

TRAIL MAINTENANCE BOOKLET



Including:

**An Overview
Safety
Terms and Definitions
Tools
Water Diversion Tactics
- and -
General Tips and Tasks**

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Table of Contents

TABLE OF CONTENTS

TITLE	PAGE NUMBER
TABLE OF CONTENTS.....	2
INTRODUCTION.....	13
Copies of the TATC Trail Maintenance Booklet.....	14
Copies of the TATC Trail Maintenance Crew Briefing Booklet.....	14
Copies of the TATC Trail Maintenance and Construction Hazards and Recommended Safety Gear.....	14
Tidewater Appalachian Trail Club (TATC) Activity Sign Up.....	15
Waiver / Workmen's Compensation.....	15
Points of Contact.....	15
Trail Maintenance Texts.....	16
If You Remember Nothing Else, Please Remember the Following.....	16
Safety.....	16
Prevention.....	16
First Aid.....	16
Additions and Corrections.....	16
CHAPTER 1 - AN OVERVIEW.....	17
WHAT - WHO - WHERE - WHEN.....	17
What Is Trail Maintenance.....	17
Who Can Do Trail Maintenance.....	17
Participants.....	17
Where is Trail Maintenance Done ?.....	17
Mountain Trail Maintenance.....	17
Local Trail Maintenance.....	18
When Is Trail Maintenance Done.....	18
Club Trips.....	18
April or May.....	19
May and October.....	19
July.....	19
Emergency Trips.....	20
A.T. Section Maintainer Trips.....	20
Local Trail Maintenance Trips.....	20
RELATED INFORMATION.....	20
Activity Sign Up Sheet.....	20
Trail Maintenance and Construction Hazards and Recommended Safety	

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Table of Contents

Gear.	20
A.T. Section Maintainers.....	20
Chain Saw.	21
Crosscut Saw, Bucking, Underbucking, or Felling.	21
Day Pack.	21
Directions.....	21
Emergency.	21
First Aid Kit.....	22
Konnarock.	22
For information.	22
Call.....	22
Write.	22
E-Mail.	22
Maps.....	22
Local Trails.	23
The A.T.....	23
Recognition.	23
Safety.	24
Taxes.	24
Tools.	24
Water.	24
Other Drinks.....	25
Weather.	25
Workman's Compensation.....	25
CHAPTER 2 - Activity/Crew Leaders.....	27
Activity/Crew Leaders.....	27
CHAPTER 3 - TRAIL MAINTENANCE SAFETY.....	29
General.....	29
Accident Times.	29
Activity/Crew Leaders.....	29
Baseball.	29
Best Advice.	30
Blaze Orange.	30
Burrs.....	30
Photo.	30
Bystanders.	30
Careful Passing.	30
Carrying Capacity.	31
Carrying Tools.....	31

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Table of Contents

General.....	31
Elbows.....	31
Shoulder Carry.....	31
Chain Saw.....	32
Crosscut Saw.....	32
Sledge Hammer and Rock Bar.....	32
Clothing.....	32
Evacuation.....	33
Exit Route.....	33
Eye Protection.....	33
First Aid Kit.....	33
Food and Garbage.....	34
Gloves.....	35
Grounding Tools.....	35
Hammers (all sizes).....	35
Hard Hat.....	35
Hunting.....	35
Insects Repellents and Lotions.....	36
Medicines and Medical Problems.....	37
Moving Things.....	37
Approximate Weights.....	38
Quit.....	39
Snags.....	39
Photo - Don't Leave Something to Be Walked into.....	39
Photo - Cut Back to the Trunk.....	39
Photo - Don't Leave a Dangerous Snag.....	39
Photo - Cut to the Ground.....	39
Space Workers.....	40
Time.....	40
Toiletries.....	40
Tools.....	40
Tool Passing.....	41
Trail Closure.....	41
Trail Maintenance and Construction Task Hazards and Recommended Safety	
Gear.....	41
Tree Felling.....	41
Photo.....	41
Tricks for Outdoor Leaders.....	43
Water.....	43
Waterbar Log Carrying.....	43
Weather.....	44

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Table of Contents

Trail Maintenance and Construction Task Hazards and Recommended Safety Gear (sample page).	44
CHAPTER 4 - TERMS AND DEFINITIONS.	47
General.	47
Agency Partners.	47
Berm.	47
Photo.	47
Backslope.	47
Sketch.	47
Barber Chair.	47
Barking.	47
Blazes.	48
Photo.	48
A.T..	48
Side Trails.	48
Blowdown.	48
Photo.	48
Brontosaurus.	48
Brushing Out.	48
Bucking-Underbucking.	49
Photos.	49
Check Dam.	49
Climbing Turn.	49
Compacted Trail.	49
Cribbing.	49
Drainage Channel.	49
Duff.	49
Erosion Control.	49
Exit Chute.	49
Fillslope.	50
Fortify.	50
French Drain.	50
Full Bench.	50
Grade / Trail Grade.	50
Grade Dips / Coweeta Dips / Terrain Dips/ Trail Dips / and Swales.	50
Gravel.	50
Hazard Tree.	50
Leaner.	50
Limbing.	50
Lopping.	50

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Table of Contents

Mineral Soil.	50
Ohsosaurus.	50
Outlet.	50
Outslope / Trail Outslope / Trail Slope.	51
Pitch Out.	51
Rock.	51
Safety.	51
Safety Observer.	51
Sidehill.	51
Slough.	51
Sketch.	51
Snag.	51
Spotter.	51
Steps.	52
Swing Blading.	52
Switchback.	52
SST.	52
Trail Corridor.	52
Trail Grade.	52
Trail Maintainer.	52
Trail Outslope.	52
Trail Slope.	52
Trail Tread.	52
Trench.	52
Photo.	52
Uglification.	53
Waterbar.	53
Weed Whacking.	53
Widow Maker.	53
CHAPTER 5 - TOOLS (with photos of most tools).	55
GENERAL.	55
Sharpening.	55
Sheathes.	55
Storage.	56
TOOL DESCRIPTIONS.	56
Adze.	56
Axe.	56
Bag, Plastic.	56
Ball.	57
Bucket.	57

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Table of Contents

Canvas.	57
Canvas Bag.	57
Cant Hook.	57
Cleaner, Oven.	57
Clearing Axe.	57
Clinometer.	58
Cold Chisel.	58
Come-Along.	58
Cutter Mattock.	58
Digging and Tamping Bar.	58
Drawknife.	58
Drawshave.	58
Drilling Hammer.	58
Eye Protection.	58
File, Mill Bastard.	58
Fire Hose.	59
Fire Rake.	59
First Aid Kit.	59
Gloves, Leather & Cotton Stippled.	59
Glut.	59
Grass Whip.	59
Grill Brick.	59
Grip Hoist or Griphoist® Equipment.	60
Grub Hoe.	60
Hammer, Engineers.	60
Hammer, Hand-Drilling.	60
Hammer, Rifting.	60
Hammer, Rock.	61
Hammer, Sledge.	61
Hammer, Spalling.	61
Handles.	61
Hard Hat.	62
Hatchet.	62
Hatchet, Double Bit.	62
Hazel Hoe.	62
Kerchief - Headband.	62
Kerf.	63
Log Carrier.	63
Loppers.	63
Maul.	63
Mall.	63

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Table of Contents

Mattock, Cutter.	63
Mattock, Pick.	63
McLeod.	63
Measuring Tool.	64
Multitool.	64
Nail Clipper.	64
Peavey or Peavy.	64
Pick.	64
Pick Mattock.	64
Pinch Point Crow Bar.	65
Pruners.	65
Pulaski.	65
Ratchet Winch.	65
Re-Bar.	65
Rifting Hammer.	65
Rock Bar.	65
Rock Hammer.	66
Rope.	66
Saw Size.	66
Saw Kerf.	66
Saw, Bow.	66
Saw, Buck.	66
Saw, Buck, Collapsible.	66
Saw, Chain.	67
U-Dig-It.	68
Related Equipment.	68
Saw, Crosscut, Bucking, Underbucking, or Felling.	68
U-Dig-It.	69
Related Equipment.	69
Saw, Pruning.	69
Sheath.	70
Shin Guards.	70
Shovel, Folding.	70
Sledge Hammer.	70
Snips.	70
Spalling Hammer.	71
Stone, Sharpening.	71
Straps.	71
Star Drill.	71
Swedish Bush Axe.	71
Swing Blade.	71

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Table of Contents

Tape, Flagging or Surveyor.	72
Timber Carrier or Swivel Timber Carrier.	72
Trench.	72
U-Dig-It	72
Wedge, Felling/bucking.	72
Wedge, Splitting.	73
Weed Cutter.	73
Weed Whip.	73
Weedwhacker.	73
Whatchamacallit.	73
Wire Flags.	73
 CHAPTER 6 - WATER DIVERSION TACTICS.	 75
General.	75
Water Diversion Tactics.	75
Trail Outslope.	76
Sketch.	76
Trail Inslope.	76
Sketch.	76
Terrain Dips, Cowetta Dips, Trail Dips, Grade Dips.	76
Waterbars, General.	77
Waterbar Angle.	78
Waterbar Log.	78
Straps.	79
Photos.	79
Straighten.	79
Bend, Take Up Slack.	79
Peavies or Log Carriers.	80
Shoulders.	80
Installation.	80
Staking a Waterbar.	82
Removed Dirt.	82
Waterbar Drainage Channel.	82
Walk The Waterbar.	83
Final Covering.	83
Rock Waterbars.	83
Drainage Ditch.	84
Waterbars, Summary.	84
Ball.	85
 CHAPTER 7 - GENERAL TIPS and TASKS.	 87

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Table of Contents

General.....	87
Axe Work.....	87
Sketch - Springpole.	87
Sketch - Limbing with an Axe.....	87
Blazes.....	88
Photo.	88
Blowdowns.	89
Photo - Blowdown - Before.....	89
Photo - Blowdown - After.	89
Blowdowns in Wilderness Areas & Sketches.	90
Blowdowns and Stokes Litter Requirements.....	91
Photo - Brushing Out - Before.....	91
Brushing Out/Lopping.	91
Photo - Brushing Out - After.	91
Sketch - Trail Corridor.....	92
Cutting vs Digging Out.	93
Daypack.	93
Education.....	93
Education Handouts.....	94
‘Flag’ Trees.	94
Fire Road.	94
Limbing.	94
Limbing with an Axe.....	95
Sketch - Springpole.	95
Limbing with a Saw.....	95
Springpoles.	95
Limbing Standing Trees..	96
Lopping a Branch or Sapling.	99
Sketch - Lopping a Branch.....	99
Sketch - Lopping a Sapling.....	99
Oiling and Cleaning Your Tools.	99
Poison Ivy, Poison Oak, Poison Sumac.....	100
General Information.....	100
Photo - Jewelweed Flowers, Yellow.	100
Photo - Jewelweed Flowers, Orange.	100
Photo - Poison Ivy Branches, Winter.....	101
Photo - Poison Ivy, Autumn Leaves.	102
Photo - Poison Ivy, Roots.	102
Photo - Poison Ivy, Summer Leaves.	102
Photo - Poison Ivy, Spring Leaflets.....	102
Rhododendron.	103

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Table of Contents

Photo - Rhododendron Candles.....	103
Photo - Rhododendron Flowers.....	103
Stinging Nettles.....	103
Photo - Stinging Nettles.....	103
Photo - Stinging Nettle Flowers.....	103
Virginia Creeper.....	104
Photo - Virginia Creeper, Leaves of Five You'll Survive.....	104
Photo - Virginia Creeper, Autumn Leaves.....	104
Shelters and SSTs.....	104
Signs.....	105
Snags.....	105
Swing Blading.....	105
Supervisor.....	105
Undercut.....	106
Waterbar Maintenance.....	106
Sketch - Anatomy of a Waterbar.....	107
Photo - Before Maintenance.....	107
Photo - After Maintenance.....	107
Photo - Water Flow at Grand Prix Curve.....	107
Waterbar Drainage Channel Reshaping.....	108
Weed Whacking.....	108
Sketch - Weed Whacking.....	108
Wood, Dead vs Live.....	109
Trail Maintenance Booklet Summary.....	109
 CHAPTER 8 - Trail Maintenance Texts.....	 111
 CHAPTER 9 - TATC Education Handouts.....	 113
Education Handouts.....	113
Suggested Education Handout Reading Includes:.....	113
Other available Trail Maintenance information.....	113
Additions and Corrections to this Trail Maintenance Booklet.....	113
Poster - Trail Maintenance Crew.....	115
Take a Nap.....	115
Like this.....	115
Photo - A Well-Deserved Nap.....	115
The End.....	115

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Introduction

INTRODUCTION

Today's Discussion -
An Overview
Activity/Crew Leaders
Safety
Terms and Definitions
Tools
Water Diversion Tactics
General Tips and Tasks
(18)

Note

Throughout this booklet there are a number of framed things like the one shown above. Please ignore the numbers in parenthesis. These are included for the use of the author during Trail Maintenance Workshops.

Unless otherwise specified, information in this booklet refers to the Appalachian Trail between Reeds Gap and the Tye River, and to the Mau-Har Trail. The data contained herein pertains to our local policies and may not be the norm in other parts of the country. Different areas of the country do trail maintenance in varying ways. When in Rome, do as the Romans do.

This short booklet cannot possibly contain all the information you need to know about trail maintenance. Rather, this is a brief summary that may be of use as a reference. It covers only those common, frequently performed trail maintenance tasks performed by Tidewater Appalachian Trail Club (TATC) trail maintainers. For more detailed information, please consult texts listed in the footnotes, and in CHAPTER 8. Footnotes (endnotes really) are indicated like this (), and are located at the end of each CHAPTER.

Trail maintenance can be an individual or team effort, and ranges from very easy to quite difficult. The self-satisfaction and pleasure gained by giving of yourself in this effort can only be experienced, not described.

Expect the arduous. Consider it a strenuous sport. Be in shape with regular exercise. Get Doctor's OK. (27)

Tidewater Appalachian Trail Club - Trail Maintenance Booklet Introduction

More difficult trail maintenance can be a demanding chore. Always expect it to be arduous. Consider it a strenuous sport. Be sure you are in good physical shape. You, yourself, must accept responsibility for entering into trail maintenance activities. Only you and your doctor know your capabilities *and* your limitations. Get into a regular exercise program before heading out on the trail. Do not overstress yourself. Do not jump suddenly into strenuous activity. Work up to it with gradually increasing exercise. It's always a good idea to get your doctor's OK before engaging in strenuous activities like this.

Please join us as we work on trails in the local Tidewater area, and in the Blue Ridge Mountains.

Copies of the TATC Trail Maintenance Booklet

Copies of this booklet (black & white only) may be requested by trail maintainers from the Education Committee, at cost, at monthly Tidewater Appalachian Trail Club meetings. Contact the TATC Education Chair (listed in the TATC newsletter, 'Appalachian Hiker,' and on the TATC web site) to make arrangements for copies to be made. Copies (with some color) may also be printed from the TATC web site, www.tidewateratc.com.

Copies of the TATC Trail Maintenance Crew Briefing Booklet

Copies of this booklet (black & white only) may be requested by trail maintainers from the Education Committee, at cost, at monthly Tidewater Appalachian Trail Club meetings. Contact the TATC Education Chair (listed in the TATC newsletter, 'Appalachian Hiker,' and on the TATC website) to make arrangements for copies to be made. Copies (with some color) may also be printed from the TATC web site, www.tidewateratc.com. This fifteen-page booklet contains brief descriptions of and how to for:

- Waterbar Maintenance
- Poison Ivy - Virginia Creeper - Stinging Nettles
- Trail Trimming (weed whacking and limb lopping)
- Established Campsite Fire Ring
- Rogue Fire Ring Along Trail

Copies of the TATC Trail Maintenance and Construction Hazards and Recommended Safety Gear

Copies of this form may be printed from the TATC web site and must be reviewed and signed by each member of a trail maintenance crew (one or more persons) before each trail maintenance event. It is turned in to the TATC Hikemaster after each trail

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Introduction

maintenance trip. See sample page at end of Chapter 3.

Tidewater Appalachian Trail Club (TATC) Activity Sign Up (CHAPTER 9)

A Tidewater Appalachian Trail Club (TATC) Activity Sign Up must be originated for each day and weekend trail maintenance activity sponsored by TATC and TATC Activity Leaders.

For legal and record keeping purposes, the Activity Sign Up must be turned in to the Hikemaster/TATC Vice President after the activity has been completed for the day or the weekend.

Obtain blank paper copies of Tidewater Appalachian Trail Club (TATC) Activity Sign Up sheets from the Vice President/Hikemaster. Copies may also be printed from the TATC web site, www.tidewateratc.com.

Waiver / Workmen's Compensation

The Tidewater Appalachian Trail Club Activity Sign Up (Chapter 9) contains a 'TATC WAIVER AND RELEASE OF ALL CLAIMS.' It is required that each activity participant provide a legal signature, as well as a printed name, on the Activity Sign Up sheet. Your signature stipulates that you have read and understand the 'TATC WAIVER AND RELEASE OF ALL CLAIMS.' Failure to sign the Activity Sign Up sheet with your legal signature precludes your participation in that activity.

As a TATC member, or as a guest non-member, failure to sign the Activity Sign Up sheet may prevent your right to be covered by Workmen's Compensation under Volunteer in the Parks (VIP) and Volunteer in the Forest (VIF) programs.

The Tidewater Appalachian Trail Club membership form, which you must sign when joining the club and when renewing your membership each year, also includes the 'TATC WAIVER AND RELEASE OF ALL CLAIMS.'

Points of Contact

TATC Officers, Committee Chairpersons, and other club points of contact, and their telephone numbers, are listed in the newsletter, the 'Tidewater Appalachian Hiker.' This is mailed to club members in early February, April, June, August, October, and December. Additionally, copies are generally available at local backpacking stores. TATC Board members and Committee Chairs, with their e-mail addresses, are listed on the TATC web site www.tridewateratc.com.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Introduction

Trail Maintenance Texts

Other Trail Maintenance Texts are listed in CHAPTER 8. If there is any conflict between information contained in this booklet and that contained in the Appalachian Trail Conservancy text titled ‘Appalachian Trail Design, Construction, and Maintenance,’ the *latter takes precedence*.

If You Remember Nothing Else, Please Remember the Following:

Safety

Safety is anything you or others do to prevent injury.

Prevention

Prevention forestalls the need to try and remember, then practice, unknown, rusty, or forgotten First Aid skills.

First Aid

What you try to remember how to do, after you did not work safely.

Additions and Corrections:

The only way for this Booklet to improve is for you, the Trail Maintainer, to make suggestions and comments. Even small typographical errors are welcome news, it means you’re paying attention. ***Please*** pass any ideas you have to the TATC Education Committee:

- At regular meetings, or
- Via e-mail to: education@tidewateratc.com, or
- Via regular mail to:
Education Committee
Tidewater Appalachian Trail Club
P.O. Box 8248
Norfolk, VA 23503-0246

And a big **THANK YOU** for doing so !!!!!

CHAPTER 1 - AN OVERVIEW

WHAT - WHO - WHERE - WHEN

What Is Trail Maintenance ?

Trail maintenance:
Any chore that helps keep a trail, or a trail related structure
like a shelter, bridge, or outhouse, usable and safe. (2)

Work varies from easy to quite difficult. Chores may include: cleaning up the shelter area, removing ashes from the shelter fireplace, painting blazes and shelters, cutting weeds, lopping intrusive branches, reshaping the trail to promote drainage, installing waterbars, removing branches or downed trees from the trail, working on the fire road to keep it passable, building rock steps, or communal dinner preparation at Sherando Lake Recreation Area in May and October. Work sites may be just moments, or two to three hours from where vehicles are parked. There is something for everyone, even *YOU* !!

Who Can Do Trail Maintenance ? Almost everyone. Tasks range from easy to quite difficult.

Participants. For guidance regarding minors taking part in TATC activities, refer to the TATC web site and see Education Handout 'GUIDELINES FOR ACTIVITY PARTICIPATION BY MINORS.' Also, refer to TABLE OF CONTENTS and see, 'Workman's Compensation,' this chapter.

Where is Trail Maintenance Done ?

Mountain Trail Maintenance. TATC, one of about 30 volunteer clubs, helps maintain the 2,181-mile ¹ A.T. This is the reason TATC exists. 'Our' 10.5-mile A.T. section runs from Reeds Gap at milepost 13.5 on the Blue Ridge Parkway, past or over Meadow Mountain, Maupin Field Shelter, Three Ridges, Harpers Creek Shelter, and the Tye River, to US 56. Trail altitude ranges from 900-feet at the Tye River to 3,970-feet atop Three Ridges. The trail varies from right easy to huffer-puffer up and down.

¹ As of summer 2011.

Trail Maintenance = Any chore that helps keep a trail, or trail related structure (shelter, outhouse, and etc.) usable and safe.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet

Chapter 1 - An Overview

Reeds Gap is at milepost 13.5 on the Blue Ridge Parkway, where Rt 664 crosses the Parkway. This intersection is just northwest of the village of Wintergreen on the Virginia state road map.

The A.T. crossing of U.S. 56 is 4.7-miles west of Massies Mill, VA., and 1.2-miles east of the Rt 814, VA 56 intersection.

In addition to the A.T., we maintain the 3-mile Mau-Har Trail that connects at each end with 'our' section of the A.T., the White Rock Gap Trail on the Blue Ridge Parkway, and some trails in the Saint Mary's Wilderness.

NOTE

Looking at the map, many folks assume the Mau-Har Trail is a nice, easy shortcut. True, it does enable a hiker to make a loop hike. But that trail is not an easy shortcut. Especially with a backpack on, it is a tough little trail, though beautiful and rewarding. It requires the same energy and stamina as going over the top of Three Ridges.

Local Trail Maintenance. Some folks cannot participate on mountain trips, but still like to do their part by volunteering time to trail maintenance. TATC offers half or one day, local trail maintenance trips in the Tidewater area. These trips provide valuable aid, and offer a lot of satisfaction to participants. Some of the work (weed cutting, lopping, and etc.) is the same as that done in the mountains. Sometimes variety is added as we build park benches or work on bridges and other structures. Periodic local trail maintenance is accomplished throughout the Tidewater area, Peninsula and Southside, and includes Merchant Mill Pond State Park in North Carolina. For Workman's Compensation coverage where you volunteer, confer with the governing jurisdiction. For local trail maintenance trips, refer to the activity schedule on the TATC web site, www.tidewateratc.com, or contact the Local Trails Committee Chair listed on the TATC web site and in the TATC newsletter.

When Is Trail Maintenance Done ?

Club Trips. Trail maintenance trips may be scheduled during any month. Three major A.T. maintenance trips are scheduled each year. The Spring trip in May, Mid-season trip in July, and Autumn trip in October. We also hold a Walk-Through of 'our' A.T. section in April or May. Other A.T., and local, trail maintenance trips

Trail Maintenance = Any chore that helps keep a trail, or trail related structure (shelter, outhouse, and etc.) usable and safe.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet

Chapter 1 - An Overview

may occur during any month. Trips are announced at club meetings, in the newsletter, and on the TATC web site www.tidewateratc.com.

