

EXECUTIVE SUMMARY

Bobolink (*Dolichonyx oryzivorus*), one of the most iconic and charismatic grassland birds, has declined in numbers on its North American breeding grounds by nearly 60% since 1970. Many other grassland obligate birds share a similar fate, as do the native grasslands on which they depend, now one of the most endangered ecosystems in the Americas. Bobolink is a Partners in Flight Watch List species, a U.S. Fish and Wildlife Service Focal Species and Bird of Conservation Concern, a Species of Greatest Conservation Concern in most U.S. states and Canadian provinces in which it occurs, and is listed as Threatened under the Species at Risk Act in Canada. In nine of the Bird Conservation Regions (BCRs) in which it breeds, populations are predicted to decline by 30% over the next two decades.

Bobolink breeds in temperate grasslands across much of southern Canada and the northern U.S., spanning seven provinces, 34 states, and 15 BCRs. It then migrates great distances, staging for several weeks in the Llanos grasslands of Venezuela and eastern Colombia, continuing to open grassland and associated wetland wintering areas in Bolivia, Paraguay, and Argentina, and returning to its North American breeding grounds following a similar route in the spring. While Bobolink relies on grasslands throughout every portion of its hemispheric annual cycle, those grasslands are affected by different limitations, threats, policies, cultures, and political jurisdictions. Scientific research indicates that the different phases of Bobolink's life cycle are inextricably linked, so conservation practitioners require a geographically and biologically integrated approach to conservation for the species. *A Full Life Cycle Conservation Plan for Bobolink* (Plan) acknowledges that, given the multiple services grasslands provide, effective conservation will require coordination and creative solutions that merge economic, social, ecological, and conservation needs.

The overarching goal of the Plan is to provide the essential biological information, tools, and strategies necessary to sustain global Bobolink populations into the future through strategic, full life cycle conservation measures—and concurrently, populations of other grassland bird species, the habitats they depend on, and associated ecosystem services across continents and sectors. The Plan draws on extensive input from North and South American partners—including the Bobolink Full Life Cycle Conservation Working Group (BWG)—and six partner workshops. Planning objectives include:

- Directing resources to essential research and the most promising conservation strategies.
- Maintaining native and restored grasslands at landscape scales sufficient to sustain bird populations, vital ecosystem services, human health, and long-term economic benefits to associated communities.
- Integration with conservation plans for other grassland-dependent species and with other cooperative grassland conservation initiatives.
- Building and strengthening partnerships for coordinated action at local, regional, national, and hemispheric scales.

Partners contributed to the processes and workshops that identified the top-ranking threats to Bobolinks on the breeding grounds in North America: widespread conversion of grasslands (including hayfields, pasture, and rangeland) to row-crop agriculture (driven in large part by demand for biofuels), intensification of haying/mowing practices, and conversion to development and development-dominated landscapes. Conversion of grasslands to agriculture and development emerged as dominant threats on the South American staging and wintering grounds as well. Targeted direct take of Bobolinks to control depredation on rice in Bolivia and Argentina has been largely mitigated; lethal effects of pesticides used in rice cultivation remain a source of concern and uncertainty. In terms of potential population impacts, predicted changes in precipitation associated with climate change and loss of wet grasslands emerged as the highest ranked threat for nonbreeding habitat.

The impacts of climate change cross all boundaries, connecting ecological, social, and economic interests alike. Climate change will not only affect grassland birds, but also those who supply the vast majority of their habitat—farmers, ranchers, and private landowners. A full life cycle climate change conceptual model for Bobolink suggests that variability in precipitation is likely to be the most important variable affecting Bobolink demography and persistence both in terms of increased grassland productivity and extreme events associated with drought. Bobolinks, like other grassland birds, will be vulnerable to climate impacts—although the magnitude of the vulnerability remains highly uncertain.

The Bobolink Plan follows Partners in Flight in setting conservation objectives based on population trends derived from North American Breeding Bird Survey (BBS) data. Although the BBS is conducted during the breeding season, its resulting trend estimates should be understood as an integration of all demographic parameters affecting Bobolink population size during the entire annual cycle, including events that occur during the non-breeding season in South America. The BWG set a qualitative long-term goal of maintaining a stable Bobolink population—thereby also contributing to the conservation of associated grassland bird species and their habitats—and two quantitative objectives: (1) slowing the annual rate of Bobolink population decline over the next decade to 0%/year, as measured by the BBS, and (2) over the next 20 years, maintaining population stability at $\geq 85\%$ of the 2016 population of an estimated 10,000,000 breeding individuals. (Canadian partners incorporated these Plan objectives in their Recovery Strategy for Bobolink.) A trend-based Bobolink Population Objectives tool (Bobolink Tool) was developed to apportion responsibility for reaching the rangewide objective among BCRs and Bird Habitat Joint Ventures (JVs) comprising the Bobolink's North American range. The Prairie Pothole JV piloted the Bobolink Tool and demonstrated an approach for translating the trend-based objectives into grassland habitat acres. The Bobolink Tool approach significantly advances regional coordination of population and habitat objectives so that participating entities can each contribute meaningfully and realistically toward a measurable rangewide goal.

