



Trail Maintenance 101

Presented by Grady Vigneau of Stowe Trails Partnership



Topics

- Tools
- Planning Ahead - Seasonality
- Trail Characteristics, Style, Difficulty
- Assessing Trails
- Identifying Issues
- Correcting Issues
- Common Techniques
 - Repairing Trail Tread
 - Working with Water

Tools

- Resources
 - IMBA/GQTE
 - ANR Atlas
 - Trail Solutions
 - VT FPR Town Forest Trail Guide
 - USFS Handbook
- Must Have Tools
 - Spade shovel
 - Grubbing tool
 - Hoe
 - Pulaski
 - McLeod
 - Folding saw/pruning saw
 - Loppers/Clippers/Pruners
 - Rake



Nice to Have Tools

- Clinometer
- Digital level
- Wheelbarrow/buckets
- Sledgehammer
- Chainsaw
- Polesaw
- Leaf blower
- String trimmer
- GPS/GIS/Survey Programs (Gaia GPS, Avenza, CalTopo, etc.)



Tool Safety

- PPE
 - Glasses/Goggles
 - Hard toed boots
 - Long pants
 - Helmets
 - Chaps
 - Ear protection
 - Chainsaw Certification/Education
- Best Practices
 - Don't carry too much
 - Be aware of your surroundings
 - Know where the head of your tool is at all times
 - Spacing between people





Planning Ahead - Seasonality

Spring

- When are trails ready?
- Prior to opening
 - Clear corridors
 - Ensure drains are working

Summer

- Extreme weather
 - Heavy rains
 - Extreme dry
- Strategic Closures
- Tread work
- Vegetation Creep
- Pine needles

Fall

- Tread work EARLY
- Leaves
 - Raking
 - Keeping drains clear
- Freeze/Thaw Cycles

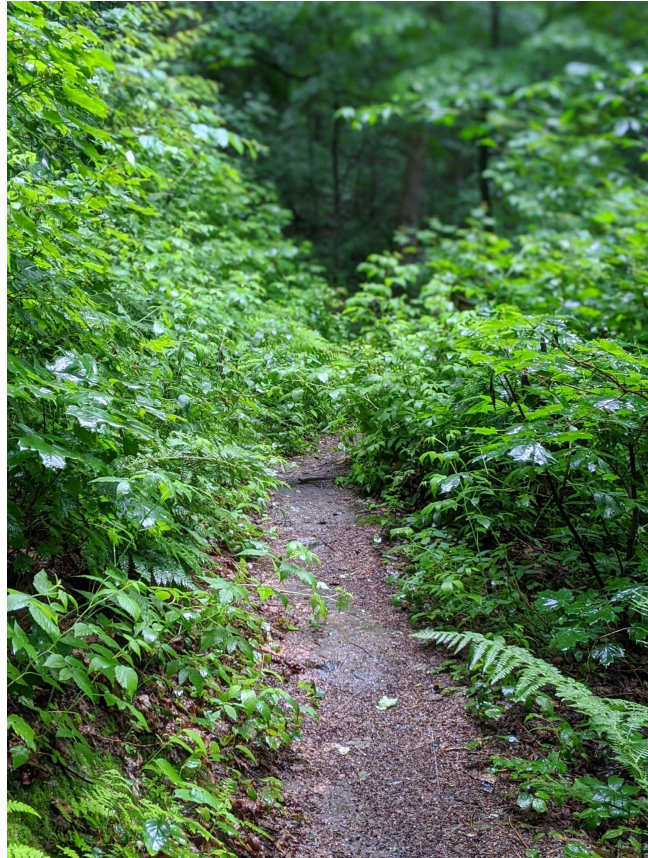
Spring

- When are trails ready to open?
- What needs to happen before they open?
 - Corridor clearing
 - Drain clearing
 - Raking/leaf blowing
 - New drains
- Watch forecasts for a longer term view of opening.



