

Short-lived seed of alpine plants

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Seeds of this alpine population of *Silene vulgaris* ssp. *glareosa* are significantly shorter lived than a lowland relative. Credit: Andrea Mondoni

Scientists from the Millennium Seed Bank Partnership have found that the seeds of alpine plants are shorter lived than their lowland relatives. This will have implications for seed conservation strategies for alpine species.

We have known for many decades that seed longevity in air-dry storage varies considerably amongst [plant species](#). [Archaeological evidence](#) has confirmed that the seeds of some species can remain viable for many hundreds of years and yet some seeds die within a few decades, even under the very dry and very cold conditions of a seed bank.

Research carried out at the [Millennium Seed Bank](#) and by our international partners has shown, for the first time, that seed structure and climate of origin correlate with seed longevity (Probert et al., 2009). It turns out that seeds with small [embryos](#) from cool wet regions of the world are more likely to be short lived compared with seeds with large embryos from warmer, drier regions.

The Millennium Seed Bank's international partners at the University of Pavia, Italy, have now extended this evidence in a comparative study of

seeds of alpine species and their lowland relatives. Controlled ageing experiments on 63 species revealed that seeds of alpine species and populations were consistently shorter lived than their lowland counterparts (Mondoni et al., 2011). The results cannot be explained by differences in seed maturity, and further work is needed to confirm the extent to which these differences are due to genetic makeup resulting from selection pressure for seed survival after dispersal.

Seed banking will be an important strategy for the conservation of alpine floras, but extra care will be needed in setting viability monitoring intervals and for some species cryo-preservation may be needed in order to maximize seed longevity.

More information: Probert, R.J., et al. (2009). Ecological correlates of ex situ seed longevity: a comparative study on 195 species. *Annals of Botany* 104: 57 - 69.

Mondoni, A., et al. (2011). Seeds of alpine plants are short lived: implications for long-term conservation. *Annals of Botany* 107: 171 - 179.

Provided by Royal Botanic Gardens, Kew

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