

Town of Reading

Adopt-A-Trail Program Handbook

What is the Adopt-A-Trail Program?

The Town of Reading's Adopt-A-Trail Program is a volunteer program providing opportunities for members of the community to assist conservation area staff by monitoring, maintaining and enhancing trails and trailhead facilities.

Who can adopt a trail?

School and youth groups, scout troops, church, community and service organizations, businesses, families, individuals or groups of individuals can adopt a trail. Anyone with an interest in trails and the outdoors is welcome to help preserve our land and provide safe, enjoyable access to the outdoors.

What can volunteers do?

Adopt-A-Trail volunteers assist Conservation Area staff in managing and maintaining trail systems. Activities include keeping the trail surface free of sticks, rocks and other debris, pruning small limbs from the trail corridor, cleaning waterbars and drainage ditches, and clearing debris from bridges, stairs, and viewing decks. Other responsibilities include litter clean-up, maintaining the trailhead area including parking lot, bulletin board and trail signs, and reporting vandalism, trail hazards or safety issues.

Why should you participate?

Adopting a trail provides an opportunity for you to be actively involved in conservation. Helping to maintain and enhance existing trails improves the resource for all to enjoy. The effort brings trail and nature enthusiasts closer to the environment and their community. Enjoy the time outdoors and personal satisfaction gained through volunteering on a conservation trail.

How to get started:

If you have a specific Conservation Area or trail in mind, let us know. If the trail you choose is available for adoption, we'll get you set up right away. If you want to know which trails are available in a particular area or region, we can help you find the right one. Once you've chosen a trail you will be contacted by the area manager who will set a date that is convenient for you to meet and discuss the requirements and benefits of trail adoption.

Guidelines For Volunteers

Adoption Period

A trail or trail section must be adopted for a period of one year, renewable annually thereafter upon approval by the area manager. This agreement may be terminated at any time by the volunteer or the area manager.

Trail Inspections

Trail inspections may include the following: observing the condition of trailhead parking lot, bulletin board and trail signs, monitoring trail conditions and performing routine maintenance, picking up litter, and notifying the area manager of any problems or additional maintenance needs.

Volunteers are asked to visit the adopted trail or trail section at least 4 times per year (approximately once every 3 months). At your convenience choose the days and times you would like to visit the trail. You may wish to check with the area manager prior to your trip to inquire about hunting seasons or other activities that may be scheduled on the area. Please send a written report to the Adopt-A-Trail Coordinator after each visit, so that we may keep track of your efforts.

Maintenance

Routine maintenance involves keeping the trail surface free of loose rocks, limbs and other debris, pruning small limbs from the trail corridor, cleaning waterbars and drainage ditches, and clearing debris from benches, bridges, stairs and viewing structures. The area manager will provide volunteers with information and instruction on maintaining specific trails to meet area management guidelines. Volunteers are asked to provide their own trail maintenance tools, but with prior notice we may have loaner tools available.

Volunteers should notify the area manager if there is an erosion problem, trees down on the trail, missing or damaged signs, vandalism, or other issues that cannot be handled on the day of a trail visit. Report any suspicious or illegal activity. If litter will be picked up but not removed from the area during your visit, please make arrangements in advance with the area manager for litter pickup.

Volunteers should dress appropriately for trail work and use gloves, safety glasses and other protective gear when necessary. All work shall take place during daylight hours and be performed with safety in mind. Do not attempt any tasks you are not comfortable with. Volunteers are not permitted to use chainsaws or have motorized equipment on the trail. No work shall be done that has not been previously agreed upon with the area manager.

Do you have questions or need more information on the requirements of volunteering?

Contact us at: ReadingTrails@ci.reading.ma.us .

More information about the Adopt-A-Trail program can be found at:

http://www.readingma.gov/Pages/ReadingMA_VolConTrails/adoptatrail .

Basic Maintenance Tasks of Adopters

In order of priority, the maintenance tasks of adopters are:

Drainage Maintenance- clean waterbars and drainage ditches of dirt and debris each spring and fall.

Trail Marking - mark trails with paint blazes.

Vegetation Control - clear blowdowns, limbs, and brush to maintain a passable trail corridor.

Treadway Definition - prevent development of widened trails and multiple treadways.

SAFETY WHILE WORKING

Knowing the proper use and safety techniques of tools is essential in doing trail work. Not only will knowledge of these skills increase your efficiency in trail work, but it will also reduce your chances of being injured or of injuring someone else. The following includes general safety precautions, proper carrying techniques, a list of all tools that volunteers may use in trail work, and a description of their proper use.

Proper Carrying, Transport and Storage Techniques: When packing in, or carrying tools to work, it is always preferable to strap tools to your pack. However, such tools as rock bars are often difficult to strap to a pack. In this case, it is preferable to carry tools in your hands, down at your sides. In the event of a slip or a fall while hiking with tools (which will happen) try to throw the tool away from your body and away from others to prevent falling on top of your tool.

Do not throw tools carelessly to the ground: In order for tools to function properly, trail workers must respect their tools.

