Juniper Titmouse

Baeolophus ridgwayi

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: NSS3 (Bb), Tier II
WYNDD: G5, S1S3
Wyoming Contribution: LOW
IUCN: Least Concern
PIF Continental Concern Score: 12

STATUS AND RANK COMMENTS

The Wyoming Natural Diversity Database has assigned Juniper Titmouse (*Baeolophus ridgwayi*) a state conservation rank ranging from S1 (Critically Imperiled) to S3 (Vulnerable) because of uncertainty about the abundance, proportion of range occupied, and population trends for this species in Wyoming.

NATURAL HISTORY

Taxonomy:

In 1997, Plain Titmouse (*Parus inornatus*) was split into two geographically distinct species based on genetic evidence and differences in ecology, morphology, coloration, and song: Juniper Titmouse (*B. ridgwayi*) and Oak Titmouse (*B. inornatus*) [1, 2]. There are currently two recognized subspecies of Juniper Titmouse, but only *B. r. ridgwayi* is found in Wyoming [2, 3].

Description:

Identification of Juniper Titmouse is possible in the field. Juniper Titmouse has uniform brownish-gray plumage year-round, with breast feathers that are slightly lighter than the back and wings, a short crest, unmarked face, dark gray legs and bill, and black eyes [2, 4]. The sexes are similar in appearance. Adults have a wingspan of approximately 22.9 cm and weigh 13.5–23.1 g, with males averaging slightly larger than females [2, 4]. The plumage coloration of Juniper Titmouse is similar to Bushtit (*Psaltriparus minimus*), but Bushtit lacks a crest and is substantially smaller (i.e., wingspan 15.2 cm and weight 5.3 g) [4].

Distribution & Range:

Juniper Titmouse occurs only in portions of western North America. The species is found year-round from southern Oregon and Idaho to extreme northern Sonora, Mexico [2]. A small isolated population also occurs on the border of New Mexico and Texas in the vicinity of the Guadalupe Mountains [2, 5]. Range overlap with Oak Titmouse is limited to a small area in northern California

[2, 6]. Juniper Titmouse may be physiologically restricted at the northern boundary of its continental distribution by thermoregulatory requirements and metabolic restrictions that limit tolerance to cold [7-9]. Wyoming is peripheral to the core range of Juniper Titmouse [2], but the species is a year-round resident [10, 11]. Juniper Titmouse is most frequently observed in southwestern Wyoming [10, 11]. Confirmed and suspected breeding has been documented in just 4 of the 28 latitude/longitude degree blocks in the state, all in southwestern and southcentral Wyoming [11].

Habitat:
Juniper Titmouse is a juniper and piñon-juniper woodland obligate across its distribution [2, 12]. In Wyoming, Juniper Titmouse occurs in mature Utah Juniper (*Juniperus osteosperma*) woodlands with large trees, high canopy cover, and high densities of senescent trees and dead limbs [10, 13-16]. Presence of Piñon Pine (*Pinus edulis*), although uncommon in Wyoming [17], has also been identified as a strong predictor of Juniper Titmouse habitat use within Wyoming juniper woodlands [14]. Juniper Titmouse nests primarily in existing tree cavities, and will use both natural cavities and cavities created by woodpeckers [2, 11].

Phenology:
Very little is known about the specific breeding habits of Juniper Titmouse in Wyoming. The species is believed to be non-migratory, with the exception of some short-distance movements outside of the breeding season [2, 10]. Juniper Titmouse is a territorial species that forms life-long pair bonds [2, 18]. Both the male and female actively defend their territory throughout the year, even outside the breeding season [2, 18]. Nests are likely initiated in April or May, and clutch size ranges from 4–7 eggs [2]. Females are solely responsible for incubation, which likely lasts 14–16 days [2]. Nests with young have been reported in mid- and late May in southwestern Wyoming [13]. Juniper Titmouse is believed to be a single-brood species [2].

