Nelson Institute for Environmental Studies
UNIVERSITY OF WISCONSIN–MADISON

April 2025

THE COMMONS

For alumni and friends of the Nelson Institute for Environmental Studies at the University of Wisconsin–Madison

Educate. Inspire. Motivate.

Get an inside look at the topics, research, and people behind Earth Fest 2025.

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We're reducing our carbon footprint! We hope you enjoy our digitally published magazine, sent monthly to Nelson alumni, students, and friends.

Cover photo: Plant giveaway at Allen Centennial Garden during Earth Fest 2024. Photo by Lauren Graves

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From the Dean

Dear Nelson Institute alumni and friends,

Earth Fest kicks off next Monday, April 21, and I hope you'll join me in celebrating our shared commitment to sustainability. Throughout the week, you'll be able to connect with folks across the Nelson Institute community — from fellow alumni to current students, faculty and staff to community members. This isn't just a campus event; it's a community celebration.

In case you missed the coverage of last year's inaugural Earth Fest, allow me to offer a brief recap: the Nelson Institute and the UW–Madison Office of Sustainability (OS) came together to unify two long-standing but disconnected initiatives — our Earth Day Conference (est. 2008), which I'm sure you're familiar with, and the OS's Earth Week celebration (est. 2018), which featured on-campus, student-led programming. Enter Earth Fest, a multiday collection of events to unite the UW–Madison community, writ large, over the one resource we all share: our world.

The results of the first year speak for themselves: across eight days, more than 35 campus departments, schools/colleges, and student organizations hosted nearly 50 events, and more than 7,000 people attended. We were covered in media outlets across the state, our web traffic surged over 600 percent, and nearly 770,000 people engaged with us on social media. Clearly, people need this stuff right now; they want to learn, check in with one another, and hear about solutions to urgent environmental challenges.

The excitement generated by Earth Fest year one has set us up for an even bigger, better year two — which you'll get a preview of in this issue of The Commons. And if you're not in the Madison area (or planning to travel), we also have a number of ways you can participate in Earth Fest virtually.

I honestly cannot recall a moment more primed for people seeking community, looking for answers, and engaging one another around sustainability. Everyone will be here: community partners, faculty, staff, and most important, our students who always knock me out with their knowledge and energy. A personal highlight will be our special screening of *Planetwalker*, the acclaimed documentary about 1991 Nelson graduate John Francis, which was shortlisted for the 2025 Oscars.

On, Wisconsin!

Paul Robbins
Dean, Nelson Institute


EARTH SESSIONS
2024
THE FUTURE IS
INTERSECTIONAL

Party Like It's 2024

Attendees at the official "after party" for Earth Fest 2024 gather around a live screen printer offering bespoke prints on donated and secondhand materials. But free screen printing isn't the only thing coming back for Earth Fest's second year (head to the Earth Fest Forum to customize your gear!): this year's celebration is poised to be another week of educational, inspiring, and motivational events across campus and online. Photo by Lauren Graves, Office of Sustainability

How To: Design Sustainably with Natural Dyes

The print and design class returns to Earth Fest 2025 to showcase their work in natural dyes.

By Laila Smith

Student pieces using natural dyes are displayed at the D.C. Smith Greenhouse during Earth Fest 2024. Photo by Lauren Graves

During last year's Earth Fest celebration, UW–Madison's D.C. Smith Greenhouse was adorned with beautiful hangings dyed in all colors of the rainbow. In a wing of the greenhouse, a group of students and community members gathered around a vat of indigo dye, taking turns dying cloth strips, socks, and even denim shorts!

This year, Eco-Fashion: Plant-Based Dyes will be returning to the D.C. Smith Greenhouse on Thursday, April 24, for Earth Fest 2025. Led by lecturer Sara Holwerda from the School of Human Ecology's Department of Design Studies, this event showcases student work from Textile Design: Print and Dye and invites the UW–Madison community to explore natural dye in action.

Holwerda was first introduced to natural dyes over the COVID-19 pandemic when she moved from Chicago to Madison. "It was the first time in my adult life that I had a yard, and through gardening I was able to explore these dyes," she says. She started incorporating natural dyes into her teaching three years ago, when she started teaching a course called Cloth to Clothing at UW–Madison. Since then, she began teaching the Print and Dye class, which she has taught for the past two years.

In this class, Holwerda covers the basics of textile dye, with an emphasis on natural dyes."We touch on some synthetic dyes that are safe to use in a studio environment, but I really want to teach students about what we can do with natural dyes, their historical connections, and how they can be a more sustainable solution going forward," Holwerda says.

In addition to teaching students how to use natural materials — including roots, leaves, woodchips, fruit peels, and insects — to create these dyes, Holwerda also covers the environmental and workplace hazards of using synthetic dyes. "Synthetic dyes are very toxic, they use up a lot of water, and are heavily tied to fast fashion," she says. "Some of the natural dyes we use take a lot of work to make the color stick; it's a multi-step process. In a way, it's an antidote to fast fashion."

Holwerda says using natural dyes can also build on people's relationship to the land around them. "Some of the

colors we use come from plants that grow on campus. I think it's really cool to pick up something — like a leaf or a walnut — and realize you can turn that into a color," she says. Last year Holwerda led a "foraged color" day in the class, where she invited students to create dyes from their surroundings, such as food waste. Some of her students created dyes from dried onion skins they collected from dining halls on campus. Another student, who worked at Bandit Tacos, created pink dye from the restaurant's leftover avocado pits.

Members of the community participate in the indigo dye demonstration during last year's Earth Fest. Photo by Laila Smith

Learning about natural dyes has also helped some students become more in-touch with their cultures. For Edward Xiong, a textile and fashion design student, this class has been an opportunity to learn more about traditional Hmong dyeing techniques. "I chose to study textile and fashion design because I wanted to explore Hmong textiles," Xiong says. "Historically, Hmong have communicated their identities and culture through clothing using natural dyes and textile embellishments." Now, Xiong is exploring these dyes and textiles to express himself through art that honors Hmong traditions.

Xiong's favorite dye is indigo, which is integral to Hmong culture. "Every time I work with indigo, I learn something new," he says. "For example, I learned from one of my cousins that every Hmong family has a pot of indigo outside their house, which they use as medicine." At this year's plant dye event, the class is planning on having a live demonstration of how the indigo dye takes effect, a popular activity from last year's Earth Fest. In the vat, the dye appears to be a yellowish-green color — but after a cloth is dipped in and removed from the dye, it oxidizes into a deep blue color. "It's a pretty immediate reaction," says Holwerda, who has helped coordinate the event both this year and last year.

"I think it's really cool to pick up something — like a leaf or a walnut — and realize you can turn that into a color."

