Indiana Native Plant Society

Bringing Youth to Nature

Indiana Native Plant Wizard Patch Program

Leader Manual

April 2019

Contents

Welcome to the Indiana Native Plant Society Wizard Program!

We hope you have fun and learn something too. We encourage you to consult guides and reference books as needed. We have provided a few references in the relevant sections.

Be sure to read through this manual a week to ten days *before* you meet with the Wizard(s) in Training (WITs), in plenty of time to implement the steps below. Step 1 is for your protection.

1. Always have at least one other adult with you when you are with the Wizards-in-Training.

Never be alone with WITs. This step is for your protection.

2. Print copies of the Native Plant Wizard Workbook.

You may have received a pdf file of the Wizard Workbook, or you can download the file from the Indiana Native Plant Society (INPS) website, http://www.indiananativeplants.org/ (find the link at Education > Native Plant Wizard). Print out the pages that are appropriate for the age group you are going to lead.

Each activity is one page in length. Your group may complete the activities in any order; however, we strongly recommend that you complete Activity 1 (Poison Ivy) first and then Activity 2 (State Tree, Tulip Poplar) prior to other activities. Be certain to provide the vocabulary list (page 5 of this Leader Manual) to each WIT. Patch requirements are as follows:

Ages 5-10: 10 activities
Ages 11-13: 12 activities
Ages 14-16: Minimum of 15 activities

If desired, you may print additional activity pages for the WITs to complete on their own or with their family. Encourage the WITs to initial each page (so different WITs' pages won't get mixed up, in case they get separated from the workbook).

Note that ages 11 and above are required to complete the core tasks as well as additional tasks noted for some activities to earn the patch.

We recommend that you check and print the INPS brochure "Landscaping with Plants Native to Indiana," found at http://www.indiananativeplants.org/wp-content/uploads/LandscapingPlants070312.pdf, which lists plants native to specific habitats in Indiana. We encourage you to check the INPS website http://www.indiananativeplants.org/ online for periodic updates.

3. Assemble a kit of essential materials.

- Sharpened pencils, a pencil sharpener, extra pencils
- Vocabulary list (page 5 of this Leader Manual) and relevant pages from the Wizard Workbook for participants

- Photographs of poison ivy and Virginia creeper (for Activity 1) and tulip tree leaves and blossoms (for Activity 2).
- Sunscreen, insect spray, hat

4. Read over the activities carefully and assemble other items needed. Some examples:

- For ages 5 to 7, a copy of "The Very Hungry Caterpillar" for Activity 4—Caterpillars.
- Stickers of butterflies (for Activity 3), animals (for Activity 6), and anything else the WITs may feel insecure about drawing. When an activity asks WITs to draw an object, using a sticker is always an option.
- One or more magnifying glasses and white flat-bottomed containers for Activity 14—Wetlands.
- Paper envelopes if you will be collecting seeds that will not have time to dry out before being stored (Activity 18).
- Possibly, blindfolds when the WITs are asked to cover their eyes and listen, to make it easier for them to actually listen.
- Possibly, a copy of *Wake Up, Woods*, a children's book to be published by INPS in 2019, for more ideas on teaching about woodland plants.

5. Plan where to take your group.

- If you need help finding a particular area or ecosystem, you might contact your local INPS chapter (see https://indiananativeplants.org/about-us/regional-chapters for chapter leaders) or your local Soil and Water Conservation District.

6. Tips for leading groups of WITs:

- After you ask a question, allow time for them to think.
- You don't have to call on the first hand raised.
- Call on one WIT at a time.

7. As you lead activities, know that the text in quotation marks is a suggested script.

You don't have to use the text verbatim. This manual provides the workbook questions and activities in **boldface** at the beginning of each activity, to help you know what to be sure to include and what to emphasize. Beyond that, you may omit or tailor the additional information as appropriate.

INPS encourages you to take several sessions to complete the patch requirements. We anticipate that it will take three or four two-hour sessions to complete the required activities. The focus should be on investigating, asking questions, exploring, learning, and having fun.

8. After each WIT has completed the required number of activities, Girl Scouts of Central Indiana may purchase official patches with the Girl Scout logo at the Girl Scout store. Others may email wizard@indiananativeplants.org with the following information:

   - the number of patches needed
   - your mailing address (not a PO Box)
   - the leader's name and position
   - the leader's phone number (in case INPS has questions)
   - If applicable, class location(s) and class dates

Or others may write to:

Indiana Native Plant Society
Attn: Native Plant Wizard
P.O. Box 501528
Indianapolis, IN 46250

and an INPS representative will mail earned patches to you to distribute to the new Wizards.

Vocabulary

The leader may teach the vocabulary words in any order appropriate.

An Endangered Species: An animal or plant that is classified as becoming extinct within the foreseeable future.

