



## Inquisitive Mind, Generous Spirit

### A Remembrance of INPAWS Stalwart Rolland Kontak

Compiled by Ruth Ann Ingraham

On January 9, 2008, INPAWS lost charter member Rolland Kontak. Rolland and his wife Mildred attended one of our earliest organizational meetings—June 1993—and were devoted members from then on.

Rolland jump-started our fledging organization when he volunteered to be auctioneer for a Plant & Garden Goodie Auction that first fall, held in the former nature center at Holliday Park. His winning way boosted our total YTD income of \$610 by more than \$2,000, and INPAWS was up and running. Who can forget the heart-stopping bids he inspired on plants such as exotic native orchids, donated through Rolland by a Michigan grower? Then there was a recent auction when, as Tom



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Hohman remembers it, Rolland put a plant up for bid that, for some reason, he did not even have with him. He said he was looking for an “angel” to purchase this plant, which he then described. Doing his usual encouragement of bidders, the result was a very high price for the phantom plant. The winner smiled and declared, “I always wanted to be called an angel.”

Barbara Hamilton’s initial encounter with Rolland, “the man in the top hat,” was at her first INPAWS plant sale several years ago. At the time she knew little about plants, much less natives. Rolland’s depth of knowledge about the plants impressed her, and she asked him about an orchid. “He spent about fifteen minutes explaining the growth habit and requirements for the plant he had identified as a rare specimen,” she writes. “Fortunately,

he helped me decide that I did not have a good location, so I left it for someone who would have a better chance of ensuring its survival.” Barbara feels that Rolland was responsible for helping gardeners at all levels embrace the world of native plants.

Rolland was a tool-and-die engineer with the auto industry by profession, but I first connected him with coin and stamp collecting. That’s only the tip of the iceberg. As Pastor Phillip Krupski said at the funeral, Rolland was endlessly, passionately inquisitive and always woke up wondering what he would learn that day. What he learned he freely shared with others.

Consequently, many INPAWS members visited the Kontakas at their home hidden



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INPAWS JOURNAL is published quarterly for members of the Indiana Native Plant and Wildflower Society. Material may be reprinted with the permission of the editor.

All are invited to submit articles, news items, and event postings of interest to our membership. Acceptance for publication is at the discretion of the editor. INPAWS welcomes opposing viewpoints.

Please submit text and photos via e-mail to [wwford@comcast.net](mailto:wwford@comcast.net) or via land mail to INPAWS JOURNAL, 6911 Cabernet Way, Indianapolis IN 46278.

Submission deadlines for specific issues are as follows:

*Spring*  
February 23 for April 1 mailing

*Summer*  
May 23 for July 1 mailing

*Autumn*  
August 23 for October 1 mailing

*Winter*  
November 23 for January 1 mailing

## INPAWS Mission

To promote the appreciation, preservation, conservation, utilization and scientific study of the flora native to Indiana and to educate the public about the value, beauty, diversity, and environmental importance of indigenous vegetation.

## Membership

INPAWS is a not-for-profit 501(c)(3) organization open to the public. For membership information, visit [www.inpaws.org](http://www.inpaws.org).

## News and Views

Information to be shared with INPAWS members may be directed to [membership@inpaws.org](mailto:membership@inpaws.org).

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# Luxuriating

I remember the day I fell in love with wildflowers. It was twenty years ago, and we had just bought a small piece of land outside Cataract, Indiana. One day in late August I noticed some tall plants with large mauve-purple heads, absolutely covered with swallowtail butterflies. Back in Indianapolis I bought my first wildflower guide and looked them up. Joe-Pye weed. The next spring I saw an entire hillside of Dutchman's breeches. I was a goner.

At one point I heard there was an actual organization of people who loved wildflowers, and I had a scrap of paper with the name Carolyn Harstad. I went to a plant sale in New Augusta, bought a sweatshirt, and joined the Indiana Native Plant and Wildflower Society.

Since then, INPAWS has been a part of my life. I can't describe the pleasure that I have had since then looking for, stumbling over, identifying and simply luxuriating in Indiana's wildflowers, native trees, and shrubs. Even more fun than the plants, though, have been the people, many of whom have become dear friends. Even fellow INPAWS members I don't know too well, I appreciate immensely when we tromp together through a woods or discuss the merits of Virginia bluebells or native dogwood in our gardens.

INPAWS is even more exciting to me today. We have a new youth outreach program which will let schoolchildren who wouldn't otherwise have the opportunity, experience a day in nature. We have a team watching legislative and conservation issues in Indiana, which sadly, ranks as the country's 49<sup>th</sup> greenest state. We have a plant sale May 10 which is shaping up to be the best ever, and have Doug Tallamy as this year's conference keynote.

Whatever your interests and talents, I encourage you to get involved with INPAWS. A committee chair would love to hear from you.

It's loads of fun spending time with people who love plants!

—Nancy Hill



Sharplobe hepatica (*Hepatica nobilis* Schreb. var. *acuta* (Pursh) Steyererm. Britton, N.L., and A. Brown. 1913. An illustrated flora of the northern United States, Canada and the British Possessions. Vol. 2: 101. Courtesy of Kentucky Native Plant Society.

## INPAWS PARTNERS

# INCA Conservation Priorities for 2008

INPAWS participates in the Indiana Conservation Alliance (INCA), a state-wide network of nonprofit organizations providing a unified voice for the protection, stewardship, and sustainable use of Indiana's natural resources. INCA was instrumental last year in achieving appropriations of **\$4 million to the Indiana Heritage Trust**, the state's only dedicated land acquisition program for conservation, and **\$2 million additional funding for Clean Water Indiana (CWI)**, which lends Indiana farmers and property owners the technical expertise to complete projects that conserve soil and water.

This year, INCA organizations worked on the following priorities:

► **Great Lakes Water Resources Compact (SB 45)** Water shortages in the parched south and west have raised questions on the feasibility of fresh water pipelines and massive shipments of water from the Great Lakes. This bill **prevents diversions of water from the Great Lakes Basin**. *Signed into law.*

► **Renewable Energy Standard (RES) (HB 1102)** A new state standard would **require 10% percent of Indiana's electricity to come from renewable sources by 2018**. Promotes in-state development of wind, energy crops, bio-gas, solar, and other strictly renewable energy sources. *Died in committee.*

► **Apprentice Hunting License** Seeking to reverse the declining number of hunters while increasing Indiana's share of federal matching dollars, this bill **enables youth to hunt under the mentorship of a licensed adult**. *Signed into law.*

► **Sustained Funding for the Division of Forestry (DOF)** SB 14 and HB 1001 would eliminate the funding of DOF from property taxes, a funding method established in 1925 with the philosophy to be above politics and provide a more stable source than the general fund. **INCA supports finding a new dedicated funding source for the DOF**. *SB 14 passed the Senate but died in the House; HB 1001 covered the loss of DOF funding for next year.*



## Rolland Kontak, continued from page 1

in the woods near Beech Grove. We made a U-turn off multiple lanes of pavement onto a narrow lane that led into a dense forest and Rolland and Mildred's 20-acre urban oasis. It was a mystical experience to enter the deep shade, a mere stone's throw away from concrete and speeding traffic. Warmly greeted, we followed Rolland on meandering paths that crossed a stream and ended at the far edge of his property along another busy urban street, where he maintained a mountain of composting material, donated initially by IPALCO. Back at the Kontaks' home, Carolyn Bryson remembers the iron sculptures he designed and created. And there were his experimental plots, one to determine how best to encourage dog-toothed violets to bloom. Rolland always sent us home with something—seeds he'd collected or plants he'd propagated. Near my back door is a thriving patch of miniature hostas from his garden.

