

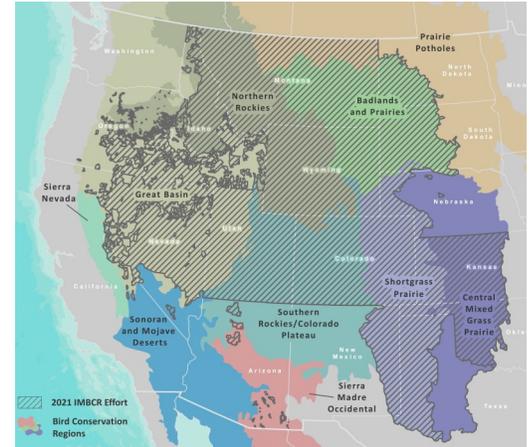


Integrated Monitoring in Bird Conservation Regions: Funding Models & Costs

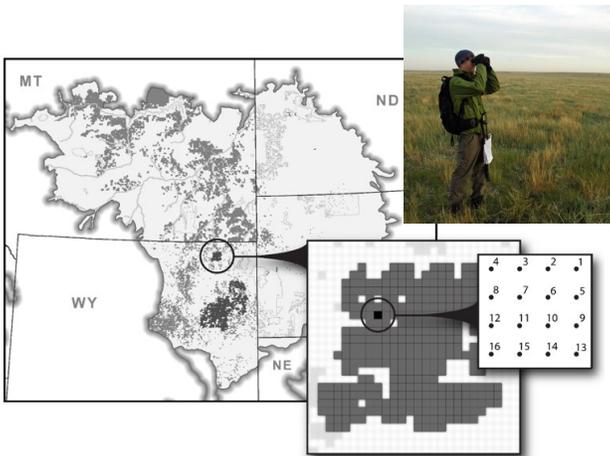


PROGRAM OVERVIEW

The Integrated Monitoring in Bird Conservation Regions (IMBCR) program was created in 2008 in response to avian population declines and national recommendations for improving avian monitoring. Today, the IMBCR program is the second largest breeding bird monitoring program in North America, spanning the Great Plains to the Great Basin. The strength of the IMBCR program lies in its partnership with multiple state and federal agencies, joint ventures, and NGOs with Bird Conservancy of the Rockies leading the effort. We pool monitoring resources among the partners in a spatially balanced, probabilistic framework, which promotes efficiencies in field work and analyses and allows us to provide population estimates for over 300 species including songbirds, gamebirds, common raptors, and some waterfowl and shorebirds.



Extent of the IMBCR program as of 2021.



Example sampling frame for the Badlands and Prairies Bird Conservation Region with 1-km² grid cells and example transect containing 16 point count stations.

Within a sampling frame, all lands and vegetation types are available for sampling, so we learn about bird populations across the whole landscape. We create strata based on fixed attributes, such as state borders and management unit boundaries, and stratification is determined by funding partners. With a nested sampling design, we estimate bird population size within a management unit up to a state-wide, and larger regions. Spatially balanced sample selection also allows partners to adjust monitoring efforts while maintaining spatial coverage of a stratum.

Every spring, trained observers visit up to 16 survey points within a 1-km² grid cell per morning and record all birds seen and heard. They also record ocular vegetation estimates at each point, such as over and understory cover and height.

DATA APPLICATIONS

- *Data products* from IMBCR include bird density, abundance, occupancy, and population trend. These estimates are all corrected for detection probability and are available at multiple scales.
- *State agency* biologists use population estimates to inform State Wildlife Action Plans and Species of Greatest Conservation Need and prioritize conservation actions for these species.
- *US Forest Service and Bureau of Land Management* biologists use population estimates to determine potential project-level impacts on migratory birds, update management plans, and identify species of concern.
- *Department of Defense* biologists use population estimates to inform the status of migratory birds on installations and determine installation impacts on migratory birds.
- *In addition to the baseline monitoring effort*, partners also conduct targeted monitoring in project areas to ask specific questions about landuse impacts on birds (i.e., overlay projects).

IMBCR FUNDING MODELS AND COSTS

The IMBCR partnership is made up of two main partner types: those who fund the data collection and those who implement data collection for funders. There are numerous other models that partners use to accomplish the monitoring within their management unit(s) or area of interest. For example, a partner may collect the data themselves and only pay programmatic fees, or pay for data collection and then conduct their own analyses. A partner may also design the study and store, manage, and analyze data on their own, but pay Bird Conservancy or other field implementer to collect the data.

The cost of IMBCR surveys depends on two main variables: land ownership and presence of grizzly bears. Surveys on private land require landowner outreach to gain permission, while surveys in grizzly country require additional training and two observers. Survey costs include field gear, observer salary and training, vehicle expenses, and programmatic fees, like data storage, management, and analysis. To have Bird Conservancy or other field implementer collect the monitoring data, see below for costs as of 2022 for grid cells within different stratum classifications.

Stratum Classification	Description	Cost per Grid Cell
Grizzly country	Stratum falls within Grizzly Bear Range, and >50% of the surveys in a stratum require 2 observers per transect for safety purposes	\$1,231
Backcountry, non-grizzly country	Stratum does not fall within Grizzly Bear Range, and >25% of the transects require overnight backpacking trips with 1-2 observers	\$1,181
Front country, public	Stratum has <25% of transects that require backpacking, and averages <1 landowner per transect	\$1,056
Front country, public/private combo	Stratum has <25% of transects that require backpacking, and averages between 1-2 private landowners per transect	\$1,156
Front country, private - established/permit	Stratum averages >2 private landowners per transect and has been surveyed for >3 yr. Also includes strata that require a permit or partner coordination on public land	\$1,181
Front country, private - new	Stratum averages >2 private landowners per transect and has been surveyed for <3 yr	\$1,231

MORE BANG FOR YOUR BUCK



An IMBCR surveyor and a pygmy nuthatch.

The IMBCR program is able to provide robust estimates to inform management and conservation efforts using a relatively small investment from each partner. Each year, we analyze all the data together to provide population estimates across the entire IMBCR footprint at multiple scales. This represents a small amount of biometrician time to provide estimates for each individual stratum, whereas each partner would pay significantly more if they had to pay for an independent analysis. Population estimates are available via the Rocky Mountain Avian Data Center and raw data are also available upon request for the data you fund or collect.

Each funding partner benefits from the leveraging of all partner's resources within their region, so no one partner is shouldering the load for coverage. For example, Colorado Parks and Wildlife funds monitoring on private lands across Colorado, but with BLM and USFS funding for public lands, they are able to obtain state-wide estimates for many species. In addition, we use the same IMBCR field methods and sample selection for targeted overlay projects to answer specific management questions. This allows us to leverage detection data from across the program to estimate population size for infrequently detected species and place them in regional context.

ACKNOWLEDGEMENTS

IMBCR efforts are possible with support from numerous partner agencies and organizations. To see a list of current IMBCR partners and other program information, please visit our website: <https://www.birdconservancy.org/what-we-do/science/monitoring/imbc-program/>



For more information about IMBCR, please contact Jen Timmer (jennifer.timmer@birdconservancy.org)



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