Delaware Township Environmental Commission - About Us

In 1968 the State Legislature passed a law establishing Environmental Commissions for the "protection, development, and use of natural resources, including water resources included within the territorial limits of Delaware Township." In 1972, the law was amended to expand the commissions' responsibilities to other areas of environmental concern, such as pollution prevention and control, solid waste management, noise control, and environmental appearance.

Environmental Commissions are also mandated to develop and maintain a local database of the town's natural resources, review and comment on governmental actions, promote regional and long-range planning, and inform the public through educational programs, publications, and meetings.

The Environmental Commission's responsibility is to advise relevant township authorities regarding measures designed to enhance the quality of life of its residents by protecting the quality of their environment.

As part of its educational mandate, the Commission has established a goal of promoting the development of hiking trails on preserved lands within the Township.

Additional research reports conducted for the development of this brochure are available on www.delawaretwpnj.org, the Delaware Township web site.

WAIVER STATEMENT:

The Delaware Township Environmental Commission and the individual property owners involved will not be liable for personal injury or property loss of anyone using the trails.

Delaware Township Environmental Commission
PO Box 500 • Sergeantsville, NJ 08557 • (609) 397-3240 • Fax: (609) 397-4893

Delaware Township White Oak Trail

Developed and Maintained by:

The Delaware Township Environmental Commission

570 Rosemont-Ringoes Road
PO Box 500 • Sergeantsville, NJ 08557
(609) 397-3240 • Fax: (609) 397-4893

www.delawaretwpnj.org

With funding from the Federal Highway Administration's National Trails Program through the New Jersey Department of Environmental Protection, on property owned by the New Jersey Department of Environmental Protection, and administered by the New Jersey State Park Service

Introduction

Delaware Township's White Oak Trail is a .9 mile hiking trail through approximately 140 acres of preserved woodlands. The land was purchased by the N.J. Department of Environmental Protection, Division of Parks and Forestry, from the Schuck Family of Delaware Township. The land is administered by the New Jersey State Park Service. The trail, named for the prominent white oak tree that represents the final stage of woodland evolution, is comprised of two sections connected by a short walk along Quarry Road:

- The southern section begins on the northbound side of Route 29, about 500 feet south of the entrance to Bulls Island State Park, and proceeds east and north to Quarry Road.
- The northern section begins on Quarry Road and proceeds north and east to the intersection of Federal Twist and Raven Rock-Rosemont Road.

The rustic trail is an easy hike rising approximately 200 feet through woodlands. The trail provides an opportunity to examine evolving woodlands, ranging from mature to those repopulating abandoned farm fields. Visible are native and non-native species of trees, seasonal vegetation, birds, and insects. Also visible are remnants of past human labors, eventually to be absorbed by nature.

Welcome to the Trail

The trail is maintained by the Delaware Township Environmental Commission with help from volunteers. Visitors are welcome from dawn to dusk. We ask that, in appreciation of the land and in the consideration of others, you adhere to the following:

- Park only in areas designated on the trail map - parking on the road is prohibited
- Stay on the marked trail; walk at your leisure
- Do Not Litter, "Carry In/Carry Out" Trash
- Disturbance or removal of vegetation is prohibited
- Horses or motorized vehicles are prohibited
- Mountain bike are permitted, however bicyclists are advised that portions of the trail are steep, wet, or may require bicycles to be carried
- Pets must be leashed and under control at all times - Carry Out pet waste
- Smoking and creating fires is prohibited
- Camping and picnicking is prohibited (you may do so at Bull's Island)
- No restrooms are provided on the trail (please use Bull's Island facilities)
- Minimize noise in consideration of the property's neighbors

Warnings

This is a rustic trail and, although periodically maintained, contains hazards normally found in wooded areas. Wet and/or frozen conditions will produce muddy, icy, and slippery walking surfaces. Gullies created by natural erosion have been bridged, but please be careful crossing. During the warm season, be aware of gnats and mosquitoes.

Connecting Trails

Other trails in the vicinity include:

- **Mimi's Trail and the Zega-Lockatong Preserve** - Owned by the Hunterdon Land Trust Alliance, this Preserve, totaling 70 acres, is located along the Lockatong Creek in Delaware Township. It contains Mimi's Trail, a one mile hiking trail that links with the adjoining Wescott Preserve. The Zega-Lockatong Preserve is primarily wooded with a small, open field along Raven-Rock Road.

