Sustainable Trail Guide - Genesee Valley Region

Purpose: This guide has been developed to provide landowners interested in sustainability, small woodlot management and mind-and-body focused trails with relevant information and resources.

Acknowledgements: Development of the management guide was a part of the '*Growing Agritourism in the Genesee Valley Region'* project funded by the Genesee Valley Regional Market Authority and coordinated by the Cornell University Cooperative Extension of Monroe County. Cooperation and expertise of Kevin Farrell, Genesee Land Trust, was critical in the successful completion of this guide.

Understanding Your Woodlot

I.

Soil Survey: The USDA Soil Survey provides a detailed map and summary of existing soil types on the land of interest. Understanding your soil and its characteristics is key to deciding how to design and maintain your trail in a sustainable way. Start below by visiting their website and following the proceeding steps.

- Step 1: **Go to https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm**
- Step 2: Click the green circular button labeled "Start WSS".
- Step 3: On the left-hand side identify the bar labeled "Navigation". Under this is a tab labeled "address". Click this tab and enter the desired address. Hit enter.
- Step 4: Use the buttons at the top left corner of the map to zoom in and out as needed until the entire area desired is visible. Use the first button, the magnifying glass with the plus, to zoom in. The second button, the magnifying button with the minus, to zoom out. Carefully click these one at a time. The user can click, hold and drag the zoom button around the desired area to more accurately zoom in. Use the button with the white glove icon to drag the map in any direction. If the user cannot find the original location desired, re-enter the address in the left-hand side tab.
- Step 5: Click the "Define AOI by Rectangle" or "Define AOI by Polygon" button. Next, click the map and drag to extend the rectangle over the desired location. If using the polygon button continue to click and drag to create the desired boundary. Double click to "close" the shape. Once completed it will automatically load your area of interest (AOI)

shown in blue with diagonal lines across the area chosen. The user can re-create the shape as many times as needed.

- Step 6: Near the top of the webpage click the tab labeled “Soil Map”. The soil units will appear on the map with coordinating legend on the left-hand side. Zoom in and out as needed.
- Step 7: Click the tab near the top of the page labeled “Soil Data Explorer”. Click on each of the tabs on the left-hand side of the map to learn more about the user’s desired area. Click “view description” and “view rating” to learn more about what each tab means. Take any given warnings into consideration. Continue to explore with different tabs and buttons to make the user experience easier.

II.

Plant Identification

Use any of the following resources to identify plants. Create a plant list on paper or in Excel to understand your woodlots biodiversity, health and public risks. Take pictures to record changes over time and track progress associated with your specific goals.

Websites such as:

- http://identifythatplant.com/plant-id-resources/plant-id-websites/
- https://www.discoverlife.org/mp/20q
- https://www.leaf-id.com/

Phone apps such as:

- PictureThis
- PlantSnap Pant Identification
- Planta

Books such as:

- Field Guide to Eastern Trees: Peterson Field Guide by George A. Petrides
- Flora of the Northeast: A Manual of the Vascular Flora of New England and Adjacent New York by Dennis W. Magee and Henry E. Ahles
- Invasive Plants: A Guide to Identification, Impacts, and Control of Common North American Species by Sylvan Ramsey Kaufman and Wallace Kaufman

Any questions related to horticulture you can contact

- Cornell Cooperative Extension of Monroe County Master Gardeners through their gardening helpline at 585-753-2555 or visit http://monroe.cce.cornell.edu/ for further information.
- Cornell Cooperative Extension of Monroe County offers a Diagnostic Lab for plants, insects and soil. Visit http://monroe.cce.cornell.edu/horticulture/diagnostic-lab for more information.

III.

Gaining knowledge of the woodlot will help to establish your goals associated with building a trail. Determine the purpose such as conservation and preserving natural biodiversity, increasing agritourism and/or providing a recreation area for the public. Next, contact any relevant resources (page 12) to provide more information and continue your own research through online sources, books and guides. Then create a step-by-step plan with a realistic timeline to achieve these goals.

