The NYC Department of Parks & Recreation presents

The Natural Classroom™

urban park rangers • education program

CONSERVATION

Keeping it Wild!

City of New York Parks & Recreation Urban Park Rangers

Activities and Lessons in these programs meet academic Performance Standards accepted and used by the New York City Department of Education, including:

Critical Thinking • Exploring Science • Site Evaluation
Researching and Writing a Field Guide • Natural Science
Creating and Reading Graphs • Data Gathering • Calculating
Proving Math Concepts

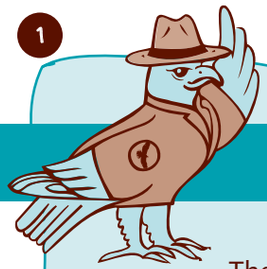
City of New York Parks & Recreation

bp sponsored by BP AMERICA

NATIONAL GEOGRAPHIC SOCIETY

The New York City Department of Education

City of New York Parks & Recreation Urban Park Rangers



What is the Natural Classroom?

The Natural Classroom is a series of educational programs developed by the Urban Park Rangers to immerse students in the living laboratory of the natural world. These programs combine standards-based education with hands-on field lessons taught by Urban Park Rangers.

Based on natural and cultural topics that are visibly brought to life in our parks, The Natural Classroom is designed to stimulate, motivate and inspire your students to apply their developing skills in English, Math, Science and History to real-life critical thinking challenges.

The activities in Conservation: Keeping it Wild!
focus on the following skills:

- *Creating* and *Reading Graphs*, *Measuring*, and *Making Calculations*
- *Exploring Living Science Concepts* by creating *Field Guides*, performing a *Site Evaluation*, and *Gathering Data* in the field
- *Writing* and *Drawing*

How to Use This Natural Classroom Program Guide

Find Your Level: Level One = Grades K-2
Level Two = Grades 2-6
Level Three = Grades 6-8

Word Challenge: Important vocabulary words are provided and listed in order of appearance. Let your students find the definitions and begin their adventure.

Focus on The Big Picture: Read the teacher text to learn about the **three main program concepts**, introduce them to your class, and get them thinking in context.

Take Action: Have your students research, write, measure, build, and create using the pre-visit activities. Each project is designed to actively engage the group in planning for their park visit.

Prepare For Adventure: Review the park visit activities a few days before the trip so you will be aware of the day's anticipated events. Let your students know how to dress for the weather, the bugs, and the terrain – you will be outdoors in the "wilds" of New York City parks.

Wrap it up: Have your students map, graph, illustrate, chart and analyze their way to thoughtful conclusions using the post-visit activities.

On and Beyond: Loved your park experience and the learning topic so much that you want more? We have included extension activities that expand the scope of the in-class program.

Word Challenge

Key Conservation Vocabulary Words

restoration	natural resources	disposable
preservation	sustainable	habitat
protection	renewable	

*Words will be italicized throughout program

Focus on the Big Picture

CONCEPT 1

Conservation in Action

Conservation is the use and management of resources in a way that assures their continuing availability to future generations.

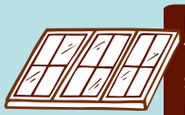
Conservation efforts in New York City include recycling, use of alternative energy sources, wastewater treatment plants, and public transportation.

Conservation practices in New York City parks include the *restoration*, *preservation*, and *protection* of all natural habitats for wildlife to live in and for humans to enjoy and appreciate.

The Urban Park Rangers work with other divisions in New york City's Department of Parks and Recreation, such as the Natural Resources Group, and other New York State agencies, such as the Department of Environmental Conservation, to restore habitat for wildlife in parks. Through our Wildlife Management Program, the Urban Park Rangers reintroduce native wildlife back into city parks.

Park maintenance crews operate year-round planting, cleaning, and caring for parks to preserve the city's *natural resources*, while ongoing Urban Park Ranger programs, such as environmental education and the enforcement of park rules and regulations, protect parks.

Together with many other entities, the Urban Park Rangers work to foster a conservation minded public by promoting the *sustainable* use of the natural resources found in parks.



FACT:
The use of alternative, *renewable* energy sources, such as solar energy, wind power, and hydrogen fuel cells are all practices in natural resource conservation.

DID YOU KNOW?
Over a five year period, 20 young eagles will have been released in Inwood Hill Park.

