



inpaws journal

Indiana Native Plant and Wildflower Society

Winter 2013

Indianapolis' Vanishing Native Flora

Butler University research draws attention to effects of urbanization

How exactly does urbanization affect biodiversity? It is a question that becomes more pressing every day, now that more than half of the world's population lives in cities. It is a question asked by INPAWS' own Dr. Rebecca Dolan, director of the Friesner Herbarium at Butler University. In one of the first studies of its kind, Dr. Dolan led a team of ecologists to use 70-year-old dried plant specimens to track the impact of increasing urbanization on plants. The results were published in March, 2011, in the British Ecological Society's prestigious *Journal of Ecology*.

Dr. Dolan and her team examined 2,800 dried plants collected around Indianapolis before 1940 and compared these with plants they, their students, and others found at 16 field sites between 1996 and 2006. They discovered that increasing urbanization has wrought major changes to Indianapolis plant populations.

Although the city supports a similar number of species as before 1940 (around 700), today's flora has fewer native plants and more non-native species – plants introduced from other parts of the world that are now spreading on their own.

Trees to farms to city

In the 1820s, 98% of Marion County was covered in forest. Most (over 70%) was beech and maple upland forest, with a small amount of oak-hickory forest on drier ridges. One hundred years later, by the 1920s, about 80% of the county's land had been turned over to agricul-

ture. In the next 40-50 years, due to the rapid urbanization of Indianapolis in the 1960s and 70s, agricultural land plummeted from 80% to only around 18%.

The study found that over the past 70 years, Indianapolis native plants have been lost at a rate of 2.4 species per year, and over the same period 1.4 non-natives arrive each year. According to Dolan: "This study shows that our flora is becoming less distinctive."

Plants now lost to Indianapolis include Queen-of-the-prairie (*Filipendula rubra*), a member of the rose family with fantastic wands of pink flowers. It was last found growing in a damp spot by the Water Canal at 52nd Street in July 1935. Another loss is the Virginia bunchflower (*Melanthium virginicum*), a member of the lily family with striking stalks of white flowers.

Hats Off



Wikimedia

Queen of the prairie (above) is among the native plants lost to Indianapolis, according to research by Becky Dolan's team at Butler University. It was last found growing outside of cultivation by the Water Canal at 52nd Street in July 1935.

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Unwelcome arrivals include the invasive Japanese knotweed (*Fallopia japonica*) and the despised Amur bush honeysuckle (*Lonicera maackii*). "Japanese knotweed was brought to our area as an ornamental. It spreads readily by seed and by root sprouts, forming thickets that choke out native species," says Dolan.

"Amur bush honeysuckle was once promoted by the USDA's Soil Conservation Service for erosion control and wildlife food, but we now know it does neither. Instead, it has spread and become a pest plant, covering the banks of

Butler – continued on page 13

Residents Fight Invaders

Members of Brown County Native Woodlands Project map and eradicate weeds in treasured state park, across county

Hats Off



Julie Davis

Mountain biker Leg Logterman has led the effort to control invasive plants throughout Brown County State Park.

by Leslie Drahos

Weed Patch Hill in Brown County State Park is the second-highest spot in the state of Indiana. The site was a major attraction in the county even before the park opened to the public in 1929.

Named by a party of Kentucky hunters who found a “rank weed growth” atop the 1,058-foot-tall hill, the name might not have stuck had the Brown County Native Woodlands Project (BCNWP) been around in the early 1900s.

Founded in 2006 by a handful of residents worried by the rapid expansion of invasive plants in fields, forests, and on roadsides, the BCNWP’s mission is to protect county land from exotic plants through education, training, and eradication.

After creating a map showing the roadside extent of four targeted invasive plant species throughout the county in 2007, BCNWP began eradicating noxious weeds, training volunteers, completing more than 70 free invasive plant assessments on private property, and creating an informative website, bcnwp.org.

As an educational outreach effort, an invasive species packet on the website includes a calendar of control that identifies noxious plants, color codes the most effective herbicide products for each, and indicates the best months to spray – critical knowledge for conscientious landowners.

And while the BCNWP wasn’t around when Weed Patch Hill earned its name, the group aims to keep the rest of Brown County State Park from resembling that moniker. In 2011, the BCNWP sponsored and helped fund a digital invasive plant survey to pinpoint the extent of non-native plants growing in the 16,000-acre park and presented the resulting map to the park to guide treatment of invasive plants on park property and document the need for funds to control invasive plants in the future.

A Ravine Revealed

A catalyst to the inception of the BCNWP occurred in 2002, when members of the Brown County Public Library Board and its director saw invasive species had obscured the view of a small stream meandering through a wooded ravine behind the library in Nashville, Ind., the county seat. To solve the problem, a citizens committee was formed to find funds to eradicate the exotic invasive species and replace them with shade-loving native plants.

In 2003 and 2005, the Indiana Native Plant and Wildflower Society (INPAWS) awarded grants to the project totaling \$3,000, and the committee hired a contractor to apply herbicides on weeds and to reseed with native grasses and sedges.

A Pioneer Volunteer

A formative force behind Brown County’s largely volunteer invasives-fighting effort is Ruth Ann Ingraham, an Indianapolis resident who bought a small cabin in Brown County with her husband in 1990.

A co-founder of INPAWS in 1993, Ingraham and others took action when invasive plants in Brown County began to proliferate. Ingraham chaired the Brown County Library Ravine Project and then co-founded the nonprofit BCNWP in 2006.

