INTEGRATED BREEDING BIRD MONITORING ACROSS BLM LANDS IN WYOMING:

Population Trends in Selected Species from 2009-2023

*Introduction*

The BLM has a national MOU with the USFWS (MOU WO-230-2020-04; extended via HQ Information Bulletin IB 022-036) to promote conservation and avoid or minimize adverse impacts on migratory birds under the Migratory Bird Treaty Act.

Identifying migratory birds with decreasing populations on BLM land will help biologists prioritize species they should consider or include in NEPA analyses and Resource Management Plans. For example, restoration efforts intended to promote sagebrush habitat for sagebrush-associated species may have harmful effects on declining populations of pinyon-juniper-associated species (e.g., gray flycatcher). Local population trend information for the latter could be used to help refine project design.

Integrated Monitoring in Bird Conservation Regions (IMBCR) is a collaborative breeding bird monitoring program led by Bird Conservancy of the Rockies in which partners pool monitoring resources to create efficiencies in data collection and analysis. IMBCR is based on a spatially balanced sampling design which provides inference to avian populations at various scales, from local field offices to entire states or Bird Conservation Regions (BCR), facilitating conservation at local and national levels (Pavlacky et al. 2017). The nested design also provides a consistent and flexible framework for understanding and comparing annual changes of bird populations with local and regional context. Trained observers conduct point count surveys across public and private land from the Great Basin to the Great Plains.

Bird Conservancy has been monitoring breeding landbirds on BLM lands in Wyoming from 2009 to 2023 for a 15-year outlook of landbird populations. We monitor each field office, so biologists can make inference about the status of local bird populations and then compare to populations across all BLM land in Wyoming for context (Fig. 1). Since 2009, we have conducted over 11,000 surveys within 131 sampling units, and detected more than 107,000 individuals across 182 different species. IMBCR protocol targets breeding landbirds (e.g., songbirds). Therefore, species such as waterfowl and raptors are generally not detected frequently on IMBCR surveys. Rare species may also not be detected frequently enough due to their uncommonness, and we generally are not able to provide robust estimates for species with few detections.

Table 1 shows robust negative trend estimates for species on all BLM lands in Wyoming (stratum = WY-BLM), on BLM lands in the BCR16-portion of Wyoming (WY-BCR16-BLM), on BLM lands in the BCR18-portion of Wyoming (WY-BCR18-BLM), and in each Field Office from 2009-2023. The percent change per year based on density or occupancy (i.e., the trend) is the estimated percent loss each year for the population in a particular stratum (or percent increase each year for Table 2). We classify trend estimates as “robust” or supported if they have an f-value ≥ 0.9. The f-value is the probability that the true population change is in the direction of the percent change per year, or more simply, our confidence in the direction of the population change. For example, if a species has a percent change of -5% with an f-value of 0.93, then we are 93% certain the population is decreasing over the monitoring period and the estimated amount of population loss is 5% each year.

In Table 2, we list species with robust increasing trend estimates in the same regions and strata. We also include whether the listed species are designated as a Wyoming BLM listed sensitive species or a Partners in Flight species of concern for the appropriate BCR in both tables. One important note for Tables 1 and 2 is that we now provide trend based on density and occupancy estimates, whereas before, we just provided trend based on density estimates. Density is the number of birds per square kilometer and occupancy is the proportion of surveyed points occupied by a species within a stratum. Although density and occupancy have different units of measure, their trend estimates are interpreted the same: as the amount of population change per year. Trend estimates based on density and occupancy are also oftentimes very similar. However, there may be discrepancies between trend based on density and trend based on occupancy in Table 1 or 2 where trend based on density is negative and trend based on occupancy is positive, for example. In this case, the trend with an f-value ≥ 0.9 is the trend to pay attention to because we are at least 90% confident of the trend direction. Trend on occupancy is likely to be more useful for less common species where we may not have sufficient detections to estimate density.

To access the individual density and occupancy estimates across all BLM land in Wyoming and for each field office, please visit the new and improved [Rocky Mountain Avian Data Center](https://bird-conservancy.shinyapps.io/rmadc/) (RMADC). On this site, you can see approximate survey locations within your field office, a list of species detected and their counts, and download tables for the density, occupancy, and trend estimates. Click on the “Tutorial” tab for instructions on viewing estimates for a particular stratum, like a field office. Click on the “Explore the Data” tab to select your stratum and/or species filters to find results. If you have any questions about the trend estimates included in this report, or accessing density, occupancy, or other information from the RMADC, please contact Jen Timmer (Jennifer.timmer@birdconservancy.org).

*Summary*

Overall, 43 species have supported decreasing population trends based on density or occupancy across all BLM land in Wyoming, including 20 species, like lark bunting, Cassin’s finch, and mountain bluebird, that are Partners in Flight (PIF) regional species of concern (Table 1). One BLM sensitive species, mountain plover, is also decreasing across this footprint. Identifying species which are decreasing with certainty across all BLM land in the state is important for updating the state sensitive species list, especially for species like lark bunting, which aren’t currently designated sensitive species in Wyoming, but do have conservation concern for populations within their ranges. In contrast, 10 species have supported increasing population trends based on density or occupancy across all BLM land in Wyoming, including two species, Brewer’s sparrow and long-billed curlew, which are both PIF species of concern and sensitive species (Table 2).

Statewide trends also highlight which avian species to consider when completing a NEPA report or Resource Management Plan. However, trends at the scale of a field office may differ from statewide trends due to local management or conservation efforts, abiotic conditions, habitat availability, or because the field office is outside a species’ range. These local trends are equally as important to consider for knowing which migratory birds should be on “your radar” for writing management plans and implementing projects because a species of concern may not have a supported decreasing trend across all BLM land in the state, but it could within a specific field office. For example, several PIF regional species of concern, including Clark’s nutcracker and Townsend’s solitaire, are decreasing in the Lander Field Office, while sage thrasher, another PIF species of concern and sensitive species, is decreasing in the Pinedale Field Office. It’s also useful to note discrepancies between local and regional trends because these could indicate greater importance of local conditions or management activities compared to landscape drivers. For example, the horned lark population is decreasing in the Rawlins Field Office, but increasing across all BLM land in the state. In contrast, the Brewer’s sparrow population is increasing in the Lander Field Office, but we do not have a robust trend estimate statewide. This could occur because the local conditions, habitat availability, or management activities within the Field Office are promoting greater populations of the species, or there could be high variability in number of detections for Brewer’s sparrow statewide across the monitoring period. This variability is more pronounced in “superstratum” estimates that are rolled up from individual stratum or Field Office estimates (e.g., estimates for all BLM land in Wyoming).