CONCEPT 2

How You Conserve at Home

By reducing waste, we can practice conservation at home and preserve resources for the future. You can practice conservation by avoiding the use of *disposable* products such as paper towels, plastic cutlery, and foam cups and plates. Instead, use products designed for durability and reuse, such as cloth napkins and towels, ceramic mugs and dishes, and steel cutlery.

DID YOU KNOW?:
- The iron and steel we dispose of is enough to steadily resupply the USA automakers each year.
- Our entire commercial airfleet could be rebuilt every three months with the aluminum that we throw away.
- We could build a 12 foot high wall from New York to Los Angeles every year with the paper that is thrown away.

Without necessarily knowing, you practice conservation everyday. You turn off the lights when you leave the house. You recycle aluminum cans, paper and plastic products, and you make sure not to leave the water running in the kitchen or the bathroom.

Lifespan of Litter

Orange and banana peels	2 - 5 weeks
Plastic coated paper	5 years
Wool socks	1 - 5 years
Cigarette butts	1 - 5 years
Plastic bags	10 - 20 years
Plastic film containers	20 - 30 years
Nylon fabric	30 - 40 years
Leather	up to 50 years
Rubber boot sole	50 - 80 years
Aluminum cans	80 - 100 years
Glass bottles	1,000,000 years

When you recycle and reuse items around your house, you are saving natural resources, such as trees and water.

CONCEPT 3

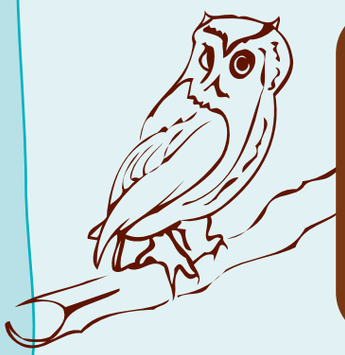
Conservation with the Urban Park Rangers

In addition to assisting with the preservation and protection of parks' natural resources, the Urban Park Rangers engage in the restoration of native wildlife in New York City parks. Over the last few years, the Rangers have worked to return many species to parks across the city, including bald eagles, screech owls, barn owls, painted turtles, and grey tree frogs.

When making management decisions to restore certain species, Urban Park Rangers conduct *habitat* assessments.

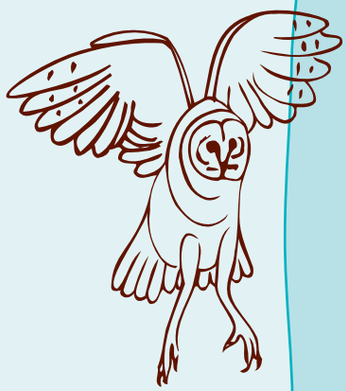
During your park visit, students will conduct their own owl habitat assessment. At the park, students will work in groups to determine whether or not the habitat is suitable for either an eastern screech owl or a barn owl.

Based on the field data that they collect at the park, students will be able to recommend the changes to their site that would make it more suitable for each species of owl.



The most critical component of screech owl habitat is the availability of sufficiently large trees to provide cavities for nesting. To determine habitat suitability for screech owls, it is important to measure the number and size of trees in the forest.

The most critical component of barn owl habitat is fields with herbaceous plants high enough to provide rodent habitat but low enough for barn owls to capture their prey.



Take Action

The Pre-Visit Activities

The following pre-visit activities will prepare your students for their trip to the park.

Setting up a Field Journal

All Levels

Objective: To give students the means to make a permanent record of their experience.

Materials: Stapler, 10 sheets of paper per student, pencils.

What To Do: Fold the sheets of paper in half and staple along the folded edge.

Explain that the students will be using the journals to record information and observations from the park visit. Have each student write their name on the cover of the journal, as well as the name of the park they are gong to visit. Encourage them to draw a picture of what they expect to find at the park.

Make some predictions before going in the field, and have students record these in their journals. Get students thinking by asking the following questions: *Based on the time of year, what do you expect to see at the park? What do you think you will learn from the visit?* Have students include a few questions and answers of their own on the first page of the journal.

The information the students collect and the observations they make in the field will be dependent on many things, including the time of year, time of day, and weather conditions. As a result, it is important to include the following information for each field journal entry.

Date: Is it early spring? Late fall? The time of year will greatly affect what you find in the park (e.g. birds migrate in the fall).

Time: Is it early in the morning? High noon? The time of day will also effect what you are likely to observe (e.g. birds are more active at dawn and dusk).

