

CHANGING PLANT LIFE

Restoring the Ecosystem with Native Plants

PARK PLANT PROPAGATION staff and volunteers head into the North Cascades National Park to gather plant cuttings and seeds to be used for restoration. Then, they take the plants back to the park nursery in Marblemount.

North Cascades National Park Service Complex has been working to ameliorate the effects of human impacts, such as foot traffic on vegetation, for more than 30 years. Dedicated plant propagation staff and volunteers restore native plant cover in bare, over-used campsites and trails with plantings they grow in the nursery. Park staff and volunteers also remove invasive, non-native plants, which can out compete or choke-out native plants.

The park's goal is to restore plant life to the way it would be without the impact of foot traffic or non-native species, said Michael Brondi, who has worked in the park complex plant propagation program for 10 years.

"We work in areas disturbed by human actions," Brondi said. "Our work includes teaching people to move in the park while creating minimal disturbance to the plant community."

Minimize Your Impact

- Avoid restoration sites—sites that are set off with stakes, signs, shade cloth or aspen bark shavings.
- Stay on the trail, and try not to sidestep mud or snow, cut switchbacks or widen trails.
- When resting off the trail, sit on a rock or bare ground.
- Camp only in designated areas.
- Volunteer. Contact Michael.Brondi@nps.gov, or call 360.854-7275.

Restoring Vegetation

The Park Complex is home to more than 1,700 known plant species—a number that keeps growing as botanists discover more species through species inventory, said park botanist Mignonne Bivin, who manages all the vegetation projects in the park.

Revegetation begins each fall when seeds and cuttings are collected. In the nursery each plant is tagged with its collection location so that it can be returned to the same area. The in-park rule is that plants must be replanted as close to where they were collected and not more than one half mile from where they were found. "Particularly in the wilderness, we are very careful to avoid taking action if it could cause another problem. . .we are careful to reduce the risk of bringing in pests and non-natives," Brondi said. It is a Park Service policy to retain the genetic integrity of native plant communities.

This year the nursery has 90 different species, Brondi said. The nursery caretakers try to mimic the natural soil conditions by going onsite to gather soil, and litter, which they incorporate into the potting soil.

Limited funding is one of the impediments to revegetation projects, Brondi said. Assistance from volunteer and friends groups is critical for success.

Clearing out Invasive Plants

When non-native plants, such as reed canarygrass at Ross Lake, are allowed to persist, often, native species can be replaced by a monoculture of non-native species, thus reducing species diversity.



Native plant steward working on a revegetation project in the park

So, park botanists have to focus not only on replanting, but also on removing plants to ensure the survival of native plants. To combat the reed canarygrass in Ross Lake, they employ herbicides as well as innovative approaches, such as the use of woody debris to create shade and replenish nutrient-rich wetlands.

"One reason we're concerned [about the canarygrass] is because it could spread into more pristine areas like Big and Little Beaver Creeks," Brondi said.

In 2004, the park crew used wood to mimic naturally occurring wetlands and riparian areas around Ross Lake. The new areas allowed a diversity of native plant species to thrive, and helped shade out the reed canarygrass.

Global climate change will have a dramatic effect in this park, which is greatly affected by snow pack. "Parks offer an area that is less humanly altered than less protected lands, so it should allow us to see direct effects of climate change on plant life," Bivin said. "It benefits the public to have these places to study."

Plant Studies

- Forest monitoring and vegetation mapping programs will continue in cooperation with Mount Rainier and Olympic National Parks.

- As botanical forays continue in 2007, more new plant species may be discovered in North Cascades.

- Researchers from North Cascades and Mount Rainier National Parks will continue studies on whitebark pine populations during the summer of 2007 to determine their current status.

- The North Cascades mountain monkeyflower will be studied to see how the flower adapts to high elevation environments and to find out the evolutionary history of the species.

- Cheatgrass mapping in two areas of the park--the Stehekin area and east side of Ross Lake--will help control this fire-adapted, non-native species.

- Alpine and sub-alpine plant monitoring protocols will be developed for the North Coast and Cascades Research Learning Network.



How Climate Change Impacts Butterflies and Red Paintbrush

People hear about the changing climate's effects on glaciers and polar bears, but rarely does one hear about climate's effects on the smaller plants and creatures. But, as researchers understand, changes that impact one species will in turn affect another species and so on. A recent study by Western Washington University student Susan Imholt shows the interdependency of species through its investigation into the effects of climate change on one of the North Cascade's smaller species, the Anicia checkerspot butterfly.

Imholt studied the effects of day length, soil moisture, and stream proximity of the

red paintbrush, which is a host plant of the butterfly, at two sites in the park. She found that second to day length, soil moisture served a key role in plant growth rates. Imholt discovered the growing season length for the red paintbrush in moist soils is 9.5 days longer than those in dry soils. So, as climate warms and soil becomes drier, the red paintbrush will experience shorter growing periods, which will in turn affect the Anicia checkerspot, who thrive on the plant. This small chain reaction shows how interconnected plant species and nature are, and how important it is for park caretakers and visitors to protect the area.

How Climate Change May Be Impacting High Elevation Fungi

As global temperatures rise, studies indicate that alpine floral communities are drastically changing and that certain alpine floral species are disappearing. These changes may be impacting the fungal species in the North Cascades as well--a study that University of Washington PhD candidate Amy Honan will begin, as part of a cooperative study with the North Coast and Cascades Research Learning Network.

Honan's study will be the first to research the response of alpine fungi to climate change. The study will establish baseline data on soil fungi from alpine and subalpine areas at three sites in the North Cascades.

A total of 72 soil samples will be drawn by the end of October 2007. The study will examine the roots and DNA of the fungi, and will inventory and photograph each specimen.

Other Park Fungi Studies

Emeritus Professor James Trappe of the University of Oregon began work in April 2005 on an ongoing study to inventory all the fungi in the Stehekin watershed, which is unique for its numerous fungi species. As of 2006, fungi inventories have yielded 480 collections of macrofungi in the Stehekin watershed, of which three species are new to science and two are extremely rare.