

# MAJOR THREATS TO BIRDS



Multiple interacting causes are likely behind bird population declines.  
Here are a few of the top threats.

## Habitat Loss and Degradation

Habitats, the physical environments inhabited by living organisms, are fundamentally important to species' survival. In the case of birds, habitats provide cover from predators; breeding, wintering, and migration stopover sites; and places to forage and roost. All of the habitats used by a bird play a role in its survival, and the loss or degradation of any one of them can potentially have a population-level impact. It is little surprise, then, that habitat loss is the greatest threat to birds.

There are few habitats on Earth that have not been affected by humans. As we modify and reshape the land around us, we damage or destroy natural habitat for birds. The habitats we create instead—farms, suburbs, cities—are more often than not poor substitutes for the habitats they supplant, supporting a lower diversity of more adaptable (and therefore more widespread) bird species. As human populations expand into more and more natural habitats, some bird populations will inevitably decline.

One of the largest sources of habitat conversion is agriculture. In the U.S. alone, 4.8 million acres were converted for agricultural purposes between 2007 and 2018. In addition, birds have been impacted by the shift from small, family-run farms to immense single-crop industrial holdings reliant on heavy use of herbicides and pesticides. Loss of habitat to agriculture is a top threat to migratory birds on breeding grounds as well as wintering grounds both inside and outside of North America.

The way lands are managed also has an impact on birds and wildlife overall. For example, many of our forests and grasslands depend on wildfire, but in many areas, natural fires no longer occur frequently enough to maintain healthy habitats.

Fire suppression policies have created dangerous conditions in many places, with understory choked with dense brush and dead, woody debris. This fuel builds up so that fires that once burned only understory, now burn more intensely, climb into forest canopies, and can kill mature trees, among other negative effects.

## Climate Change

Climate change threatens to exacerbate threats from habitat loss and invasive species (highlighted below), as well as creating new challenges that birds must overcome. This includes changing habitat distributions and a shift in the timing of peak food supplies such that traditional migration patterns may no longer put birds where they need to be at the right time.

As climate change progresses, some habitats are predicted to shift pole-ward or up mountain slopes. Unfortunately, tundra and alpine habitats located in the far north or at the tops of high mountains have nowhere else to go. Habitats might also not shift fast enough in the face of rapid change. For instance, sea level rise may occur too fast for saltmarshes to shift inland, and roads and coastal developments now surrounding many



BARN SWALLOWS BY CYBERKAT/SHUTTERSTOCK

saltmarshes present barriers to habitat movement. Range shifts could also cause problems for migrants, requiring them to travel farther to reach breeding areas if wintering areas do not also shift.

In Hawaii, the effects of climate change on birds may be especially severe—again, due to malaria. Many of Hawaii’s native songbirds now find their last refuges in high-elevation forests where temperatures are cooler than the average minimum threshold for malaria transmission (55 °F). As temperatures increase, mosquitoes are expected to move upslope, bringing malaria with them and threatening the extinction of species that cannot develop disease resistance.

## Invasive Species

Invasive species are responsible for the majority of bird extinctions since the 1800s, most of which have occurred on oceanic islands. On Hawaii alone, invasive pathogens and predators have contributed to the extinction of 71 bird species.

Among the most harmful of invasive species for birds is the domestic house cat, which was originally domesticated in Egypt 4,000 years ago and later brought to the U.S. by European colonists. Cats now occur throughout the country, including in places where few, if any, native mammalian predators originally occurred. Today, it’s estimated that there are 100 million feral and outdoor cats in the U.S. alone. They can make wonderful pets, but cats roaming outdoors kill approximately 2.4 billion birds every year in the U.S., making cat predation by far the largest human-caused source of bird mortality.

The biggest threat to Hawaii’s endangered native forest birds, such as the ‘Akikiki and ‘Akeke’e, is the mosquito, which spreads two deadly diseases, avian malaria and avian pox, that have spread across the main islands. The diseases, like the mosquitoes, are nonnative and have caused numerous bird extinctions.

## Collisions with Glass

There are billions of square feet of window glass in the U.S., and much of this glass presents a deadly hazard for birds. Both homes and tall office buildings can be problems, and few buildings are immune to occasional collisions. An average building kills from one to ten birds per year, but some buildings lit at night, or with large expanses of glass, kill far more.

The sheer number of homes and glass windows makes this one of the biggest killers of birds in the U.S., with up to one billion birds dying as a result of glass collisions each year. Several birds of conservation concern are among the species most vulnerable to window collisions, including Golden-winged and Canada Warblers, Painted Bunting, and Wood Thrush.

## Collisions with Other Structures

Collisions with other man-made structures also take a toll. Powerlines, for example, present a flying hazard to birds, especially those with larger wingspans, and are estimated to cause 25 million bird deaths each year. Communications towers are estimated to cause 7 million bird deaths each year and pose a particular threat to songbirds that migrate by night.

Meanwhile, the annual loss of birds from collisions with wind turbines is now estimated to be nearly 410,000 annually. As more industrial wind energy is built out, these losses will continue to climb. It’s vital to pursue renewable energy now to limit the effects of climate change, but also important that we site turbines and associated infrastructure away from areas that are essential for birds.

## Pesticides and Other Toxics

The U.S. Fish and Wildlife Service estimates that as many as 72 million birds die each year from pesticide poisoning. The true impact of pesticides on birds is difficult to gauge: Pollution and toxins can cause sub-lethal effects that do not directly kill birds, but reduce their longevity or reproductive rates.

The sensitivity of birds to pesticides can indicate environmental threats that may also harm people. While progress has been made to restrict or cancel some of the most toxic pesticides used in the U.S., new threats are emerging. Growing evidence indicates that the new generation of agricultural pesticides called neonicotinoids (“neonics”) are accumulating in waterways and are a likely cause of the historic insect declines now being reported—reducing a crucial food source for birds. In addition, a 2013 study showed that neonics are lethal to birds: A single seed coated with a neonic can kill a songbird.

In addition to pesticides, other contaminants, including heavy metals (such as lead) and plastic garbage, also limit birds’ life spans and reproductive success.