A Guide to Building a Nature Trail

Step 1: Mapping the Trail System

- Walk the area of a future trail to ensure it is the optimal route. Note possible hazards i.e. flooding or erosion. Identify need and locations for additional structures such as bridges or boardwalks.
- Determine the future trail coordinates, using GPS. Place the wire flags at the check points for your future visual aid.

  Trail Design Tips:

  1. Use the 'least resistance' principle. Utilize the existing bushwhacked trails for initial mapping
  2. When creating a trail on a sharp incline, gradually descending paths are a key to erosion prevention and accessibility for all users
  3. Avoid wet areas to prevent premature trail erosion and to make their maintenance more manageable
  4. Consider a trail width of 4 to 6 feet individuals to walk side by side or for hikers to travel in both directions
  5. The trail clearance height should be 8 to 10 feet for safety and easy access.
  6. Mark thickets of poisonous or endangered ecology

7. Provide visual guide i.e. fence, signs, thickets or boulders to block visitors from entering an unauthorized or private property

Step 2: Tools Required

A variety of tools may be utilized at varying costs. Standard personal protective equipment (PPE) such as gloves, safety glasses and work boots will be needed.

Suggested tools:

- *Bush-whacker* and/or *weed-whacker* to clear a majority of the brush
- *Loppers* or an appropriate *hand saw* to cut small branches and trees
- *Chainsaw* to remove any large branches or trees
- *Pulaski* (see Figure 3) or *Mattock* hoe for the soil, stump or root removal
- *Level* to ensure the trail is even
- *Posthole digger* or equivalent to add posts for signage. A shovel is not recommended due to less efficiency and more physical work
- *Tamper* to compact the soil

Step 3: Small Brush Removal

Clear 4 to 6 feet of the main route of the trail using a bush and/or weed-whacker. Remove obstacles such as branches, trees or shrubs within the pathway using loppers or hand saw. Additional tools such as hand pruners may be used for even smaller brush. Dig out poisonous or unfriendly plants (i.e. poison ivy, brambles) at least 2 feet away from the edge of the bush-whacked trail. Treat with spray (See page 12 for details) if desired. Remove any litter in the trail area.

Step 4: Trees and Large Branches Removal

Clear the trail by taking out large trees or branches with a chain saw. Cut the branches flush to the main stem. Remove the stumps. Clear out the soil around the stump and set aside. Gradually, cut the roots until the stump pulls away. Fill the hole with the saved soil. Use the Pulaski or mattock hoe and a shovel. With a hand and/or a chainsaw cut branches blocking the width of the trail and obstructing the path 10 feet up from the ground. Use a ladder with a spotter for safety.

Step 5: Hazardous Roots Removal

Expose potentially hazardous roots on the trail path with a Pulaski or mattock hoe. Scrape away excess soil, using the same tool, cut each side and pull to remove. Refill area with the soil, tamper to flatten the ground. If building the trail on a steep slope, create a “wall” of soil at a ninety-degree angle on one side of the path to create safer accessibility

Step 6: Water Drainage Control

Walk the trail in every season to identify problem areas caused by running water. Look at low spots and sections facing downhill for the ruts caused by the water. Redirect the water by digging a narrow channel. Create a board walk or foot bridges in muddy or flooded areas. Apply porous material such as gravel to areas that are prone to erosion or excess water. When applying, distribute the material evenly and tamper it down afterwards.

Step 7: Trail Signs and Recreational Structures

Walk trail to identify future sign locations. Mark with tape or wire flags.

- Types of Signs:
    1) Directional markers such as arrows, color markers or "trail this way"
    2) Private property signs
    3) Warning signs for visitor's safety (i.e. harmful plants, trip hazards, electric fence)
    4) Educational signs i.e. tree, plant or wildlife identification, their benefits, impacts, and stewardship
    5) Mindfulness signs to aid users to stay in touch with their senses
    6) Informative material to share information about the farm and its services
- Utilize natural features such as clearing for benches or picnic tables while creating stops or scenic overviews. Include a recreational structure at the end of the trail (near the willow). Place an informational bulletin board at the trailhead. (Figure 4)

Figure 3. A Pulaski tool.

