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Nightshade Nurtures Hornworms to Hawkmoths

One man's vermin is another man's wild treasure, I guess. Lucky for us some of our country neighbors are aware of that. We've come home to "gifts" waiting outside our door of live-trapped chipmunks (rat snake food) and lethally-trapped, but intact woodchucks (skull preservation).

A few weeks ago neighbor, Lou Sharp pulled onto our driveway and handed us a jar with two large hornworms she had picked off her tomato plants. She explained that she was just going to pitch them but her granddaughter, Olivia – a regular among our various nature camps – had insisted that we would want them. She was right.



The oft-maligned, tomato-munching Tobacco Hornworm metamorphoses into the beautiful Carolina Sphinx. Nurturing one off the plant into "mothhood" is easy and eye-opening.



In fact, this species of sphinx moth larva is not actually a "tomato hornworm," although there is such a larva – that of the Five-spotted Hawkmoth Moth. The tobacco hornworm - larva of the Carolina Sphinx Moth - is by far the most commonly seen feeding on backyard tomato plants. To tell the difference note that the tobacco has a distinct, white, diagonal slash on the side of each segment. The two white slashes that merge on segments of the tomato hornworm remind me of the angle sign used in a geometry theorem.

From Golden Guide to Butterflies & Moths, by Mitchell & Zim.

People love butterflies, but a slew of native moths are just as impressive and beautiful - or even more so than butterflies. This should not be surprising when taken into account that there are ten times more species of moths among the lepidoptera than butterflies. That's ten times more diversity equating to ten times more opportunity to impress through stark or subtle beauty, through myriad examples of anatomical and behavioral adaptation, as well as through ecological nuances related to food plants, camouflage, sources of depredation, etc.



A Fawn Sphinx on White Ash.

The caterpillars of all lepidoptera, then, by virtue of their being so physiologically diametric to their winged adult forms, present an entire extra array of varied qualities. Pick up any field guide and be wowed, page after page, by larval colors and patterns. Starkly-colored caterpillars are gorgeous in their own right, but those possessing subtle hues and markings that allow them to melt right into their leafy domain are to be marveled as nothing short of evolutionary perfection.

Many members of the family, Sphingidae (sphinx and hawkmoths) are camouflage masters. The larvae are termed “hornworms” since most possess a single angularly-jutting sharp horn on the back abdominal segment. It may look like some sort of stinger but merely bends if you press a fingertip to it. Hornworms do not spin a silken cocoon but instead burrow under the soil to pupate and overwinter.

The tobacco hornworm is surely the sphinx species most often found, usually by any gardener of tomatoes in late summer. It is encountered often enough that gardeners can’t help but occasionally stumble upon nature’s biological control of the species, as well: an accumulation of small, white, ovate cocoons spun upright across the back and made by larvae of a small, parasitic braconid wasp. They fed on its inner organs before emerging to enter their pupal stages.

We use live tobacco hornworms educationally in late summer whenever opportunity knocks. We may show a field guide page so that audiences can get to know the species in other stages of the life cycle. When the ones we keep eventually pupate we can unearth them and show their mummy-like character to audiences. A prominent loop at the head end houses the future proboscis for sipping nectar. We will also prepare and keep a pinned specimen of the moth in order to show the beauty of the real thing: the forewings, camouflaged perfectly to match the bark of a tree on which it may rest after emerging from underground; and rows of brilliant yellow spots that line each side of the abdomen, which are only evident when its wings are spread in flight.

Carolina Sphinx Moths, typical of most, fly after sunset and sip nectar from flowers much in the mien of a hovering hummingbird, complete with blurred wings. Fertile females find far more than garden tomatoes on which to deposit eggs. They’ll oviposit on quite a variety of wild-growing members of the nightshade family. I’ve found hornworms on bittersweet nightshade - a common, alien, herbaceous vine that trails up bushes, fences and other upright structures. Common nightshade - an alien herbaceous, free-standing shrub that grows quite profusely in any disturbed soil - is often found growing right next to your tomato patch.



Note the tomato-like leaves of Common Nightshade.

We encourage adults and kids to not kill a hornworm when they find it on their tomatoes, but instead, remove it from the plant and relocate it on one of the wild nightshades. These plants are fairly easy to find in late summer. Better yet, try your hand at nurturing the hornworm in captivity by feeding it nightshade sprigs until it pupates and eventually emerges as an adult.