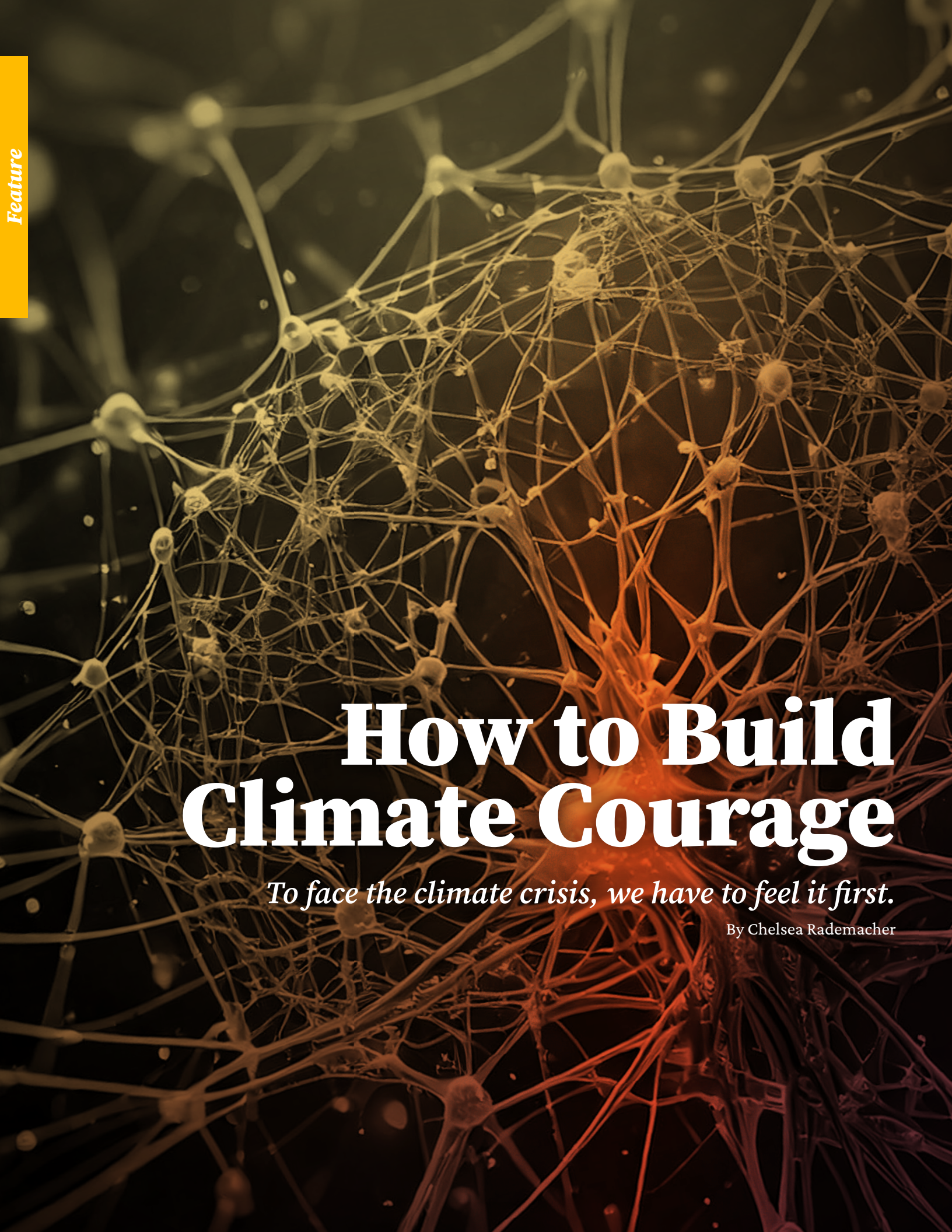
— Sara Holwerda

Also at the event, Print and Dye students will have the opportunity to showcase their naturally-dyed textile work throughout the semester — including swatchbooks, eco printing, resist dyeing, and more. Holwerda is also planning on displaying some samples of fresh and dried plant material that the students have used in their dyes.

Due to their artistic, cultural, and environmental significance, natural dyes are essential to promoting more eco-conscious fashion and textile design. As Holwerda and her students have demonstrated, these beautiful dyes can help people become more connected to their surroundings, explore their culture, and reduce unnecessary pollution from toxins in synthetic dyes. Whether you're interested in learning more about the sustainable capabilities of natural dyes, exploring student work, or creating a work of art to add to your wardrobe, Eco-Fashion: Plant-Based Dyes has something for everyone!

DIY Dyes at Earth Fest
Eco-Fashion: Plant-Based Dyes
Thursday, April 24 | 11 a.m.–1 p.m.
Learn more

Feature



How to Build Climate Courage

To face the climate crisis, we have to feel it first.

By Chelsea Rademacher

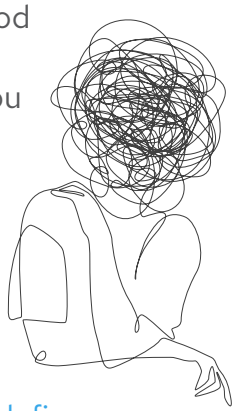
Fill in the blank: It takes courage to _____.

What comes to mind? Maybe you see firefighters or police officers or soldiers. Perhaps you think of the courage to get out of bed in the morning or to ask someone out on a date. The courage to ask for what you need; the courage to fight for the ones you love.

But what about the courage required to simply exist on this planet that is being, and has long been, ravaged by climate change? How do you build resilience needed to make change? And *can* you?

Just as we have researchers studying solar energy and scientists analyzing air quality data, there are researchers and scientists who are investigating these very questions. The emotional aspect to environmentalism is a growing field, and quickly. It was only 14 years ago that two researchers from the Lewis & Clark Graduate School of Education and Counseling published the first journal article detailing the impacts of climate change on the mind. Since then, the connection between the climate crisis and mental health has appeared in everything from academic journals to the *New York Times*.

Researchers at the University of Wisconsin–Madison are offering a way to manage these ecological emotions and build resilience in the midst of change: through developing climate courage. But what does that look like in practice? For some, it's easy to turn anxiety about the climate crisis into action. But for an increasing number of environmentalists across generations, those feelings are dwelling and metastasizing — from something as small as a bad mood or an "off day" to panic attacks or paralyzing depression — making it really hard to show up. These feelings are *real*; you can name them.



So, let's start there.

Ecological Emotions

Negative feelings about the environment — or *climate distress* — typically fall into one of two categories: eco-anxiety or climate despair. The American Psychological Association defines eco-anxiety as "a chronic fear of environmental doom. Climate despair — or sometimes climate grief — refers to a state of hopelessness. Following a parallel structure to how your run-of-the-mill anxiety and depression manifest, eco-anxiety is associated with heightened feelings (think: racing thoughts, panic attacks, chronic worry), whereas people with climate despair experience decreased drive: low mood, loss of interest in things, feeling of futility.

Sound familiar? You're not alone. Research shows that more than 50 percent of young people worldwide have experienced emotions like sadness, anxiety, and hopelessness about climate change. In Wisconsin, 60 percent of residents have expressed some level of concern about global warming. A study across Europe showed that more than 42 percent of respondents felt very or extremely worried about climate change.

"As environmentalists, ultimately the wounds that we are carrying, we are carrying it because we're feeling pain on behalf of the Earth, on behalf of the species or a landscape that we love," says Dekila Chungyalpa, director of the Loka Initiative at the University of Wisconsin–Madison. The Loka Initiative — housed within the UW's Center for Healthy Minds — helps an array of faith leaders and culture keepers to understand ecological emotions and help build capacity for resilience in their respective communities. It was through defining those emotions — and discovering language for them — that Chungyalpa found her way into this work."

It was the early 2000s, and she was the only woman — let alone the woman of color or Indigenous person — on her team at the World Wildlife Fund. She'd just been promoted, becoming the organization's youngest field director ever. On the surface, she'd "made it." But every night, she had panic attacks about what she was seeing in the field. "You could walk for half an hour and not hear a single bird," she remembers. "There was just no life around me … I was kind of taking everything I knew and applying it to a real life situation and realizing that the future was immensely bleak, for humans and non-human beings." Then she read a paper by Australian philosopher Glenn Albrecht, who coined the term solastalgia. He defined it as the immense grief experienced by those who are deeply connected to nature and the land. "It was like something exploded for me," Chungyalpa remembers. "Finally someone named what I was feeling." Naming it allowed her to begin processing those emotions, setting her on a path to the work she does today.

So, where do you land? Eco-anxiety, climate despair … maybe a bit of both?

Have your answer? Good. Naming it is just the start. Now … let it all in.

Rewiring Your Brain

When you put a name to your feelings, you're actually engaging in an awareness practice. This type of work goes by many names: meditation, mindfulness, contemplative

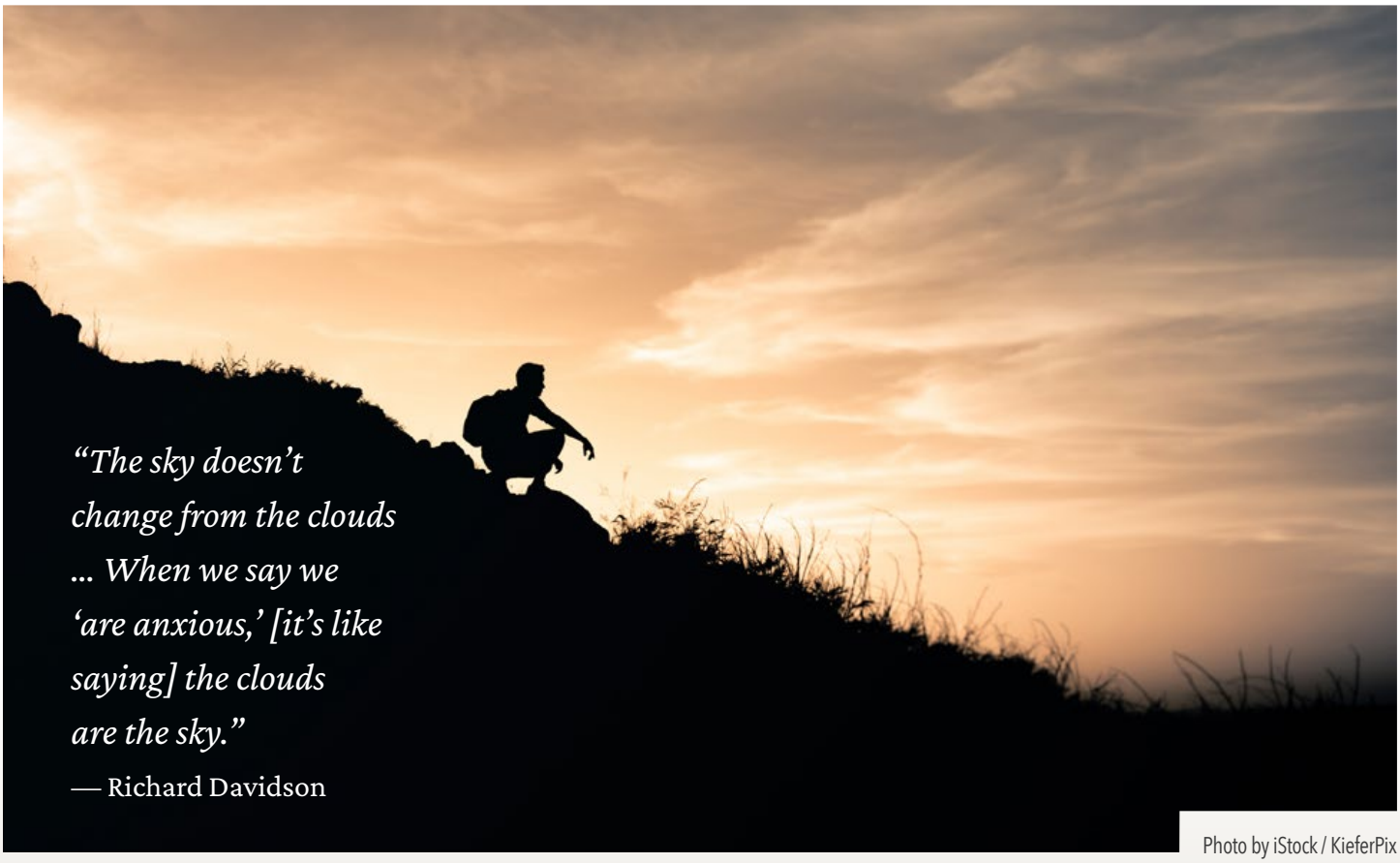
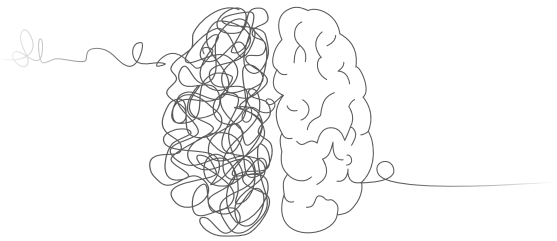