An active contributor to the INPAWS journal and the BCNWP newsletter, Ingraham tirelessly supports community events that enhance public awareness of native plants versus exotic invasives. She personally conducts free invasive plant surveys on request from private landowners. In 2012, landowners could apply for grants offering a 50 percent reduction on the cost of eradication, a perk provided by funds from the Southern Indiana Cooperative Weed Management Area (SICWMA).

On Ingraham’s wish list for future weed control is an ordinance governing which plants may be introduced safely into the landscape.

Ingraham credits the success of BCNWP to a highly dedicated community, plus the financial help and support provided by Dan Shaver, director of

Brown County – continued on page 11

BCNWP Board

Jim Eagleman
Bill Freeman*
Ruth Ann
Ingraham*
Peg Lindenlaub*
Len Logterman
Dan McGuckin
Donna Ormiston*
Cathy Paradise
Dave Richards
Jane and David
Savage*
Dan Shaver

*INPAWS members

Milkweed & Monarchs

by Kit Newkirk

Coming across butterflies basking, puddling, or nectaring in the landscape is one of life’s pleasures. Some would argue that an even

over nine to 14 days. In the process, the larvae accumulate and sequester molecules called cardenolides which persist through metamorphosis, making the adults unpalatable, even toxic, to predators.

Female monarchs lay eggs on more than 20 species of *Asclepiadaceae* in the eastern US. But according to MonarchLab at the University of Minnesota, they are choosy about their milkweed. They will deposit eggs on *Asclepias tuberosa*, the showy butterfly weed, but actually prefer some other species such as common milkweed (*A. syriaca*) and swamp milkweed (*A. incarnata*). Caterpillars have higher rates of survival on the latter species. The monarch moms’ choosiness is warranted and may relate to cardenolide levels.

Milkweeds produce cardenolides in varying quantities. Caterpillars born onto plants with high levels of cardenolides have lower survival rates than those on moderately toxic milkweeds. In addition, the milky latex that lends milkweed its common name can “gum up the mandibles of small larvae” (MonarchLab).

With jaws glued shut, the little caterpillars have to stop eating. Latex may be implicated in as much as 30% of larval failure. Caterpillars have been observed using strategies to cut off the



Lynne Tweedle – all

greater pleasure is to grow plants specifically for butterfly larvae and discover them munching away on the leaves. Among these are gardeners who cultivate varieties of milkweed (*Asclepiadaceae*) for the purpose of nurturing monarch butterflies (*Danaus plexippus*).

While monarch butterflies will feed on the nectar of many flowering plants, the larvae depend entirely upon milkweed for food. In warm summer weather they hatch from eggs laid on the underside of milkweed leaves and begin eating virtually nonstop through five instars (the periods between molts),

Host Plants



Lynne Tweedle

While monarch butterflies feed on the nectar of many flowers (above), their larvae (lower left) are dependent on milkweed for sustenance. But milkweed poses challenges to the hungry, hungry caterpillars including toxins and gluey latex.

Milkweed – continued on page 9

Perils of the Beach Pea

First of two chapters

by Barbara Plampin

Because beach pea (*Lathyrus japonicus* aka *L. maritimus*) grows in sandy dumps, like one in Mackinaw City and another in Paradise, Michigan, surely it should survive anywhere. Not so at the Indiana Dunes National Lakeshore (INDU) where our state endangered variety, *L. japonicus glaber*, once known from three sites,

Plant Profile



Two scientists have befriended the beach pea, which is nearly gone from Indiana despite its ability to grow a tap root up to two meters long.

is now extirpated (extinguished). One INDU site is known only from an herbarium specimen; others supported only one or two plants. The site I found had one dead plant and one struggling against shade and smothering grasses. It too died.

In Indiana Dunes State Park one remaining population survives. The villains are mostly human activities: trampling and jetties, breakwaters, piers that alter sand accretion and erosion, as well as climate change with its potential alterations in lake levels. That beach pea is at the southern end of its midwestern range probably enhances its troubles.

Beach pea is found in a scattering of locations around the world – on both shores of the North Atlantic and North Pacific oceans, on both sides of the equator, and on the shores of some inland lakes. It has been reported from Bass

Lake in Starke County, and it definitely grows on the shores of Lake Winnipeg, Canada. It is also reported in Chile. In the Midwest it is a coastal plain disjunct; the plant may have worked its way from the Atlantic seaboard to the Great Lakes via Lake Champlain.

Beach pea, a perennial, can sprawl over sand in arresting patches nearly two meters across with meter-long branches bearing somewhat fleshy pinnate leaves and racemes of butterfly-like red-purple or pink flowers. Voss writes of white flowers on Lake Superior plants, and the flower I saw at Grand Mere near Stevensville, Michigan, was an almost royal blue. You can recognize vegetative (non-blooming) plants by their characteristic stipules (appendages situated on either side of a leaf axil). A beach pea's survival is supported by three things: a tap root up to two meters long that can reach the lower water table, rhizomes that pull water closer to the surface, and leaves with stomata (pores) that close and allow the leaf to fold during the worst heat of the day.

