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THIS ISSUE

The Worth in Fall Webworms

In discussing the difference, then taxonomic commonality, between toads and other frogs in last month's column I pointed out that the assignment of so many common names to wild life could save unnecessary confusion if the name actually reflected the creature's taxonomic position, i.e., a toad *is*, in fact, a type of frog. I then listed a number of common names assigned to birds that may generate confusion as to the avian family to which they actually belong.

The column prompted a response from Steve Mueller, resident manager and ecosystem ecologist at Ody Brook Nature Sanctuary near Cedar Springs, Michigan. "Ranger Steve," a lifelong lepidopterist, claims that he is often asked, "What is the difference between a moth and a butterfly?" He replies that they are all scale winged insects and that scientifically, there is no difference.

They may all be lepidopterans, each residing in a specific family based on common characteristics, but the two terms can generate quite polar responses in people. When I ask an audience how many of them like butterflies the raised hands are nearly unanimous. However, delivery of the same query about moths generates a mere smattering of hands.

Granted, most reasons for this are probably not due to perceptions as extreme as my grandmother's. As a boy I remember opening her cedar chest and being instantaneously engulfed by an overpowering chemical odor rising from beneath the stored, woolen, winter clothing. When I asked her about the smell she explained the purpose of moth balls, then added this unambiguously stark factoid with a grimace of disgust: *Moths eat clothes!*

In the human mind butterflies are associated with color and beauty. The term generates extended images of bright sunshine and fields of flowers. Thus, people are more accepting of the immature stage of a butterfly (i.e., Monarch), and will acknowledge, embrace, and encourage its requirement to devour certain plant life (i.e., milkweed) in order to progress to its pinnacle stage. Upon discovering a growing caterpillar of the Black Swallowtail on their dill, many gardeners of this herb will even gladly sacrifice several of their plants in order to aid its journey to adult form.

Moths? Well…, quite the opposite: Most are drably-colored, small and nondescript, active and largely unobservable in the darkness of night (or cedar chest), ergo, easy to dismiss – even to vilify if the larval stage is discovered in the act of (horrors!) consuming foliage.

Lepidopteran larvae across the families employ a variety of evolutionary strategies in an attempt to avoid being eaten. Physical adaptations include camouflage, cryptic patterning, mimicry, spines, bristles, irritating hairs, etc. Behavioral adaptations abound, as well, perhaps the most glaring of which is colonialism, whereby sibling larvae reap benefits of safety in numbers as they feed and grow. Since dozens of individuals hatch from a cluster of eggs laid by a single female then feed side by side, the eventual presence of entirely defoliated branches – however unsightly to us - is as it should be, ecologically, given the species in question is a native one. The Gypsy Moth is another story…

A pinned Mourning Cloak from our collection.

Moth species outnumber butterflies nearly ten to one, so the colonial activity and the resulting defoliation we may notice usually turns out to be the work of the larvae of a moth species. However, some butterflies engage in colonial activity in the larva stage, as well. The familiar and beloved Mourning Cloak Butterfly's caterpillars hatch from an egg cluster laid, perhaps, in the topmost foliage of a rural roadside willow thicket, then consume the slim leaves outwardly from there, often completely defoliating a sizeable swath of the thicket's crown before dispersing and metamorphosing to the chrysalis state. The smaller, less familiar (and increasingly less common, in my neighborhood) Milbert's Tortoise Shell deposits an egg cluster atop a stinging nettle. The larvae hatch then collectively munch their way down the stalk.

It is difficult to find anyone, though, who speaks in anything short of a negative tone when it comes to the work of the many more colonial moth larvae observed in trees and shrubs around us; to wit, the silken, webby structures that are currently prevalent on the ends of branches of a variety of trees in yards, parks and along roadsides. These are the result of teamwork employed by the colonial siblings of the Fall Webworm.

In contrast to the Eastern Tent Caterpillar - a springtime phenomenon – the Fall Webworm feeds in late summer and in relative safety on leaves that have been engulfed *within* a woven shroud. Tent caterpillars, on the other hand, spin a communal structure at the fork of a branch or crotch of a small tree - most often, a Wild Black Cherry - that serves as a haven for them to hide and rest. They periodically exit the tent en masse, usually at night, and crawl in single file along surrounding branches to feed, then return to it (I wrote about the ecological significance of this moth in the opening column of our June, 2016 newsletter. In case you missed it: http://naturediscovery.net/pdf/WILD%20TIMES%20June16.pdf).

While the webs may be aesthetically unattractive from the human perspective, the ecology of the Eastern Deciduous Forest Biome harbors no such bias. A tendency toward biological diversity – the myriad components interconnected like pieces of a complex jigsaw puzzle, pliable in form and function by ever-changing environmental conditions – is its very essence, independent of our judgement of beauty.

