

Introduction

This self-guided walk focuses on the variety of landscapes and plants that can be found on the grounds of the University's West Campus. The walk covers less than a mile and can be completed in 90 minutes. Explore these areas between the months of May and October, when the largely deciduous vegetation is at its peak.

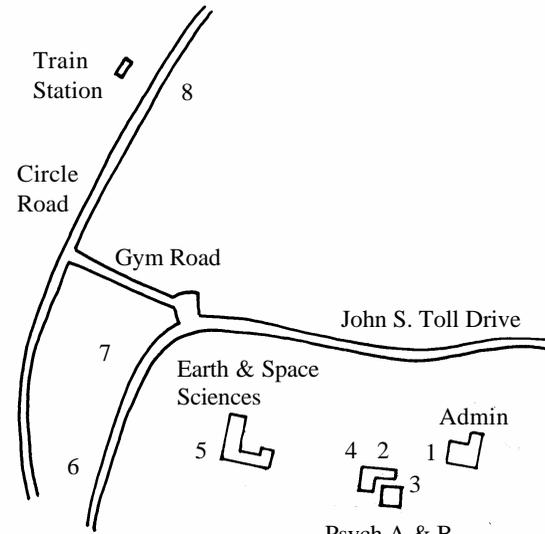
The State University of New York at Stony Brook is situated on the Harbor Hill Moraine, formed by the last glacial advance approximately 22,000 years ago. Since the last glacier's retreat, rainfall and human hands have shaped the area into the landscape you see before you. Farmers settled the Stony Brook area in the early 17th century. Prior to breaking ground for the University in 1959, the land was used as farmland, undeveloped forest, and contained a racetrack near the present day train station.

The West campus includes areas such as the Academic Mall, a formal landscape that contains a variety of ornamental plants and grasses. Most of these plants are not native to this area and the integrity of these plantings is maintained by moderate watering, fertilization, weeding, and pruning.

Wooded areas on West Campus have not been tended in recent years and have become home to plant species that can compete successfully. These woodlands represent second growth forest. Meadows occurring farther from the core campus have developed grasses and weeds, which receive no care, other than periodic mowing.

The types of existing plant species are dependent upon the local geology, naturally-occurring or introduced soils, water availability, and the amount of human intervention. You will observe a range of landscapes from carefully tended areas to areas that have reverted to nature under the influence of the forces that control ecological succession.

Warning: Wooded areas contain poison ivy—a dark green, frequently shiny, three-leafed plant. The leaves, stems, and roots are dangerous year-round. If you come in contact with poison ivy, wash skin and clothing well, as soon as possible.



Campus map showing location of stops

1. Formal Garden

We begin our walk at the formal gardens located in the triangular area directly in front of Administration. Note the diverse vegetation—the different plant growth (habits), textures, colors, and leaf forms. In general, these perennial plants and shrubs are tolerant of dry conditions and full sun. The gardens here are watered by a drip irrigation system. In an attempt to conserve water resources, there is a trend toward planting xeriscape gardens and lawns. Xeriscape plants require *little or no watering once they are established*, while nonxeriscape plants need about one inch of water per week. What effect might a xeriscape garden or lawn have on our groundwater resources here in Suffolk County? Can you guess how much of our local groundwater resources are used for irrigation? It is estimated that in Suffolk County 30% of our groundwater is used for the irrigation of gardens and lawns.

This garden is a dramatic, inviting, and relatively low-maintenance showcase for interesting varieties of plants. The perennial plants come back and spread year-after-year and only require annual trimming. Weeding is minimal due to the mulch covering and relatively close placement of plants, allowing little space and light for weeds to grow. The dense plantings also trap moisture.

Note the variety of decorative grasses that are native to North America, Europe, and Asia. The Purple Cone Flower is native to North America and its flowers, stems, and leaves are used as an over-the-counter cold remedy. The long-leafed Yucca originates in the semi-desert conditions of Mexico. Some woody plants in this landscape include: purplish-blue flowering Russian Sage, native to Iran and northwest India; red-leafed Japanese Maple; Kousa Dogwood, another Japanese native that bears beautiful white flowers in the spring and red fruit in the fall; Barberry, a red and green-leafed bush; and Mugo Pine, a low-growing pine that is particularly well-suited to a xeriscape garden.

During the course of the day, plants give off moisture through pores in their leaves and stems by a process called transpiration. Transpiration is greatest on hot, dry, windy days. Plants that are adapted to dry conditions have rounded, folded, fleshy, or needle-like leaves with a thick waxy coating or small hairs. Which moisture conservation method applies to each of these plants in this sunny, exposed location?

2. Turf Lawn

Turf is a mat of grass laid down over prepared soil that establishes an “instant” lawn. These lawns have been carefully maintained—watered, fertilized, and fenced-off—since their planting. Note how alike the grass is, one stalk to the next.

Examine the turf. Have other types of plants begun to grow among the turf grass? Unless treated with herbicides that discourage the growth of weeds, lawns become home to plant species other than the cultivated grass. Maintaining a lawn of this type requires regular application of fertilizers, herbicides, and pesticides. Why is there concern about the use of these chemicals in Long Island's gardens and lawns?

3. Birch Garden

You are standing in the beautiful courtyard shade garden designed, donated, and planted by Professor Ashley Schiff in 1967. Dr. Schiff, a conservationist and professor of political science, strove to beautify Stony Brook campus while major construction was still in progress. With the help of students, the original garden was planted with European White Birch,

pink and white Azaleas, and English Ivy. The garden now also includes perennials at its entrance, River Birch, and several varieties of Hosta. The plants are watered by a sprinkler system, while horticultural cloth and mulch cover the ground to retain moisture and discourage weeds. The stone blocks along the pathways provide a durable surface that allows rain to infiltrate the ground. Why is maximum rainwater infiltration especially important here on Long Island?

