



*On cue, while composing this column on a trip to Terre Haute, IN, we picked up the Tribune Star to find this on the front feature page. We read the whole article and found not a single 'N'-related activity in the camp's description.*

**THIS ISSUE**

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***There is no N  
in STEM***

I initially became familiar with the educational acronym, STEM, in the early 2000s. Charter schools touted their specialty in a curriculum infused with science, technology, engineering and math. More and more schools at all levels picked up on the buzz. It represents education for the times. More recently, it seems, the acronym expanded to STEAM. Was it an afterthought, or did teachers specializing in the various arts band together and lobby for inclusion of their discipline in the acronym? Maybe parents of children who were artistically inclined liked the STEM format but felt study of the arts was just as important to a well-rounded education as the rest.

With the formation of any acronym it is always preferable for it to spell a real word – the easier to remember. If you're lucky maybe the acronym spells a word that has some direct or indirect connection to the sum of the parts. MADD and SADD speak for mothers who are mad and students who are sad about drunk driving. People with Seasonal Affective Disorder really are sad through the dead of winter.

Yes, schools at *all* levels are dedicated to the STEAM-based experience for their pupils, and apparently it is never too early. Last Tuesday I gave a wildlife presentation to a mostly-preschool audience at a Tutor Time child care center in Sterling Heights. As I walked down one corridor my eye landed on an impressive and elaborate collage. Large letters spelling STEAM jutted in bas-relief from the wall. Around each individual letter swirled a couple dozen images of things associated with what it signified, i.e., around 'S' for science danced images of microscopes, pulleys, gears, periodic elements, flasks, magnets, atoms, planets, etc. Images of computers, signal towers, and more orbited around 'T' followed by a similarly appropriate soup of discipline-associated images around 'E', 'A', and 'M'.

I drew closer to study the array of little pictures around the 'S'. No image of a tree or a leaf was among them. A butterfly? No. Any other insect? (After all, six-legged invertebrates make up the vast majority of animal life on our planet.) None. Vertebrates? A deer, a bird, a frog or a snake? Nada. How about at least a farm animal? Nary a pig, pony or pullet. A more cursory look across the other letters revealed not a single image that would indicate the least academic acknowledgement of the diverse and abundant interacting organisms that make Planet Earth so unique. The omission connotes an unspoken message,

mutely delivered to students through every grade level of education. *Natural science education is not important.*

Of course many schools that offer the STEAM choices depicted in the mural would argue that they do cover some aspects of plant and animal study. However, coverage of this discipline is so rudimentary it most certainly should not register acronymic recognition.

In order to keep this column to three pages (because so many Michigan-specific examples exist that it could go on indefinitely) here is a single example of what we view as rudimentary natural science: a second-grader may be presented a unit on “life cycles,” and learn about metamorphosis in the butterfly. The species of butterfly doesn’t seem to matter, unless of course, it is a monarch. A kindergarten teacher may purchase a kit to raise painted lady butterflies in the classroom allowing young students opportunity to experience the process. Yet, the children learn nothing of this species’ ecological niche in the world; nowhere does information exist in the content for the teacher about the sole food plant in the environment (like milkweed for a monarch) on which the painted lady larva feeds – thistle. Students will never learn from this lesson how their activities around the yard or neighborhood affect the ability of a wild painted lady not just to survive, but to successfully produce another generation.



*A bull thistle is not only a food plant of the painted lady larva, its large magenta blooms are magnets to all varieties of nectaring lepidopterans. Finches and other birds devour the contents of seed heads in the fall and winter.*

Nature Discovery has the knowledge and means to enrich a mere butterfly kit into a series of highly-experiential lessons and walking field trips that extends for weeks or even months - beyond the classroom, into the students’ homes, and even into the summer. The ultimate outcome will not only secure the connection of the painted lady to thistle through the rest of the students’ lives, but even more importantly, instill in them a more *holistic* consideration for the plant as it exists in the environment; this, opposed to the default, starkly-negative impression of the plant – the only consideration and judgement of its worth based on how its spiny leaves feel on human skin.

Kids have an innate affinity to other life forms around them, and they love learning about them. We can attest to this through decades of enthusiastic feedback from parents, teachers and the students themselves. At Montessori Children’s House in Lansing and Stepping Stones Montessori in East Lansing, children from grades K through 6 receive weekly lessons from us that traverse the identification, behavior, life history, and ecology of a list of wild organisms that is impressively lengthy, as well as human influences that affect their survival. Over the past eight years especially-young children at Okemos Nursery School receive the same information in an age-appropriate mien. As purposeful exposure, species by species, accumulates through the years of a child’s “wild” education, the pieces knit to form a level of understanding of the complex, dynamic “big picture” that a student deprived of such an education would be hard-pressed to achieve.

Naturally-educated children grow into adults who are keenly aware of their natural surroundings, recognize and value natural diversity, both, where they live and around the world, and make decisions in their lives with due consideration to the impact they are making on the components and sustainability of a given ecosystem or natural community. By extension, the naturally-educated readily acknowledge that

organisms within every ecosystem in every biome require clean air and water to sustain themselves, and that this *includes* the one that has so effectively separated itself from the rest along an industrial, agricultural and technological tangent.