If you don’t see any or many robust trend estimates for species within your Field Office, it could be due to a low sampling effort, high variability in numbers of species’ detections, or species could have relatively stable populations (i.e., the trend estimate is approximately 1.0). It is probable that with more years of monitoring data and/or an increased sampling effort within a Field Office, we may be able to provide robust trend estimates for several more species.

*Literature Cited*

Pavlacky DC Jr., PM Lukacs, JA Blakesley, RC Skorkowsky, DS Klute, BA Hahn, VJ Dreitz, TL George, and DJ Hanni. 2017. A statistically rigorous sampling design to integrate avian monitoring and management within Bird Conservation Regions. PLoS ONE 12(10): e0185924.

*Suggested citation:*

Timmer, J.M. 2024. Integrated breeding bird monitoring across BLM lands in Wyoming:

population trends in selected species from 2009-2023. Bird Conservancy of the Rockies. Brighton, Colorado, USA.

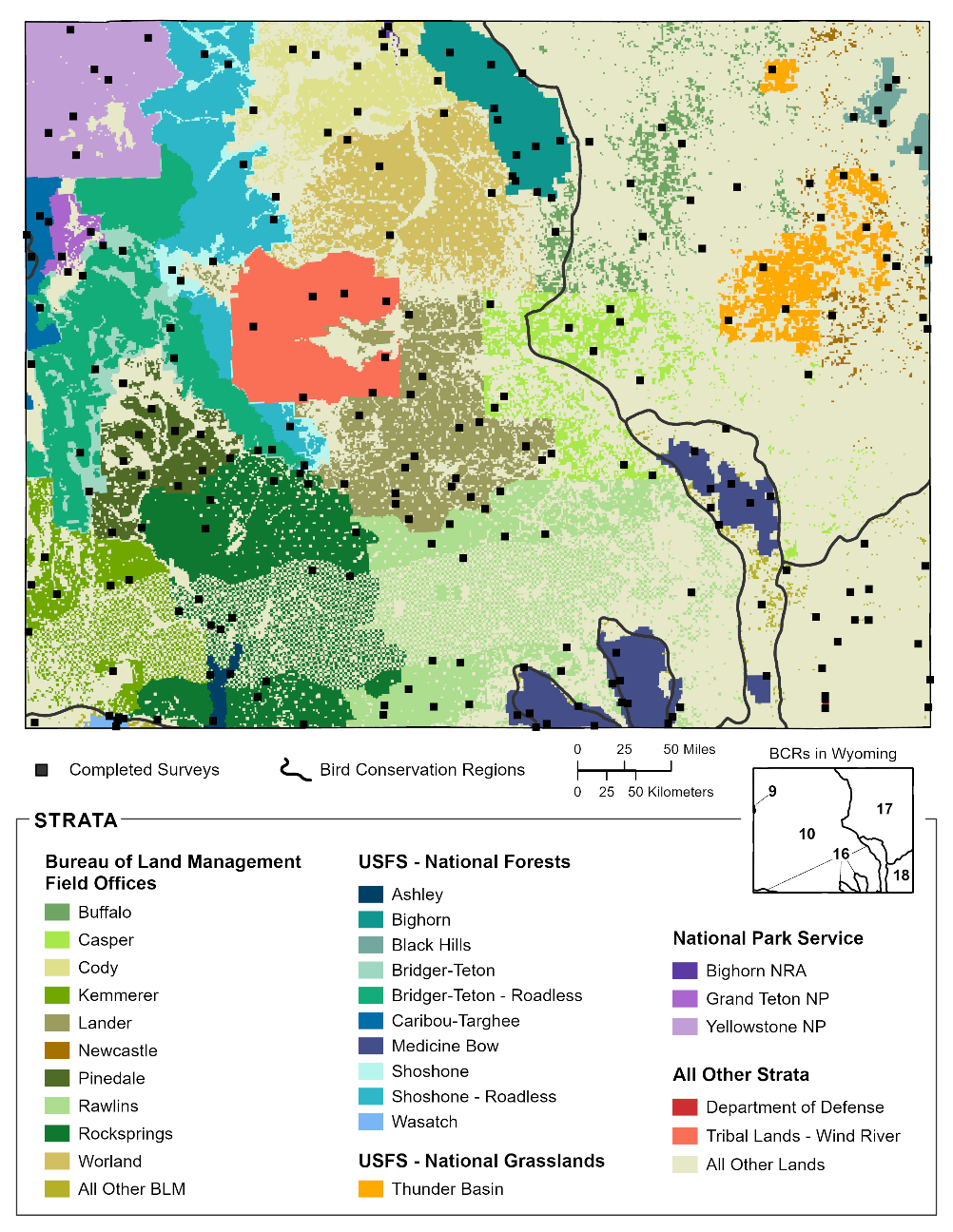


Figure 1. Sampled strata within Wyoming in 2023. Black boxes represent surveyed sampling units and colored areas represent individual strata. Note the Bird Conservation Regions (BCR 9, 10, 16, 17, & 18).

