

# BAY CIRCUIT TRAIL



# STEWARDSHIP GUIDE

Bay Circuit Trail Committee - 2018 edition

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## INTRODUCTION

### Who's Who

The **Bay Circuit Trails Committee (BCTC)** advises and assists BCT maintainers. We share the common goal of a trail that is safe, easy to follow, and fun to explore.

The **Bay Circuit Alliance (BCA)** was formed in 1990 to protect and promote the Bay Circuit Trail and Greenway. The Alliance is a partnership of local, state and federal agencies, organizations and individuals, public and private, working to support the Bay Circuit Trail and Greenway.

The Bay Circuit Trail is a project of the **Appalachian Mountain Club (AMC)**. The AMC is one of Massachusetts' largest and oldest conservation organizations. AMC staff work with the BCTC and BCA towards the completion, enhancement, and long-term protection of the trail and greenway.



### What's in this Guide

This guide offers the essential information about how to provide basic care for a section of the BCT. Consult additional references for more comprehensive details on more complex trail maintenance and construction skills.

Using these guidelines will promote consistency in the quality and care of the trail across property/town boundaries.

All work should be performed in a manner to protect the environment, natural resources, and the recreational experience of users. Trail stewards should understand and comply with all standards, policies and regulations that apply on a particular section of the BCT, including town requirements for work near wetlands and bodies of water. Use the Steward Contact & Info Sheet to get to know your section (Appendix A). Adopters are expected to act in the spirit of partnership and as ambassadors to the public.

Basic maintenance does NOT require construction of structures to solve trail issues, like boardwalks and bridges. Please note and report major issues. If you want to participate in advance trail construction projects, work with the land manager, your BCTC rep, and inquire with AMC-Bay Circuit Trail Volunteer Program staff about current projects.

## WORK SAFE AND SMART

- Check the **weather** and bring appropriate water, clothing layers and rain gear.
- **Let someone know** where you're going and your intended route.
- **Wear Personal Protective Equipment:** Sturdy leather work gloves, sturdy boots, & long pants and sleeves help prevent injury. Safety glasses and a hard hat also increase protection.
- **Maintain tools** in good working condition; know the proper use and safety techniques of tools; be aware of other people using tools around you.  
*\*Note – This guide addresses hand tools only. Volunteers seeking to use power tools, like chainsaws or gas-powered brush cutters, should do so only with land manager approval, in accordance with local regulations and with proper safety gear and training.*
- Know your abilities and limits; and take breaks before you are too tired. Stay hydrated and well-fed. **Use common sense!**
- Employ strategies to **deter deer tick bites and poison ivy** rashes (see pages 10-12).
- Carry basic **first aid** supplies (see page 9). Consider taking a first aid certification course.
- Take advantage of **trainings and workshops** to learn, gain experience and connect with other Adopters.

## TRAIL ADOPTER RESPONSIBILITIES

The trail adopter serves to find, report and address trail issues early before serious problems develop. Perhaps you are responsible for only one or several of the duties described below. No matter what, you don't have to fit every job into one outing. Pick a priority goal, and focus on accomplishing that work. Adopters work on their own schedule and at their own pace. Remember, trail work is part science, part art – use the fundamentals in this Stewardship Guide to guide your work on your unique section of the trail!

Here are the tasks for keeping the trail open and in good shape:

### MONITOR

+**Walk** your section at least 2 times per year – early spring to check for winter damage, then again in summer or fall

+**Keep an eye out** for trail obstructions, erosion, flooding patterns, insufficient trail markers, significant changes on/around trail, condition of structures (bridges, signs, kiosk, etc), vandalism, dumping and litter problems

+Keep up-to-date BCT information in **kiosks**

+Fill out and turn in a **Trail Condition Report** to your designated contact each time you perform a monitoring visit

### MAINTAIN

+**Trail clearing** – clear simple blowdown limbs/tree trunks and cut back vegetation to maintain an open trail corridor annually

+**Trail marking** – maintain BCT route markers, replace as necessary

+**Drainage** – assess trail flooding/erosion, clean and repair waterbars each spring and fall

+**Trail definition** - prevent trail widening & multiple paths that bypass wet areas and switchbacks

+Fill out and turn in a **Trail Condition Report** noting observations and work accomplished



