Spring in the Forest Lessons and Activities

In this Section	Grade Levels	Objectives
Signs of Spring, Page 11	PreK-5	Discuss spring and natural cycles. Use all five senses to discover signs of springtime in the Troy Community Forest.
Bird Watching, Page 12	3-12	Hone wildlife watching skills and learn to identify birds common to Troy Gardens. Discuss field marks, anatomy, and habitats. Plan a bird walk, and use binoculars to observe.
Reptiles and Amphibians, Page 13	PreK-12	Learn the differences between reptiles and amphibians. Brainstorm and discover which reptilian and amphibian species reside in the Troy Community Forest.
Wild and Edible Plants, Page 14	6-12	On a walking tour of Troy Gardens, discuss the benefits and hazards of wild edible plants to animals, humans, and the landscape. Identify and taste edible plants.
Garlic Mustard, Page 15	PreK-12	Learn how to identify, pull, and dispose of an invasive species. Turn stewardship lesson into a cooking lesson by making pesto.
Spring Ephemeral Planting, Page 16	PreK-12	Discover and plant ephemerals and wildflowers in the forest. What is an ephemeral and how do we plant them?
Bark Identification and Rubbing, Page 17	PreK-5	Participate in a nature craft and learn to identify tree species by studying the shape and texture of their bark.
Tree Identification, Page 17	6-12	Using field guides, identify seasonal characteristics and tree species in the forest.

Suggested Nature Games, Recipes, and Crafts:

Predator/Prey Red Rover: See Appendix I, Page 33
Nature Wax Figure Tag: See Appendix I, Page 34
Garlic Mustard Pesto: See Appendix II, Page 35
Building a Bird Nest: See Appendix III, Page 37

Signs of Spring

May require teacher, student, or class research to encourage discussions.

Talk about spring and natural cycles. Take children on a hike through the forest and have them use their five senses to look for signs of spring.

Begin with the following examples:
Look under leaf litter to find green plant shoots.
Turn up rocks to discover worms and insects.
Feel branches and look for leaf buds.
Look and *listen* for birds and count how many different species you see or hear.
Invite children to imitate bird calls they hear.
Look for nests in trees.
Late spring: Identify flowers and plants (e.g. Bloodroot, Mayapple, and Dog Tooth Violet).
Taste garlic mustard.
Close your eyes and *smell* the spring air.

Record the Signs of Spring You See Today:
Date: _____

_____

_____

_____

_____

_____

Compare this list with the list you create next spring! Look for patterns!

Variation:

Treasure Map

1. Give children clipboards, blank maps, writing utensils, and bandanas/cloth pieces.
2. Have them identify signs of spring and plot them on a map of the forest.
3. In addition, invite children to mark signs of spring with bandanas/cloth pieces.
4. Ask them to trade maps with one another.
5. Go out into the forest and search for new treasures!

Grade levels: PreK-5

Wisconsin Model Academic Standards Addressed:
Agricultural Education: E.4.1; Environmental Education: F.4.1, F.4.2, F.4.3, F.4.4; Science: C.4.1, C.4.2, C.4.6, F.4.4

Activity Time: 10-15 minutes

Supplies:
☐ Photo Identification Cards: Trees, Flowers, Insects, Birds
☐ Field Guides

Variation:
☐ Clipboards
☐ Blank Maps
☐ Pencils, Colored Pencils, markers
☐ Bandanas/Cloth Pieces

Vocabulary:
1. Natural Cycle: An order of events that a plant or animal completes during its life; a cycle may be repeated.

Grade levels: 3-12

Wisconsin Model Academic Standards Addressed:
Agricultural Education: E.4.1; Environmental Education: A.4.1, A.4.2, A.4.3, A.4.4, A.8.4, A.8.5; Science: C.4.1, C.4.2, F.4.1

Activity Time: 65 minutes

Supplies:
- ☐ "Fly By" Cards
- ☐ Binoculars
- ☐ Field Guide
- ☐ Notebook
- ☐ Pencil

Vocabulary:
1. Field Mark: Distinct coloring, pattern, body size and shape that determines one species' identification from another
2. House Sparrow: Frequent visitors in the gardens, they perch on fence posts and tomato cages. Look for their distinct black "bibs."
3. Tree Swallow: Residents in many of our birdhouses, they have iridescent green coloring on wings and back and a white belly.
5. Eastern Bluebird: A welcome friend to the gardens, we have established bluebird houses throughout the land. Look for the males' red breast and blue back and wings.
6. American Goldfinch: An undulating flyer (flies up and down in shallow waves) and frequent visitor in the gardens and prairie, both males and females have yellow backs and bellies and black wings with two white bars. Males also have a black cap.
7. American Robin: Wisconsin's State bird and our hopping, worm-digging garden friend. They have brown heads, backs, and wings and red bellies.
8. Frugivore: An animal that eats fruit.

