

- Trail Clearance
 - 32 – 48 inches wide
 - 80 inches high



- Trail Tread
 - 18 – 24 inches
 - Clear of obstructions and hazards

BASIC TRAIL MAINTENANCE

The Florida Trail Association
"How To" Guide
for New Trail Maintainers



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FTA Information for Trail Maintainers

The Florida Trail Association has enjoyed a reputation for over 40 years as Florida's premier, volunteer-based builder and maintainer of hiking trails. FTA volunteer trail maintainers have built this reputation and deserve all of the credit. FTA trail maintainers are on their trails throughout the year clearing brush, sawing blow-downs, and touching up blazes. They receive no monetary awards and little recognition, other than the occasional appreciation from a passing hiker. Many beginning maintainers find that the job is more fun than work and can be a means of healthy exercise. Those who enjoy it are encouraged to learn more by reading the FTA Trail Manual, attending F-Troops and training workshops to learn advanced skills, and accepting leadership positions in FTA. Many thanks to all of those who've decided to contribute their time and energy to keeping our trail open for hiking.

The Florida Trail Association is responsible for building and maintaining the 1400-mile Florida National Scenic Trail as well as about 600 miles of other trails in parks and forests throughout the state. On the National Scenic Trail we share administrative responsibility with our federal partner, the USDA Forest Service.

For maintenance purposes our trail is divided up into Sections which average about 30 miles in length and each Section is overseen by a volunteer Section Leader. Section Leaders must be nominated by their chapters for the job and are appointed by the FTA Vice-President of Trails. Within each section of trail the Section Leader may appoint Trailmasters who take on the responsibility for shorter pieces of trail, usually 1 to 5 miles in length. Also, each FTA Chapter has a Trail Coordinator who takes care of many administrative tasks such as equipment inventory and ordering, reporting volunteer hours and scheduling maintenance hikes.

Most maintenance is done on Chapter scheduled and sponsored "Trail Maintenance Hikes", "Trail Care Hikes", or just plain old "Work Hikes." Some times these are combined with overnight camping. They will be listed in the state-wide Footprint and/or your Chapter newsletter and website, and are announced at Chapter meetings. Of course, as an FTA member you may participate in any other Chapter's hikes anywhere in the state. If this is your first outing with FTA, call or e-mail the activity leader, who will be a Section Leader or Trailmaster, for advice on what to wear and

Recommendations for further reading:

Trail Manual for the Florida Trail System - every Section Leader should have a copy. Download from: <http://www.floridatrail.org>

Trail Construction and Maintenance Notebook, USDA Forest Service. Hesselbarth and Vachowski. Download from: <http://www.fhwa.dot.gov/download/hep/fspubs/pdf00232839.pdf>

The Complete Guide to Trail Building and Maintenance, 3rd Ed, Demrow and Salisbury, Appalachian Mountain Club, Boston.

Appalachian Trail Design, Construction and Maintenance, 2nd Ed, Birchard and Proudman. Appalachian Trail Conservancy, Harpers Ferry.

Lightly on the Land, The SCA Trail Building and Maintenance Manual, 2nd Ed, Robert Birkby. The Mountaineers Books, Seattle.

Natural Surface Trails By Design, Troy Scott Parker, Naturescape, Boulder, CO.

Trail Solutions, IMBA, Boulder, CO.

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prescribed burn has eliminated half of your blazes along a 1/2 mile stretch. You can also note missing signs and erratic blazing. Make a note of areas you can handle with a buddy and areas where you may need a large work crew or certified sawyer. If you are technically inclined you can even mark these areas with a GPS and create your own map. Once you have the problem areas identified you can create a work plan for your whole trail.

Your first priority is to make sure your trail is decently blazed and passable for hikers. So concentrate on the problem areas first. You may have a tree that needs to be removed, but you don't have the equipment or aren't certified for chain saw use. Simply removing all the branches with loppers or a folding pruning saw so hikers don't impale themselves may be enough to make the trail "passable". Once the trail is passable for those early hikers, you can concentrate on the less problematic areas to make your trail the best maintained segment in the entire Florida Trail System.

Trailmasters, Section Leaders and Trail Coordinators need to work together to schedule chapter maintenance hikes. Factors to consider include: hunting seasons (see <http://myfwc.com/hunting>), other chapter and state events, holidays, land manager rules and regulations, scheduled prescribed burns or logging, even football weekends. Try to get publicity out as soon as possible. It's helpful to have copies of written directions to meeting places and perhaps even trail worker maps to give out at chapter meetings.