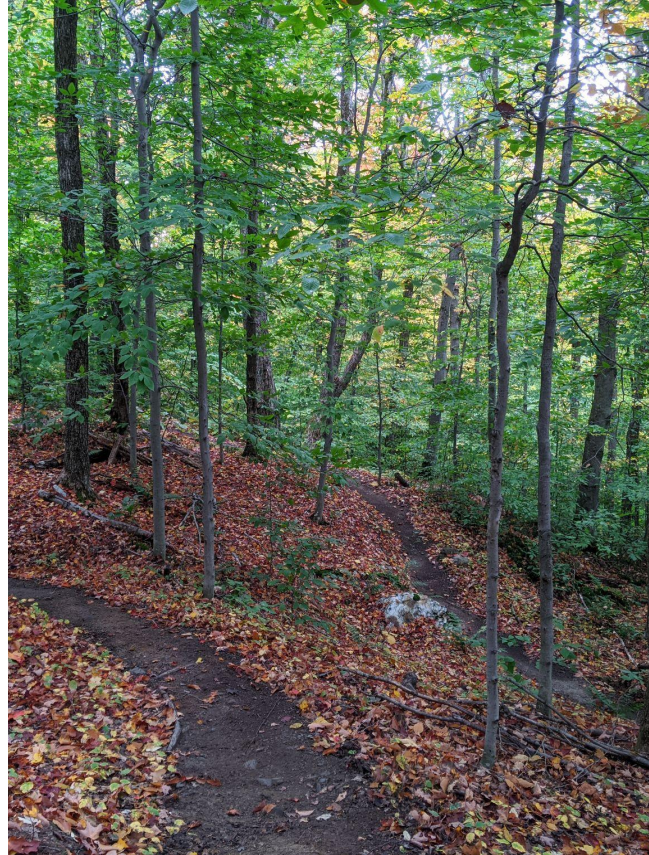
Summer

- Handling extreme weather conditions
 - Dusty conditions
 - Heavy rains
- Tread work
- Vegetation creep
- Pine needles
- Strategic closures



Fall

- Do your tread work early in the fall
- Leaves
 - Raking
 - Keeping drains clear
- Freeze/Thaw Cycles
- Closing trails for the season



Trail Character, Style, and Difficulty

- Intended Use
- Tread Width
- Tread Surface
- Corridor Width and Height
- Average Grade
- Use these to guide your maintenance
- Keeping a catalog of trails with this information can be very helpful





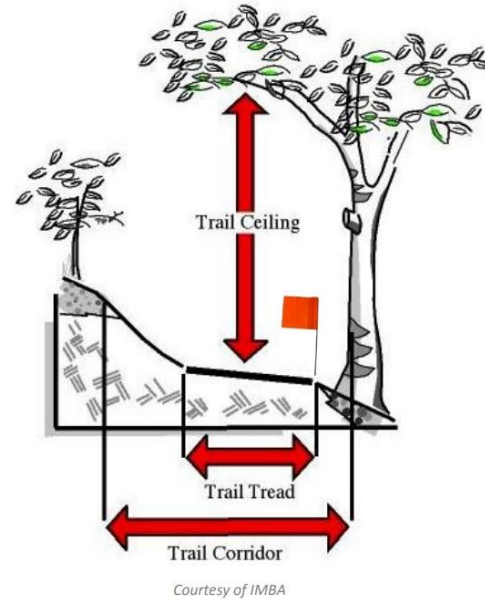
Assessing Trail Condition

- Assess with photos and notes, slowly
- Use an assessment form for clear guidelines and to standardize assessments
- Communicate with others about work to be completed
- Assign the work

Trail:	Location:
Priority:	Tools:
Problem:	
Repair:	
Sketch Trail:	Sketch Repair:

Trail Corridor

- Define the corridor
 - Trail Users
 - Height
 - Width
 - Control points
- Trim back vegetation
- Clear downed and hazard trees



Trail Tread

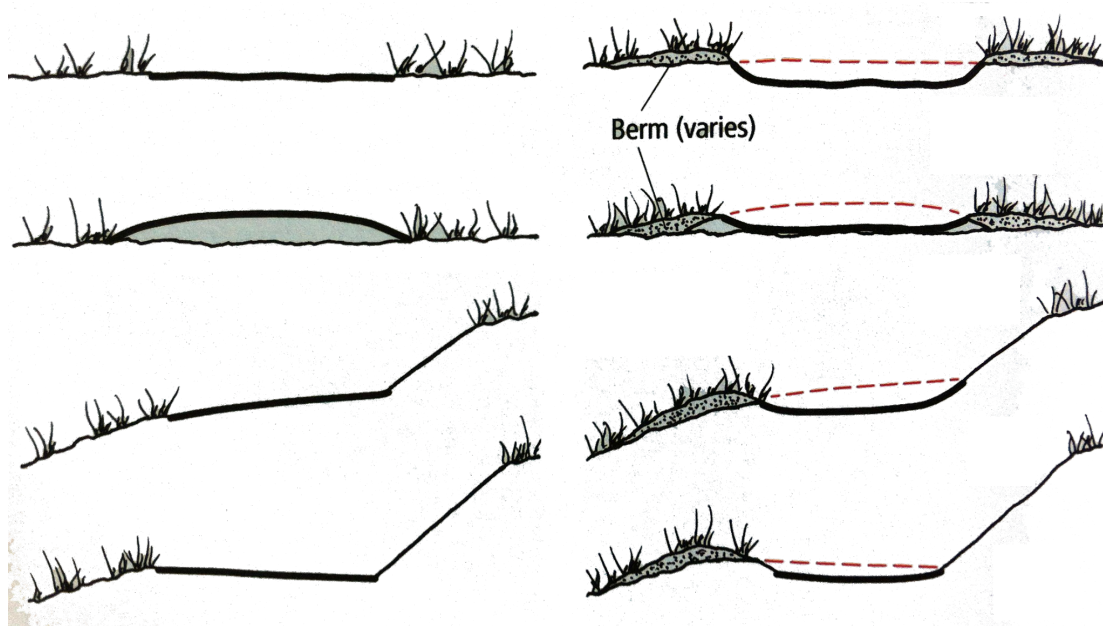
- Trail Character
 - Technical?
 - Smooth?
 - Trail Uses
- When to fix
- How to fix
 - Dig pit
 - Remove material
 - Turnpike
 - Rock armor

