

The Waterfowler's Guide to Global Warming

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GLENN CHAMBERS

Ducks, geese and swans are important to waterfowl hunters, birders and others. Annually in the United States, sportsmen and women spend some 12 million days hunting waterfowl. Waterfowl viewing is also popular among the more than 46 million birders in the United States. Moreover, waterfowl are integral components of natural ecosystems. For nearly a century, waterfowl conservation has been a priority for North America's citizens, leading to the development of numerous policies and programs to restore and protect waterfowl species and their habitat.

But the job is far from complete.

In addition to the ongoing threat of habitat destruction due to development, agricultural conversion and other activities, human-enhanced global warming has emerged as a significant challenge to conserving waterfowl populations for current and future generations. The extensive burning of coal, oil and natural gas has released large quantities of carbon dioxide and other gases into the atmosphere. In the last 200 years, use of these fuels has grown enormously. As a result, carbon dioxide concentrations in the Earth's atmosphere have risen by over 30 percent. The released gases act like a blanket, trapping heat that would otherwise escape through the atmosphere. Temperature, precipitation, storm frequency, storm severity and other climatic factors are all affected.



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Top 10 States for Trip and Equipment Expenditures on Migratory Bird Hunting in 2001

Texas	\$219.1 million
Tennessee	\$121.9 million
Arkansas	\$118.3 million
California	\$116.8 million
Minnesota	\$99 million
Louisiana	\$86.7 million
Illinois	\$68.3 million
Wisconsin	\$59 million
Washington	\$46 million
Oregon	\$41.5 million

SOURCE: U.S. Fish & Wildlife Service, 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (Washington, DC: U.S. Department of the Interior, 2002) (Includes expenditures for trips and equipment.)

The potential consequences of global warming to waterfowl are significant because of the strong relationship between waterfowl and water conditions. Although the precise effects of global warming on waterfowl are difficult to project, the best available science offers significant insight into what is likely to happen if global warming continues unabated. While some localized effects may be positive, the overall impact on waterfowl populations is likely to be negative.

The solutions are at hand, however, and with the right investments, people can change the forecast for waterfowl and ensure that their children and grandchildren will have the same opportunities to hunt, bird, and otherwise enjoy the natural world that they have grown to know and love.

Global Warming's Threat to North America's Duck Factory

One of the most important waterfowl breeding areas in North America is the Prairie Pothole Region on both sides of the U.S./Canadian border in the northern Great Plains. The region's productivity as waterfowl habitat has rightly earned it the designation as North America's "duck factory." The Prairie Pothole Region contains millions of shallow depressions that fill with water in spring, providing breeding habitat for millions of ducks and other migratory birds, and many species of resident wildlife. As the climate warms and evaporation and transpiration by plants increase, many of these ponds are likely to dry up or be wet for shorter periods, making them less suitable habitat for breeding pairs and duck broods. **1**

Models of future drought conditions in the region due to global warming project significant declines of Prairie Pothole wetlands of up to 91 percent. This could lead to a 9- to 69- percent reduction in the abundance

