

THIS ISSUE

- Make an Appointment, Visit our Center*
- Volunteer to Save Trees*
- Sedentary, Non-guided Outside Visits*
- AFFEW: MI Reptiles/Amphibians, Apr 6*
- MSU Sci Fest: Frogging by Ear, Apr 10*
- Spring Products for Sale*
- Thank You, Donors!*
- Sustainability the Indigenous Way*



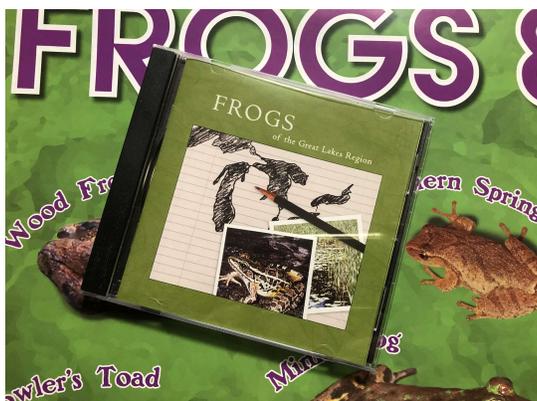
We, the Peepers

These tiny frogs rely on much more than the vernal ponds for their long term survival.

Going for the play on words, this column’s title is one I had considered for a particular environmental segment on Nature Discovery’s CD, *Frogs of the Great Lakes Region* – shrill spring peeper vocalizations recorded right here on one of the ponds out back. Ultimately, however, I opted for the equally punny but somewhat more tongue-in-cheek, *Peeper Madness*... Madness, indeed!

Select this particular segment on the CD, then turn up the volume. More..., keep going..., oh, just go ahead and max it out. As you find yourself reflexively covering your ears to muffle the din (I’m sure any audiologist would agree that this is *very* bad for your hearing.) keep this in mind. The maximum volume on your speaker is still not as loud as it would actually be if you were standing at the edge of an ecologically-healthy vernal pond, say, around April first on a 60-degree evening shortly after dusk.

Over decades of listening I will never stop marveling over the realization that such a powerful emission is manifested by a being that can sit comfortably on a quarter. Add another hundred or so vocalizing males, and this is what you get.



It is appropriate that a healthy vernal wetland would herald its awakening so blaringly after the early spring thaw. After all, this is known to be the most biologically abundant and diverse natural community in temperate regions of the planet, like here.

The Northern Spring Peeper is the most well-known, and yes, ear-splitting of the vernal pond’s varied voices. Like many other tree frog species, it is highly nocturnal, especially in its breeding habits. Thus, where relatively few males may vocalize on and off on a seasonably warm afternoon (often

accompanied by the very different vocalizations of their early spring cohorts, chorus and wood frogs) as daylight wanes the number of peepers calling and the frequency with which they do, increases markedly.



During a presentation, when I discuss this tiny frog's singular vocal capacity I will allow audience members to pass a live peeper around while sealed safely in a jar. Then, I play the *Peeper Madness* segment and turn it to maximum volume. I yell to the audience that when they hear such a din coming from a dark rural roadside in early spring to think of the peepers screaming two messages, loud and clear. The first is this: *We are spring peepers and we are making more of ourselves!* The second is about one quality of the water imperative to their reproductive success: *There are no fish here! There are no fish in this pond!*

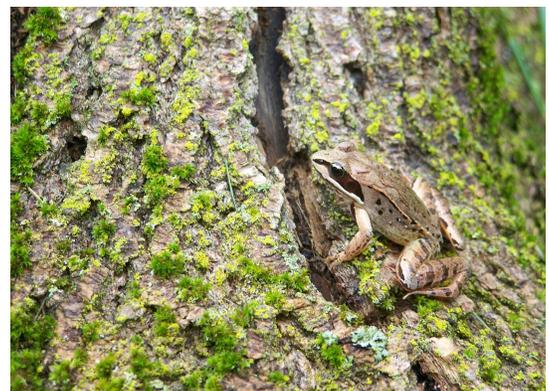
If there were fish - bluegills perhaps - the peepers definitely wouldn't be there. After all, these tiny frogs are no bigger than a cricket, and any medium-sized bluegill will treat a peeper like it treats a cricket. Should a pair of peepers locked in egg-laying amplexus avoid being eaten long enough to actually deposit some, fish of any size would soon locate and suck the eggs up before

they ever had a chance to hatch. Thus, emerges a stark reality of which every citizen should be aware. Fishing ponds are terrible amphibian breeding sites, especially so for the earliest of the breeders - peepers, chorus frogs and wood frogs, as well as a few species of mole salamanders.