Chain saws and crosscut saws may only be used by certified sawyers. FTA offers 4-6 chain saw classes and usually one crosscut saw class each year. State-wide training opportunities are also available for such topics as cable rigging, tool maintenance, bridge and boardwalk construction, and invasive plant identification, usually as F-Troop projects. Other workshops are offered at the state and regional conferences.

Do what you can and don't be afraid to ask your Section Leader and Chapter for help. Practice safety first and always remember, you are more important to us than that one problem tree. We want you around helping us with the Trail for many years to come. Most of all, have fun and experience the satisfaction of a job well done.

bring. At the meeting place you will sign in and meet your fellow workers. There will be a short, informal discussion of the job planned and safety precautions, jobs will be assigned, and tools and safety gear handed out. Your first few hikes will be a learning experience – so ask lots of questions and observe how the experienced maintainers not only do the jobs, but have fun at it.

FTA trail maintainers are expected to handle all of the routine maintenance tasks on their trail section including vegetation control, maintenance of blazes and trail signs, removal of obstacles, and removal of litter. Those volunteers responsible for regular trail maintenance must be members of the Florida Trail Association, but guests may sometimes join in on maintenance hikes. A few projects are just too big or too challenging for local maintainers to handle. For these projects (major bridges, hurricane damage, etc) Section Leaders can call on other chapter volunteers, land management personnel, FTA staff, and other state-wide programs such as F-Troop, Student Conservation Association, Alternative Spring Break crews and Americorps.

FTA and local Chapters provide a variety of tools required for trail maintenance activities. Volunteers will be issued safety equipment by their Chapter upon signing up for trail maintenance activities. Heavy-duty mowers, loppers, pruning saws, hand clippers, paint brushes and Pulaskis are our basic trail maintenance tools. While FTA provides a lot of the equipment, most volunteers prefer to purchase and work with their own personal hand tools such as gloves, loppers, pruning saws, nippers, and paint brushes.

General Information

This booklet is for you – the FTA volunteer trail maintainer – and covers the basics that a Trailmaster is responsible for on their little chunk of the Florida Trail. It was developed as a "how to" guide for beginning maintainers as well as a review for "old hands".

Most important is to work only within the limits of your physical condition and skills. You want to have a good time—not get exhausted. Be sure to drink plenty of water and protect yourself from sunburn, bugs, vines and scratches. Be a responsible adult and take seriously the need for safety equipment and procedures. Stay with other members of the group, especially if you are not familiar with that section of the trail. At breaks or lunch, sit on a

plastic sheet or stool – don't become "chigger bait!" Let the leader know if you are having a problem or don't understand a task. Don't ignore an early blister, muscle cramp, or fatigue.

At the end of the maintenance hike the leader can sign your FTA Trail Work Record ("The Green Card") to help you keep track of your volunteer hours. Awards are given after 10, 100 and 500 hours. Tracking volunteer hours is done by the Section Leaders and Chapter Trail Coordinator and is very important in helping FTA obtain funding and grants for the Florida Trail System. Don't forget to include hours you spend on travel to and from the work site.

Trail maintenance combines good exercise, the pleasure of working with friends, the beauty of the outdoor trails, and the satisfaction of useful volunteer work. FTA hopes you develop the habit of joining in caring for all trails, learning about the way we do it, and possibly becoming a trail leader.

Safety Equipment

Long sleeved shirts, long pants and sturdy boots are recommended for all maintenance activities. They will help protect you from cuts and scrapes as well as the sun. Insect repellent is also recommended, especially for protection from ticks and chiggers. Always carry lots of water and a small personal first aid kit in a day or fanny pack. It's easy to become dehydrated when working hard in Florida's heat and humidity, so drink often. During archery, muzzle-loading and general gun hunting seasons (basically October into January) wear a safety orange vest or clothing. Sunscreen with a high SPF is important, especially in open areas.

One of the biggest safety rules is never work alone. Most FTA maintenance activities are accomplished by groups. That not only makes the work easier but more fun. If you do happen to go out alone, always let someone know where you are going to be working and when you plan to return. A cell phone is a good item to have along with you, but be aware that reception is spotty along many areas of the Trail.

For almost all routine maintenance you are required to wear a hard hat, eye protection and gloves. Make sure your hard hat and gloves fit. Add a strap to the hard hat if you find it slipping off as you bend over. If you are working with any type of cutting tool (from loppers

- Watch the tension on fallen trees; saw so the natural tension opens the cut rather than pinches the saw.
- Use pry poles or levers to relieve tension and open the saw cut.
- Drag windfalls away from the immediate sight of the trail. Try to reduce the visual impact of cut trees by turning cut ends of logs away from view of the trail.
- Flush cut stumps to the ground to reduce visual impact and to encourage rapid decay of the stump.