Stand or sit quietly for a few moments. Would you consider this type of shade garden for your own property some day?

4. Groundcover Plantings

Observe the groundcovers planted beneath the trees and within the walkway dividers of the Administrative Mall. The visually-appealing dark green leaves of Periwinkle, the red and green leaves of the low-growing Barberry bush, and the striped light and dark green leaves of Lilyturf represent low-maintenance, perennial groundcovers. These plantings require only annual trimming and no mowing, remain green for most of the year, provide natural mulch, and choke out weeds. Compare the care required by a grass lawn versus a groundcover area. Why was the groundcover a wise landscaping choice for this location? What are the advantages and disadvantages of a lawn?

5. Woodland

Here, flanked by two parking lots, stands a small, fairly typical North Shore deciduous woodland community. Deciduous trees have large flat leaves that provide maximum surface area for photosynthesis during the spring and summer, shed their leaves in fall, and lie dormant during the winter months. This site represents the effort of University planners to retain wooded landscapes adjacent to paved areas.

Moist woodlands such as this show us the full range of strata—a canopy of tall trees, an understory of shorter trees, a shrub layer of low bushes, an herb layer of short plants, and a litter layer of decomposing leaves on the ground.

This woodland is characterized by a canopy of White and Red Oak, Red Maple, and Black Locust. The understory is populated by Mountain Laurel,



Forest Stratification

Sassafras, and blight-challenged American Chestnut shoots. The shrub layer consists of Mapleleaf Viburnum and Lowbush Blueberries. A variety of plants and wild flowers make up the herb layer of this community. Poison Ivy and Fox Grape vines grow among the other plants. Decomposing leaves resting on the soil make up the litter layer of this woodland.

What factor is important in supporting plant life from the top canopy to the bottom herb layer of this woodland? Several years ago, the shrub and herb layers were removed from this area but have recovered somewhat. What purpose might these layers serve in a woodland ecosystem?

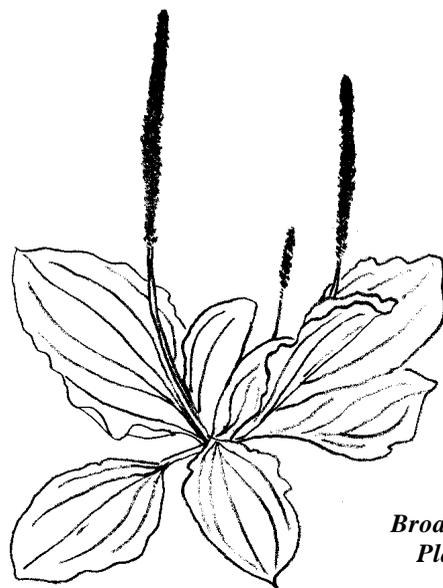
6. Woodland

You have entered a woodland community, which has been disturbed less than Location 5. The flora here are mostly similar to the previous location, but display more diversity. Why?

Plants carry on photosynthesis by drawing energy from the sun, and water and nutrients from the soil. When leaves fall, the litter they create breaks down and returns nutrients back to the soil. Brush aside the topmost layer of dry leaves, then the more decomposed older leaves, the humus (rotted leaves and twigs), and finally dig up some mineral soil. What color is the soil? Do you see any roots? How does the soil feel between your fingers—sticky (clayey), gritty (sandy), or smooth (silty)? Are there any pebbles or cobbles in the soil? Long Island's soil is transported—where did it come from? How did it get here?

7. Meadow

Note the variety of grasses and weeds that coexist in this field. Crabgrass, White Clover, Broad-leafed Plantain, and Narrow-leafed Plantain are predominant



Broad-leafed Plantain

here. Native Americans dubbed Broad-leafed Plantain “White Man’s Foot” because this weed appeared in North America where Europeans settled. The Shoshone applied wet dressings of Broad-leafed Plantain to wounds and venomous insect and reptile bites. They used the seeds as a worming treatment. Plantain is also a folk remedy for treating the itch of Poison Ivy. Broad-leafed plants such as those you see here require little water and fertilizer, are relatively slow growing, but have a low tolerance for traffic.

How does this meadow differ from the turf grass lawn you observed at Location 2? How many different species of plants can you find? What are the advantages and disadvantages of this type of lawn?

8. Woodland

Our last stop is a dense stand of predominantly Norway Maple and some Black Locust. Observe the strata. Recall Locations 5 and 6. How is this woodland different? Why?

Norway Maple is a native of Eurasia introduced to Philadelphia in the 18th century as an ornamental shade tree. It is the most planted city tree in the United States today. This maple is tolerant of shade and efficient in its use of water and nutrients and thus outcompetes native Sugar Maples. The dense canopy created by the Norway Maple discourages the growth of the understory, shrub, and herb layers, further reducing plant diversity. Conservationists are urging communities to ban and remove this tree. Does the appearance of this woodland confirm the growth habit of the Norway Maple? Why do you think the Black Locust has survived here?

Illustrations of oak leaf and forest stratification by
Maria T. Weisenberg
as originally published in
A Field Guide to Long Island’s Woodlands

Copies of this walk and its related research paper, as well as other science walks, may be downloaded at
www.geo.sunysb.edu/esp/

SCIENCE WALK TO OBSERVE THE FLORA OF STONY BROOK UNIVERSITY’S WEST CAMPUS

Written by Olga Crnosija



White Oak

**STONY
BROOK**
STATE UNIVERSITY OF NEW YORK