Vernal ponds are fish-free as a rule because they exist as mere temporary wetlands. Natural depressions in the rural landscape fill with water that runs downhill from higher ground after significant precipitation events and from snow melt. However, in most years evaporation through the warm summer months exceeds input from rainfall. By autumn if the pond has not completely dried, the water level has receded enough that any gilled inhabitants residing within are doomed to perish over the freezing months of winter.

Some may ask: *What about tadpoles that still remain in the pond as it dries down at summer's end? Are they on track to perish as well?* They too have gills, so yes. However, of fourteen frog species found throughout the state, only three have a tadpole stage that potentially overwinters under the ice, the most ubiquitous of which is the large Green Frog. All the rest deposit eggs in spring and early summer, the tadpoles hatch then race through their fishy larval stage to metamorphose into subadult frog form before summer's end. For those occupying a vernal pond instead of a deeper, permanent body, this tadpole race is especially critical as the water level recedes. Upon metamorphosis and through the summer, froglets of each species leave the shrinking water to disperse through the surrounding natural landscape.

Contrary to what we are taught about frogs in our early years, most species here *do not* overwinter as adults in the mud at the pond's bottom. After their spring breeding cycle is complete adult peepers, chorus frogs, wood frogs, toads, et al., leave the pond and return to the surrounding natural habitats from which they came. Eventually accompanied by the hungry, growing metamorphs from the spring's breeding effort, these frogs will spend the rest of the summer and early autumn foraging for small invertebrate sustenance within the naturally-occurring woodlands, shrublands and meadowlands adjacent to the breeding pond. All these species respond to cold weather by instinctively burrowing into the soil, under



A subadult wood frog forages for insect prey.

leaf litter, under logs, and among the roots of grasses and other herbaceous plants where they will remain over the winter. They will not stir until temperatures rise and the ground begins to thaw around late March, then return to the pond of their origin to renew their musical breeding cycle.

A healthy vernal wetland is so overflowing in biological richness its myriad contents regularly and often cyclically spill, drift and disperse beyond its vegetated borders into the surrounding spaces, in many cases amazingly far from the point of origin. For instance,

- Dry, fluffy cattail seeds are wafted far and wide on a breezy day, each to eventually alight often miles from the stalk on which it matured;
- Sticky, double-pronged beggar-tick seeds lodge into the hair on the flank of a deer as it forages among the dense overgrowth that encroaches on the receding vernal waters of late summer, then, eventually dislodge and fall to the ground a half mile distant when the deer scratches the irritated spot with its hoof;
- A synchronized hatch of winged Phantom Midges rises like a fog from the water's surface and disperses on the air currents to feed swallows by day and bats by night as they zigzag through air spaces far downwind of the vernal wetland;
- Juvenile Red-winged Blackbirds follow their mother out of their natal vernal wetland in early August to feed among huge flocks in distant fields before eventually migrating hundreds of miles southward;
- And, too, the many newly-metamorphosed amphibians, their larval growth having been powered through the spring by the pond's productivity, disperse into the varied natural communities that immediately surround the breeding pond.



A Phantom Midge mating cloud.

This final example stands apart from the others on one critical count. The existence of the amphibian species that breed in the vernal pond is not only tied to the health of the nursery wetland itself, but just as critically to the quality of the natural areas immediately surrounding or adjacent to the wetland. In fact, the simplistic notion that “the frog lives in the pond,” a perception held broadly by a large swath of decision-making adults in society, is more wrong than right for the vast majority of frog and salamander species



Example: Many decades ago this once productive and presumably loud vernal wetland at the corner of Grand River and Park Lake in East Lansing was hemmed in and ecologically doomed from surrounding development.

found in our state. In reality, they actually occupy the pond to breed over a mere handful of weeks through the year. Therefore, the dual requirement of healthy breeding and foraging habitat *in proximity to one another* is imperative to the survival of most amphibians. Land use decisions that fail to take this into account are destined to drive local amphibian populations to steep decline, if not, extinction.

Over seventy-five percent of Michigan's vernal wetlands have already been destroyed or ecologically degraded. There is little chance of bringing most of them back. Meanwhile, well-monied developers lobby for loopholes and variances that allow them to chip away at what's left in the name of profit. For most readers this probably goes without saying, but for visualization's sake...