| Table 1. Robust declining population trend estimates from the IMBCR program across BLM land in Wyoming from 2009-2023 and for each field office. Information shown includes the percent population change per year based on density (% change per yr\_D), our confidence in the direction of the trend based on density (f\_D), the number of detections used to estimate trend based on density, the percent population change per year based on occupancy (% change per yr\_Occ), our confidence in the direction of the trend based on occupancy (f\_Occ), and the number of surveyed points with a detection. | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Stratum** | **Species** | **Years** | **% change per yr\_D** | **f\_D** | **No. of detections** | **% change per yr\_Occ** | **f\_Occ** | **No. of points** |
| Buffalo FO | Brewer's Blackbird | 2009-2023 | -3.57 | 0.87 | 76 | -6.86 | 0.96 | 41 |
| Buffalo FO | Common Raven | 2009-2023 | -8.48 | 0.98 | 55 | -6.00 | 0.90 | 5 |
| Buffalo FO | Mountain Bluebird\* | 2009-2023 | -5.44 | 0.95 | 63 | -3.18 | 0.83 | 39 |
| Buffalo FO | Ruby-crowned Kinglet | 2009-2023 | -7.26 | 0.94 | 76 | -6.92 | 0.92 | 53 |
| Buffalo FO | Vesper Sparrow\* | 2009-2023 | -3.33 | 0.88 | 451 | -6.27 | 0.95 | 199 |
| Casper FO | Common Raven | 2009-2023 | -5.22 | 0.94 | 44 | -3.42 | 0.82 | 5 |
| Casper FO | Golden Eagle\* | 2009-2023 | -5.32 | 0.91 | 6 | -5.71 | 0.92 | 6 |
| Casper FO | Grasshopper Sparrow\* | 2009-2023 | 1.06 | 0.51 | 33 | -5.80 | 0.93 | 32 |
| Casper FO | Horned Lark | 2009-2023 | -3.48 | 0.96 | 1,101 | -4.06 | 0.92 | 480 |
| Casper FO | Killdeer | 2009-2023 | -6.71 | 0.98 | 17 | -6.30 | 0.97 | 10 |
| Casper FO | Lark Bunting\* | 2009-2023 | -7.11 | 0.96 | 1,354 | -5.92 | 0.97 | 357 |
| Casper FO | Mountain Bluebird\* | 2009-2023 | -7.26 | 0.94 | 42 | -5.83 | 0.90 | 32 |
| Casper FO | Red-breasted Nuthatch\* | 2009-2023 | -14.92 | 0.95 | 8 | -10.49 | 0.92 | 5 |
| Casper FO | Violet-green Swallow | 2009-2023 | -10.91 | 0.97 | 26 | -9.72 | 0.95 | 20 |
| Casper FO | Western Kingbird | 2009-2023 | -8.85 | 0.91 | 10 | -6.00 | 0.86 | 8 |
| Casper FO | Western Meadowlark | 2009-2023 | -3.01 | 0.99 | 2,091 | -5.94 | 0.98 | 479 |
| Cody FO | Common Raven | 2009-2023 | -12.63 | 1.00 | 114 | -6.03 | 0.89 | 4 |
| Cody FO | Grasshopper Sparrow | 2009-2023 | -5.05 | 0.76 | 3 | -12.04 | 0.93 | 3 |
| Kemmerer FO | Sage Thrasher\*S | 2009-2023 | -5.20 | 0.97 | 550 | -5.43 | 0.96 | 186 |
| Lander FO | American Goldfinch | 2009-2023 | -8.86 | 0.92 | 13 | -5.38 | 0.79 | 10 |
| Lander FO | American Robin | 2009-2023 | -12.44 | 1.00 | 256 | -11.55 | 1.00 | 130 |
| Lander FO | Black-billed Magpie | 2009-2023 | -5.42 | 0.83 | 25 | -9.36 | 0.93 | 5 |
| Lander FO | Black-capped Chickadee | 2009-2023 | -15.03 | 0.98 | 7 | -11.91 | 0.93 | 4 |
| Lander FO | Broad-tailed Hummingbird | 2009-2023 | -7.53 | 0.89 | 3 | -11.73 | 0.98 | 3 |
| Lander FO | Brown-headed Cowbird | 2009-2023 | -11.67 | 0.99 | 35 | -13.38 | 0.99 | 26 |
| Lander FO | Canada Jay | 2009-2023 | -14.10 | 0.99 | 2 | -9.72 | 0.97 | 1 |
| Lander FO | Cassin's Finch\* | 2009-2023 | -13.04 | 0.98 | 20 | -10.86 | 0.97 | 18 |
| Lander FO | Chipping Sparrow\* | 2009-2023 | -21.91 | 1.00 | 97 | -20.37 | 1.00 | 80 |
| Lander FO | Clark's Nutcracker\* | 2009-2023 | -9.80 | 0.98 | 124 | -9.58 | 0.97 | 35 |
| Lander FO | Common Raven | 2009-2023 | -9.75 | 0.99 | 109 | -8.78 | 0.97 | 3 |
| Lander FO | Dark-eyed Junco | 2009-2023 | -22.48 | 1.00 | 48 | -24.63 | 1.00 | 37 |
| Lander FO | Dusky Flycatcher\* | 2009-2023 | -12.61 | 1.00 | 91 | -12.47 | 0.99 | 73 |
| Lander FO | Green-tailed Towhee | 2009-2023 | -5.43 | 0.96 | 545 | -7.69 | 1.00 | 290 |
| Lander FO | Hairy Woodpecker | 2009-2023 | -13.48 | 0.98 | 12 | -11.71 | 0.99 | 10 |
| Lander FO | Hermit Thrush | 2009-2023 | -12.08 | 0.93 | 15 | -10.41 | 0.91 | 7 |
| Lander FO | Lincoln's Sparrow | 2009-2023 | -12.35 | 0.97 | 50 | -10.34 | 0.98 | 35 |
| Lander FO | MacGillivray's Warbler\* | 2009-2023 | -9.57 | 0.95 | 36 | -9.83 | 0.95 | 29 |
| Lander FO | Mountain Bluebird\* | 2009-2023 | -12.10 | 1.00 | 116 | -11.23 | 1.00 | 77 |
