

**Friends of the Ouachita Trail**  
(FoOT)



**Trail Maintenance Guide**

*(Third Edition - March 2009)*

*The highest reward for a person's toil is not what they get for it,  
but what they become by it.  
-- John Ruskin*

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## **Friends of the Ouachita Trail (FoOT)** **TRAIL MAINTENANCE INSTRUCTIONS**

Volunteers who adopt sections of trail are accepting responsibility for regularly keeping the trail corridor open and the tread way free of debris. Whether your sport is running, hiking or biking, trail maintenance is a great way to put something back into a sport that gives you so much.

**FREQUENCY OF MAINTENANCE.** Ideally, trail should be maintained *twice* yearly.

**Spring.** Before heat, ticks, and chiggers emerge; primary tasks are **clearing** winter debris and **making repairs** to tread damage from water, animals or intrusive vehicles.

*Check with the appropriate District Ranger to be certain that no controlled burn is planned for your workday.*

**Fall.** Before deer hunters emerge; primary task is **cutting** summer growth and **clearing** material downed by summer storms.

### **DEFINITION OF TRAIL TERMS**

**Blaze:** A marking, usually on a tree, to provide confidence to the trail user that he is on the trail. The Ouachita trail uses blue 'blaze' markers.

**Clearing:** The removal of *downed* material from the trail, such as trees, branches, etc.

**Corridor:** A visually clear passage (hallway) through the forest, approximately 6 feet wide and 8 feet high. Estimate width with your outstretched arms equal your height. For height, use your arm plus loppers extended over your head.

**DBH:** Diameter Breast High, used by loggers to measure tree size. Estimate 3" with fingers.

**Drainage:** The way water flows downhill and OFF the trail.

**Drain:** Any specifically designed trail feature to allow water to escape the trail, rather than running down the trail causing erosion damage.

**Fall Line:** The natural flow of water based on hill slope (downhill).

**Flag / Flagging:** Thin, brightly colored ribbon to mark an area of trail for construction or maintenance.

**Tread:** The packed, relatively level path down the center of the corridor, 18 to 24 inches wide.

**Water bar:** A diagonal line of rock or tree trunk that slows erosion by directing water off the trail.

**Wilderness:** An area designated by the US Congress with special protected status. As it relates to trail maintenance, NO power tools of any kind may be used in a Wilderness area. Trail work must disturb the natural environment to the least extent possible.

### **RECOMMENDED PERSONAL GEAR:**

Sturdy Boots or footwear

Work Gloves (for grip, blister prevention, and protection against briars, poison ivy, etc.)

Appropriate Clothing: Long pants; long sleeves

**Safety glasses; First Aid Kit**

Hard Hats and Ear Protection (*if using power tools*)

Consider personal insecticide and protective lotions for poison plants.

**Drinking water**

### **TOOLS:**

Volunteers need to provide their own personal hand tools. USFS (or FoOT) may provide tools in some cases.

Coordinate, in advance, with your District Captain, the FoOT Vice President – Maintenance, or your local District Ranger.

#### **Personal Hand Tools**

Sharp Loppers are basic, 2-3 foot handle; Hand pruning shears (in sheath)

Bow saw or Hand Saw with 13-30 inch blade; kind that carries in a sheath is convenient

Rake, hoe, or shovel for tread repair.

#### **Tools Available from FoOT or USFS**

Fire Rakes

Pulaski (Pick/axe combination)

McCleod (a tread finishing tool)

Trenching Tool

Paint supplies for blazing

#### **Power Tools**

Weed-eaters and chain saws are both useful for trail maintenance.

FoOT owns several weed-eaters and they are particularly useful for annual growth removal. You may also use your own. If you use weed-eaters, **wear ear and face protection!!**

**Note:** Chainsaw use is **not permitted** unless you are Forest Service certified.

If you are interested in certification, let the FoOT Vice President - Maintenance know.