Barbara attended a program in Cool Creek Park where Rolland was the presenter and had with him a variety of odds-and-ends for which she could see no practical use. She writes, "Throughout the program, he enthusiastically enlightened all of us in how to make good use of each item he had scavenged from his neighbor's trash as well as the left-behind wire frames for political yard posters. Uses ranged from making paper pots for planting seeds

to constructing plant support forms from the wires." Remember his plant identification markers? Strips of metal blinds cut into 6-inch lengths.

In recent years Parkinson's disease took its toll but didn't stop him from doing what he loved, with Mildred always by his side. Colletta Kosiba cherishes the day when Rolland, despite needing a cane for stability, strolled with other INPAWS members around her 13-acre landscaped property near Brownsburg.

A couple of years ago, Hilary Cox walked with Rolland and Mildred on a field trip that Kevin Tungesvick organized at Yuhus Woods in east-central Indiana. Trilliums and other woodland plants were in their springtime glory. While Hilary and Rolland talked about their shared passion for plants and photography, he never once complained about his condi-

▲ "There are no friends at an auction" was Rolland's signature phrase to bring the bidding higher. Photo by the author.

◀ *Front page:* Hummer with bottle gentian was the caption for this Rolland Kontak photo.

▼ Rolland shared with friends his passion for wildlife photography by emailing a regular Pix of the Week.



tion, just took things very slowly and in stride, she relates. And in Carolyn's words, "His determination to stay involved in his favorite activities in spite of his physical challenges was an example that I shall not soon forget."

Plants and photography were intimately connected for Rolland. Hilary and Carolyn both saved all of his Pix of the Week, starting in September 2000 and ending August 2003. Native flora was the usual subject but occasionally he'd email a close-up of a pileated woodpecker or other creature in nature. Anyone interested could ask to be on his email list. His printed photos were used to "energize potential bidders" at both the IMA Horticultural Society and INPAWS auctions, recalls Carolyn. And when Juanita Graham, another stellar INPAWS member, died in December 2000, he sent out a stunning picture, in tribute, of a snow trillium that grew in her wooded ravine. (Hilary sent me this photo along with her memories.)

George Wilson liked to walk with Rolland on field trips, as they both loved photographing flowers. George appreciated Rolland's wonderful eye for what would make a good picture.

Rolland started Betsy Wilson on her avocation of breeding native plants. "I bought some of his seeds at the early meetings



# 2008 Plant Sale and Auction Preview

It's that time again! Time to start thinking about the annual INPAWS Plant Sale and Auction. After two successful years at the Indiana School for the Blind, the sale will move to a new location. **This year's event will be held May 10 at Trinity/ St. Richard's Church and School, 3243 N. Meridian St., Indianapolis.** The location will provide more room for the sale, a stage for the auction, and better parking.

The plant sale will begin at 10:00 a.m., the auction at 11:15 a.m. All sale plants still remaining by about 12:15 p.m. will be sold as the last items of the auction.

A selection of books on native plant gardening, wildflowers, and other nature-related topics will again be available for sale, but because of the larger space they will no longer need to be sold in a separate room. Books will now be available throughout the plant sale and auction.

**Volunteers**—The sale could not be a success without all the hard work of the volunteers. Whether it's digging plants to donate or helping the day of the sale, their help is critical. Many of them volunteer year after year, enjoying the camaraderie of other native plant enthusiasts and sometimes the challenge of identifying an unknown plant that someone has just dropped off.

Volunteers are needed to help with setup on Friday night, and with the sale itself on Saturday. You don't

need to know a lot about native plants (although it does help). We can use your brain or your brawn, or both. Your skills can be used pricing plants for the sale, helping customers carry their purchases to their cars, and many other related tasks. Anyone interested in helping should contact Tom Hohman at hohmantr@aol.com.

**Donations**—All the plants in the sale are either donated by members and businesses, or have been obtained in an INPAWS plant rescue. This year we are making a special effort to encourage members to grow plants from seed. This will enable us to provide a more predictable inventory of plants, especially some of the late-blooming prairie plants that we always seem to have too few of.

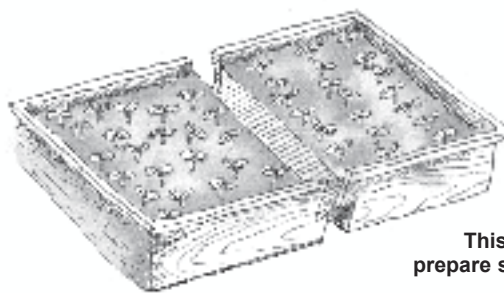
Plant donations should be brought to St. Richard's school gymnasium on Friday night from 5:00 to 8:00 p.m., or Saturday morning before 9:00 a.m. Please pot any plants that you are going to donate several weeks prior to the sale. Doing so will enable them to better withstand the stress of transportation and the sale itself. Labeling of the plants prior to donation is a big help. While it's fun to identify that uncommon plant, doing so while an eager

crowd is milling about at the front door can be a little stressful.

**Auction**—The favorite part of the sale for many is the auction, even if they don't buy anything. It's a great opportunity to learn more about the plants for sale, watch the competitive bidding, and possibly pick up an unexpected bargain. The combination of auctioneer Mike Stelts' banter with the knowledgeable comments of experts like Kevin Tungsveck, Hillary Cox, and Sue Nord Peiffer make for a really entertaining event, one that's over all too quickly.

If you have never been to the plant sale before, make it a point to come and join the fun. Although held in Indianapolis, it is truly a statewide event, one worth coming to Indy to see. Once you do come, you'll likely make it an annual event.

*Tom Hohman, Chairperson, 2008 Plant Sale and Auction*



**This year we encourage members to prepare seedlings of prairie plants.**

and planted them per his instructions. Amazingly they grew and have thrived. My small prairie is the Rolland Kontak Prairie. It measures only about 6 by 20 feet, but the seeds Rolland carefully collected and sold at the annual meeting have made it a goldfinch and sparrow magnet and a treat to the eyes in July."

