

To see interactive maps for all 314 species under threat, and for more information about what you can do, visit [audubon.org/climate](http://audubon.org/climate).



Above: Brown Pelican  
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## THE AUDUBON REPORT

# BIRDS & CLIMATE CHANGE

Every bird species has adapted to the places it currently lives. But global warming is altering the availability of food and suitable nesting and wintering grounds, and if those shifts are too extreme, birds will be forced to seek out habitat and/or food supplies elsewhere. To determine how bird ranges will be affected, Audubon scientists used sophisticated climate models that combine decades of observations from the Audubon Christmas Bird Count and the North American Breeding Bird Survey, factoring in 17 climate variables, including temperature, precipitation, and seasonal changes. The models forecast the “climate envelopes,” or ranges, where future conditions are expected to support each species’ historical climatic needs.

**Here are some important takeaways from the study:**

**The models predict the ranges** of 588 North American bird species under future climate scenarios. It found that the majority—314 species—will lose more than 50 percent of their current range by 2080.

**Of the 314 species at risk from climate change**, 126 of them, classified as “climate-endangered,” are projected to lose more than 50 percent of their current range by 2050. The other 188 species are “climate-threatened,” and expected to lose more than 50 percent of their current range by 2080.

**While some species may be able to adapt**, others will have nowhere to go. Many of our most cherished birds, including the Bald Eagle, Brown Pelican, and Common Loon, face an increased risk of extinction.

**The findings may appear shocking**, and we know that a certain amount of change is already inevitable, but the study provides a roadmap for action. By identifying which birds are most at risk and the places they might inhabit in the future, we can prioritize protections for critical habitat.

**To give birds a chance at a future**, we need to continue supporting efforts to curb global warming by cutting greenhouse gases. These dire outcomes are inevitable only if we do not use this warning as an opportunity to take collective action.

For more information about Audubon’s climate work, go to [audubon.org/climate](http://audubon.org/climate).

Right: Bobolink



### What You Can Do to Help Protect Birds

Audubon’s new science sends a clear message about the serious dangers birds face in a warming world. Protecting them will require both redoubling conservation efforts to safeguard critical habitat and curbing greenhouse gas emissions. Below are a few important steps you can take right away. For more ideas and to share your stories, visit [audubon.org/climate](http://audubon.org/climate).

#### Create a Bird-Friendly Yard

Healthy birds will be better equipped to face the challenges of climate change. Commit to creating safe spaces for birds around your home and community by using fewer pesticides, letting dead trees stand, installing birdbaths, and converting lawns and gardens to native plants. School grounds, parks, vacant lots, and common areas can all be “bird-scaped.” Learn more at [athome.audubon.org](http://athome.audubon.org).

#### Get Involved With Your Local Important Bird Area

Protect the places birds need most today and in the future by pitching in with Audubon’s IBA program, which identifies and conserves areas that are vital to birds and biodiversity. You can help with IBA restoration, cleanup, citizen science, and field trips. To get started, find Audubon near you at [audubon.org/search-by-zip](http://audubon.org/search-by-zip).

#### Put Birds on Your Community’s Agenda

Use this pullout to begin a conversation with your neighbors, colleagues, and local leaders about why it’s important to protect your community’s birds, and share what you’re doing on behalf of birds. Reach more people by writing a letter to your newspaper, speaking at a community event, or visiting a local school.

