building for the FUTURE

Sustainable Trails Help Visitors Leave No Trace

BY JANE RAFFALDI AND McCREA BURNHAM
PHOTOS PROVIDED BY AUTHORS
The allure of nature is hard to resist. Getting out on a trail provides an opportunity to escape the daily routine of life, enjoy the beauty of nature, and replenish your mind, body, and spirit.

When out and about on state lands, you’re probably thinking about your destination, maybe hoping to see some wildlife, or trying to escape from the stresses of the work week. You’re probably not thinking about the dirt and rock beneath your feet, which is exactly what DEC—specifically its Lands and Forests unit—is aiming for.

“Motivated by a desire to protect the property’s natural resources and provide a safe experience for visitors, DEC embarked on a conscious, statewide effort to make existing and new state trails more sustainable.”

For the past few decades, and especially in recent years, DEC has been using sustainable techniques in its building and re-routing of trails to help ensure they last forever, and to provide routes that are more enjoyable for visitors and better for the environment.

Most visitors who enjoy New York’s vast and diverse outdoor resources try to minimize their environmental impact as much as possible, but oftentimes that can be difficult when poorly designed routes invite users to leave the trail. Prior to the 1970s, recreational trails were usually created by taking the most direct route up and down the mountain. Known as “legacy trails,” they were not planned out or designed, but rather created by fit hikers tackling steep slopes to reach their destination—usually an amazing view—the quickest way possible.

Taking a direct route led to steep and highly compacted trails. During rainfall and snowmelt, these trails transform into flumes, with the flowing water rapidly pulling away sediment. In the process, roots and rocks are exposed and the trail becomes more gullied or U-shaped (like a house gutter), creating a hazardous route for weak and strong ankles alike. Significant erosion affects the visitor experience and the surrounding environment. Soil that gets washed away from the trails can end up in nearby streams, clouding fish habitat, disrupting nutrient balances in the water, and burying fish eggs and aquatic invertebrates.

After only a few decades, the consequential damage of these direct route trails could be seen both on and off the trails. Motivated by a desire to protect the property’s natural resources and provide a safe experience for visitors, DEC embarked on a conscious, statewide effort to make existing and new state trails more sustainable.

Today, trails are being designed to withstand high amounts of use and allow water to drain, which prevents erosion, making these trails sustainable over the long-term. This is achieved by locating trails in areas where soils are durable and avoiding steep slopes, with most sustainable trails staying below a 10 percent grade (see diagram).

For the past few decades, and especially in recent years, DEC has been using sustainable techniques in its building and re-routing of trails to help ensure they last forever, and to provide routes that are more enjoyable for visitors and better for the environment.

Most visitors who enjoy New York’s vast and diverse outdoor resources try to minimize their environmental impact as much as possible, but oftentimes that can be difficult when poorly designed routes invite users to leave the trail. Prior to the 1970s, recreational trails were usually created by taking the most direct route up and down the mountain. Known as “legacy trails,” they were not planned out or designed, but rather created by fit hikers tackling steep slopes to reach their destination—usually an amazing view—the quickest way possible.

Taking a direct route led to steep and highly compacted trails. During rainfall and snowmelt, these trails transform into flumes, with the flowing water rapidly pulling away sediment. In the process, roots and rocks are exposed and the trail becomes more gullied or U-shaped (like a house gutter), creating a hazardous route for weak and strong ankles alike. Significant erosion affects the visitor experience and the surrounding environment. Soil that gets washed away from the trails can end up in nearby streams, clouding fish habitat, disrupting nutrient balances in the water, and burying fish eggs and aquatic invertebrates.

After only a few decades, the consequential damage of these direct route trails could be seen both on and off the trails. Motivated by a desire to protect the property’s natural resources and provide a safe experience for visitors, DEC embarked on a conscious, statewide effort to make existing and new state trails more sustainable.

Today, trails are being designed to withstand high amounts of use and allow water to drain, which prevents erosion, making these trails sustainable over the long-term. This is achieved by locating trails in areas where soils are durable and avoiding steep slopes, with most sustainable trails staying below a 10 percent grade (see diagram).
Water and its power to erode are the biggest threats to any trail in the northeast. By eliminating high-power waterflow and the damage it can cause, DEC is helping to ensure the trails will last “forever”—mostly. While any trail will always require maintenance (such as clearing blowdown), the tread of a sustainably-built trail shouldn’t require much work over the years.

Before any shovels hit the dirt to build sustainable trails, the most important step is the planning. Staff from the Division of Lands and Forests work with other DEC Divisions to plot the layout and design of new and rerouted trails. During design, staff consider the environmental priorities of a site, as well as the attractions and views visitors are there to see. The final product is typically the most realistic solution; one that balances minimal environmental impacts with a safe, enjoyable, and rewarding experience for visitors.

