Teacher Guides were made by teachers for teachers as a collaborative project of EVSC, USI, and WNS. Special thanks to the authors of this Guide: EVSC Teachers, and to the authors of the bibliography: USI Dept. of Teacher Education faculty Dr. Joyce Gulley and Dr. Jeff Thomas.

Program: TRACKS & TRAILS

Target Audience: Grades 3, 4, or 5

Description: Many creatures stay out of our sight, but they are not out of mind because we encounter signs of their activity. Become a true nature detective and search for clues of the wildlife living among us in our woods, wetlands, and waterways. Evidence that animals have left behind-tracks in the mud, a feather on the ground, a nibbled branch-can teach us a lot about their homes and habitats.

Teacher Guide Contents:

1. Program Agenda & Synopsis
2. Objectives, Academic Standards and Correlations
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   a. Post-program lesson plan
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   d. Games
   e. Snacks
   f. Music
   g. Stories
5. Resources
   a. Book
   b. Web
6. Assessment
   a. Pre- and Post-program survey
   b. Assessment Rubric
Program Agenda: Time Needed: 2.5 hrs.

I. Welcome and Introduction 25 min
II. Activities (with rotation if necessary)
   A. Tracking and Trailing Hike 60 min
   B. Make Tracks 30 min
   C. Carnivore Crossroads Game 30 min
III. Conclusion 15 min

Program Synopsis:
After a brief introduction to vocabulary and concepts, children will be split into smaller groups for the duration of the program. The introductory discussion will include explanation of scientific investigation and process, how to look for evidence or signs that an animal has been there, types of evidence to look for i.e. fur, scat, bones, markings, dens, etc., and the program’s agenda.
Small groups will then move among activity stations demonstrating the scientific process and hands-on techniques for investigating the evidence of wildlife in a habitat and their interactions. Activities will include a hike through the woods to make close observations of living organisms in their natural habitats and search for clues of their occurrence in that habitat, an interactive game of clues to tell a predator/prey story, and the crafting of animal tracks using plaster track molds to take home. Students will utilize their notebooks to record their observations and make conclusions about what they’ve learned, demonstrating their understanding of organism interactions.

Objectives: Students will be able to….

1. Gain an understanding of the nature of science. Conduct scientific investigations using knowledge, tools, and environmental evidence.
2. Observe, identify, and describe adaptations of plants and animals that affect their survival and are suited to different habitats.
3. Recognize that organisms interact with each other and their environment in various ways for survival.
4. Use observation and evidence to make predictions about the relationships in nature.
5. Draw and write about observations in a journal.
6. Have Fun

Indiana Academic Science Standards Summary: Students investigate the nature of science using knowledge, tools, and evidence. Students recognize and describe differences in living things, and work cooperatively to use evidence to make predictions about their interactions. Students will revise their understanding of interrelatedness of organisms with their environment, and communicate their findings in notebooks.

Indiana Academic Science Standards Code:
2010 IASS: Grade 3-5 Nature of Science Process Standards, Life Science Standards:
Grade 3 [Changes] Change and Growth:
- Observe, describe, and ask questions about plant growth and development.
- Take measurements of plant growth. Observe, ID, and record plant structures and their functions.
- Observe, ID, and compare different plants and their structures.
- Model the life cycle of a plant.
- Form hypothesis and test influences on plant growth.
Grade 4 [Form and Function] Structures of Life:

5/22/13
• Observe, describe, and ask questions about structures of organisms that affect their growth and survival.
• Show that offspring are like parents and others, but vary.
• Observe, compare, and record – draw and write – physical characteristics (adaptations) of live plants and animals from widely different environments.
• Design investigation to explore how an organism meets its needs by responding to information from environment.
• Engineer and describe how a given organism might adapt to global warming.

Grade 5 [Systems] Interdependence:
• Observe, describe, and ask questions about how changes in one part of an ecosystem create changes in other parts.
• Observe and classify organisms as producers, consumers, decomposers, predator and prey.
• Describe and build a nature recycler to allow observation of decomposition i.e. earthworms in compost.

STEM Correlations:
• Science: Refer to the Life Science Standards
• Technology:
• Engineering:
• Mathematics:

English/Language Arts Correlations:

Program Preparation:
Students will get more out of the program if they have been introduced to the following vocabulary and concepts prior to the program visit.

