



February 2016, Volume 10, Issue 01

Your key to discovering the **Natural Missouri**



From
Our
President

Well, the cold and snow finally arrived. It feels good once in a while to sit on the couch, get the fireplace going and read a book.

I have been looking out the window watching the many birds I have coming to my feeders scramble for food. Sure glad I don't have to eat my weight each day to stay warm as I read that birds need to do. Don't forget the Great Backyard Bird Count in February. You can get information at www.audubon.org/content/about-great-backyard-bird-count.

We had our first meeting of the year at the Weldon Springs Interpretive Center. It was well attended and had an excellent speaker. The rest of the year looks like a great lineup of topics and presenters. Our chapter has many projects resting right now but as spring wakes us up, the activity will increase. At each meeting, I am having a short review by the project leads so you are aware of what is available. Please volunteer all the time you have to spare. Lots to do and many hands help get it done. We will especially be looking for a new member or two for the Forest Rehabilitation Team since they keep taking on new areas in which to cut cedars

and thin trees. Missourians for Monarchs will also be needing many hands as they move into a much more physically active phase of planting native plants and milkweed around the area. Requests are already coming in for schools group activities at our Nature Explore Classroom. Volunteers interact with the children and try to pass on our love for nature to the kids. Especially popular is the tree potting Saturday at Forest Re-leaf in early March. So watch for Glen Bish's Volunteer Opportunities email, my emails; and call if you want to do something and can't find the project leader. My phone number is 636-399-6567. See you at the March meeting, I hope.

Happy Winter!

Alberta

Alberta McGilligan
President, Confluence Chapter

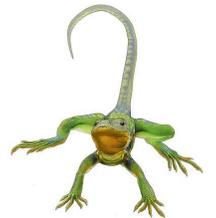


Northern saw-whet owl pair.
Photo by Herbert Lange/Wisconsin DNR

Master Naturalist

2016 Certification Pin

Eastern Collared
Lizard
***Crotaphytus
collaris collaris***



The "mountain boomer" is a gangling, big-headed, long-tailed lizard that runs on its back legs like a miniature dinosaur. The two black collar markings (often broken at the nape) are constant but coloration and pattern are variable. Males are yellowish, greenish, brownish, or bluish; throat yellow or orange-yellow; dorsal pattern consisting of a profusion of light spots and a series of dark cross bands. Females are similar but less brilliantly colored.

Size: Total length is 8-14 inches, with the head and body measuring approximately 4.5 inches.

Habitat: Collared lizards are naturally found throughout most of the Missouri Ozarks and on glades in the St. Francois Mountains. Limestone ledges, rock piles, and glades offering an abundance of hiding places are preferred habitats. They are active during the day especially during sunny, warm weather.



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Milestones, Certifications, Annual Pins, and Other Recognitions

November 2015:

Bob Lee presented Sarah Berglund with the "High Flyer" award for her work in setting up and maintaining the Monarch Facebook page.



The yearly pin was awarded to Rob Merriman. A gold pin was awarded to Carmen Santos for completion of 1000 volunteer hours.



Bronze Pins (250 hours) were issued to Lee Holloway, Don Moyer, and Pat McCoy.

Pewter Pins (500 hours) were issued to Deborah Moulton, Don Moyer, and Pat McCoy. Deborah Moulton was present to receive her pin.



January Awards:

Paul Robbins issued membership badges to Diane Baniak, Ryan Brady, Jean Harmon, John Gibbs, Robert Gibbs, and Paul Robbins. Only Paul Robbins was present to receive the badge.



February Awards:

Paul Robbins presented the annual pin, an eastern collared lizard, to Tom Nagle for his service. Forty hours of service and eight hours of advanced training are required to receive the annual pin.



Pins for 2015 (40 hours) were issued to Jayme Gribble, David Morgan, Barbara Moore, Mindy Batsch, Scott Barnes, Lee Holloway, Deborah Moore, Jane McCarthy, Steve McCarthy, and Diane Baniak. Jayme Gribble and Steve McCarthy were present to receive pins.