Helpful & Inspiring Resources:
1. *Wisconsin Breeding Bird Atlas*, Wisconsin Society for Ornithology
2. *The Sibley Field Guide to Birds of Eastern North America* by David Allen Sibley

Wildlife Watching: Birding Skills and Identification

Activities below are shared in a full lesson format. Please construct your lesson to your needs. "Fly By" activities may require advance preparation.

Gather to for a name game. Ask participants to share their name and act out something a bird might do during its day. Examples include hop, fly, build a nest, feed young, hunt for worms, eat a berry, enjoy a birdbath, sing a song, peck a tree, and migrate south. (5-10 minutes)

Play "Wildlife Watching." See Appendix I for instructions. (10 minutes)

Practice wildlife watching skills with "Fly By" activities. With at least ten images of birds common to the area, encourage wildlife awareness skills with three rounds: (15 minutes)

Round 1: "Fly" images "by" kids quickly! Ask students to share what they noticed.

Round 2: "Fly" images "by" kids slowly. What did students observe this time? During this round, kids may use construction paper binoculars to help them hone in on the details (or field marks) of the birds, especially between the male and female birds of each species.

Round 3: Invite one or two participants to be blindfolded. Ask the remaining participants to again look for distinguishing details as the bird "flies by." How well can participants describe a bird to those blindfolded? Examples of bird images include Red-winged Blackbird, American Robin, and Blue Jay. These three birds are very common and fairly well known; however, if participants are less knowledgeable it is a good idea to use images from the first two rounds—images already seen and described—again in this round. Those blindfolded may be better able to picture a described bird and guess it correctly!

Get familiar with binoculars. Adjust the knob to focus on an object or bird close to where the group is gathered. Discuss methods for spotting birds: scan area slowly with binoculars to your eyes; watch for movement without binoculars and when spotted, keep your eyes on the bird and bring the binoculars to your eyes (this takes practice and may be helpful to do so before starting on your bird walk); listen for calls, songs, and pecking (when in the forest). (10 minutes)

Take a bird walk. Don't forget binoculars, notebooks, and field guides! Walk slowly and share with others if you spot something. Try to share the characteristics you observed. Can you identify the bird together? Did you recognize it by sight, sound, or both? Where did you spot it? What was it doing? As you take note of these things you will begin to familiarize yourself with the birds common to your area. At Troy Gardens, make sure to investigate the different habitats including the gardens, maple woodland, and prairie. (At least 20 minutes)

Special interests:
- Eat mulberries like a frugivore. Which birds are frugivores? (Answer: The Cedar Waxwing is a frugivore common to Troy Gardens.)
- Create clay/mud birds' nests. Collect other natural materials to enhance the structure of your nest! Form eggs for your nest, too.
- Check on the bluebird houses. Which houses are occupied? Do *bluebirds* occupy them? How do you know? Please remember to keep a respectful distance while observing.
- Put together a Troy Gardens field guide. Include drawings, descriptions, and observations of the birds you see.

Reptiles and Amphibians: Who are they? Where do they live? What do they do?

May require teacher, student, or class research to encourage discussions.

Activity for grades Pre-K-5: Discuss the differences between reptiles and amphibians. Share with students which of these may live in the forest. Why do you think they live in the forest? Where in the forest do you think we can find them? Here, introduce the secretive nature of salamanders. This secretive nature is one of their defensive strategies.

A salamander will also defend itself by bending its head down, or laying its head flat against the ground and head butting when attacked. Their predators are shrews, birds, snakes, other salamanders, beetles, centipedes, and spiders. Learn about predator-prey relationships and defensive strategies by joining in a predator-prey game. Create your own or refer to Appendix I to learn instructions for "Salamander Survival."

Now that you have discussed defensive strategies, turn to discover salamanders' secret places and search for where they may be living in our forest, e.g. big, dead log. Share secret places with classmates.

Record Your Observations: Date: _____

_____

_____

_____

_____

_____

Animal and Habitat Identification

Activity for grades 6-12: Discuss differences between reptiles and amphibians. Search for hidden secret salamander places, as well as other reptiles and amphibians in the forest. Encourage students to sketch or photograph and identify which live in our forest. What characteristics do you look for in order to identify species? Describe their habitats.