Exotic plant: A plant not native to the continent on which it is now found.

Invasive plants: Plants that have been moved outside of their native range, or from their natural home, and are taking the place of native plants. Invasive plants often eradicate native plants by using all of the natural resources (water, soil nutrients, and space). Wildlife are often unable to use invasive plants. If native wildlife are unable to use invasive plants, wildlife suffer and ecosystems may be altered. Invasive plants threaten all species (including our livestock), our economy, and our human health.

Native plant: A species of plant that has been growing in a particular area for many, many years (since before the Europeans settled in North America). Native plants have adapted to local conditions (soil, weather, water regime, wildlife and other plants) and grow without human help. Native plants grow with many other native plants and wildlife and together they make a healthy, balanced habitat. Native plants, birds, and insects all depend upon each other to survive. For example, some flowers will only be pollinated by a specific species of bee, other insect or bird; and that specific wildlife may only be able to obtain food from one or two specific plants.

Non-native plant: A non-native plant is one that is growing outside of its native area or natural range. Often non-native plants are taken from their natural range by people. A non-native plant is not necessarily an invasive plant. To find out whether a given plant is considered invasive, consult the Indiana Invasive Species Council Invasive Species Plant List at https://www.entm.purdue.edu/iisc/invasiveplants.php.

Ecosystem: An ecosystem includes all the living things in an area and their interactions with the nonliving and living organisms that make up the area. Examples of ecosystems include prairie, swamps and forests.

Weedy plant: A plant that is growing where you do not want it to grow. A weedy plant can be native or non-native; it can be invasive or non-invasive.

Suggested Leader Script

"Welcome to _____ and the INPS Native Plant Wizard Patch Program. I'm _____, your leader for today."

Make sure the WITs have used the restroom. Depending on the WIT age range, you might want to suggest this often.

"You have your Plant Wizard Workbook pages and a pencil. As we go through our sessions together, please fill out the information for each part. I have extra pencils and a sharpener."

"Don't forget to put your initials at the bottom of each page. This is in case one of your pages separates from your workbook. I don't want your pages to get mixed up with somebody else's!"

Talk about what is unique about the area you will be visiting at the beginning of each session.

"Do not eat berries, seeds, or leaves unless instructed to do so. They could be poisonous and make you feel very sick or even put your life in danger."

"We will focus on plants. Some plants are native and others are not. What do you think a 'native' plant is?"

Allow time for them to think. Call on 1 or 2 for answers.

"The answer is: Native plants are plants that have been growing in Indiana long before European settlers arrived. That means they have been here for many, many generations of people. Wildlife such as birds, bees, insects and other animals depend on native plants for shelter and food."

"Let's begin our activity. Please turn to Activity 1 in your workbook."

Activity 1—Poison Ivy

Go for a walk and find poison ivy. Learn to identify it. In the winter try to observe birds eating the berries.

a. Draw a picture of poison ivy leaves and the stem.
b. Write why you should avoid touching poison ivy.
c. Write what you should do if you touch poison ivy.

"The first plant that we want to talk about is poison ivy."

Show them an example on the ground.

"DO NOT TOUCH IT! Why shouldn't we touch it?"

Call on 1 or 2 for answers.

"The name tells us it is poisonous."

It is considered poisonous because if the oil on the plant gets on your skin it can cause a blistering rash that itches. All parts of the plant have the oil: the leaves, stems, flowers, berries and roots.

"How do we recognize poison ivy?"

Point out the 3 leaflets that make up a leaf of poison ivy. Typically each leaflet will have one or more teeth on the edges of the leaf. Remember all parts of the plant contain oils that may cause an allergic reaction so just look at the plant! It can grow by itself, or as a climbing or low spreading vine.

Show them the picture of poison ivy and Virginia creeper together. Note that Virginia creeper has five leaflets per leaf while poison ivy has 3 leaflets per leaf.

"Remember, leaves of three, let it be."

Have them draw a picture of poison ivy.

Ask or describe if anyone has had a reaction to poison ivy. Often when poison ivy oil has come into contact with skin, it will be itchy and red with small bumps, and often larger raised areas. Blisters usually develop later with fluid that may leak. This clear liquid is not poison ivy oils and is therefore not contagious.

"What should you do if you touch poison ivy?"

- Wash the area immediately with soap and cool water. If water is not available, clean the skin with alcohol based wipes.
- If Jewelweed is nearby, use to soothe the itching temporarily.

- Wash the affected area within 3 hours with COLD water and soap. Why cold water? Warm water opens pores and helps the oil soak into your skin.
- Wash the clothes you were wearing as soon as possible.
- Smoothing calamine lotion on the affected area may help limit itching and decrease allergic reactions.

Please note that poison ivy oil can get on your skin even if you touch it in the wintertime. If you burn it and inhale the smoke, it can cause blisters in the nose and throat.

