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Avian Adventures

Pre-visit Lesson: Urban Bird Observation

Overview

Visiting gardens like Wave Hill is a wonderful way to see living creatures in their natural habitat, but so is looking out the window or walking to the bus. Use this activity to help your students identify birds that they see every day in their own neighborhood.

Activity

Birds come in many different shapes, sizes and colors. Aside from physical differences, individual species have distinct behavioral patterns. Making close observations and recording them will help students identify the bird you've seen, it even when it is no longer right in front of you.

Use the characteristics below to help identify the bird you have observed.

Size Birds range in size from the tiniest hummingbird to the giant ostrich. It can be helpful to compare the size of your bird to objects that are familiar to you. Is it larger than a walnut? Is it smaller than your fist? Is it bigger than a sneaker? Size is a key identifier.

Shape If you see your bird flying, pay close attention to the shape of its spread wings and tail. Is the tail split in two, like a snake's tongue? Does it spread open like a fan? Is your bird's tail short and stocky like a thumb? What about your bird's wings: Do they swoop downward like the legs of a "w"? Are the feathers at the wingtips splayed open like your fingers when you spread them, or are they smooth and pointed like a triangle? Do the tips of your bird's wings point up or down?

If the bird stays still, try to observe the shape of its beak and feet. Is your bird's beak wide and deep, like a spoon? Squat and triangular? Thin and needle like? Look at the feet: Are the toes webbed? Are the feet muscular looking with big talons, or small and delicate with thin nails?

Field Markings Field markings are the colors and patterns of a bird's feathers. Male cardinals are bright red, while the females are a dusky rose. But both share a black mask on the face. Blue jays, true to their name, are blue, but the white spots on their wings and tail will help you recognize them. Look at your bird's wings, tail, throat and face: What colors and patterns do you see?

Continued/



Avian Adventures

Pre-visit Lesson: Urban Bird Observation (2)

Behavior The personality and activities of birds differ according to their species. Observe them closely to help identify your bird. Mockingbirds are very sociable. Aside from chasing other birds away from their territory, their favorite activity is to find a high perch and sing their lungs out. Robins are known for the way they cock their heads before they run across a lawn and catch a worm. Observing a bird's behavior can help you determine whether it is looking for a mate, protecting young fledglings or looking for food. Does your bird swoop casually through the air or fly from post to post in fits and starts? Does it congregate with other so of its species, or is it a loner? Does your bird like to sit high atop phone poles, or does it seem to be more comfortable deep inside a hedge?

Song or Call Each bird species song or call is unique. Listen closely: How many different bird sounds do you hear? Many birds have different songs or calls for specific purposes, such as attracting a mate, marking their territory or sharing information. Does your bird sing in quick bursts, long warbles, short staccato or prolonged notes? Recording your impressions of a specific call can help you identify the bird.

Location Where is your bird? On a branch? On the ground? On a telephone wire with many other birds of the same species? Make sure you note where you see a bird, especially if you see the same type of bird repeatedly in that area.

Use the spaces below to help with your observations of the behavior and appearance of each bird you see.

Size

Tail Shape

Wing Shape

Field Markings

Continued/



Avian Adventures

Pre-visit Lesson: Urban Bird Observation (3)

Behaviors Observed

Song or Call

Where did you see the bird?

Draw the bird you are observing. Use any perspective you like—from above, from below, from the side—to try to capture what is most striking about your bird's appearance.

A large, empty rectangular box with a black border, intended for drawing the bird.



Avian Adventures

Pre-visit Lesson: Urban Bird Observation

Resource List

Books for Students

Arnold, C. *Birds: Nature's Magnificent Flying Machines*. Massachusetts: Charlesbridge Publishing, 2003.

Backyard birds (Peterson Field Guides for Young Naturalists Series). Boston, MA: Houghton Mifflin Company.

Burnie, D. *Birds (Eyewitness Book Series)*. New York: Dorling Kindersley Publishing, Inc., 1998.

Ehlert, L. *Feathers for Lunch*. San Diego: Harcourt Brace & Company, 1990.

Landry, S.B. *Urban Wildlife (Peterson First Guides Series)*. New York: Houghton Mifflin Company, 1994.

Wiener, Y. *Birds Build Nests*. Massachusetts: Charlesbridge Publishing, 2002.

Books for Teachers

Burton, R. *Bird Migration*. London: Aurum Press Limited, 1992.

Hultberg, J. *Land Birds of New York City*. New York: The Brooklyn Children's Museum, 1981.

Mahnken, J. *The Backyard Bird-Lover's Guide*. Massachusetts: Storey Communications, Inc., 1998.

Ranger Ricks: *Birds, Birds, Birds!*

Russell, H.R. *City Critters*. Cortland, NY: The American Nature Study Society, Wilkins/Printers, 1975.