Spring ephemeral describes a life habit of perennial woodland wildflowers which develop aerial parts of the plant early each spring and then quickly bloom, and produce seed. The leaves often wither leaving only underground structures for the remainder of the year. This strategy is very common in herbaceous communities of deciduous forests as it allows small herbaceous plants to take advantage of the high levels of sunlight reaching the forest floor prior to formation of a canopy by woody plants. Examples include: **spring beauties, trilliums, and harbinger of spring.**



Spring Beauty
Claytonia virginica

Erigenia bulbosa
Harbinger of Spring
Photo by Chris Packard,
<https://commons.wikimedia.org>



Trillium
(*T. recurvatum*)

Missouri has 7 species in the genus Trillium. Purple trillium (*T. recurvatum*) is similar to *T. sessile*, but the sepals curve downward as the flower opens, and the leaves have a distinct, short stem; it is **the most common trillium in eastern Missouri.**

(Continues on Page 7)

Master Naturalist 2016 Certification Pin

Continued
Eastern Collared Lizard
Crotaphytus collaris collaris

Seasonal activity usually lasts from April to September. A great deal of time is spent basking in the sun on exposed rocks. When alarmed, they run first on all four legs, then after attaining considerable speed they run in an upright position on their back legs.

Food: Insects make up the bulk of this lizard's diet. They have also been known to eat small lizards including Horned Lizards.

Interesting Facts:

This lizard has no voice. The name "mountain boomer" probably originated in the

southwestern U.S. where settlers may have seen the lizard basking on rocks, while hearing the barking call of a local frog species.

Each lizard defends a home territory. The bright color of males is used to ward off other males. Young males use several types of avoidance behavior when traveling through a dominant male's home range. They try to remain hidden, move as little as possible, and avoid displaying head-bobbing or pushups.

These nifty lizards always generate interest because they are so colorful. Because they are an indicator species, when their numbers decline, we know that something is wrong with their habitat. In this case, it is human suppression of fires that allowed trees to overgrow their sunny glades.

This species preys upon a variety of insects, spiders, and other small creatures, keep-

ing their populations in check. These lizards are in turn preyed upon by snakes, hawks, and in southwestern Missouri, roadrunners.

<https://mdc.mo.gov/discover-nature/field-guide/eastern-collared-lizard>



Photo by Dakota L., Taum Sauk Mountain State Park in Missouri.,
<https://commons.wikimedia.org>





ON THE WILD SIDE



Pictured here is the **Bog Turtle**—North America's tiniest turtle! This turtle can be found in the Appalachian Mountain bogs, one of the nation's most biodiverse, yet rarest and most imperiled habitats. Roughly 90 percent of the area's mountain bogs that once existed have been lost, making protection critical. <http://on.doi.gov/23Ljo4L> Photo by Rosie Walunas, USFWS

Baby Black Bears are born in the winter and stay in the den with their mothers through the cold months. In spring, the cubs emerge to explore the world and show off their cuteness. Photo from Cades Cove in Great Smoky Mountains National Park in Tennessee by Steve Perry.



Bat gates

USFWS Midwest Region

Not all bat gates work for all bat species. Gray bats prefer chute gates like this one.



Sparky

Sparky the bison at Neal Smith National Wildlife Refuge by Karen Viste-Sparkman/USFWS

Can you imagine being struck by lightning? Sparky, a bison at Neal Smith National Wildlife Refuge in Iowa knows exactly what it's like! Sparky was struck in 2013, and is doing surprisingly well. We recently checked in with Wildlife Biologist Karen Viste-Sparkman to learn more about Sparky's amazing story.

Sparky joined the herd at Neal Smith in 2006 after being transferred from the National Bison Range in Montana. As you may have guessed, Sparky earned his name after the lightning strike and is the only bison that has been struck at the refuge—although it does occasionally happen across the country.

Karen does regular checks on the bison to watch for signs of illness and check body condition. During a survey in late July 2013, she noticed a bull standing by himself. When she took a closer look through her binoculars, she noticed that Sparky looked bloody. This wasn't entirely surprising because bison bulls will often fight during the mating season and July tends to be a prime time for injuries. Upon closer inspection, it was clear that Sparky had been burned over a large area. His hump was missing hair and there was a large lump on his hind leg, which must have been the exit wound, meaning Sparky was lying down at the time of the strike.

Sparky was thin after the strike and wasn't expected to live long. Since a lightning strike is something that could easily occur in wild bison anywhere, the refuge let nature take its course. There are no natural predators in the bison area, so injured bison are monitored regularly and euthanized if they're unable to eat or walk. Sparky was standing when his injuries were discovered, which was a promising sign. Karen kept checking on Sparky and was able to watch his wounds slowly heal. With a limp, Sparky kept walking.

At 11 years old and about 1,600 pounds, Sparky is a bit thinner than the rest of the bison, but he still stands strong. Before being struck, Sparky fathered three calves. Genetic testing will tell us if he successfully reproduced after the strike, but we're hoping that he does because he's one tough bison!