"How can you avoid getting poison ivy?"

- Cover your skin (wear gloves, long sleeves and pants).
- Know what it looks like and avoid it.
- Wash clothing and shoes when coming in from the outdoors.
- Avoid touching pets who have been in the poison ivy, because they often carry the poison on their fur

Ask the WITs if they think poison ivy has any advantages; there are many. Wildlife, especially birds, eat the berries and cottontail rabbits eat the leaves.

Remember! Leaves of 3—let it be!

Additional information:

Three almond shaped leaflets make up one leaf. Leaves are arranged alternately along the stem. There are no thorns. Leaves may have smooth edges or have one to several teeth along the edge. Color varies from light green to dark green to red in autumn. Climbing vines have smooth roots that help the vine climb and stay attached to an object. Vines have milky sap that darkens upon exposure to air.

The oil in poison ivy is called urushiol. The urushiol compound is not a defense mechanism for the plant: it is a mechanism that helps the plants retain water.

Activity 2—Our State Tree

Go for a walk and look for a tulip tree. Learn to identify it and learn what insects depend on the tree.

> **a. Draw three pictures, a tulip tree, its leaf, and its flower, if present. And/or do a bark rubbing with crayons.**
> **b. Look for insects buzzing around the tulip tree flower, if present and visible from the ground. If the branches are too high, look on the ground for fallen twigs and blossoms. If possible, look for caterpillars eating the leaves or stems of leaves and draw a picture of the insects or caterpillars on the parts of the tree.**
> **c. Write about why you think insects and caterpillars are attracted to the tulip tree.**

"Who knows what the Indiana state tree is?"

Answer: Tulip Tree, also called Yellow Poplar.

"Why is it called a tulip tree?"

Because the flower resembles a tulip flower. The leaf is also shaped similar to a tulip flower.

Point out how the leaf resembles a tulip blossom. Have them describe it and have the older WITs write their answers in their workbook.

"Blades of leaves are 4 to 6 inches apart with 4 broad lobes, and the upper 2 lobes are separated by a broad notch. The edges are smooth and bright green."

Show them that the leaves are alternate on the twig, simple (not compound), and on short, slender stems.

"The leaves turn yellow in the fall. The bark is thin, gray, and whitish with fissures (cracks) on young trees. As the tree ages, the bark becomes thick, with deep furrows and broad ridges. Older trees are tall with a very straight trunk."

"Tulip trees flower in May. The flowers are large, cup-shaped and tulip-shaped with 6 green and orange waxy petals. The fruit is an upright cone containing many seeds up to 3 inches long. The seeds are winged and are wind dispersed in fall or early winter. "

Show them pictures of any parts not present on your live specimen.

"The wood of tulip trees is fine-grained and stable. It is easy to work with and often referred to as poplar wood. It is used for cabinetry and furniture framing. Tulip trees were also used by Native Americans for dug-out canoes. "

"Tulip tree leaves are an important food source. The leaves are eaten by caterpillars such as eastern tiger swallowtails. Caterpillars provide food for birds in the spring. Caterpillars are a major food source required to raise native bird chicks. Therefore, the tulip tree is a major food source for a healthy forest ecosystem. Tulip trees are a major honey producer in the eastern United States as well."

Have the WITs draw a picture of the tree and leaf, and if present, the flower. Ask them why people would like this tree.

"The trunk is tall, straight, and strong and yields durable wood that is fine-grained and thus good for furniture, cabinets, and—in pioneer times—log cabins."

"The tulip tree is beautiful, provides shade, and helps wildlife."

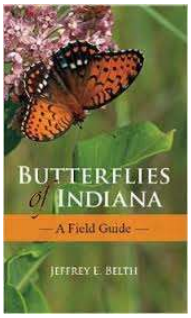
Activity 3—Butterfly-Attracting Plants

Visit a butterfly garden, prairie, or other native planting with butterfly-attracting plants. Learn to identify native plants that attract butterflies.

a. Learn the names of three plants that attract butterflies. Draw a picture of a butterfly on one of the plants you learned. Or use stickers.
b. What attracts butterflies to native plants? Label these plant parts on the flower drawing or sticker above.
c. Write the name of the food or energy source the plant provides for butterflies.
d. Cover your eyes and be very quiet and listen to the sounds in the butterfly garden for 5 minutes at a minimum. Write what sounds you hear.

Suggested reference books:

Butterflies of Indiana: A Field Guide, by Jeffrey E. Belth



Indiana Butterflies and Moths, by James Kavanagh and Raymond Leung

Activity 4—Caterpillars

Take a walk in the woods. Look for caterpillars eating stems or leaves of native plants.

a. Draw a picture of a caterpillar on the plant.
b. Label the plant part being eaten by the caterpillar in the drawing above.
c. (ages 5 to 7) Listen to your leader read the story, "The Very Hungry Caterpillar."
(Ages 11 and above)
d. Write why caterpillars are so important to a healthy ecosystem.
e. List at least three different types of wildlife that eat caterpillars.
f. How many caterpillars do you think it takes to feed a baby chickadee each day? It is at least 300.