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Directions: From Bull's Island Recreation Area, take Route 29 south for .5 miles. Turn left at Federal Twist Road and follow for .6 miles. Take your next right onto Rosemont-Raven Rock Road and proceed for .3 miles. The Preserve may be accessed from a small gravel parking lot on the left (parking also available for the Delaware Township - White Oak Trail), just before the historic iron truss bridge.

- **Wescott Preserve** - A Hunterdon County 200 acre park, Wescott Preserve offers a ½ mile loop trail with a view of diverse habitat and a wonderful opportunity to view wildlife. It is one of the few places in the county that exhibits a stately stand of Hemlock Trees. A meadow provides shelter and food for grassland species including Eastern Bluebirds and American Kestrels. The Lockatong Creek, a native trout stream, provides an excellent draw for wildlife. Crayfish and other aquatic invertebrates can be found there.

  Directions: From Bull's Island Recreation Area, take Route 29 south for .5 miles. Turn left at Federal Twist Road and follow for .6 miles. Take your next right onto Rosemont-Raven Rock Road and proceed for 1.2 miles. The Preserve is located on the left.

- **Ralph Peter's Trail** - The 1½ mile trail, jointly owned by Hunterdon County and the Hunterdon Land Trust Alliance, is located on an undeveloped 102-acre property consisting of mature woodlands and open meadows along the Lockatong Creek in Delaware Township. The property is directly adjacent to Wescott Preserve and connects through to Mimi's Trail on the Zega Lockatong Preserve, via the Wescott Preserve.

  Directions: From Bull's Island Recreation Area, take Route 29 south for .5 miles. Turn left at Federal Twist Road and follow for 1.3 miles. Take a right onto Strimples Mill Road and proceed for .3 miles. The Preserve parking is located on the right at the sharp bend in the road.

Wildlife

With the changes in vegetation brought on by forest succession, so follows the kind and abundance of wildlife. Wildlife foraging or hunting in wide open fields of grass, shrubs, or sapling trees may not have the same food source available in mature woodlands. With relatively small areas of emerging and mature forest occurring so close to each other, as well as so close to the Delaware River, the state property provides habitat for a variety of wildlife.

Typical evidence or sightings of mammals will include gray squirrels, white-tailed Deer, foxes, opossums, skunks, and raccoons. With luck, one may even see a Southern Flying Squirrel, which is typically nocturnal.

Reptiles and amphibians could include the Eastern Box Turtle, the Black Rat Snake, Eastern Milk Snake, and Eastern Garter Snake. Northern water snakes may be found in the wet areas closer to the Delaware River. Sightings of amphibians are typically in springtime. Redback Salamanders should be abundant. Listen for the spring calls of American Toads, Wood Frogs, Spring Peepers, and Gray Tree Frogs.

Due to its proximity to the Delaware River, this preserve can host many spring migratory birds. In fact, Bull's Island Recreation Area provides a checklist of birds that includes thirty-two of the thirty-four species routinely reported for the state. Other sightings include flycatchers, wrens, and sparrow families. Not all of these migrants leave - some become summer breeding residents. Breeding members of the thrush family include the Wood Thrush and the Veery. Other nesting songbirds include the Scarlet Tanager, Northern Oriole, and Yellow-Billed Cuckoo.

This forest is also host to many year round residents including most types of woodpeckers commonly found in New Jersey: Downy, Hairy, Red-Bellied, Northern Flicker, Yellow-Bellied Sapsucker, and Pileated. Other year round inhabitants include Black-Capped Chickadees, Tufted Titmice, Eastern Bluebirds, White-Breasted Nuthatches, Cardinals, Blue Jays, Goldfinches, and American robins and crows.

With fall comes the southern migration, best known for hawks and other raptors.

In recent years, there have been pairs of nesting eagles found along the river between Frenchtown and Lambertville. While most sightings are near the river, it would not be impossible to look up and see a soaring eagle. Year round sighting of other raptors can include Red Tail Hawks, Cooper's Hawks, Great Horned Owls, and Eastern Screech Owls.