If you ever find yourself near Des Moines, stop by Neal Smith National Wildlife

Refuge and see if you can spot Sparky. He tends to spend his time just like other bulls—hanging out in small groups or enjoying some quiet time alone.

-- Courtney Celley, Public Affairs Specialist, Midwest Region



Lizard Myths

MYTH: A glass lizard that has lost its tail will come back, find its tail, and put itself back together again.



No, this is biologically impossible.

MYTH: The tail of a skink is poisonous and can sting you.

No, their tail is not a stinger and is not venomous.



MYTH: "Mountain boomers" (eastern colored lizard) produce a call that sounds like a frog.

No, all of Missouri's lizards are voiceless.

MYTH: If a lizard bites you, it will hold on until it thunders.

No, they have no interest in holding on that long.



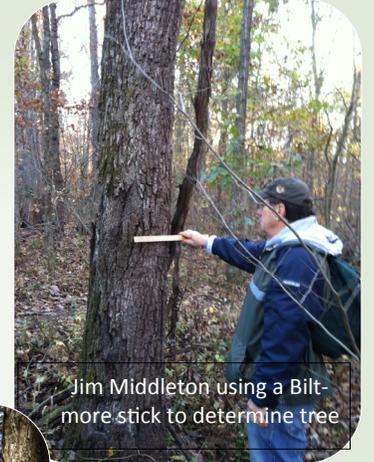


Pictures from the Tree Inventory

By Jim Middleton



Steve Thomas using Biltmore stick, Bob Coffing in background



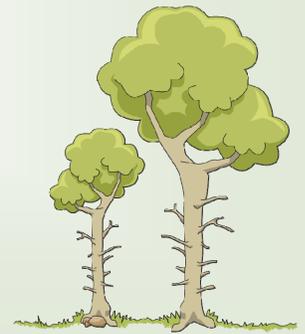
Jim Middleton using a Biltmore stick to determine tree



Phil Rahn and MDC agents taking a tree core sample



Sam Hodge and Steve Thomas



Plastics are Invading Your Salt Shakers

Conservation Magazine
University of Washington
Used by Permission

The first thing they teach you when learning to cook is that everything, even desserts, can benefit from some salt. That's because salt—a sodium atom plus a chloride atom—helps food to taste more like itself, thanks to some fancy gustatory neuroscience. But sometimes, it seems, adding a little salt can make your food taste more like plastic.

That's according to a new study published in the journal *Environmental Science and Technology*. Micro-plastics, which are defined as any plastic particle less than five millimeters wide, have infiltrated our oceans and can now be found in

a wide variety of marine critters, including the ones we eat. It stands to reason that micro-plastics might also find their way into sea salt since, well, it comes from the sea. The coast of China turns out to be a micro-plastics hotspot, and since "seawater is widely polluted by micro-plastics," writes East China Normal University researcher Dongqi Yang, "sea salts might contain micro-plastics" as well.

To find out, Yang and his colleagues went shopping. They bought 15 different brands of sea salt from randomly selected Chinese supermarkets, with each salt originating in a different place, as well as a handful of lake and rock salts for comparison purposes. Perhaps unsurprisingly, they discovered the highest micro-plastic concentration in sea salt, with between 550 and 681 particles per kilogram. Next was the lake salt, which contained between 43 and 364 particles per kilogram. The rock salt also contained a bit of plastic, but only between 7 and 204 particles per kilogram. Because that value was so low, the researchers suspect that the plastic gets introduced into the salt in the production and packaging process, rather than being locked away in the salt mines themselves. Which means that it's an additional route for salt intrusion into lake and sea salts as well.

More than half of the plastic particles they recovered were smaller than 200 micrometers wide. That's about twice as

wide as a human hair, and only slightly larger than the width of a paramecium. The dominant form of plastic they found was cellophane which, given its ubiquity in human culture, should perhaps be expected. These results tell us not just about the salt we sprinkle on our foods, but also something about the health of Chinese coastlines, from which the seawater to make sea salt is procured.

According to the World Health Organization, human adults should consume fewer than 5 grams of salt. At that level of intake, a human in China could consume as many as 1,000 pieces of micro-plastic each year from table salt alone—not to mention the plastics they could ingest by eating seafood. Though the risk from seafood is considerably higher (perhaps 11,000 pieces per year by eating mollusks), the use of salt is nearly universal, while folks can try to avoid seafood, if they so choose. Just what that means for human health is still very much an open question.

Jason G. Goldman, Source: Yang, D., Shi, H., Li, L., Li, J., Jabeen, K., & Kolandhasamy, Micro-plastic pollution in table salts from China. *Environmental Science & Technology*.