Vocabulary:
Scientific experiment, hypothesis, habitat, niche, predator, prey, evidence / signs

Concepts:
• Scientific process – using a repeatable unbiased experiment to validate or disprove an educated guess about a cause and effect relationship.
  o Hypothesis
  o Methods
  o Results
  o Conclusion
• Habitat – where an organism lives, its home; contains food, water, shelter, and space in an arrangement appropriate for the organism’s biological needs.
• Niche – what an organism does in its ecosystem, its role.
• In all ecosystems there are predator / prey dynamics, where predators hunt and eat prey animals.
  o Predator – animal that hunts and kills and eats its prey
  o Prey – animal that is hunted and eaten.
• Evidence – signs or clues that can tell a story.
You can tell if an organism is present / or has been present in a particular habitat without even seeing that organism, just by knowing where and what to look for in a habitat. A way to do this is to use clues about animal behavior look for something left behind by that plant or animal.
Signs of plant / animal presence:
- Tracks
- Trails
- Scat
- Pellets
- Nests or dens
- Browse or carrion
- Feathers, fur, skins (ex. snake sheds), bones
- Seeds, leaves, bark

Where to find signs of animal presence:
- In wet soil
- Along animal paths and trails
- Near water / food / shelter sources
- Where there is less human activity

**Program Follow Up:**
- Review vocabulary & concepts.
- Lead students to discuss / share their field trip experiences
- Review student notebooks as a class and assist students with completion/correction of answers.
- Rent the WNS Traveling Nature Trunks for your classroom, if available for your program topic.
- Utilize one of the many supplemental lesson plans available on our website: [www.wesselmannnaturesociety.org](http://www.wesselmannnaturesociety.org) > Educators (top tab). Most programs have completed supplements but some are still in development.

**Activity suggestions:**

**Arts/ Crafts:**
- Make animal track stamps
- Make track molds outside (can do their own footprints in moist sand or mud if no animal prints can be found)

**Games:**
- Footprint ID game
- Animal tracks matching game
- Online Tracking Game
  [http://nwwoodsman.com/TrackingGame/TrackinGameB.html](http://nwwoodsman.com/TrackingGame/TrackinGameB.html)
Snacks:

- Scat matching game, candy items used to represent different scats, can eat when done with game
- Bear scat fudge
  http://www.trailcooking.com/recipes/bear-scat-fudge
- Raccoon Scat treat

Bibliography:

**Animal Tracks and Signs.** Jinny Johnson. National Geographic, 2008. ISBN 978142630253. EVPL Call Number 599.147 JOHNS. A species-by-species guide to the clues left behind by more than four hundred animals helps readers identify what to look for when tracking animals in the wild or in the backyard.

**Citizen Scientists: Be a Part of Scientific Discover From Your Own Backyard.** Loree Griffin Burns. Photo. Ellen Harasimowicz. Henry Holt and Co, 2012. ISBN 0805090622. Four projects, one for each season, show students how they can become scientists by observing the organisms in their own backyards.


**A Place for Bats.** Melissa Stewart. Illustrated by Higgins Bond. Peachtree, 2012. ISBN 1561456241. Fascinating facts about bats, their habitats, and their importance in the ecosystem are detailed. One page tells how Indiana bats were almost eradicated due to human interaction.


**WILD TRACKS: A GUIDE TO NATURE’S FOOTPRINTS.** Jim Arnosky. Sterling Press, 2008. ISBN 1402739850 EVPL Call Number 591.479. A variety of animals – from bears, to deer, to birds – are displayed on full page spreads showing each animal and its habitat on one side and the tracks they leave behind on the other. Detailed explanations reveal subtle clues about how to read additional information about the animal’s habits from the tracks left behind.

**Other Book Resources:**

**Websites Resources:**
- Supplemental lesson plans on our website: [www.wesselmannaturesociety.org](http://www.wesselmannaturesociety.org)
- Indiana DNR Educator Resources: [http://www.in.gov/dnr/fishwild/2340.htm](http://www.in.gov/dnr/fishwild/2340.htm)
- What Animal is it? Track and Scat ID: [http://www.mspca.org/programs/wildlife-resources/what-animal-is-it.html](http://www.mspca.org/programs/wildlife-resources/what-animal-is-it.html)

**Pre- and Post- Program Assessment:**
Be sure to ask a pre- and post- program survey question to assess student learning. (A ready-to-use form was provided with your confirmation and is also available on our website.) Please report the results on your program evaluation form and return to us.

**TRACKS AND TRAILS:**
Q: What can you look for to find out what animals live in an area?
A: The signs (evidence) an animal leaves behind.