Grade levels: Pre-K-5, 6-12

Wisconsin Model Academic Standards Addressed:
Agricultural Education: E.4.1; Environmental Education: A.4.1, A.4.2, A.4.3, A.4.4, A.8.4, A.8.5, B.4.4, B.4.6; Science: C.4.1, C.4.2, C.8.1, C.8.2, C.8.3, F.4.1, F.4.3, F.4.4

Activity Time: 30 minutes

Supplies:
☐ Photo Identification Cards
☐ Life Chips (any material/objects)

Activity for grades 6-12:
☐ Paper
☐ Pencils
☐ Field Guides
☐ Camera

Vocabulary:
1. Reptile: Cold-blooded vertebrates including, alligators, crocodiles, snakes, turtles, and lizards. These animals have hard scales or plates, claws, and lay tough eggs.
2. Amphibian: Cold-blooded vertebrate including, toads, frogs, and salamanders. These animals lay soft eggs in water, and their young begin life breathing underwater. As adults they have soft skin, and must live near water.
3. Habitat: The place where an animal or plant lives. This place must provide food, water, and shelter. Small-scale examples include nest, log, tree, and burrow. Large-scale examples include forest, wetland, garden, and lake.
4.Ecosystem: The encompassing environment, plants, and animals that live and grow together.
5. Defense (defensive strategy): A prey's action in order to protect itself from a predator.
6. Predator: Animal that hunts and eats its prey.
7. Prey: Animal that is hunted and eaten by a predator.

Helpful & Inspiring Resources:
1. *Reptiles and Amphibians: Eastern/Central North America* by Roger Conant and Joseph T. Collins

Grade levels: 6-12; *Lesson can be simplified for younger grade levels*

Wisconsin Model Academic Standards Addressed:
Agricultural Education: E.4.1; Environmental Education: C.8.1, C.8.2, F.8.2, F.8.7, F.8.8, F.12.7, F.12.9

Activity Time: 30 minutes

Supplies:
☐ Discussion Cards (for group leader)
☐ Wild Edible Plants List
*See Appendix VI, pages 47-48
☐ Field Guides
☐ Resource Books

Vocabulary:
1. **Invasive Species**: A non-native species with an advantage over native species; grows to dominate an **ecosystem**.
2. **Over-harvest**: To pick so many plants that there are not enough left to propagate next year's crop.
3. **Armament**: A physical feature used for defense.
4. **External Chemical**: Poisonous or irritant chemicals on the leaves or stalks of plants, making the plant harmful to the touch.
5. **Internal Chemical**: Poisonous chemicals in the leaves or stalks of plants making them harmful to ingest.

Helpful & Inspiring Resources:
Information in this section was gathered from:
1. *Edible Wild Plants: A North American Field Guide* by Thomas S. Elias & Peter A. Dykeman
2. *Tom Brown's Field Guide – Wild Edible and Medicinal Plants* by Tom Brown, Jr.

Wild Edible Plants Discussion and Hike

Discuss the following and plan a hike through Troy Gardens, including the maple woodland. Refer to the Wild Edible Plants list and snack while hiking!

- Food is everywhere! Many plants are edible, and some have medicinal uses as well. Some plants that are edible are exotic, invasive species. They are often abundant and can be destructive to ecosystems. Refer to the list of wild edible plants growing at Troy Gardens in Appendix VI, pages 45-46.

- Nutrition and Importance of Eating Fresh
  When foods are packaged, frozen, etc. they lose many of the vitamins and minerals that make them nutritious. That's why it is so important to eat things that are fresh and in season.

- Safe and Responsible Foraging
  1. Danger of over-harvesting
  Be sure not to take too much from a given area; pick too much and there will be none next year.
  2. Danger of poisoning and allergic reactions
  Always be 100% sure of the species of any plant before you eat it; "when in doubt, leave it out", there is a very real danger of poisoning. Also, be careful with any plant that you have never eaten before, you don't know how your body will react.

Plants Defenses

- Armament
  Thorns, stinging hairs, tree bark, etc.

- External Chemical
  Poison Ivy and Wild Parsnip are two examples of plants whose leaves have chemicals that may cause allergic reactions.

- Internal Chemical
  Deadly Nightshade and many kinds of mushrooms contain poisons and other chemicals that are harmful.

- Intentional Appeal to Animals
  Many plants produce seed bearing fruits that are colorful or sweet so as to appeal to animals. The seeds pass through the animal's digestive system, and are dispersed over a larger area than just falling off the plant.

Cooking

- Necessary vs. Recommended
  Some plants must be cooked before they are edible to remove harmful chemicals or armaments, while others just greatly improve in texture and taste when they are cooked.