Do not leave it in the woods or an otherwise inconspicuous place: When you finish quarrying a rock, or dirt, or doing any other task off-trail, you must be sure not to leave your tool in the woods.

Never lean any tool up against a tree or rock, and never stand it up on its own: The danger here is that an upright tool can easily be knocked down, and could fall on a person and cause them injury. Be aware of how you place tools; the best way is to lay them down on the ground in an obvious place.

If you'll be working at the site for more than one day, you may wish to create a tool cache at the end of the day. In many cases, trail workers can create a cache of tools at the end of a work day, in order to save the effort of carrying tools back and forth from camp to work. Be sure to pick a place that is off-trail and be sure that the tools will not be visible from the trail. Gather all tools and count them at the end of each day while caching the tools. Cache all tools in the same location; and be sure to pick a location that is easily recognizable, such as behind a fallen tree or large boulder, etc. Give the next crew specific instructions as to how to find the tool cache, if you leave the tools in for more than one week.

The Circle of Danger: This is a safety principle that applies to use of all tools in trail work, especially those that you swing, like the pick mattock, root axe, or good axe. When using any tool, you must be sure that all people are outside the circle whose radius is defined by the length of that tool. This circle is known as the inner circle in the circle of danger; an area where risk of injury is significantly increased. The secondary circle is a wider circle that encompasses the inner circle of danger, but also includes the area where a tool might land if

it's accidentally released while being used, or where debris might land, including where a rock might roll or a tree might land. Anyone within that circle also has an increased risk of injury.

Personal Safety Gear: A helmet, safety goggles, and gloves can all improve personal safety of those working on trail maintenance or construction projects.

The use of tools in trail maintenance carries some risks and hazards that adopters should be aware of. Listed below are some of the risks and recommended safety gear that adopters should consider including in their rucksack. Safety equipment can be obtained from the forestry suppliers. Basic safety equipment for all trail work includes sturdy boots, work gloves, and appropriate dress for the weather. Maintain tools in good working condition; know your abilities and limits; and take breaks before you are too tired. Besides protecting yourself, it is important to be aware of anyone near you when you are using tools, especially swizzles, axes, and chainsaws. It is also wise to carry a first aid kit when working.

**Risks associated with trail maintenance and recommended safety equipment
(Modified from ATC Register of June 1993)**

Task	Risks	Safety Equipment
Brushing	Bees, eye pokes, rotten trees, loose footing, blisters, sharp branches, sharp tools	Eye protection, gloves
Axe use	Sharp tools, dull tools*, loose footing, blisters, tree cutting risks	Gloves, hardhat, shinguards, boots
Log work**	Sharp tools, slippery logs, rolling logs, back strain, loose footing	Gloves, shinguards
Rock work	Crushed fingers and toes, back strain, loose footing, striking head with pry bar, abrasions, rocks rolling downhill	Gloves, shinguards, hardhat
Tree cutting	Falling branches, springpoles, bees, axe use risks	Gloves, boots, hardhat, ropes or winches, wedges, axe gear

FIRST AID

It is likely that at some point you will encounter ill or injured hikers. In addition, adopters, because of the nature of their work and use of tools, are subject to injury. Thus, adopters should have some knowledge of first aid and carry a first aid kit. The AMC offers several courses and workshops on wilderness first aid. You can purchase one of the many commercially-available first aid kits or assemble your own kit more cheaply by buying items individually at a pharmacy. It is important to know what is in your first aid kit and how to use the item. Some suggested items are listed below:

First aid manual - small booklets usually supplied with kits. These contain concise instructions for treating conditions such as bleeding, fractures, shock, heat exhaustion, and heat stroke.

Band-aids - several, for simple cuts and abrasions

Gauze pads or roll - 3 to 4 inches square, bandage for deeper wounds and pressure compresses to stop bleeding

Butterfly band-aids - for closing cuts

Moleskin or Spenco Second Skin - for preventing blisters, use before blister forms

Adhesive tape - 2 inches wide, for holding bandages and splints in place

Elastic bandage - 3 inches wide, support for sprains

Large triangular bandage (cravat) - for a sling

Safety pins

Razor blade, knife, or scissors - for cutting tape and moleskin

Tweezers - for removing splinters and ticks

Needle - for opening blisters, removing splinters
Aspirin - for relieving headaches, pain, and fever
Antihistamine - e. g., Benadryl or Teldrin, for allergic reactions to insect bites and stings
Salt tablets - for treating muscle cramps and heat exhaustion
Antibiotic ointment - e. g., Mycitracin, Bacitracin, to prevent infection of abrasions, small cuts, insect bites, and blisters
Antiseptic - towlettes, swabs, or solution (e. g., alcohol, benzalkonium chloride, povidone-iodine), for cleaning wounds

Other items that could be included - antacid, decongestant, laxative, anti-diarrhetic, cortisone cream, ammonia inhalants, oil of cloves for toothache, extractor kit for stings or snake bites, large Surgipad or trauma pad, latex surgical gloves, and a SAM or wire splint

BASIC TRAIL MAINTENANCE

The procedures for trail maintenance described here should be followed by adopters in order to achieve uniform standards of maintenance for all hiking trails on Wachusett Mountain. Before undertaking trail maintenance, it is very useful to take an inventory of your trail noting the number and location of signs, waterbars, rock steps, cairns, etc. This will serve as a baseline for future reference. Keeping a log book or notebook of your work reports will help you monitor your progress. In addition, you can follow the progress of regrowth and regeneration of vegetation as a result of efforts such as blocking bootleg trails, building scree walls, and putting in adequate drainage. Basic maintenance, besides providing convenience for hikers, makes a major contribution to protecting the mountain environment.

