



CHANGE THE FORECAST FOR WILDLIFE
SOLUTIONS TO GLOBAL WARMING

Global Warming and MICHIGAN

With its delicate lake shores and ecosystems already stressed by habitat fragmentation, pollution and other man-made problems, Michigan stands to lose a great deal if global warming continues unabated. The Union of Concerned Scientists and the Ecological Society of America estimate that by 2100, average summer temperatures in the state could increase between 7-13 degrees Fahrenheit depending on the extent to which greenhouse gas emissions are curbed. Precipitation is also likely to increase, although warmer average temperatures and higher evaporation rates are expected to lead to drier conditions overall. We can solve global warming and revitalize our economy by rebuilding America with clean energy.



NPS

Global warming effects on Michigan wildlife

Michigan is home to an incredible diversity of native wildlife species, including 303 birds, 67 mammals, 27 reptiles, 137 fish and 23 amphibians. Rising temperatures in the state will likely change the makeup of entire ecosystems, forcing wildlife to shift their ranges or adapt.

- Global warming is expected to affect shoreline wetlands of the Great Lakes, which provide critical habitat for breeding and migrating waterfowl. Research suggests that the changes in breeding and migratory habitat due to global warming could lead to a 19-39 percent decline in duck numbers throughout the region by the 2030s.
- Cold-water fish species in Michigan are expected to take the brunt of global warming. As water temperatures warm and water levels diminish, scientists project that suitable habitat for cold-water fish such as brook trout and walleye will be considerably reduced.
- A temperature increase of 1-2 degrees Fahrenheit could cause plants and trees better suited to warmer weather to replace the valuable coniferous forests of Michigan, causing declines in species such as the endangered Kirtland's warbler, a bird that only breeds in the jack pine forests of the state.



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Global Warming Pollution

Burning coal, gas and oil produces carbon dioxide, which is a greenhouse gas that warms the planet as it builds up in the atmosphere. Some of the carbon dioxide released today remains in the atmosphere after even 100 years, trapping more and more heat.

Since the mid-1800s, emissions of carbon dioxide have skyrocketed, causing global temperatures to rise by about 1° Fahrenheit in the last century. Earth has not experienced such a rapid change in temperature in thousands of years.

A Global Solution

The U.S. must lead the world by passing global warming legislation at home and working with other nations at the Copenhagen climate summit at the end of 2009 to sign a new climate treaty that keeps further warming below 2° Fahrenheit. With a global solution, we can avoid the worst impacts of global warming.



What's at stake for Michiganders?

The changes from global warming threaten not only to degrade the natural forest and aquatic ecosystems of Michigan but also the health and economy of the state.

- Although there is uncertainty in forecasting the impact of global warming on the water levels of the Great Lakes, there is a clear risk as global warming increases evaporation and alters precipitation patterns. In 2002, the Bush Administration published a global warming report that warned: "Lake levels are likely to decline due to increased warm-season evaporation, leading to reduced water supply and degraded water quality."
- Warmer average temperatures could increase concentrations of ground-level ozone, which is known to aggravate respiratory problems such as asthma.
- Rising air and water temperatures and declining lake levels may increase the Great Lakes vulnerability to invasive species. In Lake Erie, the non-native wetland plant *Phragmites australis*, which can degrade waterfowl habitat and reduce biodiversity, is rapidly expanding onto newly uncovered coastal wetlands. This expansion will likely continue if the warming temperatures and declining lake levels persist. Zebra mussels, and other aquatic invasive species, have already wrecked havoc on the delicate food webs of the Lakes. As lake temperatures continue to rise, stressing native species, these invasions may be encouraged.

"Global warming poses an overriding challenge to our responsibility to protect wildlife for our children's future. We must advance balanced solutions that work for people, wildlife and the economy to overcome this challenge."—

Larry Schweiger
President, CEO
National Wildlife Federation

GLOBAL WARMING NATIONAL POLICY SOLUTION:

A federal legislative solution can drive American ingenuity, create millions of green jobs, and restore America's global leadership on global warming. Legislation should:

- * Include ambitious targets to reduce America's global warming pollution as swiftly and deeply as possible. Scientists say that developed countries as a whole need to reduce their global warming pollution by at least 80% from 1990 levels by 2050 to avoid the worst impacts of global warming.
- * Move America toward a 100% clean electricity future by maximizing energy efficiency, modernizing the electric power grid, expanding power generation from renewable energy resources, and investing in clean transportation infrastructure.
- * Invest in natural resources. Forests, coasts, wetlands, clean air and clean water are already being impacted by global warming. Funding is needed to safeguard the natural resources that are critical to wildlife populations and human health.
- * Lead a worldwide effort to finance clean energy technology, forest conservation, and adaptation to unavoidable impacts of global warming.

For more information, visit: www.nwf.org/globalwarming.



Michigan's solutions to global warming

Through numerous initiatives, such as the 21st Century Jobs Fund, Michigan is working to promote job growth through investment in research, commercialization and manufacture of new, far more efficient, energy and automotive technologies.

- Michigan's first large wind farm has just begun operation in Pigeon, MI, and the state ranks 14th in the nation in wind generation potential. It is also ranked 4th in the nation in potential to manufacture components to supply a growing wind energy market nationwide.
- In November 2007, Governor Granholm issued an Executive Order establishing the Michigan Climate Action Council that will develop a comprehensive state Climate Change plan and policy recommendations by December 2008.

The Midwest Governors Association Energy and Climate Stewardship Platform

In late 2007, Michigan was one of nine Midwest states and the Province of Manitoba that signed on to an aggressive energy and climate program that plans major steps forward for the region on renewable energy, energy efficiency, next generation biofuels, and carbon capture and storage. Through their leadership on energy, the states also seek to boost the region's economy by stimulating investment, creating new jobs, and stabilizing energy prices. In addition, the states of Illinois, Iowa, Kansas, Michigan, Minnesota, and Wisconsin have signed the Midwestern Regional Greenhouse Gas Accord. The Accord will establish greenhouse gas reduction targets and a market based cap and trade mechanism to help achieve these targets by late 2008.

Following some simple guidelines, you can cut your global warming pollution, become more energy efficient and give something back to nature.

- Convert to compact fluorescent bulbs: If every household in America replaced its next burned out light bulb with a compact fluorescent, we would prevent more than 13 billion pounds of carbon dioxide from being emitted.

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