April or May. For the April A.T. Section Leader Walk-Through, we generally camp either at Sherando Lake ² (a US Forest Service Recreation Area) or at Maupin Field, the area around Maupin Field Shelter. Maupin Field includes both forest and open field camping. There is a shelter, normally left for through hikers, and a SST (Sweet Smelling Toilet). There is a spring behind the shelter. Filter, boil, or treat all water. After June the spring may be low or not running. Water can be found further downstream, though it may be quite a walk. Make sure you bring plenty of your own. Bring all your own food and camping equipment. Fires are allowed. Refer to TABLE OF CONTENTS and see 'CHAPTER 2 - Water.' The Walk-Through is really an inspection trip of 'our' section of the A.T. to see what maintenance needs doing during the coming year.

May and October. For the May and October A.T. maintenance trips, we generally camp in the National Forest Sherando Lake Recreation Area. The Recreation Area includes three lakes (fishing, canoeing, swimming), and many hiking trails. Bring your own camping equipment and food. Saturday night, after the work day is over, TATC sponsors a communal dinner. Pot luck desserts are encouraged. Some of the beauties about the Recreation Area are: you are really car camping; you do not have to have or carry a backpack; you can see other folks' camping gear; you can bring an ice chest, car camping stove, and lawn chairs; you can bring folks, young and young at heart, who would just like to be in the campground while you do the trail work; and showers, flush toilets, and running water are available.

July. For the July mid-season A.T. maintenance trip, we generally camp either at Sherando Lake (see above) or at Maupin Field, the area around Maupin Field Shelter. This area includes both forest and open field camping. There is a shelter, normally left for through hikers, and a SST (Sweet Smelling Toilet). There is water behind the shelter. Filter, boil, or treat all water. After June the spring may be low or not running. Water can be found further downstream, though it may be quite a walk. Make sure you bring plenty of your own. Bring all your own food and camping equipment. Fires are allowed. Refer to TABLE OF CONTENTS and see

² For directions refer to the TATC web site and see the TATC Educational Handout, 'TATC A.T. SECTION - TRAIL HEADS, MARSHALING AREAS, AND LANDMARKS.'

Trail Maintenance = Any chore that helps keep a trail, or trail related structure (shelter, outhouse, and etc.) usable and safe.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 1 - An Overview

‘CHAPTER 2 - Water.’

Emergency Trips. An emergency maintenance trip may occur at any time. Such a trip may be as the result of an ice storm, hurricane, or other calamity.

A.T. Section Maintainer Trips. A.T. Section Maintainers may hold trips on their section of the trail at any time. Refer to TABLE OF CONTENTS and see ‘CHAPTER 1, RELATED INFORMATION, A.T. Section Maintainers.’

Local Trail Maintenance Trips. Maintenance trips on trails in the local Tidewater area are usually announced in the TATC , at TATC club meetings, and on the TATC web site. They are usually half or one day trips.

RELATED INFORMATION

Activity Sign Up Sheet.
Required due to waiver, and for record purposes,
in case of Workman’s Compensation.
Must be turned in to VP/Hikemaster when activity is finished. (21)

Activity Sign Up Sheet. Trail Maintenance trips are no different than other TATC activities. It is the leader's responsibility to initiate an Activity Sign Up sheet (CHAPTER 9) and to ensure that each and every participant on the maintenance trip provides a legal signature on the Activity Sign Up sheet before the trip commences. This becomes especially important when documentation is reviewed to substantiate a Workman's Compensation claim as a result of an injury. Refer to TABLE OF CONTENTS and see ‘Workman's Compensation,’ this chapter. Turn your Activity Sign Up sheet in to TATC Vice President/Hikemaster after the activity concludes. Activity Sign Up sheets may be obtained from the TATC Vice President/Hikemaster, or printed from the TATC web site.

Trail Maintenance and Construction Hazards and Recommended Safety Gear. Copies of this form may be printed from the TATC web site and must be reviewed and signed by each member of a trail maintenance crew (one or more persons) before each trail maintenance event. It is turned in to the TATC Hikemaster after each trail maintenance trip. See sample page at end of Chapter 3.

A.T. Section Maintainers. Our three major trips each year are designed to do the heavier trail maintenance work. In addition to these trips, volunteer A.T. Section Maintainers add

Trail Maintenance = Any chore that helps keep a trail, or trail related structure (shelter, outhouse, and etc.) usable and safe.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet

Chapter 1 - An Overview

to the maintenance effort by maintaining individual, short ³ sections of 'our' A.T. Section Maintainer skills vary, and their efforts range from everyday weed cutting to more difficult jobs. Some work alone, others announce trips at club meetings, in the TATC newsletter, or on the TATC web site. The TATC Supervisor of Trails and Assistant Supervisor of Trails (present at most club meetings, and listed in the TATC newsletter and on the TATC web site) can brief you on Section Maintainer responsibilities and the availability of sections.

Chain Saw. Current National Park Service/US Forest Service approved certification and proper safety equipment are *required* to operate a chain saw on National Forest and National Park Service land. For more complete chain saw information refer to the TABLE OF CONTENTS and see CHAPTER 5, 'Saw, Chain.'

Crosscut Saw, Bucking, Underbucking, or Felling. Current National Park Service/US Forest Service approved certification and proper safety equipment are *required* to operate a crosscut saw on National Forest and National Park Service land. For more complete crosscut saw information refer to the TABLE OF CONTENTS and see CHAPTER 5, 'Saw, Crosscut, Bucking or Felling.'

Day Pack. Bring your day pack on trail maintenance trips. In it you should have your lunch, 2 to 4-liters of water (the more the better), extra clothes, rain gear, and other personal items. For suggested contents, see the TATC web site Education Handout 'SUGGESTED DAY PACK CONTENTS.' The further away from base camp you are, the more important the contents of your day pack become. Be sure to carry water treatment equipment.

Directions. For directions to the Sherando Lake Recreation Area, Maupin Field, and the trailheads for 'our' A.T. section, see the TATC web site Education Handout 'TATC A.T. SECTION - TRAIL HEADS, MARSHALING AREAS, AND LANDMARKS.'

Emergency. In case of a medical or other emergency, and for emergency telephone numbers, distances, and locations, carry the TATC web site Education Handout 'TATC A.T. DATA SHEET.'

³ Approximately 1 to 1.5-miles.

Trail Maintenance = Any chore that helps keep a trail, or trail related structure (shelter, outhouse, and etc.) usable and safe.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet

Chapter 1 - An Overview

A first aid kit is a collection of material necessary
to treat injuries or illnesses likely to occur during an activity. (3)

First Aid Kit. As an outdoors person, you should assemble, carry, and know how to use a good first aid kit. For suggested contents, see the TATC web site Education Handout 'SUGGESTED FIRST AID KIT CONTENTS.' The further away from base camp or vehicles you are, the more important your first aid kit becomes.

Konnarock. The U.S. Forest Service and Appalachian Trail Conservancy, Southwest and Central Virginia, sponsor Konnarock Crews. Each crew is led by a paid, experienced, leader. The Crews help A.T. maintaining clubs with trail relocations, really heavy trail work, and trail maintenance training. Work weeks are Thursday through Monday. You can volunteer for one or more weeks, or the entire season.

Until you have worked with a crew, you simply cannot imagine the camaraderie and self-satisfaction that can be yours. Working with a crew provides a great deal of experience you can pass on when you do trail maintenance with TATC.

The area the Konnarock Crews works extends from the A.T. southern terminus, at Springer Mountain in Georgia, to Afton Mountain, where I-64 crosses the A.T.

Other A.T. volunteer crews work from Afton Mountain north to Maine.

For information.

Call. ATC, Southwest and Central Virginia Regional Office
Tel (540) 904-4316

Fax (540) 904-4368

Write. ATC, Southwest and Central Virginia Regional Office,
Appalachian Trail Conservancy
5162 Valleypointe Parkway
Roanoke, VA 24019

E-Mail. atc-varo@appalachiantrail.org

Maps.

Trail Maintenance = Any chore that helps keep a trail, or trail related structure (shelter, outhouse, and etc.) usable and safe.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet

Chapter 1 - An Overview

Local Trails. For links to maps and parks connected with local trail maintenance, refer to the TATC web site: www.TidewaterATC.org, or to specific local parks, wildlife refuges, and the like.

The A.T. For maps connected with ‘our.’ section of the A.T., refer to:

‘Appalachian Trail Guide to Central Virginia,’ and to its map ‘Appalachian Trail, Map 5, Pedlar Ranger District, Washington-Jefferson National Forest.’

USGS topographic quadrangles: Vesuvius, Horshoe Mountain, Massies Mill, and Sherando.

MAP 12, Appalachian Trail and other trails in George Washington National Forest, Pedlar District - Virginia, Rockfish Gap to Tye River (Sections 15 and 16 of A.T. in Virginia).

For a sketch map of the TATC section of the A.T., On the TATC web site see the ‘TATC A.T. Section - Sketch Map.’

For elevation and distance data on the TATC section of the A.T., see the TATC web site Education Handout ‘A.T. DISTANCES AND ELEVATIONS.’

Recognition. TATC offers A.T. trail maintainers the following recognition:

WHEN	WHAT
20 Hours	Rocker for TATC Patch
50 Hours	TATC Trail Maintainer ‘T’ Shirt, and U. S. Forest Service Trail Volunteer Patch
100, 200, 300, 400, 500, 600, 700, 800, 900 & 1000 Hours	Respective Rockers for the U. S. Forest Service Trail Volunteer patch

Safety is No Accident (!9)

Trail Maintenance = Any chore that helps keep a trail, or trail related structure (shelter, outhouse, and etc.) usable and safe.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet

Chapter 1 - An Overview

Safety. Safety is of paramount importance, whether hiking or doing trail maintenance. Safety is anything you or others do to keep from being injured. Refer to TABLE OF CONTENTS and see 'CHAPTER 3 - TRAIL MAINTENANCE, SAFETY.'

Taxes. Some non-reimbursed expenses and mileage associated with trail maintenance may be tax deductible. Consult your tax accountant, and maintain appropriate records and receipts. Tell your tax accountant that TATC is a 501(3)(c) non-profit organization.

Tools. If you have loppers or a bow saw, bring them along. Other trail maintenance tools are provided by TATC. Please, take care of these as if they were your own; return them when the day is over. If you plan on using a saw (bow, buck) bring, and use, a pair of safety glasses. Bring your own work gloves. Leather gloves provide the best protection, but are dangerously slippery when wet. Cotton gloves, with rubber stipples, provide grip when wet, but offer much less protection. Some leather gloves have a Thinsulate™ lining which offers more warmth, even when wet. For information on using a cross cut or chain saw, refer to the TABLE OF CONTENTS and see:

CHAPTER 1, RELATED INFORMATION, Chain saw, and Crosscut Saw
Bucking, Underbucking, or Felling

CHAPTER 5. TOOL DESCRIPTIONS, Saw, Chain, and Saw, Crosscut,
Bucking, Underbucking, or Felling.'

Water. The most frequent problem on trail maintenance trips is the lack of water. Participants simply and dangerously underestimate the amount they need for the day. The very minimum that should be carried is 2-liters. It is better to carry 4-liters, and this may well be gone before you return.

Water is available (if you filter, boil or chemically treat it) along the northern half of the Mau-Har Trail. Water is also available at both Harpers Creek and Maupin Field Shelters, but this may be low or gone from July on. Filter, boil, or treat all surface water (springs, streams, puddles) used for drinking, cooking, or washing. When in doubt, filter, boil or chemically treat your water. Always be in doubt.

See the TATC web site Education Handout 'WATER, THE BASIC ESSENTIALS.'

Thirst, because it does not appear until you are about 1 1/2 liters LOW, or have lost 2% of body's body fluid, is not accurate gauge of water needs

Drink before you are thirsty. Once you feel thirsty, you're likely already dehydrated by nearly a third of your body's needs.

Trail Maintenance = Any chore that helps keep a trail, or trail related structure (shelter, outhouse, and etc.) usable and safe.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet

Chapter 1 - An Overview

First symptoms: mild headache, tired. Then: disoriented, irritability, rapid pulse, clumsiness, feeling completely pooped and cramps may be warning signs of low fluid stores.

The best tool you have for a survival situation is your brain, and keeping your brain hydrated is key to clear thinking.

Other Drinks.

Besides water, there are other drinks with various flavors that can be considered: Gatorade (powder or liquid), Emer-Gen-C, Tang, CamelBak Elixer, Crystal Light, and others.

Some years back the Konnarock Crew Leader told us to make powdered Gatorade half strength.

Be prepared for the worst weather that can happen at that location,
at that time of year.
Assume you will get wet. (20)

Weather. Be prepared for the weather at the work site, whether that is in the Tidewater area *or* the mountains. Better yet, *be prepared* for the worst weather that can happen at the work site at that time of year - then you'll be ready for anything nature can throw your way. In the mountains be ready for 30° in May, 50° in July, and 10-15° in October. It may not be that bad, but *be prepared*. On May 15th, 1997 snow was 1 and 1/2-inches deep on Three Ridges. 50° is warm in winter, but is darn cold in July. Storms normally hit the mountains up to 12-hours before the forecast. If you're close enough to hear the thunder, you're close enough to get hit by lightning.

Workman's Compensation.
You're covered if you are a paid member or have signed (*legal signature*)
the Activity Sign Up sheet. (22)

Workman's Compensation. Under the Volunteer in the Parks (VIP) and Volunteer in the Forest (VIF) programs, as a volunteer trail maintainer when on either National Park Service or U. S. Forest Service lands:

Trail Maintenance = Any chore that helps keep a trail, or trail related structure (shelter, outhouse, and etc.) usable and safe.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet

Chapter 1 - An Overview

You are covered by Workmen's Compensation, if you are a current paid member in TATC. Make sure you pay your dues on time so that you do not have a break in your membership.

As a guest, you also are covered by Workman's Compensation, if you signed the Activity Sign Up sheet (Appendix A) before the trip (that means a legal signature, not a telephone sign up where someone else puts your name on the list).

As a minor under 18 years of age, you can only be covered by Workman's Compensation if your parents have signed a parental consent for the particular maintenance trip in which you are taking part. There is no such thing as a blanket parental consent. An original must be furnished for each trip in which a minor participates. Minors must also sign the Activity Sign Up sheet.

Due to the time it takes for claims to pass through the system, for minor (small) injuries it may better to use your own health insurance than to apply for Workman's Compensation (check with your insurance company on this). Workman's Compensation covers only some costs related to injuries, it does *not* cover the cost of lost time in your normal job.

For Workman's Compensation coverage in state, city, and other types of parks and forests, confer with the governing jurisdiction prior where you are offering to perform volunteer work.

Trail Maintenance = Any chore that helps keep a trail, or trail related structure (shelter, outhouse, and etc.) usable and safe.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 2 - Activity/Crew Leaders

CHAPTER 2 - Activity/Crew Leaders

Activity/Crew Leaders.

The requirement for guests to sign the TATC Activity Sign Up sheet in order to be eligible for Workman's Compensation on National Park Service and U. S. Forest Service land is just one more reason to ensure that you have a legible and legal signature for each and every participant in your scheduled activity before you start the activity.

Refer to the TABLE OF CONTENTS and see CHAPTER 1, 'Workman's Compensation.'

As a Crew Leader you should have a basic knowledge of what is contained in this booklet and with the TATC web site '**Trail Maintenance Crew Briefing Booklet**,' and the Trail Maintenance form **TATC Trail Maintenance and Construction Task Hazards and Recommended Safety Gear**.

You should review and be familiar with TATC web site Education Handouts and Trail Maintenance Information..

You should carry a copy of:

PATC Map # 12, and/or

Appalachian Trail Map 5, Pedlar Ranger District, Washington-Jefferson National Forest, and/or

Appalachian Trail Guide to Central Virginia., and/or

The TATC web site Education Handout **TATC A.T. Section - Sketch Map** available on the TATC web site

Either a VIP or VIF incident package, available from the TATC Trail Supervisor or Assistant rail Supervisor.

When offered, think about taking part in a TATC Activity Leader's Workshop or Trail maintenance Workshop.

The TATC Trail Supervisor and Assistant Trail Supervisor should have copies of this booklet, the **TATC Leave No Trace Booklet**, the **TATC Trail Maintenance Crew Briefing Booklet**, and the **TATC Trail Maintenance and Construction Task Hazards and Recommended Safety Gear** form (all available on the TATC web site).

Leadership - Appropriate knowledge, skill, and ability to properly plan and lead the activity.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 2 - Activity/Crew Leaders

page left blank

Leadership - Appropriate knowledge, skill, and ability to properly plan and lead the activity.

CHAPTER 3 - TRAIL MAINTENANCE SAFETY

Safety
Takes Precedence over All Other Considerations
In the Backcountry (4)

General. Safety is the *very most important* aspect of trail maintenance. Develop and maintain a safety-oriented work attitude.

Although this short chapter concerning safety may give the reader much to think about and practice, it cannot possibly cover everything that might occur. Be alert ! Be cautious ! Wear your thinking cap *at all times* ! This booklet covers only a *few* basics.

Use common sense, do some reading, and pay attention to what you *and* others are doing. Make sure you understand the entire task *before* the one who assigned it disappears around a bend in the trail. Work as a team. Watch and learn from experienced folks. Don't hesitate to tell even a skilled worker when a task is being accomplished in an unsafe manner. Familiarity breeds sloppiness and sometimes safety is ignored. Being Macho doesn't work in trail maintenance.

Most Frequent Accident Times:
After lunch when folks are relaxed, tummies full, and muscles have tightened up - and at the end of the work day when workers are weary. (24)

Accident Times. Common accident times include: After lunch when folks are relaxed, and muscles have tightened up - and at the end of the day when folks are tired. At these times be especially watchful and alert to prevent accidents and injuries.

Activity/Crew Leaders. Refer to the TABLE OF CONTENTS and see CHAPTER 2 'Activity/Crew Leaders.'

Baseball. What does baseball have to do with trail maintenance ? Simple. A pair of baseball catcher leg guards really protects your knees and shins when doing rock work, working with waterbars, and digging sidehill. Sure they are awkward, and a bit warm. What's better, a little discomfort or an injury ? Think before you act.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

Best Advice. The best safety advice that can be offered concerning Trail Maintenance is to 'Think Before You Act.' Can what you are doing adversely effect other folks or yourself? Are you doing alone what you should have help doing? Do you know what you are doing? These questions seem simple - and they are, but . . . just remember -

Think Before You Act. (5)

Blaze Orange: Before discussing blaze orange, there are two questions you should ask yourself; to wit;

1. Is hunting legal ***across*** the Appalachian Trail, in Nelson County, in the Pedlar District, George Washington - Jefferson National Forest?
2. Is hunting legal ***from*** the Appalachian Trail, in Nelson County, in the Pedlar District, George Washington - Jefferson National Forest?

Think about these two questions, then refer to the TABLE OF CONTENTS and see 'Hunting,' this chapter.

Burrs & Photo. Burrs develop on the butt (striking surface) of tools such as cold chisels and star drills. A burr is a bent over, ragged piece of metal generally caused by hammering. Burrs will, in time, break and fly off - *eye protection is required*. To prevent dangerous shrapnel, burrs must be removed with a file as they are formed.



Burr

Bystanders. When doing trail work you often find passing hikers, or other workers, stopping to watch. It is *your* responsibility to keep bystanders safe, even if you have to stop work to ensure their safety. When safe to do so, explain what is going on and why you are working in that location. Talk about TATC. This is a good opportunity to encourage trail maintenance, and to create an interest in the trail. Above all, keep bystanders at a safe distance. Refer to TABLE OF CONTENTS and see 'CHAPTER 3 - Trail Closure.'

Careful Passing. When working, you concentrate on the task at hand and don't always notice what others are doing. If you are done with your task and want to pass other trail workers on the trail, make sure the workers know you are there *before* you pass. Imagine, if you will, that you are working on a waterbar and need to take a swing with a Pulaski at

Safety takes precedence over all other considerations in the back country (from Lightly on the Land, Page 42)

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

that blankety-blank root. Swing you do, but no one told you someone was quietly going by to do work further up the trail. 'Oops' and 'sorry' really do not replace forethought, or a forefinger. Think before you act !

Carrying Capacity. Your carrying capacity (be it a backpack, a day pack and tools, a rock, a waterbar, or whatever) is limited by your physical condition. Trail maintenance is a strenuous project. You should be in good physical condition, be engaged in a continuing exercise program, and should obtain your doctor's permission before engaging in this activity.

When carrying a load, any load, that load should not be more than 20 to 25% of your body weight. For children, the weight carried should not exceed 20% of their body weight.

Carrying Tools. When carrying tools, carry them so that they will not lop off a toe, or gouge a leg, if dropped. Except for those tools specifically listed in the 'Carrying Tools, Shoulder Carry' paragraph this chapter, do not carry tools over your shoulder ! If you turn quickly, or trip, a shoulder-borne tool is a splendid menace.

General. When carrying tools, as well as when working on the trail, stay spaced out. Don't bunch up so that one person's slip effects others. When you fall or trip, you naturally tend to fall uphill. Carry tools at your side, on the downhill side. Keep the sharp portion of the tool forward and down. Be ready to toss the tool aside if you trip or stumble. Keep those protective covers on the tools when not in use. Protect the blade - protect yourself.

Day Packs. Some day packs have sleeves for carrying ski poles. These sleeves can also carry *some* trail tools. Make sure the tool carried does not put a sharp edge dangerously close to your head. Any tool carried on a day pack must be secured so it does not come loose if you stumble or trip and fall.

Elbows. When carrying tools, try to not overextend your elbow for extended periods of time, injury may result. Overextending is the forceful straightening of the arm (elbow joint).

Example. Your arm hanging straight down when you limply carry a heavy weight (like a sledge hammer or pick mattock) in your hand.

Shoulder Carry. There are a few exceptions to the 'do not carry tools over your shoulder' rule cited above. These are shown in the next subparagraphs *for specific*

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

tools. When shoulder carrying, be very careful of the person in front, and the person behind. A sudden turn or stop on your part may cause an injury. In all cases, the tool is still carried on your downhill side.

NOTE

Current A.T. Conservancy approved certification *and* proper safety equipment are *required* to operate a chain saw or crosscut saw on National Forest and National Park Service land. For required safety equipment, refer to the TABLE OF CONTENTS and see: - CHAPTER 1, 'Workmen's Compensation.' Without certification and safety equipment, Workman's Compensation and associated medical benefits may be denied.

Chain Saw. A cold chain saw, with the blade properly sheathed, may be shoulder carried. Ensure the oil drip area does not pose a problem to the carrier.

Crosscut Saw. A crosscut saw, with the blade properly sheathed, may be carried over the shoulder. Carry it on the downhill side with teeth facing outboard. The blade (teeth) must be covered. On some saws, a handle may be removed to prevent snagging on brush as you hike to the work site.

Sledge Hammer and Rock Bar. Due to their weight and the fact that they do not have sharp blades, a sledge hammer or rock bar may be shoulder carried on the downhill side.