Reestablishing Outslope





Trail Tread



Identifying and Correcting Specific Issues

- Too steep and eroded
- Trail is in a wet location
- Trail widening, braiding, creep
- Washboard or braking bumps
- Social trails
- Generally eroded/wet trails



Too Steep and Eroded

- Reroute
- Water bars
- Rock armor



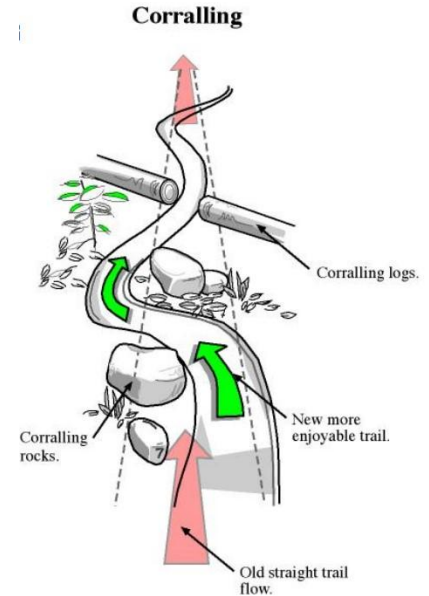
Trail is in a Wet Location

- Reroute
- Outslope
- Rock armor
- Bridge
- Turnpike



Trail Braiding, Widening, Creep

- Identify why
 - Wet tread
 - Obstacles
- See fixes from “Wet Areas”
- Reroute
- Use debris or control points to keep users on trail



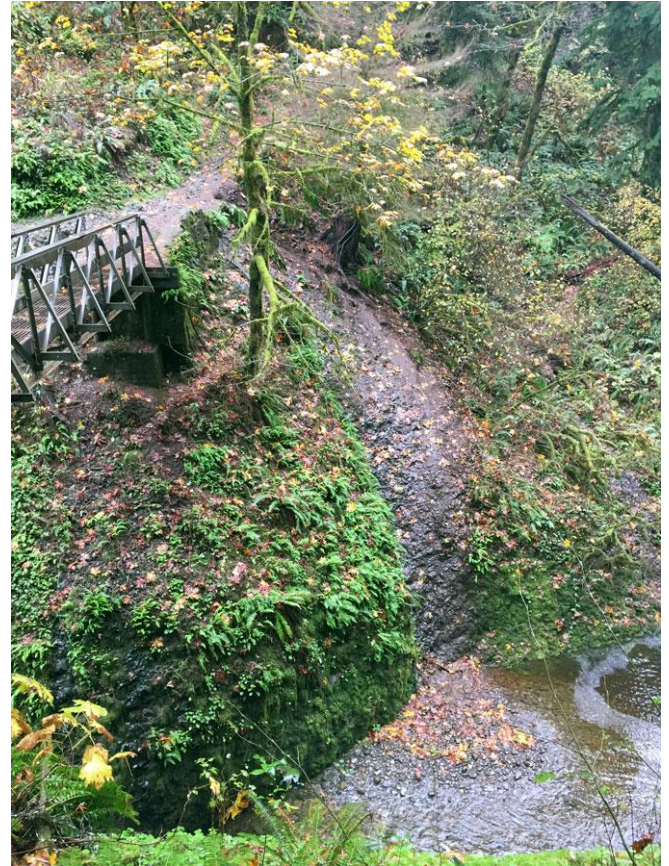
Washboards or Braking Bumps

- Add “speed catches” to prevent future issues
- Rough up, redistribute and repack tread
- Add additional material to trail tread



Social Trails

- Typically form due to trails not meeting user expectations
- Use positive control points to address user expectations
- Signage at trailheads can help
- Brush in social trails
- Occasionally adopting social trails can help
 - Can encourage poor trail etiquette
 - Ensure it is sustainably designed
 - Requires lots of finish work to establish