Cultural History

The earliest known inhabitants of the region were the native Lenape of the Unami speaking clans, beginning their migration from Canada ~12,000 years ago and settling in the mid-Atlantic region ~3000 years ago. The Lenape were semi-nomadic, living in villages where they would plant during the spring and harvest during the fall. During the summer, the tribes would migrate to bay and shore areas for the seasonal catch, establishing trails along the Delaware River. After the summer, they would return to their village for the fall harvest and spend the winter fishing and hunting. A popular local hunting and fishing spot was the Lockatong Creek (a Lenape name), which passes just south of what is now Raven Rock. Each clan had assigned lands for their use. As the clans depleted their land, they would move on to other sites, allowing nature to replenish their used locations. Not much is known as to how this land came under ownership of the Europeans, however it was likely bought cheap or taken over after many wars between the Native Americans and Dutch and British colonists.

The earliest deeded history of the area dates to the early 1700s. The trail property had been part of a 650 acre tract purchased in 1712 by Peter Fretwell. This tract included land on either side of Quarry and Federal Twist Roads, just north of the current state property boundary and east to the Lockatong Creek.

Through the early 1800s, the settlement now known as Raven Rock was called Saxtonville, a farming community supported by a mill and a tavern. The area south of the trail borders farmland owned by the Johnson family. George Johnson, once part owner of the Stockton Inn with his brother Asher, sold his shares to Asher after their father's death in 1828, and returned to the homestead on Federal Twist Road.

The area north of the trail became part of the Gilbert Van Camp farm through the late 1800s. A substantial portion of this farm was retained as woodland, providing the timber for heating, cooking, building, and fencing. Dry-laid stone walls provided the border for much of the property, separating the woodland and fields.

The farming nature of Saxtonville evolved with the industrialization of the mid-1800s. A sign of impending change was the expansion of the Saxtonville Tavern, with additions circa 1820 and 1835. With the opening of the Delaware and Raritan feeder canal in 1832, a new public waterway moved people and cargo down the 23 miles of canal to Trenton, enabling local quarries to transport blocks of sandstone for construction projects. By 1854, the Belvedere Delaware (later Pennsylvania) Railroad had stops at Bull's Island and Stockton. By 1860, the area evolved into more than a farmland community, consisting of a quarry, a railroad station, a waterway stop, two stores, two inns, a tavern, a covered bridge to Lumberville, PA, a post office, 12 dwellings, and a new name – Raven Rock.

Although the village flourished through the remaining 1800s and into the 1900s, early 20th century developments such as automobiles and highways made the canals and railroads obsolete, while concrete reduced the need for the sandstone blocks. Today, visitors to Bull's Island Recreation Area enjoy

camping, boating, wading, and fishing. Raven Rock continues to evolve – currently for residential and recreational use.

Natural History - Geology

The geologic formations that most influence the current landscape can be traced back to the Triassic Period of the Mesozoic Era, 250-200 million years ago. This was the time of the Pangaea, a "supercontinent" believed to comprise all of the Earth's land masses joined together. At the beginning of the Triassic, what is now New Jersey was joined with what is now northwest Africa, somewhere on the Earth's equator. During this 180 million year era, it is believed that continued movement of the Earth's plates separated the single land mass into the present day continents. As the lands slowly tore apart, the major rift filled with water (now the Atlantic Ocean). Partial or failed rifts became basins, collecting sediment and run off from the adjoining faults. One of those was the Newark Basin, running along the Ramapo and Hudson faults from New York into Pennsylvania.

During the Triassic period, sediment collected into the basin forming a layer now referred to as the Stockton Formation. The sediments of this formation came from the southeast portion of the basin and formed a light gray to light brown, medium to coarse grained sandstone and sandy shale. Due to this mix of sediment, aquifers within this formation are considered some of the best in the area. During the late Triassic period, the Lockatong Formation developed from sediments of a lake that had flooded a portion of the Newark Basin. This formation has a light to dark gray, greenish-gray siltstone, claystone, and shale. Both formations interfinger each other, likely due to lake edge shifting. The southern section of the trail has Stockton Sandstone near the surface while the northern section has rock of the Lockatong Formation. The stone forming the walls on the northern section contain argillite (rock formed by clay) of that formation. Argillite is also known locally as "jingle stone." Since land and water based animal fossils have been discovered within the Stockton Formation, it is likely that dinosaurs did roam this land.

