

# SHENANDOAH NATIONAL PARK

## Restoration and Monitoring

National Park Service  
U.S. Department of the Interior

Natural Resource Stewardship and Science  
Mid-Atlantic Network



### Old Rag High-Elevation Plant Restoration: Protecting Habitat and Monitoring Results

The summit of Old Rag mountain is one of the most popular hiking destinations in Shenandoah National Park. On popular weekends, thousands of visitors enjoy the challenging hikes and spectacular views. Unfortunately, many years of heavy visitor use have harmed vegetation and plant habitats on the Old Rag summit. In addition, a number of areas on the summit no longer have a natural appearance, particularly where vegetation and soils are heavily disturbed.

In 2010, park staff and volunteers began a project to protect rare plant habitats on the summit of Old Rag. Key areas were selected for protec-

tion and restoration based on the presence of a rare plant, mountain sandwort (*Minuartia groenlandica*, see back page). Other sites were selected to improve the natural appearance of the area by directing hikers onto established paths away from vegetation.

A variety of techniques are being used to modify visitor behavior and to facilitate protection and recovery at these restoration areas. Techniques include planting native vegetation, and installing signs or synthetic or natural barriers. Planned restoration work was completed in the summer of 2010.

### Highlights

1. Old Rag summit supports high-elevation rare plants.
2. Heavy visitor use of Old Rag has damaged plant habitats.
3. In 2010, visitor access was restricted in certain areas to help reduce trampling of vegetation.
4. To monitor the success of the project, NPS staff measure plant growth and photograph vegetation at each restoration site.
5. Results to date are variable. Where trampling has been reduced, vegetation is recovering. Nevertheless, some sites continue to show impacts.



**2010:** This location was heavily impacted prior to restoration. Initially, rocks and debris were used to limit hiker use of the area.



**2010:** Park staff also installed signs and cable barriers to reduce foot traffic through the site.



**2016:** Six years after restoration, the site is much improved. Plants are flourishing and better soil conditions are developing.



## Old Rag Plant Restoration (continued)....

Since 2010, with help from many volunteers, annual monitoring of plant growth and periodic maintenance has been done at all restoration areas. In general, restoration efforts have been successful. Increases in vegetation are apparent at many sites (see photos, front page and below). Nevertheless, despite the presence of barriers and signs, visitor use and damage continues to occur in some restoration sites. In addition, the rare mountain sandwort continues to decline in a few locations. Additional work may be required to further restrict hiker traffic in certain areas on the Old Rag summit.



## Monitoring Results

In order to document the success or failure of the Old Rag restoration program, park staff measure and photograph plant growth on the summit of Old Rag. In particular, monitoring focuses on a rare plant called mountain sandwort (see text and photos, below). Transects are used to measure the growth of mountain sandwort plants. To date, sandwort recovery results on Old Rag are variable. Areas that showed initial sandwort growth have shown declines in recent years. However, areas fully protected from visitor trampling have exhibited some of the most successful mountain sandwort regrowth. Protective barriers will remain in place, and results will be monitored for years to come.



**2010:** This location originally suffered from heavy trampling by hikers. Very little mountain sandwort could be found at the site.



**2010:** Park staff placed boulders in specific locations to reduce foot traffic in this area.



**2015:** Five years later, the site is much improved. Mountain sandwort is flourishing now that its habitat is more protected.

## Mountain sandwort (*Minuartia groenlandica*): A glacial relict that's worth protecting

Many of the 66 state and globally rare plant species found in Shenandoah National Park are adapted to the colder microclimates found in the Park's high-elevation habitats. Mountain sandwort is a small, herbaceous plant that is critically imperiled in Virginia. In Shenandoah, mountain sandwort is found at only one location, the summit of Old Rag Mountain. Since the glacial periods over 10,000 years ago, this small plant has survived on the gravel barrens and rock crevices of this mountain's summit crown.

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