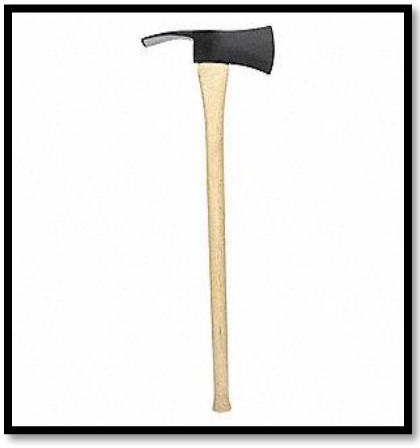


Figure 4. Example of an Outdoor Bulletin Board.

Signs

The signs and their support can be made from wood, metal or fiberglass. Signs should be in visible location. Clear text and simple graphics are the key.

- Include content stating the rules - i.e. leashing dogs, picking up after your pet, carry in carry out, staying on the trail, trespassing and avoiding sensitive vegetation. Promote environmental stewardship by providing a trash can and/or pet waste bags at the start of the trail.
- Blazers are small colored signs to mark a trail for guidance and directions. Use a different color for each trail. Place them in visible locations and height. They can be purchased at various stores and websites. (www.vosssigns.com/products/stock/trailblazers/). Manual marking of trees with paint is an alternative.
- When applying signs or blazes on trees use a two-inch roofing nail. Do not nail in tight. Allow about ¾ inch to remain for natural growth. Attach at the top and bottom.
- Signs can be purchased through websites such as: https://www.campgroundsigns.com
- See samples below (Figure 5). The price for these signs can range from $10 to $30.
- Local businesses to consider are:

  1) *Emerald Print Management*: www.emeraldprint.com

  2) *Gupp Signs*: www.guppsigns.com

  3) *Millennium Printing & Graphics*: www.millenniumresults.com/signs-rochester-ny

  4) *Rapid Print and Marketing*: www.rapidprintandmarketing.com/signs-graphics
- See sign examples (A – F) with mindfulness, environmental and conservation content below.

A)

B)


UNTIL NEXT TIME
Thank yourself for coming today.
Notice how you feel...
How has your breathing changed?
How does your body feel? Your mind?
Share, connect and grow:
#StarkMindfulnessWalk
Mental Health & Addiction Recovery
STARK PARKS
10
MINDFULNESS WALK
STARK COUNTY

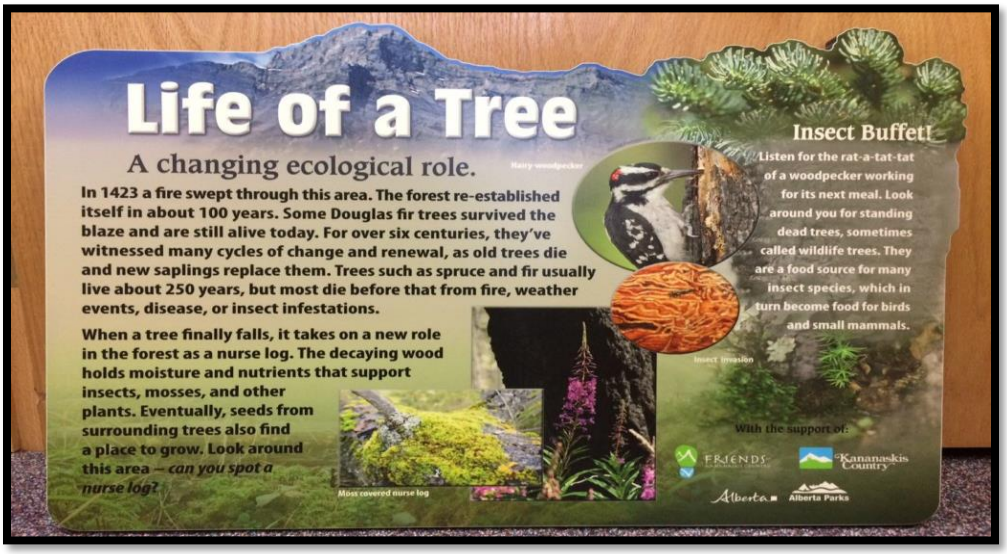
C)


Hemlock
Tsuga canadensis
- Grows 100 ft tall or more
- Lives 500 years
- Grows very slowly
- Generally lives in wet, marshy areas

