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Washington Rare Plant Care & Conservation - University of Washington Botanic Gardens
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2006 was a record-breaking year for the Miller Seed Vault

Rare Care added 14 new species to the Miller Seed Vault in 2006, the highest number ever added in one year. Rare Care volunteers contributed 11 collections. The Washington Natural Heritage Program (WNHP) provided collections of 2 federally listed species, *Lomatium bradshawii* and *Sidalcea nelsoniana.*

We also added *Astragalus sinuatus* to the vault for the first time, obtaining seeds from UW graduate student Julie Combs. We will clean and accession more seeds of this very rare endemic in the upcoming year to increase the number of populations represented in the seed vault.

These collections take us one step closer to meeting our goal of holding seeds of the 350+ rare plant species in the state (see article below). We would not be able to reach this goal without the hard work of our volunteers and strong partnerships with WNHP and other state and federal agencies.

We added 530 accessions to the Miller Seed Vault in 2006, exceeding our previous record by nearly 30 percent. (An accession consists of seeds from one maternal plant.) Special thanks to our seed vault volunteers for all their hard work cleaning and processing over 15,000 seeds one by one!

How are seed collections prioritized for *ex situ* conservation?

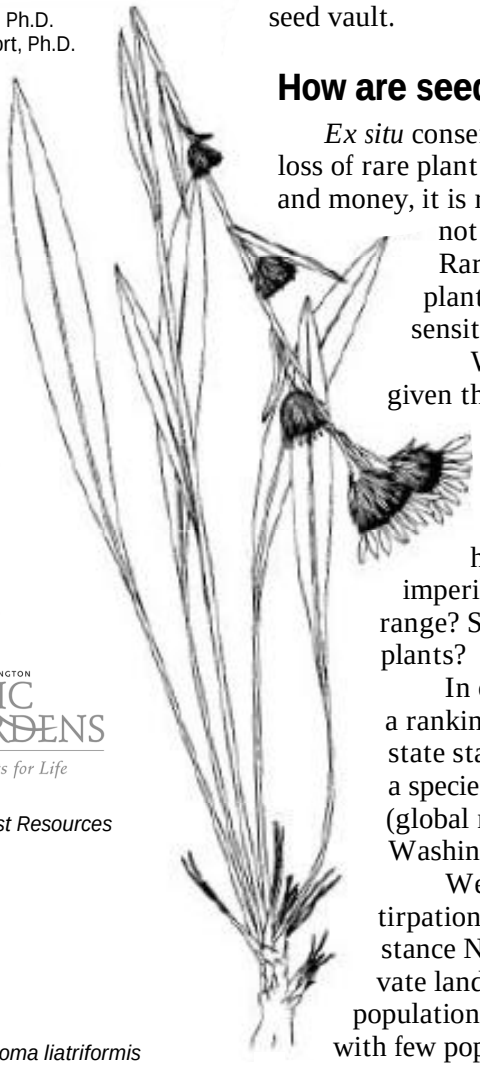
Ex situ conservation of seeds provides a cost effective tool to ensure against the loss of rare plant populations. Because it requires a relatively low investment of time and money, it is recommended for all rare plants vulnerable to decline or extirpation, not just plants listed under the Endangered Species Act. Accordingly, Rare Care's goal for the Miller Seed Vault is to store seeds of the 350+ plants of the state that are considered to be endangered, threatened or sensitive to decline.

With that many rare plants, how do we prioritize seed collections given the limited resources available for conservation? To address this question, Rare Care is developing a decision matrix to help guide seed collection activities over the next decade.

What factors do we consider when prioritizing seed collections? Perhaps the most obvious factor is to prioritize the most highly imperiled species. But what about species that are highly imperiled in our state, but reasonably secure throughout the rest of their range? Should we place more priority on collecting seeds from endemic plants?

In our decision matrix, we look at each of these factors and develop a ranking system to rate each species. For instance, while we use a species' state status to determine how imperiled it is in this state, we also consider a species' global rank to assess whether it is rare throughout its range (global ranks of G1, G2 or G3), or whether it is considered secure outside Washington State (global ranks of G4 or G5).

