Why monitor breeding birds with the IMBCR program?

Why Monitor?

Why do biologists monitor wildlife populations? Monitoring provides basic information on species distributions and allows us to determine the status of species of interest, while detecting changes in populations over time. Monitoring also provides information on how populations respond to management actions and landscape and climate change, and is a critical component of adaptive management.

Why monitor birds in particular?

- Birds are a useful indicator because they are *conspicuous* during the breeding season, and we can obtain information about numerous species without specialized surveys, including species with different life histories and habitat preferences.
- Recent studies indicate we have lost up to 3 billion birds since 1970, which means we need *rigorous information* on population sizes, so we can *prioritize* our conservation efforts and *evaluate* the effectiveness of those efforts.
- Birds provide many *ecosystem services* including pollination, pest control, scavenging, and seed dispersal, and they also hold *intrinsic* and *cultural* value.
- Birds provide *economic value*: according to a 2019 study, more than 45 million people in the U.S. watch birds, which generates nearly $100 billion in revenue each year. This includes money birders spend on equipment, and also while traveling, which benefits local communities. Birding also creates jobs (782,000 jobs in 2016).

Above: counting bighorn sheep during a helicopter survey in Montana (Sonja Andersen).

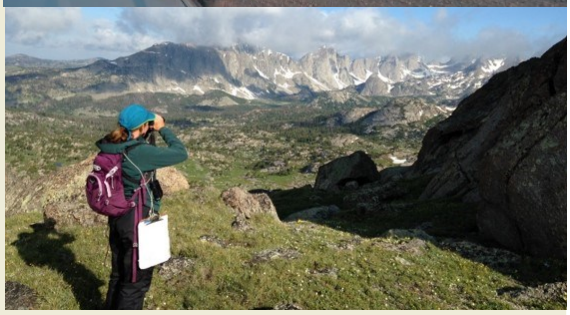
Male chestnut-collared longspur (Rick Bohn) and an American goldfinch eating sunflower seeds (USFWS).

How Do We Monitor Birds?

There are several ways to count birds and track population trends. Breeding bird surveys are the most common method because the birds are easier to observe and identify during the breeding season. In the US, we have two large-scale breeding bird monitoring programs:

- **Breeding Bird Survey:** Began in 1968 and is the only long-term information we have on bird populations across the US. Survey routes are randomly located along secondary roads.
- **Integrated Monitoring in Bird Conservation Regions:** Began in 2008 and has since expanded throughout the West. Sampling units are distributed via spatially balanced selection on private and public lands within areas of interest.

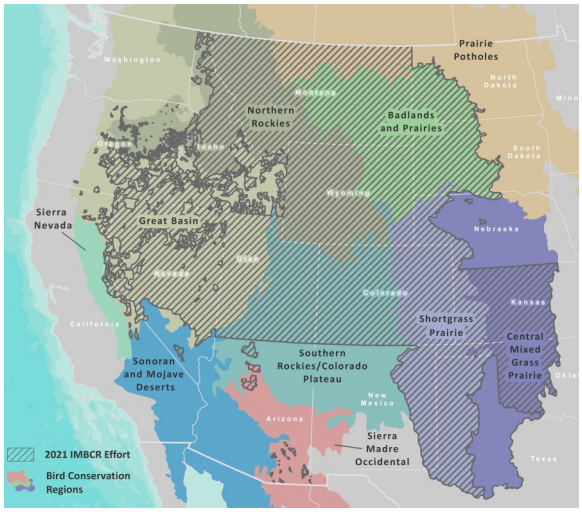
In addition, **eBird** is a large citizen science effort in which birders contribute bird observations throughout the year. These observations are used to develop tools for bird conservation, such as full annual cycle trends.



Top: volunteer surveying along a BBS route in eastern Colorado (Rachel Sill), Below: observer completing an IMBCR survey (Nick Van Lanen).

Why IMBCR?

Why is it useful to use the IMBCR program for breeding landbird monitoring? *In a nutshell:* Partners participate in the program to collect data across political and land ownership boundaries and obtain a better understanding of bird populations in a regional context and to compare and evaluate local management actions. The IMBCR program has several unique characteristics listed below.



IMBCR extent as of 2021 and an IMBCR observer.

What is IMBCR? IMBCR was created to address large-scale declines of avian populations and the need for extensive and rigorous landbird monitoring. IMBCR operates as a partnership (led by Bird Conservancy of the Rockies) with multiple federal and state agencies JV's, and NGO's who contribute funding or field capacity. A hierarchical sampling design and probabilistic sampling allow us to provide population estimates for >300 species at a variety of scales.

IMBCR's Niche

- **Partnership:** IMBCR is a *collaborative* monitoring program overseen by Bird Conservancy with funding and field implementing partners representing state and federal agencies, joint ventures, and NGOs. By *pooling resources*, we are able to survey a larger geographic area each year to obtain estimates for more species with greater precision than would be possible through individual efforts.
- **Sampling Design:** IMBCR's *spatially balanced* sampling design includes data collection across vegetation types, on public lands, and also on privately owned lands, which are typically under-sampled by other large-scale monitoring efforts. The use of skilled field technicians following *standardized protocols* ensures high-quality and reliable data across the program including ocular vegetation estimates. The sampling design facilitates *robust population and trend estimates* of breeding landbirds at multiple scales that can be linked to *climate and landscape change* at biogeographical scales.
- **Data Quality:** IMBCR's survey design allows for *imperfect detection* to be explicitly modeled and accounted for during analyses. This enables estimates of absolute abundances instead of a relative measure or index of abundance. This is especially important for obtaining *unbiased* estimates of population trends if there is even a small amount of variation in detectability through time. Overlay projects leverage detection data across the program to provide *project-level assessments* that partners can use to evaluate the efficacy and efficiency of management or conservation actions for meeting desired project outcomes.
- **Data Access:** Every year, Bird Conservancy analyzes IMBCR data to provide population estimates for *>300 species at different scales* most relevant to management and decision-making. Population estimates provided include: density, abundance, occupancy, and trend. These estimates, along with *measures of uncertainty* (e.g., coefficient of variation), are available to the public on the Rocky Mountain Avian Data Center, which is a node of the Avian Knowledge Network. Through data integration, IMBCR can complement and inform other long-term and/or citizen science monitoring efforts as well.

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: www.birdconservancy.org/what-we-do/science/monitoring/imbcr-program/

Bird Conservancy of the Rockies

For more information about IMBCR, please contact Jen: jennifer.timmer@birdconservancy.org

Integrated Monitoring in Bird Conservation Regions