*Tip: Orange or yellow paint/tape on handles helps keep track of tools in the forest.*

*Tip: Trail tools are available from local hardware stores and from several internet suppliers.*

For starters, try:

[www.benmeadows.com](http://www.benmeadows.com) , [www.amleonard.com](http://www.amleonard.com) , or [www.gemplers.com](http://www.gemplers.com)

## SAFETY

**Trail work includes inherent safety risks. Always use caution and exercise common sense. Stay alert to other workers and to potential trail hazards.**

**\*\* Never work alone!** Always carry a first-aid kit.

**\*\* Watch your footing.** Always keep a firm, balanced, and comfortable stance.

**\*\* Clear the Work Area!** Watch for overhead or side hazards; keep your tool in front of you.

**\*\* Always be aware of where your fellow workers are.** If moving large branches or felling trees, make sure you clear the area first. *Tip: Orange vests help work party members keep track of each other.*

**\*\* Watch for signs of personal fatigue or dehydration.** Don't push yourself beyond your limits. Watch for signs of fatigue in others.

### **Tool Safety:**

**\*\* Choose the right tool** for the job. The wrong tool can force you to work in awkward position, increasing fatigue.

**\*\* Keep your tools sharp.** They cut easier and safer.

**\*\* Keep a good grip** on your tools; always wear gloves.

**\*\* Carry your tools properly.** Carry tools in downhill hand; working side forward; sharpest side facing ground. **Do NOT carry tools over your shoulder – this is a good way to hurt some one else.**

**\*\* Watch where you swing a tool.** Be careful of other workers and of overhead hazards.

### *When using any power tools:*

**\*\* Wear ear protection; eye protection; hard hat.**

**\*\* Protect your fellow workers;** power tools throw debris great distances at high speed.

**\*\* Chain saw use is allowed only by personnel trained and certified by the USFS.**

**In the event that someone does get injured, your first priority should immediately become their welfare.** Stop work and use whatever means possible to get them medical attention. Use on-site first aid, and then use whatever communication method available to seek further help. Try to have medical personnel meet you at the trailhead if necessary, then help the injured volunteer to the trailhead. *Sort out the paperwork later.* Remember that if you have signed a FoOT Volunteer agreement you will be covered under USFS Workman's Compensation.

## Planning and Reporting Your Work

### **Trail Triage** (From Forest Service Trail Construction Notebook)

**\*\* Monitor your trail conditions closely.**

**\*\* Decide what can (and cannot) be accomplished as basic maintenance.**

**\*\* Determine what can be deferred; what needs immediate attention.**

**\*\* Identify what area will need major work or most frequent work.**

**Use your work report to identify areas that you intend to defer or that you need assistance on.**

Note: Parts of the Ouachita Trail are badly overgrown. Several attacks may be needed to achieve the visually clear six-foot corridor and clean tread way that is your goal.

Note: Not all volunteers have the same physical abilities or the same physical skills. Some of the things suggested in this manual may seem beyond your ability. Do not put yourself at risk of injury by performing a task you are uncomfortable with. If you have questions about how to perform maintenance or how to report something, please contact your District Captain or the FoOT Vice President – Maintenance and ask for clarification. They are there to help you.

## Maintenance Report

After completing your maintenance project, submit a **FoOT Trail Maintenance Report** using the form provided. This report is important to our overall visibility of trail conditions and in your ability to get help for work beyond your capability. The report has three major objectives – for FoOT to collect volunteer data for the USFS, for you to identify work that needs FoOT or USFS attention, and to provide current trail condition. Work Reports that can be completed digitally and submitted

by email are available at the FoOT web site [www.friendsOT.org](http://www.friendsOT.org) or directly from FoOT via email at [friends\\_OT2003@yahoo.com](mailto:friends_OT2003@yahoo.com) .

The **Data** requested is important for a record of work performed. Remember to identify any guest workers and have them sign a guest worker agreement (for their protection) and to report the man-hours worked. This data allows us to provide the USFS with essential data such as the number of volunteer man-hours worked during the year. This type of data can also be useful in obtaining funding for FoOT projects. We have streamlined the report to ask for only that information necessary to provide the Forest service with data they are required to collect, or data that is necessary for us to keep the trail in good condition. Please do not forget this last step important in the job.

The **Trail Assessment** section is important to our overall visibility of trail conditions. Give an overall Green / Yellow / Red assessment, as defined on the form. This will allow us to prioritize work needed, both for the FoOT Patrol and for the USFS. We also use post trail assessment information on our web site, as a service to trail users, in an effort to promote interest in both the Ouachita Trail and interest in FoOT.