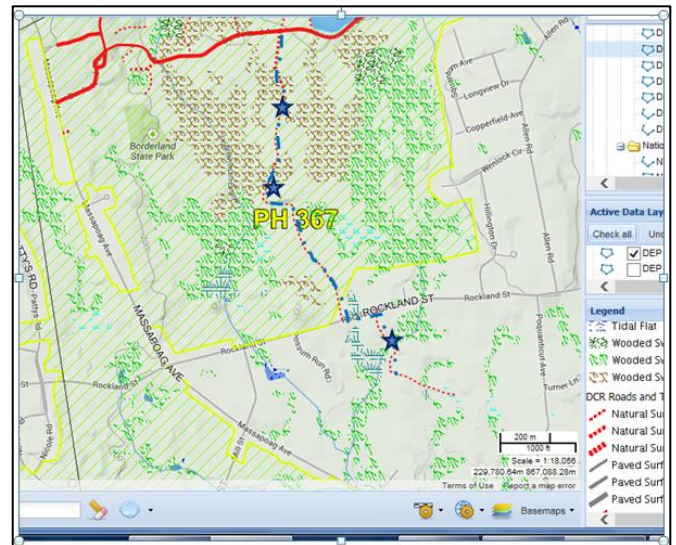
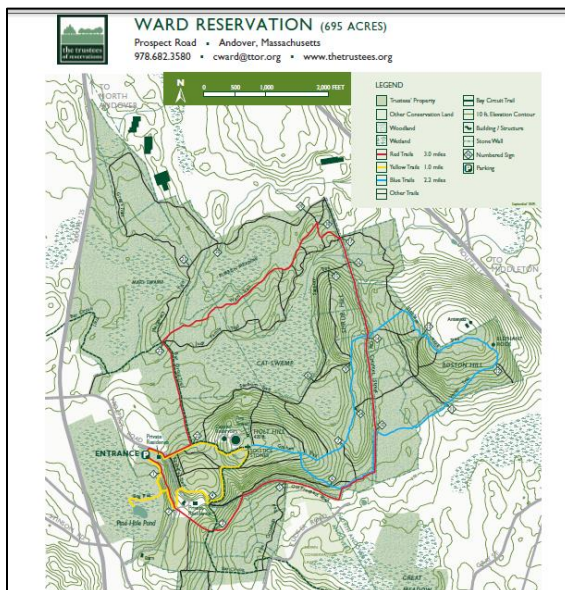
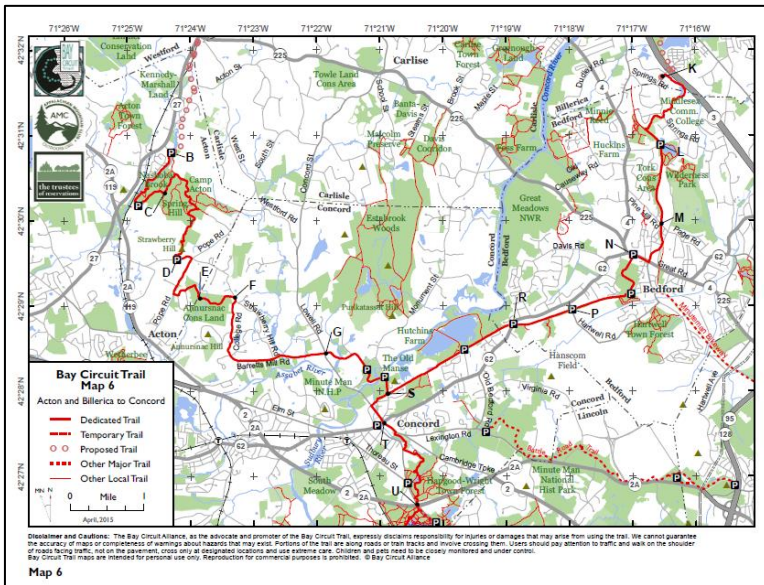
# MONITORING

**OBJECTIVE:** Keep an eye out for changes over time. Document and report on your visits, even if there is nothing new or particularly notable—knowing that you’re out there and finding that things look good is helpful! Plan to walk each part of your designated section at least twice during the course of the year. We suggest you use the Trail Condition Report (Appendix E).

## SUGGESTED GEAR

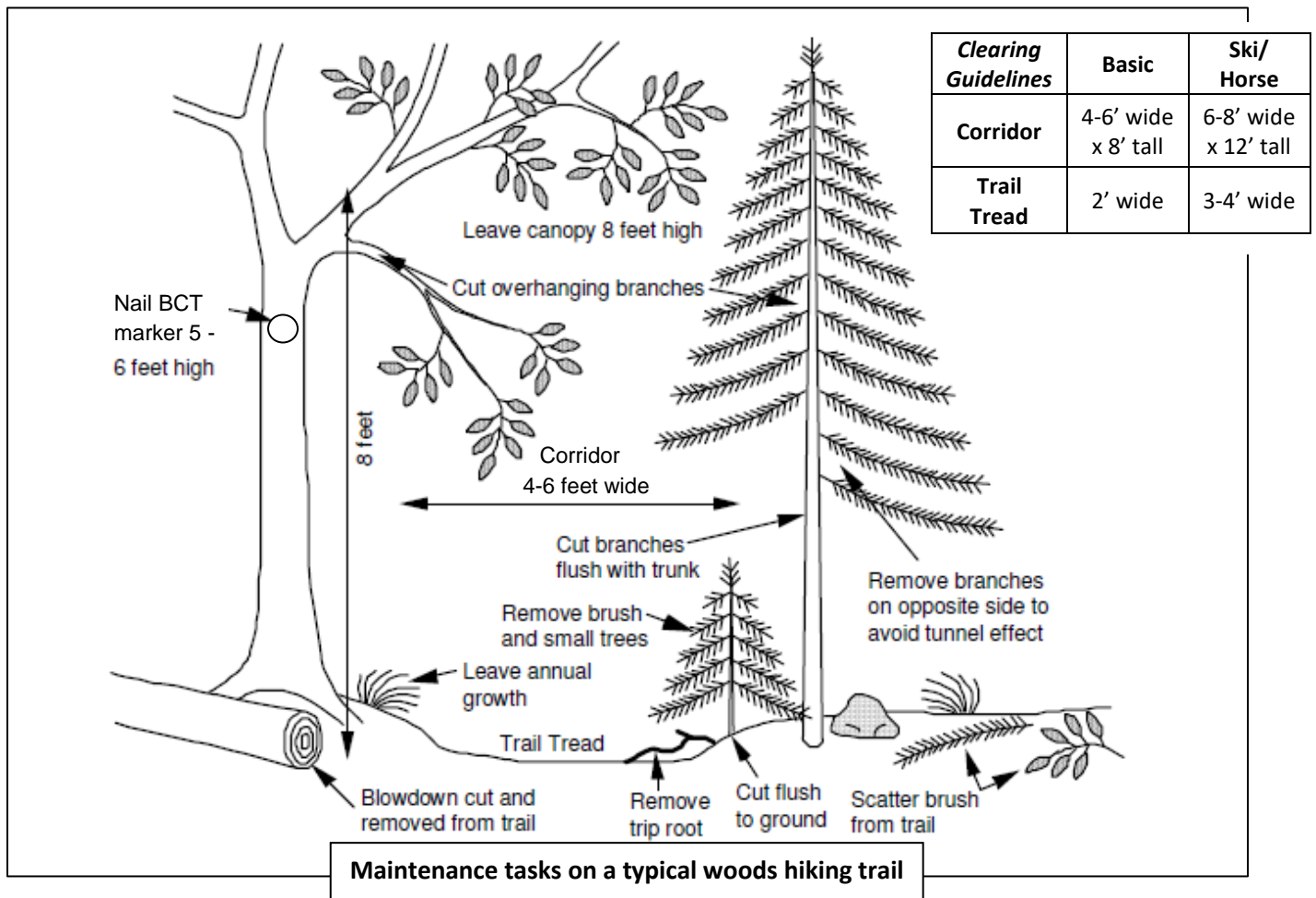
Use a system that works best for you – here are useful items:

- Note-taking materials, such as pencil and Rite-in-the-Rain paper
- Blank Trail Condition Report
- Camera, or phone with camera
- GPS device or GPS app on phone to mark a location
- Trail map
- Trash bag



Use a map to mark your monitoring route, locations of problems, or other notes. Examples of useful maps (from top, counter-clockwise): [BCT maps](#) online; land manager trail maps available at kiosks or online; make-your-own maps using the MassGIS online mapping program [OLIVER](#).

## CLEARING THE TRAIL CORRIDOR



**OBJECTIVE:** Create an open, standard-size trail corridor by clearing obstacles and overgrown vegetation—the reason this is also called *standardizing* and *brushing*. Imagine a large trail user coming along...will they brush into branches or brush? Do they have clear footing?

### SUGGESTED TOOLS

- Loppers
- Hand pruners
- Saw – folding hand saw, bow saw and/or pole saw
- Swizzle stick (for green vegetation, especially in late summer)

### **KEY POINTS:**

- Blowdown trees can be hazardous and complex. Exercise extreme care; assess the situation before acting. Report anything beyond your ability or the capability of your tools for the land manager to remove.
- Cut branches almost flush with the tree trunk or node (where a branch splits) – avoid “coat hanger” stubs
- Cut shrubs or small trees flush with ground—avoid pointed stumps
- “When in doubt, take it out.” Plants will keep growing if not cut back. If a small tree needs excessive pruning, remove it entirely. Conversely, use your judgement in leaving some attractive trees or shrubs.
- Remove cut vegetation from the trail. Disperse 10-15 feet off trail.

# TRAIL MARKING

## TRAIL MARKER TIPS

1. Install BCT markers so that a hiker can follow the trail without referring to the guide text. Trail markers should “effortlessly guide the hiker along the route without intruding on the natural experience” (*AMC's Complete Guide to Trail Building and Maintenance 4th Edition*).
2. If you are marking the trail for the first time, walk the route and plan how you intend to mark it.
3. Mark the trail in one direction at a time. A partner is helpful to determine appropriate marker placement. After you have finished marking the trail, have another hiker unfamiliar with the BCT follow the route.
4. Frequency of markers depends on the character of the trail. In general, a user should at minimum be able to see the next trail marker less than three minutes after walking past the previous marker.

\* When marking an area with an ill-defined pathway or with a maze of intersecting trails, markers may be more abundant so that the hiker can always see the next marker.

\*When marking a clearly defined path with no intersecting trails, markers may be spaced farther apart.

5. Try to use separate trees for north and southbound markers so that if a tree falls, the other direction marker remains.
6. Before installing markers on a tree, look up and see if the tree is healthy.
7. When nailing markers to trees, leave 3/4"+ of exposed nail to allow for tree growth.
8. Install the markers at eye level, 5-6' high.
9. Align markers facing the hiker so that the marker is seen when looking down the path. Do not place markers at right angles to the direction of travel.
10. Immediately after a crossing or turn at a road, brook or trail junction, add a confirmation marker for reassurance. Add a second marker 20-50 feet away in sight from the crossing/turn in case the first marker disappears.
11. In general, use turn arrow markers only when there is a trail intersection and turn in the route.
12. Brush out obstructions in front of trees or poles where markers are located.
13. Pull old nails out slightly, or replace before tree growth buries the nail head. Aluminum nails are soft and may be hard to remove. Carry out and dispose of old nails and markers, or cut nail flush with trunk.

