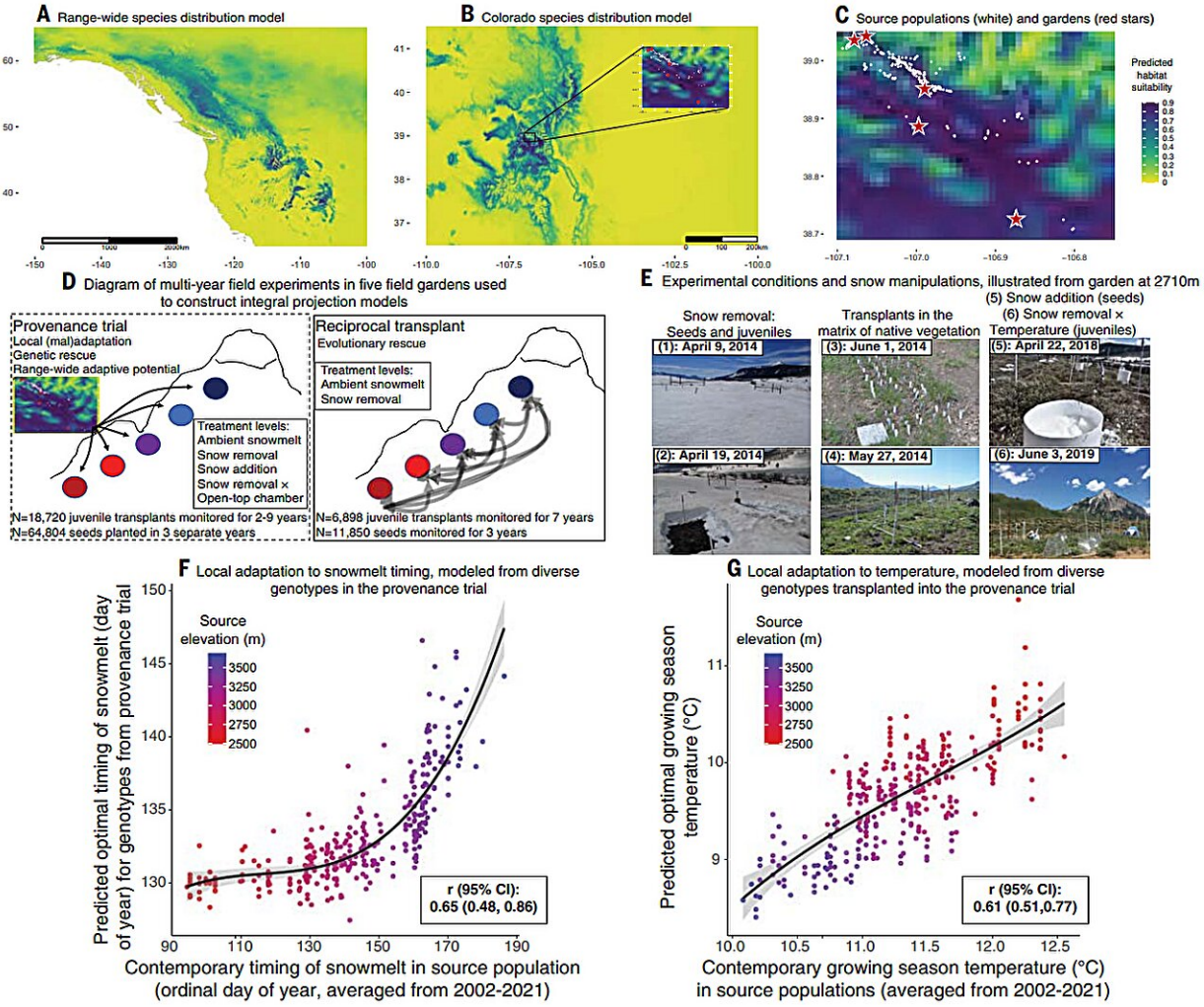
Nine-year study shows mountain plants won't adapt fast enough to climate change

May 6 2025, by Bob Yirka



Distribution and climatic adaptation of Boechera stricta. Credit: *Science* (2025). DOI: 10.1126/science.adr1010.
https://www.science.org/doi/10.1126/science.adr1010

A team of plant biologists, geneticists and ecologists from the University of Georgia, Rocky Mountain Biological Laboratory, the University of California and Davidson College has found via a nine-year study of Drummond's rockcress plants that many mountain plants will not be able to adapt to rising temperatures quickly enough to survive in the face of global warming.

Their paper is published in the journal *Science*. Sally Aitken, a conservation scientist at the University of British Columbia, in Canada, has published a Perspective piece in the same journal issue outlining the work.

Prior research has suggested that many species of plants and animals will find it difficult to adapt to climate change and will likely become extinct. In this new effort, the research team wondered about the ability of plants that grow in the mountains to adapt to rising temperatures.

Researchers have assumed that many such plants will be able to survive by spreading to higher elevations as temperatures rise. To determine if that is the case, the researchers conducted a near-decade-long field study of Drummond's rockcress plants, a flowering species common across all of North America's mountains.

The study involved planting 102,000 specimens at different elevations and manipulating snowpacks in some areas to simulate warming temperatures. The team also conducted a genetic analysis of sample plants from different areas to find out if evolutionary changes were occurring related to warming temperatures.

The research team found no strong evidence suggesting that the plants were able to either change their nature in a way that allowed them to survive warmer temperatures or to spread up the sides of mountains quickly enough to keep ahead of warming temperatures.

The researchers note that despite their focus on a single species, their findings may have implications for a wide variety of plants that live in narrow-band mountainous ecosystems. Aitken suggests it is possible some species could be saved via human assistance—but that will only happen if there are groups willing to make the effort.

More information: Jill T. Anderson et al, Adaptation and gene flow are insufficient to rescue a montane plant under climate change, *Science* (2025). DOI: 10.1126/science.adr1010. www.science.org/doi/10.1126/science.adr1010

Sally N. Aitken, An uphill grind for wild plant populations, *Science* (2025). DOI: 10.1126/science.adx5165. www.science.org/doi/10.1126/science.adx5165

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