

CLIMATE CHANGE

AND ECOSYSTEMS

Thousands of scientists predict that the earth's climate will change because human activities are altering the chemical composition of the atmosphere through the buildup of greenhouse gases. The heat-trapping property of such gases as carbon dioxide, methane, nitrous oxide, and chlorofluorocarbons is undisputed. Greenhouse gases are released into the atmosphere in large quantities by motorized vehicles, utilities, factories, appliances, and landfills.

Although there is uncertainty about exactly how and when the earth's climate will respond to higher concentrations of greenhouse gases, observations indicate that detectable changes are underway. Temperatures will most likely rise by an average of 2 to 6°F over the next century, along with measurable changes in precipitation, soil moisture, and sea level. All of these changes could have adverse effects on many ecological systems, as well as on human health and the economy.

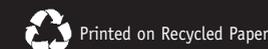


WHAT CAN YOU DO?

- Inform yourself and other. To keep up with the latest scientific developments, check out EPA's climate change website at www.epa.gov/globalwarming. Or call EPA's National Service Center for Environmental Publications (NSCEP) at 1-800-490-9198 and ask for information on climate change.
- Encourage more research. If you work for an organization that carries out related scientific studies, suggest including a climate change component to the research.
- Reduce greenhouse gases. Use a more fuel-efficient (or non-motorized) mode of transportation. Carpool. Purchase electronic devices and appliances with the ENERGY STAR® label. Plant trees.



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EPA Climate Change and BIRDS

Change On The Wing



CLIMATE CHANGE

AND BIRDS

Global warming could affect the abundance and distribution of birds in the United States. Changes in climate may change nesting and feeding habitats, migratory stopover areas, and the availability of key food sources. Some impacts may be positive, making conditions more favorable for certain kinds of birds. But climate change also could lead to reduced breeding success in some species and some localities, raising the possibility of regional population declines and extinctions.

Birds require specific environmental conditions to survive and raise their young. Nesting, for example, is timed to coincide with favorable weather and food availability. If a trend toward warmer spring weather leads birds to nest earlier, their breeding success may suffer if primary food sources are not yet available when nestlings hatch.

Birds are more mobile than most other animals, and they simply can fly to a new location if a former site is no longer suitable. But global warming may make it difficult for some species to find new habitats. Plant and animal communities that provide optimal habitat today may be fundamentally altered in the future as the climate changes. A recent study suggests that ecological communities may not simply shift their range northward in response to warming, but instead may undergo complex changes as interacting species are affected in different ways by the changing climate.



CLIMATE CHANGE

AND WATERFOWL

Changes in temperature and precipitation predicted under global warming could affect the nesting habitats of ducks and other waterfowl. According to one study, global warming could cause breeding populations of ducks in the north-central United States to decline by more than half—from 5 million birds today to between 2.1 and 2.7 million by the year 2060.

Why? Warmer temperatures and more frequent droughts could cause hundreds of thousands of ponds in the prairie pothole region of the north-central U.S. to dry up. The potholes account for only 10 percent of North America's waterfowl breeding habitat, but they produce 50 to 80 percent of the continent's ducks. The pothole region also serves as an important stopover point for migrating waterfowl. Although many of the affected ducks may move north into Canada, studies suggest that climate change may affect breeding habitats in Canadian prairies and forests as well.



AND SEABIRDS

Populations of sooty shearwaters off the coast of California and Washington declined by 90 percent between 1987 and 1994, a period when sea surface temperatures increased. The decline represents a potential loss of more than 4 million birds. The warmer water triggers a reduction in upwelling, a circulatory process that brings nutrient-rich water to the ocean's surface. Over the past two decades, reduced upwelling apparently has caused a 70 percent decrease in zooplankton, a key food source for shearwaters and the small fish that the shearwaters eat.

