Impacts and Adaptation

The Nature Conservancy's work to understand and lessen the impacts of climate change at places around the world

In China's Yunnan Province, climate change is one of the reasons why trees are moving upslope.

Global climate change is changing the places we know and cherish. Within our lifetimes, we will see the visible effects of global climate change on coastlines, coral reefs, glacier-carved mountains and other places, with potentially devastating ecological and economic consequences. While there is some uncertainty about the long-range predictions of the impacts of global climate change, there is no doubt that climate change is under way – and we know enough to take action now.

Climate change is caused primarily by the release of heat-trapping gases, chiefly carbon dioxide, produced by vehicles, industrial processes, power plants and deforestation. The gases we emit today will linger in the atmosphere for decades. The longer we wait to take steps to reduce emissions, the steeper and more costly the cuts in emissions will need to be in the future to prevent dangerous rates of global climate change.

Climate change has the potential to undermine the past conservation work of governments, communities and organizations like The Nature Conservancy, eroding hard-won gains to protect wildlife habitat and biodiversity around the world. Using widely accepted models of climate change, Conservancy scientists have overlaid maps of places at risk from climate change with maps of Conservancy land holdings. They estimate that the majority of the Conservancy's investments are in jeopardy of

losing their ability to sustain biodiversity because the climate will become so altered that the plants and animals we have endeavored to protect at those sites will face untenable conditions.

To combat the threat of climate change to the natural world and to our way of life, the Conservancy supports pragmatic policies to reduce emissions causing global climate change.

Additionally, at several places where we work around the globe, the Conservancy is studying the anticipated impacts of climate change on biodiversity and how those places will respond. From this information, we can develop the tools and long-term conservation strategies that address a place's adaptation to a changing climate. Our work has only just begun in places like Alaska, China and North Carolina; some highlights follow. We now need to spread our climate-adaptation projects to more sites to get a critical mass of data, tools and strategies that together can lessen the threat of climate change to Conservancy project sites.

Alaska

With some of the highest rates of warming experienced thus far, the Arctic provides a striking illustration of the impacts of climate change on people and places. Sea ice has shrunk substantially, and coastal ice melts three weeks earlier than it did just 30 years ago. With shifts in the seasons and scarcer, thinner ice, wildlife and native people who rely on the ice for subsistence fishing and hunting face an uncertain future.

Caribou, (Rangifer tarandus), photographed on the slopes at Denali National Park in Alaska. © Ross Geredien

Winter temperatures in Alaska have risen by more than 5°F in the 20th century, leading to extensive melting of sea ice and permafrost in the tundra. As the frozen ground thaws, more greenhouse gases are released into the atmosphere. These changes are having serious economic implications as roads crumble, pipelines buckle and entire communities are being forced to move inland. In addition, these changes are damaging habitat for Arctic foxes, polar bears and caribou.

In Alaska, the Conservancy is developing conservation plans that anticipate the likely climate change impacts on habitat for caribou and other species.

China

On the border between Tibet and Yunnan Province, climate change is one of the reasons why trees are moving upslope, where they are invading high-elevation alpine meadows and reducing the area available for rare plants, important medicinal plants and traditional yak herding. Neither the plants nor the people will find it easy to adapt because moving farther up steep, rocky slopes is not a viable option.

To protect alpine areas and freshwater ecosystems, the Conservancy is developing plans that integrate the multiple threats posed by climate change, land-use changes and increased demand for medicinal plants, timber and water.

North Carolina

The forests, wetlands, dunes, rivers and estuary surrounding the Albemarle Peninsula in eastern North Carolina comprise an extraordinarily productive natural system that hosts migratory birds, the endangered red wolf, and striped bass. Yet North Carolina's coast, like many around the world, is being changed by sea-level rise. In the Albemarle Peninsula, drainage ditches originally dug to drain farmland now channel salt water inland. This inflow is harming native vegetation and threatening natural diversity. Intrusion is further compounded by high tides and storm surges.

Eroding shoreline caused by rise in sea level along the Albemarle Peninsula, Albemarle Sound area of North Carolina. © Christopher E. Zganjar

In North Carolina, the Conservancy is working to restore Albemarle Peninsula, preparing it for sea-level rise through a variety of efforts such as working with landowners to convert land to forests, installing floodgates to prevent saltwater intrusion, removing hard armoring along the coast and working with the U.S. Fish and Wildlife Service to incorporate additional adaptation measures in their management plan.

The Conservancy's climate-adaptation work alone will not be enough to avoid devastating impacts to plants, animals and natural communities posed by climate change. For the sake of the planet, practical policies to slow, stop and reverse the trend of emissions-causing global climate change must be adopted and implemented by governments everywhere.

For information on Nature Conservancy efforts to take action on climate change:

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