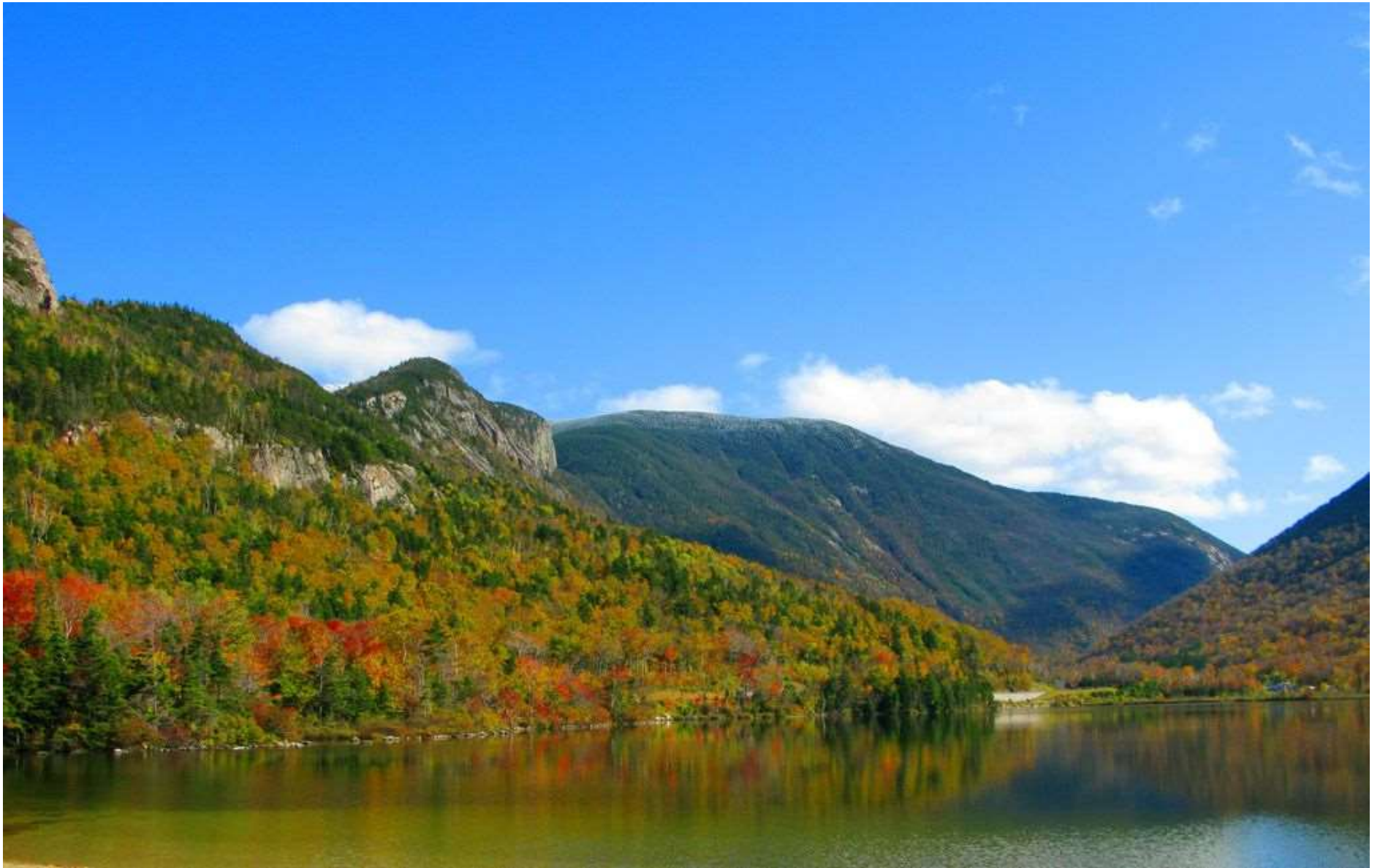| | | More from Globe IdeasSubmit to Globe IdeasSubmit a Letter to the Editor |

IDEAS

Preserving not just the most beautiful landscapes, but the most resilient

A new approach to conservation prioritizes land that can withstand climate change.

