Forest Forensics at Tory's Woods

UPPER PENINSULA
LAND CONSERVANCY

What is Forest Forensics?

Similar to how a detective may walk into a crime scene and use evidence of the environment around him to determine what happened, you can walk into a forest and look at the features of the land to determine its natural history and what man-made disturbances may have occurred there. Some phenomena we may be able to identify include agricultural impacts, logging operations, or natural disturbances such as fire or wind.

The practice of Forest Forensics was developed by Tom Wessels, an ecologist and professor at Antioch University New England. In 1997, he authored a book, Reading the Forested Landscape, which introduced his approach to interpreting the history of natural areas by evaluating an area for specific features.

What can we learn from reading the landscape?

Geology: *The science that deals with the earth's physical structure and substance, its history, and the processes that act on it.*
Specifically in Michigan, our geologic history is influenced by glaciers which advanced and retreated over 10,000 years ago. As they scoured the landscape and melted, they deposited sediments of all sizes and sculpted terrain.

Forest Ecology: *The scientific study of the interrelated patterns, processes, flora, fauna, and ecosystems in forests.*
In the forests, you can identify community types where trees with similar needs grow near one another. Additionally, you can see what stage of succession the forest area may be in following a disturbance.

Meteorology: *The branch of science concerned with climate and weather of a region.*
Some characteristics of the forest can suggest what kind or how much precipitation an area receives as well as occurrences of severe storms. Furthermore, one may be able to see indicators of climate-related changes.

Archeology: *The study of human history and prehistory through the excavation of sites and the analysis of artifacts and other physical remains.*
Human impacts can be identified on a landscape including incidents of fire, introduction of invasive species, and conversion of natural systems (i.e. a forest that was developed into farmland). We can see remnants of past land use, by recognizing the meaning of remains left behind such as litter, structural foundations, stone work and fencing.

What are some features to keep an eye out for in any forest?

1. Pillows and Cradles
    a. Indicate old trees fell over and rotted in place. Usually found in old growth forests, the 'cradle' is where the roots came out of the ground, leaving a shallow hole. The 'pillow' is the mound that indicates where the roots or log rotted. The term comes from the logging era where loggers were said to have used the landscape features as a perfect place to nap (or at least wish for one!).
    b. Suggests severe thunderstorm or wind storms which blew over trees.
    c. Forested areas with large rolling areas of pillows and cradles suggest it has always been forest area, as opposed to ever being converted to farmland.
2. Stumps
    a. May be due to logging or animal activity
    b. Likely white pine or hemlock stumps from the logging era. Hardwood stumps decay and break down much faster than pine stumps. To tell a White Pine from an Eastern Hemlock, look at the bark. Hemlock bark is full of tannin and thus resistant to rot, and so you could find rings of Hemlock bark containing nothing but crumbles of what had been the wood. In the case of White Pines, its bark drops off after about 25 years.

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3. Multiple trees growing from a single stump
    a. Indicative of logging activities. Result of the stump producing sprouts after being cut. Starts as a bushy cluster of sprouts that thin themselves out resulting in 3-5 sprouts becoming mature trees.

4. Trees missing bark or with diverging trunks
    a. May be evidence of fire

5. Large boulders
    a. Hints at the glacial history of the land as these large rocks are deposited by the retreating ice sheet

6. Level areas without trees
    a. Suggests the land was used as pasture or was the site of a homestead

7. Invasive species
    a. May have arrived by accident or they could be the remnants of a past, purposeful garden.

8. Perched roots
    a. When trees fall, they may land on other trees. This may affect the direction of growth for the tree which was fallen upon. Similarly, if the roots remain attached to the soil, the fallen tree may continue to grow with partially exposed roots.

9. Large trees, of a distinctly different age class from those around it
    a. Evidence of logging, where a separate species was targeted or where operations ended

