

EXECUTIVE SUMMARY

North American Grasslands & Birds Report



 Audubon

NATIONAL AUDUBON SOCIETY, 2019

North American Grasslands & Birds Report

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(Cover) Eastern Meadowlark

Foreword



Baird's Sparrow



David O'Neill
Chief Conservation
Officer, Audubon

When the National Audubon Society launched our study of grassland habitats and birds, we already knew that both the birds and the grasslands were in trouble. Our analysis confirmed this peril: only 11% of the tallgrass prairie, 24% of the mixed grass prairie, and 54% of the shortgrass prairie that once covered much of the continent remains. Furthermore, grassland conversion continues at a rate of millions of acres per year. Given these habitat conversion rates, it is not surprising that grassland birds are among the most vulnerable in North America. Total populations have declined more than 40% since 1966, and some species, like the Lesser Prairie-Chicken, hover at the brink of extinction. **The message is stark: we must act now to protect and restore these remaining grasslands before they are lost.**

The grassland story and the need for action does not end there. Audubon also assessed the vulnerability of representative grassland birds and their habitat to warming global temperatures. Our findings make it clear that in addition to protecting remaining grasslands, we must also advance solutions that reduce carbon emissions, and prioritize and direct resources and other investments to the places that will support grassland birds and other wildlife into the future.

Here is the good news: Audubon's *North American Grasslands & Birds Report* identifies the birds most vulnerable to climate change, and the places, or "climate strongholds," they will need to thrive as temperatures rise. It also points us to the sites most vulnerable to land conversion today, and highlights the specific conservation strategies that are part of Audubon's ambitious effort to protect grassland birds and prairies.

By partnering with key stakeholders in this working landscape, including farmers and ranchers, public agencies, and others, we are finding balanced solutions that meet the needs of both birds and people. No one has a closer connection to the land than those who depend on its fertile soil, pollinating insects, or productive grazing lands for their livelihood. It is a way of living that forges a deep commitment to stewardship and to doing right by the environment. Growing up, I learned that first-hand from my father. I saw him and his fellow farmers in Maryland move from skepticism to enthusiastic adoption of a range of agricultural best management practices that improved soil quality, reduced labor and fuel costs, and improved water quality. The farming community where I grew up gained the knowledge that working with nature rather

than against it, is good for business and the environment.

Today, 65 ranches encompassing nearly two million acres are participating in Audubon's Conservation Ranching Initiative. Their managers do not need to choose between economic prosperity and environmental stewardship. By adopting bird-friendly ranching practices, they can raise cattle in a way that both minimizes environmental impacts and also supports premium pricing for their beef. This initiative is gaining momentum throughout the Great Plains and Intermountain West, with more acres of ranchlands in the pipeline. These practices have the added benefit of sequestering carbon, which may create additional market-based incentives for ranchers who apply bird-friendly ranching practices.

We are also mobilizing our network of Audubon advocates throughout the U.S. on behalf of policies that benefit farmers and ranchers, as well as grassland habitats and birds.

We are making sure that legislation like the federal Farm Bill includes incentives for conservation—and helping bring together government agencies, private interests, indigenous communities, non-governmental organizations, and others to collaborate around large-scale solutions that balance economic and ecological interests.

Despite their critical importance to economic growth, rural economies, and food security—as well as to birds and other wildlife—prairies and grasslands are a largely forgotten and misunderstood landscape. Through this report, Audubon is sounding an urgent alarm, and empowering and inspiring our network, our partners, and all who love birds, to act now on behalf of grasslands and the birds, other wildlife, and communities that depend on them.

David O'Neill
Chief Conservation Officer
Audubon



Western Meadowlark

North American Grasslands and Birds: An Urgent Conservation Priority



Greater Prairie-Chicken

Less than 40% of the 550 million acres of historical grasslands that once stretched from Alberta to Mexico remain today. Most of these grassland acres were converted to cropland, others to energy development or other uses. As these tallgrass, mixed grass, shortgrass prairies and desert grasslands are lost, so is the wildlife that depend on them.