Drainage. The most important task of adopters is maintenance of trail drainage. This includes clearing of waterbars, outflow and side ditches, and the clearing of debris from some streams that cross the trail. These actions to properly maintain trail drainages will greatly reduce problems and negative consequences to the landscape. Failure to maintain drainage can result in a severely eroded or flooded trail.

Erosion is the most dramatic and irreversible result of trail degradation. Erosion takes on many forms, and essentially begins when foot traffic touches the trail treadway. This contact creates two effects on the soils that accelerate erosion. The first effect is compaction. Compaction is the compression of the soil particles with a resulting loss of air space between the particles. This compression results in an inability of the soils to absorb water. Compaction also depresses the surface of the treadway, creating a channel for water to flow. The second effect is churning, which is the loosening of the soils. Foot traffic acts like 'little bulldozers', essentially moving soil around with every step. Neither of these two effects causes many erosion problems individually.

Erosion is accelerated when the trail treadway is sloped and water is added. In effect, water running down the trail is the greatest cause of erosion. Two primary forces of water - volume and velocity - affect erosional potential. Reduction of either will be beneficial to reducing erosion. The volume of water is reduced by removing from the treadway. The velocity of water is reduced by impeding its flow on the treadway. A very well engineered trail will have accounted for these forces in the layout and design of the trail. Trails that have not been engineered for drainage will require the construction of erosion control structures to deal with the forces of water. These structures either drain the water from the treadway, or if drainage is not possible, they slow the water on the treadway. The two most commonly used control structures are the waterbar, and the check dam.

Waterbars direct flow out of treadway and into areas that don't have hiker traffic. They are commonly constructed of rock or logs, depending on the availability of materials in the area, the skills and abilities of the people building them, and the local 'style'. No matter what the materials of choice, the basic design is the same. The water bar is built on an angle across

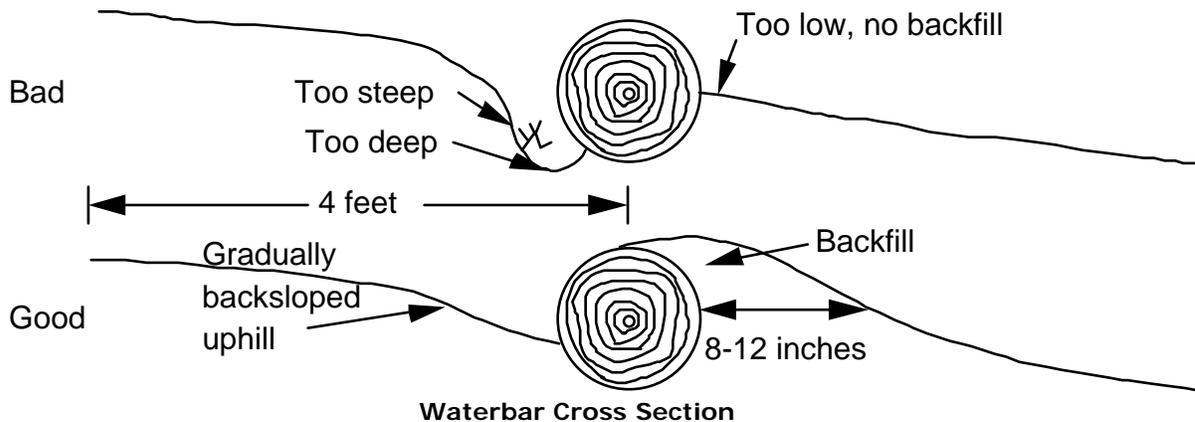
the trail, with an outflow that allows the water to leave the treadway.

