Sycamore Land Trust

THE TWIG

THE SCIENCE ISSUE // WINTER-SPRING 2024

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FROM THE

EXECUTIVE DIRECTOR

Dear Sycamore friends,

Nine hundred species of animals and plants in one nature preserve here in southern Indiana, wow! That's how many species we observed and documented in just one day at Sycamore's Beanblossom Bottoms Nature Preserve, during a BioBltz we held in collaboration with the Indiana Academy of Sciences. This amazing number shows the importance of the habit preservation and restoration efforts that you support through Sycamore, as well as our growing efforts to study and document how our native flora and fauna are responding to our projects.

In this issue of *The Twig*, you can learn more about the Beanblossom Bottoms BioBlitz and other research projects at Sycamore preserves, which we are conducting with the assistance of many colleagues and volunteers. Learning more about the species that depend on our nature preserves demonstrates the impact of our work, and helps guide our land stewardship team's restoration and ongoing management efforts. A recent example is our 60-acre wetland restoration at the Sam Shine Foundation Preserve, where our team modified plans in order to avoid disturbing a new beaver dam and the state-endangered Kirtland's snake, which we discovered through wildlife monitoring.

Thank you for supporting this exciting and vital work!

John Lawrence
Executive Director

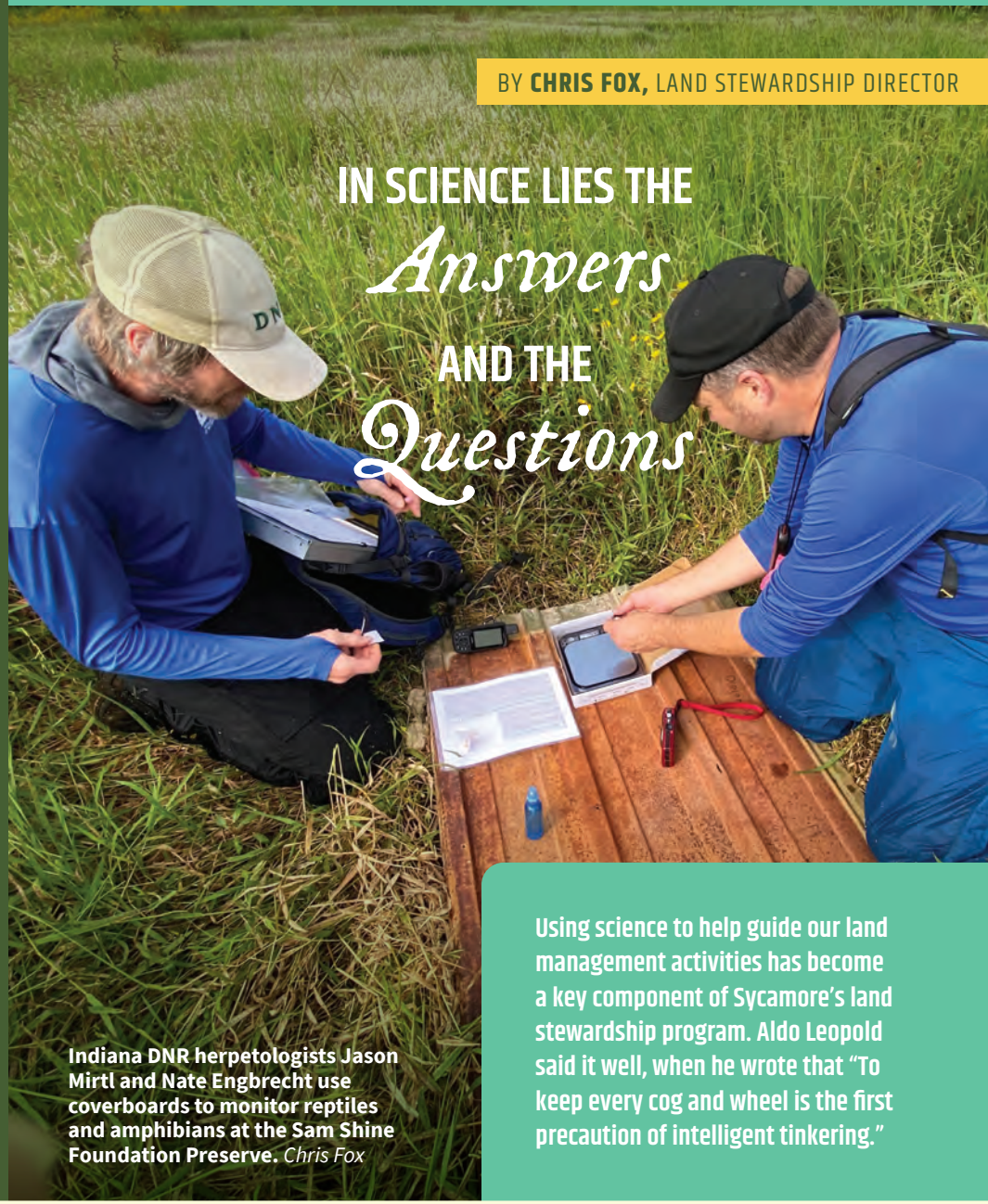
OUR MISSION

Sycamore Land Trust is a 501(c)(3) nonprofit conservation organization founded in 1990 to preserve the beauty, health, and diversity of southern Indiana's natural landscape through strategic land conservation and environmental education. We now protect 141 properties totaling 11,418 acres. *EIN # 35-1830637*

Learn more at sycamorelandtrust.org

BY **CHRIS FOX,** LAND STEWARDSHIP DIRECTOR

IN SCIENCE LIES THE *Answers* AND THE *Questions*



Indiana DNR herpetologists Jason Mirtl and Nate Engbrecht use coverboards to monitor reptiles and amphibians at the Sam Shine Foundation Preserve. *Chris Fox*

Using science to help guide our land management activities has become a key component of Sycamore's land stewardship program. Aldo Leopold said it well, when he wrote that "To keep every cog and wheel is the first precaution of intelligent tinkering."

ON THE COVER

Pipevine swallowtail caterpillars documented during the BioBlitz at Beanblossom Bottoms Nature Preserve on June 4, 2022, by the Pilla Family.

We worked with Indiana DNR in February to deploy over 250 coverboards on Sycamore preserves to survey herpetofauna (reptiles and amphibians), which are good indicators of a healthy ecosystem. This research is funded in part by a new grant from the Indianapolis Zoological Society, Inc. *Chris Fox*

As I sit here attempting to write this article while gazing out the window, I am distracted by the birds gathered at the feeders. The sun is shining brightly and the sky is that beautiful robin egg color of blue that just begs you to come outside and explore. The birds, however, are telling a different story. Though they appear warm by their plump appearance, I suspect it is not because they have stuffed themselves on sunflower seeds. Rather, their rotund physique is likely due to the fact that they have fluffed-up their feathers for an extra R-value of insulation against the bitter cold. As I sneak towards the window for a closer look, I contemplate if I should put on another layer of insulation myself and venture out.

The crisp air on a bright sunny day like today has always been exhilarating to me. Some of my favorite winter memories were exploring animal tracks in a fresh snowfall like Aldo Leopold so eloquently wrote about in A *Sand County Almanac*. What has been out roaming the woods at our office this blustery morning I ponder? But, then I remember the -10 "feels like" temperature and decide that going outside "feels like" a bad idea. Plus, there is this article to write and a fast-approaching deadline so I somewhat reluctantly resist the urge to venture out. There will be other days for that.