Not surprisingly, grassland species are among the most imperiled group of birds in the United States—total populations have declined more than 40% since 1966, and some species, like the Lesser Prairie-Chicken, hover at the brink of extinction. Bison, antelope, and monarch butterflies are only a few examples of the other wildlife that face a diminished future if we allow remaining grasslands to disappear or degrade. Human health and livelihoods are also intertwined with the fate of grasslands. Pollinating insects thrive in fields of wildflowers and native grasses, while the deep roots of native plants trap nutrients and water—and keep prairies resilient through natural cycles of drought, fire, grazing, and storms.



Chestnut-collared Longspur



Our Call to Action

This report provides a comprehensive analysis of trends and threats facing North America’s grasslands and birds. Our goal is not simply to document declines, but to outline an actionable strategy for protecting and restoring these vibrant and iconic ecosystems—and safeguarding them for future generations of humans and wildlife alike.

Our science investigation included an extensive review of available data on land use trends with implications for grasslands, as well as an assessment of population and habitat trends for 19 Audubon “flagship” bird species, each selected because it is an important indicator of overall grassland ecosystem health. We collaborated with researchers at the U.S. Geological Survey to consider scenarios for future climate and land use change, and

we worked with partner organizations, such as the Playa Lakes Joint Venture, to identify strategies for grasslands conservation. Through this analysis, we were able to:

- Assess the state of North American grasslands, including recent losses of acreage
- Document declines in bird species
- Assess vulnerability of grassland birds to the emerging threat of climate change
- Identify and map priority grassland sites for habitat protection and restoration
- Develop recommendations for conservation and policy interventions needed to protect these sites.

The State of North American Grasslands and Birds

Historically, natural cycles of periodic fire and disturbance from large grazers, such as bison, maintained the ecological balance of North America’s grasslands. Today, these natural processes have been suppressed by continuing changes in land management, such as conversion to agriculture, energy, and other development, as well as shifting patterns of rainfall and drought, including climate change impacts. These threats affect different types of grasslands in different ways, with profound implications for birds and overall ecological health. It is important to recognize that grassland birds may rely on different types of grasslands during different parts of their annual life cycle: breeding, migration, and wintering seasons. For example, the Chihuahuan grasslands of western Texas and northern Mexico provide winter habitat for 10 of Audubon’s 19 priority grassland species, as well as several species endemic to the region.

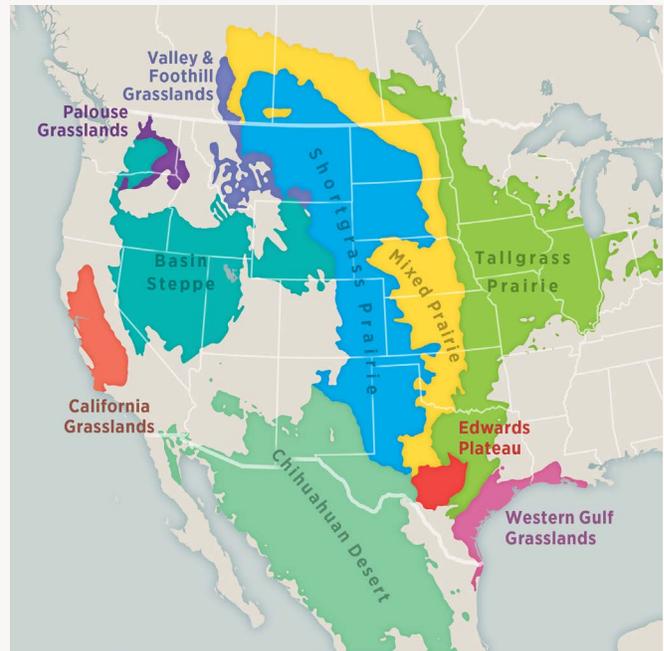


Figure 1.1. Historic grassland types of North America based on mapping data from NatureServe³ and the International Vegetation Classification and Terrestrial Ecoregions of the World⁴