Photo by iStock / KieferPix

practices, and so on. Though the details may differ, the result is the same: rewiring your brain.

"Awareness is a necessary ingredient for any kind of change to happen," says Dr. Richard J. Davidson, founder and director of the Center for Healthy Minds and founder of Healthy Minds Innovations. "We need to be aware of what's happening in our minds and bodies, so that we can understand how we are responding."



Think of your brain like a series of giant networks. Each network comprises different regions, and each serves a unique function. For example, your central executive network directs your behavior and attention. (You see a dirty dish. You think, "that should go in the dishwasher." You get up and put the dish in the dishwasher.) There's also the default mode network, which is basically your autopilot mode. (Do you default to making mental lists? Reliving awkward conversations over and over again? Winning arguments with your in-laws that haven't, and will likely never, happen?) These networks, among numerous others, are "constantly, dynamically in play," Davidson says.

> *"Climate courage or environmental courage [helps us] switch from 'we need to be saved' to 'we are protectors.'"*
>
> — Dekila Chungyalpa

Mindfulness and meditation practices can change how those networks connect to each other and work together. "When we're meditating with eco-anxiety, for example, we may not get rid of the eco-anxiety," Davidson says, "and that's not really the point." The point is to change your perception of and relation to those feelings of anxiety. But all of that starts with naming your emotion — and then giving yourself permission to feel it. Over time, and with practice, your brain will learn that your ecoanxiety or climate despair isn't all encompassing … even if it feels that way.

"It's just like clouds in the sky," Davidson illustrates. "The sky doesn't change from the clouds. You can have storm clouds, but eventually it'll change. When we say we 'are anxious,' [it's like saying] the clouds *are* the sky. There are simple training techniques that allow us to pull them apart, and that's the beginning of real change." And that's how emotional resilience becomes a skill.

Dekila Chungyalpa

Richard J. Davidson

By this point, you've named your ecological emotions, you've sat with them, and you've renegotiated your relationship to them. Big changes ahead: ready for the next step? Bring your awareness to the good stuff.

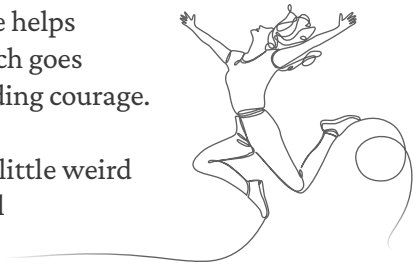
Take the Good with the Bad

Think back to where we started: how do we build our resilience — our climate courage — so that we can take action?

For Chungyalpa, there are three ingredients: joy, connection, and courage. These emotions, she says, are energizing, empowering, and activating. "Joy is absolutely necessary because it allows us to counter emotions that are more depressive, more nihilistic," she explains. Davidson might refer to this as "gratitude," or engaging in awareness practices to recognize the good in your life. "We have people that we love, people that take care of us, that we take care of," he says. "Just recognizing this, bringing loved ones into your mind and your heart — it's really amazing how accessible these kinds of virtuous emotions are."

Among its benefits, Davidson offers practicing gratitude as a way to cope with overwhelm from news and other sources. For Chungyalpa, on the other hand,

feeling joy and gratitude helps build connection — which goes hand-in-hand with building courage.



Admittedly, it can feel a little weird to allow yourself to revel in joy when there's a constant stream of terrible news running like ticker tape in the back of your mind. Have you ever thought, "How can I possibly be happy when [insert latest headline here]?" Or maybe on an unseasonably warm and sunny early spring day, you think, "We don't deserve to enjoy this right now." That, reader, is guilt, and it's standing in the way of your resilience.

Chungyalpa defines *guilt* as having a wound that you either created yourself, or one that was created on your behalf, that you don't know how to make amends for. Some of her recent research indicates that guilt is particularly paralyzing when it comes to dealing with eco-anxiety and climate distress. "It's destructive to movement-building," she says, "because what is essentially happening is you're centering your own emotions to such a point that you may not be able to show up for others the way you actually want to." More to the point, ruminating on guilt keeps the focus on *you*, not the movement. "What kind of emotion can you activate that would make you counter that?" Chungyalpa asks. *Courage!* "Courage overrides your sense of guilt to actually just say, 'I might be doing something that is not acceptable, but I'm showing up in the best way possible.' "

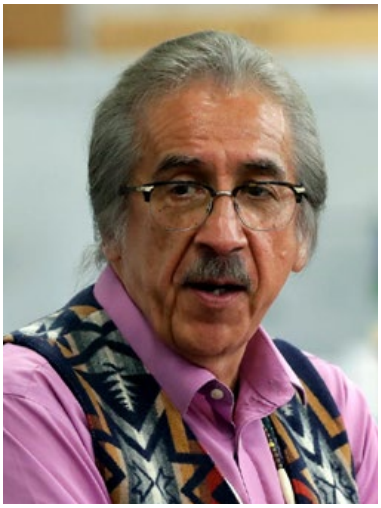
Seeking out joy and gratitude — and letting go of guilt — can feel hard. Particularly when you've been caught in a cycle of thinking the clouds *are* the sky, if you recall that metaphor. "When we try something new and it's uncomfortable, most of us don't go back," Chungyalpa says. But you tried, right? You flexed that muscle that's been enjoying a rest day/week/month/year? That's you exercising your courage.

"What we do know about courage is the more you exercise it, the more you gain it," she explains. "The best part about courage is that you typically don't exercise it just for yourself. Courage is an emotion that you often exercise on behalf of someone or something else."

If there's anyone who knows a thing or two about speaking up for others — human, animal, and landscape alike — it's Gary Besaw.

Courage in Action

For Besaw, director of the Menominee Nation's Department of Agriculture and Food Systems, *climate courage* doesn't look like an awareness practice or gratitude journal. It's tangible, lived, and rooted in tradition.



Gary Besaw. Photo by Sarah Kloepping/USA TODAY NETWORK-Wisconsin

Besaw has spent this career in tribal legislature, holding the positions of tribal chairman, vice chairman, and secretary, as well as serving on the Wisconsin Legislature's State-Tribal Relations Study Committee. He's seen a lot — and he's held a lot of responsibility. "As an Indigenous person, we're the canary in the coal mine. We see things that, many times, decision makers … don't see or experience," he describes.

"You want to know where the white hair comes from?" he laughs. "It's terrible when you … truly understand some of the implications of what could happen if we don't step forward."