With the decision made, I take one final look at the feeders before I dive back into writing. On the ground there are several different species of sparrows and a couple Dark-eyed juncos, also known as snow birds. Despite the nickname we have had very little snow this winter but maybe the snow birds know something we don't. As I watch the little slate gray colored juncos scattered about the ground teetering on one leg and then another to stay warm I have to chuckle. As they comically and somewhat clumsily alternate legs, they remind me of a toy from my childhood called Weebles. The catchy phrase that made this toy so popular back in the day was, "Webbles wobble but they won't fall down." Maybe juncos were the inspiration for the toy.

Certainly, birds have been an inspiration for many inventions and many people, myself included. As long as I can remember I have always had a love and fascination with animals and birds in particular. Just as George Costanza from Seinfeld always wanted to pretend to be an architect, as a child I always pretended to be a veterinarian. Growing up everyone just assumed I would go on to be a real veterinarian but as I got older I wasn't sure it was the right fit for me. I finally found the right fit for me when I took a class with the late Dr. Don Whitehead. I watched with great awe as Dr. Whitehead enthusiastically told stories about all of his field research. He flipped through slides of digging core samples from lake bottoms in New England to understand past climates and how acid rain might be impacting our current climate. He spoke passionately about his research examining how forest management and fragmentation along with climate change were impacting neotropical migratory songbirds' reproductive success. He spoke with such fervor, always with a sense of hope yet concerned that we must do something. I left that class with a new dream and vision of my future. Fast forward a few years, quite a few years in fact, and here I am writing an article about how we at Sycamore (an organization Dr. Whitehead was involved with and supported) utilize science to help guide our stewardship. It is a bit surreal when I think about it all.

As we plan our stewardship and restoration projects we look to science to answer questions about how our land management can best meet our objectives and goals. We consult with experts for advice and assistance. We talk with botanists, biologists, herpetologists and of course, other land stewards to find out what they are doing to

A herpetological study in partnership with Indiana DNR found 54 snakes in one day under coverboards at the Sam Shine Foundation Preserve. *Ellen Bergan*

protect and manage the flora and fauna that we at Sycamore work so hard to preserve. Using science to help guide our land management activities has become a key component of our stewardship program. Aldo Leopold said it well, when he wrote "To keep every cog and wheel is the first precaution of intelligent tinkering." While there is a lot of great scientific research out there on all aspects of stewardship, nothing can make a bigger impact than having that research conducted on land that we protect and manage. We have been fortunate to work with so many wonderful researchers on various projects on our preserves over the years. Every research project helps fill informational gaps in our collective scientific knowledge that can help us all better protect and manage these important ecological preserves. Paradoxically, the research often leads to more questions than it answers but for me that is the beauty of nature and science.

Motus Wildlife Tracking System

In March, we installed a Motus wildlife tracking system at our Sam Shine Foundation Preserve thanks to our continued partnership with Indiana Department of Natural Resources (IDNR) and the generosity of our members and donors, including Dr. Whitehead's daughter Pam Whitehead and family. This project is part of an international collaborative network of researchers that use automated radio telemetry to simultaneously track hundreds of individuals of numerous species of birds, bats, and insects. The system enables a community of researchers, educators, organizations, and citizens to undertake impactful research and education on the ecology and conservation of migratory animals. In conjunction with the Motus system we installed, we will also be partnering with Indiana Audubon and IDNR along with international partners in the first full scale, life-cycle tracking project of wood thrush from every part of their range, both summering and wintering grounds. Wood thrush like many birds have experienced severe declines in their populations due to many factors. Look for more information to follow as this project gets underway. Thanks to volunteer Rick Nicholson for all his technical help on building a Motus tower and thanks to Duke Energy and 5 Star for assisting with the installation of the tower and antennas. And of course, a big thanks to Allisyn Gillet, state ornithologist with IDNR, for all her assistance with these projects!

In March, Sycamore and Indiana DNR installed a Motus Wildlife Tracking System tower at the Sam Shine Foundation Preserve in Monroe County—just in time for spring migration!
Allisyn-Marie Gillet and Chris Fox

Wood Thrush *Hylocichla mustelina*
Photo by Ryan Sanderson

Sycamore is partnering with Indiana DNR and Indiana Audubon for the Chasing Melody Indiana Wood Thrush Conservation Project.

Indiana DNR Marsh Bird Surveys

This past year the IDNR completed marsh bird surveys in the Beanblossom Creek area. If you are not familiar with marsh birds you are not alone. These are extremely secretive birds that inhabit remote and often inaccessible wetlands or marshes, as the name implies. Unfortunately, these poorly understood and understudied birds are experiencing significant declines due largely to habitat loss. Many of the species you could encounter in Indiana are listed as threatened or endangered. American bitterns, Virginia rails and soras (a species of rail) have all been spotted on our wetland preserves. The information the ornithologists gather will help inform us on how to better manage our current wetlands to continue to provide habitat needed by these rare birds. This study will also help guide our future wetland restoration projects as we are committed to protect our increasingly threatened wetland habitats. We look forward to partnering with the IDNR to make this a long term study as we continue to construct and restore even more wetlands.

Hoot Woods Old Growth Forest Study

Next year, we will continue a research project that has been

John Lawrence

going on longer than Sycamore has been in existence, even longer than I have been in existence in fact. The late Dr. Marion T. Jackson, professor at Indiana State University, began the research project in the 1960s. The ISU professor along with some of his students and colleagues began surveying sections of Hoot Woods to better understand the dynamics of an old-growth forest. They established permanent plots within the forest and recorded all the trees that occurred in the grids along with other data. Dr. Jackson was interested to see how the forest changes over time when left undisturbed by man. The 80-acre preserve in Owen County is designated a National Natural Landmark by the National Park Service and was the 301st state dedicated nature preserve in Indiana. Thanks to the Hoot family, this forest survived the clearing that most of our forests suffered during the early settlement of our state. Now the ancient forest will remain protected as a permanent preserve. And thanks to the foresight of Dr. Jackson and the continued dedication of his past students, peers, volunteers and Sycamore staff, the research will continue for decades to come.

How to Roughly Estimate a Tree's Age

In 2021, researchers from Indiana University used the science of dendrochronology to estimate the age of trees at Hoot Woods, where Sycamore protects one of Indiana's few remaining old-growth forests. A black gum (*Nyssa sylvatica*) was estimated to be around 400 years old! Tree cores were sampled using an increment borer, which extracts a narrow core so rings can be counted without harming the tree. But you can estimate a tree's age without these tools:

1. **Find the diameter of the tree at breast height (about 4.5 feet above the stump) by measuring the circumference around the tree and dividing it by 3.14.**
2. **Determine the tree's species and look up the species' growth factor.**
3. **Estimate the age by multiplying the diameter of the tree by its growth factor.**

Growth factors of some common Indiana trees:

COTTONWOOD	2.0
PIN OAK, SILVER MAPLE, BASSWOOD	3.0
RIVER BIRCH	3.5
AMERICAN ELM, GREEN ASH, NORTHERN RED OAK	4.0
BLACK WALNUT, RED MAPLE	4.5
BLACK CHERRY, SUGAR MAPLE, WHITE BIRCH, WHITE OAK	5.0
DOGWOOD, IRONWOOD, EASTERN REDBUD	7.0
SHAGBARK HICKORY	7.5

