



Statewide Curriculum



Purdue Extension

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DNR

Indiana Department of Natural Resources

IMN

Advisory Council

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Statewide Curriculum

The mission of the Teen Indiana Master Naturalist program is to bring together natural resource specialists with young people, ages 13-17 years, to foster an understanding of Indiana's plants, water, soils and wildlife, and promote volunteer service in local communities.

Let children walk with Nature, let them see the beautiful blendings and communions of death and life, their joyous inseparable unity, as taught in woods and meadows, plains and mountains and streams of our blessed star, and they will learn that death is stingless indeed, and as beautiful as life.

- John Muir

Teen IMN Program Overview

The Purpose

The Teen Indiana Master Naturalist (Teen IMN) Program can provide our state's future environmental stewards with many hands-on opportunities to learn about our Hoosier natural resources. It also provides a way for them to share that knowledge through volunteer service to land trusts, soil and water conservation districts, state and local parks, or other natural resource and conservation agencies. The purpose of Jr. IMN includes:

- Provide an introduction to Hoosier natural resources through the eyes of resource professionals and experts in the field.
- Provide an educational opportunity to individuals 13 through 17 years of age.
- Provide an opportunity for course participants to establish a short or long-term partnership with a natural resources agency or local organization involved in natural resource management by volunteering **12 hours** as a part of the course.
- Provide a financially self-supporting program.

The Mission

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The Audience

The Teen IMN host for your course can provide more detailed information, but in general, course participants are young people with a genuine love for the out-of-doors, but limited formal science/natural resources training. They take this course to expand their knowledge of plants, wildlife, soils and other natural resources in Indiana. Class sizes vary, but usually will not exceed 20 students with a ratio of 1 adult per 10 children.

It is very important for you to seek instructors who have experience working with youth and who will provide relevant examples and explanations of processes as well as hands-on activities that teach the objectives provided.

Acknowledgement

The IMN Advisory Council would like to recognize, acknowledge, and offer sincere thanks to Corrine Paul and Frank Rouse for their dedication and valuable work in creating the original framework of the Junior Indiana Master Naturalist Program. It is through their efforts that Jr. IMN has become a reality.



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Nature is man's teacher. She unfolds her treasures to his search, unseals his eye, illumines his mind, and purifies his heart; an influence breathes from all the sights and sounds of her existence.

- Alfred Billings Street

Required Topics

The minimum number of 16 hours for an approved Teen Indiana Master Naturalist course are distributed among the following topic areas for the 8 required sessions:

Botany (2 two-hour sessions)

Geology and Soils (1 two-hour session)

Miscellaneous Related Topic (1 two-hour session)

People and Natural Resources (1 two-hour session)

Water (1 two-hour session)

Zoology (2 two-hour sessions)

Advanced Teen IMN

Teens that have enjoyed and completed a Teen IMN course can choose to take as many Teen IMN courses as they want. They will need to show their past certificate to host to prove they have complete a previous Teen IMN course or host will need to contact the IMN state coordinator to verify name. Upon completion of each additional course they will achieve Advanced Teen IMN status. They will receive an Advanced Teen patch and certificate. When requesting patches from IMN state coordinator please be clear as to how many Teen IMN patches and Advanced Teen IMN patches are needed. Please let your students know of this option.



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Climb up on some hill at sunrise. Everybody needs perspective once in a while, and you'll find it there.

- Robb Sagendorph

Botany

Area Objectives

11. Understand the difference and meanings of endangered, threatened, rare, and extirpated.

Biology 1 Core Standard 5

2. Discuss taxonomic principles, including the importance of Latin naming convention.

Biology Core Standard 1

3. Explain what an invasive plant is and give some examples and Identify at least ten native plants and ten native trees of Indiana.

Biology Core Standard 1

4. Summarize the functions of fungi.

Biology Core Standard 1

5. Recite the 12 natural regions of Indiana and their characteristics.

Biology Core Standard 1

6. Become familiar with and describe the major parts of herbaceous and woody plants.

Biology Core Standard 1

7. Understand the stages of succession in ecosystems.

Biology Core Standard 1

8. Describe the classes of plants in Indiana (vascular and nonvascular).

Biology Core Standard 1

9. Paraphrase the benefits of plants and trees (such as urban forests, plant uses, timber uses, etc.) and their management.

Biology Core Standard 1

10. Differentiate the strata of the forest (forest floor, herbaceous layer, shrub layer, understory, and upper canopy).

Biology Core Standard 1



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Look at the trees, look at the birds, look at the clouds, look at the stars... and if you have eyes you will be able to see that the whole existence is joyful. Everything is simply happy. Trees are happy for no reason; they are not going to become prime ministers or presidents and they are not going to become rich and they will never have any bank balance. Look at the flowers - for no reason. It is simply unbelievable how happy flowers are.

