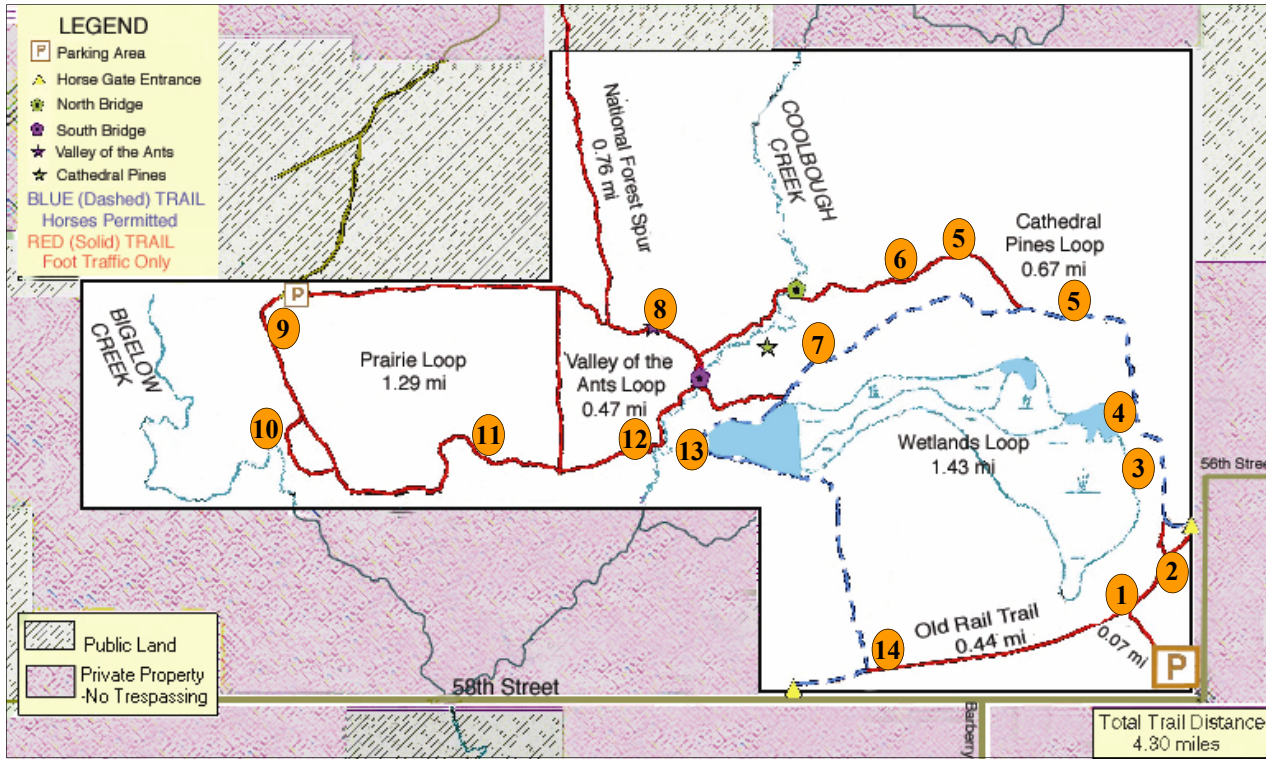


The Coolbough Natural Areas Self-Guided Tour



1 Ant Mounds: Ants created these large mounds using their mandibles to dig and mix the sandy soil with their saliva to create hundreds of corridors and ventilation passageways. These mounds or ‘ant nests’ can absorb up to three times more sunshine warmth in the morning and evening than flat ground of the same size. This extra warmth is very important to keeping the ants’ eggs, larvae and pupae alive.

2 Savanna Restoration: This once fire-suppressed stand of white oak and white pine, has been trimmed, thinned and treated with fire in order to begin bringing it back to its natural state as an open Oak Savanna. Please see the back of this brochure for more information on this rare forest-type.