The **Work Needed** section is your opportunity to ask for help. If there is work beyond your capability, such as chain saw work or major repairs that you can not perform yourself. When reporting these items, be as specific as possible, utilizing mile markers, land marks, or other clear reference points. If you have "flagged" these items, indicate method/color of flagging. Either the FoOT Patrol (our more experienced volunteer force, including chain saw crew) or the Forest Service will try to take care of these items. Please note that this section is for work you need help on. Use the "Additional Comments" section if you want to mention work that you left un-completed, but plan to get on your next time out.

Submit your report via e-mail ( [friends\\_ot2003@yahoo.com](mailto:friends_ot2003@yahoo.com) ) or via US Mail (PO Box 8630, Hot springs, AR 71910), whichever is most convenient for you.

The **Trail Condition Report** form is intended for trail users to provide input to other volunteers to let them know conditions on their trail. If you have recently used a section of trail, adopted by someone other than yourself, and notice conditions needing attention, please use this form to let the responsible volunteer know conditions.

**Note:** *You must be a member of FoOT or be registered as a Volunteer with the Ranger District managing your trail section.* Trail volunteers must have 'guest workers' sign a Guest Work Agreement, *to assure they are covered by USFS Workman's Compensation agreement.*

## TRAIL MAINTENANCE 101 – Practical Instructions

Golden Rule: **Cut to the source**

Crucial Question: **Will this be in my face next year?**

**First Priority is a tread way (18"-24")** clear and free of tripping and/or scratching hazards.

\*\* Cut all tread way vegetation as close to the ground as possible and remove to the downhill side. \*\* Step off the trail and cut woody plants that in one season will grow into the trail. **Do not "LOP AND LEAVE"—throw the cuttings as far off and out of the trail corridor as possible so as not to build up a wall of debris on the sides of trail.**

\*\* Manually cut or weed-eat non-woody annual weeds if they are thick or four-five feet tall.

\*\* Remove debris—loose rocks, leaf clogs, downed branches.

\*\* Size permitting; drag downed trees, cut or broken end first, off downhill side of the trail.

\*\* Note and report:

- location and type of major tread damage;
- location of downed trees too large to handle
- dangerously leaning dead trees.
- any illegal vehicular intrusion. (Remember, much of the OT is open to Mountain Bikes.)

\*\* The location of Items being reported for future work should be identified as specifically as possible. Use flagging material to highlight these for subsequent work crews.

**Second Priority is a corridor** in which the eye sees a forest hallway 4 feet wide and 8 feet tall. (See attached diagram.)

\*\* Cut tree branches less than 8 feet high on *both sides* of tree if possible. (Keep the trees symmetrical)

Note: "If over half of the tree needs pruning, it is usually better to cut it down instead. Cut trees off at ground level and do not leave pointed stobs" (USFS Trail Construction and Maintenance Notebook)

\*\* Cut any bramble bearing plant as close to the ground as possible.

**\*\*Cut all Greenbriars at ground level that are anywhere near the trail because by next season they will be ON the trail. Remove the cut briars away from the trail corridor.**

**\*\* Cut back Grapevine or Ground Muscadine vines encroaching on trail tread. It advances three feet or more seasonally. This works well with one person pulling the vine back to reveal the ground contact and the other person cutting it off at ground. Discard the cut vine out of the trail corridor.**

**\*\*Remove downed branches or debris from the corridor.**

Note: Not all material is stripped from the corridor.

- Off tread, leave annual weeds that should be drying up by fall maintenance time.
- Off tread, leave trees that are 3 inches diameter, but lop limbs to tame growth away from trail.
- Leave perennial plants like fern under approximately 12 inches high.

**Third Priority is side drains and turn-outs** designed to clear water off the trail. The intent of drains is twofold. First, they keep water from running down the trail, causing erosion. Second, they prevent water from pooling on the trail, causing hikers to side step, breaking down or widening the tread. Drains and turn-outs are often found in conjunction with water bars and hillside turns.

\*\* Repair water bars and minor tread damage.

\*\* Clean out drains. If this has built up for so long it has turned into dirt, you may need to dig down to open it up. A boot heel applied here helps, but a hoe or other digging tool works best. Pull the debris downhill and off into the forest.