#### Meet With Local Decision Makers

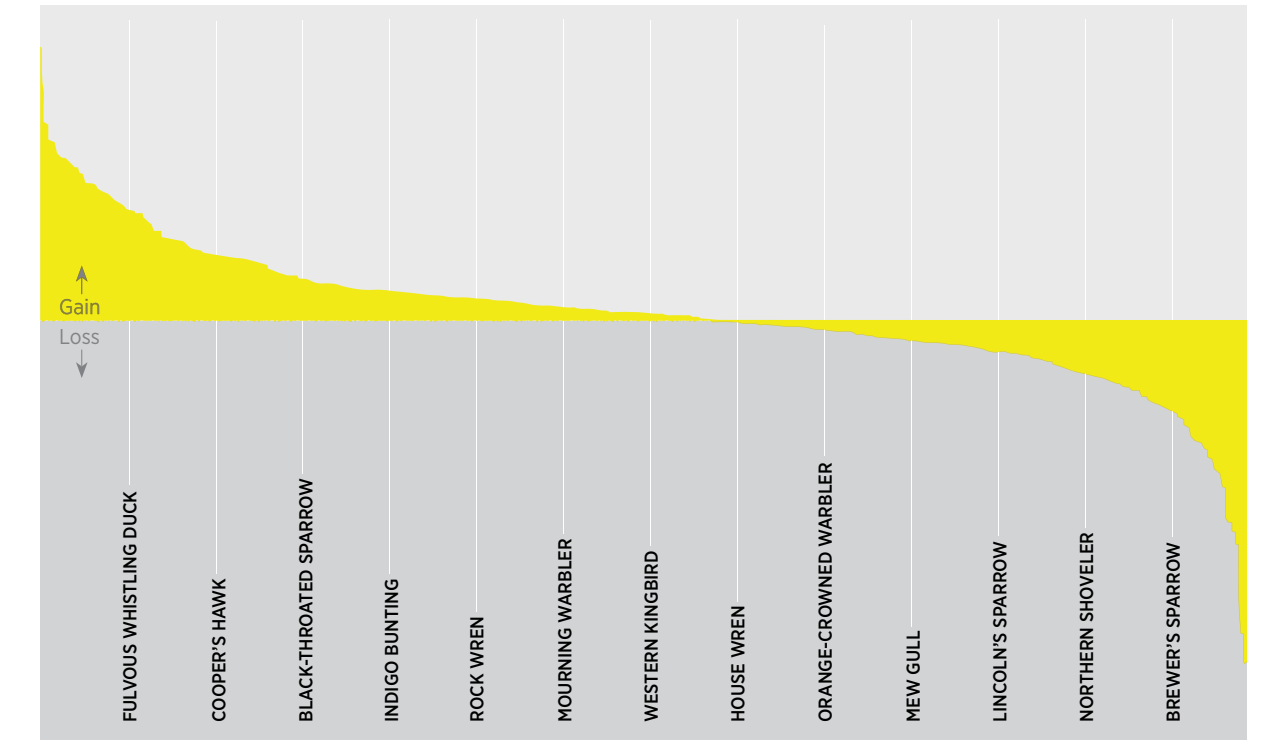
Share this science with state wildlife agencies, city parks departments, extension services, and other groups that manage our natural resources to illustrate how global warming imperils birds, and ask decision makers how they are planning to address it. For more information on how to help officials use and integrate Audubon’s science, email [climatescience@audubon.org](mailto:climatescience@audubon.org).

#### Support Policies That Lower Emissions

Urge leaders at the local, state, and national levels to enact policies that lower greenhouse gas emissions and support clean energy. Renewable portfolio standards, energy efficiency targets, and other proactive measures will reduce emissions and help limit the effects of global warming on birds. Put these policies on your leaders’ agendas, and publicly support efforts to make them stick.