## SUGGESTED TOOLS

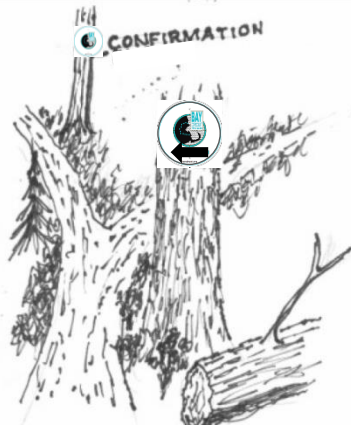
- Trail markers
- Nails (BCTC recommends aluminum 2")
- Claw hammer
- Trash bag
- Loppers/ pruners/hand saw
- Diagonal cutters, pliers or small pry bar for cutting flush or removing old nails

### **Order of priority for transition from old white plastic blazes to new aluminum logo markers**

1. Install a new logo marker when an old plastic blaze is damaged, missing, or growing too close to a tree trunk.
2. Install new logo markers when cutting/designating a new BCT section, or for sections that lack marking entirely.
3. Replace old blazes with new logo markers on a complete trail section (within a full property, between road crossings, etc).



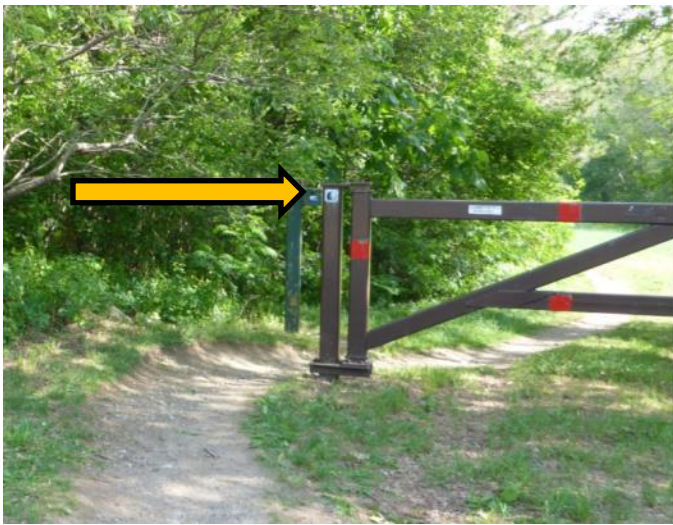
AT A JUNCTION, USE A TURN ARROW (OR LOGO MARKER OR STRAIGHT ARROW IF APPROPRIATE) FOLLOWED IMMEDIATELY BY A...



... CONFIRMATION BLAZE AFTER THE INTERSECTION



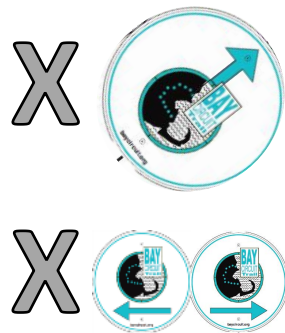
LEAVE 3/4" OR MORE OF THE NAIL EXPOSED



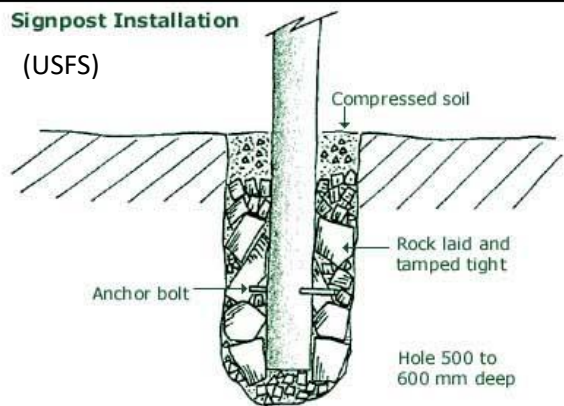
PLACE LOGO AT TRAIL ACCESS LOCATIONS: PARKING LOTS, TRAILHEADS, ETC.



AVOID PUTTING MARKERS ON TWO SIDES OF A SINGLE TREE IN CASE IT FALLS. PICK HEALTHY TREES.



INSTALL MARKER SO LOGO IS UPRIGHT. USE APPROPRIATE CONFIRMATION MARKER TO AVOID ANGLED ARROWS. PLACE MARKERS IN SIGHT ALONG DIRECTION OF TRAVEL (NO 2-WAY ARROWS).



IN OPEN FIELDS OR ABSENT MATURE LARGE TREES, CONSIDER INSTALLING A 4x4" PRESSURE TREATED MARKER POST (WITH LAND MANAGER APPROVAL). YOU MAY BEVEL POST TOP 45 DEGREES FOR WATER DRAINAGE.

## DRAINAGE

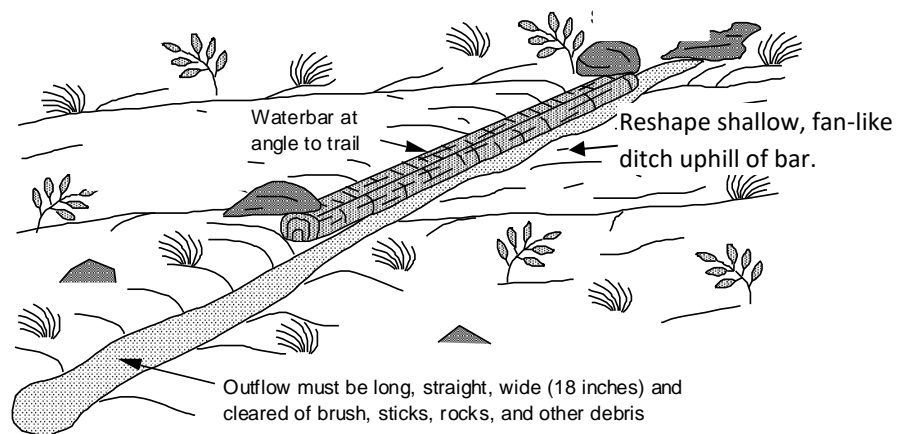
**OBJECTIVE:** Prevent erosion and create a dry treadway by moving water across and off the trail. Trail maintainers keep pre-existing drainages well shaped and clear, and they have the option to install minor drainages if appropriate.

