

Lesson 8: Field Trip: Exploring Inwood Hill Park

Objectives:

- Students use a map (and optionally, a compass) to navigate over terrain.
- Students understand how the Lenape used the terrain of Inwood Hill.
- Students are familiar with the ecological communities of forests and salt marshes that they witness in the park.
- Concepts learned in the second module of classroom lessons, about Lenape life and Mannahatta's topography, are reinforced.

Vocabulary: shell midden, glacial erratics, circumference

Materials:

- Inwood Hill Park maps (also available at Inwood Ecology Center) *
- Inwood aerial views from 1609 and today
- Salt Marsh Investigations worksheet
- Forest Investigations worksheet
- NYC Tree ID guides
- Pencils (1/student)
- Crayons (1/small group)
- Tape measures (1/small group)
- Compasses (optional)
- Binoculars (optional)

New York State Elementary Learning Standards *Key Ideas* and *Performance Indicators*:¹

- Science *Key Idea* MST4.LE7: Human decisions and activities have had a profound impact on the physical and living environment.
- Science *Performance Indicator* MST4.E.LE7A: Students identify ways in which humans have changed their environments and the effects of those changes.
- History *Key Idea* SS1.1: The study of New York State and United States history requires an analysis of the development of American culture, its diversity and multicultural context, and the ways people are unified by many values, practices, and traditions.
- History *Performance Indicator* SS1.E.1A: Students know the roots of American culture, its development from many different traditions, and the ways many people from a variety of groups and backgrounds played a role in creating it.

[Note: this field trip is designed to last about two hours. It works best if two teachers are with the students, so that students can split in half and spend half their time in the forest community, and half their time in the salt marsh community. Note also that the Inwood Urban Ecology Center is closed on Mondays and Tuesdays.]

Introduction: Inwood Hill Park

(10 minutes)

[Begin at the row of benches next to the salt marsh, across from the Ecology Center.]

Welcome to Inwood Hill Park! Has anyone ever been here before? This is the only place in Manhattan that looks something like Mannahatta would have looked when Henry Hudson first saw the island in 1609. This

¹ From www.nylearns.org/standards. NY State learning standards encompass standards, key ideas, performance indicators and major understandings.

* All images/materials are available on our website, at www.wcs.org/mannahatta. Images can be printed out in color or black and white.

place is also interesting because of its geology, its topography, the history of the people who lived here, and the different ecological communities that are here: the salt marsh and the forest. [If students have been studying Mannahatta in school, review what they have learned thus far. Show students aerial images of Inwood from 1609 and today, and ask them to look for what has changed. A lot has changed, including the location of the salt marsh. The landscape was transformed by European settlement, farming, quarrying and then the construction of the Harlem Ship Canal in the 1890s. Now restoration efforts are transforming the landscape, including the salt marsh/mud flats and the reintroduction of bald eagles in 2001-2002.]

Today we are going to explore two of the ecosystems here: the salt marsh, which you see in front of you, and the forest, which is up on the hill behind us. We are also going to spend some time in the urban ecology center, in order to learn more about the ecology of this area. [Pass out Inwood Hill Park maps – these are included in the lesson materials, and you can also get copies at the ecology center.] Can you locate where we are on this map? [Spend time with students helping them orient themselves to where they are on the map.] Can you locate the salt marsh and the urban ecology center on the map? Now can you look around you, and see where they are, and point to them? See if on the map you can find the Indian rock shelters, middens, glacial erratics, a beach, and the Hudson River. Also notice the level of the salt marsh right now. A salt marsh is tidal, meaning the water comes in and out over the course of the day, as the tides of the Hudson River rise and fall. [*Middens* are piles of discarded shells left by the Lenape people – essentially their trash dumps. *Glacial erratics* are stones left behind by glaciers.]

Now let's start exploring! [Break into two groups if possible, and have groups switch sites halfway through.]

(Note: bathrooms are inside the Urban Ecology Center.)

Activity 1: Exploring the Salt Marsh and Urban Ecology Center (50 minutes)

Let's start off in the urban ecology center. [It will take you a few minutes to walk over there.]

[Welcome students to the center, and pass out Salt Marsh Investigations worksheet. When students have completed their worksheets and spent some time in the Lenape wigwam, take them back out to the field overlooking the salt marsh.]