#### Sign Up to Learn More About What You Can Do Year-Round

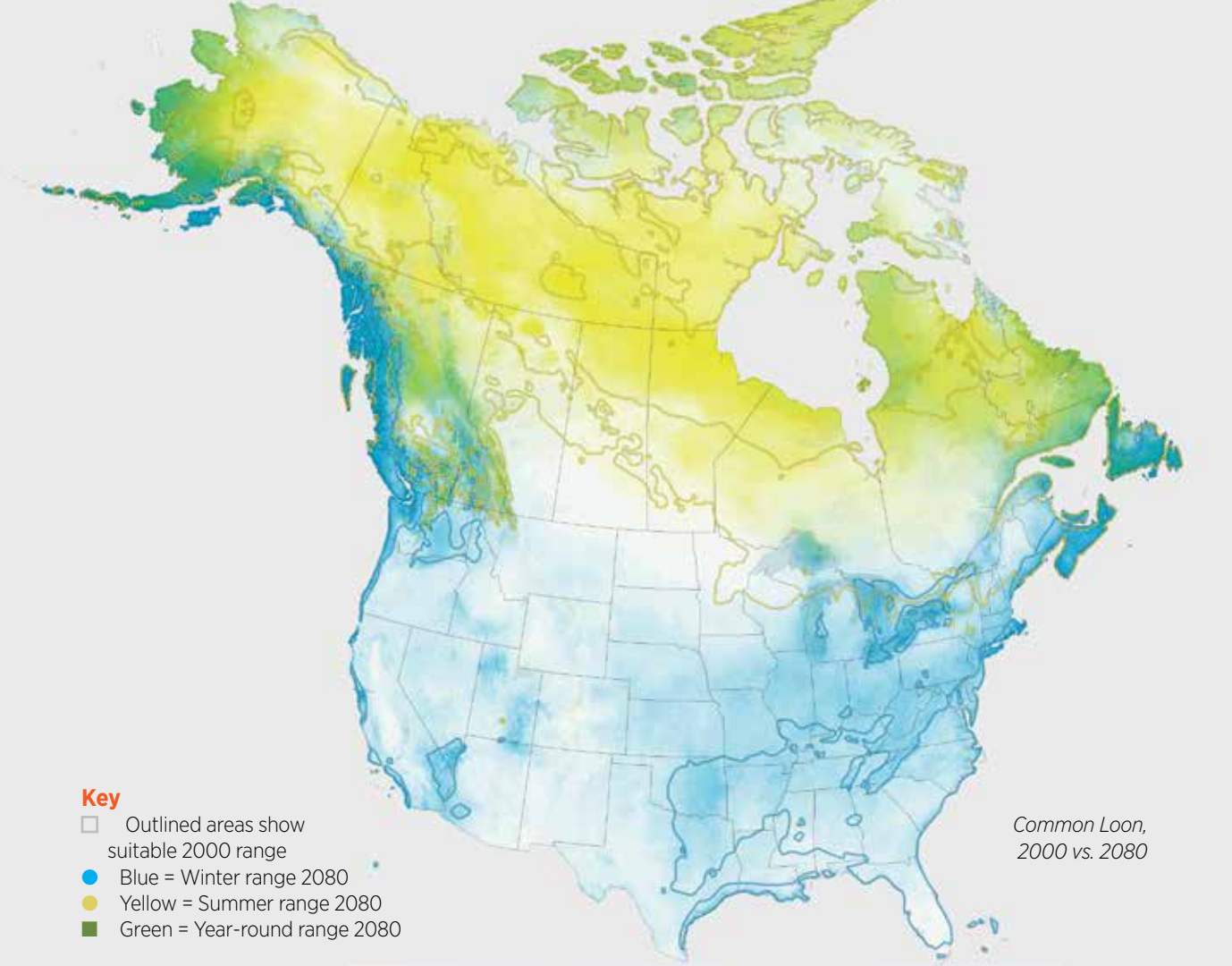
Go to [audubon.org/climate](http://audubon.org/climate) to receive the latest findings, explore climate-related volunteer opportunities in your state or local area, and enlist in Audubon’s forthcoming citizen science project to help monitor birds and document how they respond to a changing climate.



### Winners and Losers: Summer Ranges in 2080

Some birds will adapt better to climate change than others. The distribution above includes data for all 588 species Audubon studied and projects the potential gains and losses in summer (read, breeding) range. The 13 species here represent different prospects for success along the spectrum, with some flourishing and others collapsing. Potential gains in range don’t necessarily mean healthy populations: Birds may find that new climatically appropriate areas can’t support them for a host of other reasons.

Go to [audubon.org/climate](http://audubon.org/climate) to see maps for all 314 climate-threatened or climate-endangered species.



# GUIDE TO AUDUBON'S CLIMATE MODEL DATA

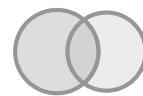
## How to Read the Maps

Each map displays the approximate range of a bird species in 2000 (solid outline) and the projected climatic ranges for the summer (yellow) and winter (blue) in 2080. Where the summer and winter ranges overlap (green), the bird will likely be a year-round resident in the future.

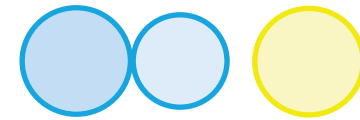
It's important to understand that while these look like the maps in field guides, the models can forecast only where future climatic conditions will match those in each species' current range—defining, by extension, that species' potential future range. But variables other than climate could render that potential future range unsuitable, a possibility this model does not take into account. For example, while a dove might easily shift from prairie to forest as the planet warms, a grassland-dependent bird would have a hard time making a go of it in the woods. Birds that lose significant amounts of their summer habitat will likely have a harder time reproducing.

## Shifting Ranges

The size of the Venn diagram circles roughly indicates the species' range size in 2000 (left) and 2080 (right). The amount of over-

