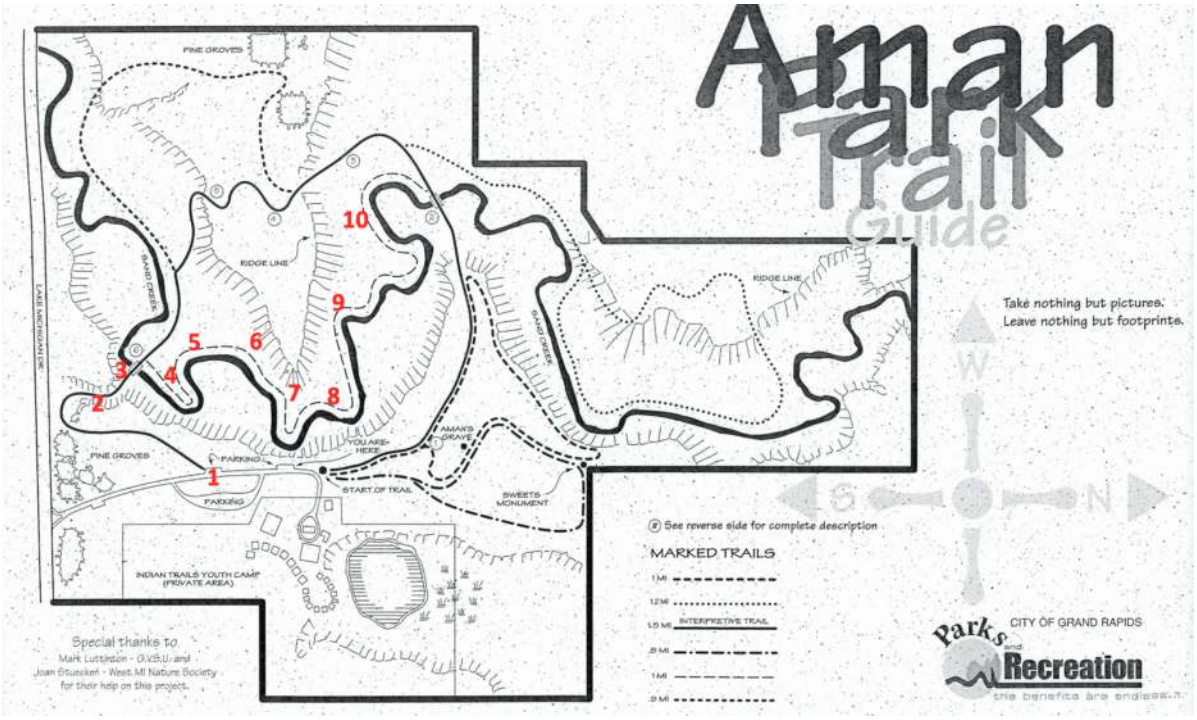
William Martinus' Guided Tour for Wild Ones River City Chapter, May 2020



Understanding the Plant Communities & Natural History and Useful Tools

A basic simplified geology of the Aman Park area: Glaciers left the assorted sands, clays, and gravels of the rolling hills of the area about 18,000 years ago. The "flats" west of the Grand River continuing through Allendale, are from a former Grand River delta. West of Allendale to Lake Michigan are a series of former higher, post-glacial lake beds. As they dried up, low dunes formed, sweeping across the dried sands. A vast remnant marsh was centered around 120th Ave. x M-45, and was drained in the early 1900s.

- Original survey maps from early 1830 are available at Loutit Library
- Aerial photos of Ottawa County taken in the 1930s can show a snapshot of history
- Atlas of pre-settlement vegetation shows that three forest types existed in Aman Park:
    1. Beech-Maple Forest west of Sand Creek
    2. Mixed Hardwood Forest east of Sand Creek
    3. Mixed Conifer Swamp surrounding the small lake (off limits to the public)

Comer, P.J., D.A. Albert, H.A. Wells, B.L. Hart, J.B. Raab, D.L. Price, D.M. Kashian, R.A. Corner, and D.W. Schuen. 1995. Michigan's pre-settlement vegetation, as interpreted from the General Land Office Surveys 1816-1856. Michigan Natural Features Inventory, Lansing, MI.

Michigan Natural Features Inventory, MNFI, has a searchable tool to explore historic plant communities.

https://mnfi.anr.msu.edu/resources/vegetation-circa-1800

- Plant communities of Michigan

Kost, M.A., D.A. Albert, J.G. Cohen, B.S. Slaughter, R.K. Schillo, C.R. Weber, and K.A. Chapman. 2007. Natural Communities of Michigan: Classification and Description. Michigan Natural Features Inventory, Report Number 2007-21, Lansing, MI. 314 pp.