\*\* If you see evidence of tread damage from running or standing water, consider installing some side drains in places you feel they are needed. Make sure the drains will carry water *away from the trail*.

**Fourth Priority is Trail Signage, Markers and Blazing.** Most of the Ouachita Trail is marked with the following:

\*\* Blue blazes painted on trees.

\*\* Permanent Mile Markers indicating trail location

\*\* Trailhead sign-in boxes located at major trailheads;

\*\* Trail signs indicating direction and distances at major intersections

Volunteers are expected to maintain the blazes in their section. See the detailed blazing instruction on the next page. Remember to include an assessment of blazes in your work report.

On each outing be alert to find the permanent mile markers. They are often difficult to see and easy to overlook. If you are convinced that one is missing, please report it.

Other signage problems should be included in your trail work report. In most cases the Forest service will repair or replace signs, but they need to know when there is a problem.

## BLAZING THE OUACHITA TRAIL 2 X 6 RECTANGLE:

### Supplies:

- Get the appropriate **blue paint in the Gatorade Bottles\***, a **paint scraper**, and **brush** from FoOT ---Ken Schultz in Hot Springs Village, AR 501-915-0399 [bmschultz@sbcglobal.net](mailto:bmschultz@sbcglobal.net)
- You can also get paint from your local Forest Service District office, or Pinnacle Mountain State Park office (see below). (Bring your own Gatorade bottle\*.)
- You are also welcome to use your own supplies. **NOTE: If you prefer to buy paint yourself, see the color codes at bottom of this instruction.**
- A zip lock bag to put the brush in when you are finished.
- Some kind of **eye protection**.
- **Rags** to wipe spills
- Nice, but not necessary, is to carry a pair of small **hand clippers** (like for rose bushes) in case there's a vine on the tree or a small branch that, when leafed out, will block the blaze.

### How to:

- **Do not use spray paint—too messy.** \*Use paint from a bucket and put paint in a 24 oz. Gatorade bottle with drinking spout and squeeze enough paint onto the 2" brush to paint the blaze (the bottle is the easiest, less messy, most efficient way to carry paint). Be sure to take enough paint for the job to be done
- In most cases find the old blaze.
- Make sure the tree is still alive. Don't paint on dead trees that will fall over.
- Scrape off the bark (not too much) for a 2" X 6" spot to paint on. This is important for a lasting effect.
- This all works best with two people. One scrapes and the other paints.

- As neatly as possible paint over the old 2" X 6" rectangular blazes if the tree is still alive (**please note "rectangle", not blob**). If the tree is dead or there are no blazes, choose appropriate LIVE trees. If there are no trees in the area, use a large stationary rock beside the trail. **Be sure to blaze both sides of the tree--both going and coming.**
- **We ARE NOT trying to color-code the forest so use your own judgment regarding spacing of blazes. The Forest Service guideline is a blaze very 500' or so. Blaze just often enough to let the trail user know where the trail is. Remember some hikers and bikers prefer the "wilderness experience". DO NOT OVERBLAZE the trail. However, extra blazing can be used at vague or confusing spots on the trail.**

