

The David Weld Sanctuary
of
The Nature Conservancy
Village of Nissequogue, Smithtown

Self-Guided Science Walk
by

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For a printable file to produce a double sided folded brochure on 8.5" x 14" paper for this Science Walk [link here.](#)



Fig. 1 Map of The David Weld Sanctuary
(Thumbnail. Click on the map to get a larger image. Use landscape mode to print the map.)

Location:

From North Country Road (25A) in St. James go northwest on Moriches road about 3 miles to Horse Race Lane (an extension of Moriches Road). Go about one-half mile north on Horse Race Lane to the T with Boney Lane. Go left (west). Watch for *The Nature Conservancy* sign on the right in a short distance, less than a quarter of a mile. If you arrive at Smithtown Short Beach, you have gone too far.

Introduction:

As you stroll along this Self Guided Science-Walk, you will come upon nine discovery stations that are numbered on white diamonds. This is a deciduous forest in which most of the trees lose their leaves each year. The amount of water in the soil plays an important role in determining which type of forest develops. This forest is developed on glacial deposits that are overlain by a layer of wind blown silt known as loess. Silt produces moist, well-drained soils needed for deciduous forests. In contrast the pine barrens of Long Island are generally developed on sandy soil, which drain rapidly and do not retain moisture as well.

You may wish to visit the [web site of Trudy Hyde](#) who did a study of the types of trees and other plants in this forest. [Linda Selvaggio](#) studied the types of [sedimentary](#) and [structural](#) features in the cliff faces at this sanctuary. From the parking lot head north toward the beach. Continue to the edge of the forest.

1. Succession:

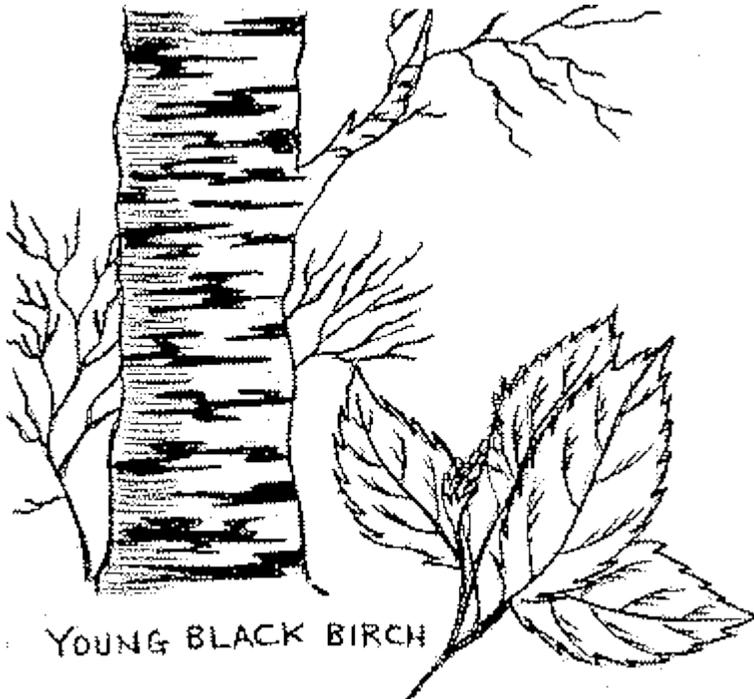
The gradual change in composition of a plant community is known as ecological succession. We are at the border between the field and the forest. Here the forest most likely began as an open field. The fastest growing and most aggressive plants begin the process of succession. Eventually larger slower growing plants compete for this space and win due to their slow but steady maturity rates, ultimately robbing smaller, shade-intolerant species of their sunlight. Here, the forest is extending its borders into the field. The dominant tree leading this transformation is mulberry. Can you see the open fields? If they stopped cutting the plants in the field, will the forest eventually dominate the field?

Continue north along the trail for a couple of hundred feet. Take the trail going to the west or to your left. Follow the trail to station two. [Link to map](#)

2. Woodland Swamp:

At this site you can see three separate environments: the forest, the woodland swamp and the marsh. Wetlands such as the swamp and marsh form when the land surface intersects the underlying groundwater table. A swamp is a wetland that contains trees. A marsh is a wetland that is dominated by reeds and other grasses. If you look past the swamp, you will see a community of reeds and tall grasses. Note where the forest and swamp meet and where the swamp and marsh meet.

At stop 5 when you are along the shore, you may wish to look for fresh-water peat and the remains of cedar trees along the shore-line indicating that the marsh-swamp environment extended to where the shoreline is currently located.



Return to the trail to the beach and continue going north.