Check dams break velocity but do not remove the water, and are built in trail treadways that don't allow the drainage of water from the treadway. An example is a treadway that is gullied, and too deep to provide an area for the water to drain away. Check dams also can be constructed from rock or logs, dependent on the same criteria as waterbars. Check dams are built across the treadway at right angles to the direction the water travels, effectively making a dam. Often, check dams look like steps with a hollowed out tread area on top. With time, eroded soils will fill this cavity, and make a step. Check dams are part of an erosion control system - they require interspersal with waterbars

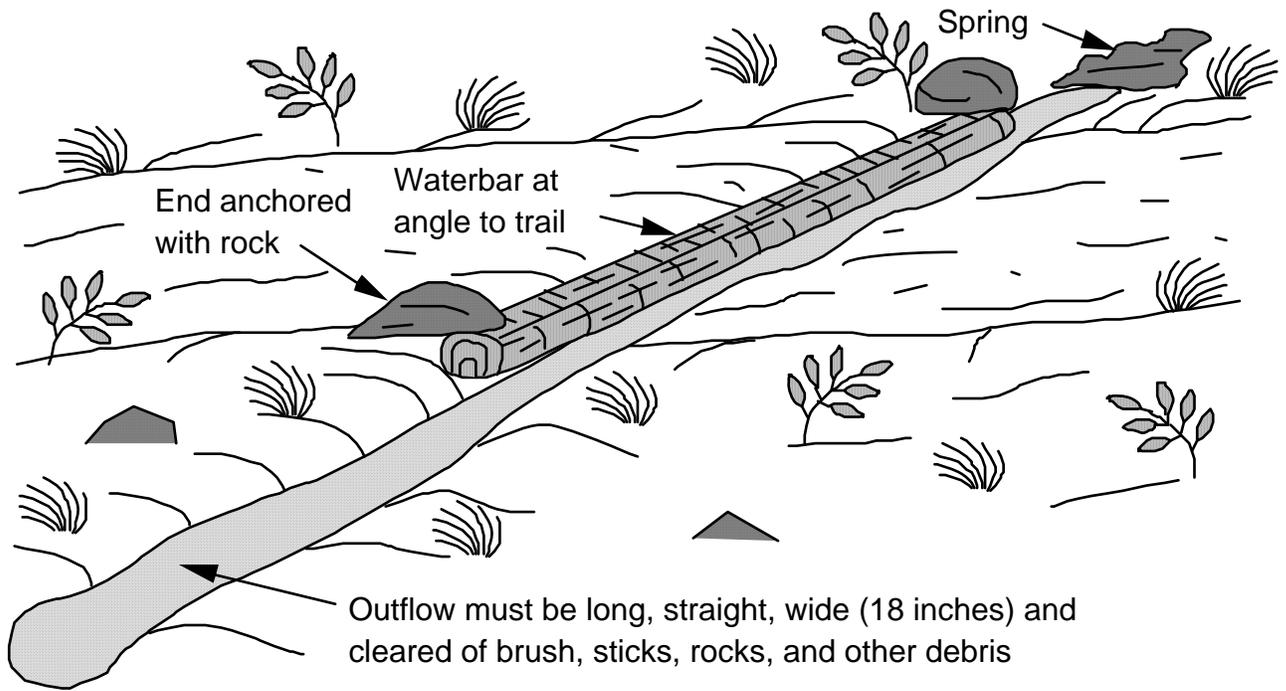
Development of waterbars and check dams as a system provides the best level of defense against erosion. Ultimately no single control structure should stand alone, but should be part of an overall system. By combining the ability to reduce the volume of water on the treadway, and reduce the velocity of any remaining water on the treadway, an effective erosion control program is created.

A popular tool for cleaning drainage is the hazel hoe or adze hoe. A fire rake or garden rake is useful. A shovel is helpful when large amounts of soil must be removed. An army style foxhole shovel or entrenching tool is lightweight and easy to carry. A pick mattock or a cutter mattock is often used because it can be used for clearing dirt, cutting roots, and prying rocks. The pick mattock has the disadvantages that it is heavy and the blade is narrow, but it is a widely used tool for clearing drainage due to its versatility. Some adopters have found that ordinary garden hoes, which are easy to obtain and light in weight, are satisfactory for cleaning drainage. The handles can be cut off at about four feet, making them easier to carry and use.

When clearing drainage, pull all of the debris from the uphill side of the waterbars and deposit it in the trail on the downhill side. Mound any soil along the downhill edge of the waterbar as backfill. Leaves, roots, and organic debris should be discarded. Do not shovel or hoe the soil out the end of the drainage and off the trail. Waterbars that do not have sufficient backfill on the downhill side are likely to undermine and dips that have worn down too much may allow water to flow over them down the trail. Backslope the uphill side of the ditch 4 feet up from the bar in the trail. If the uphill side is too steep, traffic and water will collapse it and the soil will clog the waterbar or dip. Cut out loose roots and remove rocks as these will collect debris. Clean waterbars down to approximately two inches from the bottom of the waterbar. If the depth is too great, water will undermine the waterbar.