Asphalt parking lots, subdivisions and condos, strip malls, and the like are hostile foraging and overwintering habitat for all vernal pond-breeding amphibians. Even if local ordinance requires that the wetland itself be untouched during the adjacent development's construction, the wetland's ecological integrity diminishes greatly due to siltation, lawn chemicals, road salt and other associated contaminants



Our back vernal pond in late April. Note the subclimax woodland in the background and overgrown grasses and herbaceous growth in the foreground. More of the same outside the frame to the left and right helps keep its ecological richness intact.

which inevitably trickle to the lowest point. Before long, the once vibrant vernal wetland has been reduced to a relatively lifeless retention pond that regularly collects chemically-laden runoff from the surrounding development during periods of precipitation or snow melt.

Do you value the vernal ponds on your rural property or in your rural neighborhood that shout their ecological prowess via peepers and other frog voices? Pay close attention to not just the wetlands themselves, but to the presence of the natural communities abutting them, for these contribute indispensably to the pond's vociferous vivacity. It turns out that the shrill peepers I mentioned earlier, as discussed in the presentations, are in fact, sending us a *third* message loud and clear: *There is still plenty of intact natural habitat around this vernal pond!*

Talk with neighbors and even township board members about the ecological necessity of vernal wetland/peripheral habitat complexes. As the fate of these habitat complexes go, so goes the fate not just of the amphibians, but of the quality of *all* life inherent within the sacred pinnacles of biodiversity that are the vernal ponds.

For more on frogs, vernal ponds and their tenuous future, here are titles and links to past newsletter issues with opening columns on the topics:

Vernal Ponds and Coal Mines

<http://naturediscovery.net/pdf/WILD%20TIMES%20Apr12.pdf>

Hey, They're Indicating!

<http://naturediscovery.net/pdf/WILD%20TIMES%20Jan16.pdf>

We Bought Our House for the Frogs

<http://naturediscovery.net/pdf/WILD%20TIMES%20Mar17.pdf>

The New Normal for Vernal Ponds and Amphibians?

<http://naturediscovery.net/pdf/WILD%20TIMES%20Nov18.pdf>

Acknowledge the Chorus Frog

<http://naturediscovery.net/pdf/WILD%20TIMES%20Apr19.pdf>



In early August, a hundred yards from the vernal pond, nestled within an expanse of overgrowth, a newly-metamorphosed gray tree frog perches on a leaflet of ground-ivy which, in turn, has twisted up a rigid nettle stalk.

Would you like a unique and intimate experience with blooming spring life on a vernal pond? Make an appointment now, daytime or after dark, for an experience you'll never forget. Details on the pages ahead.

-Jim McGrath



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Personal Michigan Nature/Wildlife Education: **SPRING Edition**

Being out in the fresh air surrounded by woodlands, wetlands, greening landscapes and singing birds and frogs is the perfect antidote to cabin fever and the ‘COVID Blues.’ There is no better season to be outside, and Nature Discovery is here to enhance your experience.

SMALL GROUPS OUTDOORS

To comply with physical distancing directives, we will attempt to lead in an **outdoor** setting, outside the doors of our private nature center north of Williamston as much as possible. Those entering the center are required to wear a mask. We ask that small groups be limited to individuals who share the same household, by appointment, i.e., individual or paired adults, or individual families who reside in the same household. Why is this especially good for you? In any academic pursuit every instructor and every learner knows that the lower the student-to-teacher ratio the more effectively the content is assimilated.



BY APPOINTMENT

When? Virtually any day, any time. Specific “hours of operation” don’t exist because we live here! In addition to scheduling an appointment based on when it is convenient for you, the area of interest you choose to pursue for your guided experience may better be scheduled during morning, afternoon or evening hours.

Just contact us by phone or email to schedule a time. Same-day appointments are even okay. Just give a call to confirm our availability and we could meet by this afternoon! (See PRICING and MAKE AN APPOINTMENT headings below.)



Photo by Greg Smith

TOPICS & ACTIVITIES

The following list is far from complete but may inspire ideas for other subjects, venues and activities. Remember, we have decades-worth of knowledge about the local natural world at your disposal, not to mention decades of experience in sharing it with students of all ages!

➤ VERNAL POND ENCOUNTERS

Two vernal ponds exist on the back half of our private home-based nature center's six acres. In fact, no kidding, we bought this house in 1989 because of the presence of these ponds. Did you know that the vernal pond is considered the most biologically rich natural community in temperate regions of the world? It's a naturalist's playground! We'll show you why, firsthand.