Natural History – Soils and Topography

With sediments and neighboring mountain erosion filling the basin, the Appalachian Piedmont was formed. The Piedmont plateau runs along the Appalachian from New Jersey's Highlands to Alabama. The soils along the trail include Penn Shaly Silt Loam and Klinesville Silt Loam sitting over relatively shallow bedrock. These soils, generally clay-like and erosive, are not very fertile or well suited to farming.

Over time, the Delaware River carved a gorge through the Newark Basin. The river, and its tributaries, provided an optimum living environment, especially for the Lenape. With small settlements, seasonal migration, and non -animal assisted farming techniques, these inhabitants likely had little impact on the environment. The European settlers built permanent settlements, utilizing animals for clearing forested areas to expand their agriculture and harvest wood for building. Over the years, the clearing and planting,

word dogwood comes from dagwood, from the use of the slender stems of very hard wood for making 'dags' (daggers, skewers), also used for loom shuttles, arrows, and tool handles. Wild trees produce mostly white flowers in April or May, but some produce pink and red blooms, , as well as red berries in the fall.

Hickory – *Carya spp.* is tree of very hard, stiff, dense and shock resistant wood. It has been used for tool handles, bows, wheel spokes, carts, drumsticks, lacrosse stick handles, golf club shafts, and punitive switch (hickory stick in schools). Hickory wood is also a preferred type of wood for smoke curing meats and barbeque.

Multiflora Rose - *Rosa multiflora* is a species of rose native to eastern Asia, introduced to North America as a soil conservation measure and natural hedge. It is a scrambling shrub climbing over other plants to a height of 10-15 feet. In eastern North America, it is generally considered an invasive species.

Oriental Bittersweet - *Celastrus orbiculatus*, a thin woody vine native to East Asia, was also introduced into North America to help control soil erosion, and is considered to be an invasive species in eastern North America. When grown near a tree or shrub, the vines twist themselves around the trunk and have been known to strangle the host tree to death.

Tulip Poplar - *Liriodendron tulipifera* (American tulip or yellow poplar), is one of the largest of the native trees of the eastern United States, grows to the height of 190 feet and a trunk diameter of 10 feet. It prefers rich and moist soil, and is fast-growing with strong wood, making it a very valuable timber tree.

Virginia Pine - *Pinus virginiana* is a medium-sized tree often found on poorer soils from Long Island south through the Appalachian Mountains. It normally grows to 60 feet with a trunk diameter up to 18 inches, prefers well-drained loam or clay, and is typically found where soil has eroded. The normal life span is 65 to 90 years. This pine is used for reforesting, Christmas trees, wood pulp, and lumber.

Trees and Shrubs

White Oak - *Quercus alba* is one of the pre-eminent hardwoods of eastern North America. It is known to live over 600 years. A light gray in color, it can grow over 100 feet tall and just as wide. Being relatively rot resistant, it has a closed cellular structure called tyloses (unlike red oak), which does not allow water to pass. It is used for barrels (wine and whiskey) and outdoor furniture.

Red/Black Oak - *Quercus rubra/velutina* is a native of the northeastern United States and southeast Canada. It grows in good soil that is slightly acidic, up to 140 feet, with a trunk diameter of up to 40 inches. This oak species may live up to 500 years and is one of the most important oaks for timber production in North America.

Pin Oak - *Quercus palustris (of swamp),* also known as the Spanish Oak, is a medium-sized oak growing to 70 feet, with a trunk diameter up to 36 inches, usually living 90 to 120 years. Unlike other oaks, it is a wetland tolerant tree, develops a shallow root system, and grows in acidic soil at low altitudes.

American Holly - *Ilex opaca* typically grows as an understory tree in forests, ranging from southern coastal Massachusetts to the Gulf states. It reaches its greatest size on the bottomlands of southern Arkansas and eastern Texas. The branches are short and slender, with thick, fleshy roots. It will grow in both dry and swampy soil, but grows slowly. The attractiveness of its foliage is American Holly's principal value, whether as a forest tree, planted ornamental, or Christmas decoration. The development of holly orchards and the education of landowners have lessened the exploitation of wild hollies. The Holly is not native to the area and has spread from the seeds of ornamental plantings.