**A. Cleaning waterbars** - On sloped sections of trail, you might see pre-existing drainages called waterbars reinforced with large rocks or wood. A waterbar consists of the shallow ditch across the trail, plus a longer, fan-shaped outflow ditch downhill off the trail.

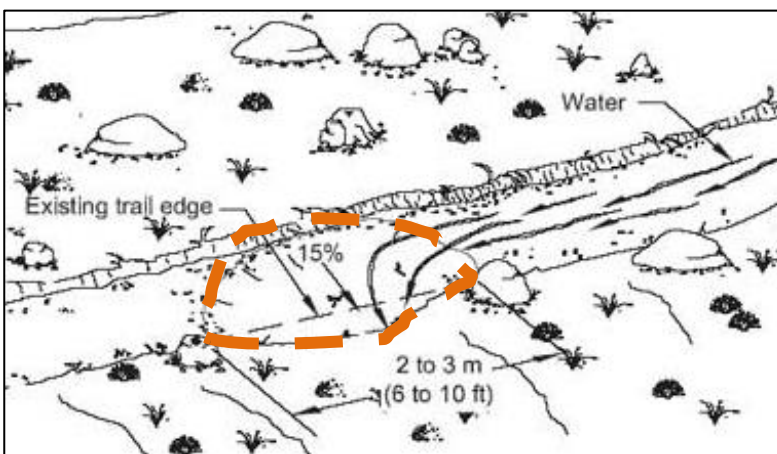
- Sticks, leaves and other organic matter clog the waterbar. Start uphill clearing material and move downhill along the drain beyond the outflow ditch.
- Reshape a wide, shallow ditch uphill of the wood/rock (12-18" wide, 6-8" deep and gently sloping).
- Reshape a long, wide outflow ditch.
- Reinforce the trench across the tread by packing soil on downhill side of the wood or rock reinforcement.

### SUGGESTED TOOLS

- Hoe
- Rake
- Pick mattock (for badly neglected drains or rocky soil)
- Loppers (for exposed roots)
- Shovel (for badly neglected drains)



(Diagrams from the AMC White Mountain Trail Adopter Manual)



### **B. Install a minor "bleeder" drain**

If you see water pooling on a mostly flat section of trail, look to see if there is a slight downhill edge or a natural low point at the side of the trail where water could flow away. If yes, use a hoe or mattock to shape a "bleeder" a shallow, wide fan-shaped drain that tapers to a narrow outflow on the downhill side.

### **C. Trail is flooded, muddy or gullied (eroded) and I don't know what to do**

Note the location and general extent of the water problem on your report. This will help document the issue over time and alert the BCTC to the issue for further assessment.

## TRAIL DEFINITION

**OBJECTIVE:** Concentrate use on the trail. Discourage hikers from creating multiple “bootleg” paths and prevent trail widening and associated trampled vegetation, compacted soil and hastened erosion.



Above: closed bootleg trail, brush piled helter-skelter.  
Right: *AMC Complete Guide* (page 157).

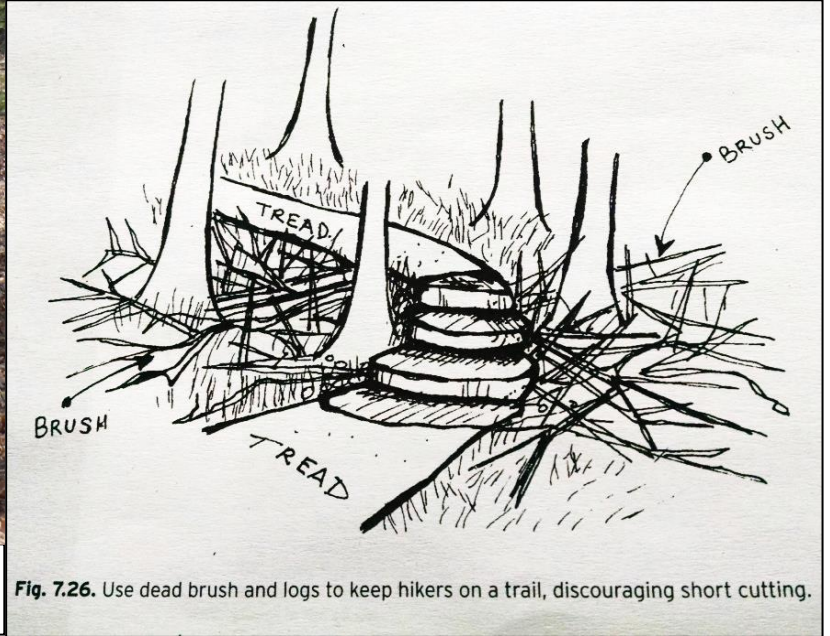


Fig. 7.26. Use dead brush and logs to keep hikers on a trail, discouraging short cutting.