- Plant species of Michigan

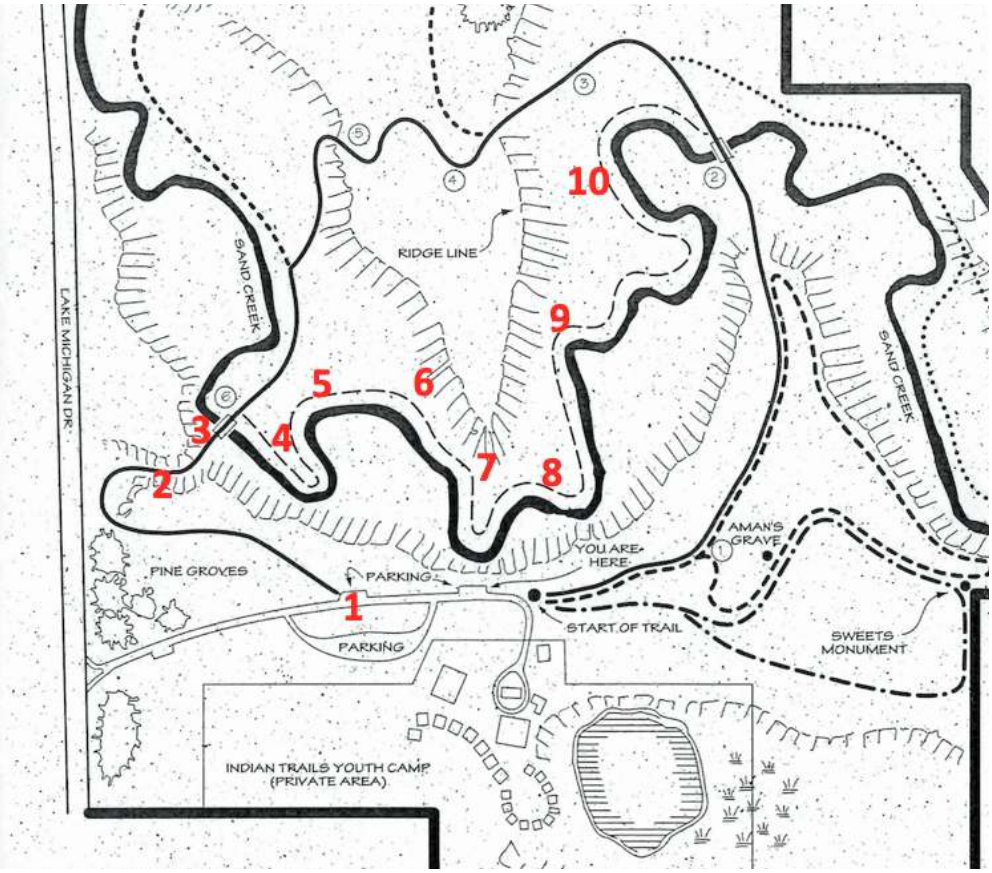
MICHIGAN FLORA ONLINE. A. A. Reznicek, E. G. Voss, & B. S. Walters. February 2011. University of Michigan. Web.

https://michiganflora.net/

- Tools that can be valuable in the field:
  - GARMIN Eltrex 10 – can track where you walk, as seen in the locations we used for STOPPING POINTS, but also allows you to "click" a location to get the coordinates for reference. For example, the identification of a Viburnum was not immediately known during the hike, we captured the coordinates so that it would be easy to revisit. At Stopping Point #10 you will find that the identification was later determined.
  - Binoculars useful in checking out plants, birds and butterflies: 8x10 power; close range. Look through them backwards to use them as a magnifying lens

SELF-GUIDED TOUR STOPPING POINTS

The RED NUMBERS on the map below, represent **STOPPING POINTS.** Note, because this follows Sand Creek, there is potential that sections of this route will be flooded, depending on recent rainfall events.



#1: Parking Lot

- The geology and history of an area can tell you both which plant communities previously existed here and what might exist in the future
- Disturbances have considerably changed most areas due to past uses of the area which could include farming, overgrazing, logging (clear-cutting, and selective cutting), intentional fires, planting and introduction of non-native species
- A long list of non-native species can be found along the road and parking lots including numerous forbs, shrubs, and trees: Norway Spruce, Red Pine, Asparagus, Periwinkle, Common Burdock, Dandelion, Hairy Bitter Cress, Garlic Mustard, Hybrid Honeysuckle, Winged Euonymus/Burning Bush, Autumn Olive, Jetbead, Multiflora Rose, English Violet, Yellow Archangel