In 2007, fate smiled on the Indiana Dunes beach pea with the emergence of a symbiotic relationship between two beach pea advocates. INDU biotechnician John Dollard was writing his MS thesis at Governors State University in Chicago. His goal was to determine the supplementary watering needed to establish young beach pea plants as yet without rhizomes and long tap roots. Meanwhile, INDU botanist and rare plant expert Dr. Daniel Mason had already decided (in 2005) to re-introduce the beach pea in the Dunes. Dollard realized that he could benefit from Dr. Mason's seed collecting in Dunes State Park (by DNR permit) and from the special, raised, sand-filled bin that Mason constructed for growing his greenhouse-raised seedlings (seeds were stratified and scarified). Conversely, Mason saw that he would benefit from Dollard's discoveries made over 2007–2009 about supplementary watering.

Dollard started with a pilot study. First he had to select the sites at which to grow and control the watering of his young beach pea plants. Before he did this, he examined re-introductions of other species in sandy sites along both fresh and salt water and visited other Great Lakes beach pea sites in a range of habitats. At some

sites, as on Michigan's Keweenaw Peninsula, plants grew at the water's edge where rhizomes were exposed by waves. At all sites, rhizomes rather than seeds appeared to be the chief means of reproduction. Dollard had to negotiate numerous and varied mind-numbing statistical techniques to measure such variables as seedling size, slope, aspect (a site's relation to the sun), sand accretion, and erosion.

One summer, Dollard and friends carried more than 2,600 gallons of water from Lake Michigan to experimental plantings of beach peas

When he was ready, in 2007, Dollard chose six sites split among three locations in the western part of the Dunes National Lakeshore where trampling and human barriers to sand movement were less likely. Each site had somewhat different conditions, but each was a 27-meter transect perpendicular to prevailing winds. Each site had twenty identically sized areas divided into ten pairs. In each pair, one area received no supplementary watering (only natural precipitation), and one received both natural precipitation and supplementary watering from Lake Michigan. Dollard transplanted five seedlings into each quadrant for a total of 300 plants.

Using a backpack sprayer and five gallon jugs, Dollard carried seven and a half liters from the Lake thrice weekly from June to October to each of the supplementary water areas. This means that he and occasional helpers carried more than 2600 gallons of water in 2007 and more than that in 2008 when he added another site. Remembering that one gallon of water weighs 16 pounds, it's no wonder that Dollard's is a Lincoln-esque long and lanky build.

The 2007 plants fared very poorly. By October, all looked dead, though a few transplants produced new shoots. Were the plants actually dead or just dormant because of heat?

In Chapter II we discuss what Dollard learned from his pilot study failures, detail the 2008 re-

Winter Tree & Shrub Identification Hike

Wonderful, woody, winter wonderland of trees and shrubs native to Indiana

When: Saturday, January 12 – 1:00 p.m. to 3:00 p.m. – Eastern Standard Time.

Where: The property of Harmon and Sally Weeks, located approximately 7 miles northeast of Attica, Fountain County, Indiana.

Leader: Sally Weeks, dendrologist, Purdue University Department of Forestry and Natural Resources.

What to See: There will be many trees and shrubs in their "all-together" and Sally will offer tips on how to recognize winter characteristics – in particular, buds, twigs, and bark.

Directions: Meet at the ShopCo parking lot on the east end of Attica (it is along Hwy 28 across from the Pizza Hut) at 1:00 p.m. Sally will be there and will guide people to her property where she will show and compare many of the species that she grows around her house as well as those occurring naturally in the woods nearby.

Questions: Contact Sally Weeks by email: weeksss@purdue.edu or by cell phone: 765-404-2947.



Can you identify this tree?

Learn how to use buds, twigs and bark to recognize trees and shrubs during INPAWS' winter hike with dendrologist Sally Weeks on January 12.

(Answer – page 9)

introduction, and bring the subsequent history of the beach pea up to date. 🌱

Barbara Plampin is a Life Director of the Shirley Heinze Land Trust and a field botanist. She does rare plant monitoring, often for the Indiana Department of Natural Resources. She holds a Ph.D. in English and lives in the Indiana Dunes. Literature list available on request.

Incoming!

An updated version of the full color flyer "Keep A Lookout! For New Invasive Plants in the Midwest" is available from the Midwest Invasive Plant Network. The two-page flyer features 16 species that are relatively new to the Midwest, with information on how to identify the species, a county map distribution for all Midwest states, and directions on how to report new locations.











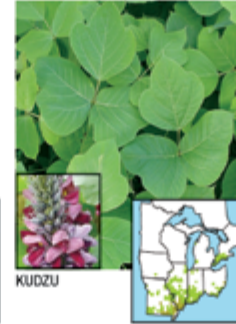





New species to watch for include Chinese silvergrass, Japanese chaff flower, Japanese wineberry, narrowleaf bittercress, and lesser celandine. Download a copy now from http://mipn.org/MIPN_Terrestrial_Flyer_2012_highres.pdf.

KEEP A LOOKOUT!

for NEW INVASIVE PLANTS in the Midwest!

Early detection and eradication can prevent an invasion. The maps show current reported distribution in the Midwest, including Ontario.*

□ Not known
 ■ Isolated (→ = single county reports)
 ■ Locally abundant
 ■ Widespread

 ASIAN BITTERSWEET	 BLACK SWALLOW-WORT	 CHINESE SILVERGRASS**	 CHINESE YAM
 GIANT HOGWEED	 JAPANESE CHAFF FLOWER	 JAPANESE HEDGEPARSLEY	 JAPANESE HOP
 JAPANESE STILTGRASS	 JAPANESE WINEBERRY	 KUDZU	 LESSER CELANDINE
 MILE-A-MINUTE WEED	 NARROWLEAF BITTERCRESS	 PALE SWALLOW-WORT	 PORCELAINBERRY

To report a sighting, please contact: www.GLEDN.org
 **For Chinese silvergrass, please report escaped populations only, not intentional plantings.
 *Updated May 2012 See reverse side for species descriptions

Consistent, documented, based in science

New Indiana Invasives List Released

by Ellen Jacquart

Over the years, I've gotten into lots of conversations with people about which plant species are invasive in Indiana. There are multiple lists floating around, some specific to a particular county, or to just aquatic plants, or to horticultural plants. For most of the lists, plants are included based on informed, even expert opinion, but not through a uniform collection of data, with documentation, saying exactly why a species is considered invasive. It is confusing when a species is deemed to be invasive in one brochure and not another.

