DISCOVERY BOXES

at Blue Jay Point County Park

"Discovery Boxes" are available for group leaders to use in the park **by reservation**.
Call (919) 870-4330 or email bluejaypoint@wakegov.com to reserve boxes for use or to schedule a time to review the boxes prior to use.

All boxes come complete with equipment and activity guides including necessary background materials. Discovery Box information cannot be photocopied due to copyright restrictions.

All activities are hands-on, site-specific, and most are selected for 5th grade suitability (though easily adaptable for other age groups). Leaders are encouraged to use an interdisciplinary approach by incorporating math, art, language arts, and social studies with these science activities.

Discovery Boxes provide wonderful activities for children and adults to use in learning about the environment and the role each human being plays in it. Group leaders are encouraged to implement pre- and post- activities emphasizing the Discovery Box theme.

Boxes with special Group Adaptability
Junior Discovery Boxes, indicated by a ☼**,** are activities that are especially appropriate for children in grades K-2. Boxes especially appropriate for secondary grades and adults are indicated with a ▲. Some boxes require a class-size group to make the activity work, but boxes indicated with a 🧍 can be done in small groups. Boxes with a 🏠must be done inside the Lodge.

1. Plants

BUILD A TREE
Length: 30 minutes **Source:** *Naturescope*
Area: Indoors or Outdoors – open area
Summary: Working together to build a "human tree," students learn the inner parts of a tree and how each part works.

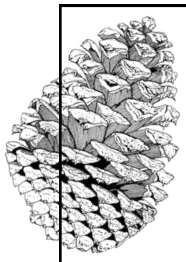
EVERY TREE FOR ITSELF
Length: 30 minutes **Source:** Project Learning Tree
Area: Indoors or Outdoors – open area
Summary: Learn about the needs of trees and what happens when trees grow too close together and have to compete for their needs.

GROW A TREE ☼ 🧍
Length: 20 minutes **Source:** Adapted from "Grow a Plant" USDA FS
Area: Indoors or Outdoors – seated
Summary: Reinforce what plants need to live and grow (air, sun, water, & soil) in a sit-down board game.

KEYING OUT TREES ▲ 🧍
Length: 1 – 1 ½ hours **Source:** *Naturescope*
Area: Indoors or Outdoors – seated
Summary: "Key out" group members according to their physical features, then use the same technique to identify common leaves.

MAPLE SEED MIX-UP ☼
Length: 30 minutes **Source:** Naturescope
Area: Indoors or Outdoors – open area
Summary: Students act out the randomness of seed dispersal to areas with favorable conditions, while learning some things that may inhibit seed growth.

MEET A TREE ☼ 🧍
Length: 20 – 30 minutes **Source:** J. Cornell
Area: Outdoors – forest setting
Summary: Use the sense of touch to discover and recognize a tree by its bark texture and other trunk features.



MY TREE

Length: 1 hour **Source:** Blue Jay Point staff
Area: Outdoors - forest setting
Summary: Use a tree key to learn about an individual tree. Observe forest layers and diversity.

PLANT BINGO ☼

Length: 30 minutes **Source:** Stephanie Avett
Area: Outdoors – garden or trail
Summary: Play bingo as you search for and identify different types of plants (ex: vine, tree, fern), parts of plants (ex: flower, leaf, seed) and more!

SEED BINGO

Length: 30 minutes **Source:** Kelley Stanton
Area: Outside in "seedy" locations
Summary: Play bingo as you search for and identify 8 different types of seed locomotion/travel.

SEED ME THIS ▲

Length: 45 minutes **Source:** Adapted fr. Adirondack Educational Manual and *Naturescope*
Area: Indoors or Outdoors – open space
Summary: Learn different ways seeds disperse and how they are adapted for specific habitats. Hike to look for adaptations for different habitats. Challenge students to modify a bean seed.

TERRIFIC TREES ☼

Length: 1 hour **Source:** Blue Jay Point Staff
Area: Anywhere
Summary: Use the series of labeled, laminated leaf cards for a giant concentration game or group matching activity. The cards can then be used as an ID guide on non-winter tree hikes.

TREE COOKIES ▲

Length: 30-45minutes **Source:** Project Learning Tree
Area: Anywhere
Summary: Can you tell how old a tree is just by looking at it? Discover how to read a tree cookie by looking at the tree rings. Determine natural events that occurred during a tree's life just like a scientist would. Create your own tree cookie based on your age and major life events.