[Link to map](#)

3. Black Birch Trees:

A common tree in this forest is the black birch. The trunk of a young black birch is smooth, shiny, and nearly black, and is streaked with pale, horizontal, corky lines. Upon maturity, these trees develop a scaly plated bark. This is one of the most common birches on Long Island. They are plentiful in this environment. Break off a branch or leaf from this tree or a smaller version nearby. What does its smell remind you of? Black birch has been used to flavor candy and chewing gum. Can you recognize any young black birches?

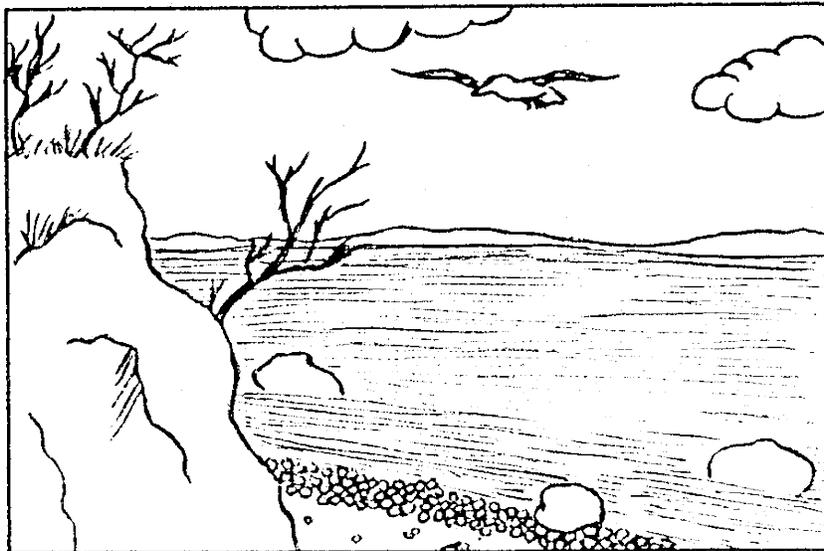
Continue along the trail to the beach. Do not take the trail to the east (your right). You will be returning on that trail at the end of the walk. [Link to map](#)

4. Tulip Tree:

Just beyond this marker is a tulip tree. You can identify these trees by their long, straight trunk and grayish, deeply fis-

sured bark. These trees grow up to 150 feet tall, making them one of the tallest trees on Long Island. This species is one of the most primitive flowering plants on earth today. Because of their long, straight trunks, these trees were sought after by shipbuilders for masts on the great vessels. Although its leaves resemble the shape of a tulip, the name is actually derived from the fact that their flowers resemble the tulip flower. The wood is yellow-poplar. Can you see how this tree with its slow, steady growth would rob smaller plants of sunlight?

Continue on the trail to the beach. Proceed north past the old cabin site and take the short footpath (to the left) down to the shore. [Link to map](#)



5. Coastal Landmarks and Geologic Features:

Nearly fifteen miles of water separates the north shore of Long Island from Connecticut. On clear days you can see the Connecticut shoreline across the sound. Far to the west, you may see the outline of Eaton's Neck and perhaps the 1798 lighthouse. South of Eaton's Neck is LIPA'S powerplant in Northport. The nearest bluffs to the west belong to Kings Park and below them is the mouth of the Nissequogue River. To the east lies Crane's Neck Point and to its south is Stony Brook Harbor.

Heading west, the marsh is on your left. In the intertidal zone, the remains of freshwater peat and old tree stumps and roots can be seen at low tide. These are evidence that the swamp and marsh extended further to the north when sea level was lower and the cliff faces were further to the north. Sea level is presently rising at a rate of about one foot per century. As sea level rises the mouth of the freshwater marsh moves continually southward.

As you proceed to the east, you can see many large boulders exposed along the shore especially at periods of low tide. These boulders were originally in the till near the top of the bluff. As the bluff eroded with the rise in sea level, the boulders fell to the shore. These boulders were carried here by a glacier and are called erratics. As you walk along the bluffs, notice the burrow holes in the top two or so feet of sediment. These burrows were created by bank swallows that patrol the coastline. They have burrowed into a layer of loess, which is unconsolidated, wind blown silt, easy to burrow into. Immediately below the loess is the till which is not easy for the swallows to burrow into. Till is made up of a mixture of clay, silt, sand, gravel, cobbles and boulders. The till which is commonly about three feet thick was originally developed at the base of a glacier. The till was left behind when the glacier melted. The wind deposited loess was deposited on the till after the glacier left. Chatter marks can be found on ellipsoidal, white quartz cobbles. The marks are faint similar to the mark of a fingernail poked into a block of clay. These marks are formed as the cobbles collided with other rocks at the base of a glacier.