| Lander FO | Mountain Chickadee | 2009-2023 | -19.02 | 1.00 | 57 | -19.45 | 1.00 | 47 |
| Lander FO | Northern Flicker | 2009-2023 | -8.50 | 0.96 | 61 | -7.84 | 0.96 | 25 |
| Lander FO | Pine Siskin\* | 2009-2023 | -24.07 | 1.00 | 11 | -20.27 | 0.99 | 13 |
| Lander FO | Red-breasted Nuthatch\* | 2009-2023 | -18.81 | 1.00 | 21 | -19.29 | 1.00 | 13 |
| Lander FO | Red-naped Sapsucker\* | 2009-2023 | -12.83 | 0.98 | 14 | -12.40 | 1.00 | 11 |
| Lander FO | Rock Wren | 2009-2023 | -1.54 | 0.77 | 458 | -7.28 | 0.98 | 141 |
| Lander FO | Ruby-crowned Kinglet | 2009-2023 | -20.44 | 1.00 | 42 | -18.13 | 1.00 | 24 |
| Lander FO | Spotted Towhee | 2009-2023 | -9.35 | 0.89 | 9 | -10.96 | 0.93 | 7 |
| Lander FO | Steller's Jay | 2009-2023 | -12.28 | 0.96 | 3 | -11.02 | 0.94 | 3 |
| Lander FO | Townsend's Solitaire\* | 2009-2023 | -13.81 | 0.98 | 4 | -11.97 | 0.98 | 3 |
| Lander FO | Tree Swallow | 2009-2023 | -11.12 | 0.93 | 1 | -8.39 | 0.86 | 1 |
| Lander FO | White-breasted Nuthatch | 2009-2023 | -9.72 | 0.93 | 1 | -8.32 | 0.91 | 1 |
| Lander FO | White-crowned Sparrow | 2009-2023 | -8.08 | 0.92 | 49 | -4.40 | 0.79 | 29 |
| Lander FO | Williamson's Sapsucker | 2009-2023 | -9.88 | 0.92 | 1 | -4.97 | 0.76 | 1 |
| Lander FO | Wilson's Warbler | 2009-2023 | -14.12 | 0.98 | 2 | -13.19 | 0.97 | 2 |
| Lander FO | Yellow-rumped Warbler | 2009-2023 | -23.68 | 1.00 | 61 | -23.60 | 1.00 | 51 |
| Newcastle FO | Lark Bunting\* | 2009-2023 | -14.53 | 1.00 | 1,230 | -11.82 | 1.00 | 372 |
| Pinedale FO | Common Raven | 2009-2023 | -8.21 | 0.99 | 136 | -4.85 | 0.83 | 5 |
| Pinedale FO | Mountain Bluebird\* | 2009-2023 | -5.50 | 0.93 | 34 | -3.62 | 0.87 | 26 |
| Pinedale FO | Sage Thrasher\*S | 2009-2023 | -1.63 | 0.94 | 2,313 | -3.42 | 0.99 | 660 |
| Pinedale FO | Willet\* | 2009-2023 | -14.92 | 0.98 | 60 | -10.96 | 0.97 | 53 |
| Rawlins FO | Brewer's Blackbird | 2009-2023 | -7.61 | 0.95 | 34 | -7.13 | 0.96 | 25 |
| Rawlins FO | Common Raven | 2009-2023 | -3.02 | 0.96 | 296 | -7.86 | 0.98 | 24 |
| Rawlins FO | Horned Lark | 2009-2023 | -2.88 | 1.00 | 3,234 | -5.43 | 0.99 | 1,159 |
| Rawlins FO | Lark Bunting\* | 2009-2023 | -11.84 | 0.91 | 155 | -6.04 | 0.80 | 58 |
| Rawlins FO | Swainson's Hawk | 2009-2023 | -4.97 | 0.83 | 4 | -6.16 | 0.90 | 4 |
| Rawlins FO | Western Kingbird | 2009-2023 | -8.84 | 0.92 | 3 | -8.19 | 0.93 | 3 |
| Rawlins FO | Western Meadowlark | 2009-2023 | -3.79 | 0.98 | 929 | -11.80 | 1.00 | 244 |
| Rock Springs FO | Common Raven | 2009-2023 | -5.45 | 0.96 | 75 | -6.42 | 0.93 | 8 |
| Rock Springs FO | Lincoln's Sparrow | 2009-2023 | -8.18 | 0.91 | 10 | -7.52 | 0.91 | 9 |
| Rock Springs FO | Mourning Dove | 2009-2023 | -4.31 | 0.91 | 213 | -0.69 | 0.65 | 45 |
| Rock Springs FO | Pine Siskin | 2009-2023 | -13.45 | 0.92 | 6 | -8.74 | 0.90 | 6 |
| Rock Springs FO | Sage Thrasher\*S | 2009-2023 | 2.36 | 0.75 | 1,053 | -3.29 | 0.96 | 324 |
| Worland FO | American Crow | 2009-2023 | -10.25 | 0.90 | 6 | -8.43 | 0.91 | 0 |
| Worland FO | Broad-tailed Hummingbird | 2009-2023 | -7.74 | 0.85 | 1 | -11.17 | 0.96 | 1 |
| Worland FO | Chipping Sparrow\* | 2009-2023 | -8.64 | 0.90 | 8 | -7.17 | 0.88 | 8 |
| Worland FO | Common Raven | 2009-2023 | -8.45 | 0.99 | 203 | -8.99 | 0.98 | 25 |
| Worland FO | Hairy Woodpecker | 2009-2023 | -7.71 | 0.88 | 1 | -8.50 | 0.93 | 1 |
| Worland FO | Hermit Thrush | 2009-2023 | -11.34 | 0.92 | 1 | -9.73 | 0.91 | 1 |
| Worland FO | Lincoln's Sparrow | 2009-2023 | -9.04 | 0.87 | 1 | -8.86 | 0.92 | 1 |
| Worland FO | Red-breasted Nuthatch\* | 2009-2023 | -10.86 | 0.90 | 2 | -10.57 | 0.92 | 2 |
| Worland FO | Townsend's Solitaire\* | 2009-2023 | -7.33 | 0.90 | 2 | -8.31 | 0.93 | 1 |
| Worland FO | Vesper Sparrow\* | 2009-2023 | -7.11 | 0.98 | 447 | -13.95 | 1.00 | 191 |
| Worland FO | Western Kingbird | 2009-2023 | -12.74 | 0.98 | 7 | -8.31 | 0.93 | 4 |
| Worland FO | Western Wood-Pewee\* | 2009-2023 | -7.65 | 0.90 | 1 | -9.59 | 0.92 | 0 |
| Worland FO | White-crowned Sparrow | 2009-2023 | -3.01 | 0.70 | 104 | -10.31 | 0.96 | 39 |
| WY-BCR16-BLM | Broad-tailed Hummingbird\* | 2009-2023 | -6.85 | 0.90 | 10 | -8.04 | 0.94 | 12 |