Clothing. As in hiking and backpacking, wicking clothing, especially underclothing, is a real help in keeping you comfortable and in preventing hyperthermia. Remember, *cotton kills.*

Long trousers, instead of shorts, add some protection and may help protect against poison ivy and stinging nettles, and those pesky biting bugs. Trousers with zip-off legs are handy. You can hike to the work site cool, with the legs zipped off and in your pack. Once on location, you can work with the legs zipped on for protection. Or you can hike in running shorts, then put long trousers on at the work site

A kerchief tied around your forehead keeps sweat from dripping into your eyes. Long sleeves *may* keep you from getting poison ivy, protect you from biting insects, and prevent you from experiencing the pure joy that one may only experience with stinging nettles.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

Gaiters help protect the shins, and help keep dirt and other unwanted things out of your boots. Gaiters may also help prevent creepy-crawly things, like ticks, black flies, and chiggers, from exploring your body.

Sure, you can, but definitely should **not**, do trail maintenance in sandals or sneakers, but where is the protection offered by a good pair of leather boots ? Don't forget to protect that thinning or bald pate with a cap or kerchief. Protect it from insects, rain, wind, sun, and verbal abuse.

For more on clothing, attend a TATC Hiking/Backpacking Seminar.

Evacuation. In very rare circumstances it may be necessary to evacuate a hiker or trail maintainer. To see what is involved in this type of activity see the TATC web site Education Handout 'EMERGENCY EVACUATION ON THE MAU-HAR TRAIL.'

Exit Route. When working on any project where you may have to very quickly move out of the way, ensure that you have a clear exit route available before you start work.

Example. Usually a minimum of three persons are involved when felling a tree with a crosscut saw, two sawyers and a Safety Observer. Before putting the saw to the tree, ensure that *each* worker has a clear and separate exit route to use, *and* that each person knows the exit route the other workers will use. When the blowdown you are working on shifts suddenly, or the tree you are felling starts to fall, there is no time available to then decide where you might think you could maybe go. Other Trail Safety Observers keep hikers out of harms way if the tree to be felled could even possibly reach the trail as it falls or bounces when falling.

Eye Protection. Eye protection is, of course, required when breaking rock into gravel, when chipping rock or cutting steps, and while using a bow saw, crosscut saw, chain saw, cold chisel, swing blade, or star drill. The most common eye complaints I've seen on the trail are from folks using hand saws. Just a small gust of wind easily moves sawdust, even when you are cutting on a ground level log. When cutting overhead, add gravity and even slight air movement together, and you can indeed hurt your eyes. A good pair of goggles or safety glasses (not just eye glasses) is worth the expense and discomfort. You only have two eyes. Think before you act !

First Aid Kit. Do you carry some sort of first aid kit ? When hiking, backpacking or doing trail maintenance, a first aid kit (homemade or bought) is a real necessity.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

A first aid kit is a collection of material necessary to treat injuries and illnesses likely to occur during an activity.

Buy and read an up-to-date first aid book, take a Red Cross or Wilderness First Aid course, know CPR, read the TATC web site Education Handouts 'FIRST AID,' 'FIRST AID KIT,' and 'SUGGESTED FIRST AID KIT CONTENTS,' then assemble your own first aid kit.

Food and Garbage. Safety items ?? Never carry food or snacks in your pockets. The smell remains long after the food is gone. Never take food into your tent. When the food is gone, the smell remains. Some folks, especially in bear country, never take the clothes they wore when cooking food into the tent, and always change clothes first. Yes food, even the presence of its aroma, may be a real safety item. To reduce smells in your pack, always keep food and garbage in secure plastic bags. When in camp, protect your food and yourself by using a bear bag raised 15-feet or higher, tied between trees and 8-feet from trees, well away from your tent (see the TATC web site Education Handout 'BEAR BAGGING'). Garbage should be kept in a separate bag within the food bag. If especially aromatic, store garbage in a separate bear bag in another location. This may act as a decoy to keep animals from trying for your food bag. And don't forget to put your toothpaste, lip balm, and other sweet smelling things in your bear bag.

Bring plenty of food, you will be burning many, many calories. It's better to eat several snacks than one BIG meal in the middle of the day.

Remember the principles of *Leave No Trace*. When thinking about LNT, cans of sardines, and the like, remember:

There is nothing . . . absolutely nothing that we can bring into and leave in the backcountry this is good for the backcountry. Everything . . . absolutely everything . . . always winds up violating Aldo Leopold's credo.

Do not bury apple cores or other garbage that can decay. Animals will surely smell it, then unearth it.

Burning works well for some garbage. Make sure it is completely burned before departing the area. Better yet, if you were strong enough to PACK IT IN, you are surely strong enough to PACK IT OUT ! Please do not burn cups or packaging materials (almost everything !) that give off vapors harmful to the atmosphere.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

Keep your day pack and backpack in the shade when you can. Carry only food that will not spoil.

When flower nectar and other foods are scarce in the late autumn and early spring, watch out for wasps and yellow jackets around your jelly sandwich, your soda, and other sweet or strong smelling foods, including sardines !

For more information on food, attend a TATC Hiking/Backpacking Seminar. For more information on Leave No Trace, attend a TATC LNT Workshop, refer to the TATC Leave No Trace Booklet on the club web site, or contact www.LNT.org.

Gloves. Gloves can do a lot to protect your hands and wrists when doing trail maintenance. Leather gloves protect the most, but are dangerously slippery when wet. Cotton gloves with rubber stipples don't protect as much, but do offer a better grip when wet. Gloves with Thinsulate™ or other insulation are helpful in colder weather.

Leather gloves with Thinsulate™ insulation are warmer, even when wet, and can be had for a nominal price at the local hardware store.

Grounding Tools. Be careful how and where you ground tools. Ground them where they will not be stepped on by others. Place each tool so that a misstep will not bring a tool handle up like a jack-in-the-box against someone's head. Paint or otherwise mark handles so that they can be seen against leaves and dirt, but not so they are slippery when wet. Position tools where they can be seen and not be lost in leaf litter. Ground tools against a log or stump, with blades away from where people might step. Do not bury an ax or Pulaski head in a stump or log. The handle can become an obstacle to walk into, or trip over.

Hammers (all sizes). When using a hammer of any size to strike rock, or to drive a tool such as a cold chisel or star drill, leather gloves and eye protection must be worn. Flying rock chips and shrapnel from burrs can cause serious injury. Refer to TABLE OF CONTENTS and see 'Burrs,' this chapter.

Hard Hat. Use when felling trees, doing grip hoist work, clearing blowdowns, swing blading, using any type of hammer, and at other times when head protection *might* be advised. Refer to the TABLE OF CONTENTS and see CHAPTER 5, 'Hard Hats.'

Hunting.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

1. Is hunting legal **across** the Appalachian Trail, in Nelson County, in the Pedlar District, George Washington - Jefferson National Forest ? No, it is not.
2. Is hunting legal **from** the Appalachian Trail, in Nelson County, in the Pedlar District, George Washington - Jefferson National Forest ? Yes, it is !

Blaze orange, during the many varied hunting seasons, may be a good option to keep you safe. Use either a BIG blaze orange kerchief or, better yet, a blaze orange vest and cap. Get and refer to the annual Virginia Department of Game and Inland Fisheries hunting booklet and to the hunting seasons in Nelson and Augusta Counties ('our' section of the A.T. is almost completely within Nelson County). Determine hunting seasons in National Parks and on National Park Service controlled land, in National Wildlife Refuges, in Saint Mary's Wilderness, in local city, state and federal forests, parks, wildlife management areas, wildlife refuges, and in other miscellaneous hiking and backpacking areas where you might be going. Know who has jurisdiction over the land where you will be, then refer to the annual Game and Inland Fisheries hunting booklet ('Hunting & Trapping in Virginia July [year] to June [year] Regulations') to determine hunting seasons. For other Department of Game and Inland Fisheries information you might try their web site: www.dgif.state.va.us.

Insects Repellents and Lotions. Make sure to wash hands after applying insect repellent, sun screen, and other lotions. Ten minutes later you may be wiping sweat out of your eyes with those chemicals still on your fingers. Wherever possible, put insect repellents on your outer clothing rather than your skin (some repellants may stain clothing or damage materials like Gore-Tex®).

Thoroughly read the cautions and instructions on the packaging.

Never put lotion of any kind where it may drip into your eyes as you sweat. Use less than a 100% DEET™. Read and heed container labels and pay attention to articles in outdoor and health magazines.

DEET % Lasts		DEET % Lasts	
7%	2 hrs	23%	8 hrs
10%	4 hrs	30%	10 hrs

Repellents containing Permethrin should be sprayed around boots, socks, and bottoms of trousers. It kills ticks and some other insects on contact and will last for a couple of washings. Apply it before you put on the clothing and don't don the clothing until

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

after it has had a chance to dry (Ed: I apply it the night before.). Do **not** spray it on the clothes you are wearing and **never** on your skin. Implicitly follow directions on the package.

Watch areas like elastic bands around underclothing for ticks and other biting friends. Inspect yourself as often as you can. Sun screen applied first may help lessen the absorption of insect repellents by your skin.

Medicines and Medical Problems. There is nothing quite so comforting as getting almost to the top of Three Ridges and then have one of your participants tell you he or she has a heart problem ! If you have health problems, special needs, allergies, and etc., let your Activity Leader know. If you are the Activity Leader, query your crew members before you leave base camp. *What the Activity Leader does not know can hurt you.*

Moving Things. Don't lift with your back - use your legs. Get help, don't over strain yourself to save 2-minutes. You do not have to lift a large rock out of the ground.

The only good rock is a rock found uphill. (7)

Never put your hands beneath a rock being lifted or moved with a rock bar, you are asking for crushed fingers.

Use a rock bar, lift one end of the rock a tad, and hold it **very steady** while your partner drops a smaller rock underneath. Talk to each other about **each and every** move you make, even extremely slight moves. What you don't expect can hurt you badly. Repeat this until you jack the rock out of the ground. Then get help to slide (not roll) it gently and slowly downhill to where it is needed. When moving rock, ensure no one is working or hiking downhill from where you are working - if necessary, temporarily close the trail. Do not place yourself or your body parts on the downhill side of a rock being moved.

Rocks seldom get a chance to travel.
A rolling rock will take advantage of the start you give it,
rapidly taking off for parts unknown.

Never try to stop a rolling rock,
unless you want to practice long forgotten first aid skills. (28)

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

Use lengths of 2-inch nylon webbing over your shoulders, and a helper, or peavies, or cant hooks, to move a waterbar log from the cutting site to the trail. Refer to TABLE OF CONTENTS and see CHAPTER 6 - 'How to Carry a Waterbar Log.'

Before you move a rock or waterbar log, make plenty of vibrations jiggling the rock or waterbar log with a tool, or stomping your feet. The vibrations may cause that unwanted snake to move before you tear into his home.

Vibrations may also disclose that nest of ground bees or yellow jackets with which you do not want to tangle. Always watch where you put your hands and feet !

Rocks, logs, and all heavy things have an inbred fear of heights,
and a love of gravity.
When picked up they will do everything in their power to quickly return to earth.
They do not care that your leg is in the way. Be careful ! (15)

When you think about moving stuff, think about the following data:

Approximate Weights:

Material	Approximate Weight per Cubic Foot ⁴
Dry, loose earth	75
Dry, packed earth	100
Mud, packed	115
Dry, loose sand/gravel	90-100
Dry, packed sand/gravel	100-120
Wet sand/gravel	120
Granite, basalt, gneiss stone	150-200
Sandstone	80-100
Shale	90
Wood	60
dry = less	
green = more	

⁴ IAW Lightly On The Land, The SCA Trail-Building and Maintenance Manual, p 237.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

Quit. It may seem strange to see the word ‘quit’ in an article about safety. There are many reasons to quit, to stop a job, to turn back, or to cancel a trip. Among these are poor preparation, changing weather, exhaustion, or just a gut feeling. Pay attention to your subconscious thoughts, your gut feelings. Your body is sometimes more aware of things than you are.

Whether it's trail maintenance or a pleasure trip, a person who does not know when to quit does not belong in the woods. Be sensible, not macho !

Snags. When brushing out the trail corridor, cut branches all the way back to the tree



Photo - Cut to the
Ground



Photo -
Don't
Leave a
Dangerous
Snag



Photo - Cut
Back to the
Trunk



Photo - Don't Leave
Something to Be Walked into

trunk, and cut saplings all the way down to the ground. Do not leave dangerous snags that pose a daylight or after dark danger to hikers. It is better to dig out small saplings, rather than just cutting them off. This prevents a stump from growing ten-quintazillion sprouts before you come back on the next trip.

And please lop branches or saplings at 90° so that you do not manufacture a dangerous point for someone to step on or walk into. The closer you lop a branch to the main trunk the easier it is for the tree to heal itself.

Safety takes precedence over all other considerations in the back country (from Lightly on
38 the Land, Page 42)

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

Space Workers. Swing blading is a wonderfully mind relaxing, rhythmic exercise that can sometimes allow you to enter into your own mental world. Keep separated. There is nothing quite so unnerving as a swing blade moving through the air without its operator. Yes, things do slip ! Insist on plenty of room between workers, no matter what the task. Wear that hard hat and that eye protection.

Time. Most mishaps occur just after the noon break, when muscles are stiff and stomachs are full. The second bad period is late in the day, when folks are tired. Be aware and watchful during these periods. Know when to stop.

Toiletries. Toiletries a safety item ? The odor given off by toothpaste and other toiletry items is attractive to some animals. Your best bet is to hang your toiletries, along with your food, up in that tree. Refer to TABLE OF CONTENTS and see 'Food and Garbage,' this chapter. Also see the TATC web site Education Handout 'BEAR BAGGING'

Tools. Before you head out on the trail, check the condition of the tools you will be using. Don't work with a dull or damaged tool. A dull tool requires more effort and can more readily swerve, bounce, or ricochet. Knives, swing blades, Pulaskies, axes, grubbing hoes, and other bladed tools should each be sharp. Check each handle for possible cracks.

A small adjustable wrench, pliers, and screwdriver, or Leatherman TM / Gerber TM / SOG TM multi tool can be handy for tightening loose nuts and bolts on the trail. Any tool with moving parts, like a lopper, should have a drop or two of oil. This helps the tool, prolongs its life, and makes the work easier.

A good cleaning and then a thin, very thin, coat of oil ⁵ when you finish with the tool will help prevent rust between trips and during winter storage. A 50-50 mixture of oil and kerosene (or lamp oil) cleans, lubricates, and helps retard rust. Be careful with the end of the tool that has just come in contact with poison ivy. You can catch it from the plant's oil on your tools, your boots, etc.

Before swinging a tool like an ax, Pulaski, swing bade, McLeod, pick mattock, or grub hoe, make sure the area is clear of branches or brush that will deflect the blade. Hold a stick, as long as the tool you will be using, overhead and out at your sides. Make sure this area is clear (clear of branches, clear of people).

⁵ A 50-50 mix of oil and kerosene makes a light oil and a good cleaner.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

When using a crosscut saw, make sure the area covered by the travel of the blade is free of branches and twigs that could become entangled in saw teeth. Remove intrusive branches and brush, don't simply attempt to bend them out of the way. Make sure the saw's teeth will not touch rocks or dirt as it passes through the log being sawed.

If you've found rocks instead of roots during the morning, a sharpening stone, or 12-inch mill 'bastard' file, may be handy at noon. A sharp tool is a safe tool.

Tool Passing. When passing a tool from one person to another the tool is sometimes dropped, causing damage to the tool or a foot. To prevent this person passing the tool to another should always maintain a grip on the tool until the person receiving the tool says "Thank You." These two little words indicate that the receiver has a good grip on the tool and that the passer can release his/her grip. This simple little procedure is easy to learn, and can save a lot of grief.

Trail Closure. When necessary for safety, temporarily close the trail to hikers and other trail workers. Explain to hikers what is happening, and give an estimate of how long the trail will be closed. Let hikers through as soon as it is safe, or briefly stop work to let them pass. Try to dissuade hikers from bushwhacking around the work site and causing damage to the environment. Temporary trail closures may be necessary when doing such things as: rock work; using a winch; or felling a tree. One or more Safety Observers are required to watch the trail for hikers, and keep the hikers out of harms way until work can be halted to allow passage.

Trail Maintenance and Construction Task Hazards and Recommended Safety Gear.



Coming Down

Copies of this form may be printed from the TATC web site and must be reviewed and signed by each member of a trail maintenance crew (one or more persons) before each trail maintenance event. It is turned in to the TATC Hikemaster after each trail maintenance trip. The form gives you a very valuable chance to review specific hazards and safety gear that may be associated with the trail maintenance tasks you are planning for any particular trail maintenance trip.

Tree Felling & Photo. Warning: Tree felling is serious business. The information in this booklet hardly even comprises an introduction to tree felling. Take a chain saw certification or crosscut saw certification course through the Appalachian Trail Conservancy, the US Forest Service, or the National Park Service,

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

and read appropriate texts listed in Appendix B, *before* attempting to fell even a small tree. You **must** have a very specific US FS certification for felling.

When felling a tree, a minimum of three to five workers is required.

If there is the slightest possibility that the felled tree may reach the trail when felled, or when bouncing as it hits the ground, two or more Safety Observers are required to keep hikers out of harms way.

A Spotter is required to watch the top of the tree. The Spotter's job is to alert the axemen or sawyer(s) when a branch, or the top of the tree, breaks off due to vibration, or the tree starts to move prior to actually falling. The Spotter does not watch the trail. The Spotter only watches the tree being felled.

And, finally, one or two axemen or sawyers actually fell the tree.

Before putting a blade to the tree:

Agree on what words or signals will be used to:

Indicate the tree is falling.

To indicate that the axemen / sawyers / spotter *must immediately* escape to safer ground.

To stop work when:

Hikers or other personnel enter the danger zone.

The breeze increases or gusts.

A clear escape route *must* be determined for each person on the felling crew, including Spotter and Safety Observers. Each person must know every other person's escape route.

Try to determine where the tree will fall, but expect the unexpected. When felling a tree, with an ax or saw, always have a Spotter watching the top of the tree.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

Remember, when the tree hits the ground, any part of the tree may move violently in any direction. The Spotter does not watch the trail to keep other people away. That is done by the Safety Observer. Three or more safety folks may be necessary.

When dropping a tree, know what you are doing, or work with someone that does !

Hard hats are mandatory when felling trees of any size, and are mandatory when using a chain saw or crosscut saw. For required chain saw and crosscut saw safety equipment refer to the 'TABLE OF CONTENTS for CHAPTER 3, 'Saw, Chain,' and 'Saw, Crosscut, Bucking, Underbucking or Felling.'

The only good tree you cut for use as a waterbar log is on the high side of the trail - this eases later moving or carrying.

Tricks for Outdoor Leaders. See the TATC web site Education Handout 'TRICKS FOR OUTDOOR LEADERS - FORMULAS, HINTS, AND HANDY CALCULATIONS.'

Water. Water, too, is a safety item. All too often a trail worker will go out with but one-liter of water for a day's work.

Two-liters is more like a bare minimum — It's not uncommon to drink a gallon !!

You can't always get a fill-up when you run out. Take more than you expect to use. You can always bring it back, or pour it over your head for cooling.

Remember that thirst is a bad, and late, indication of your condition. By the time you are thirsty, your body is already 1 to 2 liters low on water. Don't drink a lot once in a while. Sip a little, and sip it often !

Filter, boil, or chemically treat all surface water (springs, streams, puddles) used for drinking, cooking, or washing. When in doubt, filter, boil, or chemically treat your water. Always be in doubt.

Waterbar Log Carrying. A waterbar log may be carried with peavies, log carriers or straps. When carrying one on the shoulders, everyone carries it on the same side of the body. Refer to TABLE OF CONTENTS and see CHAPTER 6, 'How To Carry A Waterbar Log.'

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

If the weather changes, or looks like it may change for the worse, stop the job *before* the job stops the crew. (25)

Weather. Don't let your 'can do' attitude pose a danger during any sort of inclement weather. Do the difficult - stop the job *before* the job stops the crew. Remember — If you're close enough to hear the thunder, you're close enough to get hit by lightning.

Trail Maintenance and Construction Task Hazards
and Recommended Safety Gear (sample page)

Revised: March 5, 2013

Basic Safety equipment for all Trail work: Sturdy Boots, Work Gloves, Long Pants, and Appropriate Dress for the weather.

Maintain tools in good working condition; inspect tools and handles before leaving base camp; know your abilities and limits, take breaks before you are tired, and drink before you are thirsty.

Determine who in the crew has First Aid and CPR skills before leaving base camp. Communicate to the crew the individual responsible for transporting the First Aid kit.

Determine who in the crew has any special needs that could affect their safety: medicines, medical conditions, allergies, etc.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

✓	Trail Tasks	Likely Job Hazards	Recommended Safety Gear	Additional Comments
	Seasonal Hazards	Nettles, rattlesnakes, copperhead snakes, bee-wasp-hornet-yellow jacket stings, ticks, biting insects, chiggers, thunderstorms & lightning, sun exposure, heat stroke, heat exhaustion, hypothermia, dehydration and/or lack of adequate water, the many & varied hunting seasons	Gloves, boots, head covering, long sleeves. If desired: sun tan lotion, insect repellent (follow directions implicitly) Hydration	Poison ivy ALL year. Stinging nettles. If you are subject to anaphylactic shock know that there is little to nothing that can be done for you in the field by a work crew. Leave ridge crests before a thunderstorm arrives. If you can hear Thunder you are close enough to be struck by lightning.
	Balds Clearing	Sharp Tools, back and arm strain, dehydration, loud noise (if using power equipment), lightening, overexposure to sun, rain, or wind	Gloves, boots, sun hat, sunscreen, wrap around eye protection, weed eater harness, and hearing protection (if using power equipment)	Drink at least two quarts of water per day, keep proper spacing between workers, and leave Ridgecrest during lightening storms.
	Blowdown Removal and Brush Cutting (Trail & Fire Road Trimming) with Pruning Saw, Bow Saw, Loppers, other Hand Tools. Also see 'Spring Poles.'	Sharp tools, loose footing, flying brush, poison ivy, nettles, bee stings, snake bites, nettles, limbs under tension, uneven ground, tripping on cut items	Gloves, boots, wrap around eye protection, shin guards (optional)	Have soap and wash water available; know who is allergic to bee stings and poison ivy.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 3 - Trail Maintenance Safety

page left blank

CHAPTER 4 - TERMS AND DEFINITIONS

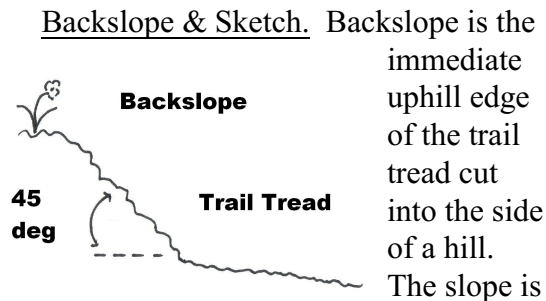
General. This short chapter will acquaint the reader with a few of the more common terms and definitions used in the fine art of trail maintenance. This is not a 'how to' chapter.