Beech – *Fagus grandifolia* (American Beech*)* is a shade tolerant tree growing to 100 feet tall, with smooth, silvery-gray bark. Native of eastern North America, it is commonly found in forests in the final stage of succession. Although sometimes found in pure stands, it is more often associated with Sugar Maple, Yellow Birch, and Eastern Hemlock, typically on moist, well drained soil.

Black Locust - *Robinia pseudoacacia* is of the pea family, native to the southeastern United States, but has been planted elsewhere in temperate North America. With a trunk diameter up to 36 inches and heights of 50 feet, it has thick, deeply furrowed, blackish bark. The wood is extremely hard, resistant to rot, and long lasting, making it prized for fence posts and small watercraft.

Cedar – *Juniperus virginiana* (Eastern Redcedar) is actually a juniper and not a true cedar. With a trunk diameter up to 36 inches and heights of 60 feet, it is one of the first trees to repopulate cleared, eroded, or otherwise damaged land. It can live for 200 years. This rot resistant and moth repelling wood is used for fence posts and closet liners. The berries are used to flavor gin and as a kidney medicine.

Dogwood – *Cornus florida* is a deciduous tree growing to 30 feet high. The

especially on sloped terrain, has allowed erosion to take place. This can be seen by the gullies that traverse the trail, particularly on the northern section. Coupled with the constant plowing, the once fertile soil in the farm area has suffered great damage. This can be seen on the northern section of the trail where a stone wall delineates what was farmland and woodland. The woodland soils have relatively deeper topsoil, good drainage and support a mix of oak species. In comparison, the farmland soil has relatively little or no topsoil, poor drainage, and now supports trees more tolerant of poorly drained soil, such as red maple and pin oak. It will take hundreds of years for nature to correct the damage.

Quarry operations also impacted the environment, changing naturally sloping hills to sheer cliffs where the sandstone was removed. The quarry along Quarry Road was the largest in the area, harvesting rock to below river level, resulting in the flooding of the base of the quarry.

As farming ceased on the property, over the years the woodland evolution began anew. The initial woodland growth was dominated by dogwood and red cedar. The renewed forest also included the large tulip poplars that have broken through the thicket of low growing trees. Black Locust, a decay resistant tree possibly introduced into this area by farmers, is reaching the end of its natural life span and can be seen in a blown down area along the southern section of the trail. Some of the dead locusts have been milled for use in building the bridges for the trail. The northern section of the trail is evolving with mid-succession growth of oak and hickory saplings emerging within an understory of fading Virginia Pine. It will not be easy for these saplings to emerge as they will need to contend with the non-native brambles and vines, specifically the Oriental Bittersweet, which cling and prevent their development and pull down many trees. This contrast of controlled understory in mature woodland, versus wild growth in uncovered woodland, can be seen in the southern section of the trail. Here, the eastern side is fairly dense, with an understory sufficiently shaded to control the non-native Multi-flora Rose and Bittersweet. On the western side of this trail section, the loss of Virginia Pine has opened the woodland, allowing the undesired non-native vegetation to control the site and prevent the regeneration of native trees and shrubs.

On the upper northern section, late succession growth of beech is emerging through the mid-succession oak and hickory. These will eventually form the final stage of woodland, maintaining an open understory and replenishing the soil.

A substantial loss of oak occurred during the gypsy moth infestation from 1978 to 1982. A commercial harvest of timber in 1990 removed over 400 trees from the trail property. This harvest was part of a long term forest management plan which also included the removal of poorly formed trees for use as firewood and an attempt at “tubing” of seedling trees to protect them from the deer population.