- **Breeding frogs!** Currently, chorus frogs, spring peepers and wood frogs are calling abundantly and sometimes deafeningly on our ponds. Leopard frogs, toads, tree frogs and green frogs will hit the ponds in the coming weeks. Take a guided walk around the edges while identifying each species "by ear" and learning more from us about their life cycles through the year, other aspects of their ecology, and discussion of the human-induced factors that are driving their declines. Take it a step further if you'd like and arrange with us to wade in among the action. Photo ops, galore!



- **Vernal Pond Wade: Day or Night!** Hey, there is a lot more going on here than the breeding frogs. A healthy vernal pond teems with a dizzying abundance and diversity of invertebrate life. Wade in with a small bucket and a net then start scooping. Specimens can be dumped into a pan for identification. You can even take a bucketful with you to inspect more closely at home. A **wade after dark** is especially enchanting. Bring a strong-beamed flashlight or headlamp to witness how the invertebrate life kicks into another gear under the cover of darkness. You might need ear protection. The awe-inspiring volume of the **spring peepers will blow you away**. We've taken our best photos of breeding frogs by spotlight after dark. Give it a try.



Catch tadpoles! There is a glut of huge green frog tadpoles on our vernal ponds now. We'll explain why this is actually a *bad thing*. Check our submerged minnow trap (attached to a rope that runs to the edge) in which we catch dozens of tadpoles a day, or catch them with a net while you wade. Kids and families are welcome to **take some home**. Watch us feed some to our garter snakes outside, weather-permitting!



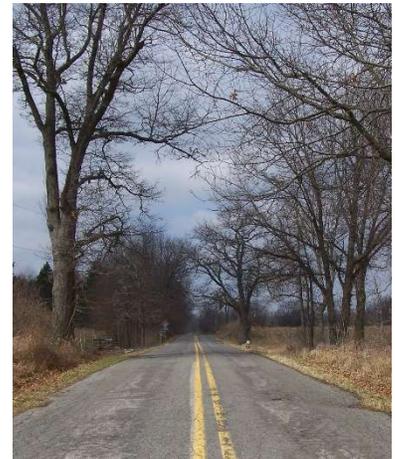
➤ **BIRDS BY SIGHT & BY SOUND**

Do you hear it? The volume, diversity and intensity of singing birds is growing by the day as individuals claim nesting territories and migrants return. Songbirds that are here are singing loudly and frequently as they secure nesting territories. Guided walks on our property (or at another location suggested by you or us) aid participants in **identifying every species** by sight and “by ear.” A **Michigan Birds checklist** is given to each participating adult or family to keep track of species encountered. Bring binoculars if you have a pair.



➤ **THE “WALKABOUT”**

Here’s a combination of **exercise, fresh air and natural instruction**. Join Jim on a walk around our country block, a 3.4-mile trek that starts and ends on our driveway. At an easy pace combined with brief stops the entire circuit can be done in less than 90 minutes. We’ll identify birds by sight and sound, plus trees, shrubs, other plant life and wildlife as we pass a diversity of **fields, woodlots, wetlands** and roadside growth. Jim will also point out roadside insect life that many casual observers would miss. Would you like to get to know the birds, flora and other fauna along the rural roads you walk around your own neighborhood? Make an “on-site” appointment.



➤ **ON NATURE’S TERMS**

No specific “theme.” Just random **natural life as we encounter it** or as it finds us in the yard, on the trail, at pond-side, and even in the skies overhead. Identification and discussion of birds, bugs, trees, vines, shrubs, and invasive growth. If you can’t decide on one of the above options or you just want to get a general feel for the experience and potential for future visits, this is a very good way to start.



PRICING

We are purposely setting our donation recommendation low for visits here at a minimum of **\$5/person/hour** (min. \$15 for the first hour) so as not to exclude anyone who would like to participate but who cannot afford to pay more. However, if you have the means we will appreciate any extra donation based on what you can afford.

The 90-minute “**Walkabout**” **rate** is a minimum of \$15 for one individual and \$5 for every extra individual from the same household. If we are traveling to a location of your choosing a nominal mileage fee may be added. Cash or check accepted and preferred. Ask us about Paypal or credit/debit card payment options, too.