Weather Conditions: Is it pouring rain? Blistering hot? These conditions will also affect what you are likely to observe (e.g. birds rest when it is very hot).

Location: Are you standing in a forest? Looking out over a body of water? Make note of the habitat features (forest/trees, meadow/grasses, pond, playground) in the area, as this will greatly affect what you see (e.g. waterfowl is generally found close to water).

Observations: Is there a flock of birds passing overhead? Do you spot a bird carrying a piece of grass into a tree? Using the background information learned in the pre-visit activities, keep your eyes peeled and keep trek of any interesting observations.

Sketch: A picture is worth a thousand words. Students will practice capturing specific details in the field by drawing what they see.

Don't forget to bring the field journals with you to the park!

Owl Field Guides

All Levels

Objective: To gather information and compile it into a reference guide.

Materials: Key rings, single hole punch, pencils, crayons or markers, index cards, bird field guides and other research resources.

Before You Begin: Select the information you want to include in the field guide (physical characteristics, behavior, habitat, etc) so that each entry is consistent.

What To Do: Have each students research two or more birds they are likely to see in the park. Record this information on an index card with a hole punched in one corner. On one side, have the student draw the bird in its habitat. On the other, have the student describe the bird's characteristics.

Before going to the park, collect the index cards and pass a keyring through the holes in the cards to make a booklet.

Don't forget to bring the field guides to the park!

Conservation Conversation

All Levels

Objective: To have students learn how to conserve everyday.

What To Do: Lead a classroom discussion, using the following text as a starting point:

The science of conservation can be very complex, while the practice of conservation can be very simple. Go around the class and have each student think of a way that he or she practices conservation everyday.

For example:
- "I use public transportation or walk to school instead of driving."
- "I use a reusable lunch bag instead of a new paper or plastic bag."
- "I recycle my soda can or bottle."
- "I make sure to turn off the lights, TV, radio, etc. when I leave my home."
- "I use rechargeable batteries."

Focus Questions:
- How do you conserve in your school?
- Does your classroom recycle?
- Who is in charge? Ask that person what happens to the paper, bottles or cans after they leave your school.

Conservation Musical Chairs

Level One/Two

Objective: To help students answer the question, "Why do we conserve?"

Materials: Chairs, CD or cassette player, music.

What To Do: Explain to your class that they are a flock of birds. Winter is coming and it's time for them to fly south. However, in order to get to the warmth of the tropics they first have to fly through the city.

In the classroom, line up the chairs – these chairs represent resting spots for birds in the city. Circle your students around them - they will act as birds. When the music stops, each bird must find a roost, that is, each bird must find a place to rest as they fly through the city. However, as the game progresses the chairs (or roosts) are taken away. Explain that in cities there are fewer trees, fields, forests and streams – this means that there are fewer places for birds to find resting spots. Every time a roost is removed one fewer bird is able to find a place to rest. This will demonstrate the dependence of animals on their habitat, where they live or migrate through, As animals lose places to roost, their numbers decrease. Conservation maximizes natural habitat for wildlife.

When the game has finished, bring your classroom outside into the schoolyard. Now the students can imagine themselves as birds outdoors. If they were a flock of birds flying through the schoolyard, would they be able to find resting spots? Before they can answer this question they need to answer the question, "Where do birds rest?" In trees, under thick bushes and even in the eaves, nooks and crannies of buildings. Have each student try to find a place to rest in the schoolyard.

What if there aren't any places to rest in the schoolyard? Is there anything the class can do to make a place for birds? Sure! Students can plant a tree or build a birdhouse. Sometimes we build places for animals to live, just like someone has built houses and apartments for us.

Make the Field Tools for the Park Visit

All Levels

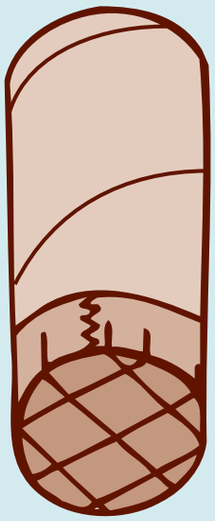
Objective: To make two field tools to assist in data collection. Make at least 3 sets of field tools for your class.

Tape Measure

Materials: Ruler, marker, masking tape.

What To Do: Using masking tape, fold the tape in half, sticky side to sticky side, using a marker to measure off 10 feet of tape. Mark off inches and feet along the folded masking tape with a permanent marker.