- Osho

Geology and Soils Area Objectives

1. Learn about the geologic history of Indiana and the important features of Indiana.

Earth and Space Science 1 Core Standard 4, 5, 7, 8

2. Discuss the hydrologic cycle and describe all possible sources of water.

Earth and Space Science 1 Core Standard 4, 5, 7, 8

3. Explain the physical and chemical properties of soil and ways to prevent soil erosion.

Earth and Space Science 1 Core Standard 4, 5, 7, 8

4. Earth and Space Science 1 Core Standard 4, 5, 7, 8
all the geologic history of Indiana (Precambrian to today).

5. Compare the important features of Indiana Geology (lithology / stratigraphy, glaciation, faulting and earthquakes, karst features, fossils, economic reserves, and local stratigraphy /collecting).

Earth and Space Science 1 Core Standard 4, 5, 7, 8

6. Describe the various landform regions of Indiana and their formation.

Earth and Space Science 1 Core Standard 4, 5, 7, 8



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Nature will bear the closest inspection. She invites us to lay our eye level with her smallest leaf, and take an insect view of its plain.

- Henry David Thoreau

Miscellaneous Related Topic Areas

This is your elective class. Below is a list of potential topics for your consideration. You are not limited to this list:

- Wilderness Survival
- Meteorology
- Astronomy
- Environmental education/interpretation
- First aid
- Orienteering
- Folklore
- Volunteerism
- Photography
- Outdoor skills and hobbies
- Wildlife rehabilitation
- Local or regional topics of interest



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There is not a sprig of grass that shoots uninteresting to me.

- Thomas Jefferson

People and Natural Resources Area Objectives

1. Explain the differences and meanings of restoration, preservation, conservation and management of natural resources, including management tools (identifying indicator species, prescribed burns, timber stand improvements).
English/Language Arts Core Standard 1, 2, 3, 7, 8

2. Become familiar with natural resource jobs at the local, state and federal levels and their area of responsibility.
U.S. History Core Standard 1, 2
U.S. Government Core Standard 9

3. Discuss how people have benefited from and impacted natural resources in historical and modern times.
U.S. History Core Standard 1, 2
U.S. Government Core Standard 9

4. Become familiar with Indiana's early naturalists and their accomplishments.
English/Language Arts Grade 9 Core Standard 3, 4, 7, 8

5. Describe and define archeology and the Indiana antiquities law.
English/Language Arts Grade 9 Core Standard 3, 4, 7, 8

6. Compare important naturalist authors (e.g. Leopold, Thoreau, Carson, Louv, Sanders, Porter, etc.).
English/Language Arts Grade 9 Core Standard 3, 4, 7, 8



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***Look deep into nature,
and then you will
understand everything
better.***

- Albert Einstein

Water

Area Objectives

Describe the hydrologic cycle and understand what makes up a watershed.

Earth and Space Science Core Standard 1,

Contrast Indiana's aquatic systems (rivers, lakes, ponds, streams) and learn how land-use affects of water quality.

Earth and Space Science Core Standard 1, 7, 8

Summarize the threats to and management of Indiana's aquatic systems.

Biology Core Standard 6

Learn what a wetland is, the values and functions of wetlands, and compare the types of wetlands, both natural and constructed, found in Indiana.

Earth and Space Science Core Standard 1, 7, 8

5. Explain what a watershed is and its characteristics.

Earth and Space Science Core Standard 1, 7, 8

6. Discuss land use effects on water quality.

Earth and Space Science Core Standard 1, 7, 8

7. Compare the types of wetlands (natural and constructed) found in Indiana.

Earth and Space Science Core Standard 1, 7, 8

8. Relate water and wetland conservation efforts in Indiana.

Earth and Space Science Core Standard 1, 7, 8



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***I go to nature to be
soothed and healed,
and to have my senses
put in order.***

- John Burroughs

Zoology

Area Objectives

Describe the different characteristics of vertebrate and invertebrate animal groups.

Biology Core Standard 1, 7, 8, 9

2. Learn about the ecological niche and energy flow of animals (food chain, food web, and food pyramid).

Biology Core Standard 1, 6

3. Understand habitats and habitat components (food, water, shelter, and space) and how changes in these components affect the ecosystem.

Biology Core Standard 6

4. State animal behavior characteristics and their adaptations to environments and environmental changes (hibernation, migration, coexistence) and understand how animals hide from enemies and predators (camouflage)

Biology Core Standard 1, 9

5. Summarize the principles of, and threats to, biodiversity (benefits, health, economics) in Indiana.

Biology Core Standard 1

6. Explain taxonomic principles, including the importance of the Latin naming convention.

Biology Core Standard 1

7. List characteristics of major vertebrate and invertebrate animal groups.

Biology Core Standard 1, 9

8. Define what an invasive animal is and give some examples.

Biology Core Standard 1

9. Identify at least 5 species from each vertebrate group (birds, mammals, fish, reptiles, amphibian) and ten invertebrates (mollusks, arachnids, insects) of Indiana.