- It's important to document non-native species: if they are not officially documented, they scientifically do not exist. Can a valid non-native management plan be implemented where there is no evidence of their existence?
- Every species has a story to tell. English Violet found near the parking lot is a non-native brought from Europe that was used as perfume and to flavor chocolate. Spreads by stolons
- Deer avoid eating sedges; silica dioxide in the plant structure is similar to glass

#2: Along trail to first bridge

- Garlic mustard releases a natural fungicide that kills the beneficial microbiotic community of trees
    - Allelopathic: the antifungal chemicals disrupt associations between beneficial mycorrhizal fungi and native plants, suppressing native plants and poses big impacts on trees in invaded areas
    - https://www.canr.msu.edu/ipm/invasive_species/garlic_mustard/about_garlic_mustard
- Black Cherry, Red Oak, and Sassafras are often signs a community has been disturbed; these are often successional tree species
- Notice the Hemlock trees. They were cut down and stripped of its bark for its use in the tannery industry located in Holland and Grand Haven in the 1800s
- Black maple can be identified by the pubescence on the backside of leaf
- Witch hazel can be identified by zig-zag growth at end of twigs
- Coefficient of Conservatism (COC) assigns a number from 0-10 which signifies a plant species prevalence in a unique undisturbed plant community.
- **Floristic Quality Assessment (currently not calculated for Aman Park)** A tool useful in determining the natural significance of a location by a thorough examination of the flora found therein, is the Floristic Quality Assessment. The Floristic Quality Assessment is determined by the Floristic Quality Index (FQI), calculated by using the "Coefficient of Conservatism" (*C*) value that has been given to each native vascular plant species in Michigan by the Department of Natural Resources Natural Heritage Program. Values range from 0 - 10 and "represent an estimated probability that a plant is likely to occur in a landscape relatively unaltered from what is believed to be pre-European settlement condition." (Herman et al., 2001). Common Ragweed (*Ambrosia artemisiifolia*), for example, is common in Michigan and is found in numerous habitats. It has a coefficient (*C*) of zero, while Wood-betony (*Pedicularis canadensis*), is a species rated a ten, and one that "almost always is restricted to a pre-settlement remnant, *i.e.* a high quality natural area" (Herman et al. 2001). The FQI results will be higher when several diverse plant communities occur at a particular site. Generally, species associated with wet habitats have higher individual coefficient numbers.

- "Areas with FQI higher than 35 possess sufficient conservatism and richness that they are floristically important from a statewide perspective. Areas registering in the 50s and higher

are extremely rare and represent a significant component of Michigan's native biodiversity and natural landscapes." (Herman et al., 2001).

#3: Right before crossing first bridge

- Tension zone between south and northern Michigan where vegetation noticeably changes: the zone stretches from Muskegon to the Saginaw area
- Most plant species are either retreating north with the glaciers or are species advancing from the south
- Some Aman Park tree species are near their northern range limit in the state: Pawpaw, Chinquapin Oak, American Sycamore, Black Maple, Tulip Tree, Shagbark Hickory, Red Bud

#4: After crossing bridge

- Equisetum abundant by river. A member of an ancient family: the fossil record in Michigan near Grand Ledge dates back to 300 million years ago. Some species were tall trees of 100 feet or more
- Rectangular woodpecker holes noticed: the Pileated Woodpecker was once extirpated in Ottawa County; a successful comeback story
- Chokecherry, a common cloning shrub along the creek. Notice the reddish leaves of new growth
- Some spring ephemerals seeds are dispersed by ants
    - Area woodlands that have been divided by roads and paved trails suffer, as ants and other insects often are not going to cross 10 or more feet of pavement to haul seeds into adjacent woodlands
    - Some area woodlands such as Hagar Park have become islands; surrounded by housing sprawl thus isolating species and genetic material
- A few spring plants found in Aman Park are circumboreal in range: found in Northern North America, Greenland, Iceland, Northern Europe, and Russia
- Although this area regularly floods it is not considered a "real" floodplain plant community, but is classified as a Southern Mesic Forest
- Plants in this area include wild leek, gooseberry, spring cress, horsetail, bladdernut, cutleaf toothwort
- Marginal wood fern = common forest fern on slopes, spores close to leaf margins
- Basswood makes special sound when knocked on, Native Americans used the inner bark for making of twine

#5: White oak stand

- White oak is one of the best woods to make furniture, oak barrels for wine and whiskey, historically used for shipbuilding
- White pine grows 2 inches every decade, large white pine in this area estimated to be ~130 years old
- No lower branches on the pine indicate it grew in a forest, not an open area
- Plants in this area: Pennsylvania sedge, partridge berry, wood anemone, native honeysuckle
    - Deer won't usually touch Partridge Berry but its bright red berries, although bland, are edible for people
- True ephemerals die back after their spring blooming period
- Yellow trout lily is one of the first plants to move in after disturbance, although it can take up to a decade before the plant blooms
- Plants in the area: Yellow Trout Lily, *Pyrola elliptica*, Flowering Dogwood