While its benefits are numerous, building sustainable trails presents challenges. Planning and design of these trails takes more time and money than just allowing people to march up a mountain. Soil types vary across the state, and also vary in how effective they are for draining water. Above 2,500 feet, soils tend to be very thin, making it more difficult to create sufficient drainage. In Wilderness Areas within the Forest Preserve, there is the additional challenge of the “minimal tools concept,” which only permits primitive, non-motorized tools to be used. The only exception is during two, narrow, off-peak windows a year. Among other things, this wilderness concept exists to minimize impacts by reducing both sound and air pollution, and to ensure only trained professionals are allowed to use motorized equipment such as chainsaws.

Sustainable updates for existing trails aren’t just for general multi-use trails. On trails tailored to specific user groups, such as horseback riders or mountain bikers, DEC explores additional techniques to make the best trail possible. For example, at Elm Ridge Wild Forest near Windham in the Catskills, a new trail network features stacked loops of single-track mountain bike trails that incorporate techniques to avoid inclines for mountain bikers, such as sweeping S-turns. These wider, lengthier turns gain elevation slowly, which makes for a more enjoyable ride and helps avoid erosion by slowing down water on the trails. The S-turns have the added benefits of encouraging bikers to slow their speeds and discouraging them from going off-trail for a more direct path.

The Elm Ridge trail network was truly a team effort from the brainstorming of these designs to the final product. DEC’s Division of Lands and Forests staff worked with the International Mountain Bicycling Association on a concept plan for the area, which was incorporated into the site’s unit management plan. The Adirondack Mountain Club, Windham Area Recreational Foundation (WARF), and DEC then worked together to bring the plans to life. The trail network, which is more than 25 miles, has been well-received by cyclists and walkers alike since its recent completion, and is more protective of local resources.

In Central New York, the Brookfield Equestrian Trail System (Madison County) is currently receiving sustainable updates that are expected to be completed this summer. Trail crews from WARF played a major role in the construction of the mountain bike trails at Elm Ridge.
systems that are designed for horses must defend against a higher level of compaction. Therefore, mineral soils or sandy soils are used because they are best for allowing drainage and are also the most durable. These soils are also used as a tread surface at Brookfield, where stream crossings are being updated to make them more horse-friendly, thereby encouraging horses to stay on the trail. Stream tests at the site have shown that the project has already remediated erosion issues, leading to improved water quality.

In the Adirondacks, sustainable trails are one solution to challenges created by the increasing popularity of the area. As more visitors flock to this region each year, creating and maintaining trails that can withstand high use and deliver a safe and enjoyable experience for users is a top priority. At Lyon Mountain, located near the northern border of the Blue Line, the original trail builders took the most direct route to the top of the mountain during a project to install a fire tower in 1917. Decades later, the original access route to the property was a 50-foot wide easement for a trail straight up the mountain to the fire tower’s footprint.

After the tower was closed in 1989, the trail morphed into a recreational trail for visitors seeking grand views of the Adirondacks. In 2008, DEC acquired all of Lyon Mountain as part of the 80,000-acre Domtar purchase, and rerouting the fire tower trail became a top priority. DEC contracted professional trail crews from the Adirondack Mountain Club who worked with the club’s volunteers to build the new trail. After a summer of mud, sweat, and heavy lifting, a more gradual, sustainable, and safer trail was unveiled, offering the same rewarding view.

Sustainable trail improvements are also planned for Cascade Mountain and Mount Van Hoevenberg in the Adirondack High Peaks. Both trails are planned to begin with a shared reroute that will provide a more gradual climb, followed by rerouting the rest of each individual trail. Safety improvements will be made to the trails and also to the parking for those peaks. Parking will be offered at the Olympic Regional Development Authority’s Mount Van Hoevenberg Sports Complex as an alternative to roadside parking along Route 73.

New, sustainable trails are helping visitors enjoy nature across New York while reducing their impact. Improved trails are a major step in conserving recreational areas for generations to come, but there is so much more people can do to leave no trace during their visits. Before embarking on your outdoor adventure, be sure to follow the first principle of Leave No Trace by planning ahead and thoroughly preparing for your trip. Always stick to the trail, even if it’s muddy, to help protect trailside plants and habitats.

By utilizing sustainable trails specifically designed to withstand visitor use, we can limit our impact on our natural resources, and protect the places we know and love for both ourselves and future generations.

Jane Raffaldi is an Outreach Specialist in DEC’s Division of Lands and Forests (DLF). McCrea Burnham is a Stewardship Coordinator in DLF.

**Trail Supporter Patch**

You can help make more state land trails sustainable across New York State by purchasing a trail supporter patch for just $5. All funds from trail supporter patch sales are used for the maintenance and enhancement of hiking, biking, horseback riding, and other non-motorized trails on state lands. This includes past projects such as materials for the accessible horse-mounting platforms at Brookfield Horse Assembly Area and the boardwalks at Elm Ridge. The patch can be ordered by phone, at all outlets where sporting licenses are sold, or on DEC’s website at [www.dec.ny.gov/outdoor/36016.html](http://www.dec.ny.gov/outdoor/36016.html).