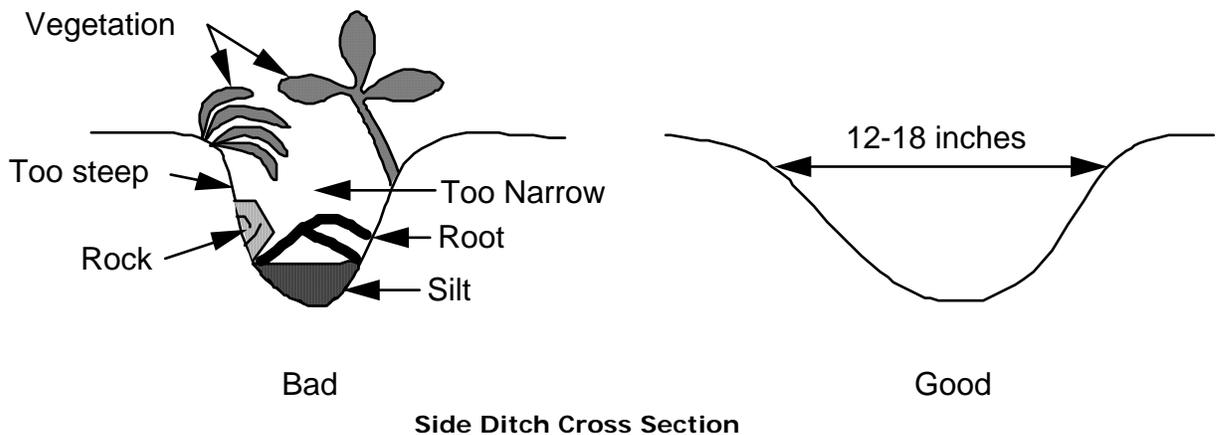
The outflow ditch at the end of the waterbar should be straight, about 18 inches wide, deep, and root-free with side slopes graded. If the outflow is not adequate, it will clog and cause the waterbar to fill up with dirt and debris. It should drop off sufficiently so that water is carried off and does not back up. Brush out the area along and at the end of the ditch to facilitate cleaning. Outflow ditches often require considerable digging and removal of roots, vegetation, and rock. Ditches should be long enough to ensure that water is taken well off the trail and does not reenter the trail further down. If the ditches are too shallow, water may overflow. Steep sides may collapse and clog the ditch. A good, wide ditch will require less maintenance over time and ensure adequate drainage.



Waterbar Outflow Ditch

Streams with shallow channels crossing the trail should also be checked and cleared of debris, if necessary. Logs, brush, rocks, and leaves may clog the channel and divert the water so that it runs down the trail.

Side ditches are useful in areas of wet, saturated soils. They are particularly helpful in directing water alongside a trail in places where a waterbar can't be placed across the trail. Ditches can be dug along one or both sides of the trail to provide drainage for ground seepage and to create a high, dry trail tread. Drainage ditches should be carried down the trail to the next waterbar which will direct the water away from the trail. Ditches silt in and become vegetated and, like waterbars, need to be checked each year. The same principles apply to ditches as to waterbars and waterdips. Avoid leaving large, unsightly mounds of dredge mud and debris along the side of the ditch. Organic mud and leaves should be discarded as they hold water and make the trail muddier.



Blazing. A properly blazed trail helps make hiking a safe and pleasurable experience. In addition, by helping keep hikers on the trail, blazing reduces impact on the environment. Adopters should inspect the state of the blazing on their trails. Blazes that are of the wrong color or which have faded should be replaced. Before beginning, assemble a paint kit containing the following suggested materials:

- Small plastic bucket with handle
- One or two pints of paint (provided by the State Reservation Supervisor)
- A scrub pad (Scotch-Brite works well) or wire brush
- A one inch nylon paint brush (use cheap disposable brushes)
- A two inch paint scraper
- One or two paper or plastic cups
- A small rag
- Ziploc bags (to keep wet brush from drying)

The bucket is used for carrying the equipment. The cups can be used to hold a small amount of paint while you are blazing. Replace it periodically from the pint can which is lidded when not in use. This way, if you spill or drop your bucket (which inevitably will occur), you will not lose all your paint. The scraper is used for scraping the bark of rough-barked trees prior to blazing. The scrub pad is used for cleaning the surface of smooth-barked trees and scraping lichens from rock. The rag is useful for cleaning up spills and blazes that run. The two items most frequently lost are the paint brush and the scrub pad. It is frustrating to have lost your brush three miles in and being unable to continue blazing. Thus, it is best to put extras in your pack. Wear old clothes when blazing, as you will get paint on them, no matter how careful you are.

Place blazes approximately six feet high, or about head height, on trees. Avoid placing blazes on dead trees, as the blaze will be lost if the tree falls. Do not paint arrows or directional signs. Within a blaze interval (see below) of trail junctions, place a double blaze, one on top of the other, on the last tree or rock before the junction. This is the standard sign for hikers to proceed cautiously and to be aware of where the trail goes. When the trail crosses an open area such as a roadway, be sure a blaze is clearly visible on the opposite side of the opening. Otherwise, hikers may not cross in the right place and will lose the trail.

You should inspect the trail ahead of you for the best placement of blazes. Blazes should guide hikers toward them, not point the direction to go. Much time can be saved if you can have a person ahead of you locating old blazes or locations for blazes. Walk through your trail blazing in one direction and then at the end turn around and blaze in the other direction. Pick out trees and rock that will be clearly visible to hikers some distance ahead. Trim brush that may obscure the blaze. Try to avoid placing blazes on both sides of the same tree, because two blazes will be lost if the tree falls. If it is not possible to blaze a trail completely in one day, try to complete sections between trail junctions. If blazes end in the middle of the trail, hikers may become confused and think they are lost. Also, this will help you know where you left off when you return to finish the blazing.

