

INDIANA PHENOLOGY

Indiana Phenology is a 501(c)(3) non-profit organization created to facilitate the long term documentation of phenology changes in plants in all 92 counties of Indiana. We are committed to advancing phenology data collection, environmental education, and environmental stewardship by providing opportunities for citizen science.

To accomplish this mission:

- We facilitate phenology data collection with a goal of having observers in every county in Indiana.
- We help individuals, groups and schools in Indiana to create Nature's Notebook observations site where they make long term observations of phenology changes in plants.
- We create and share educational resources related to plants, phenology and the impacts of environmental changes in Indiana.
- We deliver environmental education that develops observation skills, cultivates an appreciation for nature and ignites curiosity and wonder.

BACKYARD OBSERVERS: Individuals and families dedicate a minimum of ten minutes a week to observe and record the phenophases of plants and animals where they work, live or play. Backyard Observers having fun outdoors, develop a deeper connection with nature, while building relationships with family, learning about phenology, and contributing to scientific discovery in the local community. In 2020, we had 62 registered Indiana Backyard Observers observing in locations across Indiana.

SCHOOLYARD PHENOLOGY: Working with teachers and administrators, Indiana Phenology facilitates opportunities for students to participate in experiential STEM activities while monitoring the phenology of plant and animal life on school grounds. As younger students connect with nature, they develop crucial observation skills. Older students deepen their experience by identifying and answering local scientific research questions, building critical thinking skills and confidence.

INDIANA PHENOLOGY TRAIL: Through our Indiana Phenology Trail program, we help partner sites plan and implement local Nature's Notebook phenology observation programs. These Phenology Trail sites provide an opportunity for Hoosiers of all ages to play an active role as stewards of their communities as they work together monitoring selected plants in public spaces. Their observations provide valuable insight for decision-makers on the impacts invasive species, climate change, and human activities have on growth patterns, reproduction, and resource availability.

OTHER PROGRAMMING: We provide training and educational opportunities to Backyard Observers, participants at partnering sites, classroom teachers and the general public across Indiana. We create and share educational resources online and publish a monthly newsletter

sharing phenology data collected by our observers. We also offer internships for college students of various disciplines.

During 2020, Indiana Phenology program participants and others collected over 62,000 observations in Indiana of more than 60 animal species and over 150 plant species in 24 counties in Indiana. We anticipate greatly increasing the yearly observation total as we work toward our vision of having Hoosiers of all ages in all 92 counties engaged in observing and recording the seasonal cycles of the plants and animals in their communities. As we help communities and individuals use Nature's Notebook to observe the plants and animals at their schools, parks, and backyards, they develop a deeper connection to the land in which they live, which leads to greater environmental stewardship.

List of programs short, medium and long term outcomes

2020 Successes:

- Increased counties with active observers to 24 (167% increase)
- Increased observation sites in Indiana to 48 (243% increase)
- Increased partner sites to 3 (300% increase)
- Started partner school program with 1 school
- Doubled backyard observers to 62
- Newsletter reaches 155 people per month
- Delivered 10 Phenology & Climate Change presentations to 125+ students

Short Term Goals:

(Spring 2021)

- Engage 5 college interns in program delivery
- Start Indiana Backyard Observer Facebook group
- Partner with 3 service-learning college courses
- Start 5 new partner site locations
 - Wabashiki FWA, West Terre Haute, IN
 - Province Park Arboretum, Franklin IN
 - Johnson County Park Prairie, Nineveh, IN
 - Bloomington Community Orchard, Bloomington, IN
 - Touch the Earth Nature Area, Columbus, IN

(2021)

- Increase counties with active observers to 45 (of 92 counties total)
- Increase active observation sites to 75 across all programs
- Increase partner site locations to 10
- Increase partner schools to 10
- Increase backyard observers 100
- Increase newsletter mailing list to 300

Medium Term Goals: (2022)

- Grow organization by transitioning from volunteer staff to paid staff.
- Expand curriculum offerings
- Increase our educational program offerings
- Expand our schoolyard program

Long Term Goals: (2023 and Beyond)

- Maintain a long-term dataset of the timing of phenological events in Indiana
- Provide citizen science opportunities for people of all ages in Indiana
- Engage individuals, groups and schools in Nature's Notebook phenology observation
- Have active observers documenting plant phenology in all 92 counties of Indiana
- Expand our offering of environmental education programming
- Regularly create and share phenology-based educational resources
- Help communities and individuals develop a deep connection to nature & place
- Improve levels of environmental stewardship

February 12, 2021

I began observing with Indiana Phenology as part of my internship and it has become a part of my weekly routine. When I pick my daughter up from school, I'm counting geese in a field. This seemingly inconsequential activity has led to hours of bonding with my teen as we giggle over the amusing noises of territorial males or their inelegant dance across the slippery puddles of ice. When I wake up in the morning, I take the time to look at my window to see what the sugar maple tree in my backyard has been up to since the day before. Before I became an observer, I wasn't even aware of what kind of tree was in my yard – let alone that it was teeming with life.

