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Over a two year period, Rare Care will collect seeds from rare plants in Olympic National Park, Mt Rainier National Park, and North Cascades National Park. In 2007, successful collections were made of Cotton's milkvetch (Astragalus cottonii) from Olympic National Park, green keeled cotton-grass (Eriophorum viridicarinatum) from North Cascades National Park, and Mt. Rainier lousewort (Pedicularis rainierensis) and obscure Indian paintbrush (Castilleja cryptantha) from Mt. Rainier National Park. Additional collections will be made in the 2008 season.

Ex situ conservation responds to global climate change

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FEATURE PLANT:
How do you distinguish **Erigeron basalticus**?

Although there are nearly 200 species of *Erigeron* worldwide, there are only two other species in Washington that have lobed leaves like *Erigeron basalticus*, making this a relatively easy daisy to identify. Both *E. compositus* and *E. salishii* have tri-lobed leaves like *E. basalticus*, however, neither species occurs in *E. basalticus* habitat. *E. basalticus* also differs from these two species in that the flowers are born on leafy stems, whereas most leaves of *E. compositus* and *E. salishii* are basal and the flowers are born on naked stems or stems with a few, reduced leaves.

Rare Care counts all known daisy populations in one weekend

(continued from page 1)

white-flowered, mat-forming plant, such as roundleaf alumroot (*Heuchera cylindrica*), which also grow on the cliffs. Also, it was difficult to keep track of which plants have already been counted as a surveyor scanned a cliff with binoculars. This was particularly true at sites with large populations.

Rare Care volunteers were up for tackling these challenges. On the first day, they convened at one of the more accessible sites to study the plant through binoculars and spotting scopes. Surveyors had an opportunity to study the plant up close at the base of a cliff. They also practiced using a sampling technique to estimate the population size for sites that had too many plants to count individually. This technique involved counting a subset of the plants in a given number of binocular views, and then averaging the count over the area of the cliff where the plants occurred.

Rare Care staff and 13 volunteers visited 10 sites in 2 days, using foot, car and boat to complete the surveys. In addition to estimating population size, they recorded information on the daisy’s habitat characteristics, plant species growing with them, invasive plants competing with the daisies, and growth stages the plants were in (*phenology*)

Data collected during the weekend suggest that the basalt daisy population sizes were generally comparable or greater to previous estimates. Five sites contained between 1,800 and 5,000 individuals; two of these sites had more than twice the number previously estimated. Two sites held less than 30 individuals, which represented a decline since the 2000 survey. Both of these populations have shown large fluctuations in size over the 19 years for which data are available. Finally, at the two new sites, Rare Care documented population sizes of 166 and 325 individuals.

An intensive survey effort such as this provides a detailed picture of the status of the daisy’s populations at one moment in time. What about the future health of these populations? Rare Care’s surveys did not reveal obvious evidence of imminent threat to the basalt daisy. Because this plant grows on cliffs, it is not vulnerable to ground disturbances such as grazing or recreational use. Few plants can survive the stressful conditions of its habitat, so competition by invasive species does not appear to be a major threat. Finally, there appears to be very little development occurring adjacent to the cliffs, and many of the sites are located on state or federal lands. Future development could potentially be a threat if herbicides are applied to land where groundwater sources originate, or if irrigation works are built that affect the amount of groundwater seeping into the ground and through the cliffs.

All of these factors will be considered as the US Fish and Wildlife Service evaluates whether to list this plant under the Endangered Species Act. A Candidate Notice of Review currently being drafted by the USFWS Wenatchee office is expected in the near future.

View the photographs in this newsletter in color at [http://courses.washington.edu/rarecare/Links.htm](http://courses.washington.edu/rarecare/Links.htm).
Seeds of Success update

See a world in the smallest of seeds, and heaven in a wild flower, hold infinity in the palm of your hand, and eternity in an hour. —William Blake (paraphrase by Ellen Kuhlmann)

Seeds of Success, the US arm of the Kew Millennium Seedbank Project, has been moving full steam ahead this year (for background on this program, see article in Washington Native Plant Society’s Douglasia, Winter 2007, vol. 31 #1). Rare Care was fortunate to have Ellen Kuhlmann lead this project again this year. Collections in 2007 ranged from seeds so small they resemble flea feces (that of alumroot, *Heuchera micrantha*) to relatively large seeds such as those of bracted lousewort (*Pedicularis bracteosa*). Volunteer Marie Hitchman remarked that she had never in twenty years of botanizing looked closely at the flowers or fruits of devil’s club (*Oplopanax horridus*) until she participated in the seed collection for this species. She enjoyed the challenge of figuring out how to gather seed without being stuck by the plant’s prickles, and found the red berries to be quite beautiful.