The tape measure will be used to measure the DBH (Diameter at Breast Height) of the tree trunks found at the park you visit.



Canopy Tube

Materials: String, toilet paper tubes, tape.

What To Do: Thread 6 pieces of string across one end of the toilet paper tube to form a grid, as illustrated. Use tape to secure the string. You will need one tube for each student.

The canopy tube will be used to assess the amount of canopy cover at your site. Students will look through the tube and estimate canopy cover based on the number of squares filled in on the grid.

Don't forget to bring the tools with you to the park!

Prepare for Adventure

The Park Visit

Read through the following park-visit activities to get a sense of what your students will be doing on the day of the trip.

Owl Site Evaluation

All Levels

Objective: To determine if the park can support a screech or barn owl.

Materials: Owl Site Evaluation Worksheet (one for each group), pencils, tape measure, canopy cover, plastic eggs filled with sand or dry beans.

What To Do: Students will work in groups at various locations in the park to determine the habitat suitability for either screech or barn owls.

First, students will determine the density of ground cover at the site using the plastic eggs. Space groups apart at each site and have them drop the egg at their feet. The egg, which represents a small rodent, like a mouse or vole, will be harder to see in dense ground cover, and easier to see in sparse ground cover. Students should make observations at each location depending on how well the egg is concealed by the ground cover, and record their observations on the worksheet.

Next, students will measure the density of the canopy at the site using the canopy tube. Have them hold the tube straight up to the sky and count the number of squares in the grid that are filled with tree canopy. Have them record their observations on the worksheet.

Finally, measure the circumference of the trees at the site using the tape measure. Older students can covert the circumference to diameter using the following equation:

diameter = circumference/π (3.14)

In addition to using the tools above, students should count any nest cavities present at the site, and take note of any human influences, in the area. These observation can be recorded in the field journal.

After taking measurements and making observations, each team should discuss whether the site can or cannot support a screech owl or a barn owl based on what they observed.

Focus Questions:
- How well did the ground cover at your site conceal the egg?
- How much canopy cover was there at the site?
- How large were the trees?
- Are there enough places for cavity nesting birds, such as owls, to nest?
- What does this mean for owls at your site?

The Post Visit

The following post-park visit activities will help you wrap up the park visit by using data collected at the park to draw conclusions. Extension activities are also included.

Wrap it up

Owls in Graphic Detail

All Levels

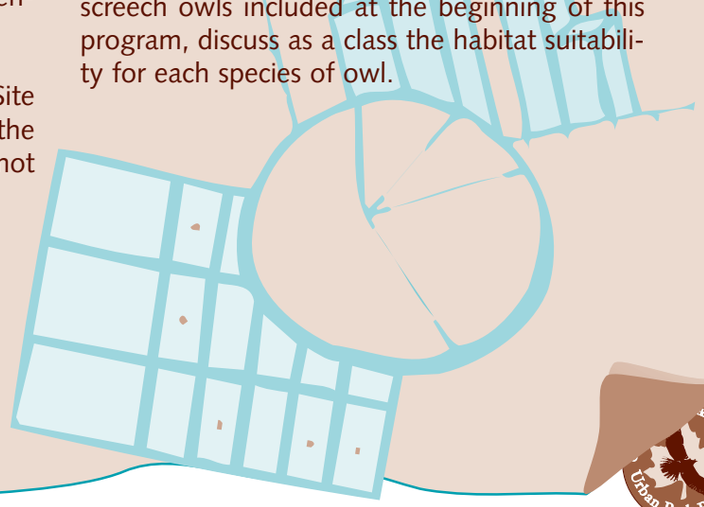
Objective: To analyze the data collected in the park using graphs, charts, and other graphics.

Materials: Owl Site Evaluation Worksheet, pencils, paper, graph paper.

What To Do: Students can use the Owl Site Evaluation Worksheet they completed in the park to determine, as a class, whether or not the owls can use this site.

NOTE: Since an owl's habitat and nesting site would span many acres, the sites your class evaluated represent just a small fraction of the data needed to make this determination. However, your students will gain a better understanding of how much information is needed by graphing each team's data and discussing their evaluations of the site.

All Levels:
Work as a class to calculate the average for each of the variables measured at the park (ground cover, canopy cover, and tree size). Create a chart on the board. Using these averages, and the information about barn and screech owls included at the beginning of this program, discuss as a class the habitat suitability for each species of owl.