I find myself wishing I had more sites when I make trips to the park or drive past a familiar place and notice something had changed about the plants and animals I see. More orange in the trees I see as I drive to work, the explosion of wildflowers I now notice when I'm stopped at a light. My life feels richer and brimful of nature thanks to how much more I see.

I didn't realize how easy it was to find comfort and escape in nature until I started my observation journey. I'm always excited to look at the data I've collected and see tangible benefits for my work. It is my hope that Indiana Phenology will continue to have the support it needs to expand their observation programs throughout the state and enrich the lives of more Hoosiers.

Sincerely,

Athena Weddle

Backyard Observer | username: cephalophyte

Daily Journal

Group recruiting people to observe, record nature

By [Ryan Trares](#) -

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Subtle clues reveal changes throughout central Indiana.

Emerging shoots of crocus, breaking leaf buds and robins making their nests welcome spring to the area. Migrating song birds return to the area as temperatures slowly creep upward. The bright yellow of tall goldenrod marks the coming end of summer, while red-tinged maple leaves serve as a harbinger of autumn.

Searching for these signs takes a keen attention to nature. But in doing so, people can learn a great deal about the world they live in.

“It’s a very old science — the idea of watching season changes and how things change over time,” said Amanda Wanlass, executive director of Indiana Phenology. “That cyclical changing of the seasons and how it’s related to environmental factors, especially weather and climate, is what the science is about.”

A group of environmental-minded Hoosiers are looking for others like them to help explore, observe and record the natural world around them. Indiana

Phenology, a nonprofit formed to document seasonal changes in plants and animals in every county in Indiana, is compiling a team of backyard scientists across the state to note changes such as the emergence of flowers in the spring and the migration of birds throughout the year.

"It is interesting to study on a basic level, because the world around us goes on through time. It's always happening out there, and we're not always aware of it," Wanlass said. "So one reason we have this program is to look more closely at what's going on around them, and become engaged in the environment.

"If you're noticing what's happening, if you're noticing the world around you, you're going to care for it more."

To help support their work, the organization is seeking the community's help to expand its observation sites and more than double the data they were able to collect in 2019.

The grassroots effort will give important information about how Indiana's environment is changing, on a level that's never been done before.

"The data has impact on a lot of different things that are relevant to different concerns, such as allergy season, spread of insect-borne disease vectors, and other health issues," said Amanda Cantrell, a Center Grove-area resident and board member of Indiana Phenology. "You can track invasive species, or plan the best time for restoration activities when there will be minimal environmental impact. There are a lot of uses for this data."

Cantrell has always been very active in conservation and environmental activities. When she discovered Indiana Phenology, she saw it as a good way to get the public involved in nature, and to develop a conservation mindset.

With the threat of climate change ongoing, she also saw it as a way for anybody to help science study that issue.

“It was a way to support climate change mitigation. By providing this type of data, policy makers and land managers can help find locally relevant solutions,” she said.

Phenology is the tracking of seasonal changes in plants and animals — observations such as when shoots and fruit emerge in certain plants, when animals migrate back to an area or when animals reproduce.

In process, it is a simple science that anyone can do: Simply go out in nature, and record what you see at that time of year.

“Phenology is one of the most sensitive and easy-to-observe indicators of change because it is so intimately linked to weather and the particular conditions at a location at a period of time,” Wanlass said.

For example, recording when leaves break in area trees gives a sense of how early temperatures start rising in a part of the country. Certain insects emerge only when the conditions are right; their life cycles might only be for a few days or weeks.

Flowers bloom when it is most beneficial to pollinate and reproduce.

“The cues that plants and animals use to move from one life-cycle stage to another are very much related to those environmental conditions, because it impacts whether they had enough food to eat and whether they could survive,” Wanlass said.

