite previous studies detecting only average differences among populations [2, 3, 5]. Originally, the Black-throated Gray Warbler was placed in the *Dendroica* genus, but recent genetic studies reclassified it into the *Setophaga* genus [6]. Thus, literature prior to 2010 lists the species in the *Dendroica* genus.

Description:

Black-throated Gray Warbler is an average-sized wood-warbler (11–13 cm, 7–10 g) [7]. It is identifiable by its black, white, and gray plumage with a yellow spot on the lores (might be difficult to see). On adult males, upperparts are gray with black streaks on the back, underparts are white with black streaks on the flanks, there are two white wing-bars and white on the tail, and the head and throat are black with white superciliary and submustachial areas. Adult females are similar, but are duller, have a white chin, and white mixed into the black throat patch. Juveniles are similar to adult females, but have a mostly white throat patch and are duller overall. There is little seasonal variation in plumage, but there might be a brownish coloration in the early fall [8]. The two warblers in Wyoming that could be confused with Black-throated Gray Warbler are Blackpoll Warbler (*S. striata*) and Black-and-white Warbler (*Mniotilta varia*). Blackpoll Warbler is only black and white in alternate plumage, and can be distinguished from Black-throated Gray Warbler by its white cheek and less distinctive facial pattern. Black-and-

white Warbler can be differentiated by its black and white striped upperparts and ventral streaks, which are not restricted to the flanks.

Distribution & Range:
Black-throated Gray Warbler has been documented in 16 of Wyoming's 28 latitude/longitude degree blocks, with confirmed or circumstantial evidence of breeding occurring in 8 of those 16 degree blocks [9]. Only 5 of the 16 degree blocks in which sightings have occurred include confirmed observations as accepted by the Wyoming Bird Records Committee (WBRC) [10]. Black-throated Gray Warbler is found in central and southwest Wyoming, and is a summer resident. The species' breeding range extends from British Columbia south to the northern Baja Peninsula, east to New Mexico, and north to central Wyoming. Black-throated Gray Warbler winters in central and western Mexico [7].

Habitat:
During the breeding season in southwestern Wyoming, Black-throated Gray Warbler prefers north- and east-facing slopes, woodland with Pinyon Pine (*Pinus edulis*), and breast-height understory vegetation [11]. Black-throated Gray Warbler prefers to breed in juniper woodland habitats [12]. Migration habitats are similar to breeding season habitats. In Colorado, Black-throated Gray Warbler uses piñon-juniper, scrub oak (*Quercus* spp.), cottonwood (*Populus* spp.), willow (*Salix* spp.), tamarisk (*Tamarix* spp.), and alder (*Alnus* spp.) habitats [13]. Winter habitat in Mexico and the southwestern United States is similar to breeding season habitat [7].

Phenology:
Migrants east of the continental divide in Wyoming arrive in early May, but timing of arrival in juniper habitats in the southwest is unknown [12]. Migrants arrive in Colorado between mid-April and late May, with a peak in early May [14, 15]. Timing of fall departure is uncertain due to few records in Wyoming [12]. In Colorado, departures range between early August and early October, with a peak of late August to mid-September [14]. There is no information on timing of pair formation or nest building [7]. Pairs usually produce only one brood, but are capable of a second brood [16, 17]. Eggs considered "fresh" were observed from mid-May to late June in Oregon and Washington [16]. Clutch size averages 4 eggs, with a range of 3–5 [18]. Timing of egg laying commencement and time between each egg laid is unclear, with substantially different times reported [16, 19]. There is no information on incubation period or hatching [7]. Chicks are altricial at hatching [7].

Diet:
Insects comprise the majority of food consumed by Black-throated Gray Warbler [7]. The only confirmed foods consumed are "small (2–4 cm) green caterpillars" [16, 20] and cordgrass (*Spartina* spp.) seeds [21].

CONSERVATION CONCERNS

Abundance:
Continental: WIDESPREAD
Wyoming: RARE
Using North American Breeding Bird Survey (BBS) data, the Partners in Flight (PIF) Science Committee estimated the global population of Black-throated Gray Warbler to be 2.4 million birds [22]. There is no estimate provided for the percentage of the global population that occurs in Wyoming. In northeast Utah, birds/km transect were estimated at 0.1 (±0.1), 1.8 (±1.2), and 0.4

in sagebrush-greasewood, juniper woodland, and riparian habitats, respectively [23]. The statewide rank of 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. Within suitable habitat in the occupied area, Black-throated Gray Warbler appears to be uncommon, occurring in relatively low densities and requiring intense survey efforts to detect the species [9]. Black-throated Gray Warbler density (number of birds per square km) and population size estimates for Wyoming are available from the Integrated Monitoring in Bird Conservation Regions (IMBCR) program for the years 2010, 2013, and 2015, although detections are limited so data must be interpreted with caution [24].

