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Conservationists around Great Lakes plan for climate change



Keep these definitions in mind as you read:

mitigation - the action of reducing the severity, seriousness, or painfulness of something

adaptation - modification of an organism or its parts that makes it more fit for existence under the conditions of its environment

By Kelly April, Tribune reporter

Thu Aug 25 2011 12:00 AM

The long-term forecast for the Chicago area calls for more wild rains, hailstorms and flooding. Throughout the Great Lakes region, residents can also expect warmer year-round temperatures, more frequent heat waves, lower lake levels and thinner lake ice.

Conservationists in the region say their efforts to protect resources must be adapted to these changes, which are already under way. Among the signs: higher average temperatures in the Chicago area over the past 10 years and warmer winters that bring more lake-effect snow.

Those warmer winters might not sound so bad, but they affect the lake ice that protects the coastline from erosion during strong winter storms. Dale Engquist, former superintendent of Indiana Dunes National Lakeshore and current president of the Chicago Wilderness Trust, says he has seen houses fall into the lake because there was not enough shelf ice to offer stability in a storm.

Scientists and conservationists can't replace the ice, which has been decreasing since the 1970s, but they can account for the erosion and design shoreline projects accordingly.

Such "climate-smart" planning seeks to improve the efficiency and cost-effectiveness of conservation efforts by employing current climate data and future predictions rather than relying on past data. Another goal is to mitigate the negative impacts of climate change.

The climate "has changed a lot in the past 20-30 years, especially since 1980," said Bob Moseley, director of conservation at the Nature Conservancy in Illinois. "We know the world we are managing for, the world that we started with, no longer exists. ... Recognizing this change is important in and of itself. We have to manage for change."

Recently, both Chicago Wilderness and the Nature Conservancy published reports to address the issues the area faces as the climate changes, both from the perspective of the city and the region's wildlife.

In addition to warmer temperatures, data projections in the reports show falling water levels in Lake Michigan — including a 1.5-foot decrease by the end of the century — shifting plant hardiness zones and the northward migration of animal species. More detrimental impacts to wildlife are expected as climate change exacerbates the effects of habitat loss, pollution and invasive species.

Area conservation experts are beginning to use these guides and others to look at their efforts through a climate-change lens. The focus of many projects is on promoting species that are more resilient to climate change, concentrating efforts on the most vulnerable species and natural areas, and on encouraging green infrastructure to temper climate change effects.

"The best science tells us the data we rely on now is already changing," said Joel Brammeier, president and CEO of the Alliance for the Great Lakes, an organization focused on the health of the largest source of surface freshwater in the world. "We are really now starting to push the edge of making changes."

The alliance is beginning to incorporate climate change data and predictions into coastal ravine restoration projects in northern Cook and Lake counties, Brammeier said.

Higher frequency of extreme summer storms bringing 2.5 inches of heavy rainfall or more is causing runoff that accelerates erosion of the ravines as well as dumping environmental contaminants into backyards and Lake Michigan, he said.

Affected communities plan to look at climate change predictions as they install erosion control measures and try to stabilize the ravines, restore habitat along ravine banks and slow the flow of water so it can be cleaned before it hits the lake.

"We have developed a system to map out problems with erosion," Brammeier said. "All the planning in those projects depends on estimates of how much rain there is, what time of year it is, what the lake level will be when the water hits the beach. The biggest concern is that we don't dump good money into projects that are going to be irrelevant in 20 years because water is shifting underneath them."

The Alliance for the Great Lakes is part of Chicago Wilderness, a network of over 250 organizations from southeastern Wisconsin, northeastern Illinois, northwestern Indiana and southern Michigan that have a stake in protecting natural resources surrounding Lake Michigan.

To address the effects of climate change, member groups have begun implementing measures both on a large scale, as with the ravine project, and on a smaller scale through efforts involving small communities, neighborhoods and even single families.

Among the priorities is managing changing precipitation patterns. In Chicago, which is plastered with impervious concrete, climate-smart initiatives include creating more permeable surfaces, installing green roofs and planting rain gardens to hold on to and absorb extra stormwater.

"We need to slow down the velocity of water that's coming off of hardened surfaces — slow it down so it can filter down into the ground," said Todd Main, of the Illinois Department of Natural Resources. "We need to think out of the box about how we can maximize green infrastructure. Systemwide across the region we could make a dent in solving some of these problems."

Another priority of conservationists is to promote biodiversity in the face of climate change across the Chicago Wilderness area and connect the 370,000 acres of existing green space. These connections and areas of open natural space help buffer negative effects of climate change.

As temperatures warm, for example, the habitat range of the monarch butterfly will shift. To help ensure it can continue to migrate safely between Mexico and the rest of North America, Casa Michoacan is planting the species' food source, milkweed, on a Pilsen garden site too contaminated to use for growing produce.

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The organization, composed of neighborhood groups representing the Mexican state of Michoacan, hopes the area can be a part of a protected corridor for the monarch as it travels. A symbol of this community, the butterfly also links many people in Pilsen with their native country.

Abigail Derby Lewis, conservation ecologist at the Field Museum, says other efforts seek to maintain the biodiversity of the area by keeping natural systems as healthy as possible so other species don't come into the area and dominate.

"What we are concerned about is what is detrimentally invasive," she said. "Things that do really well under bad conditions are things like weeds. If you have desynchronization of the system, you have things that can work their way in and can really destroy an area very quickly."

At Indian Prairie Boundary Preserve in Markham, Karl Gnaedinger, project manager for the preserve and with the Nature Conservancy of Illinois, is working to protect one of the highest-quality grassland prairies in the state. With more and more non-native species encroaching, he and other naturalists and volunteers deliberately set the prairie on fire each fall.

Prairie species thrive on periodic fires, while invasive species do not. During the summer, when it's too hot and dry to burn safely, the team sprays the area with herbicides.

Chicago is working on implementing climate-smart measures in the city's parks in partnership with the Field Museum, the Nature Conservancy and the University of Notre Dame. One such effort involves planting trees that are suitable for shifting hardiness zones. As the climate changes, Chicago is expected to see a loss of some tree species to Wisconsin and Canada while new species, like white oak, arrive from more southern locales.

The city was just awarded \$1.1 million as part of a \$2.7 million state grant from the EPA's Great Lakes Restoration Initiative, in part to address climate change effects in its conservation efforts. The \$350 million EPA initiative fulfills a 2008 Obama campaign promise to fund efforts that can demonstrate measurable results in managing the biggest issues faced by the Great Lakes ecosystem.

Projects seeking funding through the Great Lakes initiative must now take climate change into account.

"The science has now advanced far enough and has created tools for us to assess which places and species would be most vulnerable," said Moseley, of the Nature Conservancy. "We don't have to invest the same in every species; we can focus on some groups. This is information that will help managers manage their species better."

Individual Chicago residents also can take steps to manage climate change. The Chicago Sustainable Backyard program offers homeowners rebates for rain barrels and compost bins and for planting native, hardy plant and tree species, especially those that can absorb excess water and handle summer drought conditions. Despite storms bringing heavy rainfall, summers are getting drier.

"We are building a resilient future for both nature and humans," said Moseley. "I've been in this long enough that it seems incremental, one little baby step at a time, but if we've learned anything from past 150 years of the Industrial Revolution, little baby steps can change the world in a lot of ways."

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