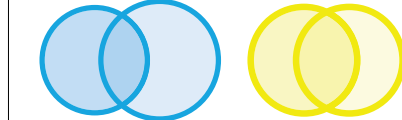
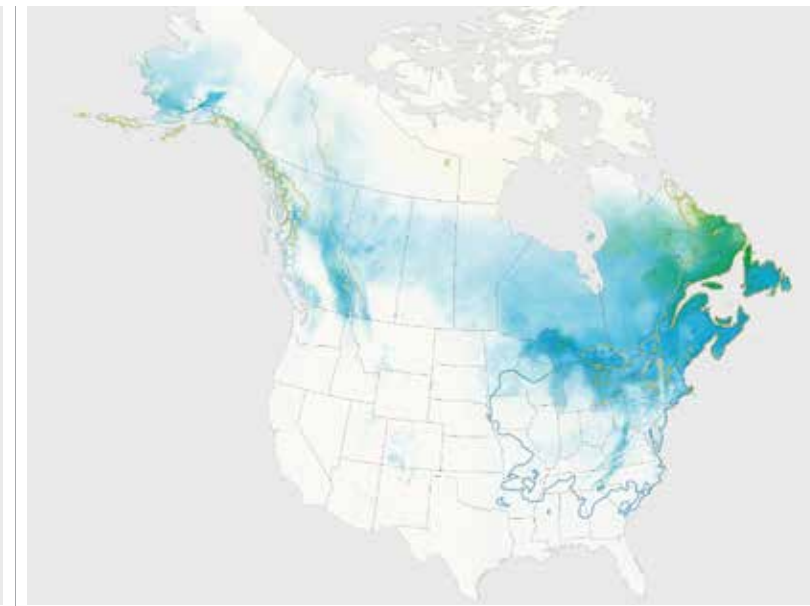


lap between the 2000 circle and the 2080 circle indicates how much the range will shift geographically. Lots of overlap means the bird's range doesn't shift much. No overlap means the species will leave its current range entirely.



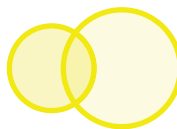
### Baird's Sparrow

This grassland songbird will likely go extinct. According to the models, it will lose 100 percent of its summer range by 2080.



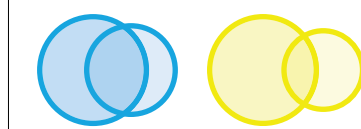
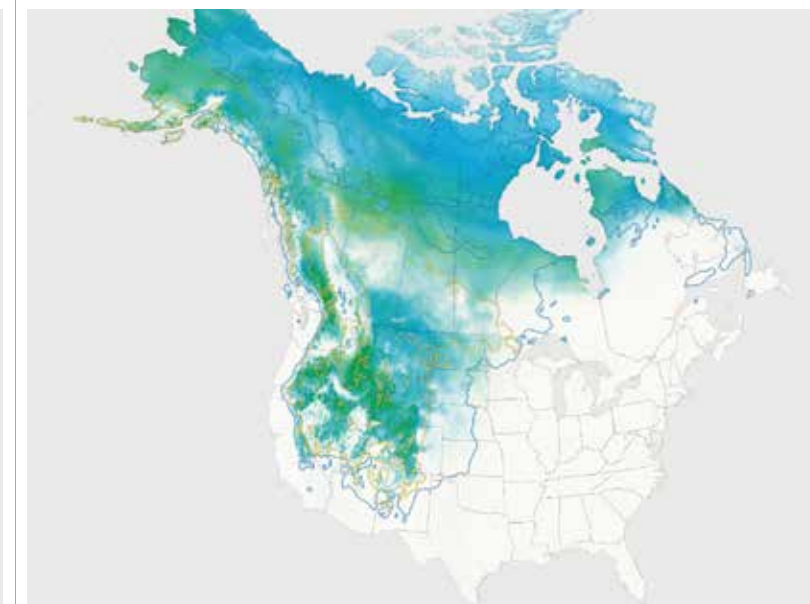
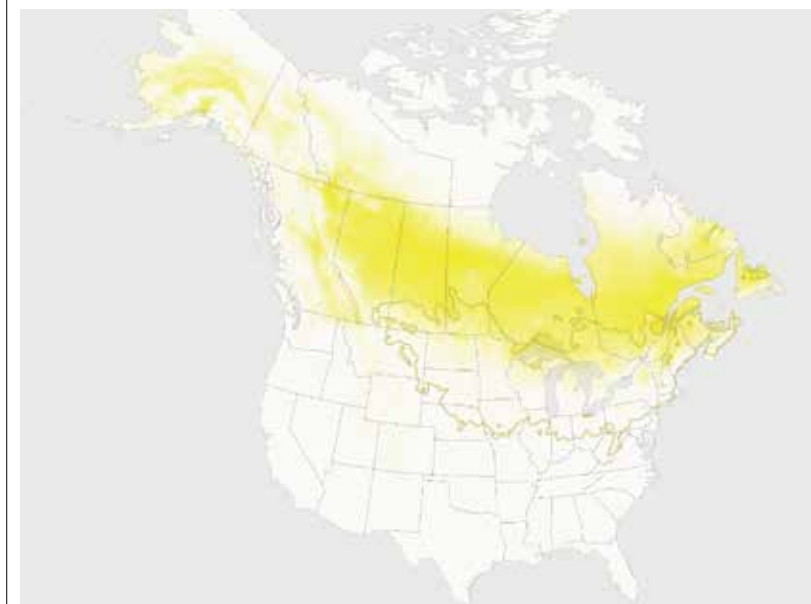
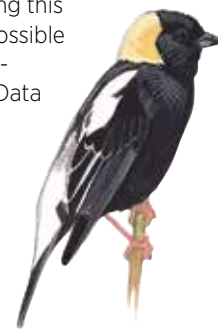
### American Black Duck