2. Animals

BACKBONE BOOGIE

Length: 1 hour **Source:** *Naturescope*
Area: Indoors or Outdoors - open area
Summary: Discover what makes one group of vertebrates different from another while learning about characteristics of the 5 major vertebrate groups. This tag-style activity will use your brain as well as your legs—the larger the playing area, the more energy expended!

BEAVERS OF BLUE JAY

Length: 30 – 45 minutes plus hike time **Source:** Blue Jay Point staff
Area: Anywhere
Summary: Learn about this fascinating mammal that calls Blue Jay Point home. Handle a beaver pelt and beaver chew sticks. If time allows (1 hour needed), take a hike to look for beaver signs at the lake shore—ask Blue Jay staff for tips on locations.

BIRD BEHAVIOR BINGO

Length: 30 minutes **Source:** *Naturescope*
Area: Outdoors - wherever you can see birds!
Summary: Observe birds in their habitat and understand why they behave as they do. A bingo game helps reinforce identification of the behaviors.

FROGS AND POLLIWOGS ☼

Length: 30 – 60 minutes
Area: Outdoors (open area)/Indoors or Picnic Tables
Source: Parts adapted from *Frogs and Toads: A Whole Language Resource Guide*
Summary: Hop into learning about frogs with two activities designed to teach children about habitat and life cycles. Frog Jump is an outdoor physical activity where children take turns hopping across a series of spots while learning about frogs' habitat needs. **A Frog's Life** is a "small group" board game which reviews the stages of frog metamorphosis.

GOING BATTY ▲

Length: 30 minutes—1 hr
Area: Indoors/Outdoors
Source: Kat Bukowy, Bat Conservation Int'l, NC Wildlife Resources Commission
Summary: Learn all about bats through interactive games. Students will learn the difference between fact and fiction in a trivia game, how echolocation works in a game of Bat/Moth, and the differences between bats inhabiting the Eastern United States.

MAMMAL SAFARI

Length: 1 hour
Area: Outdoors - forest, field
Source: *Naturescope*
Summary: Hike to investigate burrows, dens, nests, rubbings, snips & chews, scat & tracks, etc. as clues to mammals and other wildlife.

MEET A MATE ☼

Length: 30 minutes
Area: Anywhere
Source: *Naturescope*
Summary: Participants test the accuracy of their sense of hearing and compare themselves with animals that communicate largely by sound rather than sight. Using the sound made by your special sound canister, find a mate and form a family group who sounds like you!

OH DEER

Length: 30 minutes
Area: Indoors or Outdoors – open area
Source: Project WILD
Summary: Learn about the components of habitat in this "move around" activity that will help students: identify food, water, and shelter as three essential components of habitat; describe the importance of good habitat for animals; define "limiting" factors and give 3 examples, and recognize that some fluctuations in wildlife populations are natural as ecological systems undergo change.

OWL PELLETS ▲

Length: 1 hour
Area: Indoors
Source: Parts adapted from *Naturescope*
Summary: Discover what owls eat and the skeletal system by dissecting owl pellets. This box contains everything you need to complete an owl pellet lab, except for the owl pellets! Forceps, worksheets, and a lab DVD are included. Owl pellets can be purchased from the following sources: Pellets, Inc.—www.pelletsinc.com Nasco—www.enasco.com

REPTILE RELATIVES

Length: 30 - 45 minutes
Area: Indoors or Outdoors
Source: Sea Turtle Trek EELE and Laura Copeland
Summary: Become familiar with the adaptations, anatomy, and natural history of a sea turtle and a terrestrial turtle. Learn how certain adaptations make them well-suited for the habitats they live in and why the sea turtle is endangered and the Eastern box turtle is not.

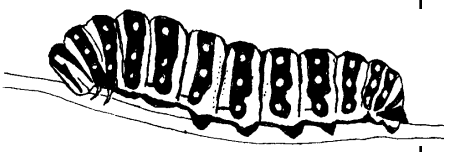
SCALES-N-TALES

Length: 1 hour or more
Area: Lakefront (Sandy Point works well)
Source: Adapted from lesson plan by Helen Eagleson and NC CATCH
Summary: Use this box to complement a fishing experience. Participants will learn to recognize the parts of a fish, identify some species of local fish, record and evaluate scientific data based on using different kinds of organic bait. Develop language and writing skills by describing the event of catching a fish and concocting a "fish story." ***You must provide your own fishing gear and bait. All NC Fishing regulations apply.***

WATERFOWL WONDERS ⬆

Length: 2 1/2 hours including video—can be broken into 2 sections **Source:** *Naturescope*
Area: Indoors
Summary: Learn about waterfowl adaptations that help them be successful in their environment. Reinforce this information with a hilarious tabletop relay game before watching Canada Geese in action in the video "Fly Away Home".