Let's look again at the salt marsh. This area was originally a salt marsh in 1609, and the park service is working to restore it to a salt marsh today. But as we saw in the aerial images, the location of the marsh has changed over time. The early Dutch colonists named the water here *Spuyten Duyvil*, or devil's whirlpool, because at one time there were 4 high tides per day there, because of how the Hudson and Harlem Rivers met each other in such tight confines. This made it very difficult to navigate ships here, so in the 1890s, the Harlem Ship Canal was built in order to allow ships to sail through the water more easily. If you look across the water, you can see a sheer rock face with a big blue "C" painted on it. That rock face was created when engineers blasted the original rock away in order to create the canal. The "C" was painted by members of the Columbia University crew team, who row their boats up here.

[If students have time remaining after they complete the worksheets and explore, you might have them do a writing activity outdoors, or try to draw a map of the salt marsh area (if you attempt this, make sure you have collected the park maps beforehand!).

Activity 2: Exploring the Forest (50 minutes)

Let's start off at the Shorakapok Rock. Can you find this rock using your maps? [It will take you a few minutes to walk over there.]

Can you tell what happened at this spot? The legend is that this is the spot where the Dutch governor of New Netherland, Peter Minuit, bought Manhattan from the Lenape in 1626 for the equivalent of \$24. But as far as we know today, the Lenape people did not actually think they were selling Manhattan to the Dutch. Instead, they thought the Dutch were giving them a few gifts as a sign of appreciation for being allowed to share the island with the Lenape. The Dutch and the Lenape did share Manhattan for a while, but eventually they had a series of wars, and the Lenape were finally driven off the island. Today Lenape people live in Oklahoma, Wisconsin and in Canada.

But traces of the Lenape presence on Manhattan still remain – and right here in Inwood! We're going to go into the forest and look for rock shelters the Lenape used, and we'll also look for shell middens that are evidence that they lived here. After we do that, we'll start trying to identify some of the trees we see. [Lead students into the forest, up the path that is flanked by rock shelters to the right and shell middens to the left.]

What do you see on the right? [Rock shelters!] Although the Lenape people built their own houses, they also used these naturally formed rock shelters to take shelter. Let's climb up the slope and take a closer look. [This slope is steep, so be careful! Make sure you climb the slope with the students.]

[After students have explored the shelters, ask students to look at the part of the forest directly across the path from the rock shelter. Ask if students can see how the land there is in the shape of a little hill. Archaeologists believe this is because that hill was formed from a big deposit of shells left by the Lenape: a shell midden. Because of the fragility of this site, students should not walk on the midden. Shell fragments from the midden will not be visible from the path, but it still may be interesting for them to know that the hill is formed from essentially a trash heap. This is an opportunity to get into a discussion about how different cultures deposit their trash, what we can learn from a culture's trash, and how we might compare Lenape waste cycles with modern Manhattan waste cycles.]

Now let's start taking a closer look at the trees. Some of these trees are really big around and tall! The bigger around a tree is, the older it is. So now you want to pick at least three trees to study closely. For each tree, measure its circumference (how big around they are), try to identify the tree species, and make a bark rubbing of the tree (different trees have very different barks!) [Have students break into groups and give each student a Forest Investigations worksheet. Pass out tape measures and crayons to each group. Students can look for trees all up and down the path, or they might choose to stay in the rock shelter area.]

[When students are done with their three trees, they can collect different leaves from the ground, and draw them on the back of their worksheets.]

Wrap-up (10 minutes)

[Gather both groups back together.] What did you all learn today? Can you imagine that 400 years ago, most of Manhattan was covered in forest like the forest you walked through?

[If you have extra time, you might want to take a walk up along the Great Wall Path or Spuyten Duyvil Road, to give students more time in the forest. You could also walk to the location of the main Lenape village of Shorakapok, which was along the line of Seaman Avenue, and/or go look at the outcrops of marble rock in Isham Park, indicated on Inwood Hill Park map.]

Extension activities:

- Students research the history of Inwood Hill Park.
- Students research the tree species they documented in the forest. Are these native species to Mannahatta?
- If your school has access to GPS units, try using a GPS to find the original shoreline of the area.