| WY-BCR16-BLM | Horned Lark | 2009-2023 | -8.58 | 0.89 | 73 | -12.32 | 0.96 | 36 |
| WY-BCR16-BLM | Killdeer | 2009-2023 | -7.68 | 0.91 | 14 | -7.23 | 0.92 | 6 |
| WY-BCR16-BLM | Red-breasted Nuthatch | 2009-2023 | -10.88 | 0.92 | 24 | -9.95 | 0.91 | 15 |
| WY-BCR18-BLM | Killdeer | 2009-2023 | -13.01 | 1.00 | 63 | -6.09 | 0.92 | 16 |
| WY-BCR18-BLM | Mountain Bluebird | 2009-2023 | -6.97 | 0.90 | 2 | -4.46 | 0.84 | 2 |
| WY-BCR18-BLM | Mountain Plover\*S | 2009-2023 | -14.87 | 0.98 | 24 | -14.85 | 0.99 | 17 |
| WY-BLM | American Crow | 2009-2023 | -1.53 | 0.83 | 192 | -3.95 | 0.96 | 19 |
| WY-BLM | American Robin | 2009-2023 | -5.55 | 1.00 | 942 | -4.50 | 1.00 | 477 |
| WY-BLM | Black-capped Chickadee | 2009-2023 | -5.79 | 0.98 | 150 | -2.64 | 0.86 | 101 |
| WY-BLM | Broad-tailed Hummingbird | 2009-2023 | -3.12 | 0.90 | 18 | -6.82 | 0.99 | 20 |
| WY-BLM | Canada Jay | 2009-2023 | -12.83 | 0.99 | 42 | -9.19 | 0.99 | 27 |
| WY-BLM | Cassin's Finch\* | 2009-2023 | -5.25 | 0.94 | 30 | -4.96 | 0.94 | 27 |
| WY-BLM | Chipping Sparrow\* | 2009-2023 | -7.97 | 1.00 | 435 | -6.27 | 1.00 | 347 |
| WY-BLM | Clark's Nutcracker\* | 2009-2023 | -7.46 | 1.00 | 415 | -6.39 | 1.00 | 97 |
| WY-BLM | Common Raven | 2009-2023 | -6.90 | 1.00 | 1,090 | -6.47 | 1.00 | 84 |
| WY-BLM | Dark-eyed Junco | 2009-2023 | -9.78 | 1.00 | 294 | -8.62 | 1.00 | 227 |
| WY-BLM | Downy Woodpecker | 2009-2023 | -5.00 | 0.92 | 15 | -2.14 | 0.79 | 14 |
| WY-BLM | Dusky Flycatcher\* | 2009-2023 | -4.37 | 0.99 | 238 | -3.68 | 0.98 | 207 |
| WY-BLM | Golden Eagle\* | 2009-2023 | -4.06 | 0.94 | 48 | -3.08 | 0.95 | 51 |
| WY-BLM | Grasshopper Sparrow\* | 2009-2023 | -0.62 | 0.71 | 261 | -6.96 | 1.00 | 223 |
| WY-BLM | Hairy Woodpecker | 2009-2023 | -6.76 | 0.99 | 45 | -6.07 | 0.99 | 41 |
| WY-BLM | Hermit Thrush | 2009-2023 | -7.62 | 0.99 | 129 | -6.74 | 0.99 | 57 |
| WY-BLM | Killdeer | 2009-2023 | -3.80 | 0.98 | 242 | -3.69 | 0.97 | 101 |
| WY-BLM | Lark Bunting\* | 2009-2023 | -3.97 | 0.95 | 4,959 | 0.15 | 0.69 | 1,342 |
| WY-BLM | Lincoln's Sparrow | 2009-2023 | -6.01 | 0.97 | 105 | -5.34 | 0.98 | 70 |
| WY-BLM | MacGillivray's Warbler\* | 2009-2023 | -5.14 | 0.93 | 47 | -5.62 | 0.96 | 38 |
| WY-BLM | Mountain Bluebird\* | 2009-2023 | -3.96 | 1.00 | 739 | -1.70 | 0.96 | 486 |
| WY-BLM | Mountain Chickadee | 2009-2023 | -9.33 | 1.00 | 250 | -7.91 | 1.00 | 199 |
| WY-BLM | Mountain Plover\*S | 2009-2023 | -8.33 | 0.96 | 114 | -6.95 | 0.97 | 53 |
| WY-BLM | Northern Flicker | 2009-2023 | -3.76 | 1.00 | 360 | -3.41 | 0.98 | 140 |
| WY-BLM | Pine Siskin\* | 2009-2023 | -9.32 | 1.00 | 78 | -7.20 | 1.00 | 81 |
| WY-BLM | Red-breasted Nuthatch\* | 2009-2023 | -10.60 | 1.00 | 111 | -9.96 | 1.00 | 76 |
| WY-BLM | Red-naped Sapsucker\* | 2009-2023 | -7.94 | 0.97 | 23 | -7.23 | 0.98 | 19 |
| WY-BLM | Ruby-crowned Kinglet | 2009-2023 | -10.28 | 1.00 | 152 | -8.37 | 1.00 | 101 |
| WY-BLM | Savannah Sparrow | 2009-2023 | -8.48 | 0.94 | 30 | -5.41 | 0.92 | 25 |
| WY-BLM | Steller's Jay | 2009-2023 | -10.15 | 0.98 | 7 | -8.62 | 0.97 | 7 |
| WY-BLM | Swainson's Hawk | 2009-2023 | -3.02 | 0.84 | 10 | -3.09 | 0.90 | 13 |
| WY-BLM | Townsend's Solitaire\* | 2009-2023 | -6.92 | 0.99 | 76 | -6.78 | 0.99 | 50 |
| WY-BLM | Tree Swallow | 2009-2023 | -7.24 | 0.99 | 63 | -4.46 | 0.96 | 37 |
| WY-BLM | Warbling Vireo\* | 2009-2023 | -3.17 | 0.93 | 197 | -2.94 | 0.94 | 127 |
| WY-BLM | Western Kingbird\* | 2009-2023 | -7.85 | 1.00 | 95 | -6.39 | 0.99 | 58 |
| WY-BLM | Western Meadowlark\* | 2009-2023 | -1.42 | 1.00 | 11,871 | -2.32 | 1.00 | 2,649 |
| WY-BLM | Western Wood-Pewee\* | 2009-2023 | -3.62 | 0.96 | 219 | -3.37 | 0.95 | 133 |
| WY-BLM | White-breasted Nuthatch | 2009-2023 | -4.77 | 0.94 | 26 | -3.71 | 0.88 | 24 |
| WY-BLM | White-crowned Sparrow | 2009-2023 | -3.05 | 0.89 | 323 | -4.14 | 0.96 | 142 |
| WY-BLM | Willet\* | 2009-2023 | -5.89 | 0.94 | 228 | -0.71 | 0.67 | 176 |
| WY-BLM | Williamson's Sapsucker\* | 2009-2023 | -5.46 | 0.91 | 10 | -2.78 | 0.76 | 7 |
| WY-BLM | Wilson's Warbler | 2009-2023 | -9.04 | 0.96 | 4 | -8.80 | 0.97 | 4 |
| WY-BLM | Yellow-rumped Warbler | 2009-2023 | -8.31 | 1.00 | 324 | -7.93 | 1.00 | 270 |