Equipment:

- Bow saws,
- Pruning saws,
- Crosscut saws (use is restricted to certified sawyers),
- Axes,
- Clippers,
- Loppers,
- Chain saws (only for non-wilderness areas and use is restricted to certified sawyers)

Tips for Trailmasters and Section Leaders

It used to be that we saw very few hikers on the trail between late April and late October. But as the Florida Trail has become better known, more and more hikers are using the trail during the "off" season. Also, as the Eastern Continental Trail (Key West to Canada) has become more popular, thru-hikers are starting on the trail earlier and earlier. Although FTA advises them to start in the south in January, thru-hikers have started as early as October. We need to strive to have the entire trail at least blazed and passable year round.

We recommend that you start the beginning of the maintenance year in September with a walk-through of your trail section. A little light maintenance is ok, but your main purpose for this trip should be to get an overall impression from which you can develop a maintenance plan for the whole section. You may find that 2 miles of your trail needs only routine mowing and lopping but the next 1/4 mile has three trees down and a big windfall. Or maybe a

reported as soon as possible to the Section Leader. The use of chain saws and crosscut saws is limited to those maintainers who hold a current certification card.

General Standards:

- Safety is the primary consideration. Do not attempt to remove large or "hung-up" trees alone. Do not exceed the capability of your equipment, your skills or your current physical abilities.
- Clear to the same width as your trail corridor.
- Appropriate safety equipment must be worn (safety glasses, ear protection, chaps, hard hat, gloves, boots).
- Protect yourself from tick infestation (long sleeves, insect repellent).
- Remove all fallen trees, windfalls, and other obstructions from the trail except those which prevent erosion, prevent access by non-authorized users (mountain bikes, ATVs, etc), and those which can be easily stepped over without breaking stride.
- Trees not removed should lie flat on the ground and should be less than 12" in diameter or low enough to allow passage of a mower.
- It is okay to leave the occasional limbed tree trunk parallel to the trail if it could be utilized by hikers as a bench for a rest break.
- All obstructions should be removed as soon as possible to prevent danger to users and discourage hikers from creating their own trails.
- If the width of a deadfall is so large that a tremendous amount of effort and manpower will be required to remove the deadfall or if worker safety is seriously compromised, consider relocating the trail around the obstacle, but only as a last resort. Steepness of slope, length of detour, and difficulty in getting around the obstacle are all factors which should be considered. Consult your Section Leader if you think this might be the case because FTA's agreements with land managers vary on this point.

Techniques for Clearing Fallen Trees:

- Remove material far enough from the trail corridor to prevent snagging hikers or creating an eyesore.

to mowers) non-skid boots are also required. For power tools you also need some form of hearing protection. Chain saw and crosscut saw use has specific additional safety equipment. You'll learn more about those requirements in your certification courses. The [FTA Safety Card](#) is a chart showing what PPE (Personal Protective Equipment) is required for different jobs. Ask your Section Leader for a copy you can carry in the field.

Blazing and Signage

FTA trail maintainers are responsible for ensuring that their trail section is adequately marked, is easy to follow, and that all signage is accurate and in good condition. No trail maintenance task is more important than blazing and the lack of proper blazing consistently causes more complaints and "lost" hikers than any other consideration. It doesn't matter how beautiful your trail is or how well you have cleared it, if hikers can't follow it.

Maintainers are tasked with keeping blazes in good condition and painting new blazes as required. Blazes consist of neatly painted rectangles and should meet the general standards as outlined below to maintain consistency throughout the Florida Trail System. The orange and blue paint used must be that approved by (and provided by) FTA.

The objective in blazing is to mark the trail often enough to guide the hiker and keep the trail distinguishable for hikers of various ages and experience levels. Maintainers should avoid over-blazing, but consideration should be given to the typical trail user for each specific piece of trail. For example, on sections frequented by inexperienced day hikers (such as those near towns and major trailheads) blazes should be placed closer together than in "back country" sections hiked principally by experienced long distance hikers.

General Standards for blazing:

- Use 2" X 6" vertical rectangles.
- Place at adult eye-level on live trees – 5.5 to 6 feet above ground level.
- Where blazes of different colors are used on the same treadway (two trails running jointly), the two blazes should be placed one above the other.