As tribal chair, he held a responsibility to be the voice for his people, their land — and all its inhabitants. From a young age, Besaw learned the importance of connection between humans and our nonhuman relatives. "We're told that we are the pitiful ones," he recalls. "All these other animals, they can live without us. If humans disappeared, they'd have a field day. But if they disappeared?" he asks, rhetorically. It's systems thinking, he says. All parts of the system have to work together, and in support of each other. "Don't make decisions where you know that the deer, if he could speak and had a voice, he'd lift his hoof up and say, 'Mr. Chairman, I'm gonna vote *no*.' "

This is what Chungyalpa and Davidson's work is helping us all move towards: courage that is rooted in connection, not the self. It's this type of courage that can build communities, build movements, and make change. And while the work of ecological emotions and climate courage is new for the lexicon of Western research and academia, it's not *new*. In fact, it's because of courage — the collective courage of the generations before us — that we're able to have this conversation today. What about seven generations from now?

Look out your window, and picture that landscape in 100 years from now in the context of the current climate reality. What do you feel: are you scared? Anxious? Depressed? Chungyalpa had pointed to a specific feeling: nihilism. "'Why does it matter? We're all screwed anyway," she defines. We learned that joy can be one counter to this, but Besaw offers another.

"It's our responsibility," he says. "I'm gonna be able to see my grandkids, God willing. I can bounce them on my knee … It's your great-great-great-grandchildren that you'll never see, so some people will go, 'Phew, I don't have to look *them* in the eyes. I don't have to feel guilty [for not taking action.' " That's an excuse people use, and I refuse to [put] the onus now on my great great grandkids."

And Chungyalpa would agree. "One of the reasons why I talk about climate courage or environmental courage so much is to get us to switch from 'we need to be saved' to 'we are protectors.' "

Fill in the blank: It takes courage to _____.

What comes to mind now?

- It takes courage to accept responsibility for my actions.
- It takes courage to speak up for those who don't have a voice.
- It takes courage to name and accept my emotions.
- It takes courage to protect the future.

When we started this journey, we asked not only *how* to build resilience in the face of the climate crisis, but also if we *can*. So … can we? On April 22, 1970, U.S. Senator Gaylord Nelson gave a speech to commemorate the first Earth Day. He wondered the same thing. "Are we able to meet the challenge? Yes," he said. "Are we willing? That is the unanswered question."

Hear from Dekila Chungyalpa, Richard Davidson, Gary Besaw, and a host of other climate courage experts at the upcoming **Earth Fest Forum: Climate Courage – Finding Resilience in the Midst of Change**. This free, public event will take place on Wednesday, April 22, from 2–7 p.m. at UW–Madison's Discovery Building. Presented in partnership with the Nelson Institute for Environmental Studies, the UW–Madison Office of Sustainability, and the Center for Healthy Minds, the Earth Fest Forum is a headliner event for UW–Madison's larger Earth Fest 2025 celebration.

In addition to music and dance performances, art installations, and opportunities to build connections, the forum will host Chungyalpa, Davidson, and Christy Wilson-Mendenhall for a discussion on the "Psychology of Deep Resilience." Then, Besaw and Chungyalpa will participate in a panel discussion called "Stories of Resilience," also featuring climate/health expert Jonathan Patz, environmental activist John Francis, and Nelson Institute alumnus and staff member Christopher Kilgour.

Kira Adkins, a senior majoring in environmental studies and legal studies with a certificate in American Indian studies, was tapped to moderate the panel. "It's a very interesting group of people that I'm really excited to speak to," Adkins says. "I think they can all offer something that represents truly what intersectionality is in the environmental field."

In preparing to lead the discussion, Adkins has already found some takeaways. She's learned that climate courage is rooted in the idea that we – humans – are fragile and fundamentally connected to the environment. "The foundation of us doesn't begin with us at all," she explains. "We are being cared for, and we're rich in abundance because of the fact that we are fragile. The trees are bigger than us, the water is bigger than us. We are at their pleasure, and at the same time, we need to take care of them."

Find Courage at Earth Fest
Earth Fest Forum: Climate Courage
Wednesday, April 23 | 2–7 p.m.
Learn more and register

Feature

The Sound of Science

Elizabeth Maroon is turning El Niño forecasts into an auditory experience.

By Chelsea Rademacher

Please respond to the following questions:

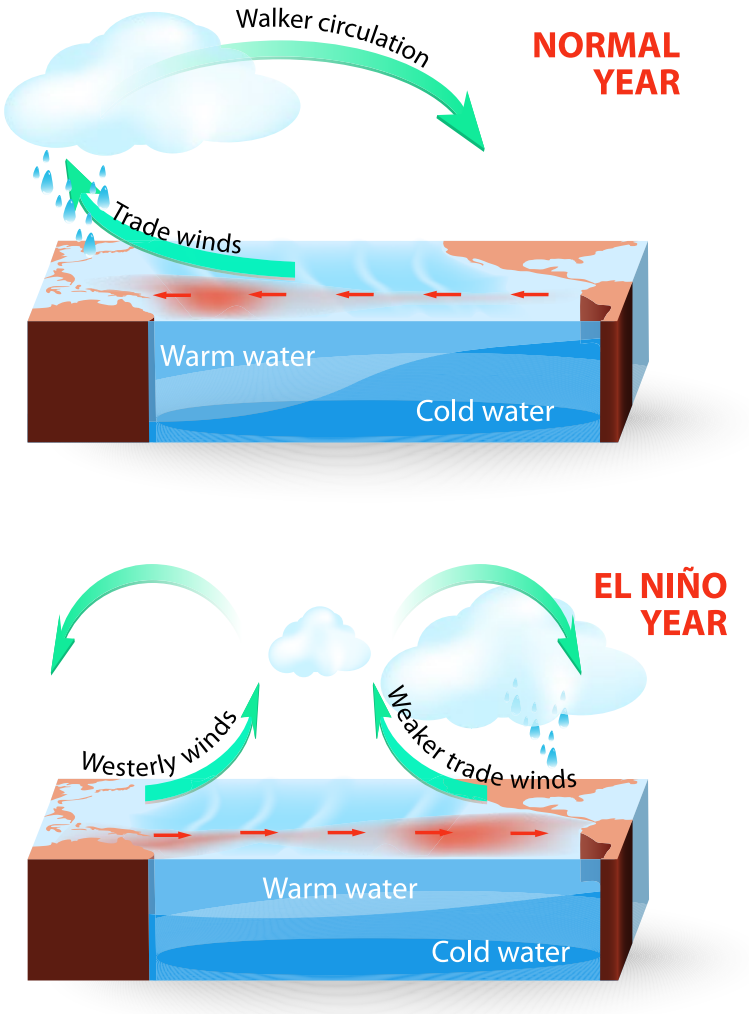
Yes	*No*	
☐	☐	Do you know that a conjunction's function is hooking up words, phrases, and clauses?
☐	☐	Can you name the 50 states in alphabetical order from memory?
☐	☐	Are you able to read these words because you know your ABCs?

If you answered *yes* to any of these questions, chances are you have a song stuck in your head now. That's because music is a unique educational tool — one that spans time, cultures, and nationalities. It's also why climate scientist and oceanographer Elizabeth Maroon has teamed up with the Mead Witter School of Music to turn El Niño into an earworm.

What makes El Niño important enough to rise to the level of a Schoolhouse Rock analogy? "El Niño is the temperature in the tropical Pacific," Maroon offers as a refresher. "It's important because the temperature down there influences weather everywhere — globally." From droughts and heatwaves to monsoons and floods, small variations in temperature can have monumental impacts. But the ripple effects of El Niño don't need to be a surprise; that's where Maroon's research comes in. As a faculty member in the Department of Atmospheric and Oceanic Sciences (AOS) and a core member of the Nelson Institute's Center for Climatic Research, Maroon studies climate predictability. Just as we can use climate models to predict the weather — What's the overnight low tonight? Is it going to rain on my parade? — we can use climate models to predict El Niño a few months to a year or two into the future.

"You can make a forecast for El Niño just like you would a weather model forecast," Maroon explains, "you just run the climate model longer." (Of course, weather models don't have oceans in them, so it's a good thing Maroon knows a thing or two about oceans.) She pulled a community climate prediction data set for 2023 and analyzed its forecasts. This is

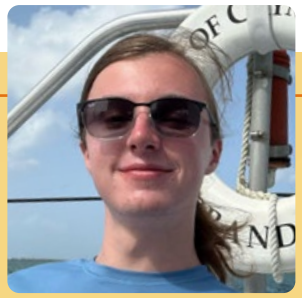
where the connection to music begins: "This data set is special in that it's an *ensemble* prediction system," Maroon explains. That means running multiple forecasts all starting from the same observations; in this case, the dataset has 20 forecasts. Each varies slightly at the very first time — "we're talking one times 10 to the negative 14th Kelvin ($1x10^{-14}$K). That's all it takes for the nonlinearities in the atmosphere and the ocean to start to diverge and to give us a wider look at the possible future climates."



El Nino Southern Oscillation (ENSO) is a global phenomenon in ocean and atmosphere. For an unknown reason El Nino events occur irregularly at intervals once every two to seven years.Illustration by iStock / TTSZ

A classically trained pianist, Maroon drew a connection between an ensemble forecast and an ensemble of musicians.