Betsy also recalls how willing to help and enthusiastic Rolland was about the INPAWS Central Chapter. "He did our first

meeting on saving seeds. Besides giving the talk, he brought, unasked, items to auction so that we would have a little cash to send out mailings and pay for meeting rooms and speakers."

I found this quotation printed on the back of the folder distributed the day of Rolland's funeral in the historic sanctuary of the St. John Lutheran Church.

*...If life went on the same without the presence of the one who has died, we*

*could only conclude that the life we here celebrate made no contribution, filled no space, meant nothing. The fact that this individual left behind a place that cannot be filled is a high tribute to this individual. Life can be the same after a trinket has been lost, but never after the loss of a treasure.*

—Paul Irion, Emeritus Professor of Pastoral Theology at Lancaster Theology Seminary, UCC.

# Money Matters

INPAWS' annual budget aims to cover all expenses with equal amounts of revenue. For 2007, the operating budget was set at \$20,245. With the books now closed on 2007, we are pleased to report that we achieved our financial goals (see details at [www.inpaws.org](http://www.inpaws.org)).

INPAWS' primary sources of revenue each year are member dues, the spring plant sale, additional member donations, and book sales. These revenues support INPAWS programs and field trips, educational outreach through exhibits and brochures, our quarterly newsletter, and the annual conference. In addition, the four regional INPAWS chapters each receive a portion of member dues to nurture local activities.

INPAWS' costs of "doing business" are dominated by printing, postage, and paper for the members' directory, postcard mailings for wildflower hikes, and renewal notices; but they also include lesser costs such as liability insurance, tax preparation, and website operations. All other services are provided by volunteers at no cost, including newsletter creation, member activities, the plant sale, and administration, collectively representing hundreds of hours of volunteer labor. We are extremely grateful to those who give so generously of their time.



The small grants program has historically been funded through interest payments from INPAWS' certificate of deposit (CD) investments of about \$50,000. INPAWS was delighted to award a total of \$2,000 to five recipients in 2007, as well as an additional \$5,000 grant to WFYI for its three-part televised presentation, *The Natural Heritage of Indiana*.

Annual education and publicity costs included booth displays at Orchard in Bloom, the Earth Day Festival, and Conservation Day at the Statehouse. Attendance at these events increases every year and helps connect INPAWS to other local conservation and invasive plant efforts.

INPAWS' budget recognizes the all-day annual conference as a significant undertaking whose expenses for facility, food, and speaker typically exceed registration revenue. Indeed, despite an unprecedented level of sponsorship support and significant silent auction proceeds, the 2007 annual conference, as budgeted, fell slightly short of breakeven status.

We strive each year to maximize the impact of INPAWS' activities to meet a wide variety of member interests and native plant needs while also acting in a fiscally responsible manner. Your INPAWS' officers and council welcome comments and suggestions for the coming year.

**We thank all those who made extra donations in 2007 to support INPAWS programs and activities.**

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## AmeriPlex Business Park Breaks New Ground

Last November, the AmeriPlex Business Park, just south of Indianapolis International Airport, was certified by the Indiana Wildlife Federation as the state's first wildlife-friendly development. The 1,500-acre complex, owned by Holladay Properties, has about five acres of wetlands, including nine ponds, as well as acres of prairie and woodland and specially designed habitats for native species.

Jerry Wheeler, director of education for IWF, noted the importance of such habitats. "They help migrating animals like birds, especially when they're going through urban areas," he says. "They need a place to rest." Gary "Dox" Doxtater, IWF's director of development and the retired head of the Indiana Department of Natural Resources' Fish and Wildlife Division, said he hopes AmeriPlex sets the tone for future business parks. "This project will lead the field in restoring and protecting wildlife habitat, particularly in urban areas," he said.

AmeriPlex is an example of the changing mindset in corporate America. It was Holladay Properties that wanted to make the complex environmentally friendly, and they were the ones who first approached IWF to see how they could do it. Doug Hunt, Holladay's senior vice president of development, was one of the first to begin working on it. Someone within the company who was connected with IWF suggested Holladay seek its help. Mark and Heather Brehob, landscape supervisors for Holladay, in turn became certified habitat stewards through IWF. Catherine Brown, a volunteer and certified habitat steward for IWF, said, "They wanted to be green. They approached us to see what they needed to do."

There's a lot of upfront work to achieve wildlife-friendly certification, but those connected with AmeriPlex say the results are worth it. Besides preserving nature, such work also boosts property values and workplace morale. Businesses within the park already are taking advantage of the walking trails and scenery for recreational purposes and even to conduct meetings. To locate in the park, businesses must meet specific IWF guidelines when designing buildings. Holladay has its own additional criteria.

Mark Brehob says there was some skepticism back when Holladay first started work on the project. "But once the habitats started taking off, we were getting all kinds of people telling us how neat it was," he said. Hunt said he expects this to be only the beginning. "This business park is no token effort," he said. "We're hoping to work with other businesses here to get them on board to contribute. Hopefully, we'll have many more projects like this." Doxtater added, "This project is setting the bar for what private enterprise can do."

### Welcome to Our New INPAWS Members

#### CENTRAL

Nina C. Andrew  
Matthew Baker  
David Benson  
Rosanne Bonjouklian  
Karen Burroughs  
Cira Coates  
Brian C. Cooper  
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Keith F. Barnhardt  
Phyllis Boyd  
Marc Evans  
Jerry D. Horn  
Susan Knapczyk

#### WEST

Steven Holladay  
Naida Lehmann  
Denise Marks

*To join INPAWS or renew  
your membership, visit  
[www.inpaws.org](http://www.inpaws.org).*

IWF also helps homeowners and school corporations establish such habitats. "I'm anxious to get this started with residential developers," Doxtater says. "We can do there what's been done here." Hunt also is realistic about the park but believes it's a progressive step forward in the relationship between progress and preservation. "We aren't in wild nature here, but we've tried to make a place where you can experience it," he said.

*Adapted with permission from an article by Wade Coggeshall published November 1, 2007, in Hendricks County Flyer. Information on line at [www.holladayproperties.com](http://www.holladayproperties.com) and [www.indianawildlife.org](http://www.indianawildlife.org).*

# Serendipity

It was all the fault of that announcement in the INPAWS Journal Field Notes. Well, no, I can't *quite* claim that.

After all, we had been tramping all over Indiana and Kentucky looking at plants out of sheer curiosity for long enough already, as those of you who read your journal cover-to-cover are likely to remember! Perhaps INPAWS Journal was just our "enabler."

If you're a regular reader, then you probably saw the announcement: The Chicago Botanic Garden was looking for botanists to collect seeds from Midwestern prairie plants, the seeds to be stored with the Seeds of Success ([www.nps.gov/plants/sos/index.htm](http://www.nps.gov/plants/sos/index.htm)) and Millennium Seedbank ([www.kew.org/msbp/index.htm](http://www.kew.org/msbp/index.htm)) projects. Metaphorically, my ears pricked up. Although neither Dee Ann Peine nor I consider ourselves botanists, we are definitely knowledgeable plant enthusiasts, and here we were with an unusual seedbank in the form of the barrens in Kentucky just when the world's botanists happened to be looking for seeds!