Henslow's Sparrow

Tallgrass Prairie

Historically, tallgrass prairie extended from southeastern Manitoba to southeastern Texas, and east through Indiana¹, covering an area of 200 million acres². The wettest and most fertile and arable of grasslands, tallgrass prairie is attractive for conversion to cropland. As a result, only 11% of the original tallgrass prairies remain—and these face a continued threat from agricultural development. Corn and soy are predominant crops, and growth in demand for ethanol crops has been a contributing factor driving conversion of land to agricultural use in recent years.

- AUDUBON GRASSLAND PRIORITY BIRDS AT RISK IN TALLGRASS PRAIRIE**
- Henslow's Sparrow
 - Bobolink
 - Greater Prairie-Chicken
 - Northern Bobwhite
 - Vesper Sparrow
 - Eastern Meadowlark



Lesser Prairie-Chicken

Mixed Grass Prairie

Conversion to cropland is the primary threat to the mixed grass prairie found in the transition zone between the tallgrass of the eastern prairie and the shortgrass of the western Great Plains. Historically, mixed grass prairie covered an area of 140 million acres⁵ but today only approximately 30 million acres remain⁶. The Prairie Pothole Region (PPR), which gets its name from the millions of shallow depressions left behind from ancient receding glaciers, also encompasses mixed grass prairie. Prairie potholes are wetlands rich in aquatic plants and wildlife, and support globally significant populations of breeding waterfowl, shorebirds, and grassland obligate birds. Additionally, the PPR also represents the most important monarch butterfly, honeybee, and native bee habitat in the United States.⁷ This ecologically rich region of grasslands and seasonal wetlands faces an ongoing threat of conversion to row crops, making habitat restoration and protection a critical conservation priority.

AUDUBON GRASSLAND PRIORITY BIRDS AT RISK IN MIXED GRASS PRAIRIE

Upland Sandpiper
Bobolink
Baird's Sparrow
Sprague's Pipit
Grasshopper Sparrow
Vesper Sparrow
Lesser Prairie-Chicken
Long-billed Curlew
Northern Bobwhite
Eastern Meadowlark



Ferruginous Hawk



Burrowing Owl

Shortgrass Prairie

Shortgrass prairie once covered 265 million acres of the western Great Plains.⁸ Today, only half of this total area remains. Much drier and less fertile than the tallgrass prairies to the east, shortgrass prairies are less arable and thus less vulnerable to conversion to cropland. However, they face growing threats from energy development, including wind and transmission lines and resulting "energy sprawl," as well as overgrazing practices utilized by many ranchers.

PRIORITY BIRDS AT RISK IN SHORTGRASS PRAIRIES
Chestnut-collared Longspur
McCown's Longspur
Mountain Plover
Horned Lark
Long-billed Curlew
Vesper Sparrow
Western Meadowlark
Ferruginous Hawk

Chihuahuan Grasslands

The Chihuahuan grasslands of northern central Mexico, western Texas, southern New Mexico, and southern Arizona historically comprised approximately 20% of the Chihuahuan Desert (around 34.5 million acres); today, nearly half of these desert grasslands have been lost⁹, likely due to intensifying agriculture, water diversion, poor grazing practices, and energy development. Protection of this important habitat is critical to the conservation of North America's grassland birds; species overwintering in the Chihuahuan grasslands have experienced a nearly 70% decline.¹⁰

PRIORITY BIRDS AT RISK IN THE CHIHUAHUAN GRASSLANDS
Chestnut-collared Longspur
McCown's Longspur
Baird's Sparrow
Sprague's Pipit
Horned Lark
Grasshopper Sparrow
Mountain Plover
Vesper Sparrow
Burrowing Owl
Eastern Meadowlark
Western Meadowlark

Climate Change: A Growing Threat



Lark Bunting

[Audubon's 2014 Birds and Climate Change Report](#) revealed that climate change is the greatest existential threat to birds and the places they need. Our *North American Grasslands & Birds Report*, which used enhanced science modeling techniques to project potential impacts of climate change on grasslands species, determined that these birds and grassland ecosystems are highly vulnerable. Temperature increases and disruptions in rainfall intensity and drought frequency will change environmental conditions—in some cases transforming thriving ecosystems into places where current species cannot survive.