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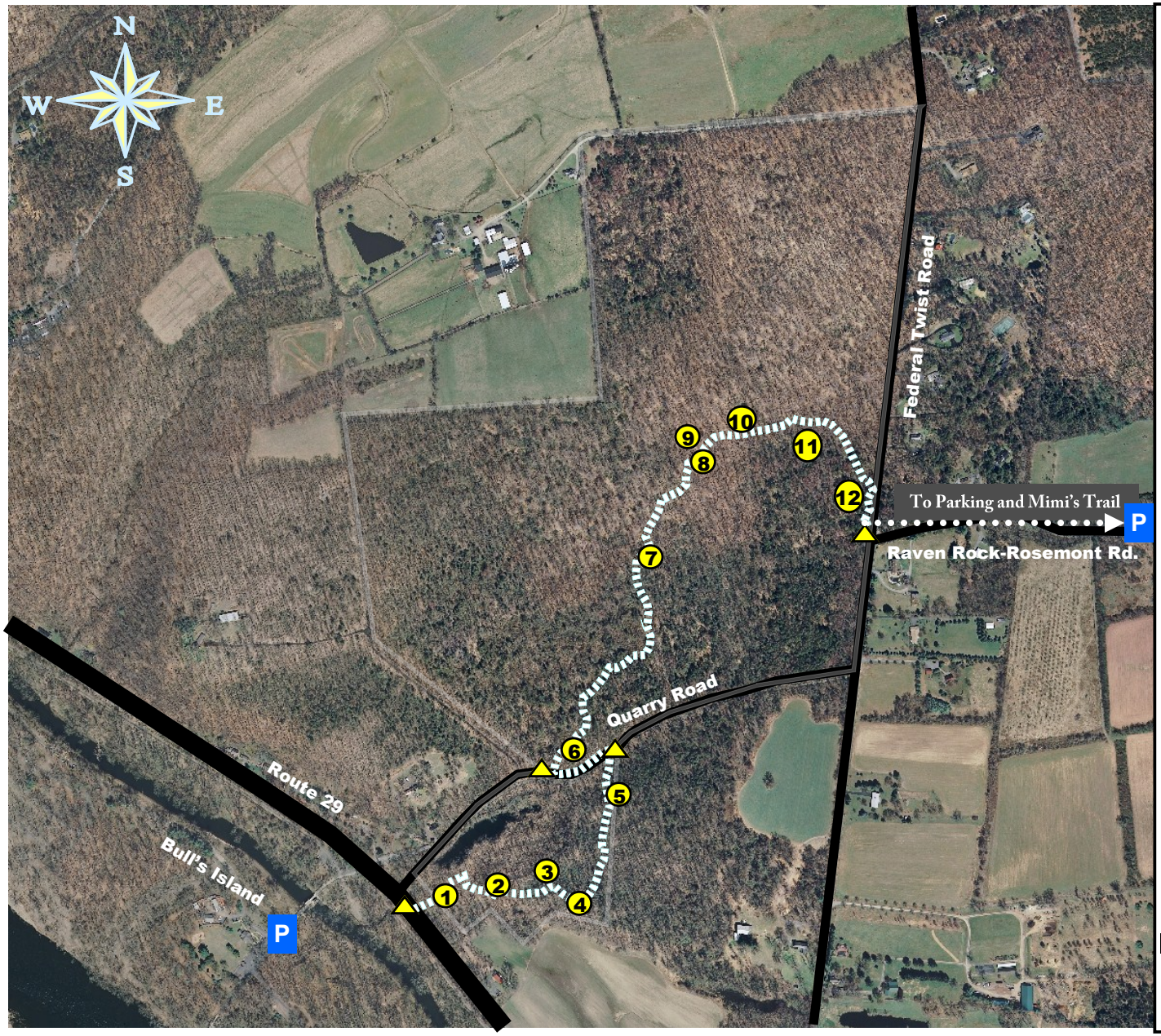

Delaware Township White Oak Trail

Points of Interest

1. Large Sycamore
2. Large White Oak
3. Black Locust Stand
4. Large Tulip Poplar
5. Dogwood and Cedar Stand
6. Oak-Hickory Regeneration
7. Stone Wall
8. Springhouse
9. Emergent Beech Stand
10. 1991 Harvest Stump
11. Stone wall - old Federal Twist Road
12. American Holly

Parking:

- P Bull's Island Recreation Area
- P Zega-Lockatong Preserve on Rosemont-Raven Rock Road (see connecting trails)

Road crossing

Trail connection along road

Trail Marker

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 Feet

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