Take a walk in a wooded area. Look for caterpillars eating stems or leaves of native plants. If one is found, have the WITs draw a picture of it. Have them label the part of the plant that it is on.

For ages 5 to 7, read the story, "The Very Hungry Caterpillar" to the group. For ages 11 or older, ask

"Why do you think caterpillar parents lay their eggs only on certain plants?"

Answers include: plants provide the specific caterpillars' preferred food and a place to shelter.

Show pictures of caterpillars in different stages on a milkweed plant.

"Why are caterpillars good to have around?"

Answers: food for birds and other wildlife, and they develop into butterflies and moths which pollinate other plants. Also, moths are food for birds, reptiles, and fish.

Entomologist Doug Tallamy found that "a parent chickadee fed a young chickadee about 300 caterpillars in a single day." Other resources, such as "Comparative notes on the life history of the Carolina chickadee" by Richard Brewer (1961) report greater than 300 caterpillars per day are required per chick.

For ages 11 and above, ask them to name one reason non-native nectar sources may not be good for butterflies. Many people think non-native milkweeds are okay to use to attract and provide nectar for native butterflies, but that may not be true! For example, black swallow-wort looks like milkweed, but monarch larva are unable to digest or use the toxin in the plant.

For ages 11 and above, explain that caterpillars can be classified as smooth, smooth with knobs or bumps, or hairy or sluglike. Ask them to research and then name a smooth caterpillar, a hairy caterpillar, and a caterpillar that is smooth with knobs or bumps.

Suggested reference books:
Caterpillars of Eastern North America: A Guide to Identification and Natural History, by David. L. Wagner

Peterson Field Guide to Caterpillars of North America, by Amy Bartlett Wright and Roger Tory Peterson

Activity 5—Trees

Take a walk in a wooded area. Learn to identify deciduous and evergreen trees. Observe how trees provide food, shelter, and nesting sites for wildlife (insects, birds, and mammals).

> **a. Write the difference between a deciduous tree and an evergreen tree.**
> **b. Ages 5 to 10: Draw a picture of a deciduous tree leaf and the fruit of a deciduous tree.**
> **OR**
> **draw a picture of an evergreen tree leaf and the fruit of an evergreen tree.**
> **Ages 11 and above: Do both of the drawings.**
> **c. Ages 11 and above: Shagbark hickory is a deciduous tree with shaggy bark. Write the name of an endangered species that uses this tree. *Hints:* its common name begins with "Indiana" and it is a flying mammal.**

In a wooded area, find two trees (one deciduous tree and one evergreen tree) that provide food, shelter and nesting sites for wildlife (insects, birds and mammals). Have the WITs list the two trees. Deciduous tree fruit varies, but two common ones are acorns from oak trees, and nuts from hickories. Pinecones are the fruit of evergreen trees.

Ask the group to think about how important plants are to all wildlife. Without food, shelter and nesting sites wildlife would die. Trees also moderate ground temperature by shading areas, hold soil in place and decrease soil runoff, and produce oxygen.

Indiana bats (*Myotis sodalis*) are flying mammals that use shagbark hickories and other trees with sloughing bark and are federally listed endangered.

You might also review the main points of Activity 2, Our State Tree.

Activity 6—The Forest Plant Community

Take a hike in a forest or woodland. Learn to identify the four layers of plants that make up a forest/woodland community.

> **a. Draw the forest/woodland community and label the four layers.**
> **b. Ages 11 and above: Add appropriate wildlife to your drawing at each layer and label the wildlife.**

Take a walk in a forest or woodland. Look at the tallest trees (canopy) and then look from the canopy to the ground. What plants are growing under the trees?

If the WITs are ages 5 to 10, use photographs and/or a short video to help them visualize the layers of the forest plant community, to supplement the diagram on the following page.

Point out the *canopy* layer. Explain that the subcanopy layer is composed of shade-tolerant species or sapling tree species waiting for an opening in the canopy. You might find a tree whose trunk has grown sideways or at an angle trying to reach the sunlight.