#6: Large Pennsylvania sedge clone, black oak, abundant mayapple, large fallen tree above trail

- 30-40 sedge species are often found in an area considered to be high quality. Almost all sedges in MI are native
- Squaw-root is a parasitic root that grows on the roots of oaks including red, black, & white
- Virginia Bluebell at Aman has become well-established. This species is listed as State Endangered

#7: Uplands: Sharp-Leaved Hepatica

- Hairy Wood Rush, *Luzula acuminata*
- Sharp-lobed hepatica
    - Common in upland, clayish soils
    - COC for sharp-lobed = 8, round-leaved = 6

#8: Walnut trees

- Walnut in lower forest: identifiable by its darker diamond bark
    - Was well sought after historically, used for furniture and veneer

- Grand Rapids was known as "Furniture Capital" due to abundance in nearby forests of walnut, white oak, tulip tree, and maple
- Cottonwood in lower mesic forest: Dutch used cottonwood to make wooden shoes
- Plants found here include: Ironwood, ginger, Virginia waterleaf

#9: Bayou

- Deer are mostly absent from Aman Park
    - If the ground is covered in maple seedlings, that is a good indication deer are not an overabundance issue in that area
- Plants found here: ostrich fern, bladdernut, spicebush (a scratch and sniff plant), Virginia bluebell, bloodroot, false rue anemone, moonseed vine, hackberry
- Former meanders of Sand Creek known as bayous *Bayou photo

#10: *Viburnum plicatum*, Japanese Snowball*

- A non-native shrub gone wild – the only location in Ottawa County
- Non-native clonal invasive Daylilies in the creek, established on a log
- Ash would have been prevalent in this area but their presence as a large tree has been severely impacted due to Emerald Ash Borer. Large American Elms also would have been common pre-1960s
- Plants found here: gooseberry, southern fragile fern, snowdrop*, Paw Paw, Virginia Bluebells

About William Martinus

William and his wife dated in Aman park over 50 years ago, and at that time, they could drive through the park, stopping, meandering on foot off-road, recording plants and birds seen along the way.

William annually updates species lists of both flora and fauna in over 50 parks in Ottawa County. While conducting inventories of an area he also takes note of other things he sees such as geological landforms, soils, and tries to research the history as well. Knowledge of the local geology helps in understanding why certain plant communities occur in a given area. He has documented hundreds of new plant species in Ottawa County via collecting specimens and vouchering them to the University of Michigan Herbarium. He has also documented over 20 plant species new to Michigan,

all but one non-native. Most of the 700 Ottawa County plant species were collected well over 50 years ago—many in the 1800s—and should be recollected to include current scientific data. William also said that it is important to take inventory of an area before a master plan is formulated or in creating a restoration plan if needed.

William has documented—via collecting specimens—sixteen Endangered, Threatened, or Special Concern plant species from Ottawa County. He has also collected and documented a new native slug species for Michigan: *Philomycus togatus* (from Port Sheldon Natural Area).

William has conducted initial field work for the vegetative community-mapping of Sleeping Bear Dunes and Cuyahoga National Parks.

He has completed official Natural Features Inventories for the following parks and preserves in Ottawa County: North Ottawa Dunes, Kitchel Dunes Preserve, Palomita Preserve, Grose Park, Eastmanville Bayou, Rosy Mound, Port Sheldon Natural Area, Hiawatha Forest, Upper Macatawa, Crockery Creek Open Space, Stu Visser Trails, De Graaf Nature Center, Hemlock Crossing, and is currently working on a NFI at the new Ottawa Sands property (Ottawa County Parks).

About Julia Core and Rebecca Marquardt

Julia Corr, is a recent graduate of Grand Valley State University where she majored in Natural Resources Management and minored in Biology. Recent work includes development of adaptive restoration and management plans for the natural communtities of the Wittenbach Wege Center in Lowell.

Rebecca Marquardt, is co-Chair of the Program Committee of Wild Ones River City Chapter, owner of Revery and a licensed landscape architect focused on regenerative design that is based in local ecologies and green infrastructure.

SOURCES:

Information provided by Mary Jane Dockery, renown founder of Blandford Nature Center; and Joan Meyer, a MSUE Master Naturalist who has made it her personal mission to save the wildflowers at Aman Park by removing garlic mustard at Aman Park for 25 years and Melanie Manion, Ottawa County Parks

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