Population Trends:

Historic: UNKNOWN

Recent: UNKNOWN

Little data are available for Black-throated Gray Warbler in Wyoming. Currently, there are no BBS trend data for Black-throated Gray Warbler in Wyoming due to a limited distribution in the state and low detection rates during monitoring surveys. However, 1968–2013 BBS trend and survey-wide analysis indicate a statistically insignificant annual decrease of 1.49% (*N* = 390 routes, 95% CI: -3.49 to 0.72), an annual decrease of 1.49% (*N* = 388 routes, 95% CI: -3.49 to -0.72) in the western BBS region, and an annual decrease of 2.23% (*N* = 35 routes; 95% CI: -4.48 to -0.03) in Colorado [25].

Intrinsic Vulnerability:

MODERATE VULNERABILITY

In Wyoming, Black-throated Gray Warbler has moderate intrinsic vulnerability to extrinsic stressors. The species' primary vulnerabilities stem from its peripheral breeding range status and low density [9, 12]. Additionally, one of the taxon's preferred breeding habitats is mature juniper woodlands, which is limited in Wyoming [11, 26].

Extrinsic Stressors:

SLIGHTLY STRESSED

Extrinsic stressors to Black-throated Gray Warbler include nest parasitism and habitat alteration. Stressors in Wyoming are most likely associated with land use practices in preferred breeding habitat, specifically mature juniper woodlands, which are extremely limited in Wyoming and are generally concentrated in the southwestern reaches of the state. These areas may be subjected to heavy livestock grazing, oil and gas development, recreational uses, invasive species, altered fire regimes, and cowbird (*Molothrus* spp.) nest parasitism, as well as juniper thinning and removal treatments [26, 27]. Drought and climate change could also alter preferred habitat. While local, state, and federal land use agreements may limit adverse impacts to these areas and provide specific guidelines for alterations, particular efforts should be made to maintain multi-aged juniper woodlands with a multi-layered native understory plant community [26]. Brown-headed Cowbird (*M. ater*) has been shown to parasitize nests of Black-throated Gray Warbler across its range [28-31]. Additionally, habitat alteration, such as removal of overstory trees to enhance pastureland, might affect habitat use [32]. Fragmentation, alteration, and loss of habitat might have cumulative effects on Black-throated Gray Warbler populations, but there is little information available to assess these effects on either the local or regional level [7].

KEY ACTIVITIES IN WYOMING

Little work has been done specific to Black-throated Gray Warbler in Wyoming since the first nesting record was documented in the state in 1982 [33]. Black-throated Gray Warbler is classified as a Species of Greatest Conservation Need (SGCN) by the Wyoming Game and Fish Department (WGFD), and a Wyoming PIF Level III Priority Species due to restricted habitat distribution and limited information on the breeding status and population trends in the state [26]. Black-throated Gray Warbler is not adequately monitored by current national or regional avian monitoring efforts in Wyoming, including the BBS program conducted on 108 established routes since 1968 [25] and the IMBCR program initiated in 2009 (3 detections since initiation) [24]. Observations of this species are reported to the WGFD and vetted through the WBRC. Black-throated Gray Warbler is a species for which the WBRC requests documentation on first latitude/longitude degree block sightings and all nesting observations. In 2016 and 2017, the WGFD will conduct a project focused on addressing data deficiencies for Utah Juniper obligate species in southwestern Wyoming, including Black-throated Gray Warbler. 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 Black-throated Gray Warbler 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 Black-throated Gray Warbler, and to determine distinctive geographic variation in disjunct populations. Additional information is also needed to determine the extent of this species' status and distribution in other parts of Wyoming where observations have been documented, especially Big Horn, Fremont, Hot Springs, Carbon, Natrona, and Washakie Counties [9, 12]. The effects of incompatible forest management practices, habitat loss and degradation, drought, and climate change are needed.

MANAGEMENT IN WYOMING

This section authored solely by WGFD; Andrea C. Orabona. Black-throated Gray Warbler 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 BBS [25] and IMBCR [24]. 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 Black-throated Gray Warbler at adequate levels, suggesting targeted, species-specific monitoring efforts are needed. Best management practices to benefit Black-throated Gray Warbler are similar to those for sympatric Utah Juniper obligate species. These include implementing a sufficient monitoring technique; maintaining mature stands of juniper and piñon-juniper habitats where Black-throated Gray Warbler occurs, including small-scale openings of habitat and overstory trees; avoiding or minimizing insecticide use in woodland habitats to maintain a food source for Black-throated Gray Warbler (and other insectivores); and excluding grazing until after July 31st in areas where Black-throated Gray Warbler occurs to reduce brood parasitism by Brown-headed Cowbird [26].