Header Image: shutterstock.com. Salt shakers image public domain.





Why Do Some Leaves Persist On Beech and Oak Trees Well Into Winter?

MARCESCENCE



Marcescence is the retention of dead plant organs that normally are shed. It is most obvious in deciduous trees that retain leaves through the winter. Several trees normally have marcescent leaves such as oak (*Quercus*), beech (*Fagus*) and hornbeam (*Carpinus*), or marcescent stipules as in some but not all species of willows.

Marcescent leaves of pin oak (*Quercus palustris*) complete development of their abscission layer in the spring. The base of the petiole remains alive over the winter. Many other trees may have marcescent leaves in seasons where an early freeze kills the leaves before the abscission layer develops or completes development. Diseases or pests can also kill leaves before they can develop an abscission layer.

Marcescent leaves may be retained indefinitely and do not break off until mechanical forces (wind for instance) cause the dry and brittle petioles to snap.

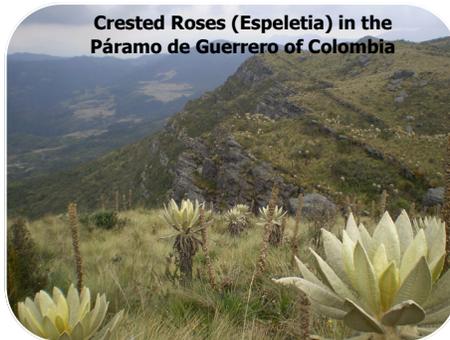
Many palms form a skirt-like or shuttcock-like crown of marcescent leaves under new growth that may persist for years before being shed. In some species only juveniles retain dead leaves and marcescence in palms is considered a primitive trait.

The term marcescent is also used in mycology to describe a mushroom which (unlike most species, described as "putrescent") can dry out, but later revive and continue to disperse spores. Genus *Marasmius* is well known for this feature, which was considered taxonomically important by Elias Magnus Fries in his 1838 classification of the fungi.

One possible advantage of marcescent

leaves is that they may deter feeding of large herbivores, such as deer and moose, which normally eat the twigs and their nutritious buds. Dead, dry leaves make the twigs less nutritious and less palatable.

Marcescent leaves may protect some species from water stress or temperature stress. For example, in tropical alpine environments a wide variety of plants in different plant families and different parts of the world have evolved a growth form known as the caulescent rosette, characterized by evergreen rosettes growing above marcescent leaves. Examples of plants for which the marcescent leaves have been confirmed to improve survival, help water balance, or protect the plant from cold injury are *Espeletia schultzei* and *Espeletia timotensis*, both from the Andes.



Crested Roses (*Espeletia*) in the Páramo de Guerrero of Colombia

The litter-trapping marcescent leaf crown of *Dypsis* palms accumulate detritus to enhance their nutrient supply. By the same token, palms with marcescent leaf bases are also more susceptible to epiphytic parasites like figs that may completely engulf and strangle the palms.

Wikipedia; Creative Commons Attribution -ShareAlike License

Did you know that a group of black footed ferrets is called a business?

That's just one interesting fact about these endangered animals. In 1987, only 18 were known to exist. With recovery efforts led by the U.S. Fish and Wildlife Service, there could be a thousand living in the wild now.



Thanks to the **Black Footed Ferret Conservation Center** in Colorado for their dedication to saving these unique and really cute animals.

Learn more: <http://on.doi.gov/liW5u6e>
Photo by Kimberly Tamkun, USFWS.

Keep Learning & Up Your Game, Master Naturalists

MN Leslie Limberg



What one way can a master naturalist get volunteer hours AND education hours in a single activity in the middle of Winter?

The Great Backyard Bird Count

Right from the laundry room window or the dining room, living room, or office window...

Sitting or standing, binocs or not, with or without a scope, indoors or out...

Watching birds is as old as the trees. And the real value? Studying their antics with master naturalists.

Yesterday with Peg Meyer, Pat Burrell-Standley, Glenn Bish & Sue Stevens, all awesome birders, it was excellent fun.

I learned that a Sharp Shinned Hawk has a square tail; Cooper's Hawk a rounded tail. Few know the difference. Equally evasive are distinctions of female sparrows. Thanks to detailed pocket field guides, we learned that the female House Finch has a white bar on her upper wing; the female Purple Finch has a fuzzy white bar above her eye. (Did I get that right, Pat?) And Pat taught us how to make a nature journal from a single piece of paper.

