



MENU ≡

[Home \(https://rrc.moiagroup.dev\)](https://rrc.moiagroup.dev) > [Projects \(/restoration-projects/\)](/restoration-projects/)

USA: Washington: Paradise Meadow Restoration, Mount Rainier

Overview

The Paradise meadows, on the south slope of Mount Rainier in Washington State, have been subject to heavy recreational use since the early 1900s. Easily accessed from the main road through Mount Rainier National Park, Paradise hosts more than one million visitors per year and is the most frequented site in the park. The heavy volume of visitors, and the myriad impacts that result therefrom, has left many areas degraded and threatens the overall integrity of the ecosystem. In 1986, the National Park Service initiated a long-term restoration project aimed at rehabilitating and revegetating 913 impacted areas within the meadows. To date, approximately 10% of the targeted sites have been restored, and an education program has been launched in an attempt to raise public awareness about the fragility of the ecosystem and to encourage more responsible, conscientious use of park resources.

Quick Facts

Project Location:

Paradise Meadow, Mount Rainier, 46.8799663, -121.72690940000001

Geographic Region:

North America

Country or Territory:

United States of America

Biome:

Grassland/Savanna

Ecosystem:

Montane Grasslands & Shrublands

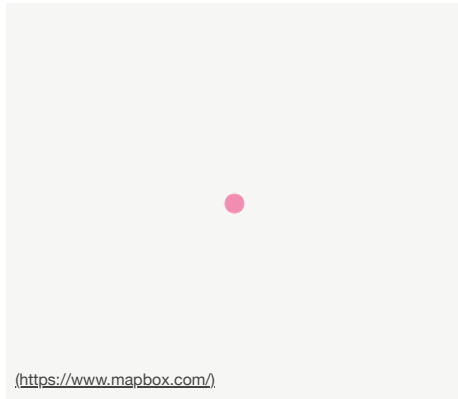
Area being restored:

12 acres

Project Lead:
National Park Service

Organization Type:
Governmental Body

Location



© Mapbox (<https://www.mapbox.com/about/maps/>) © OpenStreetMap (<https://www.openstreetmap.org/about/>)

TIMEFRAME

Project Stage:
Implementation

Start Date:
1986-07-27

End Date:
1986-07-27

DEFINING THE PROBLEM

Primary Causes of Degradation

Urbanization, Transportation & Industry

Degradation Description

Many of the anthropogenic impacts visible at Paradise Meadows have resulted from activities that are no longer permitted: a tent camp (1890-1930's), horse concession (1908-1965), golf course (1931), and ski concession (1934-1975). Horse travel resulted in trails 2-4 m wide and up to 0.6 m deep. Tent platforms and roads from the pre-existing tent camp are vegetated but still remain below grade and are easily recognized by topographic or vegetation differences from adjacent areas.

Although these historic causes of degradation have been allayed, recreational activities continue to have a significant impact, as Paradise Meadows is one of the most popular and accessible areas in Mount Rainier National Park. The area receives over 1.08 million visitors annually, and each day during peak season, thousands of park visitors stop at Paradise to hike, climb, eat, enjoy views of the mountain and tour the visitor center. Off-trail hiking is a major concern, as it has resulted in "social trails" and related erosion throughout several thousand acres of subalpine meadows. With up to 5,000 visits a day, even a small percentage of visitors deviating from established trails and encroaching onto the meadows has a detrimental impact. In fact, recent studies have shown that as few as fifteen people walking the same route through a subalpine meadow can cause noticeable damage to soils and vegetation.

PLANNING AND DESIGN

Reference Ecosystem Description

The subalpine zone is typified by tree "islands" mixed with open meadows. Several creeks and dozens of thin, murmuring rivulets flash down the slopes amid clumps of fir, cedar, and hemlock. Some trees here, referred to as krummholzes, are twisted and stunted due to severe winds and snow. Thus, trees only three feet in height may be centuries old.

