CLIMATE CHANGE

Since the dawn of time, the earth's climate has undergone many changes—some of them quite dramatic. During the Pleistocene Period, roughly 2.5 million to 10,000 years ago, numerous glaciers advanced and retreated across the globe, including much of the Chicago Wilderness region. The Ice Age, as it is commonly known, was caused by a combination of factors, including naturally-occurring changes in the amount of water vapor, carbon dioxide, methane, nitrous oxide and other gasses in the earth's atmosphere. Together, these "greenhouse gasses" regulate the temperature of the earth.

With the advent of the Industrial Revolution, concentrations of greenhouse gasses in the earth's atmosphere have increased exponentially—mainly from burning of fossil fuels and destroying native habitats. This increase has trapped significantly more heat in the atmosphere, leading to a number of projected climate change-related effects.

A growing body of research indicates that increasing temperatures will affect the abundance and distribution of fish, wildlife and plant species. Mobile species will tend to migrate northward. The Chicago Wilderness Climate Change Task Force projects that "As many as 44 species of birds that currently breed in Illinois may no longer breed in the state by the end of the century." These include such familiar and widespread species as black-capped chickadees (*Poecile atricapillus*), gray catbirds (*Dumetella carolinensis*), Baltimore orioles (*Icterus galbula*) and American goldfinches (*Carduelis tristis*).

Some pollinator insect species are likely to be negatively affected, but overall insects are expected to increase in numbers. The increase in the number of pest species may pose particular challenges for human, crop, and native ecosystem health.

Although higher temperatures may help expand the range of certain tree species in our region, considerably more may become rare or disappear entirely. These include northern red oaks (*Quercus rubra*), black cherries (*Prunus serotina*), sugar maples (*Acer saccharum*), paper birches (*Betula papyrifera*) and butternuts (*Juglans cinerea*).

Beyond the effect on individual species, climate change is likely to have a significant impact on entire natural communities. Each one is an interdependent, functioning system of plants, animals and microorganisms, which evolved over millennia. Rapid climate change, such as we are experiencing now, will affect different species differently, and at different rates. This could lead to the disruption of key species interactions, such as upsetting the balance between prey and predator, pollinators and their host plants, and other inter-species relationships, potentially causing the collapse of certain habitats.

Climate change could also amplify the existing threats to natural communities, such as habitat loss and fragmentation, invasive species, and pollution; possibly jeopardizing past conservation efforts in the Chicago Wilderness region.

Fortunately, sound conservation management is likely to help our plant and animal communities become more resilient to the challenges climate change brings. More and larger natural areas—better connected and better managed—promote genetic diversity, which allows plants and animals to adapt to changing conditions. A large and diverse number of healthy natural areas is also likely to help offset the effects of climate change for people, since they capture and store excess greenhouse gases.

"Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level." —An Assessment of the Intergovernmental Panel on Climate Change, a scientific, intergovernmental body established by the United Nations Environment Programme and the World Meteorological Organization.

*Populations of the federally-endangered Karner blue butterfly (*Lycaeides melissa samuelis*), already stressed by a lack of suitable habitat, may not be able to survive the additional habitat changes wrought by climate change.*

The balance of nature in preserves such as the Springbrook Prairie Forest Preserve in DuPage County is threatened by climate change. However, in concert with the other reserves in our region, healthy ecosystems help mitigate the effects of climate change.