Russell, H. R. *Ten-minute field-trips: A teacher's guide to using the school grounds for environmental studies*. Arlington, VA: National Science Teachers Association, 1973.

Sobel, D. *Beyond Ecophobia: Reclaiming the Heart in Nature Education*. Massachusetts: The Orion Society, 1996.

Websites

<http://www.birds.cornell.edu/>

<http://animaldiversity.ummz.umich.edu/site/index.html>

<http://www.audubon.org/>

<http://www.nsta.org>

<http://artsedge.kennedy-center.org/educators.aspx>

<http://www.enchantedlearning.com/biomes>

<http://www.ecokids.ca/pub/index.cfm>



Seeds We Need

Pre-visit Lesson: Seed Game

Overview

What do your students know about seeds? Can they identify the seeds that are part of their regular diet? What about wild seeds that are found outdoors? Play this game with your class to help students identify and categorize many different types of seeds. Students will be given a large mixed batch of seeds and challenged to separate them into different categories of their own devising. Encourage your students to identify seeds they know, but also to find ways to identify seeds they don't know. They might use size, shape, color or texture, for example, as their means of sorting.

Activity

- Split your class into small groups, with no more than five students per group.
- Provide each group with a mixture of wild and cultivated seeds and containers in which to put their seeds once they categorize them.
- Challenge your class to identify the seeds and place them in groups sharing common attributes.
- After sorting and classifying their seeds students will share their different classification methods.
- If there is enough time have the students repeat the activity, this time using a different set of criteria to classify their seeds.

Materials List

- Containers for large seeds
- Containers for small seeds
- A selection of seeds, including both edible and non-edible, as well as collected from nature. **Edible seeds** include beans, lentils, rice, corn, oats, poppy seeds, sesame seeds, barley and peas. Edible seeds are easy to come by: just visit your local grocer, or your own pantry. **Non-edible seeds** can be purchased at garden centers and found wild outside. It may take a little ingenuity and hunting, but a seed collection is an asset to any classroom and will last for years.





The Seeds We Need

Pre-visit Lesson: Seed Game

Resource List

Books for Students

- Brown, Ruth. *Ten Seeds*. New York: Alfred A. Knopf.
- Carle, Eric. *The Tiny Seed*. New York: Alladin Paperbacks, 2001.
- Cole, Joanna. *The Magic School Bus Plants Seeds*. New York: Scholastic, 1995.
- Ganeri, Anita. *Seed to Apple*. Chicago: Heinemann Library, 2006.
- Gibbons, Gail. *From Seed to Plant*. Holiday House, Inc., 2001.
- Jordan, Helene. *How a Seed Grows*. New York: Harper Collins, 1992.
- Kraus, Ruth. *The Carrot Seed*. New York: Harper Collins, 1989.
- Pfeffer, Wendy. *From Seed to Pumpkin*. New York: Harper Collins, 2004.

Books for Teachers

- Ashworth, Susanne. *Seed to Seed*. Seed Savers Exchange, 2002.
- Loewer, Peter. *Seeds*. Portland: Timber Press, 1995.
- There are many more!

Websites

- <http://www.mbgnet.net/bioplants/main.html>
- <http://theseedsite.co.uk/dispersal.html>
- <http://www.cas.vanderbilt.edu/bioimages/pages/fruit-seed-dispersal.htm>
- <http://www.teachersdomain.org/resource/lsp07.sci.life.stru.seedplant/>
- <http://www.jasons-indoor-guide-to-organic-and-hydroponics-gardening.com/seed-stage.html>
- <http://www.britannica.com/EBchecked/media/121174/Dispersal-of-several-types-of-seeds>



Trees Alive

Pre-visit Lesson: ID that tree!

Overview

For this activity, your students will look at street trees around the school and in their neighborhoods, and make basic observations about their physical characteristics.

What is a street tree? A street tree is any tree growing within a public right-of-way. (So the tree in your neighbor's backyard doesn't count.) As of 2006, there were 592,130 street trees in New York City—93,000 (19%) more trees than were counted in the 1996 census. There are more than 160 different species of trees lining the streets of New York City. Of these, 10 species account for 70% of all these trees. Learn more about street trees at http://www.milliontreesnyc.org/downloads/pdf/street_tree_fact_sheet.pdf.

For many people, a tree is a tree is a tree. Each species, however, has distinct, identifiable characteristics. Taking the time to familiarize your students with the street trees in their neighborhood, and having them pay close attention to tree features, is a great way to expand their understanding of the natural world, sharpen their observational skills and encourage them to be more in touch with the changing seasons.