Agency Partners. TATC has two Agency Partners. For the A.T. within approximately 1/2-mile of Reeds Gap, and for the fire road near the Parkway, our Agency Partner is the Blue Ridge Parkway. Our Agency Partner for the remainder of 'our' section of the A.T. and fire road, and for the Mau-Har Trail, is the Glenwood-Pedlar District, George Washington-Jefferson National Forest. TATC has Memorandum of Understanding with each of these Agency Partners and the Appalachian Trail Conservancy. These agreements define responsibilities. Trail maintenance is accomplished in accordance with these agreements, the TATC Local Management Plan, TATC trail assessments, and Appalachian Trail Conservancy guidelines.



Berm & Photo. A berm is a ridge of dirt, rock, and / or vegetation on the downhill

side of the trail that is higher than the trail tread. The berm prevents water from running off the trail. It may be caused by trail erosion, trail compaction due to hiker use, or vegetation growth along the side of the trail. A berm only 1/2 to 1-inch high will prevent water from leaving the trail and cause trail erosion. In the photo a bit of the berm has been removed (green lines) to show the berm contour.



normally 1:1, or 45°. This slope prevents immediate uphill material from sliding down onto the trail.

Barber Chair. A chair shaped stump (looking like a high-backed barber's chair) left when a felled or fallen tree breaks as it falls. A tree that 'barber chairs' as it comes down is extremely dangerous.

Barking. Removing bark from logs to be used for waterbars or other construction. Sometimes called debarking. Not to be confused with what a dog does.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 4 - Terms and Definitions

Blazes & Photo. Blazes are painted



marks of various sizes, shapes and colors, used to mark a trail.

Blaze color, size, and shape depend upon

trail location and jurisdiction. Double blazes (one above the other) denote a change in direction, or a trail spot requiring a bit more attention like a road or trail intersection. Double blazes should be used sparingly. In some areas the top blaze is offset in the direction the trail is turning. In accordance with ATC guidelines, there should no more than six blazes per mile.

A.T. Blazes along the Appalachian Trail are at eye level, painted white, and are 2 inches wide x 6 inches high.

Side Trails. Blazes on side trails that connect to the A.T., such as our Mau-Har Trail, follow the same guidelines, but are painted blue. The short spur trail from the Mau-Har Trail to the waterfall is blazed yellow. The short trail 10-minutes south of the peak of Three Ridges that leads to the Priest Overlook is painted blue.

The blue and yellow blazes cited above were painted before this area was designated as a 'wilderness.' Despite the 'Wilderness' designation, these may

still be used and renewed.



Blowdown on the Switchback
from Hell

Blowdown & Photo. A live or dead tree that has fallen, usually due to wind, ice, or rot. Refer to TABLE OF CONTENTS and see 'Hazard Tree,' 'Leaner,' and 'Widow Maker,' this chapter.

Brontosaurus. Extinct dinosaur. Refer to TABLE OF CONTENTS and see 'Ohsosaurus,' this chapter.

Brushing Out. Brushing out a trail, or waterbar drainage channel, is to cut, or dig and remove, woody growth (saplings, branches, brush, and trailside vegetation) to maintain a 4-foot wide X 8-ft high trail corridor. This provides clearance for a hiker when branches are snow or rain-weighted, and to provides ample space for a worker and fire rake to clean out a waterbar drainage channel. Refer to the TABLE OF CONTENTS and see: CHAPTER 7, 'Brushing Out/Lopping.'

Travel Safe.

Work Safe.

Come Home Safe

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 4 - Terms and Definitions



Bucking



Underbucking

Bucking-Underbucking & Photos.

Cutting up a downed tree. A buck saw, bow saw, or bucking crosscut (rather than a felling crosscut) saw is used to buck, or underbuck, a downed tree.

Check Dam. A check dam may look very much like a waterbar, except that it is built perpendicular to the trail, rather than at an angle like a waterbar. The purpose of a check dam is to slow water runoff so that sediments will be dropped behind the dam. Typically used on badly gullied trails to gain fill material. Before ‘maintaining’ a waterbar, make sure it is not a ‘check dam.’ There are a number of check dams on the A.T. between Maupin Field and the start of Bee Mountain.

Climbing Turn. A gentle trail turn on a gentle slope. Usually associated with a long gentle ridge. A climbing turn maintains the existing trail grade throughout the turn.

Compacted Trail. Compacted trail is packed down by the sheer number of trail users. May cause a depressed trail tread encouraging erosion. When building trail, loose soil is compacted to keep it in place.

Cribbing. Rocks or logs installed on the downhill side of the trail to support the trail. Cribbing often looks like a rock or log wall.

Drainage Channel. Also called the ‘exit chute,’ or ‘outlet.’ The contoured area that extends from the uphill side of a waterbar, across the trail in front of the waterbar, and off the trail on the downhill side. Generally two shovels wide. The drainage channel turns all but the heaviest runoff water from the trail, *before* it reaches the waterbar. Refer to the TABLE OF CONTENTS and see: CHAPTER 9, ‘Sketch - Anatomy of a Waterbar.’

Duff. The very top ground layer consisting of leaf litter, decaying organic matter, and twigs. This is unsuitable for trail tread or cribbing support, and is removed during trail building. A *thin* layer is sometimes scattered on brand new trail to help break up rain drops preventing erosion, and to naturalize the tread.

Erosion Control. The prevention of water run-off that will erode and damage the trail environment. The control of surface water to prevent erosion is one of the most important trail maintenance tasks.

Exit Chute. Also called the ‘drainage channel,’ or ‘outlet.’ Refer to the TABLE OF CONTENTS and see: CHAPTER 9, ‘Sketch - Anatomy of a Waterbar.’

Travel Safe.

Work Safe.

Come Home Safe

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 4 - Terms and Definitions

Fillslope. The downhill side of a trail that does not have a full bench, and requires fill material. Fillslope is not as stable or as solid as a full bench, and is more prone to damage by hikers and erosion. Often requires cribbing for support. Refer to TABLE OF CONTENTS and see 'Full Bench,' this chapter.

Fortify. Refer to TABLE OF CONTENTS and see 'Uglification,' this chapter.

French Drain. A culvert-like drain area, under the trail, normally formed with rocks.

Full Bench. A sidehill trail where the complete width of the trail tread is dug into the side of the hill. A 3/4 bench is only dug 3/4 of the way into the side of the hill and requires 1/4 of the trail tread to be fillslope.

Grade / Trail Grade. The angle at which a trail climbs or descends, typically up to 12°. A maximum of not more than 8° is desired. Some compasses include a clinometer which measures this angle.

Grade Dips / Coweeta Dips / Terrain Dips/ Trail Dips / and Swales. Low spots, natural or constructed, to shed water from the trail. Generally better and longer lasting than waterbars.

Gravel. Small rock, generally under 3-inches. Often made with the help of

Mr. Sledge Hammer. Extremely useful as fill material.

Hazard Tree. Any tree that poses a threat to people or animals passing nearby. Refer to TABLE OF CONTENTS and see 'Leaner' and 'Widow Maker,' this chapter.

Leaner. A tree that is less than vertical. May or may not lean against another tree. Refer to TABLE OF CONTENTS and see 'Widow Maker,' this chapter.

Limbing. The process of removing branches and limbs from a downed tree with saws, axes, and / or loppers.

Lopping. Using loppers to remove branches. Loppers can typically handle branches up to 1 to 1 1/2-inches in diameter. Ratchet types have greater cutting power.

Mineral Soil. The good, solid soil found under the top layer of duff. Most often consists of soil mixed with sand and pebbles or small rock. Mineral soil is the foundation of new, or reworked, sidehill trail, and waterbar 'grand prix curves.'

Ohsosaurus. A trail maintainer who practiced bad lifting techniques. Be smart. Work safe.

Outlet. Refer to the TABLE OF CONTENTS and see: 'Drainage Channel,' this chapter, and CHAPTER 9, 'Sketch - Anatomy of a Waterbar.'

Travel Safe.

Work Safe.

Come Home Safe

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 4 - Terms and Definitions

Outslope / Trail Outslope / Trail Slope.

The side to side slope of the trail. The outslope, very gentle and almost unnoticeable, allows water to drain gently from the trail, and prevents trail gullying or puddling. Typical outslope is 5%, or 1-inch in 18-inches.

Pitch Out. A western USA term for waterbar.

Rock. Those hard, heavy, things that are always in the wrong place when you build / maintain trail.

‘Rocks used for trail work come in three sizes: double hernia, single hernia, and too small (anonymous)⁶.’
Rocks smaller than double hernia are too small for trail use. (6)

Safety.

*Anything you and others
do to keep from being
injured.*

Refer to TABLE OF CONTENTS and see CHAPTER3 ‘Trail Maintenance Safety.’

Safety Observer. One or two Safety Observers are used when a section of trail must be closed while trail

maintainers are at work. Their job is to prevent hikers from getting in harms way while the work is going on, and to coordinate work breaks so that hikers can safely pass. In actuality, every Trail Maintainer should be a Safety Observer at *all* times, ensuring that *all* trail maintenance work is done in a safe and careful manner. Refer to TABLE OF CONTENTS and see also CHAPTER 3 ‘Tree Felling.’

Sidehill. A trail cut into the side of a hill. Digging or doing sidehill is the work involved in constructing trail tread on the side of a hill.

Slough & Sketch. Material that has slid down the hill and accumulated on the uphill side of the trail, narrowing the trail tread (slough pronounced like duff).



Snag. A dangerous stub, or ‘hat rack,’ left when a trail maintainer fails to cut a branch or sapling down to the ground or cut a branch all the way back to the trunk. Also used to denote a standing, bare, tree trunk after the top of the tree has broken and fallen. For photo refer to TABLE OF CONTENTS and see, ‘CHAPTER 3 - TRAIL MAINTENANCE SAFETY, Snags.’

Spotter. A Spotter is used to watch the top of a tree being felled. The job of

⁶ Lightly On The Land, The SCA Trail-Building and Maintenance Manual, p156.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 4 - Terms and Definitions

the Spotter is to spot limbs, or a treetop, that break off, and to sound a warning so that the axemen or sawyers can get out of the way and be safe. The Spotter does not watch the trail for hikers, the Spotter watches *only* the top of the tree being felled. Refer to TABLE OF CONTENTS and see also CHAPTER 3 'Tree Felling.'

Steps. Rock or log steps built into trail sections to prevent erosion and form the tread.

Swing Blading. Also called weed whacking. Using a swing blade, weed whip, or weed whacker, to maintain the trail corridor by cutting soft vegetation along the sides of the trail. Refer to the TABLE OF CONTENTS and see: CHAPTER 7, 'Weed Whacking,' and 'Brushing Out/Lopping.'

Switchback. An abrupt trail turn built on relatively steep sections of trail.

SST. 'Sweet Smelling Toilet.' The type of outhouse on our section of the A.T. So called because of the effective use of solar heating on the vent stack.

Trail Corridor. The corridor thru which you hike on the trail, usually 4-feet wide, 8-feet high. The corridor is normally wider on the uphill and narrower on the downhill side of the trail. Also used as the 'corridor of land' through which the trail is built. For more information and a trail corridor sketch, refer to the TABLE OF

CONTENTS and see: CHAPTER 7, 'Brushing Out/Lopping,' and 'Weed Whacking.'

Trail Grade. Refer to TABLE OF CONTENTS and see 'Grade/Trail Grade' this chapter.

Trail Maintainer. Trail maintainer - an evil smelling, dirt digging, rock pushing, vulture attracting, cold, wet volunteer. A volunteer who appreciates the trail, has a great deal of self respect, and one who is highly paid with self satisfaction in a job well done. One who treads lightly on our Mother Earth.

Trail Outslope. Refer to TABLE OF CONTENTS and see 'Outslope/Trail Outslope/Trail Slope,' this chapter.

Trail Slope. Refer to TABLE OF CONTENTS and see 'Outslope/Trail Outslope/Trail Slope,' this chapter.

Trail Tread. The portion of the trail you hike on, averages as wide as a Pulaski handle is long, and not less than 24-inches wide.

Trench & Photo. A shallow trench is often dug under a blowdown on the ground to prevent saw teeth from becoming damaged by earth and rocks when cutting through the blowdown.



Travel Safe.

Work Safe.

Come Home Safe

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 4 - Terms and Definitions

Uglification. The process of placing large rocks, logs, or heavy brush at the edge of the trail. This helps to prevent hikers from walking on the edge of the trail, and to prevent hikers from shortcutting the trail. Sometimes called fortifying the trail. Especially useful at switchbacks, waterbars, and steps to prevent hikers from going around or shortcutting.

Waterbar. A log, rock, or series of rocks installed at an angle across the trail. Used to divert water from the trail and prevent erosion. Before ‘maintaining’ a waterbar, make sure it is not a Check Dam. Refer to TABLE OF CONTENTS and see ‘Drainage Channel,’ and ‘Check Dam,’ this chapter, and also see CHAPTER 9,

‘Sketch - Anatomy of a Waterbar.’

Weed Whacking. Also called swing blading. Using a swing blade, weed whip, or weed whacker, to maintain the trail corridor by cutting soft vegetation along the sides of the trail. For more information and a trail corridor sketch, refer to the TABLE OF CONTENTS and see: CHAPTER 7, ‘Weed Whacking,’ and ‘Brushing Out/Lopping.’

Widow Maker. Any leaning, or partially broken, tree or limb that poses a danger to persons working or passing underneath. May fall unexpectedly for little or no visible reason, and create a ‘widow.’ Generally difficult and dangerous to remove.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 4 - Terms and Definitions

page left blank

*Safe work is always faster than doing first aid or going to the hospital.
Work Smart !*

CHAPTER 5 - TOOLS (with photos of most tools)

Safe Work Is *Always* Faster
Than Doing First Aid
Or Going to the Hospital.

WORK SMART. (9)

GENERAL. Your most important tool is your brain - use it ⁷. A rusty tool is a dangerous tool ⁸.

This short chapter will acquaint you with a few of the more common tools used in the fine art of trail maintenance. This is *not* a 'how to' chapter.

For good procedures to follow to replace tool handles and sharpen tools, and for more comprehensive information on tools and their care and use, refer to the texts at the end of this article.

Photos shown include tools owned by TATC, by the author, and by the author's neighbor.

Some of the tools show tape with a

pattern on their handles. The tape is yellow and black and, to the author, makes the tools easier to find when put down on the ground, or in autumn leaves when not in use, or after a work break.

Sharpening. Don't work with a dull or damaged tool. A dull tool requires more effort and can more readily swerve, bounce, or ricochet. Knives, swing blades, Pulaskies, axes, grubbing hoes, and other bladed tools should each be sharp. Sharpen each tool as soon as you return from a trip. If you postpone this chore until you are getting ready for a trip, sharpening will never get done. Carry a proper stone or mill Bastard file for minor sharpening chores on the trail.

Sheathes. Use a sheath on each tool with a sharp blade. Sheaths may be made from leather, garden hose, wood, or old fire hose. A sheath should cover the blade whenever a tool is being carried to and from the work site, and when being transported in a vehicle.

⁷ USFS Trail Construction and Maintenance Notebook, rev Apr 97, pg 116.

⁸ Me.

*Safe work is always faster than doing first aid or going to the hospital.
Work Smart !*

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

See 'Storage,' next paragraph below.

Storage. Clean and lightly oil ⁹ tools, including moving parts, after each trip and before storing tools. Dirt tends to absorb moisture and encourage rust; remove it. Remove sheaths while tools are being stored. A sheath prevents a blade from drying and may enhance rust. A sheath left on my double bit hatchet, in a motor home, in a garage, for a number of years, developed rust. Take those sheathes OFF. Also, the heat in a garage may cause rubber in a fire hose sheath to adhere to the protected blade.

Tools should be hung, not leaned against a garage wall. Leaning a tool may cause the handle to warp. Crosscut saws, especially, must be hung so that the blade does not develop a permanent bend. Kerosene may help to remove tree sap from saw and lopper blades. Mix the kerosene 50/50 with oil and you do two jobs at the same time; i.e., cleaning and oiling. Don't forget to safely dispose of the oily rags you use.

TOOL DESCRIPTIONS:

NOTE

Where there is more
than one tool name with

⁹ A 50-50 mix of oil and kerosene cleans and makes a thin oil.

a common word (par ex: buck saw and pruning saw), the names have been written last name first (par ex: saw, buck and saw, pruning) to keep references close together and easy to find.

Adze. An adze (also adz) is a carpenter's tool used for shaping and smoothing timbers made from rough cut wood. Adzes come in many shapes and sizes. An adze may look much like a short-handled grubbing hoe with an extremely sharp blade. Timbers are scored with a saw before being adzed. Because they may bounce and cut boots and toes just as well as they cut wood, steel-toed safety shoes should be a requirement when using this tool. When you use an adz do not earn the nickname of 'Four-toed Pete.'



Axe. Available in single bit or double bit (blade) versions. The double bit axe must only be used by the most experienced axeman.



Bag, Plastic. Plastic bag a trail maintenance tool? Sure thing. You can't imagine how many garbage bags, shopping bags, and

*Safe work is always faster than doing first aid or going to the hospital.
Work Smart !*

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

lawn and leaf bags have been filled on trail maintenance trips with litter left by other folks. A couple of plastic grocery bags take up very little space and add very little weight to your pack. And they come in so very handy. One can be used as a seat on wet ground, or to wrap a sweater in when you take it off and put it in your pack, or as liner for a not so waterproof day pack, or, or, or.... A lawn and leaf bag makes a good cover for tools during a rain shower or to protect from dew overnight. They have many, many uses.

Ball. A tennis ball, golf ball, or orange can be a useful tool. Rolled slowly down the trail after completing a waterbar or drainage dip, it will show you where the water will go. It will also show you if there is an inslope or an outslope.

Bucket, Canvas, or Canvas Bag. A bucket, or 5-gallon container, is very handy for carrying gravel or mineral dirt fill to use in waterbar construction, trail construction, and filling holes left by fallen snags and trees. A bucket is invaluable when removing ash from shelter fire rings, and is helpful when washing out an SST. A piece of canvas 2-ft square will work as well for some chores, and packs easier. Some cloth/canvas



Cloth or Canvas Shopping Bag



Coal Bag

shopping bags will carry limited amounts of gravel. DANDUX® Coal Bags (canvas coal bags) are also available for such carrying¹⁰ and will hold as much as the average person can carry. or more.

Cant Hook. Similar to a peavey, but with a small set of gripper teeth in place of the sharp point. Refer to TABLE OF



CONTENTS and see 'Peavey,' this chapter. Used for rolling or positioning logs.

Cleaner, Oven. Some stove cleaners are great for removing pitch from a saw blade (read and heed all oven cleaner manufacturer cautions and warnings).

Clearing Axe. Refer to TABLE OF CONTENTS and see 'Swedish Bush Axe,' this chapter.



Looking down on flat compass.

¹⁰ C.R.Daniels, Inc.

3451 Ellicott Center Drive, Ellicott City,
Md. USA 21043 1-410-461-2100
www.crdaniels.com

*Safe work is always faster than doing first aid or going to the hospital.
Work Smart !*

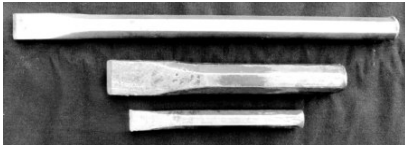
Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

Clinometer. An instrument used to measure trail grade. Often combined into a compass. The clinometer is aimed from your eye level to the eye level of a person having your same height up the hill. Refer to TABLE OF CONTENTS and see CHAPTER 4, 'Grade/Trail Grade.'



Reading inclination in compass mirror.

Cold Chisel. A chisel is used to cut metal. Often used for rock work.



Over time, the butt (striking surface) will burr and must be filed smooth to prevent dangerous flying metal chips. Refer to TABLE OF CONTENTS and see CHAPTER 3 'Burrs.'

Come-Along. Refer to TABLE OF CONTENTS and see 'Ratchet Winch,' this chapter.

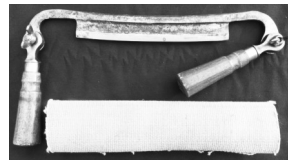
Cutter Mattock. Refer to the TABLE OF CONTENTS and see 'Mattock, Cutter' this chapter.

Digging and Tamping Bar. Often



confused with a rock bar. Has a flattened round end for tamping dirt at one end, and a flat narrow blade for shaping the bottom of post holes at the other end. It is not strong enough for prying and will bend if used as a rock bar.

Drawknife or Drawshave. A planing tool used for removing bark. It has a curved or straight knife-like blade between two handles, and is drawn toward



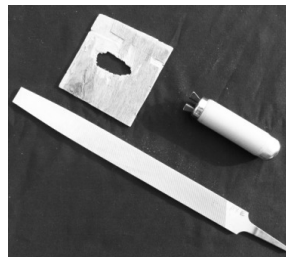
A folding drawknife & its sheath.

you during use. An excellent tool for cutting your leg when debarking a log, be careful !

Drilling Hammer. See 'Hammer, Hand Drilling,' this chapter.



Eye Protection. Safety glasses or goggles, *not* eye glasses.



Mill Bastard File, Handle, & Knuckle Guard.

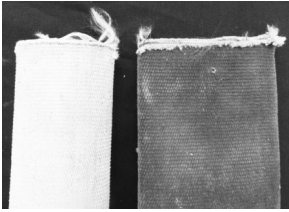
File, Mill Bastard. Useful for sharpening tools. Use a knuckle guard on tang (shank) or handle to prevent your hand from coming in

*Safe work is always faster than doing first aid or going to the hospital.
Work Smart !*

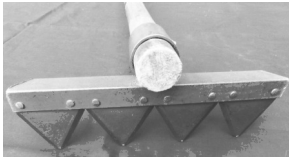
Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

contact with item being sharpened. A knuckle guard may be a thin piece of wood or a thick piece of leather, with a hole in the center. It fits between the cutting portion of the file and your hand.

Fire Hose. Used to make blade covers and sheaths to protect tools, trail maintainers, and trail maintainer vehicles. A 2 and 4-in fir hoses. sheath left on my double bit hatchet, in a motor home, in a garage, for a number of years, developed rust. It **must** be removed when a tool is stored. This prevents any trapped moisture from rusting the tool, and may prevent hose rubber from sticking to the tool blade.



Fire Rake. A rake with four sharp triangular teeth. In fire fighting, used for duff removal when making fire lanes. Handy in trail work for moving dirt and gravel, and for removing duff.



A first aid kit is a collection of material necessary to treat injuries and illnesses likely to occur during an activity.

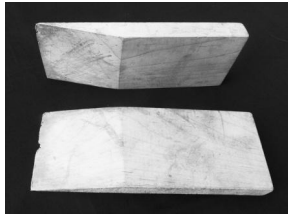
First Aid Kit. See the TATC web site Education Handouts 'SUGGESTED FIRST AID KIT CONTENTS,' 'FIRST AID,' and 'FIRST AID KIT.'

Gloves, Leather & Cotton Stippled.