OUTDOOR VOLUNTEER OPPORTUNITIES

The natural area at Nature Discovery (as well as those nearly everywhere else) is under siege from a range of **invasive growth** that is **killing healthy trees** and destroying the ecological integrity of our woodlands. We could use help any day in **cutting, pulling and burning** oriental bittersweet, Amur honeysuckle, garlic mustard, and more. Accepting adult help, or get your teens off the screens to come out and lend a hand. Save a tree while enjoying fresh air, the smells of the season and amid a serenade of birds and frogs. Contact us for more details.



MAKE AN APPOINTMENT

Since we will only be permitting one small appointed group at a time please call or email us to reserve a date and time. One hour minimum, please. Feel free to contact us *spontaneously*. As long as we have a staff person available and no other appointment is scheduled we would be happy to host you on same day's notice!



Volunteer to Save a Tree...

Want to get out of the house into a natural landscape AND do something for its benefit? Help us save our woods! This photo shows dense tangles of alien, invasive oriental bittersweet engulfing and strangling a healthy, native, wild black cherry tree. Jim will introduce you to this, as well as the invasive shrub, Amur honeysuckle, and the invasive biennial, garlic mustard – each in its own way destroying the ecology of this and nearly every other natural area on private and public properties. Jim will demonstrate methods for removing them, then let you come to the rescue.

The removed alien growth accumulates rapidly, so we regularly light a bonfire to burn what we've cut. If you'd rather not cut and clear but have a bit of 'pyromaniac' in you (What camper doesn't?), volunteer to maintain and feed invasives to the fire - a satisfying endeavor in itself.

Parents, get your teens off screens, saving trees! Send them over to try this out. Would you like to learn more about invasive plants on your own rural property? Schedule an on-site appointment most any day!

Or a More Sedentary Visit

By appointment, visit any morning, afternoon or evening to immerse yourself, alone and unguided, in the sights and sounds along our trails and around our active vernal ponds. Pull up a lawn chair at the edge of one of the ponds to enjoy the bird and frog concert. If you arrive at dusk on a mild evening, prepare to be awed by the shrill cacophony of breeding spring peepers. Then, let your eyes adjust to the darkness and search for dim pinpoints of light on the ground emitted by the larvae of this summer's fireflies. Donations graciously accepted. BYO lawn chair!



ND Presents Michigan Reptiles & Amphibians Up Close

On Tuesday, April 6, from 7-8:30pm, Nature Discovery will present *Michigan Reptiles & Amphibians Up Close*, hosted free via Zoom by the Mason County environmental organization, AFFEW.

Sign up prior to the presentation time at this link: <https://www.affew.org/mason-county-events/>



ND Presents Frogs “by Ear”

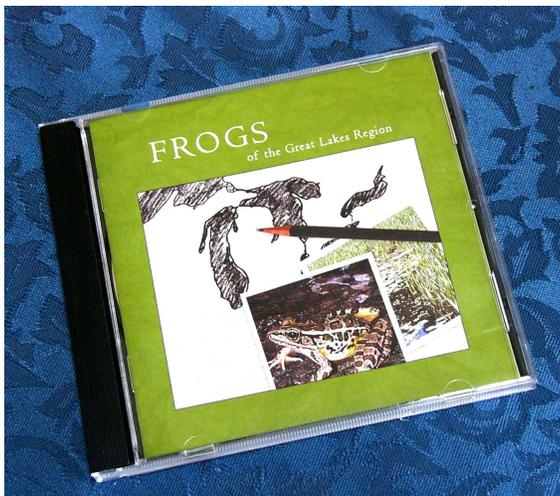
On Saturday, April 10, from 12-12:30pm, Nature Discovery will present *Frogging by Ear: Mid-Michigan Edition* as part of MSU Science Festival’s list of free streamed presentations live on Facebook. Live specimens and audio recordings from our CD will help you identify each of eight Mid-Michigan frogs by sight and by sound:

<https://sciencefestival.msu.edu/Event/View/203>

Items for Sale That Go With the Season...

Michigan Birds Checklists

Keep track of birds you identify on your property, on a field trip, at your vacation home up north or anywhere else in the state. Nature Discovery’s own design features over 300 species potentially found within the state’s borders. The list is printed on card stock for easy checking in the field and is small enough to fit into most pockets. Birds are arranged according to the official A.O.U. classification system, in general alignment to the order in which bird species are arranged in most field guides. Boxes marked A thru D allow the user to use the checklist at four separate locations or on four separate dates. **\$1 each.** Contact us to arrange payment method, pickup or delivery. (A complimentary checklist is provided to each participant in any of our guided birding functions.)



