***Seed collecting and processing***

Approximately 300 seeds per collection were harvested from 20 to 50 individual plants of a single population or multiple populations if the species was widely distributed along the elevational gradient. Only mature seeds close to the point of natural dispersal were collected from plants of populations that had already begun dispersing seeds. Dispersal units (fruits, capsules or naked seeds), were collected by hand, placed in paper envelopes and returned to the laboratory within three days of collection, having been kept dry and below 20oC in the meantime. Upon returning to the laboratory, non-seed material (including fruits, capsules and plant material), was removed from each collection by hand or by rubbing collections though progressively smaller sieves. Seed collecting campaigns were done from December 2015 till March 2016.

***Seed storage and viability testing***

In the laboratory, seeds were stored briefly at low humidity and low temperatures (*ca*. 15% relative humidity (RH) and 15°C) before being sown in germination conditions. Seed viability was tested prior to germination assays in all species/populations exposing 10 seeds per collection to a solution of water and gibberellic acid (0.25 g/L) overnight and placing them in Petri dishes containing 1% plain agar-water at room temperature. Germination was checked every day for a week. In addition, the viability of all collections was estimated in parallel using the tetrazolium chloride (TZ) staining technique (ISTA, 2003) using 2 replicates Petri dishes (n=20) per collection. Only collections with high viability in both tests (around %80) were considered for the study.

***Laboratory experiments mimicking alpine soil temperature regimes***

Seed germination was investigated using conditions that mimicked temperature regimes that seeds of alpine species experience *in situ*, post-dispersal, in an artificially shortened progression of seasons. Soil temperature data collected in both Eastern and Western slopes (Fig.1) were used to guide temperature regimes within the germination incubators (Fig.2).

Germination tests used four replicates of 30 seeds per collection, sown into 90\*5mm plastic Petri dishes (Extragene, Inc, USA) containing 1% plain agar (Winkler limitada, Chile) water. To avoid agar desiccation, Petri dishes were sealed using Parafilm (Bemis Company, INC, USA) before being placed in the germination incubator (Pitec bioref, Chile). one replicate of each collection was placed on a different incubator shelf and re-randomized on that shelf weekly.

Since mature, naturally dispersing seeds were collected during summer, the initial germination test conditions were designed to mimic summer (5 weeks at 22/10°C day/night). Subsequently, all replicates per collection were moved through a series of incubator temperature regimes that reflected the following series of seasons; autumn (5 weeks at 12/5°C day/night), winter (9 weeks at 0°C, simulating snow insulation), early spring (5 weeks at 10/5°C day/night), and summer again (3 weeks at 22/10°C day/night, at which point we did not detect more germination) (Fig.2). A 12/12 hr light/dark photoperiod was provided throughout by fluorescent tubes (ca. 50 µmol m-2 s-1). The entire experiment lasted 26 weeks.

Germination, defined as radicle emergence by >1 mm, was scored every three days, and germinated seeds and seedlings were removed from Petri dishes.

Following termination of tests, any remaining ungerminated seeds were dissected with a scalpel under a microscope. Seeds with firm, fresh endosperm and embryo were deemed viable and seeds empty of an embryo were deducted from the total when calculating percentage germination for each collection.