- Salads and Trail Picking
  Some plants can be picked and eaten raw, but make sure you know the plant!

Kids Garden and Farm Crops and Their Wild Ancestors in the Forest
Many plants that have been domesticated have relatives that grow wild. Asparagus is one example.

Garlic Mustard: Pulling for Pesto!

General Information on Garlic Mustard:
From: http://www.ipaw.org/invaders/garlic_mustard/gm.htm
The leaves of garlic mustard give off a distinctive odor of garlic, and the plant was probably introduced from Europe (where it is a native) by early settlers who were looking for a good source for salad greens. Garlic mustard is a cool-season plant and grows best in moderate to deep shade. It gets an early start in the spring, and makes so much shade that native wildflowers cannot thrive. The first victims of garlic mustard are therefore spring ephemerals such as trillium, bloodroot, Jacob's ladder, and wild geranium.

Photo

Life History: Garlic mustard is a biennial plant. Starting from seed, the plant grows in a rosette form close to the ground, gradually spreading. A lot of these first-year plants overwinter and as soon as the woods warms up in the spring they start to grow again. In southern Wisconsin these second-year plants flower in May or early June, forming large numbers of seeds. The seeds are sticky and readily attach themselves to animal fur, shoes, auto tires, etc. The plant is rapidly spread by human activity, as well as by animals. Within a few years, garlic mustard can become dominant on the forest floor, shading out all native plants.

Hand Pulling: Small infestations can be readily controlled by pulling second year plants by hand. The best time to pull plants is when they have just started flowering, but before any seeds have been made. Pulling works best if the soil is moist, after a rain. Be sure to pull all the roots out, because roots left in the ground can resprout and form new plants. It is best to put all flowering plants in bags and remove them from the property, because plants that are pulled and laid on the soil may go ahead and set seed. Do not place garlic mustard plants in compost or any other vegetative material, where the seeds might remain alive. Put the bags in a landfill, where they will be immediately buried.

Activities:

- Identify the garlic mustard plants in the woods, using plant ID guides or other resources. If you're unsure, smash a leaf—if it smells garlicky, it's probably garlic mustard! Admire the white flowers (April & May).
- Teach the students how to properly pull garlic mustard-pull slowly and make sure you get the whole root. Then place the plants in a garbage bag. Leave the bags near the road so that the city can pick them up and take them to the landfill.
- See how many garbage bags you can fill in 15 or 30 minutes-you'll be surprised! Have contests, offering prizes for the longest root and the craziest-looking root. Have students work in teams, focusing on the most heavily-infested areas.
- For older students: Create a map of the woods, diagramming the infestations. What shape are the infestations (oval, round or elongate)? What's the diameter (or area in feet) of the population? What's the density of the population (dense, scattered, very scattered)? What's the ratio of first-year plants to second-year plants? For each area, what is the % ground cover of garlic mustard vs. other plants, like trees and ephemerals?
- Make garlic mustard pesto! It's delicious. *See Appendix II, page 35.

Grade levels: PreK-12, Families

Wisconsin Model Academic Standards Addressed: Agricultural Education: E.4.1; Environmental Education: A.4.1, A.4.2, A.4.3, A.4.4, A.8.5, B.8.3, B.8.8, B.12.7, C.4.1, C.4.5, D.4.2, D.8.2, D.8.3, D.8.5, D.8.6, D.12.2, D.12.5, E.4.1, E.4.2, E.8.1, E.12.3; Science: C.4.1, C.4.2, C.4.6, C.8.1, C.8.3, F.8.2, 12.7, **H.12.1, H.12.5**

Activity Time: 60 minutes

Supplies:

- ☐ Garbage Bag
- ☐ Paper
- ☐ Pencils
- ☐ Clipboards

Vocabulary:
1. Invasive species: Garlic mustard is a **non-native** (not from WI) plant species that grows early and well, taking space and shading native plants from growing well.
2. Stewardship: In participating in this activity, you are acting as a **steward** for the environment. A steward takes responsibility for helping the environment.

Grade levels: PreK-12

Wisconsin Model Academic Standards Addressed:
Agricultural Education: E.4.1; Environmental Education: B.8.3, B.8.8, B.12.7

Activity Time: 15-30 minutes

Supplies:
☐ Shovels
☐ Seedlings
☐ Photo Identification Cards, depicting seed, seedling, and mature plant

Vocabulary:
1. Ephemeral: These plants grow rapidly for a short period of time (spring). They are able to capture much sunlight in the spring before forest trees fill out with leaves in the summer.
2. Seedling: The start of a plant; a small plant.