Having verified Dee Ann's interest in joining such an effort, I emailed our updated list of species to the CBG. We received an answer almost immediately...along with our list highlighted with 23 of the species they were interested in collecting—and a contract to sign! As it turns out, our barrens is a disjunct population and they were keen to get some of that diversity into the project.

After a flurry of emails and snail-mail, we were signed up as contract botanists for the year...and thus we essayed forth into a "brave new world."

Scheduling our tasks was an essential part of this new world. To collect seed, you need to know the optimal time of seed production for each individual species. Innocently, we thought this would be an easy matter.

The first species on our list likely to produce seed was birdfoot violet (*Viola*



Cleaning *Echinacea simulata* seeds - ouch!

*pedata*). Until last year, I had seen them growing only in relatively small patches, but on our first trip to Kentucky last April we had been taken aback to see them in carpets—in the grass, in the fields, in the woods, even growing out of sheer rock! So by May, we thought, it would be easy to collect the seed. We checked with Kevin Tungsveck as to their likely time of maturity and looked online to double check.

Serendipitously, they were due to be ready around the same time as the two botanists overseeing the project were coming down from Chicago. We had our couple of days all planned: camping out at the Peine farm in Morgan County, Indiana, one day; harvesting seeds at the Powell farm in Kentucky the next.

Then phenology introduced itself into our new world—and apparently is new to Microsoft Word too. Wikipedia defines it as "study of the times of recurring natural phenomena." I had become familiar with the word both cerebrally and conceptually through the website by which I track the spring and fall migrations of those creatures that make such legendary annual treks ([www.journeynorth.org](http://www.journeynorth.org)). Now I became familiar with phenology somatically as well—from the gut.

As it turned out, even our surest "guesses" proved wildly wide of the mark with every species, including the birdfoot violet. Look as we might, all four of us could find nothing to harvest! Disappointingly, the seeds were all already dispersed. I should explain that we were supposed to collect a minimum of 7,000 seeds (optimal is 10,000) from at least 50 individual plants to a maximum of 20% of the population. Our first collection was a bust.

Another lesson I learned only slowly, and still incompletely, is not just to observe my surroundings but to *make notes* about them—let them become a part of me,



Seedbank coordinators Emily Yates and Betsy Allen, from Chicago Botanic Garden, at Kentucky Barrens, May 2007. Photos by the author.



become one with them, *and write it down*. Notation has been the hardest part for me, which seems strange for someone who considers herself a writer! When I get into the moment, in the field, with so many exciting things to do and see...notation is the first thing to go by the board.

How many of you have been to a herbarium to look at collected plant samples? And then wished there had been more written information about them? It's all very well to see the actual plant, its roots, leaves, flowers, seedheads; but do they tell us where it was found and what kind of weather it was that day or that season or that year? Had the weather affected how it looked at the moment of collection? Was it typical or atypical of its kind? Did it flower and seed on time for its genus? Trained as a science librarian, I should see as obvious the necessity to record as much data as possible for future reference...yet life keeps getting in the way.

*There's that orchid we wanted to check out again...oops, it's been plowed up. Well it's getting very hot, so why don't we head into the woods now...oh darn, we're lost! Back in the barrens and actually looking for the plant we need to collect seed from today...these pesky ticks...got to get over to Wayne and Mary's house and do a tick check...now, what were we doing? Oh yes, better get it done, don't forget those notes...scribble, scribble...that's enough, we'll finish when we get home. (Famous last words!)*

**A**top my computer lies a sheet of paper describing an overcast, stormy day in Kentucky on which I show Dee Ann the orchids I found the previous Saturday; we get lost in the woods, where we find partially parasitic false foxgloves (*Aureolaria*, probably *laevigata* or *virginiana*), dense blazing star (*Liatris spicata*), and twayblades (*Liparis* spp...we didn't see them flower last year); and we get stuck in the mud so that Dee Ann has to push us out.

But to know what month that was, the actual date and what seeds we were hoping to collect, I have to go to (1) my field notebook and (2) my calendar. These are variously dispersed (1) in my car, in preparation for my much anticipated trip this weekend into the Superstition Mountains looking for wildflowers with Tucsonan author Scott Calhoun and my sister-in-law Judy Cox, or (2) filed away with the rest of my tax documents to be handed over to my *other* sister-in-law who is my tax accountant.

## PHENOLOGY PRIMER

# National Phenology Network Observes Native Species

Phenology, which is derived from the Greek word *phaino* meaning to show or to appear, is the study of periodic plant and animal life cycle events that are influenced by environmental changes, especially seasonal variations in temperature and precipitation driven by weather and climate. Sprouting and flowering of plants in the spring, leaf color changes of plants in the fall, bird migration, insect hatches, and animal hibernation are all examples of phenological events.

Plants are special, highly sensitive weather instruments that integrate the combined effect of weather factors such as temperature, rainfall, humidity, wind, and sunshine in their growth response. They can be observed year after year and dates recorded when certain growth stages occur, such as opening of leaf buds or appearance of first flowers.

Recently, phenology has been identified as a crucial contributor to global change research. Understanding the interaction between the atmosphere (weather and climate) and the biosphere (living organisms) is a necessary part of efforts to improve models of Earth's physical systems and monitor the impact of global climate change.

Try as I may, I cannot make myself slow down and methodically write *in one place* all the information I am wishing I had in front of me right now. Had I stuck with just filling in the fields on the form the CBG issued us, perhaps I would have more than the bits and pieces I'm looking at now. Clearly, the third subject needing further study on my part is organization.

The lessons we *have* learned from our season of seed collecting are almost beyond description: the unexpected depth of intimacy we have shared with the plants we are harvesting; the impact of drought, not only on seed production but on every part of a plant's life cycle; our dependence on weather conditions, so different last year during an exceptional drought from

The USA-National Phenology Network Native Species Observation Program is being initiated to provide observers with a selection of native plants in their region of the country ([www.uwm.edu/Dept/Geography/npn/map.html](http://www.uwm.edu/Dept/Geography/npn/map.html)) that are representative of the local/regional flora, but also abundant enough to make them easy to identify and observe.

Observations of representative native plants over large geographical regions are a vital source of information for comparison with satellite measurements and indicator plant phenology. Just as continuous and widely distributed weather observations have led to increased knowledge of atmospheric phenomena, so too will these phenological observations contribute to an active understanding of biospheric functions.

USA-NPN gives guidance to help professional and citizen scientists select and observe appropriate species at their location, and then encourages them to register and submit the data they collect each year over the Internet.

*This information is adapted from the USA-NPN Web site. To participate in the network as a native plant species observer, register at [www.uwm.edu/Dept/Geography/npn/index.html](http://www.uwm.edu/Dept/Geography/npn/index.html).*



the previous year with its overabundant rain.

