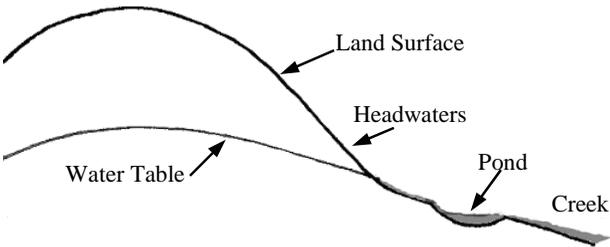


Introduction

Port Jefferson Harbor and Village occupy the site of an ancient valley formed beneath a glacier that occupied this area some 20,000 years ago. The valley walls are clearly evident to the east and west of the village and easily recognized as you travel up or down East and West Broadway. Main street travels along the floor of the valley. The water in the sub-glacial stream was under high pressure and traveled up main street breaking out from the front of the glacier near the Port Jefferson railroad station.

After the glacier melted the harbor was dry. Only as sea level rose did the seawater slowly occupy the harbor beginning some 10,000 years ago. As sea level rose the water table, which is the boundary between the water saturated sandy and gravelly sediments that underlie Port Jefferson, rose also. Where the water table intersected the land surface a stream or wetland developed. In the early 1800's when Port Jefferson



became a ship building community there was a wetland in the bottom of the valley on the south side of the harbor. This is reflected in the original name for Port Jefferson, that is Drowned Meadow.

The Drowned Meadow was developed for ship building and has been greatly modified in the last 200 years. Only a few remnants remain. One of these is the Old Mill Creek. This walk incorporates the signs along the path developed by Port Jefferson Village. Please read the signs at each of the sign stops which are in quotations.

Stop 1) Welcome to Old Mill Creek Walkway.

On this walk we will explore the Old Mill Creek. By the end of the walk we will have explored how the creek has changed over time, how humans have influenced the creek and why the creek exists as it does

today. Our walk will go just a little further than the walk designed by Port Jefferson and will end at the corner of Caroline and Brook.

Stop 2) “What is in a Name?”:

Not only have rivers and creeks been a source of water that provides sustenance to people, animals and crops, rivers and creeks were an important means of travel as well as a source of power. The old map shows what the creek used to look like; notice how close the harbor is to West Broadway. The old map shows what the creek used to look like; notice how close the harbor is to West Broadway. Also, notice how complicated the creek and pond network is. Next, look at the pond near “Jones Street”, Jones Street is now Main Street and that pond is now the mall right behind you.

In fact, much of Port Jefferson has been altered. As you walk along the trail, look for evidence of alteration of the environment or the creek. Also, note the width of the stream and how fast the water flows.

There are thumbnails of old maps of Port Jefferson in the next two columns. By folding the cover over this page the changes in Port Jefferson can be observed. The next column shows the harbor in 1917. The following column shows the harbor in 1873. Reproductions of the historical maps can be viewed at the Mather House Museum.

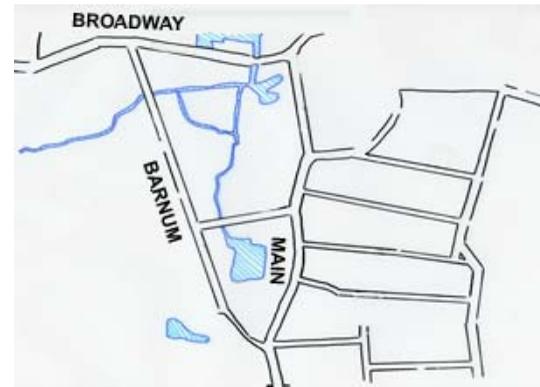
Stop 3) “Home to a Shipyard”

The sign tells us that there used to be a shipyard here when the creek was much larger and deeper and that modern Port Jefferson Harbor was known as Drowned Meadow Bay. The landward side of Drowned Meadow was a tidally controlled marshland with plants tolerant of varying levels of saltwater.