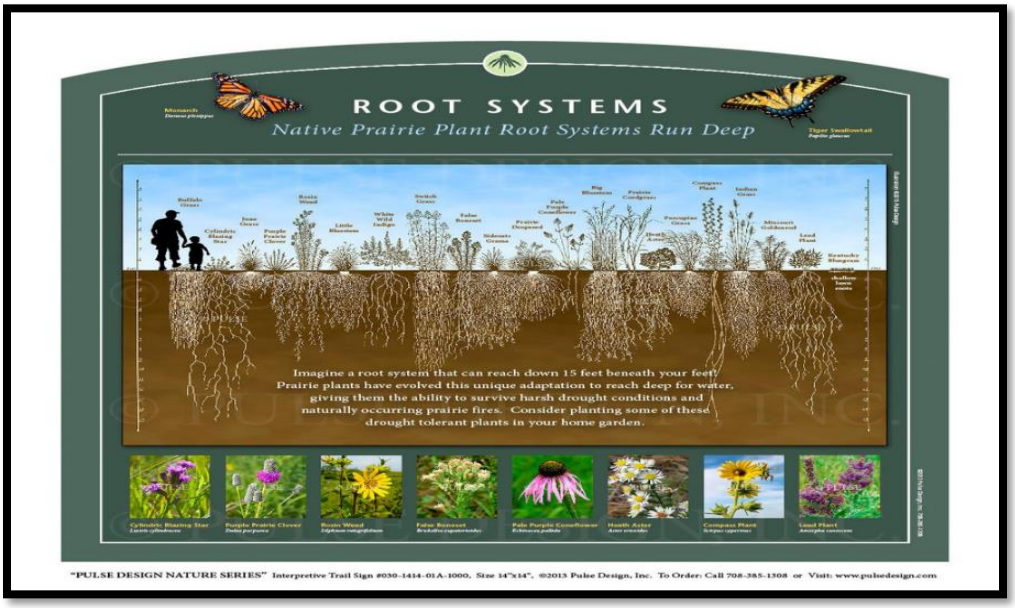
D)


INTERPRETIVE STOP 1
Chadakoin Formation outcrop
Devonian Era siltstones, shales and sandstones were deposited on the outer shelf of a Mediterranean-like sea about 350 million years ago. Fossils include brachiopods, bryozoans, crinoids and possibly sponges.

E)



F)



See resources below for ideas on creating an interpretive trail:

1) www.americantrails.org/resources/educating-trail-users-advice-for-planning-interpretive-trail-signs-and-exhibits
2) www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5104524.pdf
3) www.starkparks.com/mindfulnesswalk/

Figure 5. Ideas for Additional Trail Signs.

Long-Term Trail Management

Routine trail maintenance will be needed to avoid problems caused by either naturally occurring causes such as weather and natural elements or by humans such as a property damage or trial overuse. Check for missing or damaged signs and structures, ~~i~~ndications of trespassing, (trash, a campfire ring, graffiti, ATV tracks, etc.), damage caused by water or fallen trees.

- Trees, branches or other debris to be cleared
- Safety hazards such as exposed roots, large rocks or harmful plants

Routine Maintenance should include:

- Picking up litter
- Removing safety hazards
- Harmful plant control
- Trail edging maintain 4-6 foot width. Too wide of a trail can favor erosion, too narrow of a trail can reduce accessibility and mobility.
- Prune back plants after spring and early summer growth, ensuring 8 to 10 foot clearance.
- Repair the structures and steps especially in wet areas. Mend trail surface with rocks or gravel as needed.
- Redirect trail to prevent excess erosion and to avoid flooded areas for safety.-Establish the new section as close to the original trail as possible.

Organic Solutions to Troublesome Plants

General Notes

- Ensure to remove all of the root system for every plant
- Hand-pulling of seedlings in the spring is the most efficient method to prevent sprawling growth

- Pour boiling water where the plant has been removed for 2-3 days afterward to prevent any new growth
- A salt solution made out of 2 parts salt to 1 part water is an alternative. Spray only the leaves, stems and roots of undesirable plants, avoid surrounding growth. Minimize spraying in large amounts to prevent solution localized salinization. Spray for 7-12 days.
- Appropriately dispose of plants immediately to avoid re-rooting. Do not do so at removal site. Shred or cut them into small pieces to naturally break down. You can also burn or dispose of them in specified area that is routinely maintained.
- Replanting of native vegetation after removal is recommended.