\* Indicates a species of concern for Bird Conservation Region (BCR) 10, 16, 17, and/or 18 as designated by Partners in Flight if the stratum is located within the appropriate BCR.

S indicates a Wyoming BLM listed sensitive species.

| Table 2. Robust increasing population trend estimates from the IMBCR program across BLM land in Wyoming from 2009-2023 and for each field office. Information shown includes the percent population change per year based on density (% change per yr\_D), our confidence in the direction of the trend based on density (f\_D), the number of detections used to estimate trend based on density, the percent population change per year based on occupancy (% change per yr\_Occ), our confidence in the direction of the trend based on occupancy (f\_Occ), and the number of surveyed points with a detection. | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Stratum** | **Species** | **Years** | **% change per yr\_D** | **f\_D** | **No. of detections** | **% change per yr\_Occ** | **f\_Occ** | **No. of points** |
| Buffalo FO | Canada Goose | 2009-2023 | 15.65 | 0.92 | 29 | 14.33 | 0.95 | 30 |
| Buffalo FO | Eurasian Collared-Dove | 2009-2023 | 19.48 | 0.97 | 2 | 11.70 | 0.88 | 0 |
| Buffalo FO | European Starling | 2009-2023 | 15.21 | 0.90 | 12 | 11.51 | 0.88 | 5 |
| Buffalo FO | Western Flycatcher | 2009-2023 | 10.32 | 0.92 | 35 | 9.97 | 0.95 | 37 |
| Casper FO | Black-billed Magpie | 2009-2023 | 8.08 | 0.93 | 76 | 2.07 | 0.56 | 9 |
| Casper FO | Blue-gray Gnatcatcher | 2009-2023 | 15.73 | 0.92 | 15 | 16.79 | 0.96 | 14 |
| Casper FO | Brewer's Blackbird | 2009-2023 | 8.48 | 0.96 | 236 | 10.35 | 0.98 | 101 |
| Casper FO | Brown-headed Cowbird | 2009-2023 | 6.21 | 0.88 | 185 | 8.50 | 0.97 | 117 |
| Casper FO | Chukar | 2009-2023 | 22.12 | 0.98 | 1 | 4.78 | 0.67 | 1 |
| Casper FO | Eurasian Collared-Dove | 2009-2023 | 18.83 | 0.95 | 2 | 9.91 | 0.82 | 0 |
| Casper FO | Green-tailed Towhee | 2009-2023 | 9.24 | 0.92 | 100 | 7.78 | 0.91 | 52 |
| Casper FO | Rock Wren | 2009-2023 | 6.27 | 0.88 | 121 | 8.13 | 0.97 | 48 |
| Casper FO | Sage Thrasher\*S | 2009-2023 | 8.86 | 0.91 | 398 | 9.39 | 0.93 | 135 |
| Casper FO | Vesper Sparrow\* | 2009-2023 | 5.05 | 0.91 | 738 | 4.41 | 0.87 | 313 |
| Cody FO | American Goldfinch | 2009-2023 | 15.37 | 0.97 | 21 | 12.93 | 0.91 | 14 |
| Cody FO | Blue-gray Gnatcatcher | 2009-2023 | 17.52 | 0.94 | 10 | 14.64 | 0.92 | 10 |
| Cody FO | Chukar | 2009-2023 | 26.95 | 1.00 | 24 | 11.90 | 0.91 | 23 |
| Cody FO | Eurasian Collared-Dove | 2009-2023 | 22.09 | 0.97 | 12 | 16.78 | 0.95 | 2 |
| Cody FO | Gray Flycatcher | 2009-2023 | 16.32 | 0.93 | 8 | 13.10 | 0.86 | 7 |
| Cody FO | Lazuli Bunting\* | 2009-2023 | 16.67 | 0.95 | 19 | 11.28 | 0.88 | 14 |
| Cody FO | Violet-green Swallow | 2009-2023 | 8.61 | 0.90 | 33 | 10.96 | 0.95 | 29 |
| Kemmerer FO | Chukar | 2009-2023 | 22.71 | 0.99 | 1 | 3.95 | 0.63 | 1 |
| Kemmerer FO | Gray Flycatcher | 2009-2023 | 24.11 | 0.99 | 22 | 19.86 | 0.97 | 22 |
| Kemmerer FO | Green-tailed Towhee | 2009-2023 | 12.33 | 0.96 | 127 | 14.12 | 0.98 | 61 |
| Kemmerer FO | Horned Lark | 2009-2023 | 3.86 | 0.80 | 388 | 9.60 | 0.99 | 183 |
| Kemmerer FO | Vesper Sparrow\* | 2009-2023 | 10.94 | 0.98 | 427 | 15.76 | 1.00 | 190 |
| Lander FO | Brewer's Sparrow\*S | 2009-2023 | 20.67 | 1.00 | 1,111 | 27.25 | 1.00 | 504 |