Audubon's science team assessed the climate vulnerability of 38 grassland bird species under three scenarios representing, respectively, a 1.5°, 2.0°, and 3.0°C increase in global mean temperature. Included in this list are all 19 of Audubon's priority grassland species. These scenarios projected the impacts of greenhouse gas emissions on both temperature and

precipitation, factoring in any indirect effects on vegetation. Through this approach, we were able to estimate the percent of future range loss and gain for each bird species, and assess the species' vulnerability to climate change.

What we learned is alarming: for many grasslands species, climate and habitat where they are currently found will be unrecognizable as the planet warms, and their ability to move elsewhere to breed, forage, and overwinter may not make up for the habitat lost due to rising temperatures.

The good news: by curbing climate emissions, we also can reduce impacts on grassland birds. Our investigation showed that 42% of grassland birds are highly vulnerable to climate change under our current rate of carbon emissions (i.e. 3°C increase in global mean temperature); however, if we reduce emissions to limit global mean temperature increase to 1.5°C, only 8% of grassland birds will be highly vulnerable to climate change.

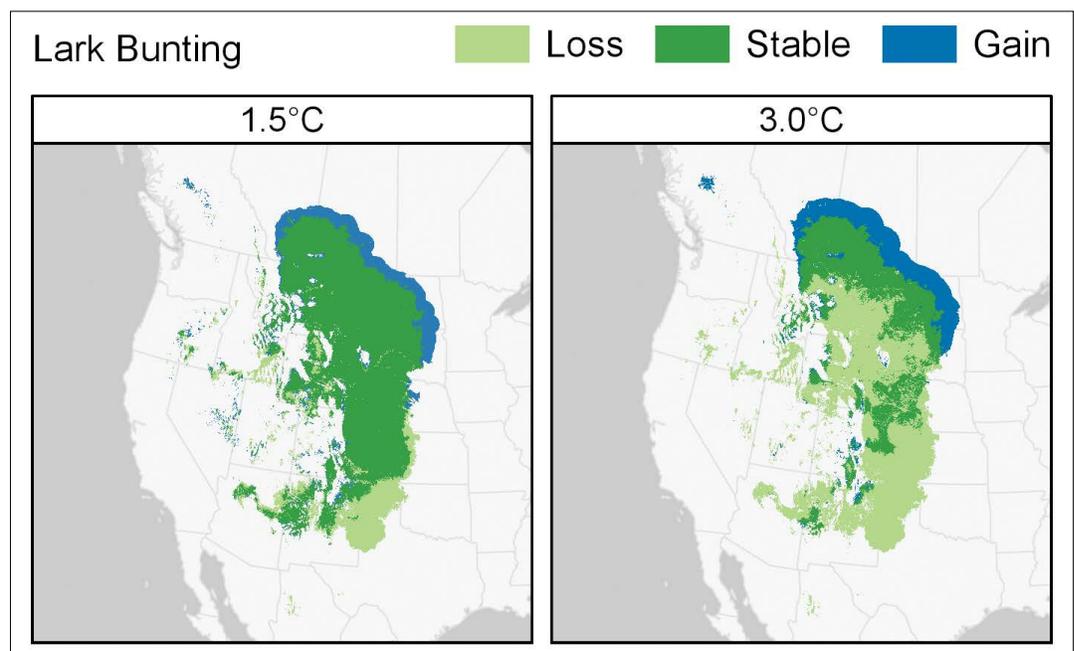


FIGURE 2. The Lark Bunting is one of 13 priority grassland species whose fate may depend on holding global mean temperature increase to 1.5 °C.