New tidbits:

- The favorite food of Pileated Woodpeckers? Carpenter Ants (keep those fallen snags on the ground).
- The male Pileated have a red bar on their cheeks. Did you know?
- Have you ever seen a Song Sparrow run? Sciddadle-scurry across a driveway? Ridiculously cuute.
- Put out just one bird feeder (away from squirrels) and before you know it, you're hooked. Watch what happens to your own behavior, when you see these adorable critters up close! The corners of your mouth will turn up for the rest of the day.

This counting wildlife stuff is called Citizen Science. There are frog counts, snake counts, amphibian counts, Quail counts, the list goes on. They're perfect for naturalists who want to help local & national conservation efforts, as well as gather advanced training hours. By the way, some of us keep our "old age" brains alive with citizen science efforts and/or nature hikes & strolls). Counting is also a good social activity for those living alone needing more social time. Collect those reference books at Book Fairs, Guys.

At yesterday's bird count we saw seventeen species and hundreds of birds, all in the comfort of a good lunch and upholstered chairs. AWWEsome!

AND... I betcha Sue's guest may very well be in the next MMN training next year, another added bonus.





Doing Our Part for Monarch Conservation

MN Lee Phillion

The monarch butterfly (*Danaus plexippus*) is now the focus of a multi-million dollar plan to halt the insect's twenty-year death spiral. In 2014, fewer than 50 million monarchs overwintered in Mexico—just a fraction of a population estimated at one billion two decades ago. And, while the 2015 count was higher, it is still one of the lowest counts recorded.

The "plan to save the monarch butterfly" is described on the U.S. Fish & Wildlife Service website <http://www.fws.gov/savethemonarch/>. The plan can be summed up in two words: Plant Milkweed. The goal is to build a "connected conservation constituency," from school children to CEOs, to plant native milkweed and nectar plants and protect monarch habitat along roadsides, rights of way, and other public and private lands.

For the last 12 months, the Confluence Chapter's monarch project—known statewide as "Missourians for Monarchs"—has been building those connections. In fact, we have been so successful in enrolling partners across the state in this effort and getting our name "out there," that in 2016, our moniker is migrating.

In 2016, "Missourians for Monarchs" will be the name of a new state-wide collaboration comprised of state and federal agencies, utilities, foundations, agriculture organizations, landowners, agribusinesses and academia. As part of the steering committee for the new group, Bob Lee, our founder and leader, will represent the Master Naturalists, Master Gardeners and Garden Clubs across the state as *Missourians for Monarchs—Naturalists and Gardeners*.

Members of the *Missourians for Monarchs* steering committee are from: Saint Louis Zoo, Monsanto, Quail Forever & Pheasants Forever, Associated Electric Cooperatives, MDC (MO Department of Conservation), DNR (Department of Natural Resources), FWS (Fish and Wildlife Services), NRCS (National Resources Conservation Service), CFM (Conservation Federation of MO), MPF (MO Prairie Foundation), MODOT (MO Dept. of Transportation), NWF (National Wildlife Federation), MFA, Inc. (used to be MO Farmers Association), UM-C (Univ. of MO at Columbia) and MBG (MO Botanical Garden). *It's a BFD to be part of this group! (You will have to ask Lee Phillion about this one)*

What the *big* Missourians for Monarchs collaborative will do is focus on large-scale expansion of habitat across the state by integrating their individual planning and goal setting into a single, monarch strategy. As part of this group, Bob Lee will ensure that the Master Naturalists, Master Gardeners and Garden Clubs across Missouri are included in the planning and are supporting the overall state strategy.

Ultimately, everyone is working to support the following overarching US goal laid out in the National Pollinator Strategy:

Increase the Eastern migratory population of the monarch butterfly to 225 million butterflies occupying an area of approximately 15 acres (6 hectares) in the overwintering grounds in

Mexico through domestic/international actions and public-private partnerships, by 2020.

For the Midwest (Illinois, Indiana, Iowa, Minnesota, Missouri, Ohio and Wisconsin), where half of the overwintering monarchs in Mexico are born (see illustration), and the area that has experienced the greatest habitat loss, planting milkweed and nectar plants to increase habitat is the primary goal.

All partners will work toward a Missouri 20-year habitat objective of 385,000 acres (19,000 acres per year) of additional pollinator habitat with 200 milkweed stems/acre.

While organizations like MDC and DNR will focus on public lands and large areas, Naturalists and Gardeners will play a valuable role in planting community waystations and backyard habitats as well as seed collection and in educating the general public.

WHAT PART WILL CONFLUENCE PLAY?

Members of the Confluence Chapter have and will continue to organize naturalists and gardeners across the state to share best practices, outreach materials and plants and seeds. But while our chapter is doing that important work, we also need volunteers to lead the monarch habitat effort *in our own region*—just as we are asking other chapters across the state to do.