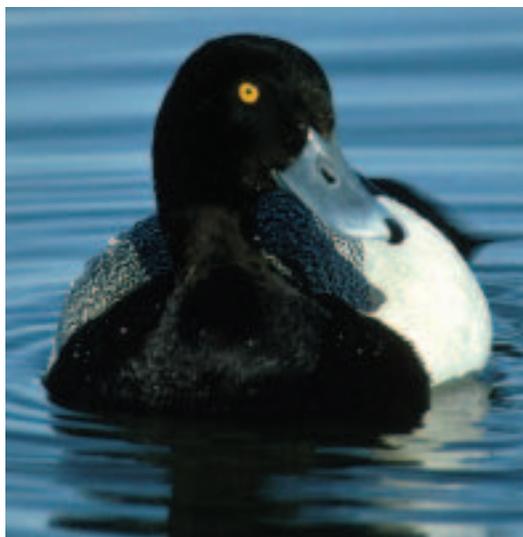
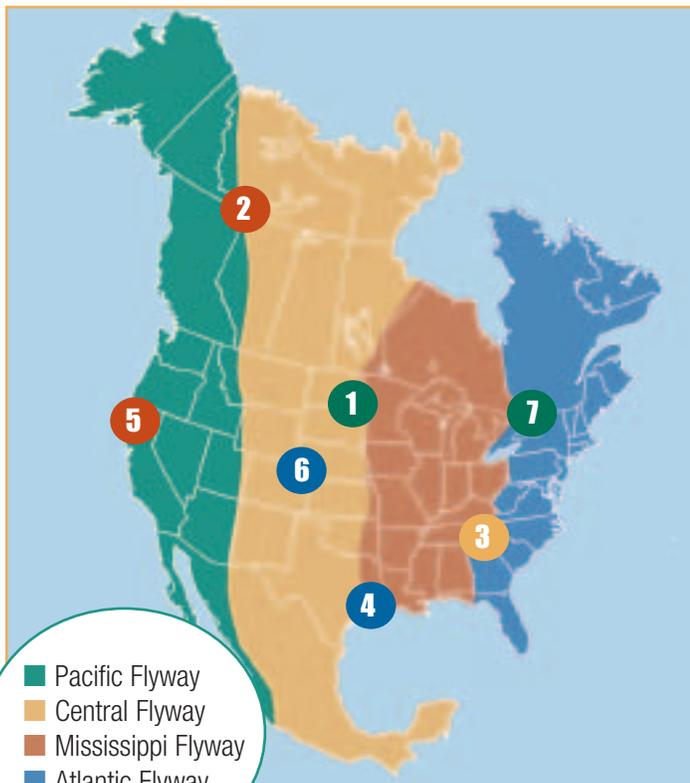
of ducks breeding in the region, affecting populations of mallards, gadwall, blue-winged teal, northern pintails, canvasbacks, redheads and ruddy ducks throughout North America's flyways.

Threats to Northern Forest & Tundra Duck Habitat

Thawing permafrost and changes in the vegetation of northern forests and tundra regions of Alaska and Canada could also affect important breeding habitat for a number of North America's waterfowl species. In some areas and for some species, the changes could be beneficial to reproductive success. For example, thawing permafrost could lead

to a conversion of parts of the tundra to wetlands, expanding nesting opportunities for arctic geese. On the other hand, problems such as higher temperatures and drought could reduce the productivity of North American scaup. **2**

Even where changes associated with global warming alone might not cause problems, the combined effects from human activities such as oil and gas development, forestry, mining and global warming could make it difficult for some waterfowl to adapt to a rapidly changing environment.



Changes in Waterfowl Migration

Global warming is also expected to affect the timing and distance traveled during waterfowl migration. Warmer fall and winter temperatures in northern regions would make it unnecessary for waterfowl to fly as far south to find ice-free water and suitable food. For example, the unusually warm, late-arriving winter of 2001 increased hunting opportunities for waterfowl hunters in the Midwest and New England states and reduced hunting opportunities in the Mid-Atlantic and South. **3**

Recent research by the U.S. Forest Service projects that changes in seasonal temperatures and precipitation due to global warming will contribute to a significant northward shift in the breeding range of mallards and blue-winged teal in the eastern half of North America before the end of this century.