3. Invertebrates



BUG BINGO ☼ 🧍

Length: 30 minutes – 1 hour **Source:** *Naturescope*
Area: Indoors or Outdoors
Summary: Introduce insect habitats and look at the ways insects find food, water, shelter, and a place to lay eggs. Test abilities to spot insects and habitats with a bingo game while on a hike or as a sit-down game with clues.

CAMO-CREEPERS ☼ 🧍

Length: 30 minutes **Source:** Project WILD
Area: Outdoors – meadow, wooded trail, parking lot margins
Summary: Experience the thrill of the hunt learning about predator and prey camouflage while searching for pipe cleaner "walking stick insects."

HOPPER HERDING ▲ 🧍

Length: 1 hour **Source:** OBIS and Kristin Arnebold
Area: Outdoors – tall grass field (mid-May - October); Indoors – seated
Summary: Discuss what makes an insect an insect. Look for insects in their natural habitat and round up a herd of hopping insects (grasshoppers, katydids, and crickets) using sweep nets in the Blue Jay meadow to find what kinds of insects live at Blue Jay Point. For a rainy day activity, unscramble a grasshopper picture and label its parts.

MACROINVERTEBRATE MAYHEM ▲

Length: 45 minutes - 1 hour **Source:** Project WET
Area: Outdoors
Summary: Learn the effects of environmental stressors on the macroinvertebrate population of an aquatic ecosystem by playing a game of tag. Students will model different behaviors to learn characteristics of pollution intolerant and tolerant insects.

ORDERING INSECTS ▲ 🧍

Length: 1 hour **Source:** Stephanie Avett
Area: Indoors or Outdoors – seated
Summary: Discover how scientists categorize living things. Students use pictures and models to figure out the characteristics common to their order of insects and create their own insect that fits into their order. Several orders of insects are introduced (Coleoptera, Hemiptera, Odonata, Hymenoptera, and Orthoptera), with information on other common orders.

SPIDER SENSATIONS ☼

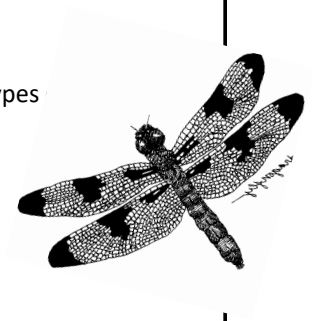
Length: 15 minutes **Source:** *Hands-On Nature*
Area: Anywhere
Summary: Taking on the role of a spider, take part in a simple activity to learn how web-spinning spiders know by touch, rather than sight, when they've captured their prey.

WEB IT! 🧍

Length: 30 minutes **Source:** OBIS
Area: Outdoors - spider habitat (a fabulous Fall activity)
Summary: With the aid of spray misters, investigate the adaptations and behavior of spiders.

WHIRLIGIGS 'N WATER BUGS ▲ 🧍

Length: 45 minutes **Source:** Blue Jay Point Staff
Area: Outdoors – Blue Jay Point's Garden Pond
Summary: Dip a net into the Blue Jay Point pond and get the real scoop on what types life inhabit its waters.



4. Ecology

AM I A BIRD? ▲ 🧍

Length: 15 – 30 minutes **Source:** Leigh Scott-Prater
Area: Anywhere
Summary: Develop language skills and encourage interaction between students, all while increasing awareness of the wild animals that might be living in our backyards.

BEAT THE CLOCK ▲

Length: 45 minutes **Source:** Adapted from *North Carolina WILD Places*
Area: Indoors or Outdoors – open area
Summary: Students attempt to "beat the clock" while exploring amphibian development and some of the difficulties facing amphibian habitats. For an amphibian, development is a very risky business, as once the egg has been laid, there's no turning back. The trick is to develop lungs and get out of the vernal (temporary) pool before it dries up, a task not easily done. Information on several of North Carolina's special amphibian species

CHAIN GANG, THE

Length: 30 minutes **Source:** *Hand-on Nature*
Area: Indoors or Outdoors - open area
Summary: Participants learn the dynamics of producers, consumers, and decomposers in nature and how they form food chains and food webs in this interactive activity.

