

PROJECT SUMMARY - 2025



Forest Bird Communities in the Southern San Juan Mountains of Colorado: A Citizen Science Project.

Conducted by Volunteers from the Weminuche Audubon Society, Pagosa Springs, CO

(see <https://www.weminucheaudubon.org/bird-community-monitoring/> for detailed reports)



Fawn Gulch Prescribed Fire – Fall 2024

Project Description:

Over the past 7 years, more than 70 volunteers from the Weminuche Audubon Society in Pagosa Springs, CO, have conducted annual surveys of bird communities in the dry-mixed conifer forests in our area.

The primary scientific question addressed by our study concerned the potential impact of wildland fuel reduction treatments (i.e., prescribed fire and shrub-layer thinning) on bird community composition and structure.

Fifteen monitoring points were established in each of five forested sites identified as follows: Jackson Mountain (JM) – no recent logging or thinning; Turkey Springs (TS) – subject to prescribed fire in 2017; Fawn Gulch (FG) – subject to shrub-layer thinning in 2017 and prescribed fire in 2024; Jackson

Mountain North (JMN) – subject to selective tree harvesting in 2025 as part of the Adaptive Silviculture for Climate Change program (www.adaptivesilviculture.org); and Jackson Mountain Thinned (JMT) – selectively logged in 2022-2023..

Teams of volunteer observers visited each monitoring point 10 times during a five-week period from late May to early July in each year of the study to record bird species observed by sight or song for 6-minute sampling intervals. This sampling protocol is consistent with bird monitoring studies reported in the scientific literature.

The FG site has been sampled in each year of the study; with data collected at TS in 2019 – 2021; JM in 2019 – 2023, then 2025; JMN in 2021 – 2024; and JMT starting in 2024.

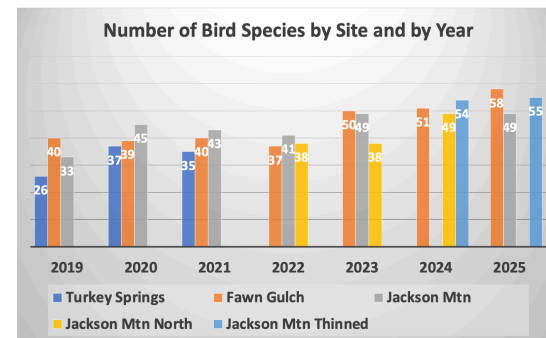


Red Crossbill

Findings:

Patterns in Abundance -

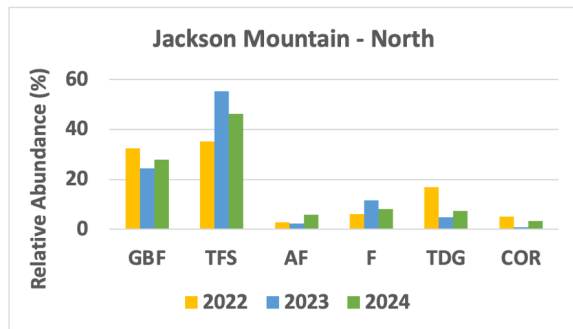
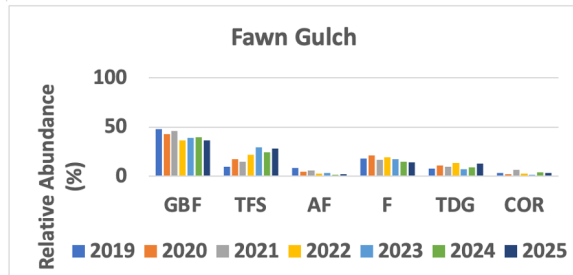
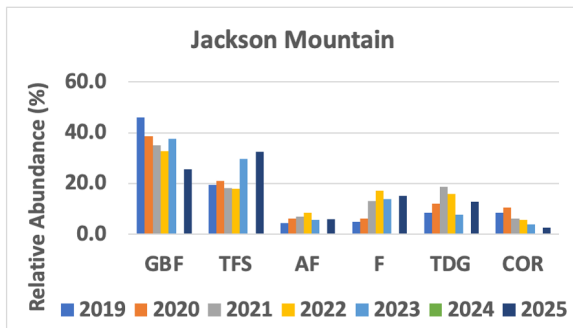
- A total of over 16,000 birds from 98 different bird species were observed across all seven years.
- 9 bird species, constituting about 45% of all birds counted, were observed at all three sites in all years of the study.
- An additional 25 bird species were observed across all years of the study, representing another 41% of all birds counted.



- Within year patterns in number of bird species counted and abundances suggests that JM is the most diverse of the sites sampled.
- Patterns in the number of bird species at the TS site, along with the relatively high number of species at the FG site, suggests that the bird communities in these sites recovered quickly after wildland fuel reduction treatments.
- The number of bird species at JMT was similar to the other sites, but the number of birds counted was lower.
- Our general observation is that the condition of the shrub-layer and understory, along with the diversity of canopy tree species, strongly influences the diversity and abundance of bird species in these forested sites.



Black-headed Grosbeak



Feeding Behaviors –

- The majority of bird species observed in our study are insectivorous during the 5-week sample period representing the primary breeding season for most species recorded.
- Ground/Brush Foraging (GBF) species were most common at TS (data not shown), FG, JM, and JMT (data not shown).
- Timber Foliage Searching (TFS) species were more common at JMN compared to other sites, indicative of the influence that understory condition and canopy tree species diversity have on the quality of habitat for bird species.

(special note – AF=Aerial Flycatcher; F=Flycatcher; TDG = Timber Drilling/Gleaning; see reports for complete legend)



Clark's Nutcracker

Nesting Behavior –

- Of the 29 bird species observed nesting in our sites over the 7 years of the study, 17 are ground, tree, or shrub nesting species, with 12 cavity nesting species.
- 9 of the 17 ground/tree/shrub nesting species are in decline; with 5 of the 12 cavity nesting species in decline.
- Across all bird species observed in our study, 20 are cavity nesters, with Pygmy Nuthatches; Northern Flickers; Violet-green Swallows, House Wrens; and White-breasted Nuthatches the most abundant.

Commonness vs. Rarity –

- 34 bird species were observed in all 7 years of this study (~73% of birds counted), with 9 species observed at all sites in each year (~45% of birds counted).
- The remaining 64 bird species accounted for ~27% of the birds counted (about 4300 birds).
- 43 of the 98 bird species observed in our study are reportedly exhibiting declines in population numbers across their ranges.
- Most notable among the bird species observed in our study that are exhibiting steep population declines are the Lewis Woodpecker; Grace's Warbler; Virginia's Warbler; Band-tailed Pigeon; Cassin's Finch; Evening Grosbeak; Pine Siskin; and Olive-sided Flycatcher.



Green-tailed Towhee

Migratory Species –

- 56 of the 98 bird species observed in our study are resident species, with 53 of these accounted for in our local Audubon Christmas Bird Count.
- 42 of the 98 bird species observed in our study are non-resident species, indicating seasonal migrations to Mexico, Central America, and South America.
- 19 of the 56 resident bird species in our dataset are exhibiting population declines, with 23 of the 42 non-resident bird species exhibiting population declines across their ranges.

Closing Remarks –

- Our findings suggest that short-term changes (i.e., 1-2 years) occur in bird communities in response to wildland fuel reduction treatments.
- Dry-Mixed Conifer forests provide critical nesting habitat for a wide range of resident and migratory bird species, many of which are in population decline.
- We need to better understand whether promoting small-scale heterogeneity in forest composition and structure affected by wildland fuel reduction treatments enhances or reduces bird diversity at the regional scale.

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