National Park
Montana

National Park Service
U.S. Department of the Interior

Glacier
Native Plant Nursery

Glacier's Native Plant Restoration Program

The Native Plant Nursery is an integral part of Glacier's Native Plant Restoration Program. Glacier's restoration program combines the expertise of many individuals including the Park Ecologist, Restoration Biologist, Nursery staff, Revegetation crew, Monitors, and the Integrated Pest Management crew.

Native plant restoration began in Glacier during the late 1970's with revegetation projects at Logan Pass and backcountry campgrounds as well as exotic plant control park-wide. The program dramatically expanded in 1986 when the park entered into partnership with the Federal Lands Highway Administration to repair the aging Going-to-the-Sun Road.

Road rehabilitation, as well as construction and heavy visitor use, results in disturbance to the vegetation and soil. The consequences include bare ground, soil erosion, invasion by exotic plants, displacement of animals, and reduced aesthetic value and biological integrity.

Over the past 12 years, Glacier has developed a comprehensive restoration program to restore structure, function, and plant diversity to these impacted areas. Indigenous plant material is used to maintain genetic integrity. Native soils and plants are salvaged and stored for replanting whenever possible. Seeds and cuttings are collected annually and propagated in the park's native plant nursery for replanting. Completed projects are monitored to evaluate the effectiveness of revegetation efforts. In addition to road reconstuction, other projects include repair of a wide range of vegetation and soil impacts in campgrounds, scenic vistas, and developed areas in Glacier National Park.

Revegetation project at Logan Pass

Glacier's Native Plant Nursery

The nursery in Glacier was built in 1987. Since then, the nursery has increased in size and production capabilities. The nursery supplies plants for roadside rehabilitation and a variety of other projects, throughout the park, where there have been construction or other human-caused disturbances.

Two hundred and thirty four native plant species, representing habitats found throughout the park, have been propagated. These species include conifers, deciduous trees, shrubs, wildflowers, grasses, sedges, rushes, and ferns. The nursery grows up to 20,000 new plants each season. At the height of the summer, the nursery may contain as many as 40,000 plants. The facility includes a greenhouse, a shade house, propagation beds, raised beds, holding and storage areas, an office, composting bins, media storage bins, and a small subalpine rock garden.

The nursery is a seasonal operation, which is opened in April and winterized in late October. Winterizing requires plants be laid down like dominoes, before a plastic cover is placed over them. Depending on the species, a layer of foam may be used for added protection as well. A good layer of snow is required to keep the insulation effects working. The insulation layer helps keep the plants frozen through the winter. This prevents loss of plants due to thawing and refreezing.

Fir seedlings

Native Plant Nursery at Park Headquarters in West Glacier

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Goals and Objectives

The Native Plant Nursery has five main goals & objectives:

- To grow plant species native to Glacier National Park.
- To maintain genetic integrity by collecting the seeds and other plant materials from specific locations within the park and returning them back to those same locations.
- To maintain biodiversity of rehabilitated sites by providing a mix of species and sizes for a more natural looking and acting habitat.
- To continually improve and learn about the methods and techniques used in native plant propagation. This is often done through experimentation.
- To educate and share information with the public and other agencies through use of the Internet, tours, publications, cooperative agreements, and school programs.

Just for You

Public Tours
Check the *Nature with a Naturalist* publication or call 406-888-7835 for a schedule of summer tours.

Environmental Education
A curriculum based program STARS (Students Taking Action in Restoration and Stewardship) is offered to grades K-12. Students get a hands-on education in this program that focuses on restoration concepts and native plants while promoting increased knowledge and stewardship of Glacier National Park.

Volunteer Days
Learn about native plants and give back to the park at the same time. Once a week, the nursery is open for anyone who wants to "get his or her hands in the dirt."

For More Information Contact:
Nursery Manager
406-888-7835

Supervisory Horticulturist
406-888-7817

Subalpine fir trees grown from seed (left).
Root cuttings are used to grow aspen trees (above).

Propagation Techniques

Plants in the nursery are grown either from seed or from the cuttings or division of live plants. The plant materials used for propagation are collected within the park at specific project locations. Each species of plant has a unique set of growing conditions and processes that must be met in order to obtain successful propagation.

Seed propagation requires simulating the natural environment in order to trigger germination. Scarification (the process of opening the seed coat) is required for some seeds that have thick seed coats. These seed coats can be opened by mechanical methods, chemical methods, or by the application of heat. Mechanical methods include scratching or nicking the seed coat with a file or sandpaper. Chemical methods involve treating the seeds with an acid to simulate a seed passing through an animal's digestive system. Heat application involves placing seeds, from plant species that are dependent on fire, in hot water or in an oven.

Once the seeds are scarified, they are placed in water to allow the seeds to imbibe or soak up water. The final step in the process of germination is that of stratification. Stratification involves putting the seeds through a series of warm and cold periods to simulate the natural seasons. This simulation triggers the seeds to germinate and begin sprouting.

Vegetative propagation can often result in plants being ready for replanting quicker than seed grown plants. These methods, include planting cuttings from plant rhizomes, roots, and stems or dividing and replanting plants.

The most common type of vegetative propagation, used in the nursery, is the collection of cuttings from the stems of woody plants. Stems are trimmed to contain two leaf nodes (and a minimal amount of leafy material), dipped in a fungicide, treated with a rooting hormone, and then placed in propagation beds. The beds contain a heated, well-draining media, and misters that come on intermittently. The cuttings remain in the propagation bed until they have developed enough roots to be transplanted into pots. This will take 4 to 8 weeks depending on the condition and species of the cuttings. Cuttings have also been done with herbaceous plants such as the twinflower.

Another method of vegetative propagation is the division of plants. This is done with plants, such as wild strawberries, which produce runners that easily spread to produce more plants. Plants are dug up at or near the site of rehabilitation, taken back to the nursery to be divided, and placed into a raised planting bed. Within one growing season, the raised bed can be filled with strawberries ready for replanting.

All of the propagation methods used at the Native Plant Nursery can be found on the Internet at: http://nativeplants.for.uidaho.edu/

Propagation beds for rooting cuttings

You Can Help

You can help the restoration efforts by reducing the amount of impact you have on the vegetation while visiting the park. You may see signs located at various locations throughout the park identifying areas of restoration.

Please remain on the trails and only use designated camp sites. Enjoy the flowers, but leave them so their seeds can spread.

Partnerships

The **Natural Resources Conservation Service** in Bridger, Montana, provides assistance with technical advice, seed storage, seed cleaning, seed increaser crops, and propagation research. **Montana Conservation Corps** crews work with the plant restoration program on projects including revegetation, nursery maintenance, and seed collecting. The **Cooperative Greenhouses** at the Blackfeet Community College, Columbia Falls High School, and Kalispell Jr. High, provide opportunities for students to grow plants from seeds collected in Glacier as part of the park's environmental education program. Park staff teach plant propagation and habitat restoration for the environmental science curriculum at **Salish Kootenai College**. The **U. S. Forest Service** has grown white bark pine seedlings from Glacier seed at their Coeur'd Alene Tree Nursery. The **Flathead National Forest** receives planning and plant production assistance from park staff. The **University of Idaho**, in partnership with Glacier National Park and the U. S. Forest Service, created a native plant propagation protocol website. http://nativeplants.for.uidaho.edu/

Students from **Local School Districts,** at all grade levels, participate in the park's environmental education program. Students assist in the revegetation of campgrounds and other disturbed sites, nursery maintenance, plant care, seed collecting, and monitoring.

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