DRAGONFLY POND ▲ 🧍

Length: up to 2 hours **Source:** Aquatic Project WILD
Area: Indoors
Summary: Learn to evaluate the effects of different land uses on wetlands. This activity requires small group decision-making on how to minimize damaging effects on wetlands during community development.

DRAWN TO NATURE ⬆▲

Length: 1 hour **Source:** Blue Jay Point Staff
Area: Anywhere
Summary: Participants increase their observation skills by beginning a nature journal. Use a "private eye" to get a close-up look at a series df natural objects. Use the drawing materials provided to sketch what you see, and then practice creative and descriptive writing skills to complete your journal entry.

Note to group leaders—this excellent activity housed in 2 boxes represents a significant time investment on the part of the group leader or chaperones to make sure all materials are ac counted for and returned properly. If you know that your group is only going to use one of the two boxes, simply request that particular box by number and it will save you a lot of time.
DRAWN TO NATURE Box #1 (Art supply pouches and nature journals)
DRAWN TO NATURE Box #2 ("Private Eye" magnifying viewers, small boxes with natural objects to view and journaling prompts, diagrams for drawing insects)

GUESS WHAT'S FOR DINNER?

Length: 30 minutes - 1 hour **Source:** Falls Lake EELE
Area: Indoors or Outdoors - open area
Summary: Participants cheer on their favorite trophic level as they help energy flow through an aquatic eco-system in this food web-based activity.

MIND'S EYE, THE

Length: 30 minutes **Source:** Kelley Stanton
Area: Anywhere
Summary: Work on descriptive language skills while examining objects found in nature. Participants describe what an object looks like while their partner guesses what it is.

MY CHANGING NEIGHBORHOOD

Length: 30 minutes **Source:** *Where Have All the Birds Gone* by John Terborg
Area: Indoors or Outdoors - seated
Summary: Introduce habitat loss with this activity and story that demonstrates the changes in songbirds and other wildlife in a neighborhood through the years as land development occurs.

NOCTURNAL NATURE ▲

Length: 1 hour, plus a hike **Source:** Blue Jay Point Staff
Area: Indoors or Outdoors – seated, followed by a self-led hike
Summary: Use this combination of factual information, pictures, and animal legends to learn about nocturnal nature. Listen to recordings of different owls found at Blue Jay in preparation for the main event—your night hike! Helpful hints for a successful night hike are included.

PICTURE THIS ▲

Length: 30 – 60 minutes **Source:** Kelley Stanton
Area: Anywhere
Summary: Develop language and listening skills with this challenging, but quiet activity. A simple line drawing of a natural object is described as a partner tries to reproduce the drawing.

QUICK FROZEN CRITTERS ▲

Length: 45 minutes **Source:** Project WILD
Area: Outdoors – open area
Summary: Play an active version of "freeze tag," which illustrates the role of predator/prey relationships, adaptations, and limiting factors affecting wildlife populations.

SOCK IT TO ME ☼

Length: 30 – 45 minutes **Source:** Kelley Stanton
Area: Anywhere
Summary: Participants test their sense of touch by reaching into a "mystery sock" and trying to guess what it contains. Students can also work on their descriptive language skills by describing what their mystery object feels like to find their match among fellow participants. *Allergy Note: This activity includes whole and "chewed" tree nuts (pecans acorns and black walnuts).*

TRIAL OF FREDDIE THE FUNGUS, THE ▲

Length: up to 2 hours **Source:** Adapted from *The Trial of Freddie the Fungus*
Area: Indoors or Outdoors, seated from Tremont Institute
Summary: Participants explore the interconnectedness of all forest life. Students learn that human ethics/values cannot be placed on wild plants and animals while they act out and discuss this activity.

WETLAND METAPHORS ▲ 🧍

Length: 30 minutes **Source:** Aquatic Project WILD
Area: Indoors or Outdoors – seated
Summary: Citizens of our rapidly changing world should understand the benefits of wetlands as resources for humans and other species. By matching metaphoric objects and pictures to written wetland functions, this activity brings those benefits to life and encourages a new appreciation for the many important roles of wetlands.