High tide was the only time that ships could be floated from the shipyard to the bay. So, at high tide, the meadow was drowned by saltwater.

This area of the stream is strongly affected by tides. When the tide is high, the stream behaves differently than when the tide is low. During high tides and strong storms, sea water travels upstream. This means that plants growing in this area must be somewhat resistant to saltwater. Usually this area is quite calm and the water appears to barely move at all.

On the 1917 map below: Note how the creek is much longer and much more complex.



Stop 4) “How does water get into the creek”

The diagram shows how the *hydrologic cycle* works on Long Island. It is important to understand that our groundwater comes from rainwater. Rain infiltrates the surface and slowly travels to the aquifer (our underground water supply) that is our source of drinking water.

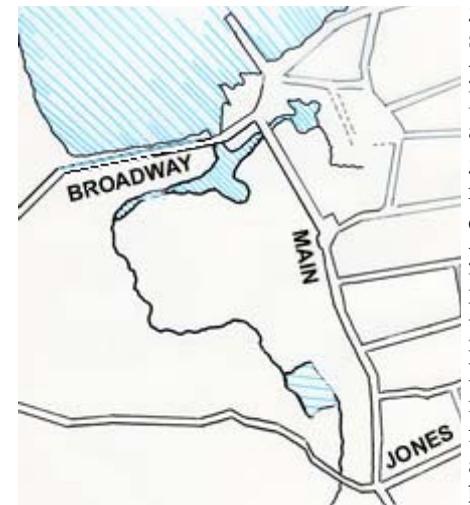
The paragraph talks about additional nutrients in surface runoff. In many cases, an addition of nutrients or toxins can force local plants and animals out of an environment and replace them with more adaptive invasive species. Before you walk to the next sign take a moment to imagine what plants and animals might inhabit a creek and pond environment.

Stop5) “Walk Softly and Stay Alert”



Compare the plants and animals you imagined to the animals on the sign. The sign lists birds that make wetlands their home. There are also plants listed. One, “the common reed” or Phragmites (pronounced frag-mite-ees), is found farther up the stream towards the pond and the headwaters. It can

On the 1873 map below: Note how the creek crosses main street. Also note how close the shoreline is to Broadway. Barnum Ave. has not been constructed.



grow 12 to 15 feet tall by the end of the growing season. If you are looking at a wall of grassy reeds, chances are you are looking at Phragmites. Phragmites is typically found in areas that have been disturbed.

In areas that have not been disturbed or polluted cattails grow.

On Long Island cattails are being replaced by Phragmites.

Of the plants and animals you imagined from the previous stop, how many are listed on this sign? Many people imagine frogs and other amphibian species. Can you hear any frogs croaking? Amphibian species are often the first species to be threatened by changes in nutrient and toxin levels. You can generally hear frogs croaking in the early evening.

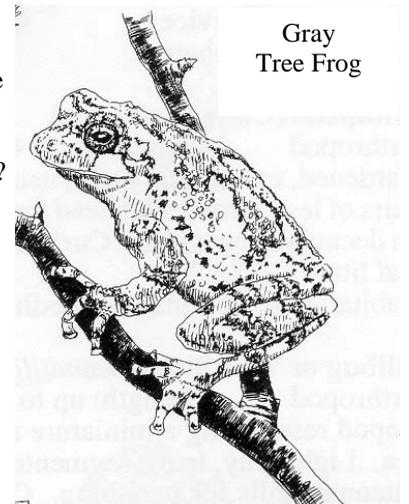


Illustration by M.T. Weisenberg as originally published in *A Field Guide to Long Island's Woodlands*

Many people would also imagine lilly pads and cattails. Lilly pads tend to grow in slightly acidic environments with calm water like the pond. As we walk toward the pond, think about why cattails are not here now.

Stop 6) The bridge over the creek

From this position we can look both upstream and downstream. Downstream from the bridge, look for small sandbars in the creek. Sandbars form where the water slows down. Some sandbars are old enough to have grass and annual plants growing on them.