### KEY POINTS:

- Trail users tend to take the path of least resistance. “Brush in” bootleg trails to make them look uninviting; dragging in ugly dead trees and large branches.
- Intermittent wet sections of trail often show signs of widening, or “creep,” as users stray to the higher, drier edge of the trail. This can lead to gulying and erosion. Consider whether drainage is possible (think bleeders, discussed in previous section) or if trail relocation should be considered. Note in your trail report.

## PERSONAL FIRST AID KIT SUGGESTED INVENTORY

Source:

*AMC's Complete Guide to Trail Building and Maintenance 4th Edition*

- 1 package moleskin or molefoam
- Aspirin or ibuprofen
- 1 triangle bandage and safety pins
- Assorted Band-Aids
- 1 Ace bandage
- 3, 4-inch-by-4-inch gauze dressings
- 1 roll of tape or Kling bandage
- Gloves
- Pocket mask
- Antihistamine capsules
- Iodine antiseptic or iodine antiseptic wipes
- Shears or scissors
- Tweezers or “tick spoon”

# TICKS & LYME DISEASE

## tick removal

Remove ticks immediately. They usually need to attach for 24 hours to transmit Lyme disease. Consult a physician if you remove an engorged deer tick.



Using a tick spoon:

- Place the wide part of the notch on the skin near the tick (hold skin taut if necessary)
- Applying slight pressure downward on the skin, slide the remover forward so the small part of the notch is framing the tick
- Continuous sliding motion of the remover detaches the tick

Using tweezers:

- Grasp the tick close to the skin with tweezers
- Pull gently until the tick lets go

1-800-821-5821  
www.mainepublichealth.gov



## tick ID

know them. prevent them.



Deer Tick (Black-Legged Tick)



nymph    adult male    adult female

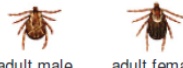
(actual size)



nymph (1/32"-1/16")    adult (1/8")    engorged adult (up to 1/2")



Dog Tick



adult male    adult female

(examples are not actual size, dog tick nymphs are rarely found on humans or their pets)



## just the facts

Deer Ticks

- Deer ticks may transmit the agents that cause Lyme disease, anaplasmosis, and babesiosis
- What bites:** nymphs and adult females
- When:** anytime temperatures are above freezing, greatest risk is spring through fall

Dog Ticks

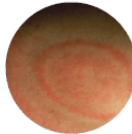
- Dog ticks do not transmit the agent that causes Lyme disease
- What bites:** adult females
- When:** April–August

## prevent the bite

- Wear light-colored protective clothing
- Use EPA-approved insect repellent on skin or clothing
- Use caution in tick infested areas
- Perform daily tick checks
- Protect your pets, use repellents, acaricides, and a Lyme disease vaccine for dogs

## lyme disease

Ticks usually need to attach for 24 hours to transmit Lyme disease.



Often, people see an expanding red rash (or bull's-eye rash) more than 2 inches across at the site of the tick bite, which may occur within a few days or a few weeks.

Other symptoms include:

- fatigue
- muscle and joint pain
- headache
- fever and chills
- facial paralysis

Deer ticks may also transmit the agents that cause other diseases such as babesia and anaplasmosis.

People that remove an engorged deer tick should consult their physician as quickly as possible.

Source:

Maine Centers for Disease Control and Prevention.

Tick Identification Wallet Card (2016)

<http://www.maine.gov/dhhs/mecdc/infectious-disease/epi/vector-borne/lyme/tick-id.shtml>

There are a number of other great online resources for tick and Lyme's Disease information. University of Rhode Island Tick Encounter Resource Center is also particularly comprehensive online resource: <http://www.tickencounter.org/>

## POISON IVY PREVENTION

Poison ivy is present in the woods across the BCT. Poison ivy contains the oil *urushiol* that causes contact dermatitis in most adults if is not washed off within 2-8 hours. Common symptoms are an itchy rash, bumps or blisters that may take several days to appear. Severity varies person to person. Any part of the plant transfers the irritating oil: leaves, “hairy”-looking vines, branches, roots.

Source:

National Institute for Occupational Safety and Health (NIOSH) – Centers for Disease Control and Prevention  
Poisonous Plants (2016)