Priority Geographies for Grassland Conservation



Bobolink

The scale and complexity of the threats facing North America’s grasslands and the birds that depend on them demands a strategic approach designed to deliver the greatest conservation return on investment. By aggregating the best available information on bird population distributions and habitat needs, incorporating potential impacts of climate change on critical habitat, and factoring in projected future land use, we identified high priority grasslands that are important for birds now and are likely to remain so in the future. We combined these findings with Grassland Priority/Potential Conservation Areas (GPCAs) identified in 2005 and 2018, which did not factor in climate change. The resulting consensus priority conservation areas are illustrated on the map below.

These are the places where grassland conservation action and investment is likely to yield the greatest return in protection of birds and the places they need, for today and tomorrow.

1. **Climate strongholds**—the places that can continue to provide quality habitat for birds as global temperatures rise—across the southern Great Plains of New Mexico, Texas, and the Oklahoma Panhandle; the Chihuahuan Desert; and the Northern Great Plains of North and South Dakota, Nebraska, Montana, Wyoming, Alberta, Saskatchewan, and Manitoba
2. **Existing Grassland Priority/Potential Conservation Areas**, which include the Flint Hills of Kansas and Oklahoma and represent regional and tri-national priorities identified in this report, as well as in previous conservation planning efforts
3. **Vulnerable grassland priorities** distributed across the Gulf Coast Prairie, Texas Blackland Prairie, the Chihuahuan Desert, large portions of the eastern-central Plains, and the Prairie Pothole Region and surrounding areas. Increasing pressure from competing land uses in the eastern half of the central grasslands, due to their higher precipitation levels and suitability for irrigated row crops, makes this region extremely vulnerable to land conversion. Urgent conservation action is required to protect or restore any unprotected tall- and mixed grass prairie that remains.

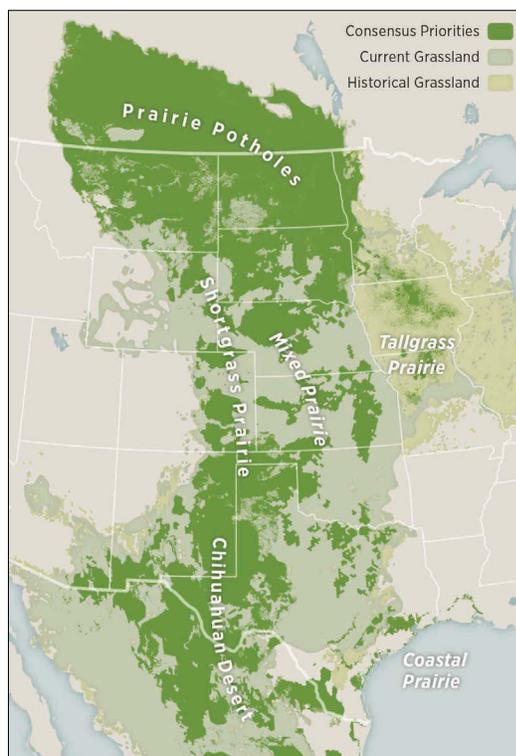


FIGURE ES.2. Grassland priorities include climate strongholds identified in this report; existing Grassland Priority Conservation Areas; (Gauthier et. al. 2003; Karl and Hoth 2005; Pool and Panjabi 2011; Comer et. al. 2018), and vulnerable priorities defined as areas with high probability of land-use conversion. Historical and current grasslands from Nature-Serve (Comer et al. 2018).