WANTED: A Confluence Member (or members) to step up to:

- Identify opportunity areas within local communities for planting waystations.
- Organize other local groups (Master Gardeners and Garden Clubs) to unite in this effort.
- Ask local officials to sign the Mayors Monarch Pledge and to take actions for pollinators on community land.
- Distribute plants and seeds available from *Missourians for Monarchs - Naturalists and Gardeners*
- Organize seed collection and propagation efforts locally
- Do local outreach and education within the communities where our members live.

No experience necessary—just enthusiasm. **Call Bob Lee at 314-496-5332 if you are interested in volunteering.**



Photos courtesy of Wendy Caldwell, Monarch Joint Venture



Oval ladies' tresses

Detroit River International Wildlife Refuge in Michigan initiated a survey this past year of a few of the largest remaining forests in the downriver area, including the renowned Humbug Marsh, which was nearly developed into hundreds of homes, a marina, and a golf course in the late-1990s and is now a part of the international wildlife refuge.

Botanists Brad Slaughter and Mike Penskar with the Michigan Natural Features Inventory, worked with Detroit River International Wildlife Refuge staff to provide an updated and accurate description of what is most unique and critical for protecting in these small forest stands that total less than 500 acres, with one acre being about the size of a football field.

The refuge ultimately wants to track those collections of species that have been together the longest and serve as a "reservoir" of biodiversity. It was recently discovered that Humbug Marsh is home to a rare grass-like plant called the hairy-fruited sedge (*Carex trichocarpa*) and an orchid species called oval ladies' tresses (*Spiranthes ovalis*). Records show that these plants have never been found in Wayne County, which has some of the oldest botanical records in Michigan. One sedge species (*Carex squarrosa*) identified on Grosse Ile had not been found since 1932. The Shumard oak, having never been recorded on the island, was determined to actually be a dominant tree on the remaining forest on the island. In fact, Grosse Ile is one of the strongholds for the Shumard oak in southeast Michigan, a Michigan State-listed special concern species.

The healthiest flatwoods, which are those on Grosse Ile, Oakwoods Metropark, and Belle Isle in Detroit, have a more even mix of old, medium, and new species. Humbug Marsh, which was determined to have had the most disturbance over the years, has a disproportionately higher abundance of new, common species to older, rare ones that have been together for a long time.

"This difference is like that of a collection at an old, ivy-league university library versus one at, say, a new Barnes and Noble, which is disproportionately represented by mass-produced, common books found nation-wide," Norwood says.

Detroit River International Wildlife Refuge covers 48-miles of shoreline along the lower Detroit River and western basin of Lake Erie. It stretches from southwest Detroit to the Ohio-Michigan border.

Learn more about this and other research at Detroit River International Wildlife Refuge: http://www.fws.gov/refuge/detroit_river/what_we_do/science/research_publications.html

Oval ladies tresses photo courtesy of David McAdoo/Creative Commons



Hairy-fruited Sedge





EPA's Preliminary Risk Assessment for the Neonicotinoid Insecticide, Imidacloprid

By Aimee Code
Pesticide Program Director
Xerces Society

The US Environmental Protection Agency (EPA) has announced a preliminary pollinator risk assessment for the neonicotinoid insecticide, imidacloprid, which shows a threat to some pollinators. The EPA's assessment indicates that the highly toxic, long-lived neonicotinoid imidacloprid **"potentially poses risk to hives when the pesticide comes in contact with certain crops that attract pollinators..."**

Review of the documents shows severe shortfalls in the methods and omissions in the evaluation which will allow continued risk to both native pollinators and to honey bees.

The EPA's Preliminary Risk Assessment for insecticides potentially harmful to bees focused on the risk to honey bees, ignoring the risks to some 3,600 species of bees native to the United States, such as the long-horned bee (genus *Melissodes*).

