



MAINTAINING Forest Trails

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Forest trails provide access for many activities, and are an important component of the overall forest management scheme. In the 20-plus years that I have been managing forest trails, along with thousands of miles of riding trails managed by others, I have learned some important lessons about maintenance and sustainability.

Trails that hold up to their intended use without damaging the natural forest resources and without damaging the maintenance budget are called ‘sustainable.’ Building sustainable trails – rather than haphazard access routes – will reduce maintenance needs while enhancing the safety and usefulness of any trail system. In other words, planning ahead about “how am I going to maintain this?” will help ensure greater sustainability for your trail system.

Trail maintenance can be divided into three related tasks: vegetation management, water management, and soil management.

Vegetation Management

Having vegetation on your trails helps protect the soil from traffic and minimizes impacts from heavy rains. Hopefully, when you planned your trail system, you made sure that most or all of it can be mowed with reasonably available equipment, such as a tractor and rotary mower. Walk-behind trimmers are also very useful for this frequently needed maintenance step. However, mowing is only the bottom of the trail vegetation picture.

Plants grow toward the openings that even narrow trails create; in the spring, every sprout and limb reaches across the trail. So if you look up from your mowed trail, the ‘tread’ in trail ter-

minology, the next thing you will find is every species imaginable encroaching from the sides. A particular culprit is blackberry, which sends long canes out each year. Some forest practices have made blackberry briars as prolific as kudzu, and the canes are hazardous to any trail user not protected by body armor.

The options available for maintaining sidewall vegetation in the 2- to 6-foot high range go hand-in-hand with forest stand management. Mature open forests have relatively little of this type growth and may be maintained by hand with machetes, pruners, or trimmers. Prescribed burning in growing timber stands targets growth at this 2- to 6-foot high level, reducing required trail maintenance. Thick growth in young stands, or along the sides of wider openings such as forest roads, often requires targeted spraying. Backpack or all-terrain vehicle (ATV)-mounted pump sprayers are essential tools, along with a good working knowledge of herbicide use.

Looking higher, above 6 feet or so, into the mid-story of the forest – yikes! – there is even more vegetation to maintain. Consider the height clearance of a trail for comfort and safety. For uses such as hiking, biking, and ATV riding, 6 to 8 feet may be enough. However, riding trails need taller clearance; a bare minimum of 10 feet. One culprit at this height is muscadine, which drapes among mid-story trees – a wildlife food source, but a real hazard to a rider or biker on a fast moving workout. Maintaining taller vegetation can be done with the hand tools mentioned above, but keep in mind that any overhead work requires head and eye protection.

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Water Management

Every time it rains, water impacts forest trails. Draining water off the trail is the key to sustainability. Mud is a warning sign of poor drainage, which leads to resource damage, safety problems, and maintenance nightmares. Washouts are also a sign – that your drainage is too much, too fast, leading to the same ultimate results. Planning your trail route will help avoid the worst of these extremes. Avoid chronically wet areas. Avoid steep slopes, and limit stretches that go straight up or down hill.

Mud that persists in dry weather will keep getting worse with traffic. Every hoof, boot, bike, and tire will press and dig deeper, trapping water as drainage gets worse and worse. Plant cover disappears and the soil loses integrity. Users avoid these spots, creating multiple, braided routes around them, damaging natural resources. Maintenance is required to create drains. Mulch and fill may be applied as a further step. Re-routing the trail around the problem area may be a final solution. In wetlands, hardening the trail by raising the tread above the natural soil will help make a trail sustainable. Materials such as gravel, synthetic webbing, board walks, and bridges are expensive solutions.

Washed-out trails occur when the drainage is so intense that the plant cover disappears and the soil erodes. They are a safety hazard of dangerous footing and can damage vehicles. Washouts often start slowly and get worse quickly. Managing eroded stretches while they are small is easier than changing their course later. The maintenance steps of creating drainage, applying mulch or fill, and finally re-routing pertain to these problems as well. The wing ditches and turn-outs on forest roads provide good examples and can be utilized on a smaller scale. Steps – logs or timbers placed at a slight angle to travel – create miniature water bars and turnouts, helping hold soil in place. Re-routing a washed-out stretch of trail, and gradually switching

direction back and forth across the slope, is often the cheapest sustainable solution.

Soil Management

With time and traffic, the soil of forest trails will break down. It will lose its ability to support plant cover, and can either become saturated with water or erode away. Sustainable trails – those that are well planned and constructed – will last longer. Maintenance helps; recognizing problems and fixing them early will prolong trail life.

Soil types wear differently. Sandy soils in the coastal plain break down into pure deep sand. The walking and riding get tough, the biking impossible, and vehicles just get stuck. Clay soils in the piedmont become compact, getting rock hard and slick. Mountain soils seem to disappear – the soil sinks away leaving nothing but rock. When any of these conditions occur, trail closures are needed.

Restricting traffic and using temporary closures may precede permanent closures and re-routing. Trails can support foot traffic when they can't stand up to heavier use by horses and motorized vehicles. Worn trails can stand light traffic better than heavy traffic. Providing alternate routes can spread out traffic. Restoring trails – fixing drainage and re-establishing plant cover – takes time, but can allow a trail manager to eventually re-open a favorite route.

A few important lessons about maintenance and sustainability have taken years to learn. Today there are resources and reference books on sustainable trail construction. Many are available from the USDA Forest Service, and probably the most useful is <http://www.fs.fed.us/t-d/pubs/pdfpubs/pdf07232806/pdf07232806dpi72.pdf>.



Mowing the tread. Notice the sidewall of blackberries in this growing stand of timber.



Thickets can be maddening where clearing of sidewall and overhead are needed. To burn or spray?



A trail washed out down to rock is difficult to travel, even in four-wheel drive.



Mud is a warning sign of poor drainage and maintenance ahead.

