

# The Effects of Pollution on Birds

By Dan Alters

Birds seem to be all around us. We don't really understand how hard it is for birds to navigate their world, or how much human activity has made this navigation more difficult. Like people, birds are very susceptible to the effects of pollution in their environment.

There are many kinds of pollution, and most people are keenly aware of one form or another. It's not uncommon now to hear about some city's contaminated drinking water on the evening news, or an oil spill somewhere. The effects of pollution on humans, the environment, and other animals and plants have been extensively studied, and has resulted in many federal and state laws regulating the activities creating pollution. Basic improvements such as sewage and industrial waste treatment or the control of smog have been in place for many years, while continuing research has revealed the need for even finer controls on a wider set of human activities.

Tiny amounts of some pollutants can have devastating long-term effects, Pesticides are meant to kill living things, and do so in a variety of ways that affect the metabolic process. Small amounts can be quickly lethal, while incredibly small amounts can still cause cancers, nervous system disruptions, and breathing problems.

The many forms of pollution have impacts on birds, as well. Common pollutants such as sulfur dioxide, nitrogen oxides or fine particulate matter have a greater impact on birds due to their more rapid respiration rate. In an extreme case in 1986, Mexico City's air pollution levels were so severe that various news sources reported birds falling from the sky. A bird's long-term exposure can lead to inflammation, ruptured blood vessels, and lung failure. The pollutants emitted by gasoline burning vehicles in urban environs may cause reduced egg production and hatching, increased clutch or brood abandonment, and reduced growth in birds.

Streams and lakes that show few direct effects of pollutants may be habitat for invertebrates and fish that ingest small amounts of toxins within the water column or sediments. In a process known as bioaccumulation, these toxins build up in the tissues of the animals, usually to levels that have little

impact on them. When birds consume enough of the invertebrates or fish that have accumulated these toxins within their bodies, the birds may suffer directly or be unable to reproduce successfully. Such was the case for DDT (banned in 1972) accumulating in predatory birds, causing their eggs to crack easily, as documented in the book *Silent Spring* written by Rachel Carson. Iconic birds, like the bald eagle and peregrine falcon, were pulled back from the brink of extinction when the use of DDT was outlawed.

The same sort of bioaccumulation can occur where the land has been contaminated with pollutants. Small grubs, insects or worms may not be affected, but the birds consuming them may suffer.

A situation most people don't consider to be a problem is light pollution, which is simply all the light we use to get around safely at night. In addition to disrupting circadian rhythms, excessive artificial light at night can also disorient birds during migration. Most songbirds migrate at night, and light pollution can confuse these birds. Bright lights at night on large buildings attract birds in the same way that bright porch lights attract moths, which can result in fatal collisions. A recent study estimates that between 100 million and one billion birds are killed in the United States each year as a result of collisions with buildings.

Earlier we wrote about the small percentage of carbon dioxide in earth's atmosphere. This small increase is responsible for the extreme weather conditions now impacting the entire planet. Though just a fraction of the air around us, it and other pollutants act as an insulating blanket, holding in the heat. Carbon dioxide and methane (natural gas) are the most significant of the "greenhouse gases" contributing to global warming, in turn creating climate change. Every living thing on earth is being impacted by the changes in climate. Extreme weather, including prolonged drought, intense unseasonable hurricanes, dry conditions resulting in wildfires, or torrential rains affect everything, including the birds we love.

Most scientists and environmental advocates believe there is yet time to avoid the very worst impacts of climate change, but governments, corporations, and individuals need to work together to develop and implement a decisive plan. We wrote about some unfortunate situations in this article, but one thing is clear – if humanity does not address climate change, and soon, nothing else matters.

The photos included are from Audubon and need to be credited as specified.

1. The osprey, which nearly went extinct from the effects of the pesticide DDT. Larry Stamm/Audubon Photography Awards 2017
2. Peregrine falcon. Stan Keiser/Audubon Photography Awards 2012.
3. A variety of songbirds, including thrushes, warblers and woodcocks, killed by window strikes in Philadelphia. Luke Franke/Audubon Lights-Out-Philadelphia