Watch for a few day-flying sphinx moths among the bee and butterfly activity on late summer blossoms of butterfly bush, joe-pye weed, bull thistle and others. The Hummingbird Moth is well-known and prized by gardeners, but the common, slightly smaller, closely-related Snowberry Clearwing is often mistaken for the former. Also active while the sun is up, the White-lined and Galium Sphinxes, two larger, closely related moths are also easily mistaken for one another.

As a teen naturalist, my friend, Goose, and I would not only spend hours searching for, and removing hornworms from neighborhood backyard vegetable gardens (The details of which are amusing fodder for another column.), we were discovering hornworms of other large, impressive species hidden in plain sight among the foliage of trees, shrubs and vines lining residential streets on the northwest side of Chicago: Great Ash Sphinx on ashes, Four-horned Sphinx on elms, Blinded Sphinx on spireas, and the starkly, clown-like-patterned Pandora Sphinx on grapes. We would know one was present by the smattering of its large, cylindrical, star-shaped droppings on the ground beneath the branches. We were amazed at how long it could take to discern it from its surroundings even with the evidence of its presence right there at our feet and on branches partially-denuded of leaves right in front of our noses.



The 5th-instar Pandora Sphinx lacks a terminal horn.

Studying hornworm field marks and associated food plants in field guides (*Caterpillars of Eastern North America* by David L. Wagner is my number one “go-to.”) pays dividends when you become mindful to scan foliage in the backyard or on the roadside. Hours-worth of scanning makes the eventual discovery of any camouflaged hornworm that much

sweeter. Watch now for hornworms as well as the larvae of many other large, impressive lepidoptera crawling across roads, sidewalks and walking/biking paths. These are larvae finished with the voracious eating portion of their life cycle that have now wandered from their food plant to eventually settle somewhere to spin or dig prior to pupation and overwintering.

Over years of being drawn by anticipation under lights at night and among natural greenery by day I’ve been fortunate to have experienced the adult and/or larval forms of most sphingid species native to the state. However, many of these have been merely singular experiences. Others (i.e., the hornworm of the Big Poplar Sphinx) still await my personal discovery... but not for lack of searching!

Awareness of hornworms represents yet another facet of familiarity gained within a life dedicated to acknowledging and understanding all natural diversity that surrounds us. This is the means by which any walk through a natural landscape can never be boring. This is the means by which a sense of value toward natural ecosystems is advanced. This is the means, if it were seriously addressed as a required course at all grade levels in our public schools, by which all curious children would grow into environmentally-conscious and environmentally-responsible adults. In fact, this is the very blueprint of the means by which we achieve Nature Discovery’s mission.



A wandering Galium Sphinx.

If you visit during our open hours this Sunday I’d be happy to help you identify both nightshades discussed above growing in our yard as well as larval food plants of any other lepidoptera. Just ask!

- Jim McGrath

Catch Us on Coffee Break September 6

Jim is scheduled to appear on Thursday, September 6 at 9:15am, discussing Michigan Snakes Day and showing one or two live snakes. The show airs weekdays from 9 to 10am on 89.7 FM. Listen live online at lcc.edu/radio/onair/ or watch it live (or later in the day at 6pm) online at lcc.edu/tv/watch. We’ll post a reminder on our Facebook fan page.



Come Celebrate our 10th Annual Michigan SNAKES Day



The Eastern Garter is one of only two species that can be found in every Michigan county.

Sunday, September 8 1 to 5pm \$5/person

Join us for **Michigan Snakes Day**. If you love snakes, this day is for you. If you loathe snakes, this day is *definitely* for you! Meet live specimens of 10 species of state-native snakes!

At 2pm, sit-in on the Powerpoint presentation, ***Michigan Snakes 101***. Beautiful photos combined with live specimens help audience members learn to identify all 17 species found here. Discussion will also cover specific behaviors, habitats, and preferred prey as well as factors leading to snake declines. Throughout the day visitors will have opportunities to handle many of these benign and gentle creatures and watch them eat a variety of prey including worms, fish, frogs and mice. Photo ops, galore!