Conversely, naturally-*uneducated* children are far more likely to grow into adults who view their natural surroundings through fogged lenses. In their minds' eyes trees are *just trees* (not silver maple, pignut hickory, red pine or white spruce), weeds are *just weeds* (not bottlebrush grass, ground-nut, sheep sorrel or horse-nettle), insects are *just bugs* (not asparagus beetle, phantom crane fly, ambush bug, or lacewing), birds are *just birds* (not field sparrow, common yellowthroat, Northern flicker, or Eastern kingbird). With little ability to recognize natural diversity or to understand ecological dynamics these adults are more likely to view some aspect of the natural world from no perspective other than how its existence in this place and time affects them and their personal goals: a naturally-diverse woodlot is a mere obstacle in the way of their imagined dream home, or perhaps an easy means for personal profit if it is clear-cut and the lumber sold.



*The Eastern Kingbird, a migrant flycatcher, is easy to spot along rural roadsides now. Note the white tail tip. Photo © Steve Sage.*

When all is said and done, by moving N - natural science education - out of the peripheral/optional educational realm where it currently sits and into mainstream education in equal standing with S, T, E, A and M, our increasingly crowded, increasingly hot world might still have a fighting chance. Now, to incorporate it into an appropriate acronym... I put my daily, Jumble-solving skills to work and came up with STAMEN. Pollinating young minds with knowledge, perhaps?

Although exceptions are out there, today most of us who are interested in natural science education to the degree outlined above must seek it in the optional/peripheral realm: nature center programs like those offered by Nature Discovery, outdoor-related events that feature natural science professionals and organizations, or membership in environmental conservation organizations, like Michigan Nature Conservancy, Michigan Nature Association, Michigan Audubon Society, Sierra Club Mackinac Chapter, Mid-Michigan Land Conservancy, Capital Area Audubon, and Wild Ones Red Cedar Chapter.

Let's create a movement to give voice to the need for mainstreaming natural science education, then demand its rightful inclusion in our public or private school curricula. Starting this coming school year would not be soon enough for our kids, the environment and the planet. #TreeToo.

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Nature Discovery's *Raising Giant Silk Moths* project is the perfect hobby for children and/or adults, to keep a daily connection to the natural world throughout the summer. It helps wild populations of these impressive but declining species, too. Attend this Sunday's open hours here (details on the next page) and purchase two small caterpillars of your species of choice with complete care instructions or contact us to arrange to pick some up on another day.

-Jim McGrath

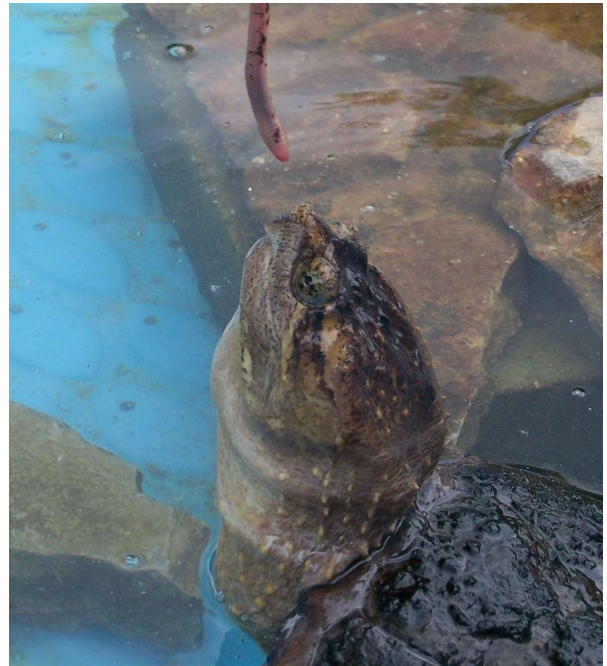
### ***A Few Openings Remain in LCC Summer Youth Classes, July 16-19***

Carol is teaching *The Mystery of Missing Bear* - 9am to 12pm for grades 2-3, and *STEAM Spinning Gadgets!* - 1-4pm for grades 5-8. Visit [lcc.edu/seriousfun](http://lcc.edu/seriousfun) or call 517-483-1415 to enroll.

# Feeding Frenzy

**Sunday, July 8**

**Doors open from 1 to 5pm.  
Admission \$5/person.**

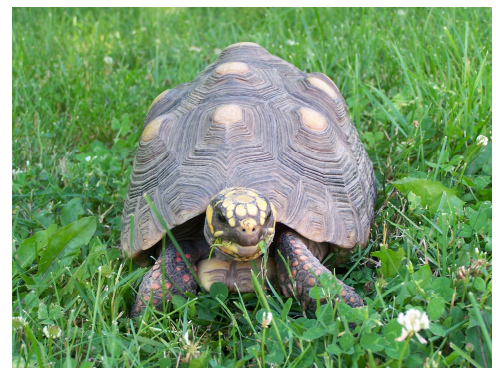


Who doesn't love feeding time at the zoo? That's why we've set up a whole afternoon of nothing but... With over 100 hungry Michigan-native reptiles and amphibians of 40 species, plus an always-hungry red-footed tortoise, plus an array of butterfly and moth caterpillars, there will be a LOT of feeding. Throughout the day, knowledgeable staff is on hand to mingle with visitors, giving everyone up-close opportunities to watch snakes, turtles, frogs, salamanders and lizards eat a wide variety of foods – fruits and vegetables plus many kinds of small animals, including worms, slugs, insects galore, fish, frogs, toads and even mice.