WETLAND WORRIES ▲

Length: 1 – 2 hours **Source:** National Wildlife Federation
Area: Indoors
Summary: Recreate a town meeting called to discuss the development of a wetland area. Role-play a developer, business owner, an adjacent landowner or an Audubon Society representative—but get involved.

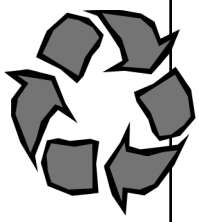
WHO'S WHO AT BLUE JAY ⬆▲

Length: length varies **Source:** D'Nise Hefner
Area: Indoors
Summary: Keep your group busy with multiple activities designed to perform a variety of housekeeping functions for groups that stay in the Blue Jay lodge, including Ice Breaker, Division into Groups, Visual Display of 36 animals that call Blue Jay home, and an Inclement Weather Activity (mini-reports and presentations).

WOODLAND BINGO ☼ 🧍

Length: 30 minutes – 1 hour **Source:** D'Nise Hefner
Area: Anywhere
Summary: Get everyone out on a hike to enjoy Blue Jay's trails! Participants will enjoy a visual scavenger hunt for things in nature. In case of inclement weather, or as a follow up learning session, play the "sit-down" version of Woodland Bingo with age appropriate clues that teach participants something about each nature item.

5. Environmental Studies



DON'T GET WASTED ▲ 🧍

Length: 30 – 45 minutes **Source:** Blue Jay Point Staff
Area: Anywhere
Summary: Encourage interaction between participants while increasing awareness of how we can avoid sending waste to the landfill with this recycling icebreaker.

EARTH BUDDIES ☼ 🧍

Length: 30—60 minutes **Source:** Parts adapted from *Naturescope*
Area: Anywhere
Summary: Encourage the development of an environmental ethic with three separate, short activities. These activities focus on things that are good or harmful for the Earth; creative thinking about reusing an everyday object; and comparing the environmentally "green" components of bagged lunches rather than the nutritional components. Each activity can stand alone.

ENVIRO GAMES ⬆ 🧍

Length: multiple activities, length varies **Source:** Various
Area: Indoors
Summary: Keep your group entertained and dry with many different environmental games good for rainy day fun!

ETHI-REASONING ▲ 🧍

Length: 1 hour **Source:** Adapted from Project WILD
Area: Indoors or Outdoors – seated
Summary: Participants use critical thinking skills to evaluate situations requiring ethical decisions.

EYE SPY ☼ 🧍

Length: 30 minutes **Source:** Kat Bukowy
Area: Blue Jay Center for Environmental Education (Mon-Sat 8a.m.-5p.m.)
Summary: Participants will increase their skills of observation in this visual indoor scavenger hunt. Most appropriate for younger audiences and students with reading/language differences.

GARDEN EYE SPY ☼ 🧍

Length: 30 minutes **Source:** Blue Jay staff
Area: Blue Jay Education Garden
Summary: Students will increase their skills of observation in this visual all-season outdoor scavenger hunt. Two sets of cards provide challenges for participants of varying ages.

INDOOR SCAVENGER HUNT ▲ 🧍

Length: 20 – 60 minutes **Source:** Blue Jay Point Staff
Area: Blue Jay Center for Environmental Education (Mon-Sat 8a.m.-5p.m.)
Summary: Team up to compete in an indoor scavenger hunt through the Blue Jay Center exhibits with this great rainy/hot/cold day activity! Water quality, current environmental issues, habitat types, and more will keep you busy as you search for elusive answers! Following activity, discuss as a group!

LIFE CYCLE OF EVERYDAY STUFF, THE ▲ *Newly Revised*

Length: 1-2 hours **Source:** D'Nise Hefner and Stephanie Avett
Area: Indoors
Summary: Participants gain an understanding of the life of everyday items, such as soccer balls, cell phones, and more from their "birth" as raw materials to their "death" or "rebirth" after we've finished using them. Small and large group activities encourage students to brain storm ideas for reuse, learn about where different raw materials come from, and more!

6. Earth Science

AIR BINGO ☼

Length: 30 minutes **Source:** US EPA—Air Pollution Training Institute - Air Pollution Scavenger Hunt (adapted)
Area: Seated area indoors or out
Summary: This activity will help early elementary children begin thinking about the air around them and air quality concerns. Children have the power to affect the quality of the air around them.