I.

Poison Ivy

Reason to Remove: Danger to humans is caused by the toxins that cause skin outbreak. Adult plants climb the host trees reducing their viability.

- Pull the plants by hand, wearing PPE. Immediately dispose plants into a garbage bag while avoiding contact with exposed skin.
- Make an organic killer spray (can be used on any plant as chemical replacement) by mixing:

    1) 1 part of vinegar and 4 parts water to create 1 gallon of solution
    2) 1 cup of salt, put into a pot and heat until salt dissolves
    3) 8-10 drops of liquid dish soap to the cold solution

Pour solution into spray bottle and apply solely to problem plants. Continue spraying for 2 weeks. Use caution when spraying as solution will kill surrounding plants.

Use tarp, agri fabric or plastic mulch (about 1 ft thick) to smother a larger concentration of new growth. Goat grazing can be a viable choice to eliminate problem plants, including poison ivy. Note that they do not eat roots and will eat beneficial plants. Therefore, extra attention and work may be needed. If this is a viable choice, consult local farmers or agricultural organizations for more information.

II.

Brambles

Reason to Remove: Undesirable due to their sharp thorns or barbs which cover the entire plant and their invasive habits that suppresses the growth of surrounding plants.

- Mow high density areas with a shredder attachment-during the flowering period to remove the nutrient-rich stem and starve the roots and to reduce the seed bank in the following years.
- Cut back plant tops to about 6 inches high. Use with hand pruners, loppers or saw depending on the growth size. Dig out roots.

III.

Grape Vines

Reason to Remove: Aggressive vines rapidly take over the ecosystem, the thick vines choke host trees reducing their viability. Their tangled vines become a safety hazards while reducing aesthetics.

- Sever each vine in at least 2 places with lopping shears or a similar tool. Cut thicker vines with brush axe, pruning saw or chainsaw depending on the size.
- One cut should be approximately shoulder height and the second should be as close to the root as possible.
- Apply organic killer spray or salt to cut stumps. Repeat for the following days. Ensure it will not rain for 2-3 days after each application.
- When possible pull vines out of affected host trees or plants.
- They are intolerant to intense shade. Cover with shade cloth, thick mulch or black plastic to kill sprouts or stumps.

IV.

Honeysuckle

Reason to Remove: Their rapid growth reduces soil nutrients and moisture from surrounding plants while also shading out less competitive native vegetation.

See below for various options available to remove or kill mature plants. These organic solutions may be implemented on similar plants.

- Cut the top growth of mature honeysuckle. Repeat this several times during the season. Rub off tender new growth from the cut crown in between cuts.

- Using a Pulaski or similar tool dig around the plant, cut any roots and pull away to remove the shrub. Remove any remaining roots in the ground. Pour boiling water or salt in the hole. Repeat before re-filling with dirt to evade any new sprouts.
- Cut the plant 2 to 3 feet from the ground. Place a durable bag over the remaining crown and stump. Staple it into the ground and leave for many months during the growing season.

V.

Autumn Olive

Reason to Remove: This plant is one of the first to leaf out in the year. Paired with biological advantages such as nitrogen fixing root nodules and a high concentration of chlorophyll this rapid growing shrub will quickly outcompete native vegetation.

Note: Cutting the base of the shrub can result in abundant sprouting. Any remaining roots are particularly tenacious and without herbicidal treatment will almost always re-root. Removal of large plants will cause a large disturbance so further management of the area will be required.

- Small shrubs can be dug up with a spade, Pulaski or similar tool. Place a bag over the crown and tie near the base to capture berries that may fall off.
- Larger shrubs will likely need a tractor, hitch and chain to remove. Attentive clean-up of berries is necessary. Dispose of the plant in an appropriate way off site i.e. shredding, burning.

Strategizing for the Future

I.