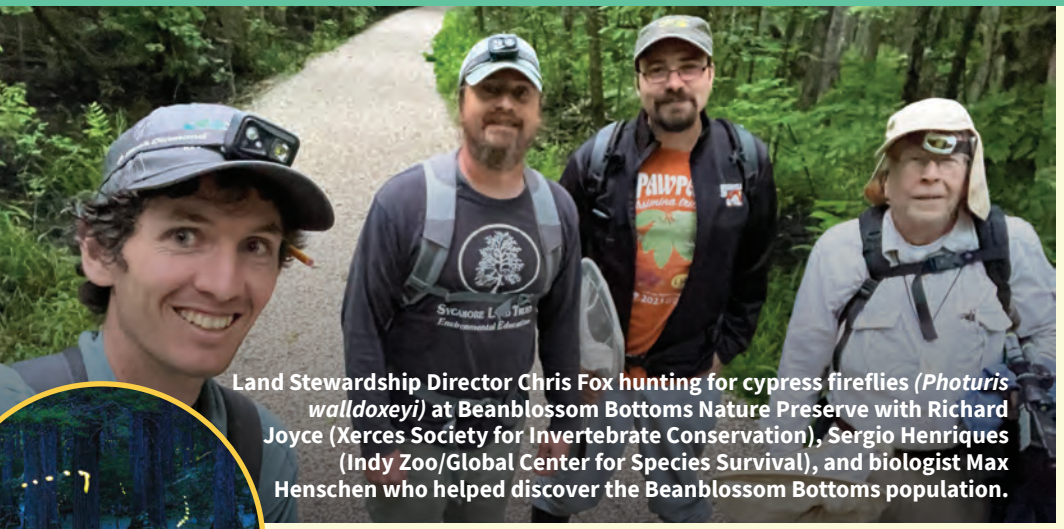
SOURCE: PURDUE UNIVERSITY LANDSCAPE REPORT 18-04

Beanblossom Creek Herpetological Study with Indiana DNR

For the past few years, Sycamore has partnered with IDNR to conduct herpetological surveys on several preserves. Specifically, these surveys were geared towards gathering information on species diversity and abundance in advance of planned restoration activities. An additional focus of many of these surveys was searching for the state endangered Kirtland's snake, a species that is poorly understood and imperiled in all states in which it occurs. It was recently considered for federal listing by the U.S. Fish and Wildlife Service under the Endangered Species Act but was not accepted due to a lack of scientific evidence to support the listing. Sycamore had a few known records of Kirtland's snakes and we were curious if there were more populations out there. Herpetological survey methods involved the use of coverboards, audio recorders, visual surveys (day and night), live traps and photography. These surveys have helped inform our stewardship team about the species currently using our preserves and this information has led to modifications in a planned restoration project to protect Kirtland's snakes already inhabiting the area. This research

Kirtland's snake *Clonophis kirtlandii*
Chris Fox

Nate Engbrecht, Indiana DNR herpetologist, documents a state endangered Kirtland's snake at the Sam Shine Foundation Preserve. *Chris Fox*



Land Stewardship Director Chris Fox hunting for cypress fireflies *(Photuris walldoxeyi)* at Beanblossom Bottoms Nature Preserve with Richard Joyce (Xerces Society for Invertebrate Conservation), Sergio Henriques (Indy Zoo/Global Center for Species Survival), and biologist Max Henschen who helped discover the Beanblossom Bottoms population.

The unique flash pattern of the elusive and very rare cypress firefly. *Schreiber*

has also led to some new findings not previously well documented in the scientific literature. Such as the discovery last year that we could identify individual Kirtland's snakes by their unique facial patterns thanks to the efforts of Zach Truelock. Photographs have been used to identify individual snakes in the past but has usually been used on larger snakes with bold patterns like rattlesnakes. Through the use of photographs, we have also been able to get a better idea of the population size and collect data on individual movement of a mostly fossorial* snake which has been rarely recorded in published data. The research has also produced several county records which helps fill in the gaps on species ranges and movements. This research is being shared with other groups and will be published in conservation journals. A huge thanks to Nathan Engbrecht, Jason Mirtl and Zachary Truelock for their passion and dedication to this project and the protection of herps everywhere.

Indianapolis Zoological Society, Inc. Research Grant

We are excited to announce that we will be starting a new research project this year focused on both the cypress firefly and Kirtland's snake thanks to the generous support of the Indianapolis Zoological Society, Inc. This is our first research-based grant and will help fund our efforts to continue to use science to guide our management and stewardship. This project will focus on 3 main goals: 1) Gain a better understanding of the current population of these two rare species using different survey methods. 2) Protect and restore habitat for these rare species so their populations can survive and potentially expand. 3) Provide more outreach and education to the public about these unique species and the threats they face. We are hopeful that this is just the beginning of a long-term study and partnership with the Indianapolis Zoological Society, Inc.

*fossorial animal is one that is adapted to digging and which lives primarily underground.

A "piebald" female cardinal with a white head due to leucism was spotted at the feeders outside Cedar Crest, Sycamore's office in Bloomington. *Chris Fox*

As I think about all these research studies, the partnerships we have formed and how far we've come in such a short time, out of the corner of my eye I suddenly see a flash of red and white streak across the window pane and my attention is brought back to the feeders in front of my desk. "What was that?" I whisper to myself as I scurry to the window for a closer look. I survey the area but all I see are sparrows, finches and those Weeble wobble juncos. And then, nestled under a St. John's wort shrub in our native plant garden, I spy our feathered mystery guest. Quickly, I grab the binoculars on the table without taking my eyes off the bird. As I peer through the lens, I am amazed at what I see. It is a female cardinal with a white head. The rest of the plumage on the body is mostly pigmented in the normal cardinal colors save a few white patches here and there. The bold white head with orange tinged crest and bright orange beak gives her an almost parrot-like look. It is striking and I hurry to alert the others in the office as I try to get a photograph. As we look on, we all discuss how we've never seen a bird like this in person. According to several sources, the odds of such a bird are 1 in 30,000. Truly our lucky day! But, what causes this and what does it mean? I may not know the answers but I know how to find out. Science will tell me and with it will no doubt come more questions and thus the mystery of life continues!

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

—ALBERT EINSTEIN

Mary Welz

Beanblossom Bottoms BioBlitz

RESULTS ARE IN: Over **900 species** observed in 24 hours

BY **KATE HAMMEL**, COMMUNICATIONS DIRECTOR

Chris Fox

On June 4, 2022, Sycamore Land Trust teamed up with Indiana Academy of Science (IAS) to hold a BioBlitz at our Beanblossom Bottoms Nature Preserve in Monroe County, helping to document wetland biodiversity and guide future habitat restoration efforts at the preserve. More than 70 researchers from multiple universities, the Indiana Department of Natural Resources, and the U.S. Fish and Wildlife Service conducted a 24-hour sampling effort across the preserve's 733 acres.

"By recording this biodiversity we are giving Sycamore Land Trust the information they need to manage this land effectively and simultaneously helping the public learn about the precious diversity we are at risk of losing," said Marc A. Milne, Associate Professor of Biology at University of Indianapolis and then the President of the Indiana Academy of Science. During the BioBlitz, he spotted the biggest spider he has ever seen, a *Dolomedes tenebrosus* that was nearly 5 inches.

The results of the Beanblossom Bottoms BioBlitz are in preparation to be published in the *Proceedings of the Indiana Academy of Science*. IAS intends to return to Beanblossom Bottoms Nature Preserve after ten years to hold another BioBlitz, to see how results have changed over time and as a result of Sycamore's ongoing habitat restoration and management.

Funding for this event was provided through the generosity of the Indiana Academy of Science and the Raymond Foundation.

"Altogether, the collected ant species seem to indicate a fairly healthy woodland habitat, without any of the species I would associate with ecological disturbance."