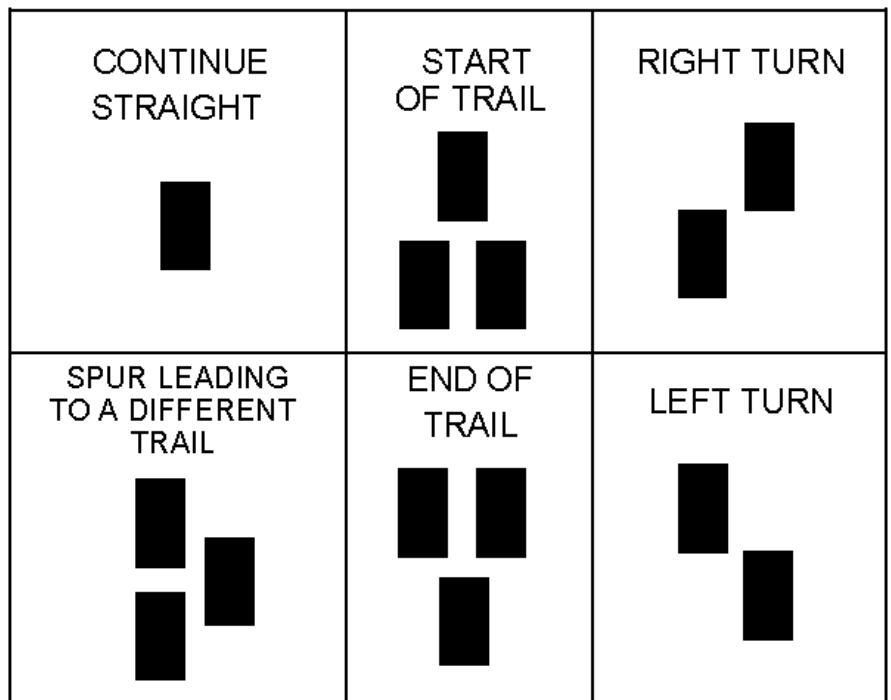


Figure 1. Blazing marks for use on Ouachita Trail

- Feel free to “erase” some old blazes if you think there are too many by lightly scraping or use wire brush.
- **If the previous blazes are not on both sides of a tree and are on different trees, “erase” one of them and put them on both sides of one tree.**
- For many years the Ouachita Trail has had the right or left slanted double blaze signifying a turn. Do not refresh these slanted blazes. Paint the new correct turn signal blaze shown in figure 1 just under the old slanted one. Eventually they will all be replaced and the old incorrect slanted blaze will fade away.
- Paint “turn signals” at vague, confusing, or abrupt turns. See figure 1. We will be using the Right Turn, Left Turn, and Continue Straight blazes shown in figure 1.
- If borrowing supplies from the Forest Service office or State Park, please clean the supplies before you return them so they will be ready for the next volunteer. With supplies borrowed from FoOT, Ken Schultz will clean them for you.

A good idea is to put a “secondary” blaze marker on the Mile Marker tree/object so the Mile Markers are easier to spot. See figure 2.

Try three vertical lines 1" wide, 1" apart about 4-5 ft off the ground. The two outside lines are 6" long and the middle is 12" long. That mark would signify a Mile Marker tree or object.

**In Oklahoma** volunteers should get paint from the USFS office in Hodgen. Call Jared Johnson 918-653-2991. He has the paint there in buckets. You should bring their own GatorAde bottle, brush and scraper.

There is also paint available at the tool cache at Cedar Lake Campground. The cache is behind the restroom across from the camp host's trailer. Olen (the host), or his wife, have the key to the cache.

**Eastern end volunteers** can get paint at Pinnacle Mountain State Park. See Kristina Root or James Mullins 501-868-5806. You should plan to bring your own Gatorade bottle, scraper and brush. We are switching over to the lighter blue paint on the eastern end so that the entire trail will be the same. BE SURE you get the lighter blue; not the old dark blue. There are excess blazes on the eastern end of the trail; please remove them with scraper or wire brush.

The paint formula for Lowe's and Wal-mart are below:

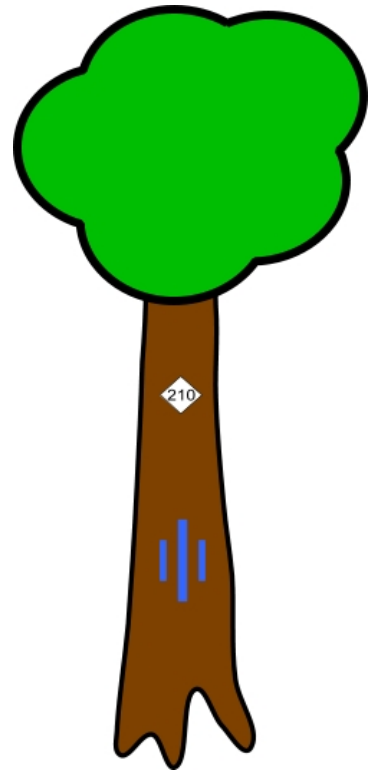


Figure 2. Secondary blaze markers on Mile Marker Tree

**Wal-Mart CUSTOM COLOR**

Dutch Boy  
 Color Place *plus*

Color Name MACH MATCH Color Number \_\_\_\_\_

Inside  Latex  Flat  Satin  
 Outside  Oil  S-Gloss  Gloss

Tint Base # ACCENT Size qt  gal  5 gal

Formula BM.5 C-11  
E-5Y16.5  
KX 6Y 12

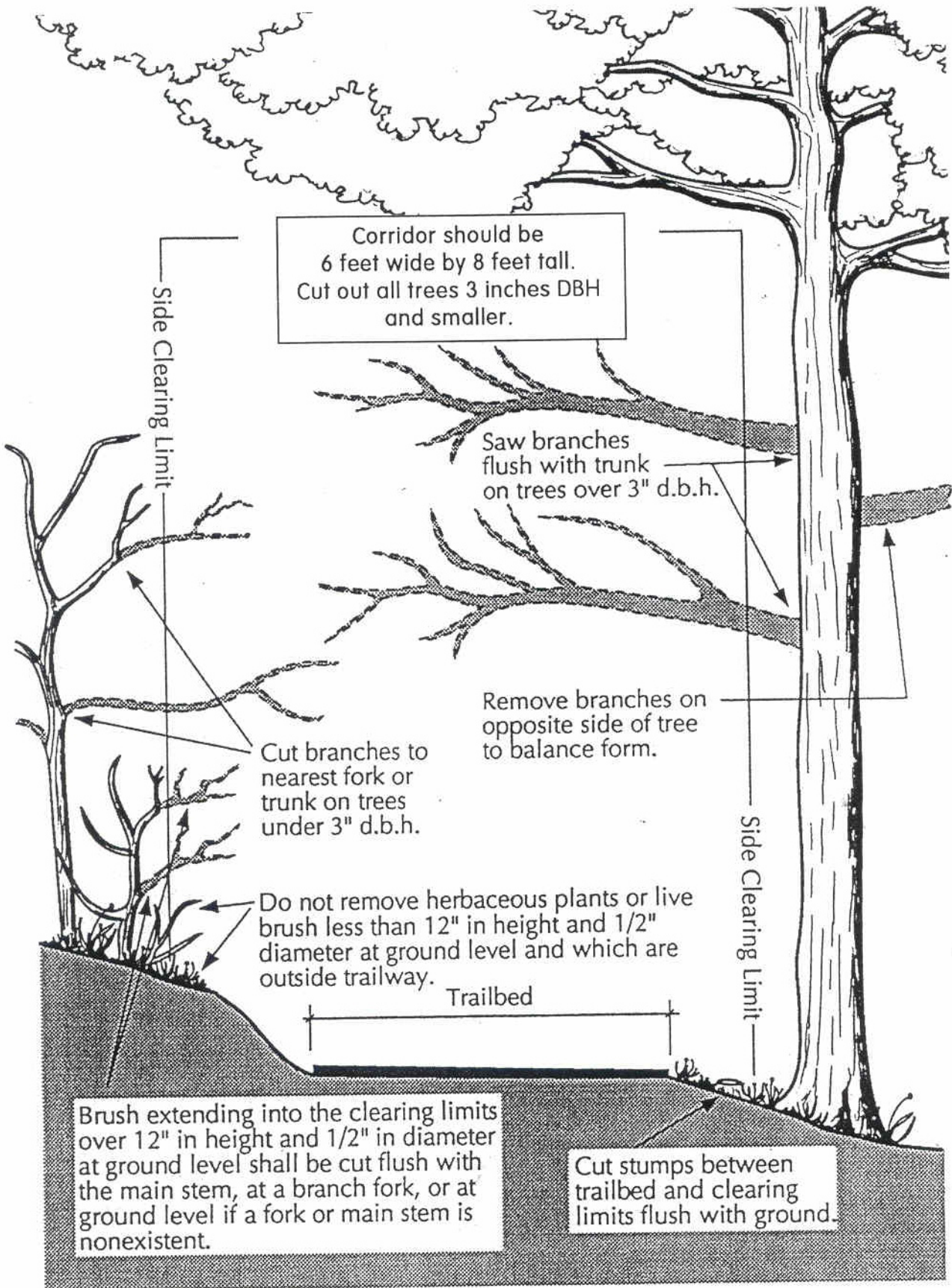
Date \_\_\_\_\_ Mixed By \_\_\_\_\_

Intermix all cans of the same color to assure color uniformity.

tinter # 2  
**MANUAL DISPENSE 12/20/05**  
 101-35.625 102-5Y12.5 111-11.25

*Lowe's*

Ext B-2





## References:

Several good trail maintenance guides are available in both printed and on-line form. Some of them are:

### **Books & Pamphlets:**

#### *Trail Construction and Maintenance Notebook*

United States Forest Service

Publication # 0723-2806-MTDC. 2007 Edition

<http://www.fhwa.dot.gov/environment/rectrails/trailpub.htm>

This is the basic USFS document. District Offices and FoOT may both have copies of this booklet.