Not satisfied with this situation, the Invasive Plant Advisory Committee (IPAC) of the Indiana Invasive Species Council (IISC) took on the challenge of creating a consistent, science-based, well-documented list of invasive plants for Indiana. With the help of interns and IPAC members, the list was created this year and was approved by the Invasive Species Council at their September 2012 meeting. There are nearly 100 species on the list, each having been carefully assessed and measured as to its invasiveness using the most recent information available from the literature and from invasive plant watchers in Indiana. The complete Indiana Invasive Plant List is available on the IISC website (<http://www.entm.purdue.edu/IISC/invasiveplants.php>) and each of the plant assessments is available for review and comment.

We had a head start on this project because of the many invasive plant assessments that were developed by the Invasive Plant Species Assessment Working Group (IPSAWG), a collaborative effort between land managers and the nursery/landscaping industry, between 2001 and 2006. The group developed an assessment tool to evaluate and rank each species. All those assessments were reviewed and updated as needed to determine inclusion in the invasive plant list. We were also able to adopt the recent assessments of aquatic plants by the Aquatic Invasive Work Group.

The Indiana Invasive Plant List is not finished by any means, as there are still a few dozen species in line to be assessed, waiting on the time, energy and volunteers necessary. Still, the invasive plants that seem to be having the greatest impacts in Indiana have been assessed and are on the list. The intent of IPAC is to review the list at least

once per year and make any needed additions or changes, each time with the approval of the IISC.

In addition to approving this list at their September meeting, the IISC has asked the regulator of Indiana invasive plants for the Department



of Natural Resources to explore removing highly invasive species from trade. This is a big step to take, but IPAC strongly believes it is warranted.

In 2006, IPSAWG produced a brochure called "Landscaping with Non-invasive Plant Species: Making the RIGHT Choice" to identify invasive garden plants and recommend that people avoid using them. Six years later 100,000 of those brochures have been printed and disseminated, but it is apparent that education, while important, is not enough. It is time to take the next step and ensure that the most damaging invasive plant species cannot be sold or purchased in Indiana. Stay tuned!

Ellen Jacquart is the Director of Northern Indiana Stewardship for The Nature Conservancy, coordinating land management on Conservancy lands and working on invasive species issues. At home, she battles multiflora rose and autumn olive on her land in Monroe County and gardens as best she can in the pottery-clay-like soil of northwest Monroe County.

Chinese silvergrass (Miscanthus sinensis) is detailed in the updated Indiana Invasive Plant List (left) and featured on the new flyer, "Keep a Lookout! For New Invasive Plants in the Midwest" (opposite).

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Check out INPAWS' great blog at inpaws.org



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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.

Submissions

All are invited to submit photos, articles, news, and event postings. Acceptance for publication is at the discretion of the editor. INPAWS welcomes differing points of view.

Please submit text and high resolution photos (300 ppi) via e-mail to journal@inpaws.org or via land mail to INPAWS JOURNAL, 5304 Carrollton Avenue, Indianapolis IN 46220. Submission deadlines for specific issues are:

- 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

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 at inpaws.org.

Share

Please direct information of interest to webmaster@inpaws.org.

We love to share the fun

Being a member of INPAWS gives you a ring-side seat to our many activities and events. But don't sit the game out. You can join in the fun, working with others and accomplishing the goals of INPAWS either state-wide or within your own community. Staff a booth for two hours, brainstorm with a committee, or even chair or co-chair a special event. Whatever the task, you will learn from and be guided by those who have done it before. Want to rescue plants at construction sites? Write about your favorite plant? Help others establish a native garden? Advocate for green causes with local and state government? Contribute photos to the Journal or other print materials? Maybe spreadsheets are your passion. Whatever your skills, large or small, we encourage you to use them as an INPAWS volunteer. Opportunities can be found on our blog at inpaws.org, the website itself, Facebook, or in INPAWS emails.

Opportunities:

Be on the committee to plan and organize the next **Plant Sale and Auction**, May 11, 2013. Contact Ross Nelson – plantsale@inpaws.org.

Staff the INPAWS booth for a two-three hour shift at the **Flower & Patio Show** in March. Contact Karen LaMere – public@inpaws.org.

Chair the committee to plan the **INPAWS Annual Conference** November 2013. Contact webmaster@inpaws.org.

Chair the **Youth Outreach / Letha's Fund** committee. Contact webmaster@inpaws.org.

Milkweed – from page 3

flow of latex such as biting through veins that carry latex and toxins.

Unfortunately, monarch mothers will also lay eggs on related invasive species from central Eurasia including European swallow-wort (*Cynanchum rossicum*) with very poor outcomes. Swallow-wort is rated highly invasive on the most recent list of plants invasive in Indiana (see page 6).

Answer – from page 5
The bark pictured is that of the black walnut (*Juglans nigra*) tree.

