# Estimating Potential Population-Level Impacts for Migratory Birds

## INTRODUCTION

The Bureau of Land Management (BLM) and US Forest Service (USFS) have national MOUs with the US Fish and Wildlife Service (FWS) to promote conservation of migratory bird populations and avoid or minimize adverse impacts on migratory birds under the Migratory Bird Treaty Act. The BLM and USFS both participate in the Integrated Monitoring in Bird Conservation Regions (IMBCR) program, a collaborative breeding bird monitoring effort led by Bird Conservancy of the Rockies. The partnership creates efficiencies in data collection and analysis, and provides robust population estimates for numerous migratory birds. IMBCR is based on a spatially balanced sampling design, which provides information on bird populations at various scales, from field offices or forests to entire states or Bird Conservation Regions (BCR). The nested design also provides regional context for local populations within management units, so biologists know if their project could impact a relatively large proportion of the regional breeding population.

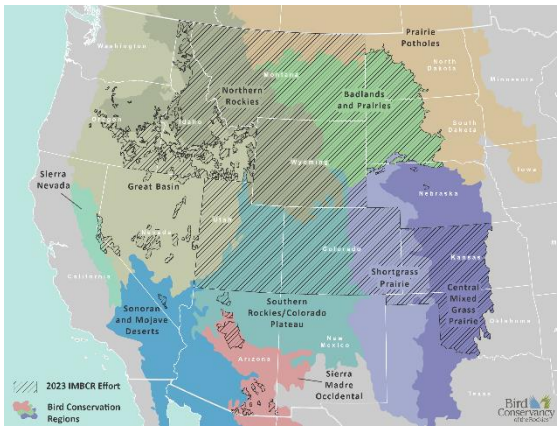


*Figure 1. IMBCR survey extent as of 2023.*

## IMBCR ESTIMATES FOR PROJECT PLANNING

- Each year, we provide density estimates for 300+ birds.
  - **Density:** number of birds/km$^2$
  - **Coefficient of variation (CV):** indicator for the reliability of the density and abundance estimates. Robust estimates will have a CV <50%.
- We post density estimates and other population metrics on the Rocky Mountain Avian Data Center (RMADC) each year (https://bird-conservancy.shinyapps.io/rmadc/).
- Using IMBCR population estimates will help you determine a population-level impact for a project.
- IMBCR estimates represent the best information for migratory breeding songbirds, and we also provide estimates for the more common raptors, gamebirds, and shorebirds.
- eBird is a great resource for less-common species (e.g., flammulated owl) when you want to know if they have been detected in your project area.
- It's important to use the best available information to determine potential project impacts for migratory birds and species of concern.
  - If the estimated population impacts could be large, you can mitigate them or implement a reasonable alternative action.
- Across the IMBCR footprint (Fig. 1), we have population estimates for most BLM field offices and USFS units, including regional context for local populations.
- If you have an upcoming project, you could intensify the sampling effort in your management unit, which will allow us to provide more precise estimates for species of concern.

## STEPS TO ESTIMATE POTENTIAL POPULATION-LEVEL IMPACTS FOR A PROJECT

1) Determine your area of interest
    a. Many field offices straddle BCR boundaries. Which BCR-portion of your field office is the project occurring in? Eg, the BCR 10-portion of the Vernal FO in Utah
    b. Many USFS units are stratified by state, elevation, or other boundary. Which substratum is your project occurring in? Eg, the roaded/managed-portion of Shoshone National Forest in Wyoming
    c. Use the "Stratum" filter under "Explore the Data" on the RMADC to select your management unit of interest.
2) Determine your species of interest.
    a. What are the species of concern that could be impacted by this project?
    b. The BLM, USFS, state agencies, and Partners in Flight maintain priority species lists to reference.
    c. Use the "Species" filter under "Explore the Data" on the RMADC to select your species of interest.
3) Estimate the number of individuals within your project area for each species.
    a. Look at the "Density" page on the RMADC to see density estimates for each species.
    b. We recommend using density estimates with a CV <50% as they are robust estimates.
    c. Project area ($km^2$) * density = the number of individuals that could be impacted by the project. This is the potential population-level impact.
4) All areas within a management unit are available for sampling including the project area. This means we don't need a surveyed sampling unit within your project area to infer project impacts from the population estimates.
5) Direct impacts (e.g., take) should be negligible if activities occur outside the breeding season (approx. April-July).
6) Migratory birds may be indirectly impacted by activities due to habitat changes, but these impacts may vary from positive to negative depending on the species' life history traits.

## ADDITIONAL CONSIDERATIONS

- For large projects with the potential to impact species of concern, consider setting up a targeted monitoring effort within the project area (i.e., overlay project), so you can get pre and post-treatment estimates.
- For overlays, we leverage detections across the IMBCR program to provide population estimates within the smaller project areas, and we can use the regional estimates from the baseline monitoring effort as context for populations within the project area (e.g., a control sample).
- If the project is going to impact a particular habitat type that doesn't occur throughout most of the management unit, then it would be most useful to set up an overlay targeting the habitat type(s).
- You can also request density estimates based on specific habitat type(s) if the project will impact one or a few habitat types within the management unit.

Integrated Monitoring in Bird Conservation Regions

Bird Conservancy of the Rockies

For more information about accessing & using IMBCR estimates, please contact:
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