She remembered some work that fellow researchers had done in *sonification*, or turning numbers and data into notes and sound. To sonify the El Niño forecasts, Maroon hired AOS undergraduate Hunter Glassford, trained him to work with a sonification tool in the programming language Python, and got to work. "Sonification maps numbers to a frequency in Hertz," Maroon says. They're



By Scott Dyke, Department of Atmospheric and Oceanic Sciences

Hunter Glassford encapsulates the Earth Signals ethos of a "science-inspired musical experience." A UW–Madison senior majoring in atmospheric and oceanic sciences, Glassford strives to blend his musical interests – he produces electronic music – with his scientific pursuits. A classic fusion of creative left-brain and analytical right-brain thinking? It's not so simple.

"Science in the classroom can often feel rigid, with so much emphasis on laws and equations," says Glassford. "It does not always inspire confidence to explore creativity within the field."

After he joined Professor Maroon's research group to help the sonification efforts, his optimism grew. For Earth Signals, Glassford developed a program that translates. Glassford plans to replicate this process for other datasets to inspire new musical creations. "Sonification is limitless," notes Glassford. "I'm already experimenting with a marine megafauna dataset, and I have no plans to stop there."

taking it a step further and mapping the numbers to musical notes: A, B, C, D, E, F, G. With traditional sonification, some frequencies might wind up in between notes. For example, A is 440 Hz and B is 493.883 Hz; a data point that maps to 450 Hz would be too high for A, but too low for B (and just a hair flat for B-flat, if we're getting specific).

"Scientific literacy matters, and if we can find ways of communicating science to audiences that don't usually come to hear it, that's a win."

— Elizabeth Maroon

While exploring the sonification with Glassford, Maroon also worked with Johannes Wallmann, professor of music and director of jazz studies in the Mead Witter School of Music, to explore climate science with a School of Music student. Maroon and Wallmann hired Ben Ferris, who is a composer, double bassist, and doctoral student, to create an original composition around El Niño, its forecasts, and its interpretation.

"Ben came up with like a lot of creative ways to map the science concepts in a completely original piece," Maroon says, "And he provided feedback on the direction for the sonification." As Glassford mapped numbers to notes, Ferris suggested trying out different scales that he had used in his composition. For the sonification, the team eventually landed on B Lydian (which sounds like this).

Ferris brought in the UW Bridge Ensemble who are turning the science into sound. To demonstrate the sonification, they selected six members from the climate forecast ensemble and sonified them for six instruments in the UW Bridge Ensemble — two violins, one viola, one cello, one piano and one double bass. In addition to the six forecasts that Maroon is representing, she selected a trumpet to represent the observations, what really happened, the "truth."

Glassford's final sonifications, as well as Ferris's new composition, will world premiere live in the Hamel Music Center performed by the UW Bridge Ensemble, during a free event hosted during UW–Madison Earth Fest.

Mead Witter Concert Hall inside the Hamel Music Center. Photo by Bryce Richter / UW–Madison

So, what *does* an El Niño forecast sound like? Think back to the data set that generated these notes. The trumpet starts on a single note — representing what really happened in November 2023. A violin joins in on the same note. The trumpet and violin then independently go higher (warmer) or lower (colder), depending on what really happened or what the forecast thought would happen. Now imagine six forecasts playing at once. All of them start on the same first note as the trumpet, but then all the instruments gradually spread out into different melodies. "The forecasts do not exactly follow the observations, and you can hear that dissonance," Maroon says. "The further you get away from where you started, the more spread there is, and the more uncertainty that you have in your forecast."

You'll be able to *hear* El Niño and understand its forecasting because of Maroon's National Science Foundation (NSF) CAREER Award, which is funding both oceanographic research and both student contributors. CAREER Awards are grants that support promising young faculty who show great potential as innovative role models in both research and education — the two areas that the grants focus on. For Maroon, Earth Signals is the education component; the research half gets further into her academic background of oceanography, specifically looking at how the mountain ranges on the ocean floor affect climate variability.

This is the first year of the grant's five-year funding. If all goes according to plan, by 2030, Maroon will have supported dozens of students in exploring and researching climate science, honing real-world skills, and getting a one-of-a-kind experience to list on their resumes. She'll also have helped bring five original compositions to life, offering the public new ways to understand and engage with climate science and oceanography.

"This is going to be a very different way to communicate science," Maroon says. "Scientific literacy matters, and if we can use music to reach folks who don't usually think about scientific topics, that's a win. A better-informed populace is going to be able to understand the scientific premise of things that matter to society."

Composer's Statement by Ben Ferris

As an artist, it is a treat to work with scientists, especially folks doing research in climate change, a pressing issue that has broad and devastating effects on the whole world. For this composition, I wanted to look at sonification of musical elements beyond pitch and rhythm. I ended up using dissonance as the element to best communicate with the audience and musicians the feeling of tension between predictions and reality, the discomfort we might feel when things don't go as we might expect.

I also used improvisation as a large part of the musical composition to sonify the idea of predictions in real-time with the musicians. As a concept for improvised sections, we draw on the music that we've already played, but develop it based on our feelings in the moment, which are in turn impacted by the choices of the other musicians. To me, this felt like a great way to experience the scientific processes involved in predictions-lots of inputs impacting what might happen.

Hear Climate at Earth Fest

Earth Signals

Monday, April 21 | 7:30–8:30 p.m.

Learn more

Meet Manny Teodoro

You never know the worth of water until the well is dry.

By Anica Graney

Manny Teodoro's area of expertise can be boiled down to the difference between a hydrated, well-functioning society, and a brutal, post-apocalyptic wasteland where scorching deserts stretch endlessly, rusted remnants of civilization litter the landscape, and lawless marauders clad in scavenged armor battle for dwindling resources amid a backdrop of anarchy, dust storms, and relentless survival.

Alright, that last bit may have drawn inspiration from *Mad Max*, but you can see the point. At the forefront of preventing the demise of society stands Manny Teodoro, professor of public affairs at UW–Madison, along with the thousands of water and sewer workers that keep our cities alive.

Let's start with the basics: who are you and what do you do?

I'm Manny Teodoro, and I'm a professor at the La Follette School of Public Affairs [and the Nelson Institute for Environmental Studies] at the University of Wisconsin–Madison. What do I do? I study, teach, and offer expertise on environmental policy and public management in the United States. Much of my research focuses on water, sewer, and storm water infrastructure and governments.

What's one of the biggest lessons you've learned?

Follow the data and be willing to be wrong. The thing that separates a scientist from a pseudo-scientist is whether you're willing to be wrong. One of the things that's very difficult in the study and the pursuit of public policy is that people bring deep and passionate beliefs into the study, and that's tough psychologically because sometimes the data don't align with your expectations. It takes tremendous self-knowledge and self-discipline to be willing to be wrong. That's tough. People don't like to feel wrong, but the advice I give to students is that that's the value we offer to the world as scholars of public policy: we follow the evidence. We let the evidence tell us what the policy should be.

What does the U.S. need to do to better serve its public related to water policy?

In the United States, I think the single biggest thing we need to do is consolidate the water sector. By that, I mean we need to have way fewer water utilities. Right now, there are about 40,000–50,000 community water systems in the United States. That's just way too many. The vast majority of those utilities lack the financial, technical, and organizational capacity to operate modern water and wastewater treatment systems. We're facing all kinds of new challenges every day, and it's a technically complex field. A lot of those utilities just cannot keep up, and we're

Aerial view of wastewater treatment plant. Photo by iStock / Bilanol

leaving our small communities behind. Ideally, we should consolidate the smaller water utilities which would make water more affordable and help ensure higher quality. Wastewater treatment plants would also have better, more equitable, environmental outcomes.

What does the public get wrong about water policy?
Water systems are the bedrocks of civilization. Potable drinking water and sanitary sewer systems are the definition of human development. These humble, ubiquitous pipes beneath our streets keep us alive every single day. I wish people would think about these systems more and about the [people] who make them work. If you live in the United States, a water utility is the last thing you think about until it's the only thing you think about. When you have a water main break, you turn on that faucet, and nothing comes out. Suddenly, that's your whole life. These systems are critical, and we ought to care about them because they keep us alive. Nothing happens without them. We don't have an economy without them. We don't have a civilization without them.

Give us some insight on your upcoming Earth Fest event about PFAS policy.
Last year, the United States Environmental Protection Agency (EPA) issued the first ever maximum contaminant limits for PFAS under the Safe Drinking Water Act. The good news is most drinking water has no PFAS. That's really good, despite lots of clickbait-y headlines you're going to see out there on the interwebs. It is not a very widespread problem. The bad news is where it is a problem, it tends to be really, really bad. There are also other sources of PFAS in the environment and in consumer products that are far worse than drinking water. Unless you happen to live in a PFAS hotspot, you're far more likely to be exposed to PFAS from food packaging or cosmetics.