ASTRONOMY ADVENTURES ⬆▲

Length: 30 min. – 1 hour **Source:** **The Night Sky Deck** by Ratcliffe and Nix
Area: Outdoors away from lights
Summary: Throughout the ages ancient peoples have studied the stars, the sun, the planets and the moon; and their appearance of ever-changing events in the night sky. Learn to identify some of the constellations used for navigation by ancient sailors and nomadic travelers. By studying the apparent magnitude of stars (brightness, size and color) we can learn much about the temperature of stars and what they are made of. This activity box includes glow-in-the-dark monthly charts to help you identify the constellations tracked each month. Basic astronomy information and the planets in our solar system is highlighted in these easy to use viewing charts.

BIG SWEEP ▲ 🧍

Length: 1 hour and up **Source:** Keep America Beautiful
Area: Outdoors – Upper Barton fishing area, Lower Barton Bridge areas, (these areas require car access; can hike back to Center or Lodge if desired – approx. 1¼ mi. hike), BJP lakeshore in dry weather
Summary: Help out wildlife habitat and improve water quality by donning gloves and picking up trash along the Falls Lake shore. Wear closed-toe shoes!! All participants must be 8yrs. and up to use this box

DISCOVER OUR ECOLOGICAL ADDRESS ▲

Length: 30 min. – 2 hours **Source:** Adapted from Proj. WET and NC OEE website
Area: Outdoor
Summary: Where does the water go when it rains? Learn what a river basin is with the following activities, each lasting approximately 30 minutes. **Water Drop Match:** Discover Blue Jay Point's river basin and what makes it special (this particular activity could be done inside). The following activities use Blue Jay's giant N.C. river basin map. **River Basin Riddler Relay:** This action-packed, trivia-based fact game promotes participant learning about N.C.'s 17 river basins (best for class-size groups). **River Basin Hopscotch:** Participants label the 17 N.C. river basins and increase their fitness by "hopscotching" across the map while practicing the basins' locations (great for small groups!). **Map Makers:** Using the provided information, participants label geological features, cities, etc. on the giant map with sidewalk chalk. Participants draw in the major rivers and tributaries, then trace how the water flows in the basins.

DISCOVERING DROUGHT ▲

Length: 1 - 2 hours **Source:** Adapted from Proj. WET *Discovering Drought* publication
Area: Indoors, classroom style
Summary: How can there be drought in a rainforest—or in a desert? What exactly is a drought? Learn the answers to these questions and more, such as droughts around the world, predicting and planning for droughts and dendrochronology (history and life of a tree).

DRIP DROP

Length: 30 minutes **Source:** Project WET and Christina Sorensen
Area: Outdoors - open area
Summary: Participants learn about erosion and sedimentation as they act as water drops traveling to a pond. Students will compare the speed at which water flows across land with and without plant cover, and how this affects sediment pollution.

DON'T TAKE A "LICHEN" FOR POLLUTION ▲

Length: 30 minutes - 1 hour **Source:** Air and Waste Management Association: Environmental Resource Guide—Air Quality
Area: Outdoor area with lichen
Summary: Participants learn about different kinds of lichen and how they act as bio-indicators for air pollution. The participants will evaluate the relative health of the environment they are studying based on the presence, diversity, and size of lichen in the area.

EROSION GAME, THE

Length: 30 minutes **Source:** Stevens Nature Center
Area: Indoors or Outdoors - open area
Summary: Demonstrate erosion and the effects that people and rain have on the landscape with this action-based game. The object of this game is for the soil to stay in the boundaries of a given ecosystem, ie. at Blue Jay Point and not run into Falls Lake.

MINERAL MADNESS ▲

Length: 1 – 2 hours **Source:** Various sources
Area: Indoors or Outdoors – seated
Summary: Investigate some of the properties of minerals. Learn to identify several common minerals through scientific observation and experimentation.

THIRSTY FOR WATER CONSERVATION ▲

Length: 1 – 2 hours **Source:** Aquatic Project WILD and Project WILD
Area: Indoors or Outdoors, seated, followed by a hike to the lake
Summary: Explore what is polluting our waters with water pollution games and a water testing activity. **Deadly Waters** increases awareness of many pollutants, their causes, and how they affect the environment. **No Water Off a Duck's Back** focuses on different kinds of litter and how they adversely affect aquatic wildlife. Also, learn to test water quality by looking at temperature, turbidity, and pH. Compare and share your results with other groups by recording your data on our Falls Lake water quality sheet.