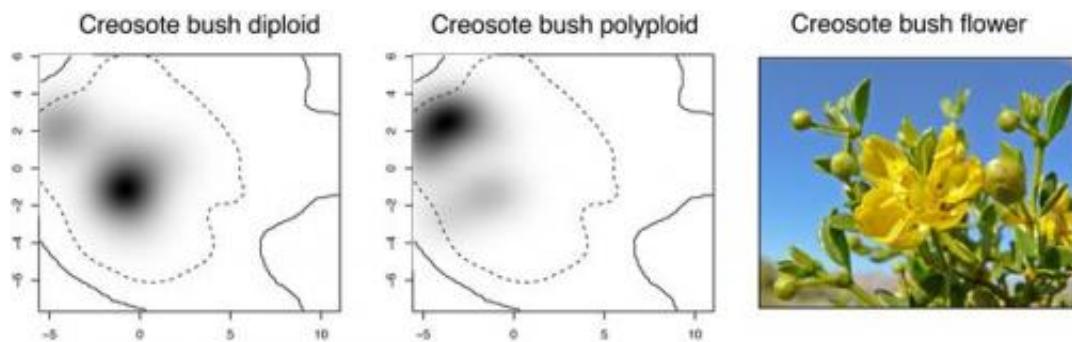


# Environmental factors may not play a large role in the establishment of new plant species

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Output for *Larrea tridentata* (creosote bush) diploid and polyploid populations that shows that both ploidies share similar climate habitats, but differ in how they share that climate.

A new study by a Wits University scientist has overturned a long-standing hypothesis about plant speciation (the formation of new and distinct species in the course of evolution), suggesting that agricultural crops could be more vulnerable to climate change than was previously thought.

Unlike humans and most other animals, plants can tolerate multiple copies of their genes – in fact some plants, called polyploids, can have more than 50 duplicates of their genomes in every cell. Scientists used to think that these extra genomes helped polyploids survive in new and extreme environments, like the tropics or the Arctic, promoting the establishment of [new species](#).

However, when Dr Kelsey Glennon of the Wits School of Animal, Plant and Environmental Sciences and a team of international collaborators tested this long-standing hypothesis, they found that, more often than not, polyploids shared the same habitats as their close relatives with normal genome sizes.

"This means that environmental factors do not play a large role in the establishment of new plant species and that maybe other factors, like the ability to spread your seeds to new locations with similar habitats, are more important," said Glennon.

"This study has implications for agriculture and [climate change](#) because all of our important crops are polyploids and they might not be much better at adapting to changing climate than their wild relatives if they live in similar climates."

Glennon's study also provides an alternative explanation for why plants are so diverse in places like the Cape where the climate has been stable for hundreds of thousands of years. Although her study examined [plant species](#) from North America and Europe only, she is looking forward to testing her hypotheses using South African plants.

Glennon's paper has been published in *Ecology Letters*, a flagship journal for broad-scale ecology research.

Provided by Wits University

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