Return to the trail take the first trail to the east (your left) only a couple hundred feet or so from the cabin foundation. After about 1200 feet at the T take the trail to the north (your left) go about 100 feet. [Link to map](#)

6. Hickory Trees:

Nearly all trees in this view are pignut hickory. These trees are identified by their dark, gray, smooth bark which is closely fitting and deeply furrowed. Hickory trees, among other hardwood species, exists in this area because of the soil deposition. There is a high abundance of silty soil here and among much of the north shore. Because the forest is well-drained, and silty soil dominates this landscape, hickory trees flourish. These trees produce nuts that are enclosed in an oval husk. Can you find any? While you are here, walk past station six to the bluff edge and look at the beach. The sand and gravel on the beach below is much different from the moist silty forest soil which was developed on the thin layer of wind blown loess which the bank swallows burrow into. The character of the soil would be quite different if it had developed on the till or the underlying sands or clays.

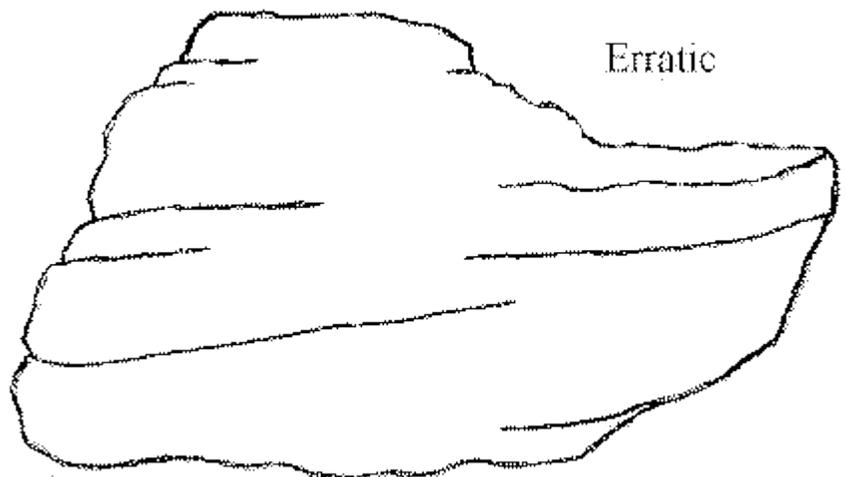
Return to the south on the trail. Continue south past the intersection for about 500 feet to station 7. [Link to map](#)

Station Seven: Erratics

Glaciers are capable of transporting large boulders which are deposited when the ice melts. Such boulders are called erratics, indicating they were derived from a distant source. Boulders are often broken, rounded, and polished during transport. This erratic, however, appears hardly disturbed. Look carefully, can you see the nearly horizontal fractures? Can you see that the blocks in this erratic have only shifted slightly? It is almost miraculous that the glacier could transport this boulder any distance without the blocks separating.

Continue south on the trail, pass the intersection and continue on the Kettle Hole Trail for about one-half mile to the large depression, "The Kettle Hole".

[Link to map](#)



Station Eight: Kettle Hole

You are surrounded by walls because you are standing in a kettle hole. A massive block of ice was buried here. When the ice melted, a pit was left in the sediment. You can visualize how a kettle hole forms by imagining a block of ice put into an empty box. Fill the box with sand covering the ice. When the ice melts the water drains to the bottom of the box and a depression is left in the sand. That depression is a kettle hole. The bottom of the depression could have water in it if the depression intersects the water layer on the bottom of the box.

If the bottom of a kettle hole intersects the water table, it becomes a kettle lake. The water table is the surface where the underlying sediments are saturated with water. This has been proposed for the origin of Lake Ronkonkoma. There are many kettle holes on Long Island. As you can imagine kettle holes come in a wide range of sizes. At this site, the surrounding surface is at an elevation of about 100 feet. The bottom of the kettle hole is at an elevation of about 40 feet. Approximately how deep is this kettle hole (in feet)? When the ice melted, where did the water go?

Return north on the Kettle Hole Trail about one-half mile to the intersecting trail from the west. Take the intersecting trail. [Link to map](#)

Station Nine: Abandoned Stream Channel

As you approach marker nine, you are walking down a steep embankment. This is the south side of an abandoned stream channel. In the summer it may be difficult to see the north side of the channel due to the vegetation. In this area, the channel runs in an east-west direction and it can be followed back to the lowest point in the sanctuary: the swamp. The southern slope is extreme in places, compared to the gradual slope on the north. Can you see the slopes?

Continue on this trail until you reach the trail to the beach. Head south and back to the parking lot. [Link to map](#)