By 2080 its winter range will migrate north, while its summer range will be largely unaffected.



### Bobolink

This songbird's range is projected to expand into Canada's boreal forests, but making this shift may be impossible for this grassland-dependent bird. Data for its wintering grounds in South America is not available.



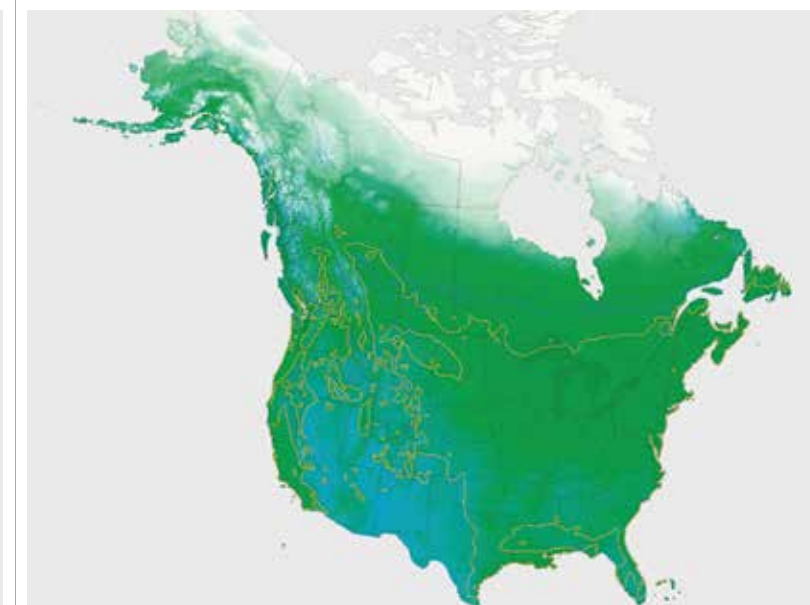
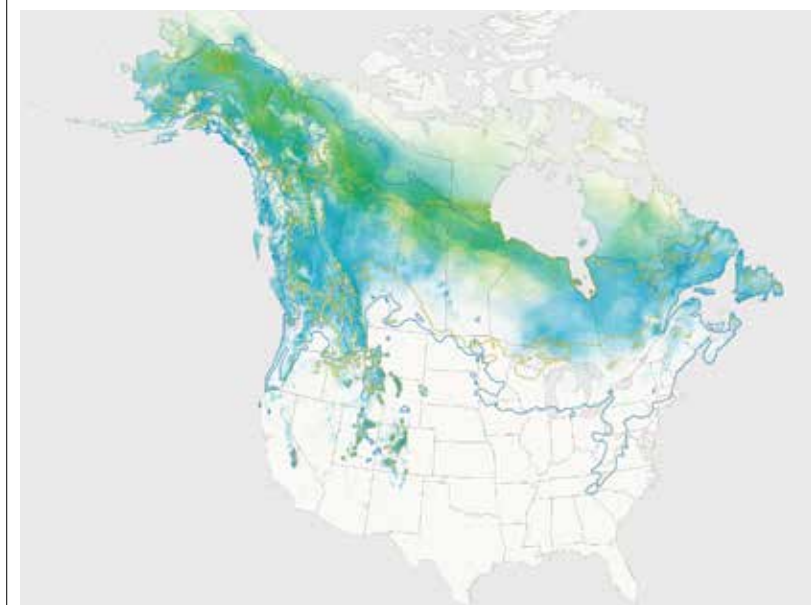
### Black-billed Magpie

Like most corvids, the magpie is projected to lose significant winter and summer range. By the end of the century it could be gone from most of the United States.



### Ruffed Grouse

The grouse's summer and winter ranges will migrate north, which means this species, the state bird of Pennsylvania, could disappear from the Northeast entirely.



### European Starling

This introduced and invasive species will continue its march across the continent, eventually colonizing Alaska.