Read an extended version of this story online.

EARTH FEST

Keep it Clean at Earth Fest
Navigating the Future of PFAS and Our Water Supply
Tuesday, April 22 | 7–8 p.m.
Learn more and register

Fostering Community through Ecopoetry

Nelson Institute and English department to host ecopoetry writing workshop as part of Earth Fest.

By Catherine Stumpf, Office of Sustainability

Earth Fest 2024 Allen Centennial Garden Earth Sessions. Photo by: Lauren Graves (2)

In part with UW–Madison's Earth Fest, the Department of English and Nelson Institute for Environmental Studies will host an ecopoetry workshop celebrating our connection to the natural world. On April 21, the workshop will feature several ecopoetry readings and a guided writing session for students to write and share their own poetry. Leading this workshop is Heather Swan, ecopoet and senior lecturer in the Department of English and the Nelson Institute.

"Poetry acknowledges darkness, but it's clinging to beauty."

— Heather Swan

Open to all levels, novice and advanced writers alike, the workshop welcomes anyone interested in writing poetry and encourages people from various disciplines to attend. In tandem with the ecopoetry workshop, Environmental Humanities 113 will host an ecopoetry open mic on April 23. Attendees are encouraged to bring a poem about the natural world that they love or one they wrote themselves.

"I'm planning to create a very positive, generative environment for people," Swan said. "A welcoming environment for them [participants] to explore what nature means to them. So it's partly about thinking about their own connections through this process of poetry."

Poetry can be accessible for each and every one of us, Swan said, especially when we integrate it into our daily lives. Often, poetry is used at the most important moments of our lives — graduations, weddings, and funerals — as a gesture of honor and appreciation for what we cherish and hold closest to us.

This gesture can become habitual when poetry is woven into our communities, Swan said. Whether you put together your own poetry group or integrate poetry readings into your own circles, like a local knitting guild, it can be built into every facet of our lives. By sharing and reading with those around us, we can use poetry to

Swan inspecting a Stag beetle. Photo by Heather Swan

become more present and appreciative of our surroundings, she said.

Beginning to write poetry can sometimes feel intimidating, but giving yourself the space to write little by little, to express how you feel and understand the world, can be freeing. This makes poetry so unique to our experiences and emotions, Swan said. "Your poem might look really different than my poem," she said. "We might both be writing about peaches, but your peach poem is going to be really different than mine, because you're aligning with your own peach values, and I'm aligning with mine." For people interested in ecopoetry, Swan recommends poetry books such as *Attached to the Living World: A New Ecopoetry Anthology* and *Black Nature: Four Centuries of African American Nature Poetry*, and online journals like Terrain, Ecotone, or The Hopper to explore and inspire their own relationship to reading and writing poetry.

Growing up moving from place to place, Swan was surrounded by many different landscapes — from mountainous regions near the ocean, to the prairies and the woodlands. For young Swan, poetry was a means of familiarizing herself with her environment, expressing how she understood and built connections with the natural world through stories.

Having written poetry since she was a little girl, Swan went on to receive her PhD in literary studies and MFA in poetry from the University of Wisconsin–Madison. Reckoning with the intersections of humanity and the more-than-human world, her published books, *Dandelion* and *A Kinship with Ash*, invite readers to look inward and reflect on their own relationship to the nonhuman world.

Top: Swan skating on "wild ice." Photo courtesy of Heather Swan. Above: Swan (left) reading poetry at the Earth Fest 2024 after party. Photo by Lauren Graves, Office of Sustainability

Through poetry, Swan reminds us of the beauty we can find and create through writing, as a form of art that expresses the love and hardships of our relationship with nature. "Poetry acknowledges darkness, but it's clinging to beauty," Swan said. "It really is a place to hold all of the emotional weight, but also the great joys that we have in this world around us."

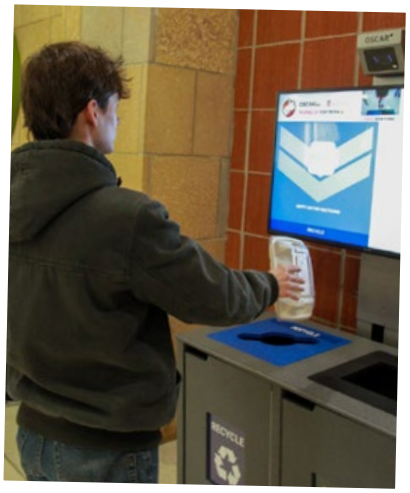
Be a Poet at Earth Fest
Ecopoetry Workshop
Monday, April 21 | 3–4:30 p.m.
Learn more

From the Office of Sustainability

UW–Madison Sustainability Goals: Making Progress and Plans, One Year Later

Next month, amidst the hustle and bustle of commencement and move-out, UW–Madison will take a key step in its sustainability journey. A team from Facilities Planning & Management, Affiliated Engineers, Inc. (AEI), and the Office of Sustainability will release results from a study that charts potential paths for the future evolution of its heating and cooling systems.

The study, which was commissioned to support the environmental sustainability initiative announced by Chancellor Mnookin in February 2024, will provide critical insight as UW–Madison seeks to build, maintain, and operate campus facilities that are reliable, efficient, and sustainable. In particular, the study supports the goal of reaching net-zero emissions by 2048, a date which coincides with both the university's 200th anniversary and science-backed targets for mitigating the worst effects of climate change.



A student uses an Oscar Sort system by holding an item in front of its AI-powered camera.

UW–Madison's net zero effort is one of five ambitious goals. The others include:

- Launch the Sustainability Research Hub by spring 2024
- Achieve STARS Gold in 2025
- Foster sustainability educational experiences for all interested students by 2030
- Create a Zero Waste campus by 2040

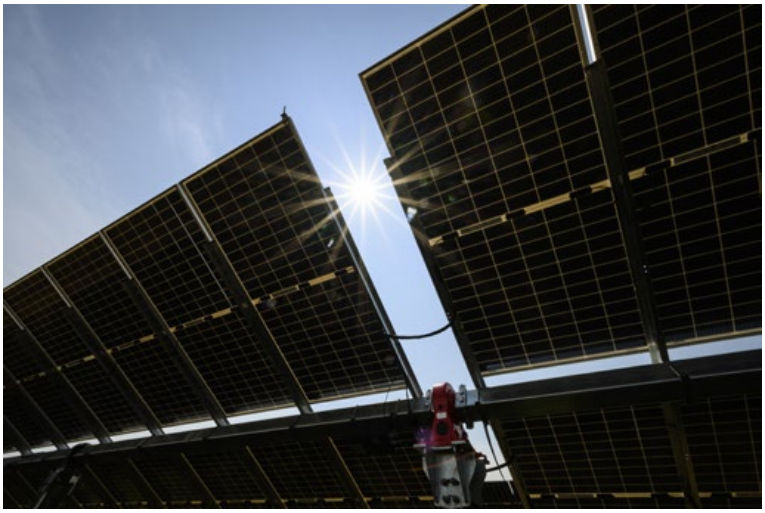
Since the announcement of the goals, the Office of Sustainability, Facilities Planning & Management, the Nelson Institute for Environmental Studies, and many other units on campus have worked together to build collaborative pathways, refine processes, and establish near-term targets that will help advance each of the goals.

"The process of change on a campus like UW–Madison is profoundly collaborative," said Missy Nergard, director of institutional sustainability. "We are so fortunate to have such exceptional staff, students, and faculty to help us make progress on this initiative."

Here's a preview of recent progress to date:

1. The Sustainability Research Hub supported over $180 million in grant submissions and secured over $16 million in new funding.
2. The UW–Madison Green Fund supported a project that will upgrade lighting fixtures in three campus greenhouses, saving over 833 MWh in energy usage and $90,000 per year in energy costs.
3. Student interest in sustainability was met by an expanded corporate sustainability internship program and a new graduate certificate in sustainability.
4. The UW Zero Waste initiative piloted new, AI-enabled waste bins to help improve disposal habits and provide researchers and students with opportunities to discuss user behavior.
5. The Office of Sustainability is currently completing data analysis for the Sustainability Tracking, Assessment, and Rating System, with initial information suggesting that campus should receive a Gold rating for our next submission.

Look for more on this topic in the coming months by subscribing to the Office of Sustainability newsletter, connecting on social media (@SustainUW), or checking out sustainability.wisc.edu.



Climate Research Highlights

Tuesday, April 22
1–2 p.m. | Zoom

Join the Center for Climatic Research for a virtual flash-talk session on climate research highlights including solar energy and agriculture, outreach efforts and partnerships across Wisconsin, and youth engagement programs. Learn more.

Weston Roundtable Lecture: Power, Life, and Ecological Maturity

Thursday, April 24
6–7 p.m. | 1106 Mechanical Engineering

The Center for Sustainability and the Global Environment is hosting Nate Hagens, the executive director of the Institute for the Study of Energy and our Future, for a special Weston Roundtable Lecture. Learn more.