Note the two drainage pipes that empty into the creek. Drainage pipes help to keep Port Jefferson from flooding and allow parking lots and backyards to exist in otherwise boggy or unstable areas.

Stop 7) “Do you see an Elephant in the Creek?”

There are many instances when business people and villagers disagree. Consider the relatively quiet village of Port Jefferson. What would have been the effect on Port Jefferson if it had become the winter home of circus animals? One change would be increased animal waste which can spread disease and “add too many nutrients” to the environment threatening the local plants and animals.

Follow the red brick path and then veer right. Across the street (west) and on the harbor side (north) of the street note the bridge crossing the creek. There is a two foot tall stone fence.

Stop 8) Bridge

Building a bridge is not just about laying a structure across a creek. The engineers have to make sure that the creek won’t undercut the foundation of the bridge causing it to collapse. Note the concrete walls along the edge of the stream which prevent erosion.

Walk south (uphill) from the bridge. On your right you will see a sign that reads “Caroline Avenue Park” Follow the pathway toward the athletic fields but be sure to stay outside the fence on the northern edge of the park.

Stop 9) Behind the athletic fields

There are several areas to peek into the creek from behind the fences. While you observe the creek note how steep the creek banks are, how deep the water is, and how fast the water is moving.

The water tends to move slowly through this area. The channel is wide and the creek banks are very steep. The tree roots act as “natural stabilizers” that help to keep such steep banks from collapsing? They remain as a stabilizing force even for several years after a tree dies. Trees can fall into a stream during storms. Downed trees can significantly alter a stream’s path which results in the erosion of the streams banks.

Stop 10) Crossing the creek

Just beyond the athletic fields there is a stair and bridge that allows you to cross the creek. When you cross you should notice that water is moving much faster here than it is downstream. You should hear a strong gurgling. This is because the water channel is narrower here. Downstream the water was calmer because the channel was wider.

You should also be able to see Phragmites on the upstream side. Don’t be surprised if they are 12- 15 feet tall. Follow the Phragmites keeping the boats on your right. To the east you should see a pond., which is near the headwaters of the Old Mill Pond.

Stop 11) The Pond

Is the water moving fast or slow? Note the sign that warns of pollution? The pollution is probably from animal waste, fertilizer, pesticides and salt picked up by the surface runoff. The pond appears motionless or slow moving.



Walk across the street and up the hill. Walk south beyond the driveway that looks like a little bridge.

Stop 12) Cement Object

Just off the road there is a strange cement object which was placed there to reduce ero-

sion. Is there water flowing over the object? If so, there was probably a recent rainstorm. Just above the cement object are the Mill Creek Headwaters. Long Island streams are fed mainly by groundwater and the headwaters are the place where the water table and the land surface first meet.

So why is the cement object there? Look around a little, if you were a drop of water where would you go? While the majority of the water in the stream may ooze out of the ground from the water table, during and after rainstorms there is a significant surface runoff. This runoff can cause significant erosion to property and roads. This object directs the runoff.

Just uphill from the cement object is a wetland that is the headwaters of the Old Mill Creek. You can look for mud cracks or a “soggy” area.

Conclusion)

On this walk we have seen maps that show how the creek and related ponds have changed as humans have developed the area. Look back and see how those maps have changed.

We have seen the plants and animals that are well adapted to live along the creek and pond. Can you remember the name for the common reed?

We have also seen how water flow is affected by channel size and how the channel reacts to the water flow. The interrelated system of channel and water flow is best exhibited by deposition of sand bars and erosion of channel walls. Since humans have to protect developed land, erosion and deposition have to be monitored and or controlled. So, in this short walk, we have seen how humans and the creek have evolved together over time.

Thanks to the Mather House Museum

Copies of this guide and guides to other science walks may be downloaded at www.geo.sunysb.edu/esp/



Old Mill Creek Walk Port Jefferson, NY

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