– Mathew Neidmann, Department of Entomology, Purdue University
ANTS TEAM LEADER

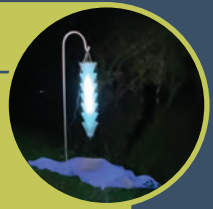
Glowworm Beetle *Phengodes sp.* (Beanblossom Bottoms Bioblitz June 4, 2022) *Carl Strang*

Beetles

TEAM LEADER: Jeff Holland, Department of Entomology, Purdue University

TEAM MEMBERS: 8 | **SPECIES OBSERVED: 185**

METHODS



The beetles were collected using a combination of hand collecting, sweep-netting, and beating branches during the day. On Saturday evening, the beetle crew collected specimens attracted to ultraviolet and mercury vapor lights.

HIGHLIGHTS

"The beetle team found 185 species of beetles from 44 different beetle families. Of these families, the rove beetles, ground beetles, and weevils had the most species found. The cyprus firefly, *Photuris walldoxeyi*, was a highlight as it is listed as vulnerable on the IUCN red list and this is only the second known locality for it within Indiana. Nine of the beetle species found are new records for the State of Indiana."

– Jeff Holland, Department of Entomology, Purdue University
BEETLES TEAM LEADER

Vintage Sycamore gear spotted at the Beanblossom Bottoms BioBlitz. *Kate Hammel*

Lemon Cuckoo Bumble Bee *Bombus citrinus* (Beanblossom Bottoms Bioblitz June 4, 2022) *Megan Moss*

Bees

TEAM LEADER: Robert Jean, Environmental Solutions & Innovations, Inc.

TEAM MEMBERS: 4 | **SPECIES OBSERVED: 19**

METHODS

Bees were collected using bowl trapping and netting at flowers. The focal area was sampled with a total of 90 bowls (30 white, 30 fluorescent blue, and 30 fluorescent yellow) filled with soapy water to trap the bees. Approximately five hours of aerial net collecting was performed by the bee team across the preserve.

HIGHLIGHTS

"No non-native species were collected suggesting an intact native bee fauna. Interesting species include *Andrena integra* and *A. platyparia*, mining bees that specialize on *Cornus* (dogwood) pollen and occur mainly in forests in early spring but have been relatively little collected or reported throughout Indiana."

– Robert Jean, Environmental Solutions & Innovations, Inc.
BEES TEAM LEADER

Aquatic macroinvertebrates play an important role in freshwater ecosystems by recycling nutrients and providing food to other animals. Sixty-two species of aquatic macroinvertebrates were observed by a team of nine scientists led by Luke Jacobus, Division of Science, Indiana University Columbus.

***Hyalella sp.* (Beanblossom Bottoms BioBlitz June 4, 2022)** *Megan Moss*

Prothonotary warbler *(Protonotaria citrea)* in a tree cavity at Beanblossom Bottoms. *Chris Fox*

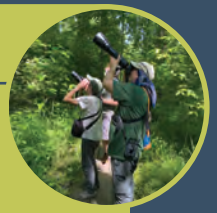
Birds

TEAM LEADER: Kamal Islam, Department of Biology, Ball State University

TEAM MEMBERS: 7

SPECIES OBSERVED: 67

METHODS



As they walked along the boardwalks and mowed trails of the property, participants worked together to record the bird species they saw and heard. A total of 67 bird species (368 individuals) were detected during approximately 42 person-hours of effort.

HIGHLIGHTS

Highlights included all six resident woodpecker species, six species of migratory flycatchers, three species of migratory vireos, eight species of long-distance migratory warblers, and a total of 28 species of long-distance migrants that breed in Indiana and winter primarily in Central and South America. Introduced commensals such as rock pigeon, European starling, and house sparrow that have successfully colonized North America were absent from the count.

"This wetland complex property within the floodplain of Beanblossom Creek provides critical breeding habitat for migratory and secondary cavity nesters. Due to the number of dead snags excavated by resident woodpeckers on the property, 15 Great Crested Flycatchers and 20 Prothonotary Warblers, both long-distance migrants, as well as short-distance migrants such as Tree Swallows were recorded."

– Kamal Islam, Department of Biology, Ball State University
BIRDS TEAM LEADER

Fish & Freshwater Mussels

TEAM LEADER: Brant Fisher, Indiana Department of Natural Resources

TEAM MEMBERS: 2

SPECIES OBSERVED: 37
(27 fish and 10 mussels)

METHODS

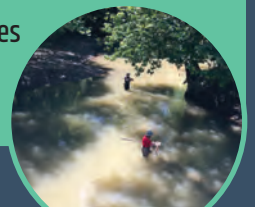
A total of 27 species of fish were collected using a combination of backpack electrofishing, seining, and dip netting techniques from Beanblossom Creek and wetland areas along the boardwalk, as well as turtle traps set by the Herp team. Fish sampling in Beanblossom Creek was difficult due to lots of woody debris and logjams, areas with deeper water, and steep, hardpan banks made sampling inefficient in many areas. Evidence of ten species of freshwater mussels was found in Beanblossom Creek.

HIGHLIGHTS

Two fish species were collected for the first time from the Beanblossom Creek drainage: the Ribbon Shiner *(Lythrurus fumeus)* and Silver Shiner *(Notropis photogenis)*. Beanblossom Creek represents the northern and southern most tributary in the West Fork White River (WFWR) drainage that Ribbon Shiner and Silver Shiner are known, respectively.

"For Pimpleback and Yellow Sandshell mussels, Beanblossom Creek is the furthest upstream tributary in the WFWR drainage they inhabit, and neither is found much further upstream on the mainstem WFWR from the mouth of Beanblossom Creek. The last remaining Washboard population known from the entire WFWR drainage is found in Beanblossom Creek."

– Brant Fisher, Indiana Department of Natural Resources
FISH/FRESHWATER MUSSELS TEAM LEADER



State Endangered Kirtland's snake *Clonophis kirtlandii* (Beanblossom Bottoms Bioblitz June 4, 2022) *Nate Engbrecht, Indiana DNR*

Herpetofauna (Herps)

TEAM LEADER: Nate Engbrecht, Indiana Department of Natural Resources

TEAM MEMBERS: 12

SPECIES OBSERVED: 20
(14 amphibians and 6 reptiles)

METHODS

Amphibian and reptile sampling was conducted using a combination of manual 'by ear' frog call surveys, dip netting, and the deployment of minnow traps and baited mesh hoop traps. Visual surveys in both aquatic and terrestrial habitats also were employed and generally involved searching beneath logs, within leaf packs, and in wetland and nearshore areas along the preserve's extensive boardwalk system. Aquatic trapping was conducted in the preserve's main wetland and in smaller pools and forested swales. A total of 50 minnow traps and 20 baited hoop traps were deployed for two nights, totaling 100 and 40 trap nights, respectively.

HIGHLIGHTS

"One State Endangered Species, the Kirtland's snake (*Clonophis kirtlandii*), and two species of Special Concern, Blanchard's cricket frog (*Acris blanchardi*) and eastern box turtle (*Terrapene arolina*), were identified. One minnow trap placed approximately 30 m from shore contained both a common watersnake and adult Kirtland's snake. Kirtland's snakes have previously been recorded from the nature preserve and at nearby sites within the Beanblossom Creek valley. A large snake skin was identified as being from a North American Racer (*Coluber constrictor*)."