Save the date: April 20

Central Chapter members – check your calendars for next April. If you enjoy outdoor exercise, natural areas, and the companionship of others with similar interests, plan on joining us April 20 at the Mary Gray Bird Sanctuary near Connersville. The Central Chapter Invasive Swat Team will be on hand to remove garlic mustard, oriental bittersweet, and whatever other non-native, invasive plants are encountered.

The Mary Gray Bird Sanctuary is owned by the Indiana Audubon Society. Over 700 acres of mostly wooded property have hiking trails, a primitive campground, several small ponds, and two indoor meeting spaces. While the property is generally a high quality natural area, it does suffer from the inevitable intrusion of non-native, invasive plants.

We will cut out large oriental bittersweet vines but most of the work will be pulling garlic mustard plants. INPAWS members will work alongside volunteers from the Indiana Audubon Society, which is providing lunch for all workers. Those coming from the Indianapolis area can join organized car pools. Look for detailed information on the INPAWS blog, but anyone interested in helping should contact Tom Hohman at pastpres@inpaws.org to ensure you receive up-to-date info as the date gets closer. 🌱

New INPAWS Members

North

Sherry Nagley
Eric Neagu
Julie Roesler & Fred Utroske
Robert W. Trimmer
Henrietta Tweedie
Sherry Wagley

South Central

Joe & Nancy Kimmel

Southwest

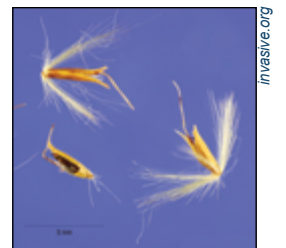
Jay C. Scott
Linda & Larry Wilcox

West Central

Bria Fleming & Tony Capizzo
Wes Homoya

Central

Chris & Kathy Anderson
Jacquie & Randy Banks
Rosemary Fanning
Ellen Germaine
James D. Loose
Michael & Dawn Olenjack
Mary Ruby
Sonja Simpson
Lynne Tweedie
Phil Warrenberg
Dianna Zamani



Flowers and seeds of Chinese silvergrass (*Miscanthus sinensis*) which grows up to 12 feet tall in dense, highly flammable bunches. It escapes ornamental plantings and invades roadsides, forest edges and old fields, displacing native vegetation and increasing risk of fire.

Cross-pollination

Native plant lovers can benefit from Master Gardener training



by Amy Perry

Last fall I signed up for Master Gardener training with Purdue Extension–Hamilton County, and I'm glad I did. I wanted more plant variety in my yard but was uncertain of my horticultural expertise. I learned a lot, had fun, and feel more confident.

In talking with other INPAWS members who've taken the training, I discovered that the purposes of INPAWS and the Master Gardener programs are quite complementary. In both, there are opportunities to educate others about native plants and to network with people interested in green topics. They both promote and teach good horticultural practices and although the MG focus is on backyard gardening in general, many MG presentations and projects are applicable to native plants.

The Master Gardener Program

Master Gardeners is an education and outreach program run by land-grant colleges that teaches good gardening practices to members of the public, who are then encouraged and empowered to teach others. The MG Association motto is "Helping Others Grow." It began in Seattle in 1972, out of a demand for home gardening information. Indiana's program, started in 1978, is administered by Purdue University through county extension offices. Out of our 92 counties, approximately 86 boast MG programs. (Neighboring states have MG programs also.)

The program consists of education plus volunteer service. After attending classes and passing a basic course, one completes at least 35 hours of volunteer service (or more, depending on the county) during the following year. Do not let the designation "Master" intimidate you. As Marcy Dailey, INPAWS North Chapter member, says, "A MG isn't expected to be a 'master of gardening.' Instead, we assume the role of a reference person with knowledge of how to access information on sound gardening practices."

To maintain the Master Gardener designation, one completes a minimum of twelve service hours and attends six hours of education annually (some counties require more). One can also advance to higher MG designations via additional education and projects.

For volunteer hours, many if not all MG associations give credit for INPAWS projects and

presentations. INPAWS volunteers take note – Master Gardener volunteers are a handy pool of people to call on for help with an INPAWS project!

Learning and Teaching

Many topics in the basic MG coursework apply to native plants, such as soils/plant nutrition, plant science, woody ornamentals, propagation, and landscaping. Often the educational presentations at Master Gardener meetings are relevant to native plants as well. To my delight, topics at the 2012 state conference included diagnosis of plant problems, garden photography, milkweed for monarchs, small pond management, planning for integrated pest management, highway beautification with natives, effective use of common areas, and gardening for birds.

The MG volunteer service activities are great opportunities not only to learn but also to teach others about native plants. MG programs include answer lines, speaker's bureau, propagation classes, tree sales, garden tours, plant potting, and heirloom gardens, as well as 4H wildflower projects and many other youth programs. The 2010 Indiana Master Gardeners report states that Indiana MGs made over 100,000 contacts with Indiana citizens, and more than 3200 MG volunteers actively volunteered over 122,000 hours to educate their fellow community members. INPAWS members Dan and Sophie Anderson say they have learned a lot about natives from other INPAWS members in their MG association. Several INPAWS-MG members express satisfaction that they can educate others through MG plant sales, newsletter articles, teaching MG classes, and presenting INPAWS volunteer opportunities to MG intern classes.