Diet:
Juniper Titmouse feeds primarily on large seeds from trees (e.g., juniper seeds, piñon seeds, acorns, etc.), as well as terrestrial invertebrates and other plant materials [2, 18]. This species hoards seeds, but specific caching behaviors have not been formally documented [2, 18].

CONSERVATION CONCERNS

Abundance:
Continental: WIDESPREAD
Wyoming: RARE
Partners in Flight estimated the global population of Juniper Titmouse at approximately 180,000 in 2013 [19]. There are no robust estimates of abundance available for Juniper Titmouse in Wyoming. The species has a statewide abundance rank of RARE but appears to be uncommon within suitable environments in the occupied area [11]. From 1968–2015, annual Wyoming Breeding Bird Survey (BBS) detections of Juniper Titmouse ranged from 0 to 6, with none recorded in most years [20]. Juniper Titmouse was not detected during surveys for the Integrated Monitoring in Bird Conservation Regions (IMBCR) program between 2009–2015 [21]. More targeted surveys in juniper woodland habitat may be necessary to adequately detect Juniper Titmouse in Wyoming.

Population Trends:
Historic: UNKNOWN

Recent: UNKNOWN
Robust population trends are not available for Juniper Titmouse in Wyoming because the species is infrequently detected during monitoring surveys. North American BBS survey-wide trend data have deficiencies, and should be viewed with caution, but suggest that Juniper Titmouse numbers declined annually by 0.23% from 1966–2013 and increased annually by 0.58% from 2003–2013 [22]. Neither trend estimate was statistically significant.

Intrinsic Vulnerability:
HIGH VULNERABILITY
Juniper Titmouse has high intrinsic vulnerability in Wyoming because it is an obligate of mature juniper woodlands for all stages of its life cycle. Only 2.2% of the total land area in Wyoming is classified as juniper woodlands [17], which restricts the distribution and abundance of Juniper Titmouse in the state. In addition, the previously discussed physiological constraints and limited cold intolerance of this species (see Distribution and Range) may limit the potential for range expansion to juniper woodlands in northern Wyoming should loss or degradation of existing habitat occur [10].

Extrinsic Stressors:
MODERATELY STRESSED
Habitat loss, degradation, and disturbance could negatively impact Juniper Titmouse in Wyoming. Piñon and juniper woodlands have been expanding in many areas of the western United States since the mid-1800s [23], and the area of piñon-juniper habitat occupied by Juniper Titmouse could increase by > 25% in parts of its range [24]. However, existing juniper woodlands in Wyoming are potentially vulnerable to changes in fire regime; invasive species such as Cheatgrass (*Bromus tectorum*); drought and climate change; habitat fragmentation; and human disturbance, including juniper removal and thinning programs [17]. In addition, juniper woodlands in southwestern Wyoming are often associated with rocky habitats, which are threatened by potential energy development and exposure to anthropogenic disturbances from recreational activities [17, 25]. Wyoming is predicted to lose a majority of its Utah Juniper woodlands over the next century due to changing climate condition [26]. Currently, it is not known how potential extrinsic stressors may impact Juniper Titmouse in Wyoming.

KEY ACTIVITIES IN WYOMING

Juniper Titmouse is classified as a Species of Greatest Conservation Need (SGCN) by the Wyoming Game and Fish Department (WGFD), and as a Level II Priority Bird Species requiring monitoring in the Wyoming Bird Conservation Plan [27]. Current statewide activities for monitoring annual detections and population trends for Juniper Titmouse in Wyoming include the BBS program conducted on 108 established routes since 1968 [22], and the multi-agency IMBCR program initiated in 2009 [21]. In 2016, the WGFD began a two-year project designed to collect data on the distribution, relative abundance, and habitat use of piñon-juniper obligate species, including Juniper Titmouse, in the woodlands of southwestern Wyoming.

ECOLOGICAL INFORMATION NEEDS

In Wyoming, Juniper Titmouse would benefit from research to determine its detailed distribution and actual abundance. Very little is known about the specific breeding habits of this species in the state, and nothing is known about nest success or fledgling survival. Additional research is needed to examine how current and future anthropogenic and natural threats to Wyoming juniper woodlands could potentially effect Juniper Titmouse populations in the state.

