

# Germination of alpiners: Climate change could shift the timing of seed germination in alpine plants

March 25 2013

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Andrea Mondoni monitoring seedling emergence at 2,500 m in the moraine of the glacier Dosedé, Lombardy Alps, Italy.

Millennium Seed Bank Partnership scientists at the Lombardy Seed Bank (University of Pavia, Italy) and Wakehurst Place (RBG Kew) are engaged in studies to understand better the impact of climate warming on the reproductive success of alpine plants.

The phenology of [seed germination](#) in eight alpine species has been

investigated by simulating monthly changes in temperature recorded at the glacial foreland and at an elevation 400 m lower to reflect the temperatures these plants would face if the climate warmed by 2.6°C (a conservative estimate of the likely increase in temperature during the 21st century). Previous studies have tended to focus on the effect on germination of warmer springs and summers because most [alpine plants](#) are adapted for spring germination. This study focused on the impact of warmer autumns.

The results, published in *Annals of Botany*, revealed for the first time that [climate warming](#) may result in a shift from spring to autumn germination. This shift means that seedlings could be more vulnerable to frost damage during the winter and may explain why plant populations tend to migrate upwards as the climate warms. As conditions at the leading edge become more favourable for seedling recruitment and survival, conditions at the trailing edge become less so.

Current experiments monitoring seedling emergence and mortality in the field will test this hypothesis.

Provided by Royal Botanic Gardens, Kew

Citation: Germination of alpine plants: Climate change could shift the timing of seed germination in alpine plants (2013, March 25) retrieved 27 April 2024 from <https://phys.org/news/2013-03-germination-alpines-climate-shift-seed.html>

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