Spring Ephemeral Planting

This activity may require advance preparation. Please familiarize yourself with the plants listed below and the woodland. You may wish to create identification cards.

Purchase the suggested seedlings at a local garden supply store or via the Internet. You may need to conduct some research as a class.

Plant these seedlings in the forest:

Ephemerals and Wildflowers for the Troy Woodland

Common Name	Botanical Name
Baneberry	*Actaea alba*
Ginger	*Asarum Canadensis*
Jack-in-the-Pulpit	*Arisaema triphyllum*
Blue Cohosh	*Caulophyllum thalictoides*
Dog Tooth Violet	*Erythronium albidum*
Geranium	*Geranium maculatum*
Hepatica	*Hepatica acutiloba*
Solomon's Seal	*Polygonatum biflorum*
Woods Phlox	*Phlox divaricata*
Mayapple	*Podophyllum paltatum*
False Solomon's Seal	*Smilacina racimosa*
Bloodroot	*Sanyvinaria ranadensis*
Trillium	*Trillium grandiflorum*
Bellwort	*Uvularia grandifolia*

Recommendation:
-> Prior to planting, students can create a map or illustration of their plans.

Trees: Bark Identification and Rubbing

The following activities will require advance preparation. Teachers will need to create bark rubbing cards and spring description cards based on lesson.

Activity for grades Pre-K-2: Begin in gathering space with pre-prepared bark rubbings of each species of tree in the forest. Provide the name of each species on the back of the rubbings, but don't reveal the names until the end! Ask students to go out and make their own bark rubbings. Encourage students to "meet" that tree by taking notice of its height, buds, flowers, leaves, branches and any other special characteristics. Have students bring their rubbings back to the gathering space and match them with the pre-prepared cards. Turn the card over to reveal the name of the tree they just met! Compare the bark rubbings with other students and share characteristics of trees with one another.

Variation:

Activity for grades 3-5: Follow the same lesson as for Pre-K-2, but provide a second set of cards with description words of what each tree species looks like now in springtime. After students have returned from creating their own bark rubbings, have them try to match their bark rubbings with the pre-prepared cards and the description cards (it will help if kids are encouraged to "meet" the tree while making a bark rubbing).

-> Both sets of cards will have the correct name of the tree species on the back.

Variation:

Tree Identification

Activity for 6-12: Instead of making bark rubbings, have students use field guides (or copies of pages from field guides pertaining to Troy Community Forest's trees) to identify spring changes in trees. In winter we had to rely on bark, twigs, and buds for identification – What changes are occurring now? Are there leaves, flowers? Ask students to sketch or photograph these spring changes -> possibly for use in a Troy Gardens field guide or for personal nature journals.

Grade levels: Pre-K-2, 3-5, 6-12

Wisconsin Model Academic Standards Addressed:
Agricultural Education: E.4.1; Environmental Education: A.4.1, A.4.2, A.4.3, A.4.4, A.8.5; Science: C.4.1, C.4.2, C.4.6, F.8.2

Activity Time: 15-20 minutes (Pre-K-5), 20-30 minutes (6-12)

Supplies:
Pre-K-2 Activity:
- ☐ Bark Rubbing Cards
- ☐ Paper
- ☐ Crayons

3-5 Activity:
- ☐ Bark Rubbing Cards
- ☐ Paper
- ☐ Crayons
- ☐ Spring Description Cards

6-12 Activity:
- ☐ Field Guides
- ☐ Pencils
- ☐ Colored Pencils
- ☐ Cameras
- ☐ Nature Journals

Vocabulary:
1. Sugar Maple: Scientific name: *Acer saccharum* Troy Community Forest is defined by its abundance of Sugar Maples. This species can be identified by its five-lobed, pointed, **palmate** leaf; double-winged **samara** (fruit, with two seeds inside); and gray-brown, rough bark.
2. White Ash: Scientific name: *Fraxinus americana*
This tree species has rough, diamond-patterned bark and **compound**, **pinnate** leaves with **ovate leaflets**.
3. Tamarack or Eastern Larch: Scientific name: *Larix laricina* The tall tamarack is identified by "potato chip" bark – large, rough chips of bark along the trunk. Its needles grow in short, numerous **bundles**.
4. Spruce spp.: Scientific name: *Picea*
These trees have smoother, chipping bark and single needles, rather than pairs or bundles.
5. Common Hackberry: Scientific name: *Celtis occidentalis*
This tree species is identified by its smooth bark, interrupted with coarse ridges. It has **alternate**, **serrated**