– Nate Engbrecht, Indiana Department of Natural Resources
HERPS TEAM LEADER

Eastern Box Turtle *Terrapene carolina carolina* (Beanblossom Bottoms Bioblitz June 4, 2022) *Megan Moss*

Male green-striped grasshopper *Chortophaga viridifasciata* (Beanblossom Bottoms BioBlitz June 4, 2022) *Carl Strang*

Singing Insects

TEAM LEADER: Dr. Carl Strang

TEAM MEMBERS: 1

SPECIES OBSERVED: 5

HIGHLIGHTS

"The 2022 bioblitz was too early in the season to provide a good sense of the singing insect species present at Beanblossom Bottoms. It is a high-quality site, and I will seek an opportunity to return later in a future year to make a more complete assessment. In particular, I anticipate a good diversity of wetland species. The few observed during the bioblitz all are characteristic of drier habitats. These included two species of 17-year cicadas (stragglers from the previous year's major emergence) and northern wood crickets, all in the small portion of upland forest. Green-striped grasshoppers and spring trigs are early season grassland species that were active in elevated open areas."

– Dr. Carl Strang
SINGING INSECTS TEAM LEADER

Spring Trig *Anaxipha-vernalis* (Beanblossom Bottoms Bioblitz June 4, 2022) *Carl Strang*

Chris Fox

Snail-killing Flies

TEAM LEADER: Bill Murphy, Research Collaborator, Smithsonian Institution

TEAM MEMBERS: 1

SPECIES OBSERVED: 11

METHODS

One person collected all 124 specimens of Sciomyzidae of 11 species in four genera by use of a sweep net. Areas swept included vegetation along moist footpaths and along boardwalks and any area with drying mud that might have stranded aquatic snails. High numbers of snail-killing flies were observed even though mid-June is considered to be late season for collecting most sciomyzid species at this latitude.

HIGHLIGHTS

Documented for the first time in Indiana was *Sepedon borealis* Steyskal, which is known only from about the Michigan state line north. Another surprise was finding *Sepedon floridensis* Steyskal, and relatively large numbers of them. Unknown from Indiana before 2010 and subsequently detected in only three Indiana counties, these records from Monroe County appear to "connect the dots" of the northward expansion into Indiana of this formerly southern species. Six species of sciomyzids were found that were new to the Monroe County list: *Dictya sabroskyi* Steyskal, *D. stricta* Steyskal, *D. texensis* Curran, *Sepedon borealis*, *S. floridensis*, and *S. tenuicornis* Cresson.

"The Beanblossom Bottoms Nature Preserve provided outstanding habitats for larval snail-killing flies, not only aquatic and semi-aquatic environments but also mesophytic woods. The diversity of species of snail-killing flies found in the Beanblossom Bottoms Nature Preserve during this bioblitz showed the area to be unusually productive. I hope that the preserve continues to be managed as well as it is now."

– **Bill Murphy, Research Collaborator, Smithsonian Institution**
SNAIL-KILLING FLIES TEAM LEADER

Kate Hammel

Spiders

TEAM LEADER: Marc A. Milne, Department of Biology, University of Indianapolis

TEAM MEMBERS: 5

SPECIES OBSERVED: 75

METHODS

The five-person spider team collected 427 spiders over ~45 person-hours of labor. Within those 427 spiders were 75 species within 57 genera within 17 families.

HIGHLIGHTS

The most abundant family was the Linyphiidae (sheet-web weavers; 87 specimens), followed by the Tetragnathidae (long-jawed orb weavers, 65 specimens), Salticidae (jumping spiders; 62 specimens), and Lycosidae (wolf spiders; 52 specimens). Within this richness were two state distribution records: *Araneus miniatus* (an angulate orbweaver in the family Araneidae) and *Robertus laticeps* (the trilobed immaculate cobweaver in the family Theridiidae).

"The species richness at Beanblossom Bottoms is exceptionally high. Many of the spider taxa we found were only collected once, indicating that there is much more to be found at Beanblossom Bottoms. Wetlands like Beanblossom Bottoms are critically-important habitats for hundreds of species in the Midwest. Ensuring that these species continue to survive means ensuring the preservation of these habitats and Sycamore Land Trust is doing just that."

– **Marc A. Milne, Department of Biology, University of Indianapolis**
SPIDERS TEAM LEADER

Six-spotted fishing spider *Dolomedes triton* (Beanblossom Bottoms Bioblitz June 4, 2022) *Jessica Hatt, ISDA Resource Specialist*

Mary Welz

Vascular Plants

TEAM LEADER: Nathanael Pilla, Midwest Biological Survey, LLC

TEAM MEMBERS: 16

SPECIES OBSERVED: 454

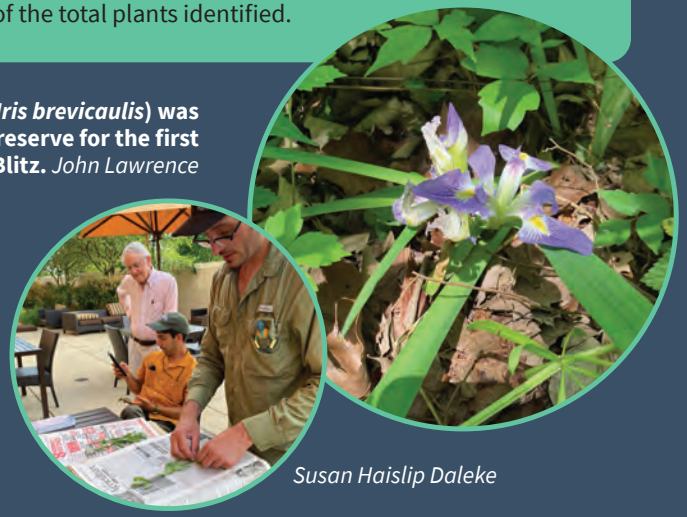
METHODS

Sixteen members of the vascular plant team traversed through four sections of Beanblossom Bottoms Nature Preserve in an attempt to cover as much ground as possible.

HIGHLIGHTS

A total of 454 total vascular plant taxa were observed within the survey area on June 4th, 2022. Among these were 393 taxa native to Indiana, or 86.6% of the total plants identified.

Zig zag iris (*Iris brevicaulis*) was documented at the preserve for the first time during the BioBlitz. *John Lawrence*



Susan Haislip Daleke

A special thank you to Glené Mynhardt, who helped organize this event.

Ecosystem Engineers

Burrowing Crawfish Create Vital Habitat

BY **ZACH TRUELOCK,** HERPETOLOGIST

A painted-hand mudbug in its burrow on a wetland preserve owned by Sycamore. *Zach Truelock*

While walking through a field, perhaps near a stream, pond, lake or ditch, you may have seen tall muddy chimneys, clustered and towering over the ground. They're unique and eye catching on the landscape—and can be dense enough to appear as a tiny city made of muddy skyscrapers.

So, what are these things? Their architect is reclusive and rarely seen, but on rainy nights you may be lucky enough to see a pair of claws and antennae protruding from the entrance.

Crayfish, crawfish, craw dads, mud bugs; whatever you call them, these charismatic crustaceans form an integral part of the North American landscape. We are in a crayfish hotspot—nearly 70% of the approximately 500 species of crayfish in existence are native to the waters of North America. Much of this crayfish diversity occurs in the southeast, but the Midwest also has its fair share. Though many of us are most familiar with the aquatic species found in streams, lakes and ponds, Indiana's 21 species are diverse in form and habitat, occurring even in places such as caves, forests, and prairies.

It is perhaps the so called "primary burrowing" crayfish that are most interesting. How does a typically aquatic animal, that uses gills to breath, live on land?