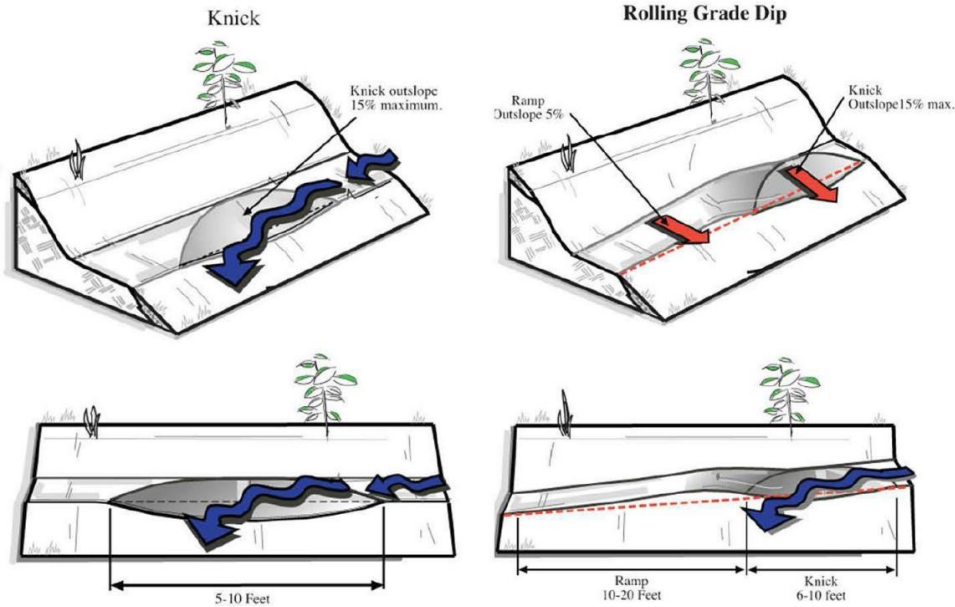




Generally Eroded/Wet Trails

- Identify Problem
- Identify Why
- Common Causes
 - Too steep
 - Compaction of the tread
 - Insloped turn
- During periods of heavy rainfall prioritize standing or running water over “wet” or “soggy” tread
- Take care of water where it enters the trail first
 - Water gains VELOCITY and VOLUME as it travels the trail
 - This causes increased erosion further downhill
- Types of drains
 - Knicks
 - Rolling grade dips
 - Outslope
 - Uphill drains
 - French drains
 - Culverts
 - Rock armor drains
- Turnpiking

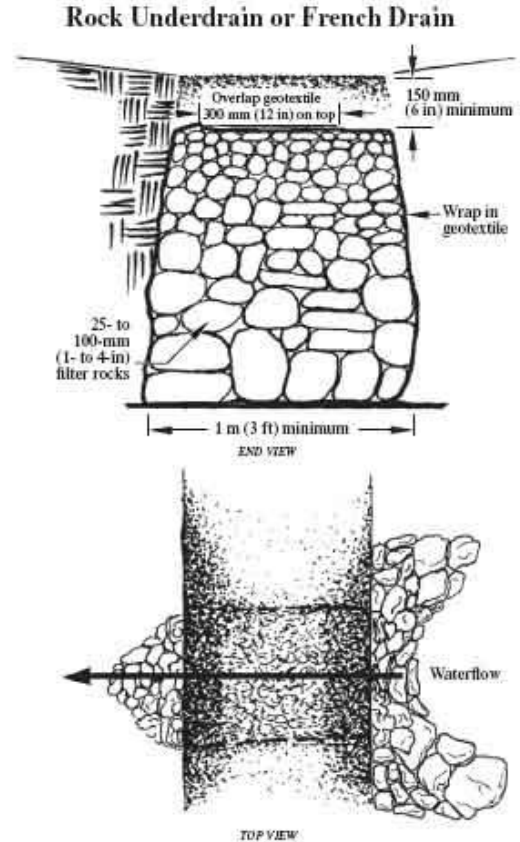
Knicks and Rolling Grade Drips



Outslope and Uphill Drains



French Drains and Culverts



Rock Armoring



Turnpiking





Wrap Up - Important Take Homes

- Ask for help/advice and utilize available resources!
 - IMBA Trail Solutions, USFS Trail Guidebooks, VT FPR Town Forest Trail Guide, etc.
 - Reach out to other trail organizations, trail builders, other trail professionals
- Don't rush - assess and discuss before digging
- Work with water, not against it. Try to keep it going where it wants to go rather than redirect
- Keep water moving across the trail, not down it
- Water gains two things as it flows downhill
 - Volume
 - Velocity
- Any questions?