Leather gloves are best for protecting hands, but are dangerously slippery when wet. Cotton gloves, with rubber stipples, provide a better grip in wet conditions, but protect much less. Leather gloves with Thinsulate™, or other insulation, are warmer, even when wet, and can be had for a modest price at the local hardware store.

Glut. A large wooden splitting wedge, usually shop-made. Sometimes used in felling a tree.



Glut

Grass Whip. Refer to the TABLE OF CONTENTS and see 'Weed Whip,' this chapter.

Grill Brick: A grill brick and kerosene may be used to clean a crosscut saw blade. A better method is to use a fine, round sharpening stone and kerosene. Some stove cleaners are also great for

Safe work is always faster than doing first aid or going to the hospital.

Work Smart !

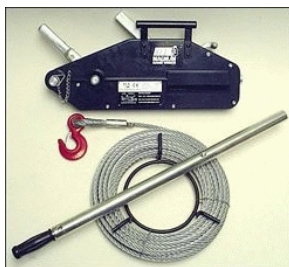
Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

removing pitch from a saw blade (read and heed all oven cleaner manufacturer cautions and warnings).

Do *not* use a grill brick or sharpening stone on any portion of the saw teeth or rakers, you may badly damage the sharpened edges and / or ruin the 'set' of the saw. A grill brick holder is handy for holding the grill brick, and saves wear and tear on the hands. Keep the saw blade wet with kerosene (not a kerosene/oil mixture) while using the grill brick or sharpening stone. Frequently wipe off and replenish dirty kerosene.

After cleaning the blade, coat blade with oil ¹¹. Grill bricks may be obtained from commercial (restaurant) kitchen equipment suppliers. The grill brick (or small, fine, round, sharpening stone) and kerosene act like fine, wet type, emery paper.

Grip Hoist or Griphoist® Equipment.



Anchor, Bight,
Cable Clamp
(Clip), Endless
Loop, Eye to Eye,
Grip Hoist, Little
Mule ®
Lineman's Wire
Grip, Safe

Working Load, Shackle, Slack, Snatch

¹¹ A 50-50 mix of oil and kerosene cleans and makes a thin oil.

Block, Tension, Wire Rope, Wire Rope Thimble. These are some of the items and terms associated with rigging used to move rocks, timbers, and other loads. For use refer to 'Chapter 17, Lightly on the Land, the SCA Trail-Building and Maintenance Manual.'

Grub Hoe. Similar to a garden hoe, but with a heavier, shaped blade, and shorter handle. Blade and handle are each curved. Useful in building trail to loosen dirt and level trail. Refer to TABLE OF CONTENTS and see 'Hazel Hoe,' this chapter.

Hammer, Engineers. A common size is 2 ½-lbs. Used to drive wedges, stakes, and etc.



Colloquially called a maul.

Hammer, Hand-Drilling. A short handled hammer, similar to a maul. Has two flat faces.



Used mainly to strike cold chisels, star drills, wedges, and the like. Hardened for long wear. Viewed from the side, the head bulges slightly away from the handle in something of a letter 'D' shape. Also called a cutter's hand hammer.

Hammer, Rifting. Refer to TABLE OF CONTENTS and see 'Hammer, Spalling,' this chapter.

Safe work is always faster than doing first aid or going to the hospital.

Work Smart !

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

Hammer, Rock. Refer to TABLE OF CONTENTS and see 'Hammer, Spalling,' this chapter.

Hammer, Sledge. Normally 3, 6, 8, 10, or 12-lb., some to 20-lb., with two flat faces.



Used for driving stakes and wedges, and for

making gravel. Common sizes are 6 and 8-lb. Some sledge hammers have a straight peen and are, in fact, spalling hammers. See next paragraph.

Hammer, Spalling. Colloquially called a rock hammer.



Used to shape and break rock. A short handled hammer with one flat face and one sharpened, wedge-shaped face like a thick hatchet. In a

spalling hammer the wedge-shaped face is parallel to the handle and is a straight peen hammer. A straight peen will force rock chips to the side, away from you. A spalling hammer is also called a rifting hammer. They come in hand hammer and sledge hammer sizes.

Dictionary - To spall: To break up into chips or fragments, to chip or crumble.

If the wedge-shaped face is

perpendicular (90°) to the handle, it is called a cross peen hammer. A cross peen hammer will force rock chips towards you and is *not* to be used for rock work. A cross peen hammer with one wedge-shaped face is sometimes called a blacksmith's hammer and is not used for trail maintenance.

Handles. The handles on picks, pick



Old pick mattock handle for tamping.

mattocks, and cutter mattocks are oftentimes easily

removable. To prevent overextending the elbow (see CHAPTER 3 'Carrying Tools, Elbows.'), remove the handle from your pick, pick mattock, or cutter mattock. Carry the tool head in your day pack and just the handle in your hand.

A handle removed from such a tool in itself makes a great tool for tamping gravel you are using to backfill around rocks in a rock waterbar. This will also beat up the handle, and sometimes splinter it. A better course of action is to use an old handle for this purpose.

Occasionally inspect all tool handles for tightness, and for cracks and other damage. Use newly handled tools with caution, and check often for cracks. If there is any defect, 'most' damage is 'likely' to occur during the first few uses.

Once a year, following directions and

Safe work is always faster than doing first aid or going to the hospital.

Work Smart !

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

safety precautions on the container, wipe those wooden tool handles down with boiled linseed oil. A small amount of linseed oil placed in a small hole (< 1/16-inch) in the end of the handle will gradually work its way into the handle. Dispose of rags and other waste material in accordance with instructions on the container.

Hard Hat. A typical construction safety



Hard Hat,
Chainsaw.



Hard Hat
General Purpose.

hat is used when doing some forms of trail work. The chin strap is there for a purpose, use it. Liners are available for cold weather use. Use when felling trees, doing grip hoist work, clearing blowdowns, using a sledge hammer or any other hammer, swing blading, and at other times when head protection **might** be advised. Hard hats are



Hard Hat
Pack Attachment

required when using a chain saw or crosscut saw. A simple piece of cord and a carabineer can attach your hart hat to your day pack. Although the chain saw hard hat has a facial screen, it will let in small

partials and additional eye protection is recommended.

Hatchet. Although a hatchet might be



used to split kindling wood, it is all but useless as a trail maintenance

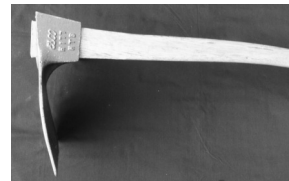
tool.

Hatchet, Double Bit. Useful for splitting kindling wood, this hatchet 'might' be used to limb green (!)



blowdowns. Otherwise all but useless as a trail maintenance tool. A rare tool to find.

Hazel Hoe. Refer to TABLE OF CONTENTS and see 'Grub Hoe,' this Chapter.



Kerchief - Headband. An extra large kerchief can be welcome in helping to protect the head, neck, and ears from either



Kerchiefs.

sun or insects. A rolled, or folded, kerchief makes a great headband for keeping dripping perspiration out of

*Safe work is always faster than doing first aid or going to the hospital.
Work Smart !*

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

your eyes. Also handy as: an emergency, unsterile bandage; towel; pot holder; wash cloth; and many etc's.

Kerf: The space or slot left as a saw cuts into wood.



Kerf

Log Carrier. Colloquial name for a timber carrier. Refer to TABLE OF CONTENTS and see 'Timber Carrier,' this chapter.

Loppers. A garden tool used to cut (lop) branches when clearing trailside vegetation. Some are ratchet equipped. Also called lopping shears. Normal loppers will cut only to 3/4 or 1-inch branches. Heavy duty or ratchet loppers can cut up to 2-inch limbs. Don't overstress light duty loppers.



Maul. Colloquial name for an engineers hammer. Used for driving wedges, stakes, and etc. Refer to the TABLE OF CONTENTS and see 'Hammer, Engineers,' this chapter.

Mall. Where you shop.

Mattock, Cutter. The cutter mattock is



a double-bladed tool with a narrow, hoe-like mattock blade on one side to dig, pull, and move soil. The other side features a narrow,

root-cutting blade (90° to the hoe blade). Refer to TABLE OF CONTENTS and see 'Mattock, Pick' in the next paragraph. The one shown is a very light duty, garden variety not strong enough for trail work.

Mattock, Pick. A double-bladed tool



with a narrow pick on one side and a narrow, hoe-like mattock blade on the

other side. The pick end loosens soil, and helps to move rocks. The mattock end digs, pulls and moves soil. Refer to TABLE OF CONTENTS and see 'Mattock, Cutter' in preceding paragraph.



McLeod. The McLeod is a two-bladed tool. One blade is a large sharpened hoe, the other a long-toothed rake with 5 to 8 teeth. 48 to 60-in handle. Used primarily for fighting fires by clearing fire lanes, it is very useful in loose soils to move dirt, and remove duff. It can pack or tamp loose soil on new trail tread. Pronounced

Safe work is always faster than doing first aid or going to the hospital.

Work Smart !

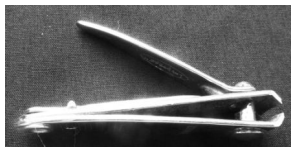
Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

‘McCloud.’ Called a ‘Rake Hoe’ in Australia, and a ‘Streif’ in the SW USA.

Measuring Tool. In place of a measuring tape, a piece of rope, a tool such as a Pulaski or fire rake, or your foot, can be used to measure something like a waterbar ditch for a needed log. For instance: the trail corridor is 4-ft W x 8-ft H; a Pulaski is 35-in (2-ft 11-in); a fire rake is 51-in (4-ft 3-in). Trail tread is generally the width of a Pulaski.



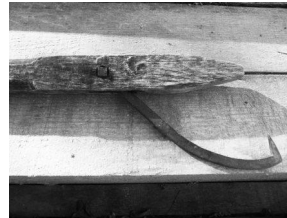
Multitool. A multitool similar to that shown is sometimes handy for tightening nuts, bolts and screws on various tools during a trail maintenance trip. Note: The little screwdriver and nut driver tips can easily slip out of the case and become lost forever. Heed the voice of experience.



Nail Clipper. A nail clipper (with nail file) may seem a strange thing to list under tools. But, the first time you chip, tear, or break a fingernail against a rock or branch, you’ll be glad to have one in your pocket or

emergency item bag.

Peavey or Peavy. A handled tool similar to half a set of antique ice tongs on the end of a four-foot, steel pointed wood handle.



Colonial Williamsburg Peavy

Used to turn or move logs. Similar to the cant hook shown, except the peavy has a sharp point at the end of the handle. The



Cant Hook

Colonial Williamsburg peavy is shown for historical interest.

Pick. The pick most often seen in old railroad building and mining films. A tool with a long, narrow, double blade, one end for chipping rock, one end for loosening soil. Seldom seen in trail maintenance.



Pick Mattock. Refer to the TABLE OF CONTENTS and see ‘Mattock, Pick’ this chapter.



*Safe work is always faster than doing first aid or going to the hospital.
Work Smart !*

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

Pinch Point Crow Bar. A formal



hardware store name for what we colloquially called a 'rock bar.'

Normal sizes: 51-inch / 12-lb., 60-inch / 18-lb., and 64-inch / 22-lb. Actual weight atop Three Ridges = 231-lbs. Used to move rocks, and to jack rocks up out of the ground. It is also helpful in moving cut sections of blowdowns off the trail. The lower third or so, near the beveled tip, is square, the remainder round. A strong prying tool offering a lot of leverage. Refer to the TABLE OF CONTENTS and see 'Re-Bar' this chapter.

Pruners. Refer to TABLE OF CONTENTS and see 'Snips,' this chapter.

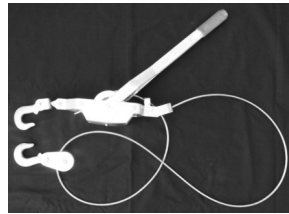
Pulaski. A double-bladed trail building tool. It has an axe-like blade on one side and a mattock blade on the other side. A combination tool, not as good as a grub hoe for dirt moving; not as



good as an axe for chopping. When in rocky areas, use a cutter mattock, *not* the axe blade of the Pulaski, to cut roots. Chopping into rocks can badly nick or chip the blade, and make the

owner *very* mad. Steer clear of Pulaskies that have a twist in the metal between the axe blade and the grub hoe blade. Their metal is not as strong as one like this. Called a 'landscape axe' at a big box store ¹².

Ratchet Winch. A small,



hand-operated winch handy for short distance load moving. Sometimes called a come-along, cable jack, or

ratchet-and-pawl cable winch. Common capacities are 1,000 and 2,000-lbs.

Re-Bar. A 3-ft piece of 3/4-inch



reinforcing bar, ground to a wedge point at one end, makes a satisfactory, *light-duty (!)*, rock bar. Refer to TABLE OF CONTENTS and see 'Pinch Point Crowbar' this chapter.

Rifting Hammer. Refer to TABLE OF CONTENTS and see 'Hammer, Rifting,' this chapter.

Rock Bar. A torture instrument of extreme value in trail work. Refer to

¹² Home Depot on 2011.11.22.

*Safe work is always faster than doing first aid or going to the hospital.
Work Smart !*

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

TABLE OF CONTENTS and see
'Pinch Point Crow Bar,' this chapter.

Rock Hammer. Refer to TABLE OF CONTENTS and see 'Hammer, Rock,' this chapter.

Rope. Rope of various sizes and lengths can often be handy for a particular purpose on a maintenance outing. It can also substitute for a measuring tape when measuring a just dug ditch for a waterbar so you (certified sawyer) can measure and cut/fell a suitable log.

CAUTION

Knots reduce the breaking strength of rope as much as 40%. Sharp bends greatly reduce the strength of a rope ¹³.

Saw Size: A saw blade, in order to remove sawdust from the kerf, should be twice the length of the diameter of the log being cut, or the tree being felled. A 20-inch buck saw will not cut a 24-inch log. The portion of the blade that pulls away from the log or tree as it is being used removes sawdust from the saw kerf.

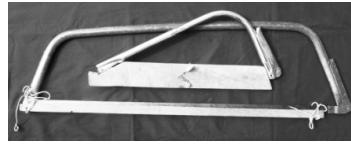


Saw Kerf: The space or slot left as a saw cuts into wood.

¹³ IAW Lehigh® brochure 'Proper use Of Rope.'

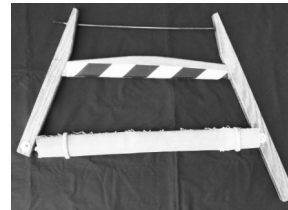
*Safe work is always faster than doing first aid or going to the hospital.
Work Smart !*

Saw, Bow. A frame saw shaped like the letter 'D.' Used for limbing and for small



blowdowns. They can be bought in many sizes. Make a sheath for that blade !

Saw, Buck. A frame saw shaped like a square letter 'A'; one side of the 'A' being longer. Used for limbing, and for small blowdowns.



Larger than the collapsible buck saw. Associated with back yard firewood cutting. Very awkward for use on the trail. Make a sheath for that blade !

Saw, Buck, Collapsible A frame saw



Collapsible Buck Saw and its Case.

shaped like a square letter 'A'; one side of the 'A' being longer. The saw comes apart and fits inside a portion of the tube frame, then into its case. Used

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

for limbing, and for small blowdowns up to 10-inches or so.

Saw, Chain. A motorized, hand held saw used to fell trees and buck blowdowns. Various motor sizes and blade lengths are available for



different jobs.

Current A.T. Conservancy approved certification and proper safety equipment are *required* to operate a chain saw on National Forest and National Park Service land. Chain saw training/certification is occasionally offered through the Appalachian Trail Conservancy.

Without certification and safety equipment, Workman's Compensation and associated medical benefits may be denied.

Chain saw certified sawyers, on National Forest and National Park Service land, must maintain current CPR and First Aid Certification.

Chain saws may not be used within the Three Ridges Wilderness. The A.T. from Reeds Gap to Maupin Field, the Fire Road, Maupin Field Shelter, and the meadow where the A.T. meets the Fire Road, are not in the 'Three Ridges Wilderness.' Chain saws, and other

motorized tools, may be used here.

Required chain saw safety equipment on National Forest and National Park Service land includes US FS approved:

1. Safety helmet with full face shield and hearing protection (85-decibels and higher).
2. Eye protection.
3. Appropriate gloves; heavy-duty, cut-resistant leather recommended.
4. Boots, heavy-duty, cut-resistant or leather, waterproof or water resistant, 8-inch high laced boots (on US Forest Service land).
5. Long-sleeved shirt.
6. Chain saw chaps with a 2-inch boot overlap (four-ply chain saw chaps recommended).

Chain saws, on National Forest and National Park Service land, may *only* be used:

1. On the fire road from Love Gap to the east side Maupin Field, outside the Three Ridges Wilderness boundary.
2. Around the shelter, field, and camping areas at Maupin Field, outside the Three Ridges Wilderness boundary.

Safe work is always faster than doing first aid or going to the hospital.

Work Smart !

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

3. On the A.T. from Reeds Gap to Maupin Field.

4. By personnel holding a current chain saw certification from the U. S. Forest Service, and current CPR and First Aid certification.

The A.T. from Maupin Field to the Tye River, and the entire Mau-Har Trail, are in a designated wilderness, the Three Ridges Wilderness. Chain saws, and other motorized tools, may not be used in a 'Wilderness.'

The use of chain saws on trails in the local Tidewater area must be coordinated and approved by the appropriate land agency.

U-Dig-It TM: The U-Dig-It can aid in chain saw work. The U-Dig-It is a small, folding trowel normally used for digging catholes for human waste. In trail maintenance it can be handy for digging a trench under a blowdown. This trench leaves space for a chain saw to finish cutting a log on the ground and prevents the saw teeth from contacting earth and rocks and becoming damaged in the process. Refer to the TABLE OF CONTENTS and see 'TOOLS, U-Dig-It,' this chapter.

Related Equipment: Other equipment used with the chain saw may include an axe, wedges, pinch point crowbar, and a maul.



Crosscut Saw

Saw, Crosscut, Bucking, Underbucking, or Felling. A straight backed, one or two-man saw. Three feet or longer. Typically 6-ft. A bucking crosscut saw is generally slightly heavier and thicker than a felling crosscut saw. For a definition of 'bucking,' refer to TABLE OF CONTENTS and see CHAPTER 4 'Bucking.'

Current A.T. Conservancy approved certification and proper safety equipment are *required* to operate a crosscut saw on National Forest and National Park Service land. Crosscut saw training/certification is occasionally offered through the Appalachian Trail Conservancy.

Without certification and safety equipment, Workman's Compensation and associated medical benefits may be denied.

Crosscut saw certified sawyers, on National Forest and National Park Service land, must maintain current CPR and First Aid Certification.

*Safe work is always faster than doing first aid or going to the hospital.
Work Smart !*

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

Crosscut saws may be used on any section of trail maintained by TATC on National Forest and National Park Service land. They must be used, in lieu of chain saws, in the Three Ridges Wilderness. The A.T. from Maupin Field to the Tye River, and the entire Mau-Har Trail, are in a designated wilderness, the Three Ridges Wilderness. Chain saws, and other motorized tools, may not be used in a 'Wilderness.'

Without certification and safety equipment, Workman's Compensation and associated medical benefits may be denied.

Required crosscut saw safety equipment in the Three Ridges Wilderness includes US FS approved:

1. Hard hat.
2. Eye protection.
3. Appropriate gloves; heavy-duty, cut-resistant leather recommended.
4. Boots, heavy-duty, cut-resistant or leather, waterproof or water resistant, 8-inch high laced boots (on US Fores Service land).
5. Long-sleeved shirt (optional).
6. Baseball or other type of shin

guards, when using an axe.

The use of crosscut saws on trails in the local Tidewater area must be coordinated and approved by the appropriate land agency.

U-Dig-It™: The U-Dig-It™ can aid in crosscut saw work. It is a small, folding trowel normally used for digging catholes for human waste. In trail maintenance it can be handy for digging a trench under a blowdown. This trench leaves space for a crosscut saw to finish cutting a log on the ground and prevents the saw teeth from contacting earth and rocks and becoming damaged in the process. Refer to the TABLE OF CONTENTS and see 'TOOLS,' 'U-Dig-It,' this chapter.

Related Equipment: Other equipment used with the crosscut saw may include an axe, wedges, pinch point crowbar, and a maul.

Saw, Pruning. A pruning saw is similar



to a household carpenter's saw except the blade is curved, it has bigger teeth, and

it cuts on the backstroke. Many varieties of teeth are available, from very fine to coarse.

They come in varying lengths from less than one foot to over two feet. Some

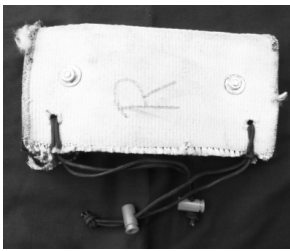
Safe work is always faster than doing first aid or going to the hospital.

Work Smart !

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

smaller ones fold for convenience. Because they lack a bulky frame, like bow and buck saws, a pruning saw is a very good tool for use in limbing blowdowns and pruning trailside branches. Sheaths are usually available from the supplier and should be used. If you don't buy a sheath, make one.

Sheath. A manufactured or home made



covering for a sharp blade. May be made from leather, garden hose, wood, old fire hose, and the like. Each sharp

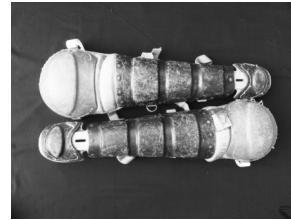
blade *must* be covered by a sheath when being carried or transported. A sheath must be securely attached to the tool it is protecting. Sheath making is only limited by ingenuity. Leather sheaths should be cared for the same as a pair of boots.

Sheaths should be removed during tool storage - the sheath itself may pick up moisture that might cause rust. Also, in a hot garage, the rubber in a fire hose sheath may adhere to the blade. A sheath left on my double bit

hatchet, in a motor home, in a garage, for a number of years, developed rust. Take those

sheathes OFF.

Shin Guards. Baseball shin guards, though a wee tad bit uncomfortable, can prevent serious injuries when that tool or rock moves



in an unwanted direction. They are invaluable when doing heavy duty rock work, digging side hill, and other major trail building/relocation chores. They are oh so very comfortable.

Shovel, Folding. A small shovel with a



folding blade, similar to a military entrenching

tool. It may have a pick opposite the shovel blade. Extremely useful in tight quarters. Especially useful in shaping the trail at a waterbar and for moving dirt when working on waterbars.

Sometimes useful at the bottom of a new hole being dug for an SST (outhouse).

Sledge Hammer. Refer to TABLE OF CONTENTS and see 'Hammer, Sledge,' this chapter.

Snips. A small hand tool used in the garden and, sometimes, along the trail for limited



Safe work is always faster than doing first aid or going to the hospital.

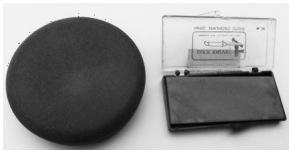
Work Smart !

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

cutting of very small branches and twigs. Also called pruners. Ratchet types are available. Handy belt holsters are available for some models.

Spalling Hammer. See 'Hammer, Spalling,' this chapter.