MANAGEMENT IN WYOMING

This section authored solely by WGFD; Andrea C. Orabona. Juniper Titmouse is classified as a SGCN in Wyoming due to a need for robust information on breeding status and population trend in Wyoming; limited distribution of required breeding habitat; loss, degradation, and fragmentation of Utah juniper habitat due to industrial developments; and incompatible management practices [17]. Two separate but compatible survey programs are in place to monitor populations of many avian species that breed in Wyoming; the BBS [22] and IMBCR [21]. While these monitoring programs provide robust estimates of occupancy, density, or population trend for many species in Wyoming, Juniper Titmouse needs a targeted, species-specific survey method approach to obtain these data. Initial work and written species accounts on avian Utah Juniper obligate species, including Juniper Titmouse, occurred in 1988 [28]. However, higher priorities and limited personnel and funding precluded conducting additional work on these species. Best management practices to benefit Juniper Titmouse include implementing a sufficient monitoring technique; maintaining mature stands of Utah Juniper habitat where Juniper Titmouse 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 Juniper Titmouse; coordinating Utah Juniper management to provide a mosaic of juniper woodland conditions [29].

CONTRIBUTORS

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Figure 1: Juniper Titmouse in Flaming Gorge, Sweetwater County, Wyoming. (Photo courtesy of Shawn Billerman)

Figure 2: North American range of Juniper Titmouse (*Baeolophus ridgwayi*) and Oak Titmouse (*B. inornatus*). (Map courtesy of Birds of North America, http://bna.birds.cornell.edu/bna, maintained by the Cornell Lab of Ornithology)

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

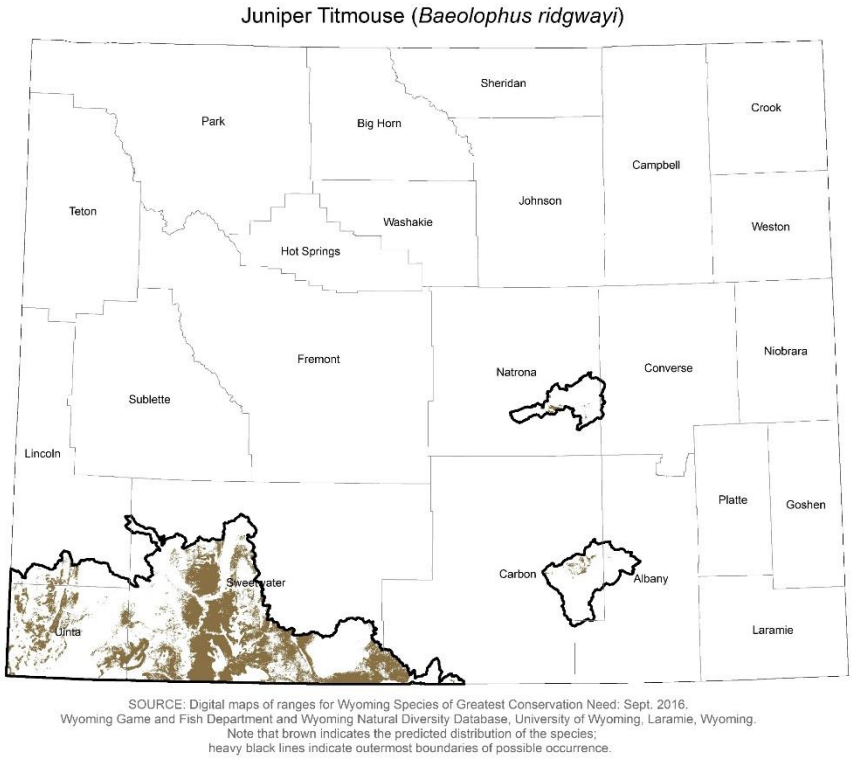

Figure 4: Range and predicted distribution of *Baeolophus ridgwayi* in Wyoming.