- A double blaze means “Heads Up!” and generally indicates an upcoming sharp turn. Double blazes can be one above the other or the top blaze offset. Gradual turns do not need double blazes, just place the blazes a little closer together.
- Double blazes should be placed just BEFORE a turn, not AT or AFTER a turn. Where are stop signs placed at an intersection? BEFORE the turn. People relate to that.
- A single blaze should be visible immediately after a turn.
- Blazes should be visible across an intersection with another trail, a stream, a power line/pipeline easement, or a road.
- No other form of paint marking (painted arrows, etc.) is approved. If a hiker requires more information than can be conveyed by a single or double blaze, then a sign should be used. See your Section Leader for available FTA signs.
- When no trees are available, install wooden posts. Pressure-treated 4x4s are the preferred blaze posts.
- Once an area re-vegetates (after a fire, timber harvest, etc), blaze posts should be removed and reused elsewhere.
- The main trail is blazed with FTA orange paint.
- Spur trails (to campsites, trailheads, water sources, etc) are blazed with FTA blue paint.
- When intersecting trails occur, and other colors are needed, consult your Section Leader.

Techniques for Blazing:

- Remember, from one blaze you should be able to see the next blaze.
- Find where 5.5 feet is on your body (chin, nose, hairline, etc.) and use that point as the bottom of the blaze.
- When standing at one blaze, site down the trail and pick the most prominent spot up ahead at the end of your sight-line. Walk to it and blaze it or install a post.
- Blazing should be done when leaves are on the trees.
- Pick large, living trees which are prominent when foliage is out.
- Avoid painting stumps or dead trees, they may not be there next year!
- Never blaze trail structures (shelters, picnic tables, land manager kiosks, etc).
- Paint neatly; avoid using too much paint (it will run down

- Low shrubs and young trees should be cut flush with the ground to prevent tripping and to reduce sprouting from the stump and roots.
- Trim branches 1" from the main trunk to prevent snagging passing hikers and to prevent tree injury.
- Branches growing towards the trail should be cut back to the next limb growing away from the trail (to encourage growth away from the trail).
- It is better to remove all lateral branches than to remove the tree top since removal of the terminal bud will encourage lateral growth across the trail.
- Grubbing with a mattock or Pulaski may be necessary to clear the tread of long neglected trails; do not remove any more vegetation than is necessary to define the tread.

Equipment:

- Loppers,
- Brush mowers (except in designated wilderness areas),
- Hand clippers (nippers, snippers),
- Hand weeders (swing blades),
- Bow and pruning saws,
- Pulaskis and mattocks (for grubbing out vegetation in the trail tread),
- Power weeders (except in designated wilderness areas),
- Proper safety equipment (safety glasses, hard hats, ear protection, gloves, boots).

Removal of Fallen Trees and Obstacles

Trail maintainers are expected to remove any obstacle that can be tackled safely. Obstacles (fallen trees, etc) causing hikers to leave the tread are the highest priority for removal, while easy walk-overs (or walk-unders) may be left in place. Maintainers may wish to carry a folding pruning saw on every routine maintenance trip to handle smaller blowdowns.

Maintainers should not attempt to remove trees that are dead but still standing, blowdowns under tension (trees that are wedged between other trees), very large obstacles, widow-makers and any other problem that might pose a safety risk. These should be

Vegetation Control

Control of vegetation is perhaps the most time-consuming task of the trail maintainer on the Florida Trail. Maintainers will usually spend most of their time using mowers to cut high grass and weeds and using loppers to trim branches, palmettos and woody vegetation that have grown into the trail corridor.

Overgrowth of problem vegetation (briars, poison ivy, stinging nettles, and high weeds) is directly related to tread degradation and erosion problems since hikers will avoid these areas and create an easier path. This results in braided tread. Control of vegetation is essential in order to avoid the labor-intensive work of repairing an eroded trail and restoring multiple social trails.

Heavy duty mowers and power weeders are the primary tools for cutting high grass, vines and weeds on all non-wilderness sections of the Florida Trail. Maintainers will want to weed aggressively, especially if you're limited to two or three visits per season. since these plants will be harder to control if left to thrive over several seasons.

General Standards:

- Tread width should be maintained at 18" to 24"
- Horizontal clearance width should be 32" to 48".
- Vertical clearance should be maintained at 80".
- Shrubs and trees should be cut flush with the ground to avoid leaving stubs as tripping hazards.
- Remove debris from trail; scatter if there are large amounts.
- Do not grub or remove trailside plants; these plants and root systems help stabilize the soil.
- Areas in front of blazes should be kept open to allow maximum visibility of blazes.
- Areas at road crossings with little or no berm should be cleared a little wider to provide hikers and motorists with unobstructed views.