Frogs of the Great Lakes Region CD

Nature Discovery’s original audio CD includes recordings of all 13 species found in the state. Several of the recordings were made on the vernal ponds right here on our property. Twenty-five minutes of instruction helps you learn what species are breeding on area ponds “by ear.” Nearly an hour of environmental listening follows, arranged in order of each species’ emergence and breeding time from early spring to summer. Load it onto your favorite device then turn up the volume on your wireless speaker to acoustically place an active breeding pond smack in the middle of your living quarters! **\$15 each.** Contact us to arrange payment method, plus pickup, delivery or shipping options.

A sincere “Thank You” to all our supporters and friends through these challenging times, and now through Jim’s convalescence, including these folks who have donated to our cause in a number of thoughtful ways through March. We appreciate you!



*Lucas Banks * Braimen Family
Sandy Carey * Debbie & Andy Clay
Peg Cheney * Brenda DuBois
Dymond Family * Fedewa Family
Elaine & Jim Flore
Kathy & Tom Freeman
Catharine Hart
Sarah & Philippe Laurens
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Sustainability the Indigenous Way

A trifecta of reporting and writing in relation to Indigenous peoples and their remarkable environmental stewardship abilities fell into my consciousness this past month in such rapid order, it feels like something more than mere coincidence. Could the rest of us finally be ready to accept Indigenous methods as legitimate and affective rather than primitive and unscientific?

First is the Biden Administration’s appointment of the first Indigenous person, Deb Haaland, to a cabinet position. In addition to the cultural and historical ramifications, it is especially befitting that the cabinet position should be Secretary of the Interior. If you didn’t receive much in the way of details, here is a link to the Natural Resources Defense Council’s take on Haaland’s appointment: <https://www.nrdc.org/stories/meet-deb-haaland>

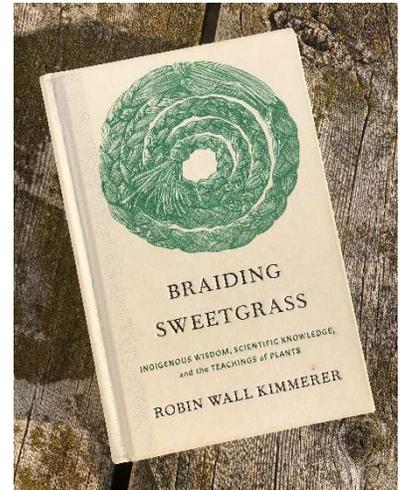
The second is a *New York Times* column, *There’s a Global Plan to Conserve Nature. Indigenous People Could Lead the Way*. Here are a couple of poignant excerpts that may induce you to read more...

**Dozens of countries are backing an effort that would protect 30 percent of Earth’s land and water. Native people, often among the most effective stewards of nature, have been disregarded, or worse, in the past.*

**Nature is healthier on the more than quarter of the world’s lands that Indigenous people manage or own, according to several scientific studies. Indigenous-managed lands in Brazil, Canada and Australia have as much or more biodiversity than lands set aside for conservation by federal and other governments, researchers have found.*

https://www.nytimes.com/2021/03/11/climate/nature-conservation-30-percent.html?campaign_id=54&emc=edit_clim_20210317&instance_id=28158&nl=climate-fwd%3A®i_id=97652655&segment_id=53606&te=1&user_id=e2b8dd8c9b543fb8c35d5dd30658067e

Finally, acting on a recommendation from my friend from northern Michigan, Dale Giddings, I borrowed from the library, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*, by Robin Wall Kimmerer. The book inspires the reader to look at the Earth and all of its life sustaining components not from the self-centered view of how much you can take from it, but from an attitude of devout appreciation and thankfulness. Thus, arises a sacred duty toward reciprocity – to always give back to the givers of life. From Milkweed Publishing: *Drawing on her life as an indigenous scientist, a mother, and a woman, Kimmerer shows how other living beings—asters and goldenrod, strawberries and squash, salamanders, algae, and sweetgrass—offer us gifts and lessons, even if we’ve forgotten how to hear their voices. In a rich braid of reflections that range from the creation of Turtle Island to the forces that threaten its flourishing today, she circles toward a central argument: that the awakening of a wider ecological consciousness requires the acknowledgment and celebration of our reciprocal relationship with the rest of the living world. For only when we can hear the languages of other beings will we be capable of understanding the generosity of the earth, and learn to give our own gifts in return.*



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

***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 CO₂
Cowspiracy.com

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



Worldwarzero.com



RSPO.org



insideclimatenews.org

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