Stone, Sharpening. A fine, round sharpening stone, with kerosene, may be used to clean a crosscut saw. Do *not* use a sharpening stone on any portion of the saw teeth or rakers, you may badly damage the sharpened edges and / or ruin the 'set' of the saw. Sharpening stones come in multiple sizes and degrees of coarseness for sharpening different tools.



Straps. Two inch wide, 20-foot long straps may be used to carry logs to be used for waterbars. Refer to TABLE OF CONTENTS and see CHAPTER 6,



'How To Carry A Waterbar Log.'

Star Drill. A star drill looks like a round piece of rod with a tip much

like a Phillips screwdriver. The tip is usually carbide. The star drill is used to drill holes in rock by striking it with a maul. Safety glasses or goggles are required. The bit is rotated slightly every time it is struck. Over time, the butt (striking surface) will burr and *must* be filed smooth to prevent dangerous flying metal chips. Refer to TABLE OF CONTENTS and see CHAPTER 3 'Burrs.'

Swedish Bush Axe. A short handled cutting tool. A housing holds a 1 x 5-inch blade so that the head of the tool looks like the letter 'D.' The flat part of the 'D' is the blade. Useful in limbing blowdowns. NOT used to 'brush out' a trail. Sometimes called a 'Sandvik.' Swedish Bush Axe TM and Sandvik TM are brand names. Also called a Clearing Axe.



Swing Blade. A housing holds a 2 x 12-inch, double-sided, toothed blade. The head of the tool looks like a slightly offset letter 'D' on a waist-high handle. By swinging it you cut (whack) fleshy trailside vegetation. The beveled side of the blade faces down. Sometimes called a brush cutter. Colloquially called a weed whacker, or a weed cutter. A firm grip is a must to



Safe work is always faster than doing first aid or going to the hospital.

Work Smart !

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

keep hold of the tool as you hit hidden rocks and branches. Eye protection and gloves. required A hard hat should be worn.

Tape, Flagging or Surveyor. Brightly colored plastic tape used to mark trails, locations for waterbars, drainage, and etc. Comes in several colors. The string helps prevent unwanted unwinding in your pack or pocket. Can be written on with some pens and markers.



Timber Carrier or Swivel Timber Carrier. Colloquially called a log carrier. Used by either two or four persons, it is a handled tool, used to carry logs. The log grabber portion looks like a set of ice tongs attached to the middle of the long handle. Useful for moving waterbar logs from the cutting location to the installation area in open country.

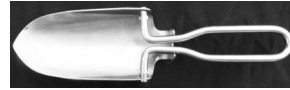
Of limited, or no use, on our narrow trails lined with crowded trees.

Trench. Although not a tool, 'trench' is included here for information purposes. A shallow trench is often dug under a blowdown on the ground to prevent saw teeth from becoming damaged by earth and rocks



when cutting through the blowdown.

U-Dig-It™: The U-Dig-It is a small, folding trowel normally used for digging catholes for



human waste. In trail maintenance it can be handy for digging a trench under a blowdown. This trench leaves space for a crosscut saw to finish cutting a log on the ground and prevents the saw teeth from contacting earth and rocks and becoming damaged in the process. The U-dig-it folds and comes with a sheath that goes on your belt or hip belt.

Wedge, Felling/bucking. A felling / bucking wedge is used behind the saw blade, to keep the kerf (slotted opening made by the saw) open so the saw is not



pinched, or to influence the tree's direction of fall. Felling wedges are usually slimmer and longer than splitting wedges. They are often used in groups of two to five wedges. They may be made of plastic or soft aluminum to keep from damaging saw teeth. They are also used to keep the saw kerf open when bucking a blowdown. Over time, the butt (striking surface) on aluminum wedges will burr and *must* be filed smooth to prevent dangerous flying

*Safe work is always faster than doing first aid or going to the hospital.
Work Smart !*

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

metal chips. Refer to TABLE OF CONTENTS and see CHAPTER 3 'Burrs.'

Wedge, Splitting. Splitting wedges are heavy and thick, and are made from soft steel or aluminum, or an aluminum magnesium combination.



They are used to split logs for use as timbers, and to split firewood. Over time, the butt (striking surface) will burr and *must* be filed smooth to prevent dangerous flying metal chips. Refer to TABLE OF CONTENTS and see CHAPTER 3 'Burrs'. Handmade wooden wedges, or gluts, may be made in the field to augment splitting wedges. Refer to TABLE OF CONTENTS and see CHAPTER 4 'Glut.' Glut. A large wooden splitting wedge, usually shop-made.

Weed Cutter. Refer to the TABLE OF CONTENTS and see 'Swing Blade,' this chapter.

Weed Whip. Similar to a swing blade in function. Only one end of the weed whip blade is attached to the handle. It is a weak, very, very light duty tool. It cannot take the punishment of hitting hidden rocks and branches, and is unsuitable for



trail use. Sometimes called a grass whip.

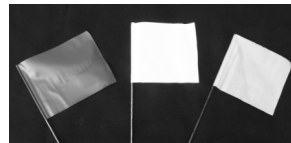
Weedwhacker. Colloquial name for a swing blade. Refer to the TABLE OF CONTENTS and see "Swing Blade," this chapter.

Whatchamacallit. A phrase used when



one cannot remember the name of a particular tool, as in, "Hey you, please hand me that whatchamacallit." "Yep, that thingie over there next to the stump." Actually a trail maintainer refueling item.

Wire Flags. Wire flags consist of a stiff piece of wire (+/- 12 to 15-inches long) with a small square of



colored plastic for a flag. They may be used to flag the location for a new trail, waterbar, or other trail work. Frequently seen in neighborhoods to mark new underground pipes or wiring. Sometimes called pin flags. Come in several colors. Can be written on with some pens and markers.

References:

*Safe work is always faster than doing first aid or going to the hospital.
Work Smart !*

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 5 - TOOLS (with photos of most tools)

Trail Construction and Maintenance
Handbook, USDA-FS, 2300-Recreation,
Revised April 1997, 9623- 2833-MTDC.

Trail Design, Construction, and
Maintenance, by William Birchard, Jr., and
Robert Proudman, Appalachian Trail
Conservancy,

P. O. Box 236, Harpers Ferry WV 25425, ©
1982 and 2000..

Lightly on the Land, The SCA Trail-Building
and Maintenance Manual, by Robert C.
Birkby, published by The Mountaineers,
1001 SW Klickitat Way, Seattle WA
98134, 1996.

*Safe work is always faster than doing first aid or going to the hospital.
Work Smart !*

CHAPTER 6 - WATER DIVERSION TACTICS

General. Water diversion tactics differ around the country, depending upon such things as material available, soil types, rainfall amounts, and flooding. Bear this in mind when reading about various trail maintenance procedures. This chapter has been tailored for 'our' section of the A.T. Different organizations have different thoughts and methods. When working in other areas of the country, learn and use their methods.

During both trail maintenance and new trail construction, control of water is of the very highest priority. 'Water is the most powerful stuff in the world. Its mission is to take your precious dirt to the ocean¹⁴.' Water picks up and carries soil until the water is tired (slowed) and drops the soil someplace else. The quantity of soil carried depends upon the amount of water *and* its speed. If we can control 'amount *and* speed,' we can control soil stealing. We need to get water off the trail before it steals (erodes) serious amounts of soil.

Berm and slough both effect how water is held on a trail. A berm is a ridge of dirt, rock, and / or vegetation on the downhill side of the trail that is higher than the trail tread. The berm prevents water from running off the trail. It may be caused by erosion, by trail compaction due to hiker use, or by vegetation growth. Slough is material that has slipped or washed down from the hillside above the trail onto the uphill side of the trail tread.

Water Diversion Tactics. A number of tactics are used to remove water from sidehill trail (trail that is dug into the side of a hill or slope). Tactics include:

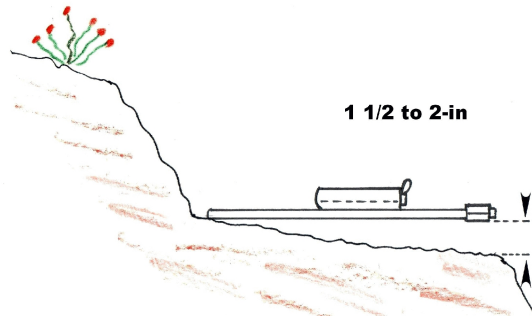
Trail Outslope — Trail Inslope — Terrain Dips — Waterbars.

The best way to determine the need for, and the optimum locations for diverting water from the trail, is to hike the trail in a hard rain. While dodging raindrops, mark locations where trail tread drainage is needed with flagging tape or wire flags.

¹⁴ Trail Construction and Maintenance Notebook, p 14.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

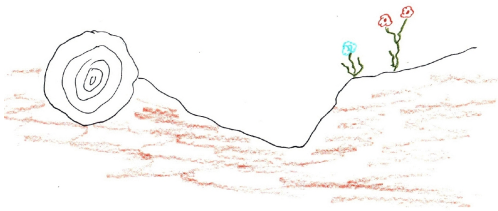
Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 6 - Water Diversion Tactics



Trail Outslope & Pulaski Level

across the trail. To do this, hold a less than full water bottle on the Pulaski handle. You can easily see if the handle is level. To form a slight trail outslope, soil must be removed until the level Pulaski handle is 1 1/2 to 2- inches above the low side of the trail tread. When walking a trail you should not feel the grade of the outslope.

Trail Inslope & Sketch. Trail inslope is the slight, side to side slope of the trail tread toward the uphill side of the trail. Trail inslope can be maintained / restored by carefully removing berm, removing slough, and regrading the tread.



Sketch - Inslope

switchback, carries the water from the trail inslope off and away from the trail. In lieu of inslope, a waterbar may be installed at the switchback so that runoff water continues straight ahead at the trail turn, leaving the trail.

Inslope is created in the same manner as outslope, using a Pulaski and water bottle for measuring purposes.

Terrain Dips, Cowetta Dips, Trail Dips, Grade Dips. Terrain Dips are short stretches of trail, usually less than 15-feet long, where the trail grade reverses. Terrain dips are also called coweeta dips, swales, or grade dips. A terrain dip can be built into a trail

Trail Outslope & Sketch. Trail outslope is the slight, side to side slope of the trail tread toward the downhill side of the trail. Trail outslope can be maintained / restored by carefully removing berm, removing slough, and regrading.

Before digging, determine how much material needs to be removed to form a good outslope. Hold a Pulaski level

Trail inslope is one of two ways to divert water off a trail at a switchback. There the runoff is kept against what would normally be the high side of the trail by cutting a slight inslope. This prevents the water from running off the upper leg of the switchback, around the switchback and onto the lower leg. A carefully dug drainage ditch, at the apex or 'V' of the

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 6 - Water Diversion Tactics

during trail layout by having the trail traverse the uphill side of a tree or rock. The natural earth mound there provides a slight rise, with a dip on at least one side, usually both sides. An artificial dip can be manufactured during trail construction, or trail maintenance, by digging a short stretch slightly lower than trail sections on either side of the dip.

Terrain dips need to be frequent enough to prevent a buildup of both water volume and speed on the trail tread. They should be placed where runoff sediment will not flow into streams.

A well-built terrain dip will almost always outperform and outlast a plain waterbar.

Waterbars, General. Waterbars are installed diagonally across a trail to turn water off and away from the trail tread. A waterbar may be constructed from a log, from which the bark has been removed, or from rocks.

Bark is removed:

To keep insects and their offspring from having a home under the bark.

To allow the log to dry faster and take longer to rot.

To prevent loose and rotting bark from causing a hiker to take a nasty tumble as loose bark slips off under a hiker's boot.

Waterbar logs are usually 8 to 14-inches in diameter, and 5 to 15-feet long. Length depends upon the width of the trail tread, and the distance needed to divert water off and away from the trail so that it will not just run back onto the tread.

Waterbars are frequently installed:

Above a set of steps to protect the steps from water caused erosion; and

At the apex or 'V' of each switchback; and

Elsewhere on a trail where water must be diverted off the trail to prevent trail erosion.

It sounds like a silly statement, but . . .

*The safer you work, the more confident and comfortable your significant other will be
that you will come home in one piece.*

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 6 - Water Diversion Tactics

When planning a waterbar,
you must have someplace for runoff water to go
after it is diverted from the trail. (11)

Look at where the waterbar will end on the low side of the trail. Make sure there is enough slope for the water to run off and disappear. A drainage ditch may be needed to carry water away from the waterbar and the trail. Diverted water runoff, and its attendant sediment, should not run into a stream

As you hike different trails, look at the waterbars to see what other folks have done well - or done poorly.

Waterbar Angle. A waterbar is installed at a 45 to 60° angle across the trail tread, 60° seems best most of the time. The steeper the trail, the greater the angle. A waterbar at less than 45° will often slow the water just enough so that sediment is dropped behind the bar, filling it in and rendering it useless.

Water runs over a filled waterbar, like water over a dam, then erodes the dirt out from under the downhill side of the waterbar. A well installed waterbar will be self cleaning; i.e., water moving off the trail tread will carry sediment with it so that the waterbar is 'self-cleaning.' Better yet, a good waterbar will carry water off the trail before it gets a chance to gain enough speed and volume to pick up (steal) sediment.

Waterbar Log. The best wood for log waterbars is black locust, spruce, and hemlock. Black locust peels easiest (when green!). Due to a lack of spruce and hemlock in our area, when we can't find black locust, we normally use oak. We usually use standing dead wood. Fell live trees for waterbars after the sap has started running in the spring, and before the leaves are out, but only if you are a US Forest Service certified sawyer !!. Blowdowns may be used, especially if they are suspended off the ground - but this makes them harder to cut. Those using a crosscut saw or chain saw need to be US Forest certified. For more complete chain saw crosscut saw information refer to the TABLE OF CONTENTS and see CHAPTER 5, 'Saw, Chain' and 'Saw, Crosscut, Bucking or Felling.'

*The safer you work, the more confident and comfortable your significant other will be
that you will come home in one piece.*

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 6 - Water Diversion Tactics

How To Carry A Waterbar Log (in *descending* order of desirability and safety):

Be very careful when working with or moving a peeled log,
especially a peeled black locust log.
They are very slippery and hard to control.
They may even attempt to escape ! (12)

Straps & Photos. Depending upon the size of the log, and the distance it must be moved, use one or two 2-inch by 20-foot nylon straps, and two or four workers. With two trail maintainers, you can lift the front end of the log and drag the hind end. With four trail maintainers, you truly carry the log.

Wrap the strap/s twice around the log, about a foot in from each end. Take the loose end of the strap across your back, across your outboard shoulder, and down your outside front. A bandana or other cushioning may be used between your shoulder and the strap.



Bend, Take Up Slack



Straighten

Together, all workers bend slightly at the knees. Take the slack out of the strap. Get and maintain a good grip on the strap with both hands, just below your shoulder. A good grip is necessary to prevent the strap from

slipping and providing you with a free, but nasty, 'rope burn.'

Together all workers straighten, taking the weight of the log onto the straps and the shoulders, lifting with the legs. Be careful not to trip or snag yourself on brush, hurting yourself or other workers.

After moving the log to the waterbar location, the same care must also be used when lowering the log to the ground. Simply letting the strap loose may cause a bad abrasion, or worse.

Work smart - Lift smart. (14)

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 6 - Water Diversion Tactics

Use legs, not your back. Together all workers bend their knees at the same time, and, as a unit, lower the log to the ground. Before loosening or removing the straps ensure that the log is stable and will not roll, or slide, or escape down the mountainside.

Peavies or Log Carriers. Depending upon the size of the log and the distance it must be moved, use one or two log carriers, two or four peavies (cant hooks), and two to eight workers. Be safe - ensure that everyone lifts with the legs, not with the back. Ensure that peavey and log carrier hooks are *securely* engaged in the log. Log carriers and peavies both require a good deal of lateral clearance. They must be used with care to avoid back injuries. Lift and lower with those legs !

Shoulders. Use two or more maintainers for a shoulder log carry.

This is the least desirable method for log carrying, and perhaps the easiest way to hurt your back when carrying a log.

This is also the most dangerous way to carry a log. If one person stumbles or trips, the log is liable to go flying in any direction and bounce in any direction. Any body parts in the way may well get injured or seriously injured.

*It is highly recommended that logs **NOT** be carried in this fashion !!*

Maintainers should all be the same height. Before lifting the log, agree on a signal to use if the log must be jettisoned. The log is *always* carried on the shoulder on your downhill side and, if necessary, jettisoned downhill.

Kneel on one knee on the uphill side of the log. Altogether, slowly and carefully, lift the log onto your shoulders. In unison, with the legs, slowly and carefully, rise to your feet. Carry the log to the desired location.

Extreme care must be used when lowering the log to the ground so that it does not slip, and so that maintainers do not injure their backs. In unison, kneel, then lower the log to the ground.

Installation. Before cutting a log to length, inspect the site where it will be installed. Try to plan the waterbar so that the uphill (large) end of the log can be dug at least a foot, or more, into the hillside. This socket (so to speak) will help lock the log in place.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 6 - Water Diversion Tactics

The downhill (small) end of the log should be locked against a rock or a tree, and extend far enough on the downhill side to carry water well off the tread. The log should not extend out into thin air like a diving board. The firmer the installation, the better the waterbar will stay in place. Do not yet cut the log.

With a mattock, mark the lay of the log as it will be installed. The estimated log length must take into account the angle at which the waterbar will be installed (45 to 60°). Remove the duff from the uphill and downhill sides of the trail where the log will be installed. Save and set aside. Start excavating the trench into which the log will be installed. Save *all* excavated dirt on the downhill side of the growing trench, away from the duff already saved.

Take a look at the partially dug trench to make sure the location is still a prime location, and that huge rocks or other obstructions have not reared their ugly heads as you excavated the trench. If everything is OK, measure the waterbar location in boot lengths, or in Pulaski handle lengths. *Then* cut the log to the appropriate length. Remember: if you make a mistake, you can always cut the log shorter - stretching it is impossible. Check the measurement twice - cut to length once !

Be very careful when working with or moving a peeled log, especially a peeled black locust log. Peeled logs are very slippery and hard to control. They may even attempt to escape.

After moving the log to the site, try the trench for size by laying the peeled log in the trench. Make note of any needed excavation changes. Take advantage of any curves in the log to enhance water diversion. Remove the log. Continue excavating until, when completed, the log will lie 1/2 to 2/3's buried. Several trial fittings may be necessary.

Before the final fitting, use an axe to score the top of the waterbar (cut small grooves or notches). This provides hiker boot soles a grip. Few things are more slippery than a wet log waterbar, or a new, freshly peeled, log waterbar.

In order to place the notches on the top of the waterbar, it is necessary to kneel when cutting the notches. If you attempt to cut the notches when standing, the notches will end up on the sides, not the top, of the waterbar, and will not help the hiker. Make it safe for the hiker.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 6 - Water Diversion Tactics

If the downhill end of the waterbar will not be locked against a rock or tree, it must be staked. Stakes, due to their small diameter, will rot and disappear quicker than a locking rock or tree.

Staking a Waterbar. Before completing log installation, cut a slanted notch into the log near the downhill end of the log, on the side of the log that faces water running down trail. This notch will hold that stake flush with the waterbar. In this manner the stake does not become a dam to gather and hold debris carried by water diverted off the trail by the waterbar.

The stake on the downhill side of the waterbar need not be notched into the waterbar, but notching this side will help secure the waterbar in place. The two stakes should form an 'X', with the waterbar under the bottom half of the 'X.' After being driven, cut stakes off even with the top of the waterbar.

If the waterbar is locked against a tree or boulder, or dug into the uphill side of the trail, staking may not be needed.

Removed Dirt. Dirt removed from the trench should be graded, and heavily tamped, on the downhill side of the waterbar so that uphill hikers have a *gentle ramp*, not a step. The gentler the ramp, the less hikers will want to shortcut around the waterbar. When really necessary, the portion of the waterbar dug into the uphill side of the trail *may* be covered with large rocks. These help hold the waterbar in place, and keep hikers on the trail.

Waterbar Drainage Channel. (Shaping The Trail Tread). Now that the waterbar is in place, the trail must be shaped. Above the waterbar, a 'Grand Prix Curve' is sculpted. I call it this because it is a banked curve. The length of trail comprising the 'Grand Prix Curve' is about 5-feet long, including the drainage channel, and is started 6-ft above the waterbar.

Soil is removed a little at a time. In fact, you might say you are shaving the soil, thin layer by thin layer. The underlying soil should not be disturbed. Pick mattocks and cutter mattocks come in two sizes. The smaller size of either is ideal for this soil shaving.

The drainage channel, 2 shovel blades wide, is created 1-shovel blade away from the waterbar. Water run off, *from all but the most extreme downpours*, should exit the trail at the grand prix curvet, before it ever reaches the waterbar.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 6 - Water Diversion Tactics

As the 'Grand Prix Curve' is created, you'll note that the drainage channel is a bit lower than the installed waterbar, encouraging water run off. Soil, removed in sculpting the 'Grand Prix Curve' and drainage channel, is placed and tamped firmly on the downhill side of the waterbar to help form the ramp. The waterbar in reality serves to reinforce the high ground immediately downhill from the 'Grand Prix Curve' and drainage channel.

The bank of the 'Grand Prix Curve' slopes down into the drainage channel all the way around the curve, including right in front of the log waterbar. Some of the removed dirt is used to shape the 'Grand Prix Curve' directly against and on the uphill side of the waterbar.

Except for the drainage channel, and *only* when necessary, both sides of the trail may need to be uglified with rocks to encourage hikers to stay on the trail.

To see if the trail is properly graded and curved, roll an orange, apple, or tennis ball down the trail. It should slowly move across the outslope and out the drainage channel, without touching the waterbar.

If the hillside is steep, the drainage channel, or the area immediately below the drainage channel, may need to be fortified with rock to slow the runoff. This prevents erosion of the hillside below the trail by fast moving runoff.

To aid in later waterbar maintenance, brush out the waterbar exit and drainage ditch just like you brush out a trail. Refer to TABLE OF CONTENTS and see CHAPTER 4 'Brushing Out.'

Walk The Waterbar. Now, walk the trail to see how it feels, and to find where you naturally walk. Walk it in both directions. Better yet, hope that other hikers come along. Stand well back off the trail; observe how they hike the new waterbar. If they do not hike where you want them to hike, you need to closely examine, and maybe adjust, your installation.

Final Covering. Finally, previously removed duff, or leaves, can be scattered *very thinly* on the new tread to break up raindrops and naturalize the new construction.

Rock Waterbars. Rock waterbars are installed much the same as log waterbars. Any rock that can very easily be moved to the waterbar site, is probably too small for use in fabricating a waterbar.

*The safer you work, the more confident and comfortable your significant other will be
that you will come home in one piece.*

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 6 - Water Diversion Tactics

Good rocks are found only uphill.

Rocks used should be larger than you think, and must be buried at least 2/3's in the ground. The force of a hiker boot hitting the ground on a downhill hike may well exceed 800-pounds. Rocks must be firmly installed.