**W**as it pure serendipity that led me to this, the most satisfying and maybe the most important job of my life? Whatever the answer, I've just mailed the next contract back to the CBG. We're signed up to continue the journey for another year, enabling Dee Ann and me to pursue our addiction, and, using our new-found knowledge and experience, maybe to top our current total of six collections—60,000 seeds, collected and cleaned!

# Of Sheets and Vouchers

*If you've wondered, as I have, what goes on in a herbarium, here are some insights from the keeper of Butler University's Friesner Herbarium, INPAWS' own Becky Dolan. —Ed.*

Botanists have been making pressed, dried specimens from living plant material for hundreds of years. They keep them in specially designed cases in herbaria (singular: herbarium) under carefully controlled conditions to prevent damage from moisture, insects, rodents, and other potential hazards.

Combining aspects of a museum and a reference library, our Indiana herbaria are an irreplaceable treasure that botanists use for many different research activities. The collections of pressed and dried plants document the flora growing outside of cultivation; they facilitate the education of future botanists and the scientific study of plant distribution and significance.

Herbaria also house significant sheets referred to as "types." These sheets contain the specimens that authors of new plant names have assigned to be the reference for the application of that name, i.e., the specimen with which that name is permanently associated.

Herbaria are of great value to professional botanists, providing a network enabling them to share information by exchanging and loaning sheets. The specimens, along with the information carefully documented on their labels, comprise a reference library on historical distribution, habitats, and the timing of flowering and fruit production. "Voucher" specimens stored in herbaria serve to verify plant identifications from formal surveys and inventories taken in the field.

A proper herbarium label contains at least the following information:

1. A heading indicating the state or area covered by the collection; very brief, e.g., Flora of Indiana or Flora of Mounds State Park.
2. Scientific name (genus, specific epithet, author, variety)
3. Locality where the specimen was collected, the more specific the better
4. Habitat, e.g., woods, old field, beech-maple forest, north-facing bluff along Sugar Creek
5. Date the material was collected
6. Name of collector
7. Collector's collection number

The label is brief and concise, but usually botanists write additional information in a field notebook (e.g., a list of everything that was collected at the same site on the same day). Thus more information may be available than what ends up on the label.

Indiana is home to dozens of herbaria. Highlights of the following collections suggest the range of research that herbaria support. Many have searchable databases providing ready access to specimen information.

## Ball State University Herbarium, Muncie

Over 13,000 specimens collected mostly by faculty and graduate students working in the Midwest. Currently documenting the flora of East-Central Indiana, with special emphasis on floristic and ecological studies of remnant fen communities. Houses the voucher specimens for Dr. Tom Merten's taxonomic studies of the genus *Polygonum*.

## Friesner Herbarium, Butler University, Indianapolis

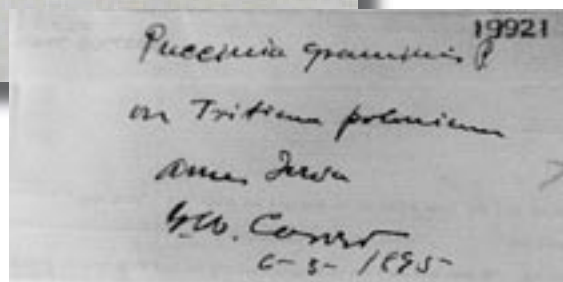
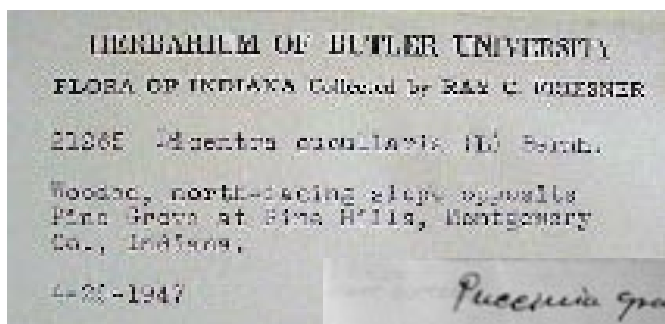
Over 100,000 specimens and a database of specimen label information for ca. 40,000 sheets collected in Indiana. Most collected 1920-1950 by Ray Friesner, Stanley Cain, John Potzger, and other Butler faculty and students whose work focused on floristics. Friesner was a prolific exchanger, so collection includes gems from around the world (collectors are listed in *Brittonia* 43:54-56), along with many duplicates of Charles Deam's collections. Also houses the Charophyte herbarium of Fay Daily.

## Indiana University Southeast Herbarium, New Albany

Original purpose was to facilitate world-wide exchanges of tropical legumes and provide a resource reference set of vascular plants from surrounding counties for community and research. Estimated 7,000 mounted sheets collected by former IUS students and currently by volunteer collectors such as William E. Thomas. A pictorial database to identify *Dioclea* Kunth sensu lato is planned.

## Deam Herbarium, Indiana University, Bloomington

Over 140,000 specimens, the core comprising ca. 60,000 early 20th century sheets collected by Charles Deam to document the county-based distribution of the vascular flora of



Indiana. Deam's work was compiled in his 1940 book *The Flora of Indiana*. Also the repository for research material collected by faculty and graduate students at Indiana University, such as the *Helianthus* collection assembled by Charley Heiser.

### Greene-Nieuwland Herbarium, University of Notre Dame, South Bend

The Edward Lee Greene and Julius A. Nieuwland collections together contain more than 266,000 specimens of worldwide distribution. The North American flora is well represented by material collected by Greene and contemporaries mainly from the West (1870s-1915) and by Nieuwland (1906-1936) from the Midwest and East. An estimated 18,000 specimens are from Indiana. Current activities are increasing holdings from Illinois, Indiana, Michigan, and Wisconsin of aquatic, wetland, and forest plants, *Quercus*, and invasive species.

### Purdue University, Arthur Herbarium and Kriebel Herbarium, West Lafayette

Arthur Herbarium houses one of the world's largest, most important collections of plant rust fungi, about 100,000 specimens collected worldwide. Because rust is a parasite on a vascular plant, every specimen in the collection is also a specimen of the host plant, adding to its scientific value. The oldest is a barberry leaf (*Berberis*) infected with *Puccinia meyeri-alberti*, collected in Tierra del Fuego, Argentina, in January 1769 during Captain James Cook's first discovery voyage around the world. Also has ca. 100 specimens of rust collected by George Washington Carver.

The Kriebel Herbarium houses 60,000 vascular plant specimens, about 1200 bryophyte specimens, and many algae and non-rust fungi specimens. About 11,000 specimens were collected by Kriebel, mostly from Indiana and especially from Lawrence County. Some of the earliest specimens were collected by Asa Clapp in the 1830's in the New Albany, Indiana, area.