Simply put—they dig. Burrowing crayfish dig long burrows down to the water table, so they can wet their gills as needed and keep their burrows moist and cool. Because of this, they can spend nearly their whole lives underground. It would be hard to know they even existed at all, if it weren't for the large chimney-like towers they build above burrow entrances. The crustacean's abodes can be extraordinarily complex with multiple chambers and entrances, going as deep as 15 feet underground! Their secretive habits have long made burrowing crayfish difficult to study, but scientists are increasingly learning more about these animals and the integral roles they play in the ecosystem.

Crayfish are sometimes considered keystone species because of how many different species eat them, and their role in transporting nutrients to species higher on the food chain. The same is true of burrowing crayfish, but they also serve another role: as ecosystem engineers. Just as a beaver creates new habitat by blocking a stream, crayfish burrows create habitat and refuge for an impressive assortment of species. In the upper Midwest, federally threatened eastern massasauga rattlesnakes and copperbelly watersnakes use crayfish burrows for shelter and to hibernate. The larvae of the federally endangered Hine's emerald dragonfly use crayfish burrows to survive periods of drought and freezing. Closer to home, the state endangered Kirtland's snake and the crawfish frog both historically occupied crayfish burrows within the Beanblossom Creek valley—though the crawfish frog has sadly since disappeared from this area. A close association has been noticed between the habitats and range of Kirtland's snakes and the digger crayfish, and the small Kirtland's snake may depend on the crayfish as a prey item as well as a habitat architect. A plethora of other species will also use crayfish burrows, including countless insects, salamanders, snakes, frogs, toads, spiders, and small mammals. Their burrows also help aerate the soil, and recycle nutrients back up to the surface. The incredible list of biodiversity supported by burrowing crayfish, and the ecosystem services they provide, cements their importance as a true keystone species. But they are also fascinating in their own right.

It's not fully understood why crayfish build chimneys over their entrances, but burrows often contain multiple entrances, some with chimneys and some without. Creating chimneys may allow crayfish to rid their burrows of excavated soil without leaving the burrow and potentially exposing themselves to predators. Juvenile burrowing crayfish seem to take cues from burrow chimneys excavated by older crayfish of their species, and preferentially make their own burrows near established ones. Recent research has revealed another function of burrow chimneys—ventilation. When wind gusts blow near burrows, air is drawn in through the chimney-less opening, and flows out the top of the chimney. Since burrow water is often low in oxygen, chimney construction may be important for allowing the crayfish to respire.

Three species of burrowing crayfish call the land that Sycamore Land Trust protects home: the digger crayfish (*Cresearinus fodiens*), the paintedhand mudbug (*Lacunicambarus polychromatus*), and the aptly named Crawzilla crawdad (*Lacunicambarus chimera*). The next time you see a crayfish chimney, stop and think about these amazing ecosystem engineers.

Paintedhand mudbug *Zach Truelock*

Primary burrowing crayfish burrow at a Sycamore wetland preserve on Beanblossom Creek. *Zach Truelock*

A Kirtland's snake in crayfish burrow. *Zach Truelock*

THE WILDLIFE CAMERA PROJECT

MOTION-TRIGGERED CAMERAS AID HABITAT RESTORATION

BY **MADELEINE THOMPSON**,
COMMUNICATIONS & DEVELOPMENT FELLOW

What is wildlife? Is it the bobcat that wanders the woods in some remote area? Or is it a squirrel you see outside your window, maybe even the little fly that buzzes in your house? Regardless of size, wildlife can be found all around us. Protecting these creatures near and far requires a deeper understanding of them and their habitats. Wildlife cameras can offer an insight into their world that can drive both inspiration and action—and that is exactly what we at Sycamore have done with our Wildlife Camera Project.

The Wildlife Camera Project began with an idea to engage the community with Sycamore's emerging major restoration efforts. Land Stewardship Director Chris Fox and Communication Director Kate Hammel spearheaded the project that took root in the planning stages of large-scale habitat restoration at the Sam Shine Foundation Preserve in 2020. This preserve is a key addition to the patchwork of protected areas in our Beanblossom Creek Conservation Area. Monitoring of the Shine Preserve with wildlife cameras has enhanced stewardship across this protected habitat corridor.

The window that these cameras opened into the natural world has allowed Sycamore to more intimately and efficiently see wildlife and their natural behaviors under minimal disturbance. Where traditional surveys would take hours of field time, the cameras condense efforts by continuously recording data while allowing review for deeper analyzation and species confirmation.

At the Shine Preserve, the cameras have been influential in conservation. They have set a baseline for restoration efforts while continuing to monitor the impact of habitat restoration efforts. The real-time input has guided improvements by showing species presence and documenting landscape-level changes—most noticeable being the beavers with whom we are working with to reestablish precious wetlands.

Much work has gone into making this project the success that it has become. Having been a part of every step in the process, I would like to take you behind the scenes of it all, from set-up to the final video, so that you too may come to appreciate it like I have—and maybe even set up your own camera to document wildlife around you!

At Sycamore we mostly use Browning Recon Force series trail cameras based on our research and recommendations from Sally Nasser, a wildlife camera expert. Because our goal is to observe wildlife on our properties, we set our cameras to be motion sensored, taking 20-second videos so we can identify species. These cameras come equipped with night vision that also lets us observe nocturnal creatures like raccoons and owls who use our property but could otherwise be missed through other survey methods. We continually rotate cameras to capture the diversity at the Shine Preserve. Picking the location of each is crucial.

Our stewardship team scouts out locations that offer various angles and habitats to capture a wide range of animals. Creativity and experimentation have led to many interesting placements—

from the “Squirrel Log Cam” to the “Opossum Crossing Cam” and even the famous “Beanblossom Bottoms Beaver Dam Cam.” Consideration of the surroundings plus height and angle of the camera on the tree are important as it can impact the type of wildlife captured. With our cameras being motion sensored, attention to vegetation and water in front of the camera is also important as through trial and error we realized wind and sun glare can trigger the cameras to take videos of nothing while using up camera space. Other factors like flooding and theft have impacted project progress.

Storage space itself is another limitation. Footage is captured via SD cards. Some cameras capture over 300 videos in just a few weeks; so limited card space requires cameras to be checked and SD cards replaced semi-regularly. This can be a challenge during the busy field season since the stewardship team manages over 11,000 acres across southern Indiana. Furthermore, the videos captured lead to lots of footage to review.

It is thanks to the help of staff and many volunteers that Sycamore is able to gather important information through these wildlife videos. With such a large influx of footage, we have to be organized and selective. Myself along with stewardship staff, interns, and volunteers watch each video on the SD cards pulled from the cameras. We document the date, location, species, and max number of individuals within a video frame into a comprehensive spreadsheet to track the species observed. So far we have seen 70 different species which has helped us better understand the diversity present and tailor habitat projects accordingly.

While there is a lot of great content, we narrow down the videos by saving and labeling those with any new species, interesting behaviors, changing landscape such as a beaver dam, or just silly moments (see the end of our 2021 raccoon video on our Youtube wildlife channel). Even then, we continue to get new

A great blue heron lands in front of our camera monitoring the beaver dam at Beanblossom Bottoms Nature Preserve, one of our first wildlife cameras.

A coyote crossing a log on our “Shine Log Bridge Cam” senses the motion-triggered wildlife camera.

and better footage that requires constant organization and refining criteria for saving videos. These chosen videos are moved to a shared drive and saved into folders based on location and preserve so it can be found later. Once an SD card is fully reviewed and key videos saved, all the videos are deleted so the card can be reused when the team checks the cameras again. And so the cycle continues… but that is not the end of the road—or should I say film.

