

## Climate Change Impacts in Arkansas

A summary of the threats that climate change poses to the people, businesses and ecosystems of Arkansas



**The Mississippi Delta in Arkansas is one of the most biologically rich places on Earth, providing habitat for the ivory-billed woodpecker and other species. As temperatures rise, the risks of fires and pest outbreaks increase, threatening these forests.** © Mark Godfrey, TNC.

Increases in carbon dioxide and other greenhouse gases in the atmosphere have caused global temperatures to increase by an average 1°F over the past century. This global warming has resulted mainly from human activities such as the combustion of fossil fuels and deforestation. Global temperatures are expected to rise more this century as emissions of heat-trapping gases continue to mount. While the impacts of climate change will vary from region to region, it's clear that almost every place on the planet will be affected.

### WHAT ARKANSAS CAN EXPECT

- more forest fires
- loss of fish habitat
- increased pine beetle infestations
- rice production hurt by higher temperatures
- duck populations shrink up to 50 percent

Over the past 50 years, The Nature Conservancy has invested billions of dollars in land acquisition and conservation. These investments, as well as those of state and federal governments, are jeopardized if emissions of heat-trapping gases continue unchecked.

Taxpayers in this country have made a substantial investment in protecting the forests of the Arkansas Delta. That investment has been rewarded with the rediscovery of the ivory-billed woodpecker in these woods. While we work to acquire and protect additional lands to ensure the survival of this spectacular bird and many other species, the impacts of global warming on places like the Big Woods only complicates our challenge.

Following is a summary of how climate change will affect Arkansas:

### Pine Timber Industry Impacts

Climate change is expected to have significant impacts on forest resources throughout the United States as the ranges of tree species shift and the risk of forest fires and pest outbreaks increases.

Forestry is an important part of the economy of Arkansas. Softwoods, including all pine species, are the most important category of roundwood timber output in Arkansas, accounting for 75 percent of total output. The Southeast is likely to experience net economic losses in the forestry sector as tree species migrate northward and tree productivity declines.

Southern pine beetle infestations have had a significant impact on pine forests in the Southeast for decades, with losses reaching as high as \$237 million in a single year. Southern pine beetle infestations and

### Rice Cultivation Impacts

In 2003, Arkansas was ranked first among U.S. states in rice exports, contributing a total value of \$513 million to Arkansas' economy.

The most common varieties of rice grown in Arkansas have been found to be more sensitive to high temperatures than have varieties grown in Asia. Climate change will bring more heat waves, with temperatures expected to rise by 4.1° to 10° F by 2100. This could put Arkansas at a significant disadvantage in the global rice commodities market

Around the world, climate change will lead to a northward movement of freshwater fish species, along with loss of habitat for cold- and cool-water fish and a gain in habitat for warm-water fish. In Arkansas, this may affect fish species such as trout, walleye and northern pike. Globally, this will cause some fish species currently classified as critically endangered to become extinct and the majority of those labeled endangered or threatened to be closer to extinction in the 21st century.

### Duck Hunting Impacts

Duck season brings national and international media attention and tourism to Arkansas. Hunting expenditures in Arkansas exceeded \$51.7 million in 2001.

The effects of more frequent drought cycles in the prairie pothole region of the Great Plains brought on by climate change could significantly impact the annual mean population of ducks by up to as much as 50 percent

Protecting the last great places of Arkansas for our children and grandchildren depends on the passage of practical legislative proposals that will reduce emissions of carbon dioxide and other heat-trapping gases. We cannot continue to rely on voluntary approaches to address this threat

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associated damages are expected to increase more than four-fold due to climate change.

Forest fires are also a concern for the pine timber industry. Climate models predict that the southeastern United States will experience a 30 percent increase in forest fire risk by mid-century due to climate change.

### Precipitation Impacts

Climate change is expected to alter precipitation levels and patterns globally in the coming century, with impacts varying from region to region. Precipitation has increased by 20 to 30 percent in the Southeast over the past century, causing flooding which in turn triggers erosion and contributes little to replenishing groundwater resources.

Potentially the largest climate change threat to rice crops in Arkansas is the higher costs of irrigation, as competition increases for water resources with changes in precipitation and population growth.

Climate models predict that by 2100, climate change could cause rice cultivation in the Mississippi Delta to decline by 10 to 20 percent

### Fisheries Impacts

In Arkansas, freshwater fishing generated \$445,778 in revenue for local businesses in 2001. That same year, freshwater fishing was the ranked most popular type of fishing in the United States, with some 28.4 million Americans fishing rivers, streams and lakes.

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**The Nature Conservancy supports pragmatic policies that will reduce emissions causing global climate change.**

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<http://nature.org/initiatives/climatechange/>

Sources: Intergovernmental Panel on Climate Change, Union of Concern Scientists, US Department of the Interior Fish and Wildlife Service, US Department of Agriculture, US Forest Service, US Global Change Research Project, Pew Center on Global Climate Change.