The distance between blazes is known as a blaze interval. This interval depends on the nature of the section of trail. In the woods, the blaze interval depends on how well defined the tread is and the nature of the woods. In open hardwoods, blazes should be placed so they can be seen from one blaze to the next (about 30-50 feet). This is especially important in the fall when leaves obscure the trail. In softwoods where there is an obvious tread and trail corridor, blazes can be more widely spaced (100-150 feet). On open ledges where there is no tread or cairns, closer spacing may be necessary.

Placement of blazes is also a matter of judgment and experience. One general rule is that if you, or someone else who is familiar with the trail, is unsure of a direction, it is best to place a blaze. Keep in mind that trail marking is for the benefit of someone who is not familiar with the trail or terrain. Another guideline is that a hiker should not have to walk more than a hundred paces without seeing a blaze ahead of or behind him or her.

Before painting the blaze, prepare the surface. Lightly scrape off any lichens, dirt,

moss, or loose bark on rough-barked trees with the scraper. On smooth-barked trees, the scrub pad will suffice. Do not cut through the bark on any trees as pitch or sap will ooze out and cause runs or discolor the blaze. If you accidentally do, abandon the spot and choose another place to blaze. Use the scrub pad or wire brush to remove lichens and dirt from ledge and rock. Clean an area slightly larger than the blaze.

You may find it necessary to place blazes over old blazes which are much larger than the standard size. This oversizing is a result of either painting the blazes too large initially, or painting blazes on small diameter trees that have grown rapidly and expanded in circumference. Remove as much of the old blaze as possible. It is often best to scrub the old blaze with a wire brush, and paint over the old blaze with the proper size and color. Weathering will often force the remainder of the original blaze to fade away. You can cover the old blaze with grey or brown paint before putting on the new blaze. However, when the camouflaging paint wears off, the underlying miscolored paint will reappear. You will also encounter old axe blazes, but this is no longer an accepted procedure for blazing.

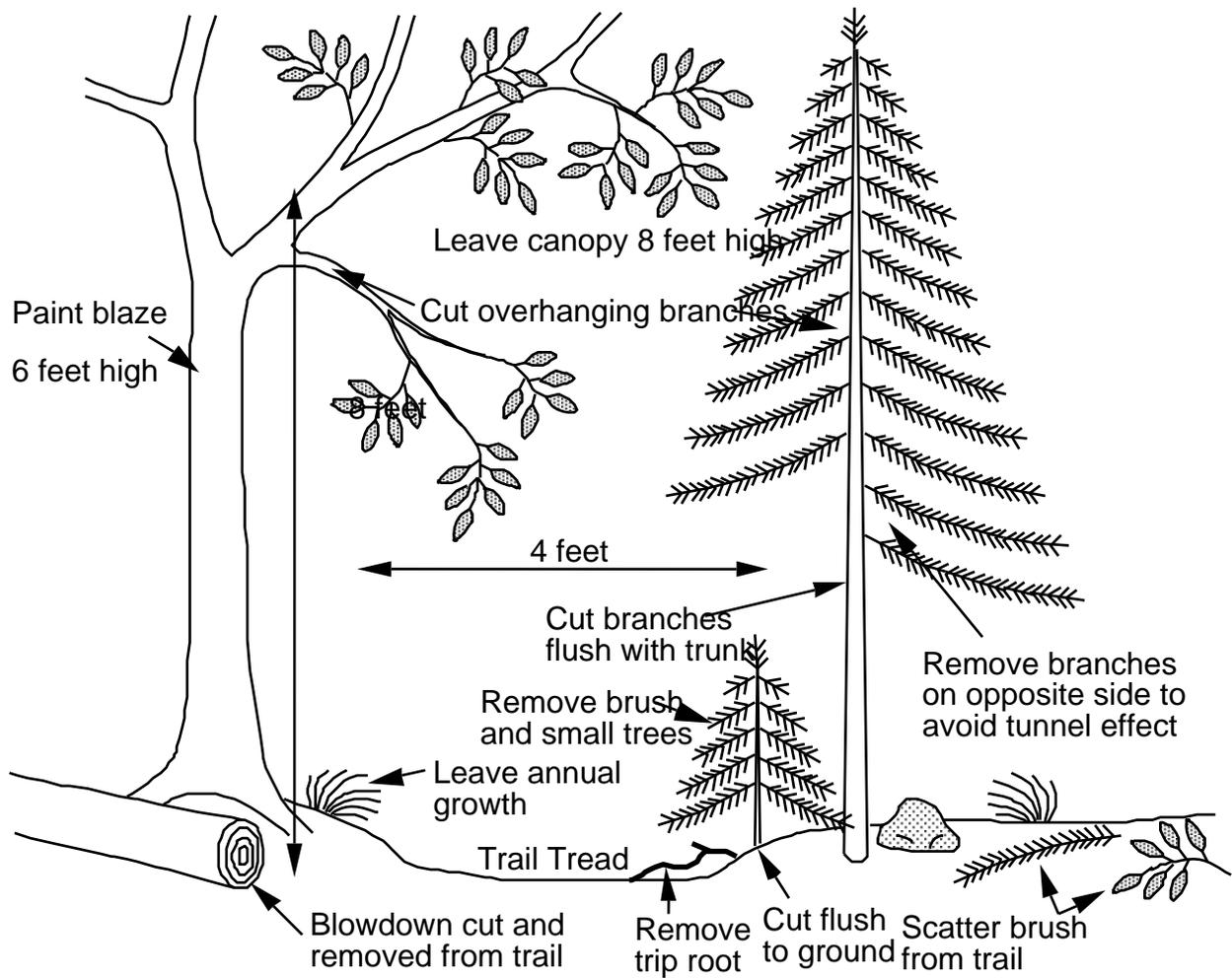
Make blazes the prescribed size and as neat as possible. They are perhaps the most visible aspect of your handiwork on the trail. Wipe up any spills and runs. Try not to allow paint to accumulate at the bottom of the blaze. It will probably run after you have gone. Keeping the brush fairly dry with only a small amount of paint on the ends of the bristles will help reduce this occurrence. After drying, any runs can be scrapped off with the wire brush or scraper. A small pointed stone picked up from the trail is useful in removing runs from rock. Do not blaze right after a rain or if rain is predicted in 24 hours and do not blaze on wet or damp surfaces. The paint will not properly adhere.