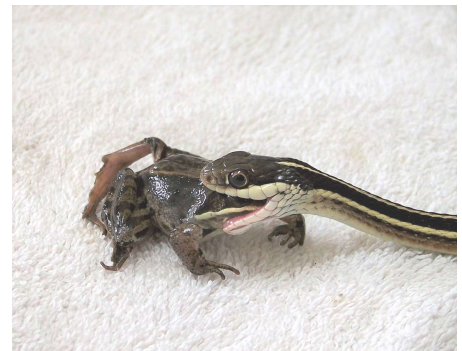


There's more! Visit Nature Discovery's entire interactive zoo that also includes Michigan-native turtles, frogs, salamanders and lizards. Knowledgeable staff is on hand to help visitors of all ages make the most of their visit.

Our gentle snakes actually seem to like being handled!

Around the State in September

- ❖ ***Saturday, September 7: 9am to 3pm. MI Reptiles & Amphibians Exhibit; Sportsmen for Youth Day, Muskegon Co. Fairgrounds.***
- ❖ ***Sunday, September 8: 12 to 4pm. MI Reptiles & Amphibians Exhibit; AARP Grandparents Day, Eastern H.S., Lansing.***
- ❖ ***Saturday, September 14: 10am to 3pm. MI Reptiles & Amphibians Exhibit; Salmon Festival, Grand Haven.***
- ❖ ***Sunday, September 15: 10am to 2pm. MI Snakes Interactive Exhibit; Eastern Ingham Farmers Market, Williamston.***



Hawk-Watching at Lake Erie Metropark

Tuesday, September 10

8:30am to 4:30pm

Mid-September is prime time for fall migration of many birds of prey, especially if conditions are right (sunny skies, northerly air flow). Lots of migrant songbirds, too. The western tip of Lake Erie is especially good because birds of prey prefer to avoid migrating directly over such a large expanse of water which offers no thermals to aid in keeping them airborne, so they go around it. At the metropark, we catch concentrated numbers (hundreds or thousands) squeezing around the corner! This guided trip includes round-trip transportation for an intimate group of five adults. Checklists are provided to keep personal tallies of the day's finds. Contact us in advance to reserve your spot! FEE: \$65. In case of inclement weather, the trip will be rescheduled on Tuesday, September 17.



Broad-winged Hawk. Photo © Greg Smith

Saturday Gifted/Talented Youth Classes thru LCC

Carol is teaching 4-week Saturday LCC Fall GATE classes (East Campus) beginning October 19.

Toy Science (9am-noon, Grades 2-3) Explore the science behind how toys work. Use this knowledge along with science and engineering skills to build your own toy to take home.

Advanced Fun with Physics (1-4pm, Grades 4-6) Learn how to build a simple motor, generate electricity from renewable sources, build a solar cooker and more in this hands on, project based class.

To register or for more information visit lcc.edu/seriousfun and click on Fall/Spring GATE.



Alternate-leaved Dogwood, a native understory tree, must be freed from invasive bittersweet vines.

Thank You!

To volunteers Elisabeth Baumann and Jace Beland for their help with invasives-clearing and animal maintenance.

To John McCoy and the David Meyer Family for their generous donations this summer.

Our big little nature center could use volunteer help from anyone, high school-aged to adult, through the fall and beyond. Animal care, invasives-clearing, gardening, and handyman jobs, to fit your availability. Contact us!

Burning the Amazon

Photos: The Burning Amazon Rainforest by Alan Taylor

https://www.theatlantic.com/photo/2019/08/photosburning-amazon-rainforest/596815/?utm_source=newsletter&utm_medium=email&utm_campaign=atlantic-daily-newsletter&utm_content=20190827&silverid-ref=MzI4Njc1NDk5NTIxS0

Science writer, Peter Brannen, argues that, as devastating as the intentional burning of the Amazon rainforest truly is, calling rainforests “the lungs of the planet” (I used the phrase in a recent issue) is actually a misrepresentation of geologic and present day oxygen cycles.

The Amazon is Not the Earth's Lungs

<https://www.theatlantic.com/science/archive/2019/08/amazon-fire-earth-has-plenty-oxygen/596923/>

-JM

The next generation would be justified in looking back at us and asking, “What were you thinking? Couldn't you hear what the scientists were saying? Couldn't you hear what Mother Nature was screaming at you?” -Al Gore



Less Beef = Less CO₂
Cowspiracy.com

[**Union of
Concerned Scientists**
Science for a healthy planet and safer world

350.org

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