Rocks are installed from the uphill side of the trail to the lower side of the trail. The first rock is installed back into the bank just like the upper end of the log waterbar. Rocks are overlapped like shingles, each rock slightly behind the previously installed rock. In this manner, water runoff will flow from one rock to another, just as it flows from shingle to shingle on a house roof.

At the bottom of the waterbar trench, next to the waterbar rocks, smaller rock should be wedged on both sides. This helps hold the large rocks tightly in the trench. When the trench is backfilled, it is tightly tamped. Gravel makes the best backfill.

After rock waterbar rocks are dug in and backfilled, test each rock by dancing on it. No rock should budge. Any rock that moves or wobbles must be reinstalled so that it does not budge when danced upon. After the rocks are dance checked, the 'Grand Prix Curve' and drainage channel are created, and both sides of the trail *may* be uglified the same as for a log waterbar. Removed soil is used to ramp the downhill side of the rock waterbar and help create the 'Grand Prix Curve', just like a log waterbar. Tamp it firmly.

Drainage Ditch. Where needed, a drainage ditch is dug at the downhill end of the log or rock waterbar to ensure that run off water is taken well away from the tread. To promote water flow and ease later maintenance, drainage ditches are dug at least 1-shovel blade wide. Drainage ditches are most frequently required at a trail switchback. Here the ditch keeps the water moving straight ahead and does not allow it to come back onto the trail tread.

To aid in later waterbar maintenance, brush out the waterbar exit and drainage ditch just like you brush out a trail. Refer to TABLE OF CONTENTS and see CHAPTER 4 'Brushing Out.'

Waterbars, Summary. Waterbars need to be frequent enough to prevent a buildup of water volume and speed on the trail tread. They should be placed where runoff sediment will not flow into streams.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 6 - Water Diversion Tactics

Waterbars are almost always installed at the switchback 'V' to keep water on the upper switchback leg from affecting the lower leg. Refer to 'Trail Inslope' this chapter.

After installation, waterbars should be inspected every six months. When necessary, clean out and reshape the sculpted area on the uphill side to create / maintain the 'Grand Prix Curve' and drainage channel.

Removed soil, not leaves or duff, is used on the trail tread, usually on the downhill side of the waterbar. This helps maintain a ramp to, instead of a step over, the bar.

It is *very* important to remove fallen leaves in the autumn. This prevents them from forming a dam and trapping sediment which will fill in the waterbar, rendering it useless.

Inspect the drainage channel, and the hillside beneath the drainage channel. On steeper slopes, the area below the drainage channel may have to be reinforced with rock to break up the water run and prevent erosion of the hillside. Rock may have to be placed in the drainage channel to prevent erosion. Before placing rock in the drainage channel, remove duff and dig the rocks in to prevent run off water from dislodging the rocks.

No matter how well a waterbar was located and constructed,
only time and water will tell you how well it works. (13)

Ball. A tennis ball, apple, or orange, can be a useful tool. Rolled slowly down the trail after completing a waterbar or drainage dip, it will show you where the water will go. It will also show you if there is an inslope or an outslope.

References:

Trail Construction and Maintenance Handbook, USDA-FS, 2300-Recreation, Revised April 1997, 9623- 2833-MTDC.

Trail Design, Construction, and Maintenance, by William Birchard, Jr., and Robert Proudman, Appalachian Trail Conservancy, 799 Washington Street, P. O. Box 807, Harpers Ferry WV 25425, 1981, © 1982 and 2000.

Lightly on the Land, The SCA Trail-Building and Maintenance Manual, by Robert c. Birkby, published by The Mountaineers, 1001 SW Klickitat Way, Seattle WA 98134, 1996.

*The safer you work, the more confident and comfortable your significant other will be
that you will come home in one piece.*

Tidewater Appalachian Trail Club, Trail Maintenance Booklet
Chapter 6 - Water Diversion Tactics

Page Left Blank

*The safer you work, the more confident and comfortable your significant other will be
that you will come home in one piece.*

CHAPTER 7 - GENERAL TIPS and TASKS

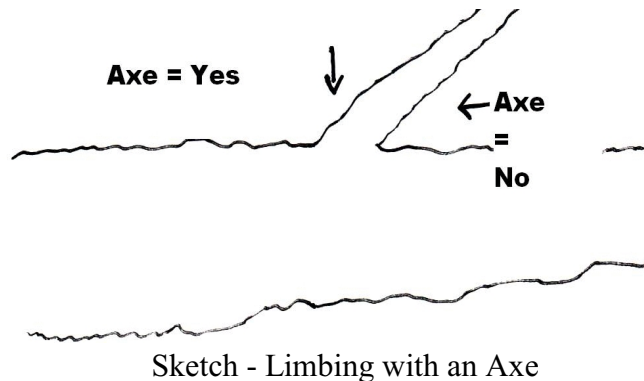
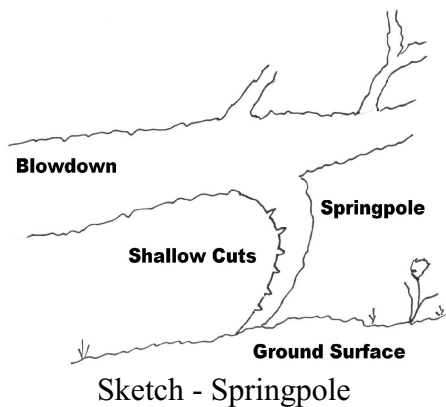
General. This chapter is a simple summary of general trail maintenance tips and common TATC trail maintenance tasks. It may be of aid to the new, or a refresher to the experienced trail maintainer. Some information concerning common trail maintenance tasks is part and parcel of other sections of this booklet and is generally not repeated here.

Axe Work. Working with an axe is a skill that takes years to learn properly. Before swinging an axe, make sure there is clearance for the reach of your arms and the axe when swung, and ensure that other workers are out of the way.

The only safe axe is a sharp axe.

When felling a tree, the initial cut is the width of half the diameter of the wood being cut. If you are felling a 12-inch tree, the initial cut is 6-inches wide. In this case you are only cutting into the middle of the tree.

When cutting a log from one side only (such as a blowdown), the initial cut is equal to the diameter of the log. If you are cutting an 18-inch blowdown, the initial cut is 18-inches wide. In this case you are cutting completely through the log. When limbing a blowdown with an axe, never swing into the narrow angle, $<90^\circ$, of the crotch.



Always cut on the open side (obtuse angle, 90 to 180°) where a branch and tree trunk meet.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

Be very careful of bent branches (springpoles) that are under stress. When cut they can spring faster than a mad mountain lion, whether you are in the way or not. And, just like a mountain lion, they can bite *very* badly !! (16)

Sometimes (repeat S O M E T I M E S !!!) you can relieve stress on a badly bent branch (springpole) by cutting shallow slots in the inside of the bend. It is a DANGEROUS undertaking that should only be undertaken by the experienced, or under the IMMEDIATE supervision of an experienced trail maintainer who has done this many times. See sketch. The trail maintainer must proceed very slowly and be ready to jump clear at the first hint of cracking, or splintering, or movement.

Likewise, watch out for limbs that are supporting the trunk of the tree off the ground. When cut, these can drop the trunk on your legs before you can move, or spring at your legs with a frightful vengeance.

When feasible, chop limbs from the opposite side of the tree trunk. This way the trunk may help to protect you from badly aimed axe blows, and from springing branches. The tree trunk will be between your soft, inviting leg and the nice sharp axe blade when you slip or made a bad swing.

An axe, or hatchet, may be used to notch the top of a new waterbar to provide better footing for the hiker. In order to place the notches on the top of the waterbar, it is necessary to kneel when cutting the notches. If you attempt to cut the notches while standing, the notches will end up on the sides, not the top of the waterbar, and will not help the hiker.

Blazes & Photo. There is a general tendency to over blaze a trail. On a well defined trail, such as our section of the A.T., blazes are more to give confidence to the new hiker, than to actually mark the trail. Blazes need not, and generally should not be within sight of each other. In accordance with AT Conservancy guidelines, there should not be more than six blazes per mile.



Double blazes (one above the other) may indicate a turn, a trail junction, or a trail spot requiring a bit more attention like a road or trail intersection. Double blazes should be used sparingly. In some area the top blaze is offset in the direction the trail is turning. In accordance with ATC guidelines, there should be no more than six blazes per mile.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

Blazes may be staggered; that is, every other one facing south bounders, and every other one facing north bounders. That way, when half way between blazes a look behind you will see a blaze facing the other direction.

Blazes are painted 2-inches wide, 6-inches high.

On the A.T. they are white;

On the Mau-Har Trail they are blue.

On the short spur to The Priest Overlook, 10-minutes south of the peak of Three Ridges, they are blue.

On the short spur trail to the waterfall off the Mau-Har trail they are yellow.

Blowdowns. Blowdown removal, especially after a storm, can be a major job. Particularly large blowdowns may be referred to the U. S. Forest Service or National Park Service by the Trail Supervisor. Blowdowns are removed slowly, one piece at a time. Use the utmost care. Any part of the blowdown may suddenly and drastically shift position - whether you are in the way or not.

Make sure you have a clear escape route planned before you begin work. Make sure each person has an escape route, and that everyone knows each person's escape route. Each blowdown is different, and each is approached and analyzed on its own merits. Safety is the only sure rule concerning all blowdowns.

Generally, limbs are removed before the trunk is sawed into sections. Stacked blowdowns, one atop another, must be removed by experienced trail maintainers only. Whenever possible, work on the uphill side of the blowdown. Otherwise, if you have a fight with gravity, you will lose (a piece of skin, an arm, a leg).

If you want to know why trees fall over, read Bill Bryson's book (soft cover, page 48) 'A Walk In The Woods.'

*The safer you work, the more confident and comfortable your significant other will
be that you will come home in one piece.*

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

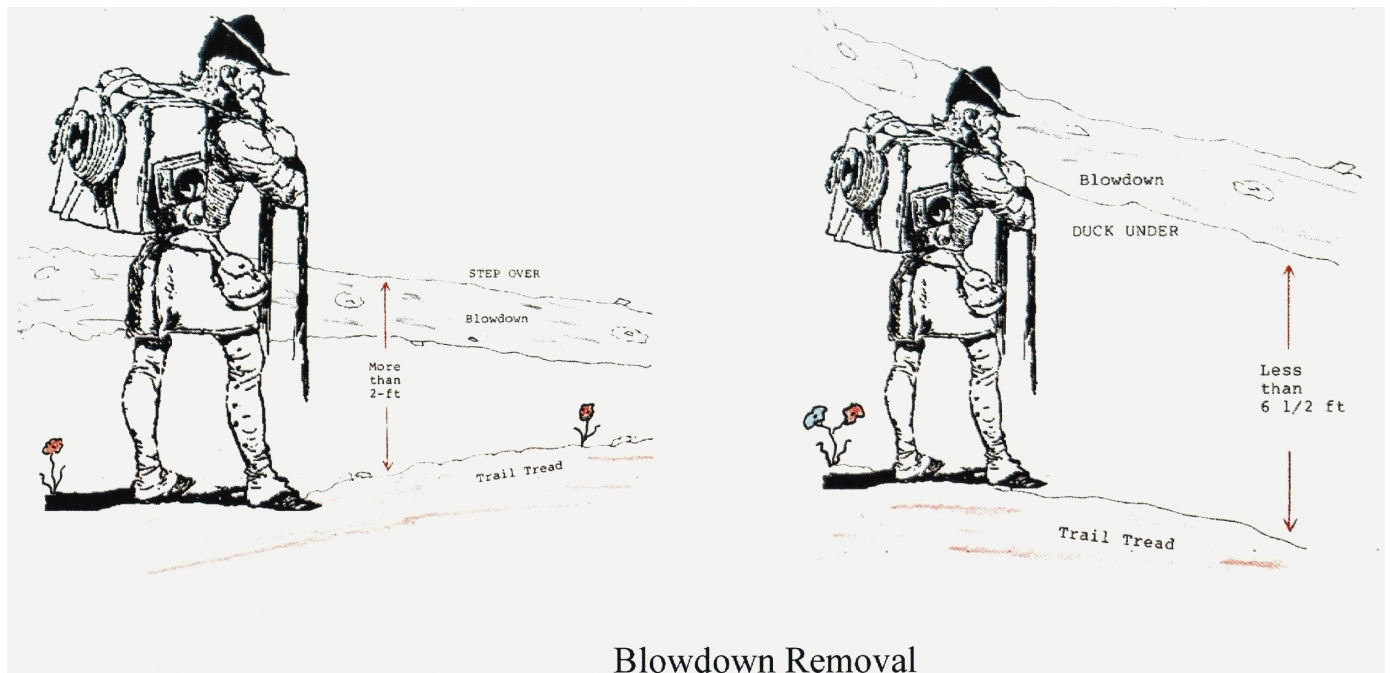


Photo - Blowdown - Before



Photo - Blowdown - After

Blowdowns in Wilderness Areas & Sketches. Normally, in a wilderness area, blowdowns that do not pose a danger to personnel, or the environment ¹⁵, are left as is. In reality, blowdowns whose top is more than 2-ft from the ground (left sketch), or whose bottom is less than 6 1/2-ft above the ground (right sketch), are removed.



¹⁵ A danger to the environment would include those blowdowns that force people to walk around the blowdown off trail and, in so doing, damage the trailsides or hillsides.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

Blowdowns and Stokes Litter Requirements. Wherever possible, a four-ft section of the blowdown is removed at the trail tread. This leaves room for passage of a Stokes Litter, if evacuation of an injured person is required at some future date.

Brushing Out/Lopping. When brushing out/lopping a trail, be serious about it. Our trail corridor should be 4-feet wide, 8-feet high. The 8-ft height prevents branches weight-loaded with rain, snow, and/or ice, from slapping a hiker in the face. See sketch next page.



Photo - Brushing Out - Before



Photo - Brushing Out - After

Look at the trail corridor where you are working. Imagine that everything is hanging down and bending over in a heavy rain, that you are 6-ft 2-in tall, you are wearing a heavy backpack that extends above your head, and you are tired of having cold, heavy, wet branches and trailside growth in your face and around your legs.

If it's within the 4-ft wide X 8-ft high trail corridor, or will grow into the corridor in the next two years, cut it. When it's cut, don't just leave it there on the ground. Take those cut branches and saplings out of sight. Leave the trail looking like a trail, not a trash heap of dead and dying cut brush.

To aid in later waterbar maintenance, brush out the waterbar exit and drainage channel just like you brush out a trail.

*And please, **please**, do NOT place your cuttings and lopped branches in the inviting open area of a waterbar drainage channel. They will only form a dam to gather leaves and block water that is trying to run off the trail in the drainage channel. It will also*

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

make the Section Maintainer for that section of trail very, very mad and cause additional work to clear out the waterbar drainage channel.



Sketch - Trail Corridor

Cut growth back to provide a 4-ft wide 8-ft high corridor.
An 8-ft high clearance keeps snow or rain-loaded branches from slapping hiker faces.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

For weed whacking - swing blading information, refer to the TABLE OF CONTENTS and see 'Weed Whacking,' this chapter.

Cutting vs Digging Out. It is much easier, the first time, to lop or cut a sapling than it is to take the time to dig it out. But . . .

When you simply lop or cut, the roots still live. The next time you pass by that little, cut-off sapling, it may well show a dozen or more shoots that need cutting. You have, in essence, created work. It's better to dig out and remove a small tree than to simply cut it off and trim the sprouts time after time, after time, after time...

When planning to dig out a small tree or sapling, do not cut it down to the ground first. Leave a stub at least 4 to 6-feet high. This stub will allow you to get a grip for leverage in pulling and levering that stubborn thing out of the ground as you dig and cut around the blankety-blank (expletives deleted) rootball. The leverage offered by the stub is invaluable, and saves a lot of strain on your back.

Daypack. When backpacking you should have everything you need with you. When you are carrying just a daypack, much remains behind in camp when you hit the trail. Yet you must be prepared for: changing weather, prolonged delays in returning to camp, thirst, hunger, first aid requirements, the unexpected arrival of sunset, and etc. For a checklist of what might be carried in a well prepared mountain hiker's day pack, refer to the TATC web site Education Handout: 'SUGGESTED DAYPACK CONTENTS.'

Do not short change yourself on water. Take a bare minimum of 2-liters, 4 is better. Packing your filter or tablets is good insurance against running out (provided you are on a stretch of trail where water is available to be treated). Refer to TABLE OF CONTENTS and see CHAPTER 3 'Water.' Refer to the club website and the Education Handout, 'WATER, THE BASIC ESSENTIALS.'

Education.

NOTE

We are not enforcers and have no enforcement authority. We can only provide tips and information to those who request it *and* are willing to listen.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

Provide information to hikers and backpackers (as welcomed) concerning: campsites, water sources, trails, trail etiquette, and related topics.

Education Handouts. The TATC web site Education Handout 'TATC A.T. DATA SHEET,' provides a great deal of information about 'our' section of the A.T. and the Mau-Har Trail. It includes emergency telephone numbers, trail distances, stores, telephones locations, and water sources. It is a ready reference and should be carried by all TATC trail maintainers so that we may provide information to hikers, *and* have information available for their own use in an emergency

For maps to carry, refer to the TABLE OF CONTENTS and see CHAPTER 1 'Related Information, Maps.'

Education Handouts on the TATC web site, www.tidewateratc.com, include several concerning trail maintenance, and a variety of other subjects.

'Flag' Trees. If all branches on one side of a sapling must be removed to clear the trail corridor, it may be better to remove the entire tree rather than to leave an uneven, unnatural 'flag' tree. Natural flag trees are those at Dolly Sods where the vicious winter wind strips branches from one side of each tree leaving 'flag' shaped trees with no limbs on the windward side.

Fire Road. Our A.T. section includes the fire road that comes in from Love Gap to Maupin Field. Our responsibilities, within capabilities, include:

Water diversion to keep the road passable

Filling in low spots.

Removing downed trees and branches, and rocks that occasionally roll down onto the roadway.

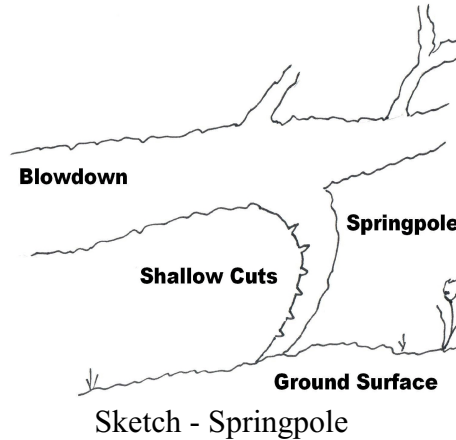
Trimming road side and overhead vegetation to keep the road passable and our vehicles unscratched. When brushing out the fire road think about the possible passage of a tall ambulance/ rescue vehicle and clear the overhead accordingly.

Limbing. Most limbing along a trail will be accomplished with loppers. In that regard see, 'The Third Cut' and the associated photo 'Third Cut Complete at the Branch Collar' a page or so farther on. Lop as close to the branch collar as possible.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

Limbing with an Axe. Refer to the TABLE OF CONTENTS and see 'Axe Work,' this chapter.



Limbing with a Saw. Limbing with a saw is usually involved when building new trail, building a relocation of a trail, or in own yard.

Springpoles.

Be very careful of bent branches (springpoles) that are under stress. When cut they can spring faster than a mad mountain lion, whether you are in the way or not. And, just like a mountain lion, they can bite *very* badly !!
(16)

Sometimes (repeat S O M E T I M E S !!!) you can relieve stress on a badly bent branch (springpole) by cutting shallow slots in the inside of the bend. It is a DANGEROUS undertaking that should only be undertaken by the experienced, or under the IMMEDIATE supervision of an experienced trail maintainer who has done this many times. See sketch. The trail maintainer must proceed very slowly and be ready to jump clear at the first hint of cracking, or splintering, or movement.

Likewise, watch out for limbs that are supporting the trunk of the tree off the ground. When cut, these can drop the trunk on your legs before you can move, or spring at your legs with a frightful vengeance.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

Limbing Standing Trees. Limbing standing trees with a saw to clear the trail corridor requires three saw cuts.

The First Cut. The first cut is made from the underside of the limb about 3-inches out from the tree trunk. To keep from binding the saw, this cut should be less than one-quarter of the thickness of the limb. Cut slowly. Concentrate on the feel of the saw. At the first sign of binding quickly remove the saw from the limb.

NOTE

This cut prevents the limb from ripping bark down the side of the tree as the limb falls, leaving an open wound allowing insects or disease to enter the tree.



First Cut Location

The lines on the left and right of the saw are only twig shadows.



First Cut Complete.

The line on the right is only a twig shadow.

The Second Cut. The second cut is made from the top of the limb, about one-half an inch farther out from the tree trunk than the first cut. It is cut all the way through the limb.

NOTE

Be sure other folks, and all portions of your body, will not be struck by the limb as it is cut and falls to the ground.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks



Second Cut Location.

It is only partially cut to show the relationship to
the first cut.

The line to the left of the cuts is just a twig shadow.

The second cut leaves a stub that looks this:



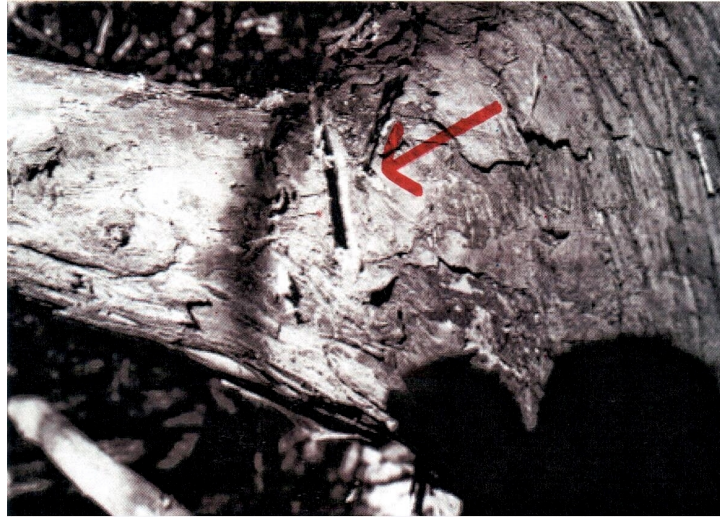
Second Cut Complete Leaving a Limb Stub

Look for and identify the branch collar. This is the slightly rounded portion
of the tree trunk from which the limb grows.

*The safer you work, the more confident and comfortable your significant other will
be that you will come home in one piece.*

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

The Third Cut. The third cut is made as close as possible to the branch collar as possible, without damaging the branch collar. It is cut all the way through the limb stub and may be vertical, or at a slight angle. This depends upon the actual orientation of the branch collar. Cutting in this fashion allows the tree to heal itself.



Third Cut Location.



Third Cut Complete at the Branch Collar

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

Lastly. Lastly, drag the cut limb off into the woods.

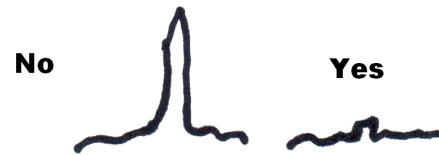
Lopping a Branch or Sapling.