Priority Strategies for Grassland Conservation



Short-eared Owl

By mid- to late-century, significant areas of today's remaining grassland bird habitat will be lost or diminished due to the impacts of climate change and grassland conversion to cropland or development. On the positive side, our analysis also identified important grassland ecosystems that will be vital for birds in the changing climate, and high priorities for protection from land conversion threats. These ecosystems, including the Prairie Potholes, Shortgrass Prairie Corridor, Gulf Coast Prairie, and Chihuahuan Grassland regions, represent the best opportunities for preserving grassland birds by protecting the integrity and sustainability of these stronghold regions.

Complicating efforts to protect and restore our country's iconic grasslands is the fact that 84% of the grasslands in the central U.S. are privately owned; the remainder is largely held by federal and state agencies¹¹. That makes cooperative solutions that deliver economic as well as ecological benefits essential for protection of grassland strongholds that are resilient to a changing climate, and for prevention of further loss of grassland to cropland and other development. Large-scale grassland conservation will require broad stakeholder engagement and a fundamental change in rural economies, including the incentives that drive agriculture and other development in the region.

The good news is that this is an opportunity as well as a challenge, and Audubon and our many partners are helping to lead the way. Boundary organizations, such as Migratory Bird Joint Ventures and Landscape Conservation Cooperatives, have forged collaboration among federal and state agencies, ranchers, indigenous communities, NGOs, and universities to protect and preserve grassland bird conservation. The best solutions will not only guide conservation today; they also will advance innovative grassland management solutions that address the economic drivers that contribute substantially to conversion.

Audubon's grassland conservation strategy is focused on four key areas, described in the next pages:

1. Technical support to private landowners and ranchers to assist their transition to bird-friendly management practices
2. Enhancement and protection of critical grassland bird habitat through financial incentives and acquisition of voluntary term or permanent conservation easements
3. Catalyzing market-based incentives for grassland conservation by empowering consumers to invest in healthy grasslands through Audubon's Conservation Ranching Initiative and by promoting emerging markets that invest in natural climate solutions, like carbon sequestration
4. Aligning federal and state policies to incentivize grassland bird habitat protection and reduce land use conversion



“Included in the mission of our ranch is the idea that good stewardship is important for the long-term financial health of the ranch, as well as the health of the sagebrush-grassland we manage. Partnering with Audubon to promote conservation ranching is an exciting opportunity to help educate the public about what we are doing to improve prairie ecosystems that are critical to many species of birds and other wildlife.”

JAY BUTLER, OWNER OPERATOR (WITH HIS WIFE LINDA) OF PRONGHORN RANCH, AN AUDUBON-CERTIFIED RANCH IN COLORADO. JAY IS ALSO A MEMBER OF AUDUBON ROCKIES BOARD OF DIRECTORS.

Accountable Conservation

Audubon's Bird-Friendliness Index (BFI) combines bird population data with environmental data to assess the capacity of a landscape to support an abundant, diverse, and resilient grassland bird community. The BFI takes into account species abundance, conservation status, and species diversity at a site. Because birds provide ecosystem functions such as seed dispersal, pest control, and pollination, their health and resiliency reflects the health and resiliency of the overall ecosystem. This approach enables Audubon to evaluate the impact of bird-friendly management of grasslands—and makes conservation accountable.

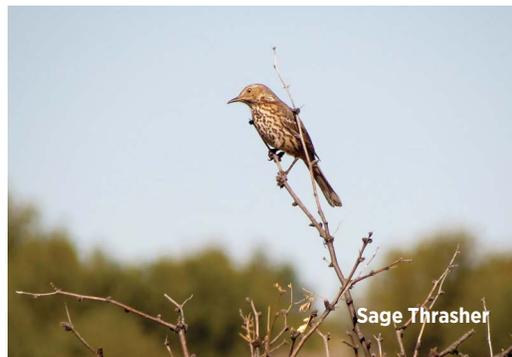
Four Components of Our Grassland Strategy

1.