Some of the most concerning issues Xerces noted in the preliminary assessment are that:

- The EPA used managed honey bees as surrogates for native bees even while it acknowledges that native bees face potentially greater risks. By focusing on impacts to honey bees, the EPA's assessment ignores the many peer-reviewed studies that show impact to native bees and butterflies from imidacloprid. Pollination by native bees is estimated to be worth over \$3 billion a year to the US economy. A final risk assessment must assess risk to a full suite of pollinators.
- The EPA failed to address the risks caused when imidacloprid is mixed with other chemicals, even though bees often experience multiple chemical exposures. For example, while the EPA recognizes that fungicides mixed with neonicotinoids can cause greater than additive effects, it still stated that "...the extent of this relationship is beyond the scope of this assessment." A final risk assessment needs to look at exposure from multiple chemicals.
- The EPA disregards the clear risk to bumble bees and other native bees

from the use of imidacloprid on tomato production. While harmful residue levels of imidacloprid are expected from tomato production, the EPA determined there was low risk because honey bees are not attracted to tomatoes. In contrast, bumble bees and other non-Apis pollinators are regular visitors to and essential pollinators of tomatoes, greatly improving fruit yield. The EPA's justification fails to acknowledge the importance of non-Apis pollinators to tomato crop systems, potentially putting several species of important crop pollinators at risk. With more than one quarter of North American bumble bees at risk of extinction, the EPA must be more responsive to the risks to native bumble bees in the final risk assessment.

- The EPA failed to evaluate potential risks of imidacloprid to declining monarch butterflies. With on-going work from multiple federal agencies to restore monarch habitat, including the EPA's own effort to determine mitigation measures to reduce pesticide impacts on monarchs, the decision to exclude monarchs from this pollinator risk assessment is a lost opportunity. The final risk assessment should evaluate the potential risk to monarchs from imidacloprid use.
- Bumble bees (genus *Bombus*) are important pollinators of tomatoes. Because honey bees are not attracted to tomatoes, the EPA considered the risk to bees visiting this crop to be low, overlooking the impact on native bees.

Even with these limitations, the EPA's preliminary assessment recognizes significant risks from the legal use of imidacloprid. If these risks are to be reversed, the EPA must suspend the use of



imidacloprid until we know if and how it can be used without threatening bees and other pollinators.

It must be recognized that this assessment addresses the impacts of only one neonicotinoid on one group of beneficial insects. Preliminary pollinator risk assessments for three other neonicotinoids,

clothianidin, thiamethoxam, and dinotefuran, are scheduled to be released for public comment in December 2016. At that same time, the EPA plans to release a risk assessment on the effects of imidacloprid to birds, aquatic species, and other animals. Despite the fact that neonicotinoids are now widely found in both terrestrial and aquatic habitats, the EPA's piecemeal process does not include an overarching review of the broader interactions and ecosystem effects from the use of these products.

The Xerces Society hopes that the final pollinator risk assessment for imidacloprid will address the deficiencies noted above and that these issues will be adequately addressed in the pollinator risk assessments for the other three pesticides.

The following Xerces Society staff contributed to this statement: Scott Hoffman Black, Rich Hatfield, Thelma Heidel-Baker, and Sarina Jepsen. (Photographs by Mace Vaughan, The Xerces Society.)



(Continued from page 2)

Green trillium (*T. viride*) is taller, with sepals spread outward; petals erect, to 3 inches long, green or yellow; leaves broadly lance-shaped or nearly round, green or mottled; common in southwestern and east-central Missouri.

Habitat and conservation: Wooded slopes and bottomlands in moist, rich soil. Trilliums are popular in shade gardens but are difficult to grow from seed. This has led to unethical collecting from the wild. However, many plants do not survive transplanting. Please be aware of the sources for your plants, and insist on nursery-grown plants from cultivated stocks.

Distribution in Missouri: Statewide; common in all but the northern third of the state; apparently absent from the Mississippi Lowlands of the Bootheel.

Status: Common names include "wake robin," "trillium" and "toadshade." "Trillium," of course, matches the genus name, the same way the names "geranium," "iris," and "forsythia" do.

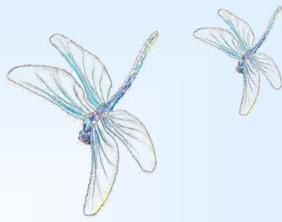
Human connections: Some species of trilliums were used historically in herbal medicine, but the most common human use of these flowers is in gardening. **Please don't collect from the wild**, however. Instead, buy nursery-cultivated plants from reputable sellers.

Ecosystem connections: The flowers of this species have a fetid aroma, presumably to attract flies and other such pollinators.





- ♥Alison Volk for being our newest cheerleader.
- ♥Bob Lee for his on-going tireless, noble, and brave effort to help butterflies across the entire state of Missouri.
- ♥Cliff Parmer for his aquatic leadership—our chapter Stream Team #3612 is going strong.
- ♥Leslie Limberg and Ann Finklang for their outstanding introduction of the Quail Ridge and O'Fallon projects.
- ♥Members who are forward thinking and going beyond the call of duty in serving our Confluence Community.