The devil’s club collection was just one of seven collections made for the Millennium Seedbank Project. An additional four collections were made for the US Seed Extractory in Bend, Oregon for use in restoration projects on federal lands.

The collections included several from the south Puget Sound prairies, where favorable spring conditions results in a bumper crop of seeds. Rare Care collected seeds of crown brodiaea (*Brodiaea coronaria*) and western buttercup (*Ranunculus occidentalis*) for the Millennium Seed Bank and seeds of the composite cutleaf silver-puffs (*Microseris laciniata*) for the Bend Seed Extractory.

The Seeds of Success team is proud to be contributing local seed to this worldwide project, and looks forward to another collection season in 2008. If you would like to volunteer for the Seeds of Success project in 2008, contact Rare Care at rarecare@u.washington.edu.

Rare Care is recruiting

Who do you know that might make a good rare plant monitor? Transportation and plant ID skills are necessary. Applications are now being accepted for 2008. They’re online at [http://depts.washington.edu/rarecare/RarePlantMonitoring.htm](http://depts.washington.edu/rarecare/RarePlantMonitoring.htm).

No need to wait until 2008 to help with seed cleaning and germination testing, though! Help us prepare this year’s collections for storage in the Miller Seed Vault. For more information, contact Rare Care at 206-616-0780 or rarecare@u.washington.edu.

Rare Care’s sixth annual Celebrating Wildflowers drew new audiences in June. We partnered with Seattle Art Museum for the first time and presented the event at Olympic Sculpture Park. The program included some new activities this year, all designed to increase children’s appreciation of the plants around them. Above left, a young visitor paints with plants, exploring the colors of Oregon grape, western redcedar bark, carrots, berries and beets. Above right, the pollinator game is a perennial favorite. (All photos this page by Jennifer Youngman.)
**Deep Thanks to All Who Have Contributed Between July 1, 2006, and June 30, 2007**

Rare Care is very grateful for the financial support provided by our generous donors. Rare Care relies on grants and donations to fund all of our program activities. We are also grateful for the support provided by talented and dedicated corps of volunteers who gave 3,843 hours of their time.

**Regional endemics may be most at risk**

(continued from page 1)

Narrowly distributed species, including regional endemic plants, may be more impacted by global climate change compared to more widely distributed species. They often have specific environmental and ecological requirements that hinder them from expanding their range beyond their optimal habitat. This limitation may not allow these endemic species to shift their distribution or otherwise adapt to the changing climatic conditions in the relatively short time frame over which global climate change is predicted to occur. In addition, sensitive and endemic plant species with small population sizes are more at risk of extirpation. Small populations often have relatively low genetic diversity that hinders these species from successfully adapting to changing environmental conditions.

**Rare Care Forum:**

2008 focus species announced, Toonen and Zamora recognized

At this fall’s Volunteer Forums, Rare Care recognized David Zamora of Wenatchee and Ron Toonen of Seattle for their consistently outstanding volunteer contributions over a period of several years. This year alone, Ron searched for and/or collected data on Carex epapillosa in Whatcom County, Montia diffusa in Skagit County, Salix maccalliana in Oka-nogan County, Howellia aquatilis in Spokane County, and Juncus kelloggii and Orobanche californica sp. grayana in Klickitat County. David monitored populations of Agoseris elata on national forest land, Cryptantha leucophaea on state fish and wildlife land, and Hackelia hispida var. disjuncta on US Bureau of Land Management property, and he has contributed outstanding images to Rare Care’s plant photo collection. Both Ron and David are trained seed collectors, and both offered to mentor new volunteers this year.

During end-of-season forums in three locations — Seattle, Thorp and Spokane — volunteers were treated to a special look at species Rare Care will focus on for monitoring in 2008. Designating “focus species” is a new approach to improve our ability to assess species status. It results from a monitoring analysis (2001-2005) prepared by Program Manager Wendy Gibble and presented during the forums.

Also during the forums, volunteers broke into small discussion groups to provide feedback that will help shape the Rare Care program and the volunteer experience in the years to come.

Sky Nursery in Shoreline provided a very generous in-kind gift for Rare Care’s volunteer recognition.

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