When lopping a **limb**, do not leave an ugly, dangerous snag. Lop the limb as close to the trunk as possible. This will aid the tree in healing the wound, and be safer for passing hikers.



When lopping a **sapling**, also do not leave an ugly, dangerous snag. Instead of bending over and lopping the sapling at an acute angle, bend way over, or kneel, and cut the sapling off close to and parallel to the ground. The closer to the ground you cut it, the less likely someone is to hit it with a swing blade!

Sketch - Lopping a Branch



Sketch - Lopping a Sapling.

Oiling and Cleaning Your Tools. Tools should be cleaned as soon as possible after use. Dirt tends to absorb moisture and will enhance the production of rust on your tools. Clean them well as soon as possible. After cleaning a good wiping down with a 50-50% mixture of kerosene and motor oil will help clean, then prevent rust during storage. A handy container for this mixture is a nasal moisturizing saline bottle.



Empty the bottle. Remove and discard the label. Take off the top. With a pair of pliers remove the nipple and tube. Discard the tube. Rinse the bottle well and allow to dry for a day or so. Add a **CAUTION** label. This step is **extremely** important for your safety and for the safety of others. Fill the bottle 1/3 full with motor oil and 1/3



CAUTION

50/50% Mixture
Kerosene
30W Motor Oil

full with kerosene. Shake well. Drip onto the tool blade and wipe with a clean rag, leaving a film to protect the tool. Store as you would the gasoline for your power mower.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

Poison Ivy, Poison Oak, Poison Sumac

General Information

Poison Ivy and Poison Oak both have three leaves. May be pointed and toothed, or round and smooth. Poison ivy leaves range from quite small to 6 to 8-inches long. Poison Ivy, Poison Oak, and Poison Sumac each have white berries.

Poison Oak: Always groups three leaves - round and oak like, lobed or smooth, shiny, fuzzy center leaflet has a longer stem than the other two

Poison Sumac: Branches have 7 to 13 pointed and smooth leaves. White or green berries grow between the leaf and branch.

The oil, urushiol (oo-roo-she-ol), immediately bonds to skin's proteins, a process that takes 10-15 minutes. Before that, oil can be removed with soap (not lotion or soap with oil) and COLD water.

Cold water (your best bet for removing oils) closes pores and combines chemically with urushiol, converting it to relatively harmless substance.

Hot water only opens your skin pores, allowing oil to penetrate easily.

A drop the size of a pinhead can cause rash in 500 people. An ounce could effect the entire world's population.

Emergency wash with Jewelweed might help prevent reaction or relieve itching.

It takes 1-3 weeks for body to metabolize the oil. When it is done, the reaction stops.



Photo - Jewelweed Flowers, Yellow



Photo - Jewelweed Flowers, Orange

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

Persons who seem to be immune, may become sensitive without warning, immunity may change drastically. Sensitivity may come and go, increase or decrease. If highly sensitive, investigate poison ivy inoculations. Repeated contact only increases risk.

Can get many months, or years later. Archeologists have caught it after handling plant specimens that were centuries old. A researcher got poison ivy dermatitis from a 100-year old pressed herbarium sample.

Only Nevada free of Toxicodendron species, decreases with altitude other states.

If itching disturbs sleep or normal daily activities, you should contact your doctor. If more than 10% or more of the body is involved, you should contact your doctor. If rash reaches the face or genitals, where skin is easily damaged, medical treatment may be necessary.

Poison Ivy. You can get poison ivy from the oil crushed from leaves, or stems, or roots, onto your tools and boots while working. A quick cold water (!) wash within ten minutes of exposure may prevent the rash from developing (warm water opens the pores, a situation you don't want at this time).

Some preventive creams are said to be helpful; consult your doctor or your pharmacist. Long sleeves and long trousers are a helpful preventive. Know your plants.

Remember: Friendly (?) poison ivy...

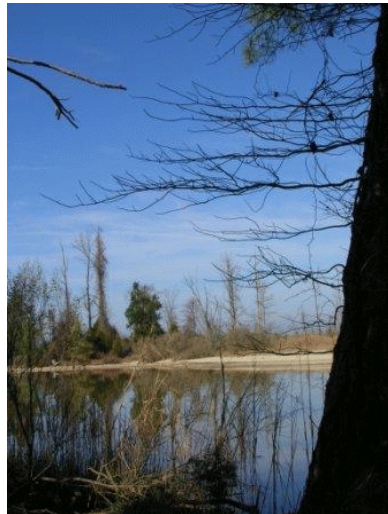


Photo - Poison Ivy Branches,
Winter

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

Leaves of Three
Let it be,
Or itch,
Like an SOB.

Berries white,
Poisonous Sight.

Leaves of Three,
Bright and Shiny,
Never, Ever
Wipe Your Hiney ¹⁶.
(32)



Photo - Poison Ivy,
Spring Leaflets



Photo - Poison Ivy, Summer
Leaves



Photo - Poison
Ivy, Roots



Photo - Poison
Ivy, Autumn
Leaves

Poison ivy vine branches may look like tree branches and can extend 8-ft or more from the tree trunk (especially on the forest edge). In the spring the tiny leaves are bright red. In the autumn poison ivy foliage turns many colors (red, orange, yellow, brown) and is, actually, quite pretty.

¹⁶ As related by 'Wanderer' who said it originated from 'Chair Man,' May 2005. Both A.T. thru-hikers. 'Chair Man' so named 'cause he packed a three-legged stool.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

A workmate friend, Eva Gay Dixon, once said: "Poison ivy is an abomination on the human body."

Never burn poison ivy or its roots. The oils will vaporize and can be breathed, with very bad results. Watch for hairy vine roots on firewood see photo 'Poison Ivy Rppts' on preceding age.

Rhododendron. Rhododendron is beautiful when blooming or snow covered. But never burn it, the smoke may be poisonous.



Photo - Rhododendron
Flowers



Photo - Rhododendron
Candles

Stinging Nettles. Stinging Nettles are pleasant little plants that can leave you itching very badly. Common to thick on some parts of 'our' A.T. Contact with almost any portion of the plant causing stinging and itching. A quick rinse with water may help alleviate the itch.



Photo - Stinging Nettles



Photo - Stinging Nettle Flowers

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

Virginia Creeper. With five leaves vs three, it is often confused with poison ivy.



Photo - Virginia Creeper, Leaves of
Five You'll Survive



Photo - Virginia Creeper, Autumn
Leaves

Shelters and SSTs. Our A.T. section includes two, three sided shelters used by overnight hikers, and two SSTs (Sweet Smelling Toilets). These are located at Harpers Creek and Maupin Field. Our responsibilities include:

Keeping shelters and SSTs clean and free of litter and cobwebs.

When sweeping out a shelter or SST, try not to raise dust. Hantavirus, an infectious disease, is spread through dried rodent urine and fecal material. A damp kerchief over your nose and mouth may help. Be sure to wash hands, face, and kerchief after sweeping. Let the SST air out for a while before sweeping.

Picking up and removing litter in shelter related camping areas, including that found in fire rings.

Maintaining shelters, SSTs and picnic tables in safe condition.

Emptying the fireplace of ashes with shovel and bucket. And please do remove tin cans, aluminum foil, half burned garbage, and other trash before carting the ashes out into the woods to be spread around. Bag and carry the removed stuff out for normal garbage disposal. The ashes are then scattered *lightly* in the woods, away from where folks camp, and away from the streambed. Please don't just dump it behind a tree.

When shoveling ashes out of the fireplace into a bucket, remove any unburned garbage and metal. This should be bagged, carried out, and disposed of properly.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

Supplying the SST with TP is not a responsibility. However; many hikers will leave their TP in the SST when they leave the area. Certainly no one will complain if you bring and donate a roll to the SST.

Some tasks are only required once in a great while:

Painting shelters.

Reroofing shelters.

Rebuilding shelters and privies as necessary, including cavern excavation under the SST.

Signs. Although we do not make signs, our responsibilities include:

Ensuring appropriate signs are posted (water treatment, and etc.).

Monitoring existing signs and requesting replacements for those that are damaged or stolen.

Recommending additional signage as needed.

Refer sign problems to the Trails Supervisor.

Snags. Please, don't leave dangerous snags. Cut branches all the way back to the tree trunk. Cut saplings all the way down to ground level, cut them square, not at an angle ! Even better than just cutting a sapling off at ground level, dig the sapling out by the roots. That way it will not grow back with countless shoots, requiring even more work next year. For photo refer to TABLE OF CONTENTS and see, 'CHAPTER 3 - TRAIL MAINTENANCE SAFETY, Snags.'

Swing Blading. Refer to TABLE OF CONTENTS and see 'Weed Whacking' this chapter.

Supervisor. Contact the Trail Supervisor to report or request work that is beyond your capability. The Trail Supervisor may request help from other trail maintainers within TATC, or from the Appalachian Trail Conservancy (the Konnarock Crew), the U. S. Forest Service, or the National Park Service, as appropriate. The Trail Supervisor is listed in the bi-monthly TATC newsletter, 'The Appalachian Hiker.'

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

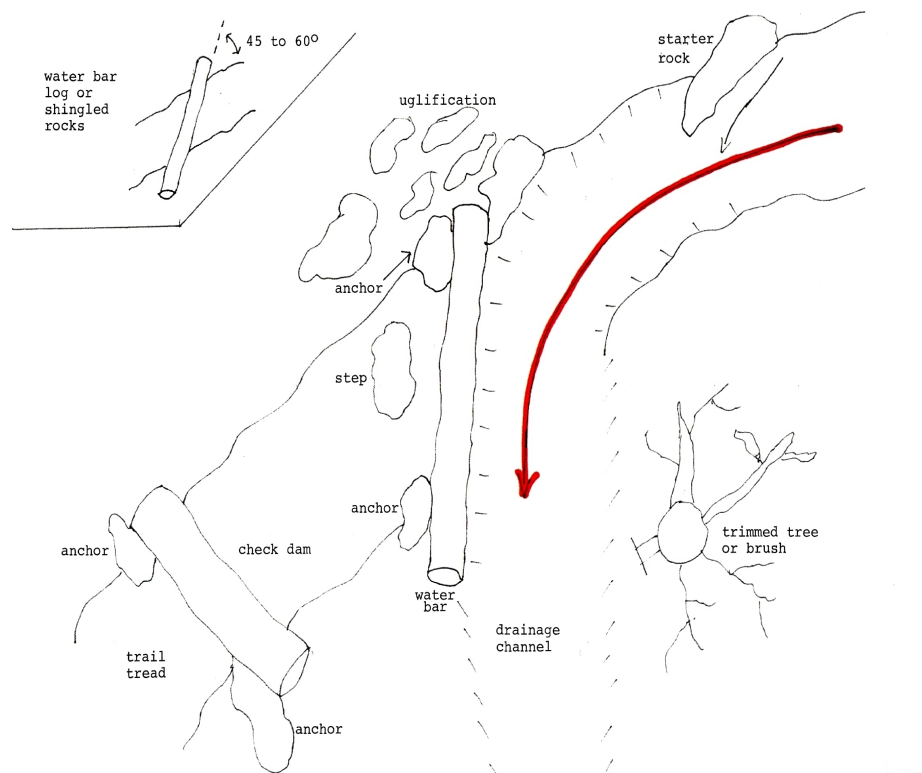
Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks

Undercut. When saw cutting branches that extend into the trail corridor, it helps to undercut the branch before cutting it from the tree trunk. Undercutting helps to prevent the bark from pulling down the side of the trunk as the branch comes away from the trunk. This leaves the tree healthier, and the trail more natural looking.

Never cut trailside branches with an axe or Swedish bush axe. These generally leave torn bark and a dangerous snag.

Waterbar Maintenance. Waterbar drainage channels should be maintained (raked out) a minimum of twice a year. Accumulations of leaves, twigs, and other litter will effectively block the drainage channel, rendering the waterbar (log or rock) useless. See sketch next page.

When raking out a drainage channel, ensure that all material is raked well out of the



The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks
Sketch - Anatomy of a Waterbar
The Grand Prix Curve is shown in **red**.

path of water being diverted by the waterbar.

Don't just rake it a foot or two, really get it out of the way of water running off the trail.

Prevent leaf and branch dams from forming in the drainage channel after you leave.



Photo - Before Maintenance



Photo - After Maintenance



Photo - Water Flow at Grand Prix Curve

But do your waterbar maintenance *gently*. Too often an overzealous maintainer will remove the dirt that forms the 'Grand Prix Curve.' This dirt, packed against the waterbar, and the curved bank that directs water off the trail, is what keeps runoff water from actually reaching the waterbar. It must be preserved, not be dug away.

In the photo at left, note the dirt banked against the waterbar to form

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet

Chapter 7 - General Tips and Tasks

the Grand Prix Curve. This dirt is packed solid with your boots or with the back of a Pulaski grub hoe blade.

For more information, and photos, of waterbar maintenance, refer to the 'TATC Trail Maintenance Crew Briefing Booklet,' on the TATC web site.

To aid in current and future waterbar maintenance, brush out the waterbar exit and drainage ditch just like you brush out a trail. Refer to TABLE OF CONTENTS and see CHAPTER 4 'Brushing Out.'

Waterbar Drainage Channel Reshaping. To reshape the drainage channel at a waterbar (rock or log) use the instructions contained in CHAPTER 6 'Water Diversion Tactics.' You reshape an drainage channel and the 'Grand Prix Curve' the same way you construct it, slowly, a bit at a time, using the same guidelines. Refer to TABLE OF CONTENTS and see CHAPTER 6 'Waterbar Drainage Channel (Shaping The Trail Tread).' For more information, and photos, refer to the 'TATC Trail Maintenance Crew Briefing Booklet,' on the TATC web site

Weed Whacking. Also called Swing Blading. Ah spring, when a trail maintainer's mind turns to pleasurable thoughts of swing blading... Swing blading is the beneficial exercise afforded in using a swing blade to cut soft vegetation back from the trail edges.

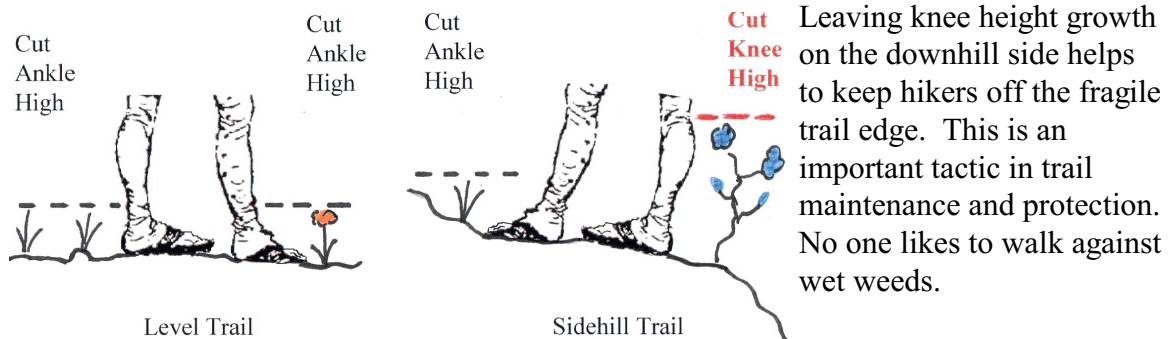
For a trail corridor sketch, refer to the TABLE OF CONTENTS and see 'CHAPTER 7, 'Brushing Out and Lopping.')

To maintain the trail corridor

1. On a level trail vegetation is cut to ankle height on both sides.
2. On a side hill trail, vegetation is cut back to ankle height on the uphill side of the trail. But, on the downhill side, growth is *only cut back to knee height*.
3. Where trailside summer growth is tall, 4 to 6-ft at times, you have to clear the uphill side of the trail back several extra feet.

The safer you work, the more confident and comfortable your significant other will be that you will come home in one piece.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 7 - General Tips and Tasks



Sketch - Weed Whacking

swingblade handle. Refer to TABLE OF CONTENTS and see CHAPTER 3 'Gloves,' and CHAPTER 5 'Gloves Leather & Cotton Stippled.'

Make sure to leave plenty of safety room between folks wielding swing blades. A swing blade hitting a rock can easily be knocked from a person's hand, then become a flying object. You are wearing a hard hat and eye protection, aren't you ??????

Do the swing blade a favor - cut foliage, not rocks, and not each other.

Wood, Dead vs Live. When using loppers, snips, an axe, a saw, and other cutting equipment, the difference between cutting green (live, soft) wood and cutting seasoned (dead, hard) wood is readily evident. Don't overstress your or the club's tools. Seasoned limbs can sometimes be used as makeshift pry bars to move logs of log segments from the trail. Expect such makeshift 'pry bars' to break and work accordingly so you don't get dumped on your keister - or worse, get injured. Remember that word '*safety*.'

Warning: an axe or other tool may actually bounce off seasoned wood. I've seen sparks bouncing an axe off an ancient cherry stump !! We've watched as various youths take an axe to seasoned black locust, then give up after the axe bounces and will not bite into the wood.

Trail Maintenance Booklet Summary

TRAIL MAINTENANCE: Any chore that helps keep a trail, or trail related structure, (shelter, SST, etc) usable and safe.

A first aid kit is a collection of material necessary to treat injuries or illnesses likely to occur during an activity.

Prevention forestalls the need to try and remember,
then practice, unknown, rusty,
or forgotten,
first aid skills. (17)

Safety is no accident.

Safety is anything you or others do to keep from being injured. (1)

First aid is what you try to remember how to do, after you did not work safely.

Travel Safe.
Work Safe.
Come Home Safe.
Return with All the Body Parts You Left Home With. (8)

My significant other seems to prefer that I come home
with the same number of fingers and toes
I had when I left home. (26)

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 8 - Trail Maintenance Texts

CHAPTER 8 - Trail Maintenance Texts

If there is any conflict between information contained in this booklet and that contained in the Appalachian Trail Conservancy text titled ‘Appalachian Trail Design, Construction, and Maintenance,’ the *latter takes precedence*.

Listed below are the major known trail maintenance related books available on the market and relative to what we do on ‘our’ section of the A.T.

Title	Author	Publisher	Date	ISBN Number
An Axe to Grind, A Practical Ax Manual	Bernie Weisgerber	USDA-FS, Missoula Technology & Development Center, Building 1, Fort Missoula, Missoula, MT 59804-9294	July 1999	NA
Appalachian Trail Design, Construction, and Maintenance - Second Edition ⁽¹⁷⁾	William Birchard, Jr., & Robert D. Proudman	Appalachian Trail Conservancy, P.O. Box 236, Harpers Ferry WV 25425	©1982, 2000	1-917953-72-x
Appalachian Trail Fieldbook Maintenance and Rehabilitation Guidelines for Volunteers - Second Edition	AT Conservancy	Appalachian Trail Conservancy, P.O. Box 236, Harpers Ferry WV 25425	©2003 Second Edition	NA
Appalachian Trail Corridor Management Signs (a brochure)	AT Conservancy	Appalachian Trail Conservancy, P.O. Box 236, Harpers Ferry WV 25425	1988, Updated 1995	NA
Appalachian Mountain Club – The Complete Guide to Trail Building and Maintenance	Carl Demrow, David Salisbury	Appalachian Mountain Club, 5 Joy Street, Boston MA 02108	©1981, 1998	1-878238-54-6 (alk. paper)

¹⁷ This is the ‘standard’ to be followed by A.T. clubs like TATC.

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 8 - Trail Maintenance Texts

Title	Author	Publisher	Date	ISBN Number
Back Country Facilities: Design and Maintenance	R.E. Leonard, E.L. Spencer, H.J. Plumley	Appalachian Mountain Club	? ? ? ? ?	0-91014-6-31-4
Crosscut Saw Manual	Warren Miller	Forest Service, U.S. Department of Agriculture, Technology and Development center, Missoula MT	June 1978 (Revised May 1988)	NA
Falling and Bucking Safety Guide	Department of Insurance & Finance, Oregon Occupational Safety and Health Division)OR-OSHA)	OR-OSHA Standards and Technical Resources Section 21 Labor and Industries Bldg. Salem OR 97310	October 1992	N/A State of Oregon 440-1871 (10/92)
Lightly On The Land, The SCA Trail-Building and Maintenance Manual (SCA = Student Conservation Association)	Robert C. Birkby	The Mountaineers, 1001 SW Klickitat Way, Seattle Washington 98134	1996	0-89886-491-7
Planning and Building an Appalachian Trailhead Bulletin Board (a brochure)	AT Conservancy	Appalachian Trail Conservancy, P.O. Box 236, Harpers Ferry WV 25425	©1999	NA
Saws That Sing, A Guide to Using Crosscut Saws	David E. Michael	USDA-FS, Missoula Technology & Development Center, Building 1, Fort Missoula, Missoula, MT 59804-9294	December 2004	NA
Trail Construction and Maintenance Notebook	Brian Vachowski	USDA-FS, Missoula Technology & Development Center, Building 1, Fort Missoula, Missoula, MT 59804-9294	October 1996 (Revised April 2007)	NA

CHAPTER 9 - TATC Education Handouts

Education Handouts: A number of TATC Education Handouts have been posted on the TATC web site.

To see the full compliment of Education Handouts, or to print copies, refer to the EDUCATION BANNER and TRAIL MAINTENANCE BANNER on the TATC web page, www.tidewateratc.com.

Suggested Education Handout Reading Includes: (Refer to the TATC web site for other Education Handouts.)

A.T. Maintainer Trail Heads
A.T. Distances and Elevations
Backpacking, an Introductory
 Overview
Bear Bagging
Black Bear News
Emergency Evacuation on the
 Mau-Har Trail
First Aid
First Aid Kit
Guidelines for Activity Participation
 by Minors

Suggested First Aid Kit Contents
Suggested Day Pack Contents
TATC A.T. Data Sheet
TATC A.T. Trail Heads
TATC Activity Leader Pocket Guide
TATC Trail Maintenance Crew Briefing
Booklet
Tricks for Outdoor Leaders -
 Formulas, Hints, and Handy
 Calculation
TATC Activity Sign Up
Water, the Basic Essentials

Other available Trail Maintenance information: To see more Trail Maintenance information, or to print copies, refer to the TRAIL MAINTENANCE banner on the TATC web page, www.tidewateratc.com.

Additions and Corrections to this Trail Maintenance Booklet:

The only way for this booklet or TATC Education Handouts to improve is for you, the Trail Maintainer, to make suggestions and comments. Even small typographical errors are welcome news, it means you're paying attention. ***Please*** pass any ideas you have to the TATC Education Chair:

Tidewater Appalachian Trail Club - Trail Maintenance Booklet
Chapter 9 - TATC Education Handouts

At regular meetings	Via e-mail to: education@tidewateratc.com	Via regular mail to: Education Committee Tidewater Appalachian Trail Club P.O. Box 8248 Norfolk, VA 23503-0246
---------------------	--	--

And a big **THANK YOU** for doing so !!!!!

You've joined TATC. You've been on a Trail Maintenance Crew.



Poster - Trail Maintenance Crew

After putting in a hard day working on the trail you have the right to Take a Nap:



Like this:



Photo - A Well-Deserved Nap

The End