The videos saved are reviewed and often inspire ideas for educational content. Partnership between stewardship and communication staff aid in developing ideas for videos. With a concept in mind, these videos are compiled together using iMovie and Adobe Premiere software to tell a story about the species or habitat highlighted in each video. Descriptive captions along with species labels allow us to aid viewer understanding in a fun, visually appealing way. The ultimate goal is to show these cool creatures and connect with them in ways that most people do not have the chance to.

While this project has had its fair share of challenges (Beanblossom Creek rose so high in 2022 that it destroyed many of our cameras!) the results have exceeded expectations. With the help of many people, this project has been able to reach millions of viewers. Since the first installations at the Shine Preserve in 2021, cameras have been added to more Sycamore properties. With 15 operating cameras, we aim to use them in other restoration projects, including monitoring threatened and endangered species as part of our new cypress firefly and Kirtland’s snake project funded by the Indianapolis Zoological Society. We will continue using these cameras to better understand and protect the land we manage while offering the public a chance to learn more about wildlife, drawing everyone in to see and connect with the beauty of nature both near and far.

TO SEE WILDLIFE CAMERA FOOTAGE FROM THE PROJECT, VISIT
sycamorelandtrust.org/wildlife OR **youtube.com/sycamorelandtrust**

Dotty Warmbier

These "frost flowers" spotted at the Laura Hare Nature Preserve at Downey Hill on Jan. 5 are ribbons of frozen sap that form at the base of American dittany plants ***(Cunila origanoides)*** when weather conditions are just right: the air temperature falls below freezing, but the ground has not yet frozen. Sap in the stems expands as it freezes causing cracks to form along the stem. Water is then released through the cracks, freezing as it hits the cold air to form a series of thin layers of ice. Eventually this creates delicate ice formations with characteristic petals or ribbons. Frost flowers often melt quickly. Your best chance of spotting them is on frosty mornings on north-facing slopes or shaded locations.

FAREWELL **MARY WELZ**

Education Director

A fond farewell to Sycamore's Education Director Mary Welz, who left Sycamore in February to join the Pollinator Partnership as Indiana Partner Biologist. While at Sycamore, Mary facilitated more than 200 educational events and reached over 5,000 participants through our Environmental Education Program, helping to lay the groundwork for our future Carl Ziegler Wetlands and Education Center. At the Pollinator Partnership, she will help private landowners and partner organizations create more pollinator habitat on their land. We are grateful for all she has accomplished at Sycamore and for her ongoing work to protect Indiana's threatened pollinators.

141 PROJECTS

11,418 ACRES

CONGRATULATIONS **DANIEL LAYTON**

Land Preservation Director

In January, Sycamore Land Steward Daniel accepted the position of Land Preservation Director at Sycamore. "While I love working in the field as a land steward, I'm excited about the transition because I will be able to directly play a part in Sycamore's goal of strategically protecting more land," Daniel said. "I look forward to focusing on the areas where we will have the greatest impact, such as along our growing stretch of protected land in the Beanblossom Creek floodplain. It will be difficult to fill the shoes of Chris Erickson, but I'm eager to learn and happy I will be able to advance a different part of Sycamore's mission."

WELCOME **FRANCES CLEVER**

Membership Coordinator

In January, Frances joined the Sycamore staff team as Membership Coordinator. "Raised in South America and the American Southeast, I spent much of my childhood immersed in the natural environment. Exploring rainforests and wetlands, sand dunes and oceans, are all part of my favorite memories. These opportunities sparked my interest in conservation, and later shaped my career goals to work in the field and help provide opportunities for others to find interest in the natural world. Following my passion, I completed a Master's Degree in International Affairs at Indiana University, concentrating in Sustainability, Development, and the Environment. Over the summer of 2023, I was a Daniel C. Smith Intern for the Indiana University Foundation, where I was exposed to the fundraising world. I am excited to be working in this capacity at Sycamore Land Trust and to further my career by supporting protecting the natural environment of Indiana."

WISHING SYCAMORE

GREAT SUCCESS

BY **JIM EAGLEMAN**, FORMER SYCAMORE BOARD MEMBER

"Oh, you're retired now. You can do anything you want!" My friends were full of ideas how to now spend my free time. Suggestions varied from a hobby of woodworking, travel, maybe get into model trains? Or, to serve on a committee that interested me. "The sky's the limit, you lucky dog!"

During my career with the Indiana Department of Natural Resources (DNR), a 40+ year span of environmental education and resource management, I learned many things. Working with people who could take the conservation message and apply it to their lives became a central mission. As employees, we were encouraged to join committees, get active in local communities and act as information specialists, similar to extension agents, a friend said. This allowed me to be a Brown County State Park representative and often a spokesperson for the DNR in general. Though sometimes I might not have agreed with agency decisions, it gave me a chance to see all sides of an issue.

Christian Freitag, Sycamore's Executive Director at the time, called one day to see if I had any interest in serving on the Sycamore Land Trust Board. "It's right up your alley; I think you'd like it," he said excitedly. And from my initial meeting with Christian and Board member George Huntington, I learned what important work Sycamore was doing and how I could maybe help.

In school, we natural resources students were assigned readings from scientist, conservationist, and author Aldo Leopold. A natural land advocate, Leopold stated, often quite bluntly, our obligation as stewards of the land. Reminded of our responsibility, and reinforced with a receptive public at the park, I saw my charge. While my work was fulfilling, now I could perform a different role—to help guide Sycamore's business at hand: to further preserve and protect valuable tracts of Indiana's lands.

At the DNR, our biennial budgets were often heavily scrutinized; state parks, the main money maker for the agency, frequently the target to reduce spending. At Brown County, we were sometimes asked to borrow equipment, resources, even staff from other properties to initiate a new program. This is not necessarily a bad thing. It fosters a sense of shared purpose. But available revenue was the chief decider, and sadly limiting for this important endeavor—to educate "the young conservation leaders of tomorrow."

This experience is why, as a two-term member of Sycamore's Board of Directors, I came to truly appreciate the generosity of Sycamore's members and their ongoing support of its mission. If a new program is proposed, a parcel purchase is time-critical, or funds are needed for student interns, requests are always answered. I learned during my tenure that the money for land purchases, as important as it is, is only part of what is needed. Operating costs, investing, staff salaries, education, etc., are all critical to Sycamore's effort. I am happy Sycamore has the expertise to be not only stewards of the land, but faithful stewards of donor support. It's a business. Sound fiscal management is paramount to achieve the ultimate goals of maintaining the health and future of the land.

I am now "in absentia" while a new board member takes my place; actually I think I might have overspent my time on the Board! But no worry; the work of this organization is taken seriously, no matter who serves. I wish the Sycamore Board great success in the next year(s), and I look forward to it welcoming me back. In the meantime, as Leopold once told his students, "... to see the land, to understand what he sees, and enjoy what he understands."

UPCOMING EVENTS & VOLUNTEER OPPORTUNITIES

Join us for a hike, workday, or special event! Register for hikes and workdays at sycamorelandtrust.org/events (required). Hikes are free for Sycamore members. The suggested donation for non-members is $5/person and $10/family. Educational volunteer workdays are always free.

MARCH

"SKY DANCE" & TWILIGHT HIKE SERIES

Thursday, March 21, 7:30-9:30pm
Beanblossom Bottoms Nature Preserve (Monroe County)
As spring approaches, a flurry of activity begins, including migration, courtship, and rising waters. The chorus of amphibians during this twilight hike will be the soundtrack as we search the sky for the woodcock's famous mating ritual, the "sky dance." Join expert naturalist Cathy Meyer for an evening exploration of our trails.