Vegetation Control. Another important task of adopters is clearing brush growing in along the sides a trail. Without regular brushing, even a heavily used trail can become overgrown in a few years. A properly cleared trail is one upon which a large hiker with a full pack can walk erect without touching trees, limbs, or brush. The line of sight is open and unobstructed and the footing is clear. The correct height and width (trail corridor) for a cleared trail depends on the terrain and vegetation. A four foot width is sufficient for most wooded trails. The trail should be cleared to a height of eight feet or as high as one can reach. The most commonly used tools in trail brush clearing are hand clippers, pruning shears or loppers, and bowsaws.

Special attention should be paid to the lateral branches of softwoods alongside the trail. When wet or covered with snow, these extend down into the trail reducing both its width and height. Adopters, if possible, should walk their trails in rain or just after a rain storm to gain a good appreciation of how much brushing is needed. Limbs on trees should be cut flush with the trunk. Stubs are unsightly and create bothersome and sometimes dangerous snags for packs and clothing. Branches growing toward the trail should be cut back to the limb growing away from the trail. A canopy left over the trail at a height of eight feet or more will suppress underlying growth.

Low shrubs and young trees which tend to come in at the sides of the trail should be cut flush with the ground for aesthetic and safety reasons. Avoid leaving pointed stumps which are potentially dangerous if stepped or fallen upon. Avoid clearing branches in an effort to widen the trail if it exposes fragile plants and mosses to trampling. Remove all dead trip roots from the trail. Do not cut trees and undergrowth heavily on the inside of a corner as it will encourage hikers to shortcut the corner. Don't cut edges heavily in boggy areas or hikers will widen the trail.

After brushing, it is very important to remove all branches and debris from the trail. Brush left in the trail can obscure roots, rocks, and holes in the trail. It can also result in hikers slipping on steep sections. In rain, brush will move down the trail clogging waterbars and drainages. Pick up all branches, trees, and debris and scatter them off the trail. Piles should be avoided because they are unsightly and can create a fire hazard. Downed trees should be dragged butt first until the top is completely off the trail. This helps conceal the tree. Large limbs and small trees can be thrown clear of the trail, provided they do not hang in the branches of shrubs and trees next to the trail or stick up butt first. If it is windy, check the wind direction before throwing brush as it can blow back on the trail or onto you and hikers. Be sure not to throw brush into drainage ditches or their outflows. This will clog ditches and seriously affect proper drainage.



Corridor Clearing

TOOLS USED IN TRAIL WORK AND WHERE TO GET THEM

The essential tools for basic maintenance are a tool for cleaning drainages, a blazing kit, a pair of clippers, and a bow saw. A brief description of the commonly-used tools and their uses is provided below. Keep in mind that improper use of a tool can result in serious injury. Many of the skills sessions provide instruction on the safe and proper use of tools.

Most adopters buy or already have at least some of the most frequently used tools. Hardware stores are good sources for basic tools. For more specialized tools, refer to one of the trail maintenance reference books in the Section on Further Reading on page 24. By owning your own tools, you have what you are most comfortable with, can properly maintain them, and have them available when needed. Experience has shown that when buying tools, it pays to purchase high quality durable tools that will do the job, even if they are more expensive initially. Breaking a tool mid way through a trail work day means lost productivity, needing to carry the unusable damaged tool back out, and having to pay for repairs or replacement. Consider putting a bright color on a portion of your tool to make it easier to find on the trail or in the brush if you misplace it.