We also attempt to evaluate whether a species faces a high risk of extirpation. Species occurring on lands that afford greater protection, for instance Natural Area Preserves, are less likely to be lost than species on private lands or lands with multiple uses. Likewise, species with a number of populations are generally more secure and therefore rank lower than species with few populations. Finally we assess practical considerations such as whether the species' seeds tolerate desiccation for long-term storage *(continued on page 2)*



Pyrrocoma liatriformis
(formerly *Haplopappus liatriformis)*

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THE CASE OF *CAREX HETERONEURA*: Rare Care helps with taxonomy investigations

Carex species are notoriously difficult to identify, especially in the field. Botanists in the Okanogan-Wenatchee National Forests (OWNF) noticed that a rare sedge, *C. heteroneura*, presented a very tricky field ID problem, because its features closely overlapped with those of *C. atrosquama*, another sedge occuring in the same area. To verify which species they had on the forest, they decided to collect voucher specimens for sedge experts to compare and identify.

In order to obtain vouchers from a wider variety of populations, OWNF Botanist Therese Ohlson asked Rare Care to collect from several *C. heteroneura* populations. Vouchers collected by Rare Care volunteer Mike Foster, Ohlson and others were then reviewed by *Carex* expert Peter Zika, who identified two specimens as *C. atrosquama* and the rest as another closely related species, *C. epapillosa*. In fact, it is now widely believed that *C. heteroneura* does not occur in Washington at all.

In 2007, after reviewing all the evidence and consulting with several botanists, the Natural Heritage Program removed *C. heteroneura* from the sensitive species list and added *C. epapillosa* in its place.

Rare Care continues to assist botanists with these tricky taxonomic questions. In 2006, Rare Care volunteers Dan Paquette and Bob Jackson collected vouchers from *Salix tweedyi* populations in the Okanogan region, and this year volunteers will help collect seeds and vouchers from a pink-flowered *Agoseris* species. Stay tuned for the results of these interesting investigations.

These *Carex epapillosa* specimens (right, and below left), collected by Rare Care volunteer Mike Foster, are stored in the UW Burke Museum Herbarium.

Many factors determine which populations are targeted

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and whether there are already viable *ex situ* collections in secure facilities.

Once species are prioritized, we prioritize populations. Ideally, we will collect seeds from many populations, but where do we start? High priority is given to populations facing imminent threat and those not adequately protected under current land use practices. We also want to make sure we have a good representation of the genetic diversity of the species.

To do this, we prioritize robust populations in the core of the species' range to capture genetic adaptations that have allowed the species to be successful. High priority is also placed on seeds from outlying populations and populations in unusual habitats to capture unique adaptations. But we must balance these goals with the availability of seed and the possibility of getting permission from the landowner to collect seeds — two additional factors in our prioritization process.

Clearly, it takes a lot of work to develop a well-conceived prioritization that appropriately weighs all the factors. Even then we often don't have all the needed information on every population and use educated guesses based on what we do know and a review of published literature. However, we believe this holistic approach will allow us to effectively focus our efforts on species and populations where *ex situ* conservation can provide the most benefit.

Thank you, donors!

These donors provided plants, high-quality garden tools and gift certificates for Rare Care's volunteer recognition event last year.

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NEW MONITORING INITIATIVES IN 2007: Vouchers document populations

Rare Care is working with Mt. Baker-Snoqualmie National Forest botanists to collect vouchers for sensitive plants on the forest. Vouchers document the presence of rare species and provide specimens for research and investigation of taxonomic questions. Rare Care volunteers will collect vouchers during monitoring trips. Vouchers will be deposited in the UW Burke Museum Herbarium.

Rare Care organizes monitoring weekend

Rare Care's first ever monitoring weekend will take place June 16-17 in Yakima Canyon. Volunteers and staff will survey all known populations of *Erigeron basalticus*, a candidate species for listing under the federal Endangered Species Act. US Fish and Wildlife biologists will use the data to review and update the listing status of the species.

Monitoring expands to national parks

The National Park Service, Natural Heritage Program and Rare Care are working out the details of expanding our award-winning volunteer monitoring program to national parks. We look forward to sending volunteers into North Cascades National Park in 2008.

Rare Care is grateful for generous support from the Miller Charitable Foundation, National Fish and Wildlife Foundation, Seattle Garden Club, The Bullitt Foundation, the Hugh and Jane Ferguson Foundation, The Mountaineers Foundation, private organizations and individual donors.