Indigenous Natures: Science, Traditional Wisdom, and Poetry

Saturday, April 26
9 a.m.–1 p.m. | 1115 Wisconsin Energy Institute

The Center for Culture, History, and Environment is teaming up with the Madison-based nonprofit Mundo Esperanza to share in a morning of discussions on science, traditional wisdom, and poetry. Learn more.

Healers and Harbingers

Five plants to keep in mind at the end of the world.

By Kate Scroggins, Office of Sustainability

Nothing is more universal than the idea of the "end of the world." From religious revelations to the yearly climate reports, the apocalypse always seems to loom just around the corner. While many of us tend to overthink the end times – whether by anxiously reading every news headline or by daydreaming about the ultimate survival base – we often overlook the one relationship that we've held since the very beginning: plants.

Humanity and plants share a long and interwoven history. We've found almost an infinite number of uses for them: from food to decoration, medicines to poisons. They've been our silent companions, through the bleakest days of humanity's history to our greatest triumphs. And yet, we forget about them when thinking about the apocalypse. Which is baffling, considering plants on this earth have survived numerous extinction events in their past.

With the coming of Earth Fest 2025, the ongoing series "Plants for the Apocalypse," hosted by the UW School of Pharmacy and Allen Centennial Garden, will return with a third installment at the D.C. Smith Greenhouse. While you'll be interacting with this year's apocalyptic plants on April 21, let us introduce you to five plants to keep in mind at the end of the world.

Cattail

Like many on this list, cattails represent many avenues of the apocalypse. Cattails are a familiar sight in wetlands. With their distinct cigar-shaped heads and tall, thick stems, they thrive in the damp marshes, ponds, and lakesides. They have a naturally rapid growth rate, and left unchecked, can overtake any marshland they choose, very reminiscent of a chaotic zombie outbreak. However, unlike the undead, cattails hold many benefits to their local ecosystem. According to the Cornell Cooperative Extension, cattails have a plethora of pros, such as providing habitat to a variety of birds and wetland critters, help trap sediments and prevent erosion, and even shown to remove pollutants through bioremediation. However, the problems start to arise when they start to become more prevalent.

Cattails can easily become a dense monoculture that can overpower native flora. This affects the fauna by eliminating sources of wildlife food like seeds and tubers. Particularly, it is the invasive hybrid that causes problems here in Wisconsin. Not only do they hide themselves looking like native cattails, they can easily outcompete the native and exponentially become a larger problem. And while they help with pollutants and heavy metals in the water, when they decompose, they produce 400 times the amount of Methane compared to conifers.

Cattails have the potential to be either a natural defense for wetlands or an invasive force to be reckoned with. The decision lies in how we choose to interact with them.

Cannabis

It may sound unconventional to talk about cannabis due to its recreational use, but this plant's medicinal and practical benefits could prove essential in times of crisis. Cannabis, particularly in its hemp form, has long been used for therapeutic purposes. Research institutions, like the Transdisciplinary

Center for Research in Psychoactive Substances at UW–Madison, continue to explore cannabis's potential — alongside other psychoactive substances such as MDMA and psilocybin — in treating mental health conditions such as depression, PTSD, and anxiety. These benefits could be crucial in an apocalypse where psychological stress and trauma are likely to escalate.

Beyond its psychological applications, cannabis could also serve more physical purposes. The plant's strong fibers can be turned into rope, fabric, and even building materials. Cannabis is a versatile, resilient plant that could function as both a healer and a builder when the world begins to crumble.

Milkweed

While mostly recognized for the beautiful monarch butterflies that use it for food, milkweed also has a long history alongside humans as well. Milkweed, with its nutrient flower buds, has been traditionally used by the Ho-Chunk both as food and medicine. The plant's floss fiber has been used in strings, rope, and even clothes. During World War II, it was even used in life jackets due to its buoyant and water repellent nature.

However, milkweed serves another important purpose: indicators of a healthy habitat. One of the reasons milkweed has seen a decline in Wisconsin is due to extensive use of weed killers. The loss of the milkweed can be exacerbated by climate change, leading to many ecosystems losing a vital source of food and shelter. This leads them to be an indicator, acting as a signal for broader ecological issues, especially for pollinators like the monarch butterfly. Milkweed's survival might be critical in assessing the health of the natural world as well as tracking the northern migration of plants.

Fungi (cordyceps)

Here's the funny thing about fungi: they aren't plants! Evolutionary cordyceps — which include fungus and mushrooms — are more closely related to us than to the plants we tend to associate them with. Despite this, fungi play an essential role and connect to the wider conversation of what nature can provide for us.

Mushrooms, like the edible morels and chanterelles, can be easily foraged in the wild, and many other varieties have medicinal properties. For example, many Native American tribes across America, from the Cherokee to the Lakota, used puffball mushrooms to help heal sores and burns. While mushrooms can be healers, they have the potential to cause death and suffering as well.

Ergot, for example, is a fungus that grows on rye and wheat that can both be used in pharmaceutical settings as well as act as a poison. Ingesting ergot through infected food can cause ergotism or "Saint Anthony's Fire," which causes a wide range of symptoms: including hallucinations, convulsions,

Attendees learn about plants that offer the same benefits as selective serotonin reuptake inhibitors (SSRIs) at Earth Fest's Plants for the Apocalypse in 2024. Photo by Lauren Graves, Office of Sustainability

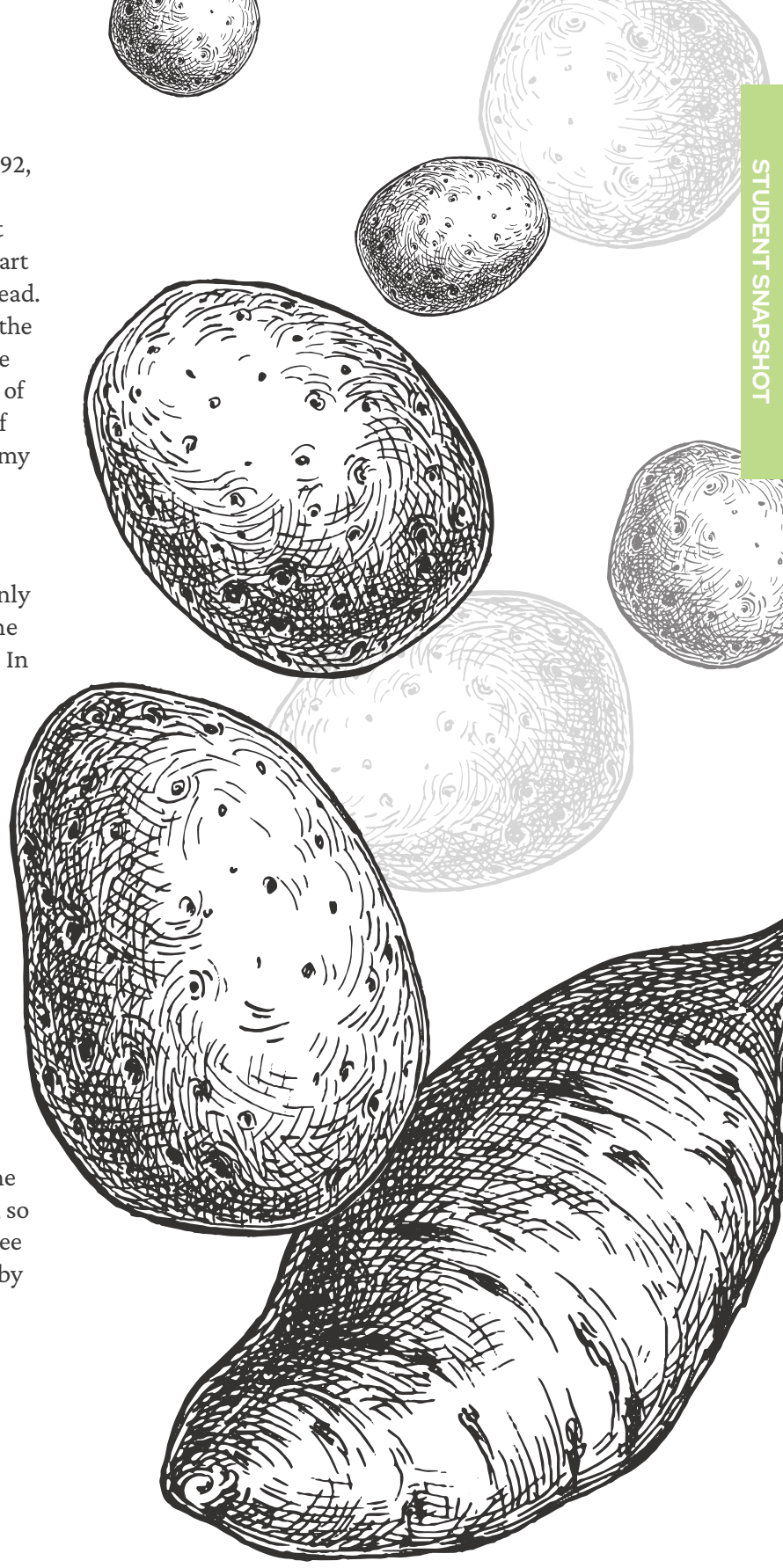
and gangrene, to name a few. The hallucinations are especially notable as it is hypothesized that the witch trials in Europe, as well as the Salem Witch Trials of 1692, was because of the neurological properties of ergotism. Considering that one of the products derived from ergot alkaloids is LSD, it's not out of the realm for people to start seeing apparitional attacks and spectral visions of the dead. Ergot also has a widespread history with famine across the world. Epidemics of ergotism documented in the Middle Ages (500-1500 A.D) have resulted in the deaths of tens of thousands of people. As both a healer and a harbinger of death, fungi could be a powerful tool — or a deadly enemy — during the apocalypse.