PARTNERING WITH PRIVATE LAND MANAGERS FOR HEALTHY GRASSLANDS

With 84% of central grasslands in the U.S. in private ownership, collaboration with ranchers and farmers is critical to conservation success. That is why Audubon works closely with private land managers, providing technical assistance as they incorporate bird-friendly practices into their operations and improve overall ecosystem health. Implementation of these best management practices enables domestic livestock to mimic the movements and pressure of historical grazers. This ensures that, like the bison of yore, grazing beef cattle improve soil health and help to create the plant diversity and structure of native prairie habitat that grassland birds depend on.

Audubon's conservation team develops Habitat Management Plans that address site-specific habitat and bird conservation opportunities on ranches participating in our programs. Desired outcomes are guided by



the habitat needs of a region-specific set of priority grassland bird species. In addition to habitat management practices, the protocols also include a standardized set of criteria related to forage consumption, animal health and welfare, and environmental sustainability. Findings from our grassland report will help Audubon prioritize engagement with ranches in grassland priority geographies. The result: more resilient and productive working lands and better habitat for birds.

Birds: Part of the Business Model at Reed Ranch

Wyoming's Thunder Basin, where sagebrush meets shortgrass prairie, is an economic engine for both agriculture and energy production. It is also home to diverse wildlife, including songbirds, mule deer, prairie dogs, and Greater Sage-Grouse—and Reed Ranch, one of the ranches participating in Audubon's Conservation Ranching Initiative. Conservation is part of the business model at this sheep and cattle operation. Ranch owner Jewell Reed works with both Audubon and the USFWS to ensure that wildlife-friendly practices are implemented on her family's land.

2.

CONSERVATION INCENTIVES AND EASEMENTS THAT PROTECT GRASSLANDS

Audubon will conserve one million acres of critically endangered grassland and associated wetland habitat by 2022 through a matrix of strategic grassland enhancement, restoration, and protection, using conservation incentives and easements. We will focus on conservation efforts that support endangered and threatened grassland-dependent species, such as Greater Prairie-Chicken and Western Meadowlark, as well as wetland-dependent species, such as Whooping Crane, Sandhill Crane, Northern Pintail, and Black Tern.

In North Dakota, in the heart of the Prairie Pothole Region, Audubon is piloting cost-share

opportunities with private landowners that provide grazing infrastructure (perimeter and cross fencing, water wells, pipelines, etc.), invasive species removal/control, and prairie restoration/reconstruction. Program enrollment requires landowners to conserve their grasslands for up to ten years, depending on the specific conservation practices implemented. Audubon staff work with landowners to develop and implement site-specific Habitat Management Plans that include plans for monitoring and assessing the impact of the applied land management practices on birds and vegetation. We are now expanding this unique grassland management assistance program into other parts of the Northern Great Plains.

Wolsey Crane Important Bird Area

The Wolsey Crane Stopover Important Bird Area (IBA) covers 1.6 million acres in east central South Dakota. Each spring, nearly one-quarter of the world's population of Sandhill Cranes stops to rest and forage on its high quality wetlands, grasslands, and croplands. By partnering with the USFWS, Ducks Unlimited, James River Watershed District, South Dakota Game, Fish, and Parks, and private donors, we have secured protection of more than 3,000 acres through perpetual easements.



3.

MARKET-BASED INCENTIVES FOR GRASSLAND CONSERVATION

Audubon's Conservation Ranching Initiative uses an innovative, market-based approach to incentivize bird-friendly livestock management practices. These regenerative grazing practices improve soil health, diversify habitat structure, and ensure environmental sustainability that benefits pollinators and other grassland wildlife. Ranchers who comply with Audubon-approved habitat management plans earn the right to use the "Grazed on Audubon Certified Bird Friendly Land" certification mark in product promotion, attracting

conservation-conscious consumers and supporting premium beef pricing. Currently, nearly two million acres and 68 ranches across 12 states are participating in this initiative, with more in the pipeline. Products with this certification are available from 26 retailers and 12 restaurants across eight states, and 11 companies that sell online. Audubon's goal is to have 2.5 million acres enrolled by the end of 2020. This win-win approach strengthens the economic vitality of rural communities and builds healthy grassland ecosystems.