Biology Core Standard 1, 9



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Nature chose for a tool, not the earthquake or lightning to rend and split asunder, not the stormy torrent or eroding rain, but the tender snow-flowers noiselessly falling through unnumbered centuries.

- John Muir

The Teen IMN Course: Step-by-Step

Before the Workshop Begins...

1. Review this manual to ensure that your natural resources agency is ready to sponsor a workshop.
2. Talk with local residents and other natural resources agencies to find out if a workshop is already in the planning stages in your area. Gauge how much interest there might be in a workshop if none has been sponsored. Check with the state coordinator (317) 232-4143 or gmurphy@dnr.in.gov or check the website for other upcoming classes at www.indianamasternaturalist.org.
3. Select a time frame. Most JrIMN classes are held during the summer like a week long day camp from 9am– 3pm. Each day can include 2 topics plus time for volunteer work. On the last day of camp, a graduation day can be held to pass out certificates and patches. However one evening class per week may be effective as well.
4. Select a convenient location for the workshop. Be sure to find out any meeting room usage fees so you can reflect those in your workshop cost.
5. Schedule speakers for the sessions, including any fees they may charge. These will impact your final course cost. Speaker topics should be within the framework established by the IMN Advisory Council and should include sessions as follows: 2 botany, 2 zoology, 1 geology/soils, 1 water, 1 people and natural resources and 1 miscellaneous related topic that you choose to fit your agency/location.
6. Establish a budget for the workshop. Be sure to include any building rental costs, speaker fees, funds for resource materials to be purchased, refreshments if appropriate, and the \$5/person administrative fee that is submitted after the workshop to the IMN state coordinator. See page 13 for more information about administrative fee.
7. Based on the total costs and the number of individuals you can manage in the class (generally no more than 20 for effective teaching), establish a course fee. This may vary with speaker/material costs, but usually ranges from \$50-80. It is recommended that you maintain a ratio of 1 adult per 10 children.
8. Submit a workshop application form and youth safety guidelines to state coordinator for IMN council approval. This should include your course cost, dates, topics for each session and speakers (if possible).
9. Publicize your workshop. The IMN state coordinator will ensure that your workshop is posted on the IMN website and can send an e-mail notification to all those who have contacted her about workshops in their area. Examples of Teen IMN brochures/registration forms can be obtained from the state coordinator.



**Statewide
Mandatory**

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***Climb the mountains
and get their good
tidings. Nature's
peace will flow into
you as sunshine flows
into trees. The winds
will blow their own
freshness into you,
and the storms their
energy, while cares will
drop off like autumn
leaves.***

- John Muir

The Teen IMN Course: Step-by-Step

10. Ensure that staff are informed about the program and are available to handle workshop registrations. General information about the program is available on the website.

11. When the class is full, establish a waiting list for future workshops and contact the IMN state coordinator, who will post a notice on the website that the class is full.

12. Provide speakers with a copy of the "IMN Program Guidelines for Speakers," available on the website. Ensure that each speaker knows the meeting date, time, location, expected topic and can interact well with the youth. Ensure that each speaker will provide appropriate handouts or will give you a single copy so you can provide handouts. Be sure to ask speakers about their audiovisual equipment and space needs for their sessions. Obtain and complete parent permission forms and any agency required criminal background checks on adult chaperones.

13. Put together participant notebooks with handouts and good resource materials. Purchase field guides or other resource books as budgeted. The Teen IMN logo is on the website for your use as needed.

14. Plan for room setup to provide convenience for speakers and comfort/friendly atmosphere for participants. Parking, easy access to restrooms, comfortable chairs and tables to write on, ease of visibility of visuals such as slides, flip charts, PowerPoint® presentations, etc. are some things to consider. Don't forget to use nametags or name "tents" on tables at each session—remember, each speaker is new even if the students aren't!

15. Plan an icebreaker/get acquainted activity for the first session to help participants learn about each other and prepare for working together.

16. Plan for refreshments and breaks during each session.

17. Ensure that someone from your agency will be on hand throughout each session to serve as the host, timekeeper and speaker assistant. This individual should also keep track of attendance, since participants must complete at least 80% of the classes. After each session, ask participants to complete a speaker evaluation form. You will keep these on file and provide copies to each speaker if they request them. This will help you evaluate speakers for future workshops.