Students identify three of the most common and easily recognizable New York City street trees—the London plane, honey locust and ginkgo. These may not be the only trees your students find. If you want to identify additional trees, it is simple to do so using the resource list provided.

Activity

Take your class outdoors to examine the trees around your school. Distribute copies of the three ID sheets on the following pages. Based on leaf, bark, fruit and flower, as well as overall silhouette, help your students determine what kind of tree they are looking at.



Trees Alive

Pre-visit Lesson: ID that tree!

London Plane Tree

Leaf

London plane tree leaves look like maple leaves. They have three to five sharply pointed lobes or sections, and coarsely *serrated* or jagged edges. The leaves are large, up to eight inches long and eight or 10 inches across. Their surface is smooth, dull and medium-green in color, and underneath they have hairy veins. The London plane tree is often mistakenly referred to as a sycamore.



Flowers and Fruit

The flowers of the London plane tree are small and not particularly distinctive. The fruit, however, are easy to recognize. Round and approximately the size of an apricot, they grow in pairs or triplets that hang off slender stems. When ripe, they fall apart into puffs of seeds.



Does your tree have maple-like leaves, mottled bark, seed balls that are round and turn into puffs of seeds and widely spread branches?

If you answered yes, congratulations! You have identified a London Plane Tree!

Bark

London plane trees have very distinctive bark. Because it flakes and sheds continuously, the bark has a mottled appearance, much like camouflage.



Silhouette

London plane trees are often have a widespread open crown, resembling wide-open arms.





Trees Alive

Pre-visit Lesson: ID that tree!

Honey Locust Tree

Leaf

The leaves of the honey locust are doubly compound, meaning that each leaf is divided into leaflets, and these, in turn, are divided up into even smaller leaflets. Since leaflets look very similar to leaves, here is how you can tell them apart. Look closely at where the leaf meets the stem. If you see a tiny bud at this axil or juncture, it is a true leaf. If there is no bud, then it is a leaflet.



Flowers and Fruit

The fruit of the honey locust look remarkably like giant bean pods. In fact, they can be up to a foot in length! This is because the honey locust is in the same family as peas and beans—known as the Legume family—as peas and beans.



Bark

The bark of the honey locust is gray-brown to black, and broken into large scales by vertical fissures or cracks. Wild honey locusts have large thorns, while cultivated honey locusts are usually thornless.



Silhouette

Honey locusts are known for having a relatively short and stout trunk with branches reaching low and high. This creates a shaggy and delicate silhouette that offers pleasant, dappled shade.



Does your tree have doubly compound leaflets, gray to dark-brown bark with vertical cracks, fruit that looks like a giant bean pod and a shaggy, delicate silhouette?

If you answered yes, congratulations! You have identified a Honey Locust Tree!



Trees Alive

Pre-visit Lesson: ID that tree!

Gingko Tree

Leaf

Gingko trees are easily identified by their unusual, and very beautiful, fan-shaped leaves. The leaves are relatively small, about the size of a silver dollar, and turn bright yellow in the fall.



Flowers and Fruit

The fruit of the ginkgo are small and round, and hang from the branches in clusters of two or three. When ripe, they turn wrinkly and have a signature odor—rather unforgettable—similar to rancid milk or vomit. Since only the female trees bear this smelly fruit, most ginkgos that are planted are male. The fruit is prized, however, for its flavor and medicinal value.



Does your tree have fan-shaped leaves; light-colored, light-feeling bark; round fruit that smells bad; a pyramidal or rounded shape?

If you answered yes, congratulations! You have identified a Ginkgo Tree!

Bark

The bark of the ginkgo is light brown to gray, developing deep furrows as the tree ages. When touched, the bark feels light, almost like cork.



Silhouette

The ginkgo has a pyramidal or rounded shape.





Trees Alive

Pre-visit Lesson: ID that Tree!

Resource List

Books for Students

Bernard, Robin. *A Tree for All Seasons* 1999, Washington DC: National Geographic Society.

Bulla, Cylla Robert. *A Tree is a Plant*. Harper Collins, 2001.

Buscaglia, Leo. *The Fall of Freddie the Leaf*. Thorofare NJ: SLACK Inc., 1982.

Lewis, Richard. *A Tree Lives*. New York: The Touchstone Center for Children, 2005.

Palazeti, Toulla. *A Seed Was Planted/Sembre Una Semilla*. Raven Tree Press, 2009.

Udry, Janice May. *A Tree Is Nice*. USA: Harper Collins, 1984.

Watts, May Theilgaard. *Tree Finder*. Rochester, NY: Nature Study guide Publishers, 1998.

Books for Teachers

Barnard, Edward Sibley. *New York City Trees*. New York: Columbia University Press, 2002.

National Audubon Society Field Guide to North American Trees, The. Alfred a. Knopf Inc., 1980.