| Lander FO | Chukar | 2009-2023 | 17.61 | 0.96 | 1 | -0.55 | 0.57 | 1 |
| Lander FO | Horned Lark | 2009-2023 | 25.63 | 1.00 | 1,152 | 43.04 | 1.00 | 497 |
| Lander FO | Lark Bunting\* | 2009-2023 | 7.81 | 0.72 | 353 | 13.75 | 0.91 | 86 |
| Lander FO | Sage Thrasher\*S | 2009-2023 | 36.65 | 1.00 | 700 | 25.51 | 1.00 | 213 |
| Lander FO | Sagebrush SparrowS | 2009-2023 | 14.96 | 0.97 | 329 | 9.55 | 0.94 | 167 |
| Lander FO | Western Meadowlark | 2009-2023 | 12.02 | 0.95 | 690 | 15.30 | 0.98 | 143 |
| Newcastle FO | Brown-headed Cowbird | 2009-2023 | 5.66 | 0.87 | 230 | 7.96 | 0.92 | 138 |
| Newcastle FO | Eurasian Collared-Dove | 2009-2023 | 20.50 | 0.95 | 3 | 10.99 | 0.84 | 2 |
| Newcastle FO | European Starling | 2009-2023 | 15.50 | 0.92 | 9 | 10.96 | 0.87 | 6 |
| Newcastle FO | Sagebrush SparrowS | 2009-2023 | 11.56 | 0.90 | 2 | 0.41 | 0.52 | 2 |
| Newcastle FO | Sharp-tailed GrouseS | 2009-2023 | 9.67 | 0.91 | 5 | 10.19 | 0.87 | 8 |
| Pinedale FO | American Robin | 2009-2023 | 11.16 | 0.90 | 150 | 10.45 | 0.90 | 59 |
| Pinedale FO | Black-billed Magpie | 2009-2023 | 9.30 | 0.96 | 101 | 7.60 | 0.88 | 31 |
| Pinedale FO | Black-capped Chickadee | 2009-2023 | 9.93 | 0.89 | 26 | 12.52 | 0.94 | 15 |
| Pinedale FO | Brewer's Sparrow\*S | 2009-2023 | 3.36 | 0.90 | 3,559 | 3.80 | 0.81 | 1,382 |
| Pinedale FO | Chukar | 2009-2023 | 21.01 | 0.98 | 1 | 0.38 | 0.54 | 1 |
| Pinedale FO | Cliff Swallow | 2009-2023 | 16.69 | 0.96 | 15 | 9.30 | 0.88 | 8 |
| Pinedale FO | Common Nighthawk\* | 2009-2023 | 16.95 | 1.00 | 121 | 9.75 | 0.95 | 48 |
| Pinedale FO | Gray Flycatcher | 2009-2023 | 22.23 | 0.97 | 8 | 15.47 | 0.92 | 7 |
| Pinedale FO | Green-tailed Towhee | 2009-2023 | 15.37 | 1.00 | 195 | 16.86 | 1.00 | 131 |
| Pinedale FO | Mallard | 2009-2023 | 12.45 | 0.90 | 13 | 14.55 | 0.93 | 13 |
| Pinedale FO | Northern Harrier | 2009-2023 | 10.29 | 0.94 | 17 | 6.29 | 0.80 | 17 |
| Pinedale FO | Red-winged Blackbird | 2009-2023 | 9.74 | 0.91 | 45 | 7.90 | 0.83 | 12 |
| Pinedale FO | Song Sparrow | 2009-2023 | 12.44 | 0.96 | 39 | 10.56 | 0.92 | 23 |
| Pinedale FO | Violet-green Swallow | 2009-2023 | 12.01 | 0.98 | 40 | 9.98 | 0.95 | 29 |
| Pinedale FO | White-crowned Sparrow | 2009-2023 | 11.43 | 0.90 | 73 | 8.70 | 0.84 | 35 |
| Pinedale FO | Yellow Warbler | 2009-2023 | 13.04 | 0.97 | 118 | 11.67 | 0.96 | 53 |
| Rawlins FO | Blue-gray Gnatcatcher | 2009-2023 | 16.53 | 0.96 | 6 | 12.89 | 0.92 | 6 |
| Rawlins FO | Brewer's Sparrow\*S | 2009-2023 | 4.55 | 0.96 | 1,941 | 6.35 | 0.98 | 868 |
| Rawlins FO | Gray Flycatcher | 2009-2023 | 26.24 | 0.99 | 35 | 20.68 | 0.99 | 31 |
| Rawlins FO | Green-tailed Towhee | 2009-2023 | 5.37 | 0.84 | 424 | 6.89 | 0.94 | 217 |
| Rawlins FO | House Finch | 2009-2023 | 17.97 | 0.94 | 8 | 10.84 | 0.85 | 8 |
| Rawlins FO | Loggerhead Shrike\*S | 2009-2023 | 7.80 | 0.91 | 23 | 4.05 | 0.73 | 14 |
| Rawlins FO | Mourning Dove | 2009-2023 | 5.10 | 0.90 | 256 | 10.89 | 0.97 | 67 |
| Rawlins FO | Rock Wren | 2009-2023 | 6.55 | 0.94 | 390 | 5.26 | 0.85 | 137 |
| Rawlins FO | Sage Thrasher\*S | 2009-2023 | 4.03 | 0.93 | 1,251 | 2.24 | 0.69 | 347 |
| Rawlins FO | Say's Phoebe | 2009-2023 | 7.84 | 0.90 | 88 | 1.92 | 0.59 | 31 |
| Rawlins FO | Vesper Sparrow\* | 2009-2023 | 2.25 | 0.67 | 1,089 | 5.15 | 0.94 | 446 |