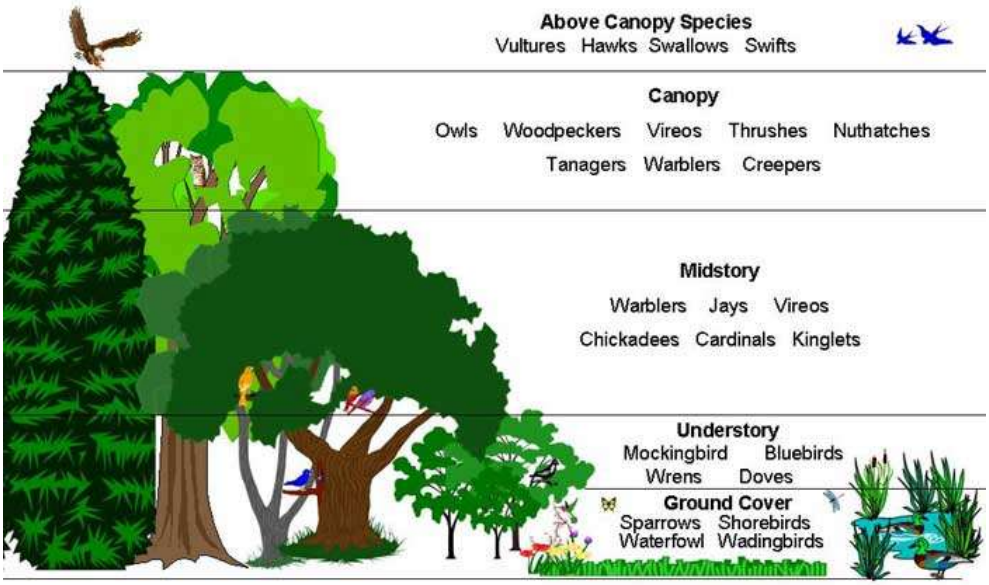
Point out the *shrub* layer, which grows beneath the subcanopy layer.

Point out the *herbaceous* layer, which consists of plants like flowers and grasses that are growing close to the ground.

Cerulean warblers nest high in the canopy of deciduous forests. Wood thrush nest in the subcanopy about 10-12 feet above the ground. Black-throated blue warblers often nest 5 feet above the ground in thick shrub layers. White-throated sparrows nest low and often on the ground in thick herbaceous layers.

Suggested references: Google “layers of forest” for more information, http://www.exploringnature.org/graphics/biomes/biome_forests_temperateRF150.pdf, http://www.exploringnature.org/db/detail.php?dbID=44&detID=573

The following diagram includes a midstory layer. Midstory layers are part of the subcanopy. This diagram is from blogs.centre.edu and can be found at http://blogs.centre.edu/environment/page/22/. You can find additional information online.



Canopy		Midstory	Understory		Ground Cover	
Junipers	Hickories	Ash	**Tall Shrubs**	**Low Shrubs**	**Prairie**	**Wetland**
Pines	Oaks	Maples	Dogwoods	Agaritas	Gramas	Sedges
Cedars	Elms	Sweetgum	Viburnums	Yaupons	Bluestems	Rushes
Maples	Pecans	Hackberries	Hawthorne	Wax Myrtles	Paspalums	Cattails

Activity 7—The Prairie Plant Community

Go for a walk in a prairie. Learn why wildflowers and grasses are good for insects, birds and other wildlife.

a. Look for nests and wildlife among the prairie plants.
b. Listen to the sounds in the prairie.
c. Write three reasons prairies are good.
d. Write two management methods that are used to maintain prairies (to keep trees from growing in a prairie).
e. Ages 11 and above: Write the difference between a tallgrass prairie and a shortgrass prairie. Name a state where you would find a shortgrass prairie. Name a state where you would find a tallgrass prairie.

Go for a walk in a prairie or prairie garden. Explain that the WITs should be very careful not to disturb the nests or wildlife. It is against the law to remove or tamper with bird nests unless you have a permit from the United States Fish and Wildlife Service to do so.

In addition to sheltering nests and wildlife, prairies stabilize soil (removal of prairies and bare soil led to the dust bowl storms of the 1930s), minimize water runoff, and thrive with little water.

You can maintain prairies by controlled burning (prescribe burning), mowing or weeding. These maintenance activities help prevent trees from growing and shading prairie plants.

Shortgrass prairies need less water than tallgrass prairies. Shortgrass prairies occur in the western plains states such as Kansas, Oklahoma, and Nebraska. Tallgrass prairies occur further east where there is more precipitation, such as Illinois and northwestern Indiana.

Suggested reference:

INPS brochure, “Landscaping with Plants Native to Indiana”

Activity 8—Native Plants

Learn why native plants are important to all of us.

a. What is a native plant?
b. List three plants native to Indiana.
c. Write as many reasons as you can why native plants are important.

Ages 11 and above:
d. For at least one of the three native plants listed in (b), write three wildlife species that use that plant.
e. Select one of the wildlife species you wrote in (d) above and list another wildlife species that depends upon the selected one. (Example: caterpillars eat tulip tree leaves and then chickadees eat caterpillars.)

A native plant is a specific kind, or species, of plant that has been growing in a particular area for many, many years (since before the Europeans settled in North America).