18. Make sure to have parent/guardian sign photo release or you will not be able to use photo of the child in future advertisements for workshops. (If there is not a photo release the pictures can not be legally used for advertisement or publishing.)



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***In wilderness I sense
the miracle of life, and
behind it our scientific
accomplishments fade
to trivia.***

**- Charles A. Lindbergh,
Life, 22 December 1967**

The Teen IMN Course: Step-by-Step

During the Workshop...

1. At the first session, provide a quick overview of the program. Remind participants about what is required to receive a Teen IMN patch and certificate.
2. Administer a Pre and Post course survey to demonstrate effectiveness of the learning experience. The master survey document is available on the www.indianamasternaturalist.org website under the forms section.

After the Workshop Ends...

1. After the workshop, complete the workshop report form and return it to the IMN state coordinator with the total administrative fee (\$5/ participant). You will receive a receipt letter. If your agency requires an invoice for submission of payment, please let the IMN state coordinator know that.
2. Enter names and addresses of all course participants in a locally maintained database so they might be contacted in the event we develop advanced courses or other materials in the future.
3. As course participants complete volunteer service, notify the IMN state coordinator and provide a copy of volunteer service records for the individual (to include name and address). The IMN state coordinator will then send a Teen IMN patch and certificate to you for signature. You will then issue the materials to the new Teen Indiana Master Naturalist!
4. Provide local media with the opportunity to photograph presentations of pins & certificates—this will be good publicity for future workshops that you might host! **(Photo release needed for this!)**
5. Send thank you notes to each of your speakers.



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In June as many as a dozen species may burst their buds on a single day. No man can heed all of these anniversaries; no man can ignore all of them.

- Aldo Leopold

The Teen IMN Course: Step-by-Step

Tips, Tricks and Good Suggestions/Ideas...

1. Graduation dates/parties etc can be listed as an optional event.
2. Practice "Leave No Trace" Hiking rules.
3. Nature Journal-what is a nature journal, how to make a nature journal, creating contents, nature do's and don'ts, how to watch wildlife, how to start drawing, how to enjoy nature.
4. Backpacks-nature journal, insect net, binoculars, magnifying glass, field guides, handbooks, bug spray, throw away camera (cardboard box camera), sun block, gloves, hat, rain gear, trash bag, extra socks.
5. Sit upons -These are great when you need to sit on the ground.
6. How to catch wildlife to study-plastic jars with lids to catch and release insects.
7. Provide throw away cameras (card board box cameras) and go for a hike. Write the date and student name on each camera. Let them take photos of wildlife, plants, trees, other students, group photos, etc. Develop film and make a memory books as a graduation book for each student and one for yourself and your helpers.
8. Name Tags - Buy clear plastic reusable name tag covers and allow each student create their own name tag. Have stickers on hand to decorate each one. Sit a name tag box by the Sign In sheet and make sure each student return their name tag at the end of each class. Let them take them home on the last day of class.
9. Have a 3 ring hole punch on hand during each workshop so that handouts can be added to the 3 ring binders during or after each class.
10. Take at least 3-5 pictures during each class and make a Jr IMN photo album for your agency's files. Don't forget the group photo. The albums make great promotional tools. Make sure to have photo releases signed by parents.

Send other ideas that can be shared to the IMN State Coordinator with completed paper work at the end of the workshop.



**Statewide
Manual**

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Nature always tends to act in the simplest way.

- Bernoulli

Forms Page

The latest version of all forms can be downloaded from the “Sponsor a Class” link on the IMN Website at www.indianamasternaturalist.org.

These forms include:

- Workshop Application—to be completed for approval by the IMN Advisory Council if your agency wishes to host a Junior IMN workshop.
- Workshop Roster—to be completed at the end of the class with names, addresses and other contact information for all participants and sent to the IMN Coordinator
- Student Pre and Post Survey—a short and simple survey to be completed by each student both before and after the course. Some standard questions are required; you may add additional questions specific to your course or region of the state. (Currently under development.)
- Student Workshop Evaluation—to be completed by each student at the end of the workshop. Copies should be provided to the IMN Coordinator.
- Instructor Evaluation—to be completed by each student after each session. Copies can be kept in your local files for future reference.
- Workshop Review Form—to be completed by the class host and submitted to the IMN Coordinator. This is your review of the overall class and planning process.
- Volunteer Hours Record—have your students use this form to document their volunteer hours and submit it for certification when hours are complete.
- Instructor Guidelines—provide each speaker with a copy of these guidelines to help them tailor their presentation for your group.

If you have questions or need additional information, please contact:

Indiana Master Naturalist Program
Division of State Parks and Reservoirs
402 W. Washington Room W296
Indianapolis, IN 46204

Phone: 317-232-4143
Email: gmurphy@dnr.IN.gov
Website: indianamasternaturalist.org



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