◀ Labels courtesy of Friesner Herbarium and Kriebel Herbarium. Note the 1895 date on the hand-written label for *Puccinia graminis*, the common wheat rust, which George Washington Carver collected while a student at Iowa State University, before he went to Tuskegee, Alabama, and became better known.

▶ Dotted blazing star (*Liatris punctata* Hook. var. *punctata*). USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. An illustrated flora of the northern United States, Canada and the British Possessions. Vol. 3: 366.

# Custer's Last Plants

Dr. Greg Shaner and Nick Harby, Purdue University

Last week, a botanist named Roger Troutman visited our Kriebel Herbarium to examine our specimens of *Liatris*. The label on one sheet identified the species as *Liatris punctata* Hook., collected in 1874 in the Black Hills, W.T. (Western Territory). The collector was simply identified as Custer.

Some checking revealed that General George Armstrong Custer led a well-armed force of 1000 troopers into the Black Hills of what is now western South Dakota and eastern Wyoming in 1874. Aris Donaldson was a Minnesota newspaperman who served as botanist and would collect plants during the trip. On July 25th, the expeditionary force entered what Custer named Floral Valley.

In a dispatch Custer wrote:

*Its equal I have never seen. Every step of our march that day was amid flowers of the most exquisite colors and perfume. So luxuriant in growth were they that the men plucked them without dismounting from the saddle...It was a strange sight to glance back at the advancing columns of cavalry, and behold the men with beautiful bouquets in their hands, while the head-gear of the horses was decorated with wreaths of flowers fit to crown a queen of May.*

Donaldson sent herbaceous specimens to John Coulter, then a professor at Hanover College in southern Indiana, for identification. When Coulter moved to Wabash College in Crawfordsville, he took his plant collections with him, including these Black Hills specimens. In 1994, Wabash College divested itself of its herbarium. It was transferred to the herbarium of the New York Botanical

Garden. An article about the Wabash Herbarium was published in *Brittonia* in 1994 (43:211-224). Only 40 of the 74 specimens collected by the Custer expedition were included in the material from Wabash. The New York herbarium queried several other herbaria in the Midwest about the other specimens, but not Purdue.

We have entered about one-fifth of our higher plant collection into an electronic database,

and quickly found that we had seven more specimens from the Black Hills 1874 expedition. Using a complete list of species collected by Donaldson that Coulter published in the first issue of the *Botanical Gazette* (November, 1875), we found 3 more specimens. The labels on all of these specimens state that they are from the herbarium of Charles Barnes. Barnes was born in Madison, Indiana. He and John Coulter met as students at Hanover College and became good friends. Barnes was a professor of botany at Purdue from 1882 through 1887. Perhaps Coulter sent part of the Black Hills collection to Barnes while he was at Purdue.

All but one of our specimens designates Donaldson as the collector. This leads us to wonder if Custer, identified as the collector of our specimen of *Liatris punctata*, plucked these plants himself, maybe without dismounting from his saddle.

*Reprinted with permission from Root of the Matter (newsletter of Purdue University Dept. of Botany and Plant Pathology), March 9, 2007.*





# Hey Kids! Come Out & Play!

Reni Winter, Winterhaven Wildflowers & Native Plant Preserve

Shhhhh. Listen.

Go outside and be very still. If you're really attentive, and the city noises around you are hushed enough—or the voice reaching into your soul is loud enough—you can hear Mother Nature calling, "Hey kids! Come out and play!"

Our young people have more distractions, more diversions, more devices to keep them entertained than ever before. Kids even of my generation—I'm 53—are so distracted by portable digital gadgets that Richard Louv has coined a new term to describe the resulting psychological ailment—Nature Deficit Disorder, brought about by a disconnect between children and the natural world. (See an online presentation by Richard Louv, author of *Last Child in the Woods: Saving our Children from Nature Deficit Disorder*, at [www.mediasite.com/presentation.aspx?p=11952](http://www.mediasite.com/presentation.aspx?p=11952).)

It's nice that someone has put a name to the condition I grew up with. I always loved the country but was born in Manhattan, New York, and raised inside the Washington D.C. Beltway. Ambulance sirens were the only calls of the wild I ever heard, except on occasional drives into the Maryland countryside and camping trips with the Girl Scouts.

Long walks by myself in the neighborhood in my early teen years, and one yard sign that stuck with me—*The gift of the sun for pardon, the song of the birds for mirth. One's nearer God's heart in a garden than anywhere else on earth*—gave rise to my lifelong dream to have a place in the country where I would surround myself with all things good and natural. Life took me in a different direction, a journalism career, but about four years ago a surprise inheritance enabled me to buy my piece of heaven on earth—13.27 acres of intensely fertile alfalfa farm in rural Tippecanoe County.



Teacher Mickey Penrod and her students are building a wildlife habitat at McCutcheon High School. The class visited Winterhaven to see the habitat plants growing in their native environment.



Cindy Pratt dug wildflowers and native grasses to purchase for a small wildlife area at her Lafayette, Ind. home. Daughter Hannah, who is home-schooled, enjoyed watching butterflies, helping to dig, and learning about native plants.

I picked the property because of the spring and wetlands, and the swales that allow water to flow south through the land. I had fallen in love with wetland plants while volunteering at the Crosby Arboretum, a preserve and education center that is restoring the longleaf pine savannah near Picayune, Mississippi. (Take a peek at what inspired me by visiting [www.crosbyarboretum.msstate.edu](http://www.crosbyarboretum.msstate.edu).) My new property on County Road 900 West near the Fountain County line (southwest of Lafayette, Indiana) offered the potential for a variety of plant communities—not just a wetland, but prairie and other communities in between.

As soon as I bought the old farmland, I embarked on reclaiming it as a natural area, borrowing a concept I had learned at Crosby. I secured an Indiana Department of Natural Resources wildlife habitat grant to return a portion of the land to tall grass prairie. DNR wildlife biologist Dean Zimmerman, who lives just up the road from me, provided guidance as I wrote the cost-share pheasant priority grant. He is quick to advise on needed changes to what I'm doing, as he passes my property every day on his way to work!

The wildflower and grass seed mix took off that first year, despite a drought, and most of the small trees and shrubs I planted survived. A year after planting, the burst of color in the spring and summer in the habitat area was amazing. My ability to identify flowers and grasses native to Indiana was increasing exponentially, and I was discovering an equal number of stunning native flowers growing here on their own.

A happy byproduct of spending my days outside with the prolific stands of coneflowers and Indian grass, little and big bluestem, black-eyed Susans and countless other varieties of native plants, was a growing inner peace and joy—a sense of being loved and nurtured

by the land—that this city girl had longed for, imagined many times, but never really felt. Mother Nature was taking care of me, and would continue to do so if I continued to take care of her.

Working part-time at Bennett's Greenhouses, I kept hearing customers ask for native plants and wildflowers. I read articles about the growing consumer interest in native plants for the home landscape because of their resilience and ease of maintenance. It dawned on me that by starting a native plant nursery on my land I could generate income to support the development of the preserve.