By late July, when most of the snow has melted, a rainbow of wildflowers carpets the subalpine meadow – white avalanche lilies (*Erythronium montanum*), yellow marsh marigolds (*Caltha leptosepala*), purple lupine (*Lupinus perennis*), red mountainheath (*Phyllodoce empetrifloris*), partridge foot (*Luetkea pectinata*), magenta paintbrush (*Castilleja parviflora*), and the plumed bear grass (*Xerophyllum tenax*). Glacier lilies (*Erythronium grandiflorum*) and snowbed buttercups (*Ranunculus eschscholtzii*) bloom at the treeline.

Project Goals

To document and repair human-caused damage in the Paradise meadow

Monitoring

The project does not have a monitoring plan.

PROJECT ACTIVITIES

Description of Project Activities:

Restoration of individual impacts involves 6 steps: scarification, stabilization, filling, revegetation, site protection, and monitoring. Many sites have become compacted and must be scarified to enhance root penetration and water percolation. Impacts deeper than 3 cm require stabilization to impede downhill movement of soil. Wood or rock silt bars are installed as subsurface erosion control structures. Following stabilization, the site is filled to the grade of the adjacent undisturbed area. Fill material consists of 3 components: rock, gravel, and topsoil. All topsoil is purchased from outside the park but specifications require it to be approximately the same soil texture, pH, and organic matter content as that of native soils. Soil is steam sterilized to prevent importation of exotic seeds. Once the site has been filled to grade, it is revegetated. Three revegetation techniques are used: seeding, transplanting, and natural revegetation. Most sites in Paradise are seeded and planted rather than allowed to revegetate solely by natural means. All seeds are collected as close to the impacted site as possible in order to maintain the genetic integrity of the site. Transplants are either salvaged from within the impacted site prior to filling or grown in the park's greenhouse from seeds or plant stock collected in close proximity to the impacted site. In 1984, the park's greenhouse program was started in a 312 square-foot greenhouse. Over the next decade, the shade houses were added and plant production was slowly increased from a first year production of 2,700 plants to 20,000 plants in 1994. In 1994, with the addition of a 864 square-foot cold frame, production increased to 34,000 plants. Also, in 1994 we received a private donation for a 1,800 square-foot greenhouse which was completed in 1996. Plant production increased to 40,000 in 1996. We are hoping to increase plant production to 50,000 to 60,000 plants annually while expanding our volunteer planting program.

PROJECT OUTCOMES

Ecological Outcomes Achieved

Eliminate existing threats to the ecosystem:

Since 1986, approximately 90 (of the total 913) impact sites in the Paradise meadows have been stabilized and filled to grade, representing an area of 71,461 square feet out of a total target area of 516,709 square feet. Furthermore, 15 (6,681 square feet) of the 90 restored impact sites have been revegetated to the point that we feel we have completed active revegetation (i.e. planting and seeding).

Socio-Economic & Community Outcomes Achieved

KEY LESSONS LEARNED

Key Lessons Learned

Paradise Meadows is just one component of the Mount Rainier National Park's park-wide restoration program. Because it has the highest visitor use within the park, Paradise exhibits the most severe human impacts and the greatest diversity of impacted sites. This range of degradation, along with the site's accessibility, has made Paradise the model for all other areas currently undergoing, or slated to undergo, restoration. Indeed, Paradise has served as a sort of proving ground where restoration methods and techniques are refined before being employed in projects elsewhere in the park.

LONG-TERM MANAGEMENT

Long-Term Management

Long-term management strategies focus on addressing the causes of degradation. Because the area is so heavily used for recreational purposes, an improved and expanded visitor education program will be crucial to the ultimate success of the restoration. Visitors need to be informed about fragile, high-elevation ecosystems and the potential impacts of human use. Approaches to heightening visitor awareness include: creating informative displays at the visitor center; offering daily slideshow programs on Paradise use and restoration; installing interpretive signs in the meadows; and roping off sensitive areas. A more creative facet of the campaign to educate meadow users involved the distribution of buttons reading: "Don't Be A Meadow Stomper!" It was hoped that these buttons would invest conscientious users with a sense of responsibility and stewardship for the meadows.

FUNDING

Sources and Amounts of Funding

This project receives federal funding through the National Park Service.

LEARN MORE

Other Resources

Mount Rainier National Park
<http://www.nps.gov/mora/>

CONTACTS

Primary Contact

Organizational Contact



<http://ser.org>



<https://www.facebook.com/SocietyforEcologicalRestoration/>