

MIDDLE & HIGH SCHOOL 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.

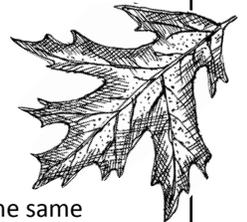
The following activities are hands-on, site-specific, and appropriate for middle and high school students. Leaders are encouraged to use an interdisciplinary approach by incorporating math, art, language arts, and social studies with these science activities.

Discovery Boxes provide wonderful activities for students to use in learning about the environment and the role each human being plays in it.

Boxes with special Group Adaptability

Many boxes require a class size group to make the activity work. Some boxes indicated with a † can be done in small groups. Boxes with a ▲ must be done inside the Lodge.

1. Plants



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.

SEED ME THIS ▲

Length: 45 minutes **Source:** Adapted fr. Adirondack Educational Manual
Area: Indoors or Outdoors – open space and *Naturescope*
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.

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

GOING BATTY ▲

Length: 30 minutes—1 hr **Source:** Kat Bukowy, Bat Conservation Int'l,
Area: Indoors/Outdoors 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 among bats inhabiting the Eastern United States.

OWL PELLETS ↑ ▲

Length: 1 hour

Source: Parts adapted from *Naturescope*

Area: Indoors

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

3. Invertebrates

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.

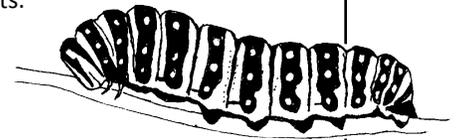
ORDERING INSECTS ▲ ♯

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.



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 of aquatic life inhabit its waters.

4. Ecology

AM I A BIRD? ▲ ♯

Length: 15 – 30 minutes

Source: Leigh Scott-Prater

Area: Anywhere

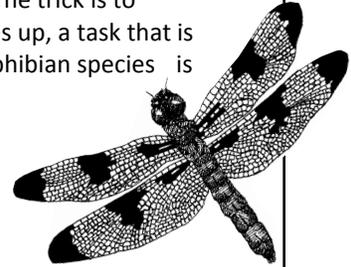
Summary: Develop language skills and encourage interaction between students, all while increasing awareness of the wild animals that might be living in our backyards.

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 that is not easily done. Information on several of North Carolina’s special amphibian species is included.

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 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 of 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 to make sure all materials are returned properly. If you know that your group is only going to use one of the two boxes, simply request it by number.**
DRAWN TO NATURE Box #1 (Art supply pouches and nature journals)
DRAWN TO NATURE Box #2 (“Private Eye” magnifying viewers and boxes with natural objects)

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.

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: Students 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 the multiple activities in this box. The activities are 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).

5. Environmental Studies



DON'T GET WASTED ▲ ♯

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

ETHI-REASONING ▲ ♯

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

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!

6. Earth Science

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!! If you would like your group's effort to be counted as official "Blue Jay volunteer time", members of your group must provide use with completed Volunteer Service Agreement and Release Forms available for download at www.wakegov.com/parks/bluejay/pages/volunteer.aspx

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).

DON'T TAKE A "LICHEN" FOR POLLUTION ▲

Length: 30 minutes - 1 hour **Source:** Air and Waste Management Association:
Area: Outdoor area with lichen Environmental Resource Guide—Air Quality
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.

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.