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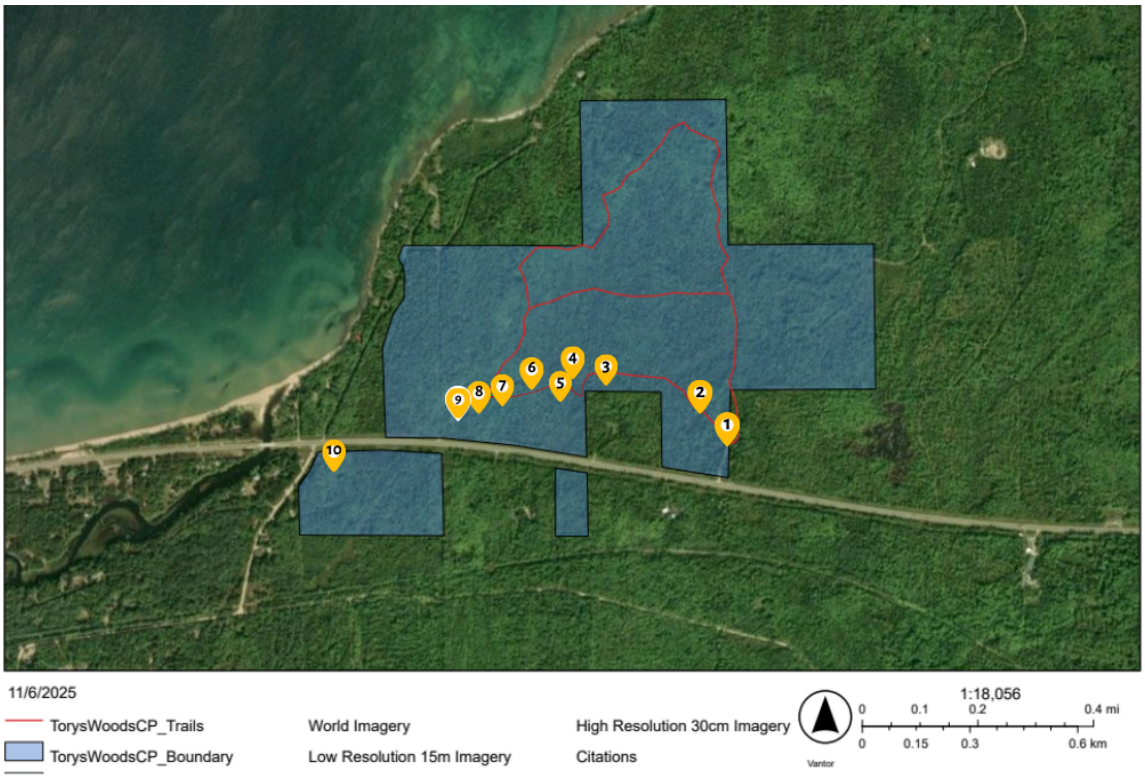
What features are unique to Tory's Woods?



1. This pond appears to be spring-fed since it holds water year-round and lacks visible inlets or outlets. However, to confirm this, we'd need to observe it through all seasons. If it were simply fed by rain or snowmelt, it might dry up in late summer. Seasonal change is a key part of forest forensics as features can look very different in spring, summer, and fall.

2. This area shows signs of past disturbance from unauthorized timber removal and bulldozing. Restoration efforts, which began nearly 25 years ago, have allowed native vegetation to recover and tree saplings to mature.

3. Look here for a cluster of fallen trees. Known as a "blowdown" event, a stand of trees will topple over or break due to strong winds. These events open gaps in the canopy, allowing sunlight to reach the forest floor and encouraging regeneration of diverse plant species.
    a. Mature, healthy trees are less likely to be affected by stormy winds. These fallen spruce trees here likely were dead long before falling over due to a

spruce budworm infestation. Although budworms are always present, sometimes their populations explode into large-scale outbreaks. Budworm larvae feed on spruce buds and young needles, often severing them at the base. After repeated years of defoliation, the upper canopy or even the entire tree may die.

4. Tory's Woods proximity to Lake Superior shapes its ecosystem. Cool, moist air encourages the growth of mosses and ferns and creates a microclimate that supports plant species typical of more northern boreal forests.

5. Take a moment to notice the boardwalk's height. Was it built that way intentionally? Look for "water lines" on nearby trees. These marks or discolorations show how high the water rises during spring thaw or heavy rains.

6. As you move along the trail, notice the change from coniferous forest to hardwood-dominated stands, especially maples. These transitions tell us about soil conditions, moisture levels, and the long-term succession of the forest.

7. This shallow, pond-like depression fills with snowmelt and rainwater in spring but dries up in summer, distinguishing it from a spring-fed pond (as seen earlier). These ephemeral pools provide critical breeding habitat for amphibians and invertebrates that can't survive in fish-filled ponds.

8. The overgrown dirt track here may have once been a logging road or provided access to homesteads. Roads like this were common during the early 1900s when Finnish immigrants settled and timber companies logged much of the Deerton area, including the Tyoga Historical Pathway which is located about 4 miles away from here.

9. This fallen structure could be a former sugar shack, suggested by the number of maples nearby. Such shacks were used to boil sap into maple syrup.

10. Look for remnants of an old stone foundation and a toppled outhouse. The rectangular masonry feature in the far wall is what Tom Wessels, the author of Forest Forensics, calls a "basement": originally a foundation for a fireplace and chimney in early homesteads.

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About the UP Land Conservancy

UP Land Conservancy is an accredited nonprofit land trust working to protect the lands and waters of Michigan's Upper Peninsula. Since 1999, we've safeguarded nearly 6,000 acres- including 11 nature preserves- that are now permanently defended, sustainably managed, and open for our community to enjoy, thanks to the generosity of our supporters.

With recent federal funding cuts, our work, and that of our conservation partners, faces new challenges. Yet, our commitment remains strong: offering public hikes and educational programs, helping landowners protect their property, and conserving forests, wetlands, and wildlife habitat that sustain our communities and help mitigate climate change.

This year, The Carls Foundation is matching donations from U.P. residents and visitors dollar-for-dollar up to $150,000. Your gift today could have twice the impact.

Please consider supporting UPLC's mission or sharing it with others who care about protecting the U.P. You can give online at uplandconservancy.org/donate, by scanning the QR code below, or by mailing a gift to our office at 1907 Presque Isle Ave. Marquette, MI 49855.

Thank you for attending our hike today and supporting our work!