3 Homestead: Please watch your step when you are around the old homestead. There are walls and holes left by those who lived here many years ago. As you walk up the hill to the north of these foundations, look to your right and left for a large

population of **Opuntia cactus**, a native prairie plant that blooms with bright yellow flowers each summer.

4 Wetland: This large natural wetland provides an excellent habitat for herons, sandhill cranes, song birds and the State-threatened red-shouldered hawk. The continuous expanse of mature forest that is part of the Coolbough Natural Areas and surrounding U.S. Forest Service land creates an ideal habitat for a variety of bird species. Try to spot the State-threatened red-shouldered hawk in the summer by listening for its distinctive call, a rapidly repeated “kee-yer”.



5 Prairie Restoration in Progress: The cut stumps you see before you were once invasive Scotch pine planted here long ago. By opening up the forest canopy, light can now reach the soil and allow seeds that have remained dormant for years to grow and restore this area back into native oak savanna.

One of these returning prairie plants is wild blue lupine. This flower is integral to the life cycle of the federally-endangered **Karner blue butterfly**. This delicate butterfly is smaller than an inch in width and survives only in a few population centers in the eastern Midwest. The larvae of this insect feed exclusively on the leaves of blue lupine. The adult butterflies use the plant as a nectar source and a place to lay their eggs.

6 White Pine: This large, branched White pine tree probably once stood in an open Oak Savanna with other scattered White oaks and pines. Lightning struck this tree, causing a split that healed as the branched stem you see before you now. The tree’s crooked stem saved it from being cut down with its neighboring trees when this region was logged in the 1800’s. It has now become the seed source for the thousands of smaller White pines that make up the forest before you.

7 Woodpecker Trees: These pine trees have become a prime development site for the Coolbough’s woodpeckers. The large holes dug in the tree trunks are quite likely created by the Pileated woodpecker, while the smaller have been made by either the Yellow-bellied sapsucker or the **Hairy woodpecker** pictured here.



8 Valley of the Ants: Hard-working red ants created the large ant mound in front of you. This mound is at least as large beneath the soil as it is

above ground, as witnessed by the tree that has been killed by the ants’ underground activities. The chambers, tunnels and air vents created in the soil prevent the tree’s roots from reaching the proper amount of water and nutrients. In order to protect their queen and her young, the ants work very hard day and night to make a large home that is climate-controlled.

9 Ronald O. Kapp Memorial Prairie: The open land that stretches before you is a remnant of the prairies that used to dot much of southwest Michigan. Through a system of periodic trimming and controlled burning, this open prairie remnant is becoming a healthy prairie like it once was. Warm season grasses, such as big and **little bluestem** (pictured), can be found in bunches throughout this prairie. These grasses grow in the summer after the Spring’s cool season grasses, have begun to yellow and die. The succulent green shoots provide an excellent late summer food source for turkey and white-tailed deer.



10 Bigelow Creek: This creek is the first main tributary that joins the Muskegon River downstream of the Hardy Dam. Its healthy, cool water provides an excellent habitat for brown and brook trout. Additionally, this creek provides an excellent habitat for a variety of turtle species, including the **wood turtle**, pictured on the left. This terrestrial reptile feeds on earthworms, beetle larvae and vegetation found inside its small territory. The sandy banks of Bigelow Creek, provide great places for the turtles to dig the nests where they lay their eggs. Please stay off the bank so as not to disturb the turtle nests.





Dr. Paul Kosnik

11 Ephemeral Wetlands: Wet areas that are not filled with water year-round, called ephemeral wetlands, are very important to many species of

plants and animals that require wet conditions, but cannot survive in continually ponded environments. Many of these species are disappearing because of wetland destruction, especially because in dry years these periodically wet areas aren't always recognized as the wetlands they are. The Coolbough's ephemeral wetlands and adjacent wet woods provide an exceptional habitat for a variety of salamanders, including the common red-backed salamander and the less-common **blue-spotted salamander** pictured here. These amphibians provide an important service to plants by breaking up the soil, thereby creating greater soil ventilation and mixing nutrients for better accessibility for plant roots.

