



Climate Change and Acadia National Park

Scientists have already observed signs indicating that Earth's climate is changing, and global climate models predict that these changes will become more significant in the next few decades. America's national parks could experience many climate change impacts in the future, many of which threaten the diverse ecosystems and natural beauty found in the parks. This factsheet highlights some of the potential impacts on Acadia National Park.

Acadia National Park is a collection of islands, bays, and sounds off the southeastern coast of Maine. Although it is small compared to other national parks, it contains a large diversity of ecosystems, including freshwater wetlands, coastal tidepools, estuaries, several different types of forests, and alpine ecosystems. Many of the plant and animal species found within the park are considered rare or threatened.

What climate changes will affect Acadia National Park?

Within the next century, Maine's temperature is expected to increase 4°F, with the greatest temperature increases occurring in the winter and summer. Annual precipitation is also expected to increase, especially in the winter, although more of this precipitation will be in the form of severe storms. Because of its coastal location, Acadia National Park will also be greatly affected by the sea level rise that will occur as a result of climate change.

This factsheet was prepared by Katie Ashton in conjunction with the Environmental Analysis and Problem-Solving class at Macalester College, Fall 2004.

What are some of the potential impacts of climate change on Acadia National Park?



Coastal ecosystems in Acadia National Park could be lost to flooding as a result of sea level rise.

Threats to coastal ecosystems

If sea level rises, many of Acadia's coastal ecosystems could be damaged or even lost. Some will be able to shift further inland, but many parts of the coast are steep and rocky with few low-lying areas where these coastal ecosystems could reestablish themselves, so they could be completely flooded. Freshwater ecosystems near the coast are in danger of saltwater intrusion and increased salinity as sea level rises. Coastal areas will also be more vulnerable to flooding and severe storms due to climate change.

For further information:

<http://www.nps.gov/acad/index.htm>

The National Park Service website for Acadia National Park

<http://www1.nature.nps.gov/criticalissues/globalclimatechange.htm>

National Park Service information on the effects of climate change on parks

<http://yosemite.epa.gov/OAR/globalwarming.nsf/content/index.html>

The EPA's information about climate change, including impacts on national parks

Threats to other water resources

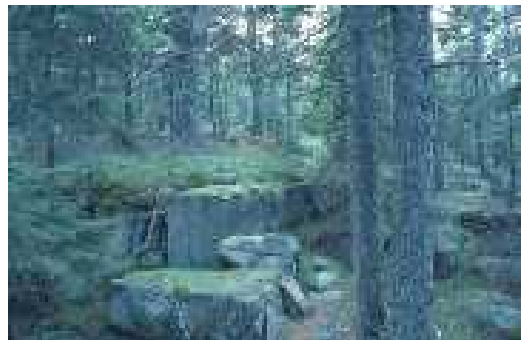
Warmer temperatures will affect the timing of snowmelt in Acadia, resulting in earlier snowmelt and greater streamflow in the spring and decreased streamflow in the summer. Warmer summer temperatures and decreased summer streamflow could result in the degradation of freshwater resources by decreasing the amount of dissolved oxygen (necessary for the survival of aquatic organisms) and the amount of waste and pollutants that freshwater ecosystems can assimilate.



Freshwater wetlands may not be able to filter pollutants and waste as well due to warmer temperatures and decreased streamflow.

Changes in the forest

Acadia National Park is located in the transition zone between the northern coniferous forest and the eastern deciduous forest. As temperatures increase, many species characteristic of the northern coniferous forest will shift northward, perhaps even out of Maine, and deciduous forest species that are more adapted to the warmer temperatures will expand their range. Forest biodiversity may decrease if some plants and animals are unable to shift their range or adapt to the changing climate.



Air pollution

Air pollution is already a concern in Acadia National Park because it is located downwind from industrial centers on Maine's southeastern coast. Air pollution in the park could increase due to climate change because warmer summer temperatures are more conducive to the formation of pollutants such as ground-level ozone (smog).

All images from the National Park Service