Coastal Wetlands Habitat Loss

As the climate warms, a possible 3.5- to 34.6-inch rise in average sea level by 2100 could eliminate up to 45 percent of coastal wetlands in the lower 48 states. Especially vulnerable are the shallow wetlands of the Gulf and Atlantic coasts. These regions provide important wintering habitat for diving ducks such as canvasbacks, redheads, ruddy ducks, scaup, northern pintails and lesser snow geese. **4**

In addition to the inundation of low-lying areas due to sea-level rise, changes in inland precipitation patterns and a significant decline in average mountain snowpack are expected to affect the quality and quantity of water in many coastal marshes and estuaries along the Pacific Coast, which provide critical habitat for resident and migrating waterfowl in the Pacific Flyway. **5**

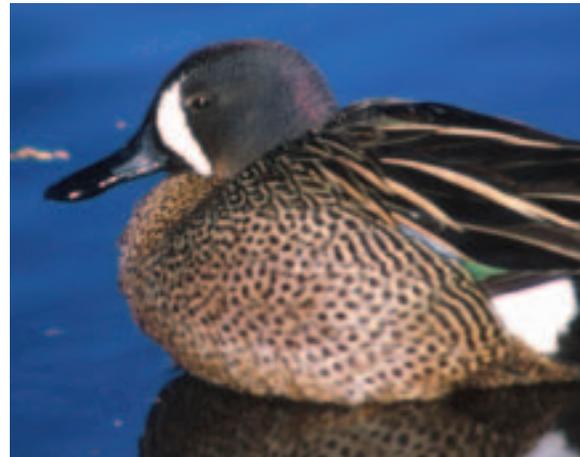
River and Lake Waterfowl Habitat at Risk

Increased drought in the Great Plains and decreased snowpack in the Rocky Mountains could reduce water flow in the Platte River and associated streams, which many species of waterfowl, as well as sandhill cranes and endangered whooping cranes, use as they migrate north in the spring. Possible reductions in mountain snowpack could further limit water availability to rivers and lakes throughout the western United States, affecting key stopover and wintering habitat. **6**

Global warming is also expected to affect shoreline wetlands of the Great Lakes and along the St. Lawrence River in the United States and Canada, which provide critical habitat for breeding and migrating waterfowl, especially diving and sea ducks. Research suggests that the combined effects of changes in breeding and migratory habitat could lead to a 19- to 39-percent decline in duck numbers throughout the region by the 2030s. **7**



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DUANE HOVORKA

Changing the Forecast for Waterfowl: A Plan of Action

Fortunately, Americans can take action now and change the forecast for waterfowl and other wildlife. Addressing global warming's challenge to waterfowl should include upholding Clean Water Act and Farm Bill wetlands protections and expanding other programs that encourage protection and restoration of wetlands. In addition to reducing the impact of other non-climatic stressors on wetland ecosystems, wildlife managers should plan for the potential effects of global warming when developing wetland and waterfowl conservation strategies, including reforming floodplain and coastal management practices to conserve these resources for the long term.

Lastly, the most effective way to minimize the threat is to reduce emissions of carbon dioxide and other heat trapping gases by enacting policies that set specific limits on the nation's global warming pollution; protecting and enhancing the ability of forests, grasslands, wetlands and other natural systems to absorb and store carbon; strengthening programs to promote energy efficiency; and developing new and more efficient renewable energy sources.



NATURAL RESOURCES CONSERVATION SERVICE

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Ten Steps You Can Take at Home to Combat Global Warming

1. Replace incandescent light bulbs with compact fluorescent bulbs.
2. Install a clock thermostat to save heating and cooling energy at night and when no one is home.
3. Change or clean furnace and air conditioner filters regularly to keep heating and cooling systems running efficiently.
4. Set your water heater to a lower setting or call a service person to adjust it for you.
5. Wash your laundry in warm or cold water instead of hot.
6. When shopping for home appliances and electronics, look for the Energy Star® label; when purchasing a car, buy the most fuel-efficient model that meets your needs.
7. Choose alternative transportation methods whenever possible, such as taking public transportation, carpooling, biking or walking.
8. Reduce gasoline consumption by keeping your tires properly inflated and your engine tuned up.
9. Recycle aluminum cans, glass bottles, plastic, cardboard and newspapers to help reduce the energy needed to make new products.
10. Contact your representatives in Congress and encourage our government to enact policies to reduce global warming pollution.

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National Wildlife Federation • 11100 Wildlife Center Drive • Reston VA 20190



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