Plants provide food, shelter and a place to raise young for many species. Plants are the basis of food webs.

Learning how plants and wildlife depend on each other shows the youth the complex connections between plants and animals.

Suggested reference:

Bringing Nature Home, by Douglas Tallamy

https://www.prairiemoon.com/circle-of-life (a very short video)

Activity 9—Invasive Plants

Learn about invasive plants and why it is important to understand the damage they do to ecosystems.

a. Write two ways in which invasive plants hurt our native ecosystems.
b. Are all invasive plants exotic?
c. Write why weeds are not the same as invasive plants.
d. Write the names of three invasive plants found in Indiana. If you are outside, have the WIT show you three.

Ages 11 and above:
e. Write the names of three invasive plants that are illegal to plant in Indiana.
f. Show your parent or an adult friend an invasive plant growing in your neighborhood. Tell them why invasive plants hurt the ecosystem. Have the adult sign at the bottom of the Activity 9 page.

An invasive species is one that is growing outside of its native range. In addition, invasive means the plant displaces and out-competes native species for resources needed to survive. It often eliminates native plants, thus removing the food, shelter, and hiding places wildlife need.

A weedy species is a plant growing where you do not want it to grow. "Weedy" is in the eye of the beholder. A weedy species may be a native or a non-native species.

An exotic plant is a plant not native to the continent on which it is now found.

There are more than 100 invasive plant species in Indiana. Common ones are garlic mustard, autumn olive, purple loosestrife, kudzu, Asian bush honeysuckle, Japanese honeysuckle, common giant reed, Japanese stiltgrass, reed canary grass, burning bush, oriental bittersweet, princess tree, and tree of heaven.

It is illegal to plant multiflora rose, purple loosestrife, and kudzu in Indiana.

Suggested references:

http://www.indiananativeplants.org/landscaping/what-not-to-plant

http://www.indiananativeplants.org/biodiversity

https://www.entm.purdue.edu/iisc/pdf/IISC_Plant_List_by_group.pdf

For federal definitions of invasive, exotic, etc. see

https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ct/technical/ecoscience/invasive/?cid=nrcs142p2_011124

Activity 10—Woodland Ferns

Take a walk in a woodland. Try to find two different species of ferns. Learn to identify the parts of ferns.

a. Draw a picture of one fern that you find. Label the frond and spores.
b. Write the names of two native ferns found in Indiana.
c. Ages 11 and above: Write the names of six native ferns found in Indiana.

Ferns are members of vascular (having channels that transport fluids, like human blood vessels) plants that have leafy fronds (large leaves divided into many parts), and that do not produce flowers and seeds. Ferns produce spores instead of flowers and seeds. Spores, which resemble tiny black dots, are typically located on the underside of fronds.

Some ferns native to Indiana include maidenhair fern, marginal wood fern, cinnamon fern, royal fern, ebony spleenwort, and Christmas fern.

Ferns are not bryophytes (mosses and liverworts) because they contain a vascular system to transport water and nutrients. There are approximately 84 native fern species in Indiana.

Suggested reference:

Wildflowers and Ferns of Indiana Forests: A Field Guide, by Michael A. Homoya

Activity 11—Shrubs

Take a walk in your neighborhood or a park. Look at the shrubs. Learn to identify native shrubs. Observe wildlife (insects, birds, and mammals) using shrubs for food, shelter and nesting places.

> **a. Write a description of a shrub (also called a bush) and write how a shrub is different from a tree.**
> **b. Draw a picture of a shrub with one wildlife species that eats food from that shrub.**
> **c. Write the names of three native shrubs found in Indiana.**
> **d. Ages 11 and above: Expand on (c): Name at least two more shrubs native to Indiana. Include and indicate at least one shrub that produces berries, one that produces nuts, one that produces seeds and one that produces catkins (slim, finger-like, drooping clusters of tiny flowers).**

Shrub is another name for bush. Shrubs have many stems coming out from the base, while trees have one central trunk.

Suggested reference:

Shrubs and Woody Vines of Indiana and the Midwest: Identification, Wildlife Values, and Landscaping Use, by Sally S. Weeks and Harmon P. Weeks, Jr.

INPS brochure, "Landscaping with Plants Native to Indiana"

Midwestern Native Shrubs and Trees: Gardening Alternatives to Nonnative Species: An Illustrated Guide, by Charlotte Adelman and Bernard L. Schwartz

Activity 12—Vines

Take a walk in your neighborhood or park. Learn to identify vines.

a. Write a description of a vine and how it grows.
b. Draw a picture of the leaves of a vine native to Indiana.
c. Write the names of three vines you found on your walk. Indicate whether the vine is native or non-native to Indiana.
d. Ages 11 or above: Write the names of three invasive vine species that are eliminating native habitats in Indiana.