On a walk, bike-ride or drive now – especially in a more rural landscape – it doesn't take long to not only spot the webs but to find one that is low enough to observe more

closely. A few hairy larvae may be found traversing the outside of the messy web on a warm day, but many more are visible through the gauzy layers, moving or resting among the skeletonized remnants of what used to be green leaves, Over, under and between the many larvae, the length of the structure's interior is punctuated with smatterings and pockets of accumulated droppings, molted skins and other organic debris.

When you attempt to tear one open the act takes more effort than you may have expected. Indeed, the criss-cross strands from continuous silken deposition by many dozens of larvae results in a surprisingly strong external wall. Tear the webby bag open and frassy contents sprinkle to the ground.

Doing so recently to one such bag I was mildly surprised to see several dead yellowjackets inside. These and many other wasps hunt lepidoptera larvae then chew them up and carry them away, wet piece by piece, to feed to growing larvae of their own. I envision a foraging worker, desperately attempting to get at the squirming goldmine of protein within, squeezing through a tight opening to get at them, then, being unable to find its way back out of the labyrinth. However, no doubt, many more still manage to take their effective share of webworm larvae. Observe a low-hanging, active web on a sunny warm day for only a few minutes and a foraging yellowjacket is likely to show up. I also found the carcass of a brown, predatory stink bug, the Spined Soldier Bug, also lured to its demise by the "all-you-can-sip caterpillar buffet."

A yellowjacket tries to penetrate the web.

These acts of predation are only the tip of the "web-berg." There are over fifty known predators and thirty-six parasites of the Fall Webworm (https://www.canr.msu.edu/news/return_of_the_fall_webworm_and_why_you_may_want_to_do_nothing_about_them). The casual observer only notices the bigger, more common ones.

The Fall Webworm larva exhibits two races, red-headed and a black-headed varieties. The red-headed seems to be most prevalent in Lower Michigan.

Generally, hairs and bristles are an effective defense against most birds, but Michigan's two cuckoos, the Black-billed and Yellow-billed, are physiologically equipped to digest them with no ill effects and are thus considered hairy caterpillar specialists. They are adept at tearing webs open to get at the contents. In one of countless examples of ecological timing I suspect it is far from coincidence that Eastern Tent Caterpillar larval availability is at its peak in mid-to-late May providing abundant and easily accessible energy to cuckoos as they migrate up from the tropics; and that the Fall Webworm is at its larval acme as cuckoos and their offspring fly southward in late August and early September.

While occupied, the webworm haunts appear gauzy-white on the ends of tree branches because fresh silk is being deposited every day by the occupants. However, as September progresses larvae complete the feeding stage of their lives, leave the web one by one, and crawl to the ground to spin cocoons among natural cover around the base of the tree. Once vacated, the aging silk becomes dirty and especially unsightly. With each successive bout of precipitation and high wind throughout fall and winter, the gray masses slowly deteriorate and fall to the ground. By spring, new leaf buds begin to open on the very same branch space occupied by the webworms the summer before. This species, like the Eastern Tent Caterpillar,

From St. Martin's Press Golden Guide to Butterflies & Moths.

demonstrates no detrimental effects to the native tree on which it feeds (However, the same can't necessarily be said of that little pampered, ornamental fruit tree you bought at the garden center if a large webworm tent happens to engulf it.).

The Fall Webworm larva may be inedible to most birds, but the tide turns when the small, snow-white moth emerges in early summer. Although the moth is nocturnal, a plethora of keen-eyed, protein-hungry songbirds locate day-resting individuals to promptly devour or to carry to their young. When the moths become active at dusk Whip-poor-wills and bats take them on the wing. Indeed, the abundance and timing of these moths' emergences plays a significant role in the reproductive success of both, bird and bat.

Ultimately, there are a relative few female Fall Webworm moths fit and fortunate enough to have survived the gantlet of pathogens, parasites and predators through all stages of their growth. They alight under the cover of night to deposit egg masses on tender leaves located on the outermost branches of native trees where ever they grow around us, and the cycle begins anew…

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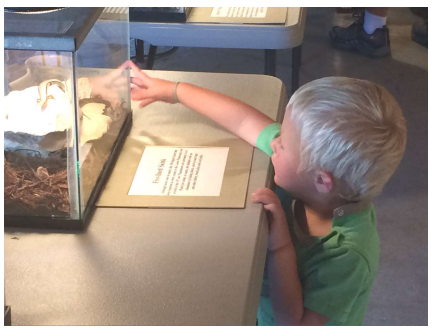
It is easy to become more personally acquainted with the Fall Webworm - and with minimal effort. Find a tree with a low-hanging web, tear it open and remove several larvae. Snip a small, leafy sprig from the same tree and place it with the caterpillars in a medium-sized, air-tight jar. Then, watch them eat, grow, and deposit silk. Empty the frass from the jar and add more leaves as necessary. When the caterpillars appear to no longer be eating and are crawling actively about the jar they are probably ready to spin cocoons. Insert a layer of dead leaves at the bottom and the caterpillars will eventually spin cocoons within this substrate.