APRIL

EARTH WEEK PRESERVE-A-PRESERVE VOLUNTEER WORKDAYS

Volunteers are invited to join Sycamore in celebration of Earth Week by helping maintain habitat at our preserves! Weed Wrangle events are fun and educational opportunities to learn how to identify and control the invasive plants that are negatively impacting our natural areas and other green spaces. The focus for these work days will be the identification and control of garlic mustard in our Beanblossom Creek Conservation Area.

Saturday, April 20, 10am-noon
Fix-Stoelting Preserve (Monroe County)
This preserve is not open to the public.

Monday, April 22, 10am-noon
Laura Hare Nature Preserve at Downey Hill (Brown County)

ARBOR DAY TREE GIVEAWAY

Saturday, April 27, 10am-2pm
Bloomingfoods East & Near West (Bloomington)
Get a free native tree seedling and celebrate everything that makes trees amazing! The giveaway will end when supplies run out. Follow us on social media for updates.

BROWN & MONROE COUNTY WILDFLOWER FORAY: PORTER WEST RAMBLE

Sunday, April 28, 10am-12:30pm
Porter West Preserve (Monroe County)
Join naturalists Cathy Meyer, Mary Welz, and Gillian Harris for a 2.5-hour moderate walk to view carpets of wildflowers beneath large oaks and hickories, sinkholes, and interesting rock outcroppings. Participants will meet at an off-site location to carpool to the preserve. Register at indianamuseum.org/programs/37th-annual-wildflower-foray.

MAY

PRESERVE-A-PRESERVE WEED WRANGLE SPRING SERIES

Volunteers are invited to help Sycamore maintain habitat at our preserves! Weed Wrangle events are fun and educational opportunities to learn how to identify and control the invasive plants that are negatively impacting our natural areas and other green spaces. The focus for these work days will be the identification and control of garlic mustard.

Wednesday, May 1, 10am-noon
Amy Weingartner Branigin Peninsula Preserve (Monroe County)

Tuesday, May 7, 10am-noon
Porter West Preserve (Monroe County)

Friday, May 17, 10am-noon
Touch the Earth Natural Area (Bartholomew County)

WETLAND SPRING BIRD WALK

Tuesday, May 14, 9-11am
Beanblossom Bottoms Nature Preserve (Monroe County)
Join guest hike leader and expert naturalist Cathy Meyer for a guided birding and nature walk through the wetland areas at Beanblossom Bottoms Nature Preserve.

SPRING NATIVE PLANT SALE

Saturday, May 11, 9am-2pm (or until we are sold out)
Bloomingfoods East Parking Lot (Bloomington)
We're delighted to announce our second annual Spring Native Plant Sale! Proceeds from the sale will be used to support our Native Plant Nursry, where we grow native plants for our many land restoration projects in South Cental Indiana. We will offer native plants that thrive in a garden setting and that provide vital habitat and food for our pollinators, birds, and small mammals. Please stop by and chat with us about adding more native plants to your backyard in support of wildlife. A pot return area will be available through June. For more information, visit sycamorelandtrust.org/plant-sale.

LITTLE HIKERS: WHO'S HERE IN SPRING?

Tuesday, May 21, 1-2:30pm
Beanblossom Bottoms Nature Preserve (Monroe County)
Is that a frog calling? Did you see that bird flying over the marsh? What is that beautiful flower? We'll investigate the sights and sounds of nature to gain a better understanding of what takes place in the wetland during spring.

A crayfish burrow chimney near our newly-contructed wetlands at the Sam Shine Foundation Preserve. *Chris Fox*

JUNE

WETLAND FLORA EXPLORATION WALK

Friday, June 7, 3-5 pm
Beanblossom Bottoms Nature Preserve (Monroe County)
Join Sycamore's Land Preservation Director Daniel Layton for this botanically inclined visit to Beanblossom Bottoms, with an introduction to basic botany and wetland flora identification. Registration will open on May 1.

LATE SPRING BIRDING WALK

Saturday, June 8, 8-10 am
Touch the Earth Natural Area (Bartholomew County)
Join birding guide David Rupp of IndiGo Birding Nature Tours for a relaxed hike around Touch the Earth Natural Area in western Bartholomew County. David will help participants spot some of the birds that nest on the preserve and also teach about their songs. The varied habitats found at Touch the Earth mean that we should find a nice variety of birds as well. All levels of birders are welcome. Registration will open on May 1.

There are many ways to show your love of nature by supporting Sycamore's work

Become an annual member or a monthly sustaining member to support conservation in southern Indiana.

Sign up for our e-news at sycamorealandtrust.org/subscribe.

Donate appreciated stock, securities, your home or other property.

Create a conservation legacy by adding Sycamore as a primary or contingent beneficiary to your will, estate plan, IRA, or insurance.

Spread the word about our programs and the importance of conservation to your family and friends.

Give in honor or memory of a loved one.

Volunteer for a workday, join us for a guided hike, or attend a special event.

Give from your company or foundation or request a matching gift from your employer.

Give a gift membership, and/or make an extra donation.

Donate to name a bench, trail, preserve observation deck, or Sycamore property for you or a loved one.

However you choose to support Sycamore – now and in the future – thank you!

To learn more, visit **sycamorelandtrust.org/give**
or contact Amy Osajima, Development Director,
at 812-336-5382 ext. 104 or amy@sycamorelandtrust.org.

SCAN TO DONATE

Why I support Sycamore Land Trust:

"An unwavering commitment to protecting natural areas; responsible, conservation-based stewardship of protected lands; ethical and transparent policies; and an incredibly knowledgeable, dedicated staff. These are just a few of the reasons I support Sycamore Land Trust. I am proud to be associated with Sycamore Land Trust as a current board member and look forward to continuing my support of Sycamore in the years to come. Through volunteering, donating when I can, and including Sycamore Land Trust in my estate planning, I hope to play a small role in keeping Sycamore's promise of protecting natural areas 'for forever.'"

Judy Stewart,
Sycamore Board President, Sycamore member since 2004, and Legacy Circle member

LEGACY CIRCLE

LET YOUR LEGACY SHINE ON FUTURE GENERATIONS

You can help preserve nature and restore habitat for future generations. Consider a planned gift to Sycamore Land Trust in your will or estate plan and join our Legacy Circle.

Anonymous (11)
Patricia Abplanalp*
Mark Adams and Nicole Swann
Mary Joan Allen*
Annette Alpert and Darrell Haile
Jan Armstrong
Marian Armstrong*
Mike and Beverly Baker
Martha Barclay-Giel*
John Bassett and Susan Hollis Bassett
Sarah Baumgart and Bill Lozowski
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**deceased*

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DECEMBER 1, 2022 - NOVEMBER 30, 2023

$20,000 AND ABOVE

American Forests

CenterPoint Energy

community foundation ALLIANCE

COMMUNITY FOUNDATION BLOOMINGTON • MONROE COUNTY

DNR Indiana Department of Natural Resources

Namaste Foundation

Laura Hare Charitable Trust

$1,000 TO $19,999

BLUESPRING CAVERNS

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COOK MEDICAL

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USDA United States Department of Agriculture Natural Resources Conservation Service

VISIT Bloomington

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**deceased*

Over 900 species were recorded at Beanblossom Bottoms Nature Preserve during a 24-hour BioBlitz in partnership with Indiana Academy of Science on June 4, 2022. *Chris Fox*

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