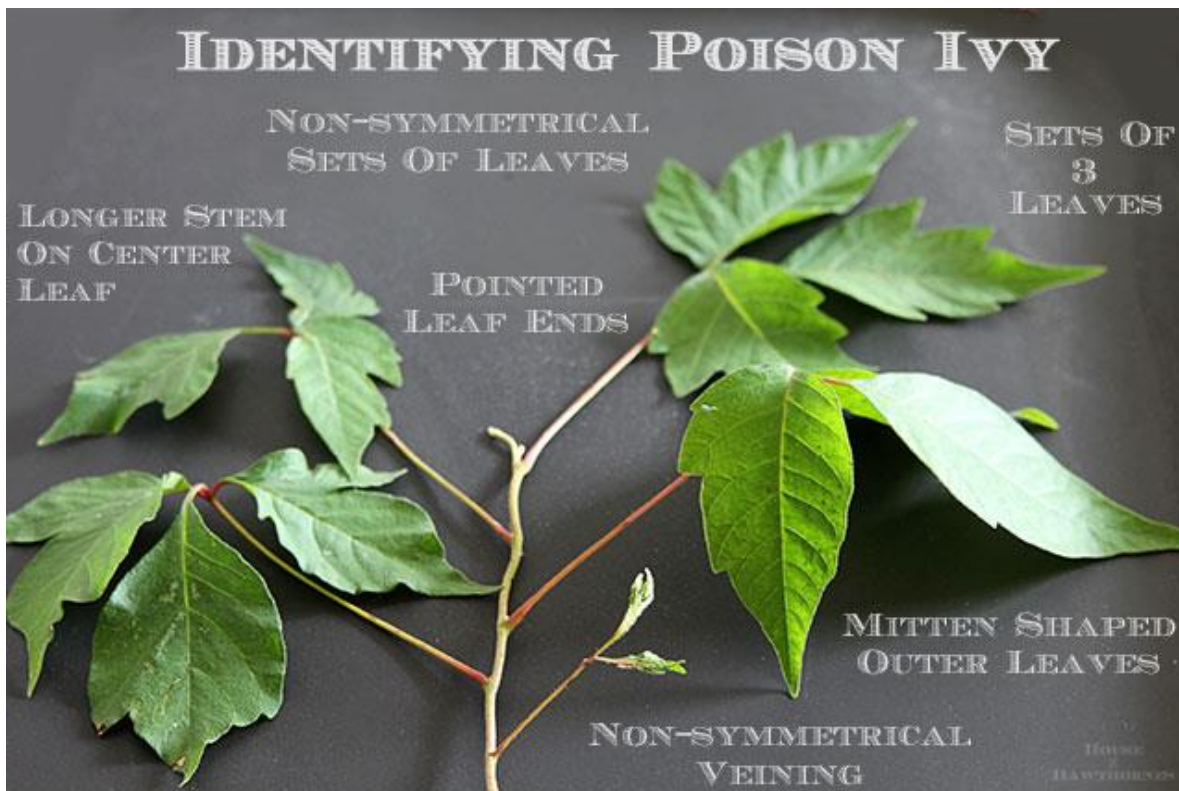
<http://www.cdc.gov/niosh/topics/plants/>

NIOSH Fast Fact Sheets is excerpted on page 14. Full Version: <http://www.cdc.gov/niosh/docs/2010-118/pdfs/2010-118.pdf>

### Poison Ivy



Photos courtesy of U.S. Department of Agriculture





# NIOSH

## Fast Facts

### Protecting Yourself from

## Poisonous Plants

Any person working outdoors is at risk of exposure to poisonous plants, such as poison ivy, poison oak, and poison sumac. When in contact with skin, the sap oil (urushiol) of these plants can cause an allergic reaction. Burning these poisonous plants produces smoke that, when inhaled, can cause lung irritation.

Workers may become exposed through:

- Direct contact with the plant

### Symptoms of Skin Contact

- Red rash within a few days of contact
  - Swelling
  - Itching
  - Possible bumps, patches, streaking or weeping blisters
- NOTE: Blister fluids are not contagious

### First Aid

If you are exposed to a poisonous plant:

- Immediately rinse skin with rubbing alcohol, poison plant wash, or degreasing soap (such as dishwashing soap) or detergent, and lots of water.
  - Rinse frequently so that wash solutions do not dry on the skin and further spread the urushiol.
- Scrub under nails with a brush.
- Apply wet compresses, calamine lotion, or hydrocortisone cream to the skin to reduce itching and blistering.
  - Oatmeal baths may relieve itching.
- An antihistamine may help relieve itching.
  - NOTE: Drowsiness may occur.
- In severe cases or if the rash is on the face or genitals, seek professional medical attention.
- Call 911 or go to a hospital emergency room if you have a severe allergic reaction, such as swelling or difficulty breathing, or have had a severe reaction in the past.

## APPENDIX A

## Steward Contact & Property Info Sheet

BCTC will provide this form completed for new stewards or will work with you to fill out details. As a caretaker of the BCT, you should understand who owns and manages the land that your trail section crosses and maintain communication with your regional BCT representative.

Northbound Section End: \_\_\_\_\_

Southbound Section End: \_\_\_\_\_

Ownership + Land Manager(s)

A. \_\_\_\_\_

B. \_\_\_\_\_

C. \_\_\_\_\_

D. \_\_\_\_\_

Allowed trail uses (ex. Hiking, biking, horseback riding, etc.):

\_\_\_\_\_  
\_\_\_\_\_

Prohibited Trail uses (ex. biking, dogs off leash, etc.):

\_\_\_\_\_  
\_\_\_\_\_

My Bay Circuit Trail Committee (BCTC) Representative:

\_\_\_\_\_

Email + Phone \_\_\_\_\_

\_\_\_\_\_

Appalachian Mountain Club Bay Circuit Trail Volunteer Programs  
Supervisor: Christine Viola, [cviola@outdoors.org](mailto:cviola@outdoors.org)

BCA General Contact: [info@baycircuit.org](mailto:info@baycircuit.org)

### Common Acronym Quick Guide

BCA – Bay Circuit Alliance, a partnership of organizations and individuals, public and private, working to complete and maintain the Bay Circuit Trail and Greenway.