Public display gardens maintained by MG associations often use native plants, for example, the Master Gardener's Native Plant Garden and the Butterfly Garden at Wesselman Nature Center in Evansville, the Bird and Butterfly Garden at Salamonie Reservoir, the rain garden at the Indianapolis Museum of Art, and the Forks of the Wabash pocket gardens. I help with two Hamilton County MG native beds, and I like the ability to experiment with more plants than I can handle in my own gardens.

A minor caveat to INPAWS members with a high level of expertise: although you likely will learn

things and enjoy the people you meet, I suggest that before enrolling in the training, you find out what material applicable to native plants will be covered. Counties vary in activities and course content. On the other hand, if the MG association you join lacks a certain program that you would like, your county coordinator may let you create one.

Networking

Master Gardeners work on projects with organizations that have goals similar to those of INPAWS. Dona Bergman, a member of INPAWS' Southwest Chapter, describes a kudzu eradication and habitat restoration project across from the Mesker Park Zoo and Botanic Garden in Evansville involving the Southwest Indiana INPAWS chapter, her MG association, area Master Naturalists, the local Soil and Water Conservation District, and the Southern Indiana Weed Management Cooperative Area, among other organizations. She highlights the joy and enthusiasm many INPAWS-MGs get from these cooperative efforts. "Most importantly," she says, "the wonderful people who belong to these groups understand we are working toward many of the same goals; we have shed the territorial mentality that plagues many organizations and work together for a better, greener, cleaner community – AND WE HAVE FUN AND ENJOY EACH OTHER!"

For gardening-based knowledge, camaraderie, and green action and outreach opportunities, MG is a cross-pollinator par excellence! Suzanne Stevens (INPAWS Central Chapter) advises INPAWS members who are considering becoming a Master Gardener, "Learn all you can and use your information to plant a lot more natives!"

To find a Master Gardener program near you, visit http://www.hort.purdue.edu/mg/basic_training.html.

Amy Perry is an INPAWS Central Chapter member and a Master Gardener in the Hamilton County Master Gardener Association.

Brown County – from page 2

The Nature Conservancy's Brown County Hills Project; SICWMA; the Brown County Soil and Water Conservation District; and the Hoosier Mountain



Lynne Tweedie – all

Early spring blooming snow trillium (left and top) and trout lily make good companions for sharp-lobed hepatica, according to Patricia Happel Cornwell (page 12). In her garden, trillium and hepatica sometimes bloom together; other times the hepatica blooms just a bit later than the trillium.

Bike Association whose donation enabled treatment of species, specifically Japanese stiltgrass, along 25 miles of Brown County State Park's renowned mountain bike trails.

In a perfect Brown County, non-native invasive plant species would not exist. But as Ingraham notes, "There is no way we could reverse the march of invasives if it were not for herbicides."

Leslie Drahos is a freelance writer in Sagamore Hills, Ohio. Reprinted with permission from pwmag.com, Public Works online magazine, August 13, 2012.

Woodland Surprise

Sharp-lobed hepatica brings bloom to late winter woods

Plant Profile



In the late 1800's, over 450,000 pounds of hepatica were collected annually as an herb for medicinal purposes.

by Patricia Happel Cornwell

Midwestern gardeners generally have low expectations when going for a walk in winter. Cold wet winds, perhaps some lingering snow in the north and east, do not promise an abundance of bloom in late February and early March. But there are some fully opened flowers to be found in native woods and gardens where bundling up for a winter walk can be rewarding.

The sharp-lobed hepatica (*H. nobilis* var. *acuta*) is the species I find closest to my home. Within walking distance of my garden is the Blue River with its limestone bluffs. I find colonies of very old plants all along those rock ledges, usually in pockets of leaf mold over rocky soil. I have seen a few growing beneath sheets of moss on large boulders. The prevailing color of bloom seems to be white, but on occasion there is lavender-blue. When watching for nice color forms, pay particular attention to the stamens. On occasion the stamens will be a contrasting color to the sepals. The flowers are actually composed of showy, 3/4-inch sepals that appear as petals. Stems are quite hairy and the fuzz is very apparent on new stems. Flower stems reach from four to about eight inches in height. Bloom period is from late February to mid-March and well into April.

In late fall and early winter the foliage turns bronze, adding to the show. Foliage is evergreen on hepatica, but very tattered by late winter. Just as blooms fully appear, new softly hairy leaves unfold. The amount and pattern of mottling in hepatica foliage vary from plant to plant, just as the bloom color varies. I have seen leaves with such a high degree of mottling I would grow the plant if it never bloomed.

The name of our local native hepatica was recently changed to *H. nobilis* var. *acuta*. The older wildflower guides list *H. acutiloba* and *H. americana*. Now both are under *H. nobilis* as *H. var. acuta* and *H. var. obtusa*. For me, *Hepatica nobilis* was the European species, so it is going to take a while for my old brain to make the transition.

According to the Medieval doctrine of signatures, God or nature placed a plant into the

natural world for each illness of man. A plant, the doctrine said, resembles the part of human anatomy whose ailments it will cure. Hepatica has leaves that resemble the shape of a human liver, thus the name "liverlobe." In the late 1800's, over 450,000 pounds of hepatica were collected annually as an herb for medicinal purposes. I remember my father taking his spoon of dark brown liquid from a patent medicine bottle that had hepatica both in the name and the contents. The fact that many of the patent medicines contained a high percentage of alcohol may have helped as much or more than the herbal ingredients inside.