The idea for Winterhaven Wildflowers & Native Plant Preserve was born. It would not only host wildlife and native plants but serve as a haven to people as well, people like me seeking a retreat from the fast pace of life, who might need to heal from the ravages of experience, who might never have heard Mother Nature's gentle but firm call to come out and play. Inspired, I joined the West Central Chapter of INPAWS and became certified as a native plant rescuer. I began monitoring the migrations and life cycles of animals and insects through the Journey North online program ([www.journeynorth.org](http://www.journeynorth.org)). I registered Winterhaven as a National Wildlife Federation certified wildlife habitat ([www.nwf.org](http://www.nwf.org)) and as a certified Monarch Waystation in the University of Kansas Monarch Watch program ([www.monarchwatch.org](http://www.monarchwatch.org)).

Last year, I started inviting school groups and friends with children, photographers, nature writers, neighbors, and the general public to Winterhaven, not only to enjoy the preserve but to participate in its operation! Children as young as toddlers are helping to reclaim this fertile farmland by sowing and harvesting seeds. In a safe, supervised outdoor environment, these youngest visitors are encountering and exploring the simple natural splendors of central Indiana, letting their imaginations run wild against the backdrop of butterflies and songbirds, wildflowers, and fireflies.

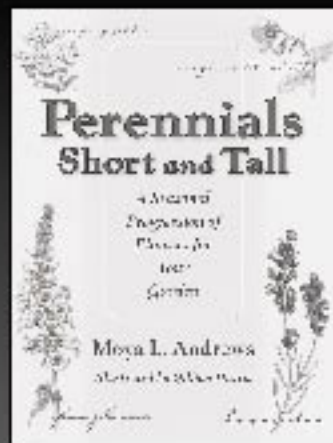
Older children help with transplanting seedlings, looking for and documenting plant communities, pulling invasives, and monitoring Monarch larvae and butterfly populations. They seem to enjoy the hunt for wildflower volunteers that often sprout along the mown paths and need "rescuing." Once a plant is confirmed as a PINS—Plant in Need of Saving—children and older visitors receive a hands-on guided experience digging up the misplaced plants and transplanting them to a safe place off the path where they can flourish. One high school teacher has even used Winterhaven's wildlife habitat to teach her students social responsibility and practical applications of English and math.

For families with children, we plan "dig your own" plant sales and outdoor workshops such as the annual Monarch Migration Celebration, a cross-cultural event that teaches the interconnectedness of conservation efforts needed in three countries (Mexico, Canada, and the U.S.) to preserve the habitat of the miraculous mariposa monarcha.

This spring, all are invited to help build a 10 by 40 foot "high tunnel" to extend the growing season by raising the temperature and humidity level for two 5 x 40 foot rows of wildflowers and grasses. This plastic covered greenhouse will give native plant customers an early start with plants that are in the ground but sheltered from extremes.

Children of all ages are welcome and needed at Winterhaven Wildflowers & Native Plant Preserve to further the cause of land stewardship and have a blast while doing it!

*Reni Winter is president-elect of INPAWS' West Central Chapter and co-chair of the 2008 INPAWS Annual Conference. She owns and operates Winterhaven Wildflowers & Native Plant Preserve as a retail nursery and agri-tourism venture. All proceeds go back into the development of Winterhaven programs ([www.winterhavenfarm.us](http://www.winterhavenfarm.us)). Contact Reni at 765-714-4288 or [reni@winterhavenfarm.us](mailto:reni@winterhavenfarm.us).*



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## Coming Up

Saturday, April 12

**INPAWS Hike in Pine Hills Nature Preserve**, Montgomery County. Spring ephemeral wildflowers and geologic formations. Led by Roger Hedge.

Thursday–Sunday, April 17–20

**Arc of Appalachia Wildflower Pilgrimage**  
30+ field trips led by experienced botanists and naturalists. [www.highlandssanctuary.org/Wildflower/Pilgrimage.htm](http://www.highlandssanctuary.org/Wildflower/Pilgrimage.htm)

Wednesday–Sunday, April 23–27

**58<sup>th</sup> Annual Smoky Mountain Wildflower Pilgrimage**  
Online registration ends April 18 at [www.springwildflowerpilgrimage.org](http://www.springwildflowerpilgrimage.org).

Saturday, May 3

**INPAWS Hike in Duning Woods Nature Preserve**, Wayne County. Spring flora and mesic forest. Led by Tom Swinford.

Saturday, May 10

**INPAWS Plant Sale and Auction**. Trinity/St. Richards Episcopal Church, Indianapolis, 10:00 a.m. to 12:30 p.m.

Saturday, June 7

**INPAWS Tour of Whiteside Arboretum and Gardens**, Coles County, Illinois. Natural habitat gardens and genus collections. Led by Dr. Wes Whiteside.

Saturday, June 21

**INPAWS Hike in Pokagon State Park**, Steuben County. Wetlands and mesic forest. Led by Dr. Paul Rothrock and Rich Dunbar.

*Watch for announcements of INPAWS events and field trips in the mail, via e-mail, and at [www.inpaws.org](http://www.inpaws.org).*

on prioritizing/planning invasive control work? Volunteers are sought to help organize sessions or topics.

To share your thoughts, or to become involved in planning this significant event, please contact INPAWS Invasives Chair Ellen Jacquart at 317-951-8818 or [ejacquart@tnc.org](mailto:ejacquart@tnc.org).

## Field Identification Skills Sought

The U.S. Forest Service Northern Research Station seeks individuals with strong plant identification skills to apply for summer field crew positions as Vegetation Specialist (Botanist/ Ecologist, GS 7 or 9). The Forest Service is taking a comprehensive forest inventory in 24 states, including data on trees/saplings/seeding, down woody material, and vegetation diversity and structure. Working in multi-person crews, vegetation specialists will identify trees, shrubs, herbs, graminoids, ferns, and fern allies and assist with other field measurements as time allows. Job details and qualifications are posted at [www.inpaws.org](http://www.inpaws.org).

## Indy to Host Major Invasive Plant Conference

The North Central Weed Science Society will hold their annual conference in Indianapolis from December 8 to 11, 2008, and the Midwest Invasive Plant Network will hold their annual meeting in conjunction with it. Preliminary plans are that MIPN will organize two days of invasive plant symposia, workshops, talks, and panel discussions. This will be a great opportunity for Indiana's land managers, researchers,

agencies, land trusts, and native plant enthusiasts to come together on this issue.

Conference organizers would like to know what *you* would like to see covered in the conference: How to control specific species? Talks on new invaders? How to organize cooperative weed management groups? Realistic prevention strategies? Panel discussion on invasive plants in trade? Workshops

## In Quest of Campanula

University of Virginia plant ecologists studying the evolutionary and ecological genetics of *Campanula americana* (Campanulaceae) (syn = *Campanulastrum americanum*; common names = American bellflower; tall bellflower) need to locate and collect seed from 40 populations of this species from throughout its range.