BCT- Bay Circuit Trail, a permanent recreation trail and greenway extending through 37 towns in Eastern MA, linking parks and open spaces  
BCTC- Bay Circuit Trail Committee

BCTC – Bay Circuit Trail Committee, comprised of regional representatives, advises and assists local partners and volunteers on stewardship issues

AMC\* – Appalachian Mountain Club, a Northeast regional non-profit focused on providing opportunities for outdoor recreation, conservation and education

\*AMC leads the Bay Circuit Alliance working towards the completion, enhancement, and long-term protection of the BCT



**APPENDIX B**  
**TRAIL CONDITION REPORT**

Date \_\_\_\_\_

Name \_\_\_\_\_

**Starting Location:** \_\_\_\_\_ **Ending Location:** \_\_\_\_\_

**Trip Purpose:**

- Monitoring only
- Maintenance task(s)
- Monitoring and maintenance

**Hours worked:** \_\_\_\_\_ (primary volunteer)

*(if applicable)*

Hours worked: \_\_\_\_\_ (helper 1)

Hours worked: \_\_\_\_\_ (helper 2)

**PLEASE COMMENT ON THE FOLLOWING OBSERVATIONS**

\*Refer to locations using BCT PDF maps' lettered landmarks, local property junction markings, or specific nearby landmarks with approximate distances. If you supply GPS coordinates, please also location details.

\*Include an additional sheet for continued notes for any section or to describe other observations.

**Weather Condition During Inspection:** \_\_\_\_\_

**General Trail Condition** (Due to recent weather):

- Very Wet
- Wet
- Normal
- Dry
- Frozen
- Other: \_\_\_\_\_

**Trail Markers**

Condition:

- Good
- Fair
- Bad

Need:

# Reassurance \_\_\_\_\_ # Right \_\_\_\_\_  
# Up \_\_\_\_\_ # Left \_\_\_\_\_

Quantity:

- Just right
- Too few
- Too many

Note problems and locations/work performed:

**Brushing** (4-6'x8' typical standardizing)

- Good
- Too Wide
- Needs Some (soon)
- Needs Lots (now)

Note problems and locations. Describe work performed:

**General Drainage Condition**

- Clean (good after visit)
- Needs normal cleaning
- Needs extensive work

Note problems and locations/work performed (# drains cleaned/installed):

Is there running water, erosion from lack of drainage, wet areas that aren't draining, etc? Comment on problems and locations:

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**Condition of Trailhead Parking Area** (Kiosk, signage, litter, etc. if applicable)

- Good
- Needs attention

Note problems and locations/work performed:

**Condition of Structures (Bridges, Benches, Kiosk)**

- All good
- Some need attention
- All need attention

For structures in need of attention, describe Type – Approx Location – Description of Problem:

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**Overall Trail Section Condition**

- Great – low priority for work
- Good – needs minor work later
- Fair – Needs work soon
- Bad – Needs abundant work
- Very Bad – Needs major work to stop serious damage

**Comments about Guide Text description**

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Additional pages/maps included with report? # \_\_\_\_\_

## FOR FURTHER REFERENCE

### ONLINE REFERENCES

MA Dept. of Conservation and Recreation: Trails Guidelines and Best Practices Manual  
<http://www.mass.gov/eea/docs/dcr/stewardship/greenway/docs/dcrguidelines.pdf>

Federal Highway Administration, Recreational Trails Program: Trail Construction and Maintenance Notebook – 2007 ed. [http://www.fhwa.dot.gov/environment/recreational\\_trails/publications/fs\\_publications/07232806/](http://www.fhwa.dot.gov/environment/recreational_trails/publications/fs_publications/07232806/)

Pacific Crest Trail Association: Trail Skills College – comprehensive skills guides  
<http://www.pcta.org/volunteer/trail-skills-college/trail-skills-college-course-curriculum/>

The Stewardship Network: New England Training Guides. Trail Maintenance for Volunteers; Volunteer Handbook. <http://newengland.stewardshipnetwork.org/trail-maintenance-volunteers-training-guide>

### PRINT REFERENCES

Birchard Jr., William and Proudman, Robert D. *Appalachian Trail Design, Construction, and Maintenance. 2nd ed.* The Appalachian Trail Conference Harpers Ferry, WV, 235 pp, 2000.

Birchard Jr., William and Proudman, Robert D. *Appalachian Trail Fieldbook. Maintenance and Rehabilitation Guidelines for Volunteers. 2nd ed.* The Appalachian Trail Conference, Harpers Ferry, WV, 96 pp., 2003.

Birkby, Robert C. *Lightly on the Land. The SCA Trail-Building and Maintenance Manual. Student Conservation Association.* The Mountaineers, Seattle, WA, 272 pp., 1996.

Staff of the AMC's Trails Department. *Complete Guide to Trail Building and Maintenance. 4th ed.,* Appalachian Mountain Club, Boston, MA, 262 pp., 2008.

*Trail Solutions: IMBA's Guide to Building Sweet Singletrack.* International Mountain Bicycling Association, 272 pp, 2004.

### RELATED READING

Waterman, Laura and Waterman, Guy. *Forest and Crag. A History of Hiking, Trail Blazing, and Adventure in the Northeast Mountains.* Appalachian Mountain Club, Boston, MA, 888 pp., 1989. *A monumental description of hiking in the Northeast backed by extensive research.*

Waterman, Laura and Waterman, Guy. *Backwood Ethics. Environmental Issues for Hikers and Campers. 2nd ed.,* The Countryman Press, Woodstock, VT, 280pp., 1993.

Wilkerson, James A. (ed.) *Medicine for Mountaineering & Other Wilderness Activities. 4th ed.,* The Mountaineers, Seattle, WA, 416pp., 1992.