#### *So You Want to Build a Trail*

Arkansas Dept of Parks and Tourism

1991

This is a state booklet, aimed more at trail construction, but has information pertinent to maintenance. It can be obtained from state parks. FoOT has several copies.

#### *Trail Building and Maintenance (Proudman & Rajala)*

Appalachian Mountain Club

1981

This one was a joint effort by AMC and National Park Service. It is much more extensive than either of the pamphlets, but is probably out of print. It may be available in libraries.

#### *Trail Solutions*

International Mountain Bicycling Association

2004

This is a well-illustrated book on trail construction, which has a good chapter on trail maintenance. It is available from IMBA, via their web site: [www.imba.com](http://www.imba.com)

### **On-line guides:**

Numerous guides are on-line. Enter "Trail maintenance Guide" in your search engine. Here are some of the good ones:

#### *Maintenance Guidelines*

Ozark Highlands Trail Association

<http://www.hikearkansas.com/maintenancemanual.html>

#### *Trail Maintenance Guide*

Potomac Appalachian Trail Club

<http://www.patc.net/volunteer/trails/handbook.pdf>

#### *TRAIL SHORTS: A Cursory Look at Trail Maintenance*

California Dept of Parks Recreation

<http://foothill.net/fta/work/maintnotes.html>

#### *Trail Maintenance Guide*

Wind River Restoration

Sierra Club and USFS

<http://www.geocities.com/yosemite/1270/general/gidetr1m.html>

#### *Trail Tending*

Wonancelet Outdoor Club

<http://www.wodc.org/tending.htm>



# FoOT Trail Condition Report

I was using this section of the **Ouachita National Recreational Trail** and want to report the conditions that I observed:

Directions for completing this form:

1. Use mouse to move from box to box.
2. Complete form & submit by email or mail to address given below.

### Report Submitted By:

### Observation DATE(S)


### Trail Section Being Reported

MILEPOST  to

### Condition of Trail

Place "X" in box that applies



GREEN {Easy to traverse}



YELLOW {Some impediments }



RED {Trail difficult to follow; treacherous trail surface; **numerous** impediments}

### Conditions Observed While On Trail

Place mark in box:

<input type="checkbox"/>	Large tree(s) down blocking trail at:	Location(s): Milepost(s)	<input style="width: 100%; height: 20px;" type="text"/>
<input type="checkbox"/>	Leaning/hanging material over trail at:	Location(s): Milepost(s)	<input style="width: 100%; height: 20px;" type="text"/>
<input type="checkbox"/>	Major tread damage at:	Location(s): Milepost(s)	<input style="width: 100%; height: 20px;" type="text"/>
<input type="checkbox"/>	Bridge/steps needed or repaired at:	Location(s): Milepost(s)	<input style="width: 100%; height: 20px;" type="text"/>
<input type="checkbox"/>	Mile markers missing at:	Location(s): Milepost(s)	<input style="width: 100%; height: 20px;" type="text"/>
<input type="checkbox"/>	Trail signs damaged/missing at: [Explain below]	Location(s): Milepost(s)	<input style="width: 100%; height: 20px;" type="text"/>
<input type="checkbox"/>	Blazing needed at:	Location(s): Milepost(s)	<input style="width: 100%; height: 20px;" type="text"/>
<input type="checkbox"/>	Trailhead signs/FR crossings needed at:	Location(s): Milepost(s)	<input style="width: 100%; height: 20px;" type="text"/>
<input type="checkbox"/>	Other damage: (erosion/off-road motorized vehicle usage, etc.)	Location(s): Milepost(s)	<input style="width: 100%; height: 20px;" type="text"/>

**COMMENTS:** {Use back of this page if needed}