Resources

Several organizations have been contacted. They are willing to aid in organizing help with trail building and maintenance, pulling unwanted plants as well as providing advice and further connections.

- **Genesee Land Trust**, **Kevin Farrell**, (585) 256-2130, kfarrell@genseelandtrust.org, www.geneseelandtrust.com.
- **Trail Works**, **Mark DeCracker**, videomark@gmail.com, https://trailworks.org
- **Crescent Trail Hiking Association**, **David Wideman,** (585) 678-1769, Crescenttrail@gmail.com, www.crescenttrail.org/support.html

- **Genesee Valley Conservancy**, **Benjamin Gajewski**, info@geneseevalleyconservancy.org, www.geneseevalleyconservancy.org
- **Finger Lakes PRISM,** Hilary Mosher, flprism@gmail.com, www. http://fingerlakesinvasives.org
- **DEC Forester**, **Garrett Koplun**, Garrett.koplun@dec.ny.gov, www.dec.ny.gov/lands/5230.html
- **Friends of Recreation, Conservation and Environmental Stewardship -** See staff webpage www.parks.ny.gov/environment/staff-partners.aspx. Nearby partners include an official FORCES club located at SUNY Geneseo. FORCES ambassadors and/or stewards located at Rochester Institute of Technology, University of Rochester and Finger Lakes Community College.

II.

Increasing Financial Gains Through Agritourism

- Contact local school systems, educational organizations or businesses to use your woodlot as an outdoor classroom. Provide a price per person, group discounts and add-ons for an additional cost. These may include a guided tour, refreshments, teaching tools, etc.
- Organizations to contact include Girl Scouts, Boy Scouts, 4-H clubs, daycares, homeschool groups, local summer camps, retirement homes, libraries or organizations that provide nature workshops or outdoor survival training such as the Earthworks Institute.
- Contact local yoga studios, meditation classes, gyms and recreation/community centers who would be interested in having their classes outside for the day. Entice them with language describing your land with words such as peaceful, beautiful views, private or synergy with nature. Charge a price per class or per person depending on what the contact is willing to do. Provide additional add-ons as mentioned before.
- Promote educational workshops you can advertise as well as teach yourself. Charge at least $15 per person. Target individuals and organizations interested in topics related to gardening, sustainable agriculture or outdoor recreation. Integrate interactive activities with a hands-on option you can offer as additional projects. Promote on social media through your CSA, local Cornell Cooperative Extension, friends and family.

- Post your classes on local forums, at local community centers or submit to teach one through organizations such as The Brainery. (rochesterbrainery.com/pages/teach-a-class).
- "Rent" your land for various events such as an orienteering competition, fundraisers, corporate event or camping. Ensure they sign liability waivers and adhere to safety guidelines.

III.

Establish Marketing

- Place a large, double-sided sign at a visible location i.e. main entrance to a farm. Post your services (farm stand, CSA, trails, rental space), public hours, philosophy and/or website. Ensure visibility from a distance.
- Create palm cards, pamphlets and/or brochures for distribution to the visitors, local businesses, libraries and community centers. They should include contact information, website and social media links on a high-quality print material. Invite people to participate in your services or events (CSA, trail, etc.). Include your farm's philosophies and opportunities for agritourism that you decide on (i.e. an educational workshop you will be offering, rent an outdoor classroom space, camping, etc.).
- Start a weekly, monthly or seasonally newsletter to advertise new events, classes, trail updates, CSA opportunities and more. Have a sign-up sheet available for visitors. Fill out the first few lines with names so that people are more likely to follow lead.
- Post on social media *at least* 2 to 3 times a week during the peak season. Utilize various platforms such as Facebook, Instagram and/or Twitter. Post in the late morning or late afternoon to capture the most views. Promote various aspects of your farms business to keep viewers interested.
- Use a professional camera to capture high quality photos throughout the year. These can be utilized for years to come. If you do not own a camera ask local high schools, colleges or community centers for someone interested in practicing their photography skills.
- Entice people to sign-up for your services using phrases such as, "Registration is filling up fast, sign-up now!".

Appendix A – Pictures of a local outdoor bulletin board. Use these as a potential reference to construct your own. Photo credit: Jarmila Haseler.