The soil in my garden ranges in pH from neutral to slightly acidic over limestone. Most of my hepatica grow in raised beds containing a high percentage of compost and leaf mold. All are located in the midst of shrub and tree root competition. I have noticed over the years that seed has gotten around a bit. I now find hepatica in the richer soils of the shade garden. The only care I give my plants is to spread chopped leaf mulch each fall. All plants have a north and easterly exposure, being on the north side of a hill.

I have *Trillium nivale* (snow trillium or dwarf white trillium) as a companion to my sharp-lobed hepatica. Sometimes they bloom together, other times the hepatica blooms just a bit later than the trillium. When the trillium goes dormant and its foliage disappears toward the end of summer, the hepatica foliage persists. Trout lilies (*Erythronium* spp.) are also great companions for both flower and foliage.

Patricia Happel Cornwell grew up on a farm in Floyd County, where she first became enamored of wildflowers. She and her husband John live on 19 acres registered as a National Wildlife Federation Certified Wildlife Habitat in rural Harrison County. She became an Indiana Master Naturalist in 2010.

Correction

In the Fall 2012 Journal, the photo of dodder flowers on page 3 is attributed to Mike Homoya. The photographer is actually Scott Namestnik.

Butler – from page 1

many of the city's streams and woodland edges, and land managers spend a lot of money eradicating it."

Dolan says they were surprised to find how many of the new invasives are woody trees and shrubs. "We found 14 invasive herbaceous plants, but only garlic mustard and Japanese hops were not known for Marion County already before 1940."

The study has important lessons for cities, biodiversity and the potential dangers posed

The Butler study attracted attention from newspapers in France and Germany, CNN.com and ScienceDaily.com

by non-native species. According to Dolan: "As cities continue to grow, urban green spaces are becoming important refuges for native biodiversity and for people. In coming decades, most people's contact with nature will be in urban settings, so the social importance of urban plants has never been greater."

The paper "Documenting effects of urbanization on flora using herbarium records" was co-authored by longtime INPAWS members Rebecca W. Dolan, Marcia E. Moore, and Butler undergraduate Jessica D. Stephens (since graduated). It appeared in the *Journal of Ecology* on March 18, 2011. Moore is a former INPAWS webmaster. It received wide attention, including from newspapers in France and Germany, CNN.com, and ScienceDaily.com. It is one of the few to document changes in the flora of a city through time in the USA. More studies of this sort have been published for European cities.

To receive a pdf of the original article, contact Dr. Dolan at rdolan@butler.edu or 317-940-9413. More information on the flora of Marion County is available on the herbarium's website at www.butler.edu/herbarium and Dr. Dolan's blog at <http://blogs.butler.edu/indianaplants/>.



Specimen sheets like this one of *Onoclea sensibilis*, common sensitive fern, from Butler's Friesner Herbarium provided data for the research by Dr. Dolan and her team.

Letha's Best Year Yet

Nearly 1,800 young people served

by Cheryl Shearer, Chair

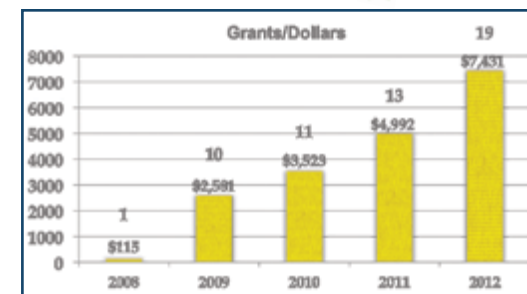
Letha's Fund had a good year in 2012. We received more applications for grants than in previous years, more youth had a meaningful outdoor experience because of the grants, and trip leaders demonstrated greater awareness of the importance of native plants. INPAWS membership increased its financial support for Letha's Fund as well.

The quality of applications was impressive. The majority were from teachers wanting to provide an environmental education experience for their students. The late Donovan Miller (former chair of Youth Outreach) urged the United Urban Network of Lake County to seek funding because of its unique approach – they reach out to youth who live less than a mile from the Indiana Dunes Lakeshore yet have never ventured into this nearby national treasure.

Letha's Fund awarded this grant and the Network, partnering with the Calumet Stewardship Initiative, arranged for 40 youth and various supportive adults to spend a day at the Paul H. Douglas Nature Center within the Dunes National Park. According to Eric Neagu of the Initiative, it has been extremely difficult to get urban youth to want to explore this environment. But with this combined effort, students did make the trip and even produced an entertaining video about their adventure, which has been posted on YouTube. The United Urban Network's guiding belief states "...you cannot bestow poverty and ignorance of any kind on any section or class of people, and not expect nature to suffer." Kudos to them for their commitment to igniting a respect for nature among urban youth. Interestingly, the National Park Service has stepped up efforts to interest urban youth in our National Parks.

Letha's Fund sponsored two students to attend the INPAWS Annual Conference in November. Jenna Parks is a high school junior and an enthusiastic volunteer at the Eagle Creek Discovery Center. She hopes to make a career in environmental science. She writes, "I appreciate the scholarship and am even more thankful now that I know the story behind Letha's Fund.The knowledge I gained will help my future college major and career inter-

ests." Brad Harmening is a Marian University junior, serving an internship at the Marian EcoLab. A biology major, he is working on an Environmental Science concentration and hopes to pursue a graduate degree. He was especially impressed with Dr. Rob Naczi's and Mike Homoya's presentations, saying they inspired him further in his career choice.



Both donations and grants have increased steadily since 2008.