On and Beyond

Recycle for the Birds

All Levels

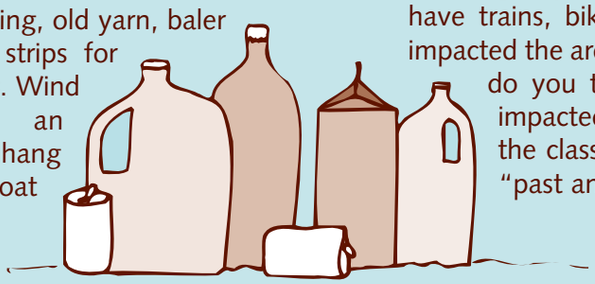
Objectives: To make a bird feeder and provide nesting materials using recycled materials.

Materials: Milk jugs or cartons, coffee cans, pie tins, mustard jar lids (for tracing circles), sticks or dowels (for perches), coat hangers, light wire, knife, hammer, nails, wire cutters, pencils, ruler (adult supervision is required to use some of these tools.)

What To Do: Many everyday containers can be reused in creative ways. In this activity, you'll turn food containers into a feeder for the birds. When reusing any food containers, be sure that you completely clean the inside before beginning your craft project.

Create bird feeders out of clean household containers. Remember to punch small drain holes in the bottom of the containers to let rain water out. You'll need a gallon or half-gallon plastic milk jug, small wooden doweling rods, and string to hang the feeder. Cut two or three holes in the middle of the jug. The holes should be between two and four inches wide depending on the type of birds you want to attract. Then make smaller holes below the feeding holes for the doweling rod. Take each rod and insert it into the smaller hole for a perch. Fill the feeder with seed.

Next, provide string, old yarn, baler twine, or cloth strips for nesting materials. Wind these through an onion sack and hang the sack on a coat hanger. Hang the feeder and nesting materials in a nearby tree!



Investigating Kestrels

All Levels

Objectives: To apply the skills learned and the information gathered at the park in a new way.

Materials: Research materials.

What To Do: Determine if your park visit site will support a kestrel by researching the habitat needs of a kestrel.

Using their Kestrel research, have your students assess the school grounds to determine if your grounds will support a kestrel.

If appropriate, build and install a kestrel box on your school grounds.

Changes in Your Area

Level Three

Objective: To chronicle usage of the park and changes to the land over time.

Materials: Research materials.

What To Do: Divide the class into groups and have them research how the park was used 100 years ago by both humans and wildlife. How have trains, bikes, cars, buildings and people impacted the area over the last 100 years? How do you think these changes may have impacted the wildlife in the area? Allow the class to compare and contrast their "past and present" findings.

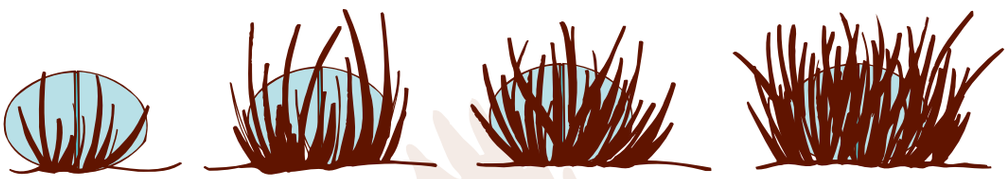
Owl Site Evaluation Worksheet

What To do:
All Levels

At each site visited in the park, students should use the tools prepared in class to determine and record:

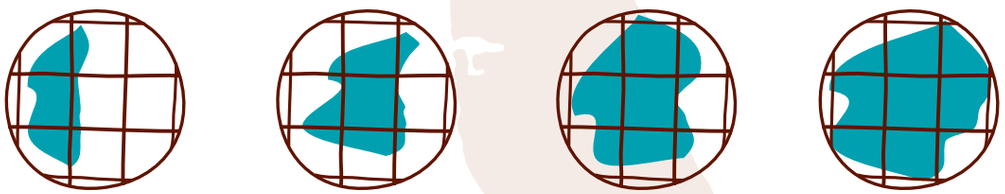
- total ground cover observed
- total canopy cover observed
- the size of the trees in the area

Ground Cover



0 - 25% | 25 - 50% | 50 - 75% | 75 - 100%

Canopy Cover



0 - 25% | 25 - 50% | 50 - 75% | 75 - 100%

Size of Trees

Notes and Remarks