If you are working alone, it is obviously difficult to carry enough tools to do everything on one work trip. Thus, on a given work trip, plan to do a specific task. When blazing, take only the paint kit and perhaps clippers (there are some clippers available that fit in a sheath attached to the belt which frees the hands when the clipper is not in use). When brushing, take clippers and a bow saw. For drainage work, the hazel hoe will handle most chores. A crowbar and pick mattock can be taken for rock work. If you have people to help you, it is possible to bring a greater variety of tools. If your trail is some distance from the road, there are light weight tools such as folding saws and shovels, garden hoes, and light weight mattocks which allow you to take more tools.

Mattocks. Mattocks are one of the most important tools used for basic maintenance in New England because of the large numbers of rocks encountered. It is a heavy, sturdy tool that can be used to dig through rocky soil and roots. There are two types of mattocks. A pick mattock has a head with an adze and a pick while a cutter mattock has an adze and a cutter blade. The pick mattock is favored by most maintainers because it can be used for cleaning waterbars and drainages and for prying out rocks when they are encountered. The cutter mattock is useful in soils with fewer rocks but abundant roots.

Hazel hoes and grub hoes. These tools are used for cleaning waterbars, cleaning drainage ditches, and sidehill grubbing. A hazel hoe has a six to eight inch wide adze blade and a curved handle. Grub hoes have a narrower blade and are essentially mattocks without a pick or cutter blade. Garden hoes with the handle shortened represent a lightweight alternative.

Shovels. Shovels, which come in different forms, are useful for removing loose soil from drainages and putting in new soil waterbars and side ditches. Shovels should not be used for prying out rocks as they may break. A pick mattock or crowbar should be used to remove the rock. Some maintainers slightly sharpen the shovel blade to facilitate cutting through small roots. Small folding shovels or foxhole shovels are light and can be carried in a pack.

Clippers, pruning shears, or lopping shears. These are one of the primary tools of adopters. They come in a variety of types and the ones used depend on the work to be done and the preferences of the adopter. The handles may be made of wood, steel, or aluminum. The cutting heads are either the sliding blade-and-hook type or the anvil type. Some have simple pivot actions while others have compound or gear-driven actions that provide increased cutting power. Most clippers provide a one to two inch diameter cut. Pole clippers have a six to eight foot handle. These are useful for cutting high limbs along ski touring trails. Small hand clippers or pruners are useful for light pruning and can be carried in a pocket. They are especially useful above timberline.

Bow saws and pruning saws. These are also among the most frequently used tools and again come in a variety of shapes and sizes. Most have chrome-plated steel or aluminum frames and blades ranging from 21 to 36 inches. Some are collapsible or folding and can easily be carried in a pack. The smaller saws are useful for cutting saplings and limbs which are too large for the clippers. The larger saws are used for cutting blowdowns. By making an undercut in addition to the top cut, a sharp bow saw can quickly cut leaners 12 inches in diameter. Pole saws are available for cutting high limbs. Non-folding saws can be tied to the back of a pack. Adopters use different types of sheaths, such as a segment of garden hose, cardboard, cloth, or aluminum, to cover the blade.

Crowbar. Crowbars (sometimes called pry bars or rock bars) are used for moving boulders or large rocks, and rolling logs. 4 foot long (12 pound), 5 foot long (18 pound), and 6 foot long (25 pound) crowbars are available. The 5 foot bar is commonly considered to offer a good compromise of weight and leverage length for most applications. The 4 foot bars are somewhat short for usable leverage, while the 6 foot bar's extra weight can wear on you over a long day. With a suitable log or rock for a fulcrum, the crowbar used as a lever can move very heavy rocks and boulders. Take care that in moving large rocks, they do not fall on your feet or wedge a leg. Do not allow a rock to roll downhill out of control, as it can gain tremendous speed and momentum greatly endangering people and vegetation below.

Swizzle stick. The swizzle stick or weeder consists of a straight or serrated blade attached by one or both ends to a long handle. This tool is used for clearing brush and low growth along trails. Because swizzles are swung like a golf club, it is important that the user maintain a safe distance from other people. It is recommended that the nuts that are supplied with the swizzle be replaced with aircraft style nylon insert lock nuts before going out into the field. You should also carry replacement nuts and bolts and the tools needed to install them. Never lay an uncovered swizzle on the ground; lean it against a tree.

A variety of other tools are used for specialized purposes in trail work. These include bark spud or peeler, chainsaw, crosscut saw, digging bar, fire rake, the McLeod which is a combination rake and hoe, pick, and Pulaski which has a single bit axe blade and a grub hoe blade. Other tools used in trail clearing are the safety or brush axe, brush hook, machete, and hatchet. These are used in cutting brush, saplings, and limbs but have the disadvantage that it is difficult to cut flush with the ground or tree, therefore are best used when clearing heavily overgrown areas or putting in a new trail, but not for routine maintenance.