12 Coolbough Creek: This meandering creek runs through the middle of the Coolbough Natural Areas and joins Bigelow creek before it enters the Muskegon River. Look for a variety of fern species, White pines, irises, columbine, and wood anemones in the spring and summer near the creek's banks.

13 Wetland: This wetland contains blue-gill and perch, making it a great fishing spot for Great Blue Herons. These pond-like areas of open water vary from year to year based on precipitation. The well-vegetated shore is an excellent habitat for many wetland-loving birds, such as the red-winged black bird pictured on the right.



Jim Bailey

14 Invasive Species: There is a variety of wildflowers and shrubs along the trail of the Coolbough. Some of them are native, and others are not. Non-native plants often have no natural predators to keep their populations balanced. They can become weedy and invasive, taking over our natural areas and upset the natural system. There are a few invasive plants at the Coolbough to watch out for. One of the most pervasive is **spotted knapweed** (as pictured), which takes over many of the open fields that should be occupied by native prairie wildflowers. This weedy species exudes a chemical in its roots that prevents other plant species from growing near it. Other invasive species that are steadily being removed by the hands of dedicated volunteers include St. John's Wort, bouncing bet (soapwort), leafy surge and autumn olive.



Doug Powless

The Rare Oak-Pine Savanna Ecosystem

The Coolbough Natural Areas contains remnants of rare Oak Savannas. This forest-type is also often called a dry sand prairie, oak-white pine barrens, or oak-pine forest based on whether grass or trees are dominant.

The Oak Savanna ecosystem is comprised of native grasses, open forests and few shrubs. They occur on sandy, nutrient-poor soils and are adapted to periodic fires. White pine and White oak are often the dominant trees. They stretch their branches wide over the open grassland where other trees, that are not fire-adapted, cannot survive. Wildflowers abound between grasses and sedges, providing food and habitat for a variety of animals, including deer, turkey, butterflies and a multitude of specialized insects that cannot live outside this ecosystem.

When settlers first arrived in Michigan in the early 1800's, the government surveyors noted that about 2.5% of the entire State was covered in Oak Savannas. This is no longer the case, as decades of fire suppression, as well as increased development and disturbance, has caused the Oak Savannas of Michigan to disappear. When new plants, such as Scotch pines, are introduced into the Oak Savannas and fires are suppressed, the ecosystem becomes unbalanced and degraded.

The Coolbough Natural Areas is a rare place where the Oak Savanna still exists and is presently being restored to its former high-quality natural state.

As you walk along the trails of the Coolbough, look for signs of Oak Savanna restoration occurring, which include the removal non-native plants, as well as the re-introduction of fire.

Brochure created and designed by: Rhoda deZoete of the Land Conservancy of West Michigan
'Keeping Nature Nearby'
www.naturenearby.org



The Coolbough Natural Areas FIELD GUIDE



A Brooks Township Nature Preserve

490 Quarterline Rd
PO Box 625
Newaygo, MI 49337
(231) 652-6763

www.brookstownship.org

Managed By:
The Coolbough Natural Areas Environmental Commission
and



www.nature.org/michigan

WHAT YOU NEED TO KNOW FOR A SAFE VISIT: *The Coolbough Natural Areas is being managed to promote the long-term survival of native plants and forests. In order to help ensure that this special place will be protected and enjoyed by all, please follow these guidelines when visiting:*

Permitted activities: *Hunting and fishing (in compliance with all applicable State rules and regulations).
Hiking, wildlife watching and educational activities
Horseback riding on the designated trail.*

Activities not permitted: *Baiting, operation of motor vehicles of any kind, biking, camping, littering, collection of plants and animals, construction and use of permanent blinds or tree stands.*

Safety considerations: *Wear suitable footwear and dress appropriately .
There are no restroom facilities.
Hunting is permitted from Sept. 15 - Jan. 1, so take precautions by wearing orange if you decide to visit during this time.
Please be respectful of the private lands surrounding the preserve (see map).*