| Rock Springs FO | Brewer's Sparrow\*S | 2009-2023 | 6.42 | 0.99 | 1,888 | 7.52 | 1.00 | 895 |
| Rock Springs FO | Common Nighthawk\* | 2009-2023 | 12.08 | 0.97 | 46 | 8.75 | 0.94 | 20 |
| Rock Springs FO | Eurasian Collared-Dove | 2009-2023 | 16.11 | 0.92 | 8 | 6.59 | 0.73 | 2 |
| Rock Springs FO | Gray Flycatcher | 2009-2023 | 23.37 | 0.98 | 25 | 17.11 | 0.96 | 27 |
| Rock Springs FO | Green-tailed Towhee | 2009-2023 | 5.38 | 0.90 | 408 | 6.05 | 0.92 | 217 |
| Rock Springs FO | Horned Lark | 2009-2023 | 3.73 | 0.92 | 2,141 | 7.86 | 0.99 | 954 |
| Rock Springs FO | Long-billed CurlewS | 2009-2023 | 11.69 | 0.86 | 12 | 13.28 | 0.90 | 10 |
| Worland FO | Black-billed Magpie | 2009-2023 | 11.78 | 0.91 | 59 | 2.20 | 0.55 | 12 |
| Worland FO | Brewer's Sparrow\*S | 2009-2023 | 9.14 | 0.96 | 941 | 10.10 | 0.97 | 393 |
| Worland FO | Chukar | 2009-2023 | 25.71 | 1.00 | 15 | 5.81 | 0.70 | 14 |
| Worland FO | Eurasian Collared-Dove | 2009-2023 | 15.69 | 0.91 | 1 | 6.77 | 0.73 | 0 |
| Worland FO | Horned Lark | 2009-2023 | 7.62 | 0.87 | 658 | 12.83 | 0.98 | 270 |
| Worland FO | Lark Bunting\* | 2009-2023 | 8.50 | 0.83 | 363 | 13.39 | 0.95 | 110 |
| Worland FO | Ring-necked Pheasant | 2009-2023 | 6.76 | 0.81 | 103 | 9.89 | 0.91 | 110 |
| Worland FO | Rock Wren | 2009-2023 | 6.00 | 0.92 | 386 | 5.73 | 0.85 | 110 |
| Worland FO | Sage Thrasher\*S | 2009-2023 | 13.72 | 0.98 | 150 | 5.24 | 0.71 | 57 |
| Worland FO | Sagebrush SparrowS | 2009-2023 | 22.28 | 1.00 | 333 | 17.05 | 0.98 | 159 |
| WY-BCR16-BLM | Black-billed Magpie | 2009-2023 | 10.34 | 0.91 | 30 | 7.52 | 0.79 | 5 |
| WY-BCR16-BLM | Green-tailed Towhee\* | 2009-2023 | 6.67 | 0.85 | 209 | 8.30 | 0.92 | 121 |
| WY-BCR16-BLM | House Wren | 2009-2023 | 9.17 | 0.93 | 155 | 9.98 | 0.94 | 88 |
| WY-BCR16-BLM | Spotted Towhee | 2009-2023 | 9.54 | 0.91 | 111 | 12.12 | 0.96 | 58 |
| WY-BCR18-BLM | Brewer's SparrowS | 2009-2023 | 14.19 | 0.93 | 35 | 8.57 | 0.76 | 16 |
| WY-BCR18-BLM | Common Nighthawk | 2009-2023 | 11.40 | 0.94 | 55 | 11.65 | 0.95 | 17 |
| WY-BCR18-BLM | Grasshopper Sparrow\* | 2009-2023 | 12.89 | 0.94 | 30 | 10.80 | 0.88 | 34 |
| WY-BCR18-BLM | Lark Bunting\* | 2009-2023 | 12.02 | 0.96 | 499 | 23.65 | 1.00 | 114 |
| WY-BLM | Bald EagleS | 2009-2023 | 9.09 | 0.87 | 6 | 8.19 | 0.90 | 6 |
| WY-BLM | Brewer's Sparrow\*S | 2009-2023 | 4.84 | 1.00 | 13,587 | 6.34 | 1.00 | 5,836 |
| WY-BLM | Chukar | 2009-2023 | 22.13 | 1.00 | 43 | 6.44 | 0.89 | 41 |
| WY-BLM | Common Nighthawk\* | 2009-2023 | 4.27 | 0.94 | 468 | 4.34 | 0.95 | 189 |
| WY-BLM | Eurasian Collared-Dove | 2009-2023 | 10.41 | 0.92 | 28 | 6.83 | 0.90 | 6 |
| WY-BLM | Gray Flycatcher | 2009-2023 | 12.56 | 0.97 | 110 | 11.13 | 1.00 | 106 |
| WY-BLM | Horned Lark | 2009-2023 | 1.28 | 0.64 | 12,270 | 4.71 | 1.00 | 5,269 |
| WY-BLM | Lazuli Bunting\* | 2009-2023 | 6.67 | 0.94 | 57 | 1.95 | 0.62 | 45 |
| WY-BLM | Long-billed Curlew\*S | 2009-2023 | 6.43 | 0.83 | 17 | 7.80 | 0.90 | 15 |
| WY-BLM | Upland Sandpiper\* | 2009-2023 | 2.95 | 0.67 | 93 | 6.71 | 0.92 | 85 |

\* indicates a species of concern for Bird Conservation Region (BCR) 10, 16, 17, and/or 18 as designated by Partners in Flight if the stratum is located within the appropriate BCR.

S indicates a Wyoming BLM listed sensitive species.