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In Honor of Donovan Miller

Mountain Laurel – from back cover

The showy clusters of pinkish flowers of mountain laurel are normally evident in Indiana from mid-May to mid-June, creating a floral display that's in a class by itself. Even the flower buds are attractive, each having the appearance of a swirl of ice cream in a cone, or a twist of icing decorating a cake.

Once open, each flower is approximately three-quarters of an inch across, with five petals fused together to form the shape of a deep saucer. The flower has ten stamens (male reproductive parts) and one pistil (female reproductive part). The stamen is composed of a long stalk (filament) with an anther at its end (where the pollen is found). The anthers are tucked into special small pockets in the petals, causing the attached filaments to be under considerable tension as they arch back to the center of the flower. The pistil is the location for the eggs, and is where seeds form following egg fertilization.

Before fertilization can occur, however, the pollen, which carries the sperm, must get to the pistil. This is accomplished by an interesting process that occurs when an insect such as a bee visits a flower in search of nectar. During the visit, the bee unintentionally touches one or more of the stamens, releasing the tension of the filament and catapulting the anther onto the bee, dusting it with pollen. The bee then brushes against and transfers pollen to the pistil of that flower or another, thus completing the process of pollination and allowing for fertilization.

In some ways, mountain laurel is a beauty masking a beast. The leaves are known to be quite poisonous. Even the honey made from its nectar, while nourishing for bees, is toxic to humans. The poison is so powerful that the Delaware Indians ingested mountain laurel to commit suicide. The flowers are poisonous also. In one case, a zoo monkey was poisoned by eating laurel flowers fed to it by a well-intentioned visitor.

Mountain laurel can also be a beast to a person trying to walk through a dense thicket of the shrub. This is not a problem in Indiana because the plant is so rare, but in the Appalachian Mountains dense laurel and rhododendron thickets are sometimes referred to as "hells" because of their impenetrable nature.

In most of its range, mountain laurel is associated with acid soils in rugged, rocky terrain. In

Indiana as well, it occurs mostly on steep, rocky hillsides and on precipices of sandstone cliffs. In Clark and Floyd Counties, mountain laurel is a rare plant that occurs only on the upper slopes of steep hillsides in the Knobstone Escarpment area of the Highland Rim Natural Region. There it is found in close association with chestnut oak and Virginia pine. In Crawford and Perry Counties, where mountain laurel is not quite as rare, it grows almost exclusively on sandstone cliffs and boulders in the Crawford Upland area of the Shawnee Hills Natural Region.

To date, no counties other than those mentioned are known to have wild populations of mountain laurel, although one might expect to find it in some of the surrounding counties. (Since the original appearance of this article an additional population has been discovered in Harrison County). At present, the species is listed by the Division of Nature Preserves as "watch-list" in the state. This means that the species, while not officially listed as rare, threatened, or endangered, is being monitored for population changes that might necessitate a stronger listing. If you know of any mountain laurel occurring naturally outside of the previously mentioned counties, a notification to the Division of Nature Preserves of its location would be appreciated.

Whether in the Smoky Mountains or the hills of southern Indiana, mountain laurel in bloom is a sight to behold. Be assured that your effort to see this most beautiful flowering shrub will be well rewarded.

Reprinted from *Outdoor Indiana* magazine with the Indiana DNR's permission. Subscribe for \$12 for six 48-page full-color issues at OutdoorIndiana.org or by calling 317-233-3046.

Michael Homoya, author, plant ecologist, and botanist with the Indiana Division of Nature Preserves since 1982, is regarded as one of the finest field-botanists of the Midwest.



Mountain laurel in spring (above) and winter twig. The leaves of our beautiful mountain laurel are highly toxic.

Grants & Awards



During Earth Day activities at Southeastway Park, Lola Reddick, a second grade student at Kitley Elementary, had a close encounter with nature, thanks to Letha's Fund.



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Beauty or Beast?

Rare in Indiana, mountain laurel occupies rocky hillsides, sandstone precipices



Liam Kaplan Wikimedia

by Mike Homoya

Imagine yourself enjoying an early summer day lounging beside a crystal-clear, briskly flowing stream, watching the water twist and turn its way through a deep ravine bordered with massive sandstone cliffs. The forest around you is replete with verdant, almost tropical-looking growth; even the rocks are green, painted with a lush growth of mosses and liverworts. In this uniformity of green, delicate hues of ink and white stand out in the branches of vegetation above a distant sandstone cliff. Intrigued, you cross the stream for a closer look, and to your delight, observe many exquisite flower clusters of what certainly must be one of the most spectacular of all North American shrubs, the magnificent mountain laurel (*Kalmia latifolia*).

You may think the region described in the above scenario must be somewhere in the Appalachian Mountains, and it well could be, but this is Perry County. That's right, mountain laurel, that spectacular flowering shrub so characteristic of the Appalachian Mountains, occurs right here in Indiana!

Mountain laurel is a medium-sized, woody shrub (rarely a small tree) that has simple, thick, evergreen leaves measuring two to three inches long and one inch wide. It is a member of the heath family, a plant family which contains many beautiful and valuable plants, such as azalea, blueberry, heather, and heath. The genus name, *Kalmia*, commemorates Pehr Kalm, an 18th century Swedish botanist and early plant collector in North America. The epithet *latifolia* means broad-leaved, a description applicable when compared to other members of the genus. There are several other common names for mountain laurel, including calico bush, ivy bush, and spoonwood. The latter name reflects the use of *Kalmia* wood by early pioneers for making spoons. It is also said that the wood was used for making tobacco pipes.

Mountain Laurel — continued on page 15