A working subgroup of the BWG, the Midwest Grasslands Network (MGN), developed a Conservation Planning Atlas for Midwest Grasslands (hosted on Data Basin) which includes the Bobolink Conservation Opportunity Map—an online interactive tool that incorporates ecological, land-use, and economic information summarized at the county scale and that allows

the user to explore customizable scenarios. The BWG used this tool to identify four county clusters that consistently surfaced as high opportunity areas for Bobolink conservation: North and South Dakota, the transition zone between the Midwest corn belt and the northern forest, the northern Allegheny Plateau, and a discontinuous band of counties extending from the eastern Great Lakes lowlands to agricultural areas of northern New England. Areas of critical importance in South America were derived largely from geolocator data that indicated regions where Bobolink resided for from three weeks to four months: the Llanos of Colombia and Venezuela (which hosts nearly the entire global population of Bobolink during fall and spring migration), northeastern Bolivia, central Paraguay, and northeastern Argentina.

The BWG conducted a series of online exercises and in-person workshops to begin the work of developing conservation strategies and associated actions for Bobolink and its grassland habitats; these were augmented with products that emerged from a MGN conservation deliberation graduate seminar hosted at the University of Minnesota. Three parallel partner workshops in South America explored non-breeding season conservation strategies. In all cases, the groups recognized that conserving a species that relies heavily on lands used for food and fuel production throughout its annual range required creative solutions that merged biological, social, economic, and conservation needs. Ultimately, in order to accomplish grassland conservation at the scale needed to stabilize grassland-dependent bird populations, bird conservation needs must be embedded within efforts that have other environmental service objectives and priorities.

The strategies that emerged from the workshops are at this point best understood as a palette or menu from which partners can draw depending on the scale at which they are operating and the opportunities and capacity available to them. They span a wide range of actions, encompassing grassland management, public policy, communication and education, scientific study, and market-based programs. Included are proven local solutions that could be scaled up as well as more innovative approaches that address rangewide drivers of population decline. Most are articulated in greater detail in the Plan. Ideas that surfaced repeatedly during planning workshops include:

- Maintaining and appropriately managing existing large tracts of public grasslands.
- Promoting grazing systems that provide vegetative structure and disturbance levels that are compatible with successful grassland bird reproduction and survival.
- Maintaining hay and pasture while developing and promoting economically viable mowing schedules that allow birds to fledge young.
- Strengthening U.S. Farm Bill and other public conservation programs that aim to enhance grassland habitat.
- Maintaining and improving practices on Conservation Reserve Program (CRP) lands in the U.S.
- Reducing incentives (e.g., the Renewable Fuel Standard) for converting grassland to other uses through investments in private conservation and best management practices.
- Communicating messages about the value of grasslands for human health and security and the importance of birds in agroecosystems.

- Eliminating the use of highly toxic pesticides on migration and wintering grounds.
- Supporting research and development of bird-friendly agricultural cultivars and practices.
- Modeling full life cycle Bobolink demographics in order to strengthen the scientific basis for conservation actions.
- Developing and exploring innovative solutions that break through the economic barriers to successful grassland conservation by broadening partnerships to include other disciplines and stakeholders.
- Forging non-traditional and hemispheric partnerships.
- Implementing grassland conservation strategies across multiple themes, pathways, and scales simultaneously.

By building on previous conservation successes and identifying new strategies, the Plan continues a broad-scale, long-term process to sustain grassland bird populations. North American partners can begin by following the lead of the Prairie Pothole Joint Venture: setting population and habitat objectives for BCRs, selecting priority strategies and linking them to desired outcomes, integrating with other grassland initiatives, and using existing mapping tools to create more explicit conservation landscapes to meet rangewide goals and objectives. In South American countries, priority strategies already have been selected and projects related to these are already underway; these projects simply require more support.

Successfully implementing a plan that incorporates so many partners across such a broad range will require dedicated teams guided by a coordinated implementation strategy. For the near-term, progress will depend on the capacity of individual organizations, partnerships, and agricultural associations to develop, execute, and coordinate work plans that meet the multiple needs of diverse stakeholders. Ultimately, however, successful conservation of Bobolink and other grassland birds will require a paradigm shift in the scale, approach, and coordination of conservation activities, similar to successful efforts to conserve waterfowl. Bold leadership will be required to implement, at minimum, an international policy of No Net Loss for grasslands.

"When you fail to achieve a goal...the defining factor that you're missing is never resources, it's resourcefulness." — Tony Robbins