- Hold specimens of all sizes of the Black Rat Snake, Michigan's largest. Then, watch some of them eat frozen, thawed mice.
- Watch caterpillars of various butterflies and moths devour leaves of a variety of native trees.
- Staff is always on hand to help visitors of all ages make the most of their visit.

- We'll provide nets for you to catch your own insects around the yard and on the trails to feed to frogs of all 13 species found in the state. Tree frogs will take one right out of your fingers!
- Feed food sticks, worms and fish to 20 aquatic turtles in small pools on the patio. Small ones will take food right out of your fingers!
- Watch our large snapping turtle take a stroll on the lawn, then watch it chase minnows in a pool.
- Feed berries to our box turtle and tortoise.
- Learn to identify all 3 species of Michigan garter snakes then watch them eat worms, fish and frogs.



*Kids love to feed Milberta, our always-hungry red-footed tortoise.*



## Catch Us on Coffee Break

**Wednesday, July 20**

Jim is scheduled to appear on Friday, July 20 at 9:45am, discussing Michigan wildlife topics. The show airs weekdays from 9 to 10am on 89.7 FM. Listen live online at [lcc.edu/radio/onair/](http://lcc.edu/radio/onair/) or watch it live (or later in the day at 6pm) online at [lcc.edu/tv/watch](http://lcc.edu/tv/watch). We'll post a reminder on our Facebook fan page.

## There is Still Time to Raise

## Giant Silk Moths this Summer

*Cecropia, Polyphemus and Promethea larvae will be available for two more weeks.*

*This is like raising Monarchs – on steroids!*

*Four larvae with complete care instructions for \$12.*



## Thank you to Eric Petrie...

*For his very generous donation to Nature Discovery. Eric says he is especially impressed with our giant silk moth presentations and the experiential opportunities we create with them. He's been raising them for years now.*

## Around the State in July



- ❖ Friday, July 6: 7:30pm. *Birding by Ear Presentation; Hartwick Pines SP, Grayling.*
- ❖ Saturday, July 7: 1:30pm. *Michigan Snakes Presentation; Hartwick Pines SP, Grayling.*
- ❖ Monday, July 9: 1 & 2:30pm. *Field Guides Come Alive Presentation; Cromaine Public Library, Hartland.*
- ❖ Saturday, July 14: 10:30am. *MI Reptiles & Amphibians Presentation; Huron County Nature Center.*
- ❖ Sunday, July 15: 10am-2pm. *MI Turtle Exhibit; Eastern Ingham Farmers Market, Williamston.*
- ❖ Saturday, July 28: 2-5pm & 7pm. *Michigan Reptiles & Amphibians Exhibit & Presentation; Ludington SP.*

*Katie Gillies coaxes this reluctant boy to pet a fox snake at Detroit River Days in June. The DNR contracts ND to set up our exhibit at the event each year.*

# ***Giving Up Plastic Straws? Great! Now, What About the Rest of that Plastic Waste Mountain?***

Kudos to *Lansing State Journal's* Judy Putnam for writing a recent column about the growing public awareness regarding plastic disposable straws, and to the *LSJ* for featuring The Peanut Barrel's efforts to transition to waste-free.

<https://www.lansingstatejournal.com/story/opinion/columnists/judy-putnam/2018/07/02/lansing-mom-reduces-plastic-pollution-stainless-steel-straws/735432002/>

<https://www.lansingstatejournal.com/story/news/2018/07/02/peanut-barrel-joins-growing-group-restaurants-ditching-straws-east-lansing-plastic-compost-recycling/701330002/>

Now, about the other 99.9% of our plastic waste... In public places we are astounded at how thoughtlessly people around us throw plastic away. At restaurants, stadiums, bowling alleys, hotel breakfast bars, and gas stations everywhere receptacles fill with recyclable plastic almost as fast as employees can empty them. Yet, a small bit of initial effort can turn into a routine that becomes as automatic as the current, common toss toward the trash can.

For instance if we know we are at an establishment that serves beverages in plastic or foam cups we specifically ask for a glass instead. Most are able to comply but will only do so if we request it. At hotels which offer breakfast bars (throwaway plastic and foam meccas) Carol and I purposefully pack a couple of plates, bowls and some silverware to bring down, use, then take back to the room to wash and stow. Over years of doing this we've *never* seen another hotel patron do this – evidence of how conditioned society has become to a lifestyle of single-use-and-toss. No wonder our Great Lakes and oceans are turning into vast garbage dumps.

We urge you to take personal responsibility for your plastic waste. You'll be pleasantly surprised at how quickly it becomes painless routine.

-JM



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