Parents, grandparents and teachers: An easy and fun project to share now with kids/students at any grade level. However, be aware when handling webs, larvae or cocoons that sloughed hairs could potentially embed in the skin and cause irritation. It is a good practice to wash hands – especially finger tips – thoroughly after handling. I've found that even wiping my fingers on a dry rag, towel or even on my jeans seems to suffice in dislodging them.

- Jim McGrath

Sportsmen for Youth Day, September 11

Our full interactive exhibit of over 40 species of Michigan-native reptiles & amphibians is just one of dozens of family-friendly stations and activities celebrating the great outdoors at Sportsmen for Youth's annual "Youth Day" at Muskegon County Fairground. Gates open at 9am, Saturday, September 11.
Admission is free. For more details visit their Facebook events page: *https://www.facebook.com/events/898527944208103*



Nature Discovery

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Visit Our Nature Center by Appointment

Suggested Minimum Donation:

$5/person/hour

The sky's the limit for natural science learning here – with a Michigan twist! Individual adults, couples, individual families and small groups are welcome to schedule a safe, intimate outdoor or indoor visit to what we call "The Biggest Little Nature Center in Michigan," and "Home to the Largest Zoo of Michigan-native Reptiles and Amphibians." The unique, hands-on experiences offered here can be found nowhere else! We will bring snakes, turtles, frogs and salamanders out of tanks to interact with adults or students of any age or grade-level. Visitors are asked to wear a mask during all indoor time.

Identify and feed "the grand slam of Michigan turtles," all ten species native to our state, as they swim in pools at your feet. Meet, pet and feed "Milberta", our always hungry Red-footed tortoise.

Handle Michigan's three species of garter snakes while learning how to tell them apart, then watch them gobble up worms and live frogs. Handle a gentle 6-foot Black Rat Snake – the largest in the state!

Many more snakes, turtles, frogs and salamanders to identify and feed. Take a guided walk on our trails to identify birds, insects, trees, vines, and invasive plants.

Ask about…

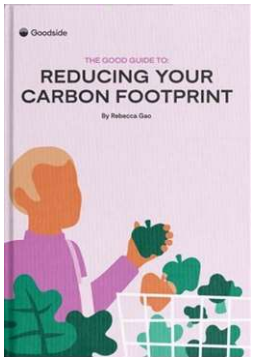
- **… arranging a guided interpretive experience at a local natural area of your or our choosing for your small group of students, adults or families.**
- **… weekly or biweekly drop-off visits with experiential activities for your elementary thru high school student(s).**
- **… volunteer opportunities for high school students and adults.**

Contact us for more information or to make an appointment.

Wake-up Call: Stop Hitting the Snooze Button

Like spoiled, self-absorbed children, we've been told to pick up our accumulating toys for over 40 years now and have stubbornly refused. Now our house is on the brink of unlivable. A glimpse at current events bears it out. The untended chickens are only just beginning to come home to roost.

On the heels of the IPCC's "it's now or never" red alert, I particularly like the scolding tone of this column from *The Guardian*.
https://www.theguardian.com/environment/2021/aug/09/ipcc-reports-verdict-on-climate-crimes-of-humanity-guilty-as-hell



"Breaking Boundaries: The Science of Our Planet" is a Netflix documentary released earlier this year. Based on the book by Johan Rockstrom and Owen Gaffney, this should be assigned viewing (or reading) now in every public high school. If you've got a subscription to Netflix, add it to your viewing queue, and/or get the book from your library.
https://www.youtube.com/watch?v=WJkrL6lLZrg

Unsure of the most effective ways to shrink your carbon footprint? Here's a free a downloadable guide to steer you through every aspect of your lifestyle. Now all you need is the will. https://www.joingoodside.com/guides/reduce-carbon-emissions?gclid=Cj0KCQjw-NaJBhDsARIsAAja6dMbV5hsbcdKCclctFC3yqOknhZnbw-gJYTP4Fe51C8m_5Vqu67SsUgaAkbREALw_wcB

-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***

I don't want you to be hopeful. I want you to panic. I want you to feel the fear I feel every day. I want you to act. I want you to act like you would in a crisis. I want you to act like your house is on fire, because it is. ***- Greta Thunberg***

Scientific findings should never be distorted or influenced by political considerations.
- from President Biden's Memorandum on Restoring Trust in Government through Scientific Integrity and Evidence-Based Policymaking.

Less Beef = Less CO_2
Cowspiracy.com

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