Vines are plants with climbing or trailing stems or runners. They grow on objects like fences, trellises, trees, posts, rocks, and buildings. They can also grow along the ground.

Winter creeper, oriental bittersweet, kudzu and English ivy are invasive species that are eliminating native habitat in Indiana and many other places in the United States. English ivy is even mildly poisonous to birds.

Suggested references:

Shrubs and Woody Vines of Indiana and the Midwest: Identification, Wildlife Values, and Landscaping Use, by Sally S. Weeks and Harmon P. Weeks, Jr.

INPS brochure, "Landscaping with Plants Native to Indiana"

Activity 13—Fall Leaves

Take a walk in the woods, a neighborhood, or a park in the fall. Collect three differently colored leaves from the ground, one each from a different tree. (Do not collect leaves in a nature preserve.)

a. Attach the leaves to this page and write the name of the tree next to each leaf.
b. Next to each leaf indicate whether the tree is native or non-native to Indiana.
c. Listen to the sounds of nature on your walk. Smell the air.
d. Describe in writing what you hear and smell on your walk.

It is against the law to disturb or remove anything from an Indiana nature preserve without a special permit.

Be sure to collect the entire leaf and not just a leaflet.

Suggested references:

101 Trees of Indiana: A Field Guide, by Marion T. Jackson

Trees of Indiana Field Guide, by Stan Tekiela

Activity 14—Wetlands

Visit a pond or other wetland. Learn to identify wildlife in the water and around the pond/wetland.

a. Listen for wildlife at the wetland.
b. Smell the air around the wetland.
c. Look for birds and other wildlife around the wetland.
d. Look at the plants around the pond or growing in the wetland.
e. Collect some water in a white, flat-bottomed container and use a magnifying glass to look for life living in the water.
f. Draw the pond or wetland. Include at least two plants, two birds and four other species of wildlife that you saw or heard. If you saw fish include those in your drawing as well. Also include what you saw in the water that you looked at through the magnifying glass.

You will need a magnifying glass and a small white flat-bottomed container for this exercise, one per WIT if possible.

Look for animal tracks. Look for large holes in trees (owls) and for trees gnawed by beavers. Look for fish, frogs, otters, ducks, geese, small birds (passerines) and coots.

Suggested references:

Animal Tracks of Indiana, by Tamara Eder

Scats and Tracks of the Great Lakes: A Field Guide to the Signs of Seventy Wildlife Species, by James Halfpenny

INPS brochure, "Landscaping with Plants Native to Indiana"

Activity 15—Streams and Rivers

Take a walk along a stream or river. Learn to identify plants and wildlife that live there.

a. Listen for birds and other wildlife at the stream/river.
b. Smell the air around the stream/river.
c. Look for birds and wildlife, including their homes, around the stream/river.
d. Look at the plants growing by the stream/river.
e. Write about the homes you found along the stream/river.
f. Write the difference between a pond/wetland and a stream/river.
g. Ages 11 and above: Write a comparison of a lentic system to a lotic system. Which system do you find in a pond/wetland? Which system do you find in a stream/river? If you were a plant, would you rather be in a lentic or lotic system?

The water in ponds and wetlands is standing or relatively still. This type of ecosystem is called a *lentic* system. The water in streams and rivers is moving and flowing. This type of ecosystem is called a *lotic* system.

Suggested references:

Animal Tracks of Indiana, by Tamara Eder

Scats and Tracks of the Great Lakes: A Field Guide to the Signs of Seventy Wildlife Species, by James Halfpenny

INPS brochure, "Landscaping with Plants Native to Indiana"

Activity 16—Leaf Characteristics

Learn to identify leaf characteristics through your senses.

a. Close your eyes and hold out your hand so that your leader can place a mystery tree leaf in your hand for you to investigate without looking.

1. **Feel the upper and lower sides.**
2. **Feel the edges of the leaf.**
3. **Smell the leaf.**
4. **(Optional) Take a very small bite and taste the leaf.**

b. Open your eyes and write about the tree leaf.

1. **How did it feel?**
2. **How did it smell?**
3. **(Optional) How did it taste?**
4. **Who might eat the tree leaf that you investigated with your senses?**

c. Ages 11 and above: Write at least five wildlife species that use this tree species for food, nesting, shelter, or something else.

Select a tree or trees appropriate for talking about how wildlife depends on the specific tree you selected. You may give the same type of leaf, or different types of leaves, to each WIT. You can make a playful game out of this activity. If you are going to have the WITs taste the leaf, be certain it is not poisonous.

Ask the WITs what the leaf felt like, was the leaf smooth or bumpy, was the leaf glossy feeling or rough, was the leaf hairy? Did your leaf have smooth edges or teeth along the edges?

Ask, what did your leaf smell like? Was it sweet or bitter or peppery? Did it remind you of food?