Our Leadership



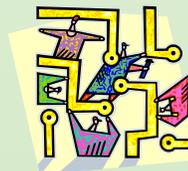
- President—Alberta McGilligan
- Vice President—Tom Nagle
- Secretary—Martha Hessler
- Treasurer—Peg Meyer
- Advanced Training—Jim Middleton
- Volunteer Coordinator—Glenn Bish
- Membership Services—Allison Volk
- Communications—Leslie Limberg
- Web Site—Rick Gray
- Photography—Don Moyer
- Newsletter—Carmen Santos

Advisors

- University of Missouri Extension, Rich Hoormann, Regional Horticulturist
- MDC, Colleen Scott, Colleen.Scott@mdc.mo.gov

Project Leaders:

- Daniel Boone Hays—Bob Coffing
- Matson Hill Park—Bob Coffing
- Cuivre River and Don Robinson State Park—Bob Coffing
- Confluence Chapter Stream Team #3612—Cliff Parmer
- Babler State Park—Alberta McGilligan and Bob Coffing
- Lewis & Clark Boathouse and Nature Center— Leslie Limberg
- Quail Ridge Prairie Demo and Rain Garden—Carmen Santos
- Bluebird monitoring - Mindy Batsch
- Nature Explore Classroom Education— Connie Campbell
- O'Fallon Public Works Project— Carmen Santos
- 2014 Capstone Project at Rotary Park— Bob Lee and Gail Gagnon.
- Rabbit Habitat—Nancy Newcomer
- Missourians for Monarchs—Bob Lee
- Birding Club—Gail Gagnon



Wildlife Trafficking:

What Happens to Confiscated Animals?

US Fish and Wildlife Services (FWS)

The FWS turned to animal care and conservation leader Shedd Aquarium for assistance in the rescue and rehabilitation of internationally protected juvenile arapaima (*Arapaima gigas*) that were confiscated from O'Hare International Airport following an attempted illegal importation for the pet trade industry. The species is one of the world's largest freshwater fishes and is listed as protected by the Convention on International Trade in Endangered



Rehabilitated arapaima in Shedd Aquarium's. Photo courtesy of Brenna Hernandez

Species of Wild Fauna and Flora (CITES). Half of the animals did not survive the unlawful trafficking, with the remaining recovering under the care of Shedd's animal care specialists.

The animals were hatched in Colombia, South America and were shipped under poor conditions into

the United States, packed in double plastic bags. Several of the animals were in critical condition and received supplemental air and a diet of small crickets, bloodworms, and small krill to promote their recovery.

"This is an example of how the illegal wildlife trade is not just decimating elephants, rhinos,

big cats, and great apes, but also thousands of lesser-known species in what has become a \$19 billion-a-year industry," said Tim Binder, executive vice president of animal care for Shedd. "This situation is a difficult reality and further evidence of the critical role accredited aquariums and zoos play in inspiring care and providing education about species and their environments for the public."

In addition to the new arapaima, Shedd officials also assisted in caring for 23 juvenile lake sturgeons (*Acipenser fulvescens*). Confiscated by enforcement officers, six of the animals died shortly after due to poor shipping practices. The remaining received intensive care from Shedd's staff and are progressing well. Still recovering behind the scenes in the aquarium's quarantine area, the sturgeons have doubled in size since their arrival to 8 inches each.

"The wildlife inspectors and special agents of the U.S. Fish and Wildlife Service diligently work to intercept smuggled wildlife and capture the criminals who perpetrate these.

In some cases, the animals become permanent residents at Shedd, including 34 Korean halibut that were confiscated by wildlife inspectors as part of the live food fish trade and hundreds of pieces of living corals illegally imported since 2010.

For more information about the Shedd Aquarium and this rehabilitation effort, please contact: Nicole Minadeo, 312-350-3365; nminadeo@sheddaquarium.org

Kelsey Ryan, 312-692-3346; kryan@sheddaquarium.org
For more information on the U.S. Fish and Wildlife Service, their work and the people who make it happen, visit www.fws.gov

The Confluence Chapter was founded in 2005 as the fifth Master Naturalist chapter in Missouri. The chapter was formed by 24 individuals from St. Charles County, St. Louis County, and St. Louis City after completing the Missouri Master Naturalist™ training program. We share a common interest in nature and in volunteering to help protect, preserve and restore Missouri's natural heritage. Most of our members live in the region West of the Missouri-Mississippi Confluence and from both north and south of the Missouri River.

We operate according to the bylaws and operating handbook of the Missouri Master Naturalist Program developed by the Missouri Department of Conservation and University of Missouri Extension.

Visit us at <http://www.mmnconfluence.org/>