Techniques for Vegetation Maintenance:

- The amount of vegetation maintenance is dependent upon the level of use the trail receives.

the tree).

- Clip away low bushes or protruding branches to clear the blaze area. Also, check for branches on other trees that can obstruct the hiker's view of the blaze.
- Scrape a 3" X 7" rectangle on thick barked trees.
- Rub moss and lichen off a 3" X 7" rectangle on thin barked trees.
- Re-blaze every year or two to keep blazes visible and to replace missing or enlarged blazes. Carefully remove excess blazing and trim down blazes which have "grown".
- Blaze in only one direction at a time before turning around at the end of your trail section. A prominent tree in one direction may look very different hiking the opposite direction.
- Try to space blazes at fairly constant intervals.
- All road walks should be blazed. Space blazes closer together as you join or leave a road. After that, a reassurance blaze every few hundred feet should be enough.
- When blazing roads, try to blaze that side of the road which is safest for the hiker, i.e., the side with the widest berm, least traffic or fewest obstructions.
- Try to avoid painting blazes on both side of the same tree, just in case it falls.

LEARNING TO PAINT BLAZES

Painting New Blazes

If you are new to blazing we suggest using a metal square to perfect your blazing techniques. These instructions are based on that suggestion. After a few hundred blazes, you probably won't need the square, but it's never a bad idea to periodically check yourself with the square again. Another idea is to create a 2x6 inch template from heavy cardboard or plastic or ask Bob Deckert to demonstrate his "Blaze Master"..

Tools

- Draw knife or draw hoe for thick barked trees (carbide is sharper and stays sharp longer)
- Paint scraper/rough kitchen scubbie pad for thin barked trees.
- 1.5-inch paintbrush

- 8x12-inch metal square
- Pencil
- Rag or paper towels
- Aluminum foil or plastic wrap to hold dirty brushes until cleaning
- Container for holding small amounts of paint— plastic peanut butter jars are widely used
- Paint stirrer
- Brush cleaner and hand cleaner for afterwards
- A small bucket, caddy or gallon milk jug to carry the above

Painting New Blazes

- On deep barked trees, use a drawknife to lightly shave off the outer layer of bark and create a relatively smooth surface for painting - about 3x7 inches.
- On trees with thin or smooth bark, lightly scrape the area with a paint scraper or rough kitchen scrubbie.
- DO NOT cut into the cambian layer of the tree and damage it.
- Using a square, draw a 6-inch vertical line plumb with the ground. Flip the square to finish drawing a 2x6-inch rectangle. The bottom of the blaze should be at 5.5 feet.
- Paint within the lines, using a paint scraper if necessary to touch up edges and corners. Apply paint liberally, brushing out any runs.

Touching Up Blazes

- Scrape dirt and loose paint off existing blaze with paint scraper or rough kitchen scrubbie.
- Hold square up to right edge of blaze and scrape along edge of square with a paint scraper to establish a plumb 6-inch edge as a baseline.
- Flip square over and scrape left edge of blaze parallel to right edge. Make sure the blaze is 2 inches wide. (As trees grow, blazes will spread.)
- Square off top and bottom edges, 6 inches apart, with paint scraper.
- Paint within the scraped rectangle.
- Trim back any foliage that blocks view of blaze.

Painting Double Blazes

- Using the above techniques, paint two 2x6-inch blazes.
- Either over-under blazes or offset blazes may be used to indicate turns.
- If offset blazes are used, the top blaze should be offset in the direction of the turn.
- The top of the bottom blaze should be at about 5.5 feet.

Removing Unnecessary Blazes

Getting rid of old blazes may become necessary when a piece of trail is relocated, a section of trail is determined to be over-blazed or over time vegetation growth changes your prominent land marks along the trail. When obliterating blazes because of a relocation be sure to remove ALL the old blazes, not just the one where the old trail deviates from the new trail. Many hikers have become "lost" because they spotted one of the old remaining blazes off through the woods and headed towards it, only to find no more trail.

- Lightly scrape off loose bark and paint with a paint scraper. Don't overdo it and harm the tree.
- Dab on brown or gray paint with end of brush to cover any remaining blaze paint and to make tree look as natural as possible.
- Primer spray paint works well. Primer is thicker and less transparent than normal spray paint.

