

# GLOBAL WARMING'S IMPACT ON BIRDS

Like many plants and animals, birds' life cycles and behavior are closely linked with the changing seasons. For neotropical migrant species, including many warblers, vireos, and other songbirds, changes in weather help signal when they should begin their long flights southward in the fall and back again in the spring. Variables such as temperature and precipitation also affect the timing and availability of flowers, seeds, and other food sources when birds reach their destinations.



Golden-cheeked Warbler: photo by Al Perry

Moreover, birds that rely on very specific habitats for at least part of their life cycle, such as the endangered Golden-cheeked Warbler in Texas, could become extinct if their habitat disappears. For each of these reasons, many bird species are considered to be particularly vulnerable to global warming and associated climate change.

## Global Warming Is Already Affecting Some Bird Species

Studies indicate that the ranges of a number of bird species have been changing, consistent with the 20th century trend of rising average temperatures.

- Seven of the North American warbler species have shifted their range significantly farther north in the past 24 years, by an average of more than 65 miles.
- Seabirds, such as the Sooty Shearwater, have shifted their migration route toward cooler northwestern areas of the Pacific in response to rising sea temperatures off the coast of California.

There are also signs that recent climate trends are affecting birds' behavior. Studies in the United States and Europe have found that some songbirds are migrating earlier in spring months, corresponding with warmer temperatures.

- Twenty species of migratory birds in North America shows that the arrival dates were up to 21 days earlier in 1994 than in 1965, while just a few species were later.
- Many species, including the North American Tree Swallow, are now nesting up to nine days earlier than 30 years ago, corresponding with an increase in average spring temperatures.

Because this shift is occurring throughout the species' broad habitat range, scientists believe that the birds are responding to larger trends than just localized climate variations. These changes may be occurring regardless of whether the birds' arrival is synchronized with the availability of food sources such as insects, flowers, and berries at their migratory destinations. Global warming may cause migration and nesting to get out of step with food supplies. As a result, the "early birds" may not get the worm.

Scientists at the Rocky Mountain Biological Laboratory in Colorado have discovered that American Robins migrating to the region are arriving an average of two weeks earlier than they did 23 years ago. They attribute this shift to the likelihood that the birds are responding to warmer temperatures at the lower altitudes that typify their wintering grounds. The problem is, they are arriving at their higher-altitude summer breeding grounds only to find that there are still winter conditions there. There is now a 65-day gap between the date of the first robin sighting and the first date of bare ground at the snow measuring station, 18 days longer than in 1981. As a result, the birds must wait longer for the snow to melt before they can feed and may be at a greater risk of starvation.

## The Effects of Global Warming on the Distribution of Songbirds in the United States

Bird communities, as we currently know them, may look quite different in the future if we do not begin to take meaningful action to reduce the greenhouse gas emissions responsible for global warming. As regional temperatures rise, the climatic ranges of a number of species in the Northern Hemisphere could shift north as they seek habitat, food availability, and other factors to which they are adapted.

When some species move to different ranges, they may face new prey, predators, and competitors, as well as different habitats. So-called "optimal" habitats for many species may no longer exist, at least in the short term. This is particularly true for birds relying on specific plants for food or nesting. While most birds can respond quickly to a changing climate, the ranges of some plants may take centuries to move, if they move at all.

## Global Warming Could Lead to a Decrease in Neotropical Migrant Species in the United States

Research has shown global warming will likely change the number of neotropical migrant species present in different regions of the country. For example, the Great Lakes region could see a potential gross loss of 53% of the neotropical migrant species that are currently found in the region's states.

These losses could be somewhat offset by birds colonizing from outside the region—Painted Buntings and Great-tailed Grackles replacing Bobolinks and Evening Grosbeaks in parts of southern Minnesota, for instance—so the net change might be 29 percent fewer neotropical species than are currently found there.

This analysis suggests that each region of the country could see a net decrease in the percent of neotropical migrant species present if global warming continues unabated.

- New York could see a significant reduction in suitable climatic range for in Cape May Warblers, Bay-breasted Warblers, and other birds that are important predators of pest insects such as eastern spruce budworms, which can cause major damage to the state's forests.
- Arizona, Nevada, and New Mexico could lose Savannah Sparrows, Sage Thrashers, and other birds that help keep outbreaks of grasshoppers in check.
- Some states may even lose their state birds. If global warming continues unabated, there may no longer be Baltimore Orioles in Baltimore (or anywhere else in Maryland). At the very least, the range of the species in Maryland may be greatly reduced.



Tree Swallow: photo by Gary Smyle

## Additional Effects of Global Warming on Birds

In addition to altering species' ranges, global warming could have a direct effect on birds' habitat and behavior. As temperatures rise and precipitation levels change, the abundance of the birds' key food sources may shift. In some cases, the amount of available seeds, insects, or other foods may expand or decline in wintering habitat, affecting birds' health for migration and breeding.

Similarly, plants may bloom or insects may hatch too early (or too late) for birds' spring arrival, which could affect their reproduction success or disrupt pollination.

Sea-level rise could also inundate important coastal habitat in many places. Without meaningful action to reduce greenhouse gas emissions, climate scientists project that sea levels could rise by 10.9 inches to 30.8 inches this century. This would have major implications for the more than 150 species of migratory waterfowl, shorebirds, and other birds that rely on coastal marshes in the mid-Atlantic region for nesting, feeding or roosting.

For songbirds and other wildlife whose populations are already limited by other human-induced problems, global warming could be the last straw.

## For More Information

The material in this fact sheet is based on the "*The Birdwatcher's Guide to Global Warming*" a 2002 report published by American Bird Conservancy and National Wildlife Federation. The full report is available at [www.abcbirds.org/climatechange/birdwatchersguide.pdf](http://www.abcbirds.org/climatechange/birdwatchersguide.pdf)



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