Ask, how did the leaf taste? Was it bitter, minty, spicy, sweet, sour, etc.?

Identify the leaf or leaves and talk about the tree(s).

Activity 17—Nature Scavenger Hunt

Take a planned Nature Scavenger Hunt through a state park or natural area with a professional ecologist, biologist, naturalist, botanist, or someone with formal training in the natural sciences.

Write a description of the wildlife, plants, birds, and other items you discovered with your eyes, ears, nose and fingers on the scavenger hunt.

Prepare a scavenger hunt in a natural setting. We suggest eight to fifteen points/stations depending on age. Design the hunt so that upon completion of the hunt children are able to answer at least three (age-dependent) questions about what they observed on the hunt.

Tell the WITs to follow the clues and be sure to collect only the species listed on the hunt form.

Ask them to note or draw in their Wizard Workbook at all points/stations.

Have the youth engage with as much of the natural environment as possible. They should see, touch and smell, but should learn to leave everything in a natural state. They should learn to observe and study without harming or antagonizing wildlife.

Suggested reference: Google “planning a nature scavenger hunt for kids.”

Activity 18—Harvesting Native Plant Seeds

Visit a prairie or rain garden in the fall with an adult who is a professional naturalist, botanist, ecologist, or otherwise trained in natural plant/seed harvesting to collect native plant seeds.

a. Harvest seeds in the proper way from at least 3 native plants.
b. Keep the seeds of each plant separate from seeds of the other plants.
c. Working with the adult, divide the seeds from each plant into small piles and place in paper or manila envelopes. If you are using small plastic bags, make sure the seeds are dried out; otherwise they tend to mold.
d. Label each packet with the following information:

1. **Grows in SUN or SHADE or PART SUN.**
2. **Grows in WET or DRY soil.**
3. **How tall the plant grows.**
4. **How wide the plant grows.**
5. **Months that the plant flowers.**
6. **Color of the flowers.**

e. Share your seed packets and knowledge with others.
f. Attach the label from one of your seed packets below.

Make sure you have permission from the property owner to collect the seeds.

You will need paper or manila envelopes and labels or small pieces of paper for this activity.

Suggested reference: Google “Collecting wildflower seeds.”

Activity 19—Essential Role of Native Plants

Listen to an adult who is a professional ecologist, biologist, naturalist, botanist, natural science professional or an informed adult explain why native plants are important to the life cycle of insects, birds, and the health of planet Earth where we all live.

Write what you learned from the talk.

Native plants 1) Provide homes for animals and birds and insects, 2) Provide food, 3) Provide cover, or hiding places and shelter, 4) Supply oxygen to our air by converting carbon dioxide to oxygen, 4) Hold soil so the soil is not washed away by rains, and 5) Help moderate the weather.

Native plants also provide food to us indirectly, because they support insects that pollinate tomatoes and other plants whose fruit we eat.

Native plants are the basis for food webs and a healthy, biodiverse planet.

Listen to a naturalist or teacher explain how energy from the sun gets converted into high quality protein (caterpillars) for wildlife to eat. Pinpoint the role of plants in this process.

Learn about the special relationship between local insects and local plants: Plants don't like to be eaten, so they have developed ways to make themselves taste bad to insects. But over thousands of years, local insects have developed ways of overcoming these substances on the local plants with which they evolved, i.e., native plants. The insects lay their eggs on these plants, so that when their larvae hatch, they are able to eat them and grow to maturity.

Most insects are "specialists," which means their larvae will eat only certain plants (e.g., monarch butterfly larvae eat only milkweed leaves). Tell what happens if those specific plants are not available to them.

Birds, frogs, salamanders and many other wild creatures depend on insects and insect larvae to feed their young. Tell what happens if those high protein insects are not available to feed on.

Write about why native plants are important in your Indiana Native Plant notebook.

Suggested references:

www.indiananativeplants.org/biodiversity

Bringing Nature Home, by Douglas Tallamy

www.prairiemoon.com/circle-of-life

Activity 20—Show and Tell

Share your native plant wizardry by taking an adult on a "show and tell" walk in a garden, park, or natural area where you know the plants.

> **a. Point out and name five (ten for ages 11 and above) native plants (trees, shrubs, ferns, vines, and/or wildflowers) and tell how native plants support wildlife.**
> **b. Point out and name two (four for ages 11 and above) invasive plants and tell why these plants have negative impacts on ecosystems.**
> **c. After the walk, have the adult write what they learned from you about the importance of native plants. Have the adult sign the bottom of the page.**

Adults can use the space on the activity page (and possibly back of the page) as necessary to write what they learned about native plants and invasive plants.

Congratulations! Your Wizards In Training are now Wizards! They have earned the Native Plant Wizard Patch. See the end of the Welcome section for how to obtain the patches. INPS hopes you have learned from and enjoyed the patch program.