Those changes, particularly when they come in different landscapes, are fascinating. Wanlass grew up in Utah, and was used to growing her garden in that dry, desert-like country. When she moved to Indiana, she had no idea about the climate cycles and when to plant.

Looking for data about certain plants, she had difficulty finding any good information.

“That really started me on a quest to look for this data and wanting to make it available,” she said.

Wanlass found direction from the USA National Phenology Network, and decided that Indiana should have a statewide phenology organization as well. Thus Indiana Phenology was born.

The mission of Indiana Phenology is to enlist backyard observers in all 92 Indiana counties. They use a smartphone app called Nature’s Network, which is a project of USA National Phenology Network. The program uses a checklist of yes-or-no questions that even newcomers to phenology can master, and helps track changes in two or three species of plants or animals around their home.

“It’s really simple to do once you get your site set up,” Wanlass said. “We’ll provide support to help them answer questions and get going.”

The organization also partners with schools to make observations as part of their curriculum. At sites throughout the state, the group is developing “phenology trails,” or specific walking areas where backyard observers can find a diverse array of plants and animals to record.

“We help nature centers, parks or other public spaces set up observation sites and incorporate phenology observation and phenology data into their existing programming,” Wanlass said.

In the spring, Indiana Phenology will unveil two such trails in the county: one in the prairie area of Johnson County Park, and another in a park in Franklin, though which park is still being decided.

The group has partnered with a number of local organizations, including Franklin Community Schools, Franklin Parks & Recreation, Johnson County Indiana Master Naturalists, Johnson County Parks & Recreation, Johnson County Public Library and Johnson County Soil & Water District to create the trails.

Franklin College has also been a supporter. Ben O'Neal, an associate professor of biology at the college, sees value in the phenology trails in a multitude of departments.

"These trails present some amazing leadership opportunities for our students," O'Neal said. "Biology majors will have the chance to conduct real-world experiments. Education majors could partner with the schools to lead K-12 students on a trail. It's an answer to a question we weren't even asking."

Indiana Phenology will lead a series of workshops on phenology at Johnson County library branches in April. The hope is that their push brings more and more people to observe nature, Wanlass said. Only 24 counties have observers signed up currently, and the more people that are providing information, the more complete the data is.

To help reach that goal, the organization is participating in crowdsourced citizen science grant challenge through Experiment.com, an online platform for discovering, crowdfunding, and sharing scientific research.

They hope to raise \$1,500 in order to create three additional public observation sites, with the potential to also receive part of a \$10,000 grant from Experiment. The money would be used for weather resistant interpretive signs, plant markers for each observed plant and protocols and training materials.

Each new site adds more than 5,000 observations per year. With three new sites, the group's yearly observations would be 30,000, doubling their total from 2019.

People can go to the project's page on the Experiment website to learn more about what they're trying to do, and how to support it. The campaign kicked off on Monday, and goes through 37 days.

"We're really hoping we can get people in Indiana interested in backing our project and donating what they can," Wanlass said.

At a glance

Indiana Phenology

Who: A nonprofit dedicated to getting people of all ages to participate in citizen science.

What is their goal?: The group aims to close the gap on environmental data using phenology, recording changes in nature in all 92 Indiana counties, as well as creating educational content to inform the community and getting information into the hands of policy-makers and leaders.

What is phenology? The study of cyclic and seasonal natural phenomena, especially in relation to climate and plant and animal life.

How to get involved?

Be a backyard observer: Choose two or three plant or animal species to observe around your own home. Join Nature's Notebook, an app available on smartphone or desktop computer, start an account and start recording.

Start a phenology trail: Those who manage a preserve, park, greenway, or some other wild space can start a phenology trail where people can make observe and record changes across an entire ecosystem.

Support Indiana Phenology in the Experiment Environmental Science Challenge: The organization is taking part in a grant challenge through Experiment, an online platform for discovering, crowdfunding, and sharing scientific research. They are hoping to raise \$1,500 by Jan. 5, which will allow Indiana Phenology to create three additional public observation sites throughout the state, adding an estimated 15,000 observations per year. Supporters can go to experiment.com/IndianaChanges to donate.

Information: indianaphenology.org, facebook.com/IndianaPhenology, or follow @IndianaChanges and #IndianaPhenology on Twitter and @IndianaPhenology Instagram.



Ryan Trares

Ryan Trares is a reporter for the Daily Journal. He can be reached at rtrares@dailyjournal.net or 317-736-2727.