By Mark Anderson Updated December 30, 2020, 4:25 p.m.

Franconia Notch State Park in New Hampshire. COURTESY OF WHITE MOUNTAINS ATTRACTIONS

The White Mountains are beautiful this time of year. Granite slopes, snow-covered peaks, and free-flowing rivers are home to spruce trees, moose, and trout. A winter hike in the region can be breathtaking, and not just because of the cold.

Preserving places like the White Mountains is important for its own sake. But new research shows that conserving landscapes like these is also one of the most effective ways to mitigate the adverse effects of climate change.

For the last several years, the team of scientists I lead at The Nature Conservancy has explored which land areas in the United States are most resilient to climate change — and can support the most diverse range of plants and animals into the future. These are the pieces of land we should focus on conserving.

These resilient strongholds, many of which are in New England, have complex topographies with varied elevations, soils, and temperatures. That composition creates diverse "micro-climates" that support a wide array of species, even as the

Earth's overall climate changes.

Wildlife need these rich, life-sustaining lands. They're running out of places to go. Since 2001, Americans have degraded 24 million acres of natural land to make way for things like housing development, roads, traffic, agriculture, and energy infrastructure. It's no wonder species are currently disappearing at a rate up to 100 times higher than the average rate of extinction over the past 10 million years.

Climate change is accelerating the damage. One-third of animal and plant species could face extinction in the next 50 years due to climate change, according to a [recent study](#) from scientists at the University of Arizona.

As the climate evolves, animals and plants will need to migrate to and between these resilient strongholds to survive. And they'll need to follow natural highways to get there. So our team is researching which lands are not just resilient and biodiverse but also connected to one another.

Our model divides 14 states and three provinces across the eastern United States and Canada into 30-meter sections. We gave each section a resilience score based on its landscape diversity and how well connected those landscapes are. The scores identify the most resilient places within each type of habitat; mountains are compared with mountains, wetlands with wetlands, sandplains with sandplains, and so on.

and so on.

This model offers a roadmap for preserving America's wildlife and natural heritage. When used as a guide, the maps allow conservationists to home in on the most important landscapes to preserve. We are now finalizing maps of resilient lands across the rest of the country.

When states, conservation agencies, and local communities understand the science behind protecting resilient lands, they can safeguard not just animals and plants but humans, too. Plants and animals transform the physical world of rock and soil into ecosystems that provide the oxygen, food, and clean, filtered water that sustain life.

Resilient lands, including forests and wetlands, capture and store larger amounts of carbon than other areas and thus help offset greenhouse gas emissions. Parcels we have identified in the eastern United States generate enough oxygen for 1.8 billion people and harbor three-quarters of the region's high-value source water.

Targeted conservation has been deployed before, with great success. Consider how

investment in wetland restoration reversed the loss of bird species in North

America. Wetlands are now the [only habitat](#) where bird populations haven't declined since 1970.

Our map of resilient lands in the eastern United States has already been put to good use. Last year, The Nature Conservancy spent $4 million to purchase one of the resilient sites we identified, Vermont's Glebe Mountain — 3,500 acres of forest that host everything from beech trees to black bears.

Since 2013, the Massachusetts Executive Office of Energy and Environmental Affairs has used our research as criteria to distribute several million dollars in land conservation grants annually. Among other large projects, state officials funded the conservation of the Brewer Brook Forest in western Massachusetts — more than 1,000 acres of unfragmented forestland.

Of course, these maps cannot be the only determinants of which lands to conserve. Governments and conservation groups must also seek the input of Indigenous

peoples and local communities. Our research team is collaborating with Indigenous communities to understand how our analysis complements their unique ecological and cultural knowledge of their lands — and how it may support their own conservation goals. Saving nature from the effects of climate change might seem impossible. But by focusing on conserving naturally resilient lands, we can keep our planet habitable for a vast array of species, including our own.

Mark Anderson is director of science, Eastern U.S., at The Nature Conservancy.

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