

# Seeding the future? 'Ark' preserves rare, threatened plants

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An ordinary-looking freezer in a sturdy cinderblock shed at a suburban Boston botanical garden holds what might be New England's most important seed catalog.

Inside the freezer in Framingham are tightly sealed packages containing an estimated 6 million seeds from hundreds of plant species, bearing obscure or hard-to-pronounce names like *potentilla robbinsiana*. They are rare varieties of plant life native to the region—in some cases found nowhere else in the world—and are in grave danger of vanishing from the landscape.

The "[seed](#) ark," as it's playfully dubbed by the New England Wild Flower Society, is not unlike Noah's biblical vessel in its quest to preserve from calamity a rich diversity of life. In this case it's not animals marching two by two but vegetation threatened by any number of things, including natural disasters, climate change, unchecked development or simply being trampled afoot by unsuspecting hikers.

The society's 2015 survey of more than 3,500 known plant species determined that 22 percent were rare, in decline, endangered or perhaps already extinct.

"Plants have always been second-class citizens when it comes to conservation," said Bill Brumback, the organization's conservation director who for three decades has supervised the collection and storage of rare seeds in New England. "Animals are much more, shall we say,

charismatic. Plants don't get the same protections under the federal endangered species act."

Teams of staffers and volunteers scour some of the region's most remote areas in search of [plants](#) like Jesup's milk-vetch, a species so rare it grows in just three tiny clusters along the Connecticut River.

Once gathered, seeds are first brought to a facility in western Massachusetts and dried to 20 to 30 percent of relative humidity, said Brumback, explaining that the drying process assures that liquid inside cells won't expand and crack when exposed to low temperatures.

The seeds are then brought to Framingham, sealed in foil envelopes and frozen at -20 degrees Celsius (-4 degrees Fahrenheit), keeping them viable for decades or even centuries, depending on the individual species.

"If we have the seed bank we have the genetic material to restore (the plants) and put them back on the landscape," as a hedge against extinction, said Debbi Edelstein, the society's executive director.

The "ark" is housed in a structure built to withstand many ravages of time. But already some seeds have been pulled from cold storage to help repopulate dying species.

An oft-cited example is *potentilla robbinsiana*, also known as Robbins' cinquefoil, a small yellow-flowered plant found only near the top of New Hampshire's Mount Washington, New England's highest peak. When hiking trails threatened to destroy the plant, the society worked with Appalachian Mountain Club and other groups on a plan that restored Robbins' cinquefoil to the point it no longer was considered an endangered species.

Rare seed programs aren't unique to New England. Similar seed banks exist in several other U.S. locations, including the Chicago Botanic Garden and the Rancho Santa Ana Botanic Garden in Claremont, California.

Conservation efforts have assumed new urgency as scientists worry about the uncertain impacts of global [climate change](#), Edelstein said. The United Nations Convention on Biological Diversity, she said, has established an ambitious goal of banking 75 percent of the world's rare seeds by 2020.

In the U.S., private conservation groups are shouldering the burden in part because the U.S. is the only major nation that never ratified the little-known 1992 treaty, though American officials over the years have voiced support for its objectives.

Preserving plant life is a worthy undertaking on many levels, Brumback said. Even the rarest of plants can be vital to ecosystems. Some could yet yield medicines or other products useful to mankind.

"These are species on Earth that deserve to live as much as we do," Brumback said.

He added: "If you lost one plant [species](#) is the world going to stop? No it's not. But if you lose enough [plant species](#) and enough biological diversity, we don't know what the effects are going to be."

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