Petrides, George A. *Trees and Shrubs*. New York: Houghton Mifflin, 1972.

Plotnick, Arthur. *The Urban Tree Book*. Times Books, 2000.

Rodd, Tony & Stackhouse, Jennifer *Trees. A Visual Guide*. University of California Press.

Websites

<http://www.treetures.com/Meet1.htm>

<http://www.arborday.org/trees/>

<http://www.milliontreesnyc.org/html/home/home.shtml>

<http://www.treesny.org/>

http://www.nycgovparks.org/sub_your_park/trees_greenstreets/treescount/

<http://www.treesnearyou.com/>

<http://www.oplin.org/tree/>

http://ecokids.ca/pub/eco_info/topics/forests/what_is_a_tree.cfm



Trees Alive

Pre-visit Lesson: ID that Tree!

Image Credits

London Plant Tree

Leaf http://etc.usf.edu/clipart/45300/45321/45321_sycamore.htm

Flowers
and fruits http://www.123rf.com/stock-photo/platanus_hispanica.html

Bark <http://www.etsu.edu/arboretum/totw.html>

Silhouette <http://www.hort.uconn.edu/plants/p/plaace/plaace1.html>

Honey Locust

Leaf <http://www.depauw.edu/univ/naturepark/natural%20history/honey%20locust.as>

Flowers
and fruits <http://www.hiltonpond.org/ThisWeek021108.html>

Bark <http://www.biologydude.com/2010/08/29/the-honey-locust-my-favorite-tree/>
<http://www.redbubble.com/>

Silhouette <http://www.tree-pictures.com/honeylocustdrawing.jpg>
http://www.flickr.com/photos/cog_nate/3288936786/

Ginkgo

Leaf http://www.cr.nps.gov/history/online_books/geology/publications/bul/611/sec9.htm

Flowers
and fruits <http://www.discoverlife.org/mp/20q?search=Ginkgo+biloba>

Bark <http://www.discoverlife.org/mp/20q?search=Ginkgo+biloba>

Silhouette <http://johnston.ces.ncsu.edu/content/gseptember2010>
<http://pixdaus.com/single.php?id=187181>

More about street trees

http://www.milliontreesnyc.org/downloads/pdf/street_tree_fact_sheet.pdf



Woodland Ecology

Pre-visit Lesson: Herbarium Sheets

Overview

When botanists see plants they want to learn more about, they often collect samples of the leaves and flowers to bring back to their lab for further inquiry. How do they keep these plant samples intact? By carefully pressing, drying and mounting these plants on special paper, botanists create long-lasting visual records of their collections. These records are called herbarium sheets, and together they form an *herbarium*, or organized collection, much like a library of dried-plant specimens. Herbarium sheets provide an important reference and resource for further study, and can last many hundreds of years.

Collecting plants and preserving them by creating herbarium sheets will encourage your class to engage in in-depth study of plant species, and provides a useful resource for future presentations or classroom displays.

Activity

Take your students on a walk around your school or a nearby park or playground. Have your students work individually, or in groups, to collect samples of several different plants. Make sure they are careful to collect as many parts of the plant as they can find—including flowers, roots and fruit. Have them record their observations about the plant's growing conditions, location, insects present and anything else relevant to their findings. Ideally, after returning to the classroom, students will use an ID book or key to identify their plants. The resource guide has some websites which will be helpful.

Materials

- Plant specimen
- Heavy cardstock, 8.5" X 11" or larger
- Newspaper
- Pen or pencil
- Glue (preferably glue stick)
- Large, heavy books to put on top of the herbarium sheets to press the specimen

Instructions

- Place the plant specimen between two sheets of newspaper. Each plant should be carefully placed on the newspaper to avoid wrinkling or bending the specimen. It might take a little work to flatten flowers so that most of their structure (pistol, stamen, ovary, sepals and bracts) is visible. Make sure all the pieces of the sample fit comfortably on the paper.
- Place the sheets of layered specimens and paper inside a heavy, hardcover book, such as a dictionary. Make sure the dimensions of the book are larger than those of the specimen.
- Place other heavy books on top for additional weight.

Continued/



Woodland Ecology

Pre-visit Lesson: Herbarium Sheets (2)

- Do *NOT* peek at the specimen while it is drying! In about a week it should be completely dry and flat. Once the plant is dry, it can be removed from between the sheets of newspaper.
- Use small amounts of glue to mount the specimen carefully to a piece of cardstock.
- Each specimen should be labeled with its common name and scientific name, if known, as well as the name of the student who collected it and the location and date it was found.
- More data can also be included on the herbarium sheet. This could include the different parts of the plant (stem, leaf, flower, root and so on), the plant's medicinal properties and country of origin.