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Recording *Saussurea gnaphalodes* at 6,221 m asl.



Photo: GBOWS

Seed collecting on Mount Everest

Plants that grow at high elevations and in polar regions are usually some of the most sensitive to the impacts of climate change.

Yongjie GUO (Germplasm Bank of Wild Species, Kunming Institute of Botany, Chinese Academy of Sciences)

Mount Everest, the highest summit on Earth, is a hotspot for both mountaineers and scientists. To our current knowledge, human beings began to climb Mount Everest in 1921, and climbers discovered plant distributions in extreme altitude areas. One such climber was Eric Shipton, a famous British alpinist who collected *Saussurea*

gnaphalodes and *Lepidostemon everestianus* at the East Rongbuk Glacier of Mount Everest at ca. 6,400 metres above sea level (m asl) in 1935 – the highest elevation collection record for a seed plant in the world to date. These rare, high-elevation plants could be threatened by popular climbing activities, as well as by climate change.

In order to understand and monitor alpine plants at risk from climate change and human activities at extreme high elevation, collectors from the Germplasm Bank of Wild Species (GBOWS), Kunming Institute of Botany, Chinese Academy of Sciences conducted seed collecting expeditions to Mount Everest in 2021. Five seed plant species were found around 6,200 m asl,



Solms-laubachia himalayensis flourishing at 6,212 m asl.

and mature seeds of *Solms-laubachia himalayensis* and *Saussurea gnaphalodes* were collected and stored at GBOWS. The initial germination of *Solms-laubachia himalayensis* showed a 100% germination rate, and after eight months of cold storage at -20°C, the seed germination rate remains high. Researchers will continue to work on these collections to understand the biological mechanisms involved in adapting to the extreme adverse environment.



Seeds of *Solms-laubachia himalayensis*.



Seed germination of *Solms-laubachia himalayensis*.

Photos: GBOWS

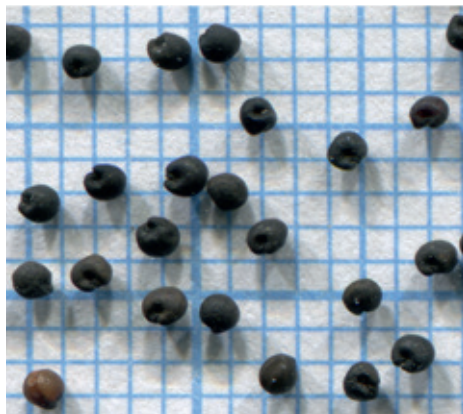


The swan song for Greek endemic *Saponaria jagelii*?

Costas A. Thanos, Nick Katsikis, Spyridon Oikonomidis, Sofoklis Mouratidis, Aikaterina L. Stefi (NKUA Seed Bank), Ian Willey & Aisyah Faruk (RBG Kew)

Let's hope this article's title isn't true! Nonetheless, the Critically Endangered *Saponaria jagelii* (included in the Top 50 Mediterranean Island Plants update) is a narrow endemic annual found only on the coastal dunes (EU habitat 2120 – 'shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)') of Elafonisos island (within the NATURA 2000 site GR2540002, just off the south-eastern coast of the Peloponnese), which are losing ground dramatically.

The species occurrence range was studied in early April 2022 and the plant is currently located at only one sandy beach in western Elafonisos, although a 2019 research report documented its occurrence in two nearby beaches. In our present survey we could not find any *S. jagelii* individuals on the second beach



Saponaria jagelii seeds, scanned on millimetre paper.



Flower of *Saponaria jagelii*.



The NKUA field team on site.

and the entire population of less than 2,000 plants is now confined to a single area of ca. 2,000 m². Fortunately, our team collected 2,000 seeds (May 25, 2022) for long-term storage at both the NKUA and the Millennium Seed Bank, as part of a satellite assignment to the 'Conserving the Flora of the Balkans: Native Plants of Greece' project.

Despite the short life cycle of the species occurring outside of the main tourist season (germination in late autumn; flowering in early spring, March to April; and setting fruit and drying by May to June), touristic development is the main threat for the species. Several building permits for summer houses have recently been issued, along the border of the population, while 10–20% of the individual plants are

growing within private property. Moreover, the introduction of alien, invasive species (*Aptenia cordifolia* and *Carpobrotus edulis*) from neighbouring gardens adds extra pressure to the survival of the species.



A *Saponaria jagelii* seedling at the cotyledon stage.



Map of Greece (left bottom), focusing in on the Peloponnese (centre, yellow). The highlighted area of the Peloponnese is Elafonisos island.

References

- Pasta, S., Perez-Graber, A., Fazan, L. & Montmollin, B. de (Eds) (2017) The Top 50 Mediterranean Island Plants UPDATE 2017. IUCN/SSC/Mediterranean Plant Specialist Group. Neuchâtel (Switzerland). E-book and online. 141 pp. top50.iucn-mpsg.org
- Kougoumoutzis, K. (2019) Species on the brink of extinction (in Greek). Research Report of the first year of the Project SoBEx. Athens (Greece). Pdf online, 68 pp. <https://docslib.org/doc/10789591/species-on-the-brink-of-extinction>