Carbon sequestration represents another opportunity for ranchers to accrue

both economic and ecological benefits from regenerative grazing practices.

While the agricultural sector represents 9% of U.S. greenhouse gas emissions, there is growing evidence that soils on agricultural lands, especially grasslands, can store a considerable amount of CO₂. Markets are now emerging that pay ranchers to preserve and manage their grasslands to lock carbon into the soil. While this is a fledgling industry, methods and protocols have been developed to measure carbon sequestration rates, generate credits, and verify results.

The management practices that sequester carbon soil on ranches also foster healthy habitats for wildlife, and more nutrient-rich food for livestock. Audubon is exploring how it can best facilitate this market and provide landowners with an additional financial incentive that produces results beneficial to protecting grasslands.



Mountain Plover

Ranching that Benefits Birds

Audubon Conservation Rancher Jon Taggart, owner and operator of Burgundy Pasture Beef in Grandview, Texas, is using the Audubon certification to showcase how his grassland conservation practices are preserving

bird habitat while producing high-quality beef. Connecting conscientious consumers, who care about where their beef comes from and how it arrives at their table, with ranchers who are restoring grassland ecosystems through

their grazing practices is an essential component of the Audubon Conservation Ranching initiative. Jon proudly displays the ACR certification mark at all three of his retail outlets in the Dallas-Fort Worth Metroplex.

4.

FEDERAL AND STATE POLICIES THAT INCENTIVIZE GRASSLAND PROTECTIONS

Conversion to row crop agriculture, urban development, oil and gas development, and fire suppression are the primary drivers of loss of native prairie landscapes. In order to limit future grassland conversion, Audubon will pursue a proactive policy strategy at the federal and state levels that incentivizes grassland conservation and discourages excessive conversion

EQIP: the Farm Bill in Action

The Environmental Quality Incentives Program (EQIP) is one way the Farm Bill supports conservation. This program, which is administered by USDA's Natural Resources Conservation Service, provides financial and one-on-one technical assistance to producers and landowners for implementation of conservation practices on their working lands. During fiscal year 2017, 11.6 million acres in the U.S. were enrolled in the program.

practices. The following are some key policy opportunities:

Farm Bill

What happens on our nation's 914 million acres of farms and ranches has significant implications for North American birds and other wildlife. The largest federal funding source for conservation on these lands is the Farm Bill, which provides agricultural producers and private landowners with billions of dollars in assistance for adopting conservation practices in their operations. Farm Bill programs are critical for birds and other wildlife—in 2015 alone, they improved almost nine million acres of wildlife habitat. Audubon helped to secure passage of the 2018 Farm Bill reauthorization, expanding funding and access to programs benefiting birds and other wildlife. Ensuring continued authorization and working with private landowners on opportunities to participate in these programs are ongoing priorities for Audubon.

State Wildlife Action Plans

State Wildlife Action Plans identify imperiled species in the state and describe actions to assist in their recovery and protection. The State Wildlife Grants Program is currently the main source of federal funding for states and territories as they implement these plans; however, it currently provides only \$70 million for all 50 states and territories, not nearly enough to enable recovery and protection of imperiled species. Audubon is working to help secure funding for State Wildlife Action Plans across the Great Plains—an essential step for the birds and people who depend on this important landscape.



Henslow's Sparrow

Conclusion

North America's grasslands are critically important for birds. The continent's tallgrass, mixed grass, and shortgrass prairies also play a central role in economic, ecological, and human health and prosperity. This report makes it clear that the challenges these complex and often undervalued ecosystems face are significant—but so is the potential for strategic conservation efforts that protect and preserve them. By heeding the alarm sounded by our findings, and applying what they reveal to conservation planning and policy, we can safeguard our grasslands for today and tomorrow.

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Horned Lark