CONTRIBUTORS

Brian M. Zinke, WGFD
Andrea C. Orabona, WGFD
Ian M. Abernethy, WYNDD

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Figure 1: Adult male Black-throated Gray Warbler (note black throat) in Moffat County, Colorado. (Photo courtesy of Bill Schmoker)

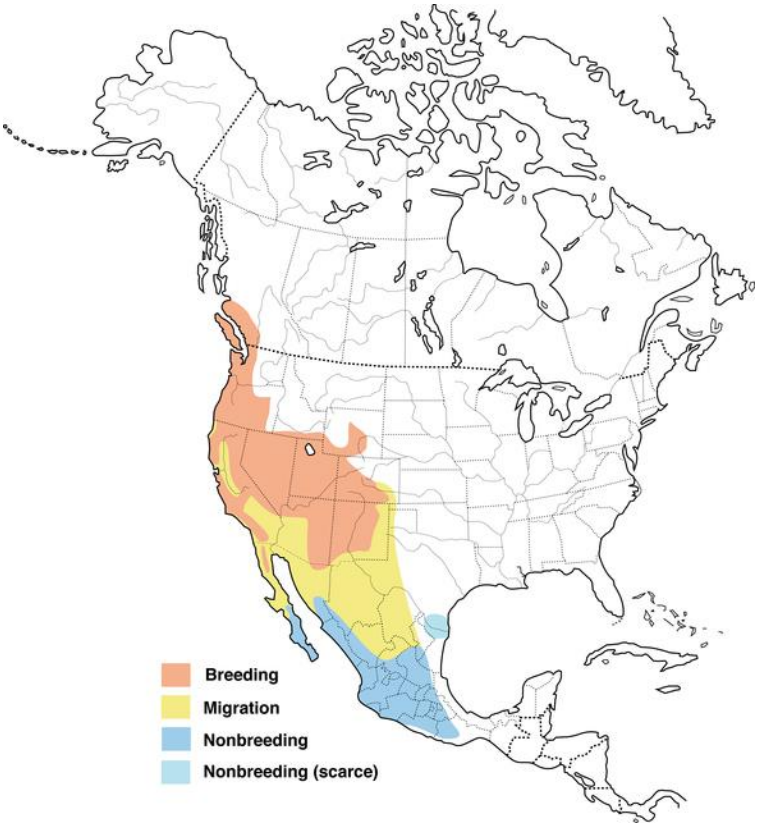

Figure 2: North American range of *Setophaga nigrescens*. (Map courtesy of Birds of North America, http://bna.birds.cornell.edu/bna, maintained by the Cornell Lab of Ornithology)

HABITAT PHOTOGRAPH

Figure 3: Photo not available.

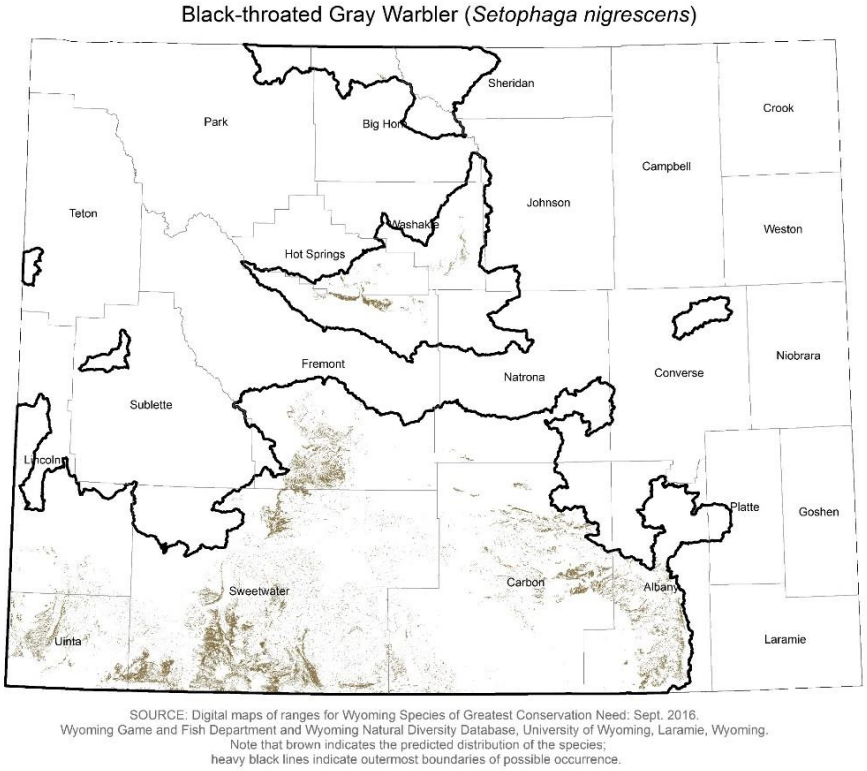

Figure 4: Range and predicted distribution of *Setophaga nigrescens* in Wyoming.