They have gathered location information from dozens of herbaria, but many herbarium specimens are quite old and the populations to which they refer may no longer exist. They seek kind-



hearted volunteers to identify local populations of *Campanula americana* and, if possible, to collect seeds. (If in doubt as to its morphology, a decent account of the species can be found at [www.missouriplants.com/Bluealt/Campanula\\_americana\\_page.html](http://www.missouriplants.com/Bluealt/Campanula_americana_page.html)).

The collection process is straightforward, taking no more than 15-30 minutes, and all collection and mailing materials (and funds to cover mailing costs) would be sent well ahead of time. Offers of assistance may be directed to Brian Barringer and Laura Galloway at [bcbarringer@virginia.edu](mailto:bcbarringer@virginia.edu).

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## Indiana State Museum Garden Report

The Watanabe Gardens at the Indiana State Museum contain about thirty species of native forbs and grasses, and a number of native trees and bushes as well. In recent years, the part of the gardens nearest the canal has become too shady for the plants presently in that area, so we are going to move them and install shade-loving plants such as Christmas fern, wild geranium, wood poppy, bloodroot, and wild ginger. *If any of you have wood poppy, bloodroot, or wild ginger that you are willing to share, we could use 20 of each.*

This year, we are again selling packets of native plant seeds, which can be obtained at the Museum Shop and the INPAWS plant sale. They are priced at \$1.50 each, and include wild indigos, milkweeds, asters, coneflowers, etc.—18 varieties total.

Twice a month, a group of volunteers works at weeding, cultivating, pruning and other tasks that help maintain the beauty of the gardens. We work the second and fourth Saturdays from 9:00 to 12:00. If you would be interested in helping while learning more

about these summer bloomers, please contact me (317-849-3105) or the volunteer office at the ISM (317-234-2449). There are some nice fringe benefits for volunteers!

—*Dan Anderson, Education Committee*

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## Human Footprints on Indiana

Presented by the Central Indiana Land Trust, a new exhibit at the Indiana State Museum—"Footprints: Balancing Nature's Diversity"—traces the history of humans' effect on Indiana's wildlife and their habitats. Filled with furs, fins, and feathers, it begins with the diversity of species near the end of the Ice Age and continues through settlers' dependence on plentiful wildlife and the impact of modern life on those species. The exhibit runs through August 3. For more information, visit [www.indianamuseum.org/footprints](http://www.indianamuseum.org/footprints) or [www.cilti.org](http://www.cilti.org).




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## INPAWS Web Site Updated

INPAWS webmaster Marcia Moore has redesigned our Web site to expand the content and make information more readily accessible. Check out the new look at [www.inpaws.org](http://www.inpaws.org).

## Battleground State?

Indiana's natural lands, rivers and lakes are turning into biological battlegrounds! In every Indiana county, invasive garlic mustard is stealing away land from our spring wildflowers. Emerald ash borers are decimating our ash trees. Hydrilla threatens to choke lakes and waterways throughout the state. These and other alien invaders are having a devastating impact on our natural resources, and everyone's help is needed to stop their spread. Here's how you can help:

- Learn how to identify the invasive plants that are in your area. Visit [www.entm.purdue.edu/caps/](http://www.entm.purdue.edu/caps/) for images and descriptions of many invasive species in Indiana, as well as up-to-date maps of their spread throughout our state.
- Clean dirt and mud off of your vehicle, pets, and boots before going onto public lands.
- Never dump the contents of an aquarium into a water body.
- Do not plant invasive species on your land. Find native or non-invasive alternative species. Visit [www.inpaws.org](http://www.inpaws.org) to see a new brochure on invasive garden plants to avoid in Indiana, and non-invasive alternatives to use.
- Volunteer to help inventory or control invasive plants at a local park.

Governor Mitch Daniels has proclaimed June as Invasive Species Awareness Month in Indiana. Throughout the month, The Nature Conservancy and other organizations are conducting workdays and educational workshops to combat exotic species. Visit the Conservancy online at [www.nature.org/indiana](http://www.nature.org/indiana) for a full listing.

# Not Alpines but Boreals

Speculating about Indiana alpines is fun, but we have, of course, no mountains. Botanists place certain Indiana "alpines" such as twin flower

(*Linnaea borealis americana*) and bearberry (*Arctostaphylos uva-ursi coactilis*) in a somewhat overlapping group: boreal relicts or boreals. Boreals are the forty or so species that came down ahead of the glacier from hardwood forests ranging from Alaska to Newfoundland and even from more northerly tundra and found they could survive in isolated pockets in the Dunes, and sometimes elsewhere in Indiana, when the glacier retreated.

Familiar boreals include white pine (*Pinus strobus*), paper birch (*Betula papyrifera*), trailing arbutus (*Epigaea repens*), large cranberry (*Vaccinium marocarpum*), and small cranberry (*V. oxycoccos*).

Many boreals like goldthread (*Ceptis trifolia*), starflower (*Trientalis borealis*), small flowered forget-me-not (*Myosotis laxa*), and twin flower prefer cool, moist woods, swamps, or bogs. (In bogs, soil temperature may remain at 57° F year round.) Others, like bearberry, inhabit sand. Bearberry sometimes cozies up to Eastern prickly pear cactus (*Opuntia humifusa*). Both have moisture-conserving leaves—after all, frozen water isn't available moisture. Harebell (*Campanula*

*rotundifolia*) will show up in foredunes, and sweet fern (*Comptonia peregrina*) "forms large colonies in its favorite habitat—sand flats and barrens."

Scientists like to study plants at the edge of their range where reproduction may be only vegetative. Our local bunchberry (*Cornus canadensis*) produced but a single flower at its last known blooming in 1967. All the plants I've seen appeared with the four leaves of sterile plants instead of the six leaves of fertile ones. How long can a plant population survive by vegetative reproduction alone? The Indiana Dunes National Lakeshore's official bunchberry monitoring plots have disappeared. Locating again two other colonies I found in the early 1990s on tamarack hummocks will depend on luck. Searchers should work in pairs so as to pull each other out of adjacent swampy pools.

Boreals are also vulnerable to climate change, too-small populations, lack of pollinators, fire (wild or prescribed), deer, and habitat loss, whether anthropogenic or natural. Twin flower, classified as extirpated, succumbed to a moving dune.



**Bunchberry (*Cornus canadensis*).** Photo by A.H. Barnes, courtesy of National Park Service.

Two success stories: without human intervention, the once state-listed club spur orchid (*Habenaria clavellata*) and dwarf ginseng (*Panax trifolius*) have been found often enough to be delisted.

## Further Reading

Swink, F. and G. Wilhelm. Boreal and Coastal Plain Relics. *Plants of the Chicago Region*. Fourth Edition. Indiana Academy of Science. 1994, pp. 47-48. Boreals not listed here are sometimes so classified in individual plant entries.



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