Potatoes

One of the most resilient crops today, potatoes not only are a staple food for billions of people but could be the perfect plant to rely on for when the apocalypse hits. In addition to being able to grow in a large variety of environments and climates (even can be grown indoors in minimal lighting environments), these tubers contain various essential vitamins, minerals, amino acids, and fiber. They also require less water and land than most other fruits and vegetables.

When analyzing the history of potatoes, the association they have to the one of the four horsemen- famine- due to the Irish potato famine in the 1800s. Over a million Irish citizens died due to an infection of P. infestans or blight. Potatoes also fueled the race for synthetic pesticides as Colorado potato beetles ravaged potato crops. This led growers in Long Island to start using calcium arsenate and, after World War II, move on to DDT. However, after every new pesticide, the next generation of beetles would develop an immunity, so a strong pesticide would be made. Now today, we can see how that "toxic mill" caused harm in the environment by contaminating waterways and ground soil.

Despite this past, if you're looking for the best plant to grow in a survival shelter, look no further than the potato.



Trivia Category: Earth Fest Events

What do you need to know about this year's Earth Day Trivia? Get the answers from Grace Gooley!

By Laila Smith

Grace Gooley

When did the first Earth Day take place? What's the driest place on Earth? What is Wisconsin's state bird? If you know the answers to these questions you might want to try your hand at Earth Day Trivia, an Earth Fest event hosted by the Nelson Ambassadors! Grace Gooley, an undergraduate student majoring in chemistry and environmental studies, is one of the wonderful ambassadors who have helped plan this year's trivia event.

This spring, Gooley and the other ambassadors are gearing up to host Earth Day Trivia, part of UW–Madison's second annual Earth Fest celebration. "We have several categories covering a variety of topics, but we try to keep most of the questions related to the environment," says Gooley. "It's just a fun thing to do!" With the other ambassadors, Gooley has been working on planning questions, coordinating prizes, and other administrative tasks to prepare for the event. She also hopes to return as the Earth Day Trivia emcee!

Tip: if you want to succeed at this year's Earth Day Trivia, Gooley suggests brushing up on the history of Earth Day!

In addition to trivia, Gooley is also looking forward to the Earth Fest Forum: Climate Courage. To her, "It's such a fun way to celebrate Earth Fest, and I love hearing the guest speakers. Last year, it set such a good atmosphere for the rest of the week!" This year the forum won't happen until midway through the week — however, there will still be plenty of events earlier in the week to build up the Earth Fest spirit!

Another event Gooley enjoyed last year was the hydroponics and aquaponics open house/workshop. At this event, the community was invited to learn more about hydroponics, a soilless farming method where plants are grown on the water, and aquaponics, which explores how fish can aid this process through a symbiotic relationship with the plants. "It was really cool!" says Gooley. "It was super informative, which was one of the reasons why I liked it so much."

While the hydroponics and aquaponics event will not be returning for Earth Fest 2025, one of the groups that hosted the event, Engineers for a Sustainable World, is planning to share a couple of solar projects they've been working on — a solar powered little free library, and a solar powered bee

hotel (they'll even show you how to build a miniature bee hotel to take home!).

Whether you're testing your knowledge with Gooley at Earth Day Trivia, learning about the new solar projects campus has to offer, or exploring one of other events, one thing's for sure — Earth Fest has an event for everyone!

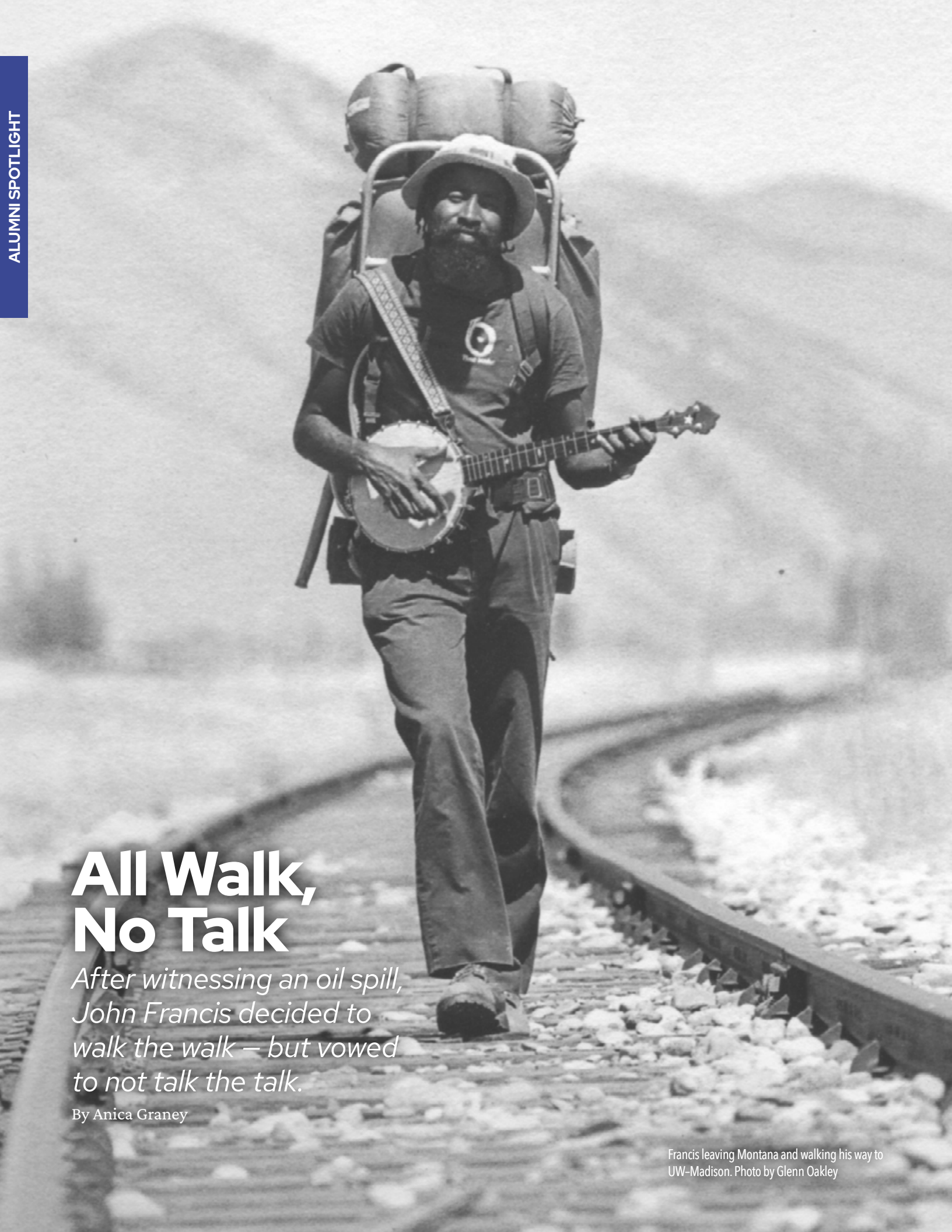
To practice up, check out these questions from last year's Earth Fest trivia list!

2024 Earth Fest Trivia event. Photo courtesy of Grace Gooley

Trivia Questions:

- Where is the driest place on Earth? (Atacama Desert or Antarctica got credit)
- When did the first Earth Day take place? (April 22, 1970)
- What is the Wisconsin state bird? (American robin)
- What's the oldest building on campus? (North Hall)
- What percentage of water on the Earth is fresh water? (3%)
- What 1962 Rachel Carson book addressed the environmental impacts of insecticides? (Silent Spring)
- Which migratory bird was hunted to extinction? (passenger pigeons)
- Naturalist John Muir was the first president of what environmental organization founded in 1892? (Sierra Club)
- What's the longest river in the United States? (Missouri River)
- What percentage of the ocean has been explored? (5%)

Illustration by Laila Smith



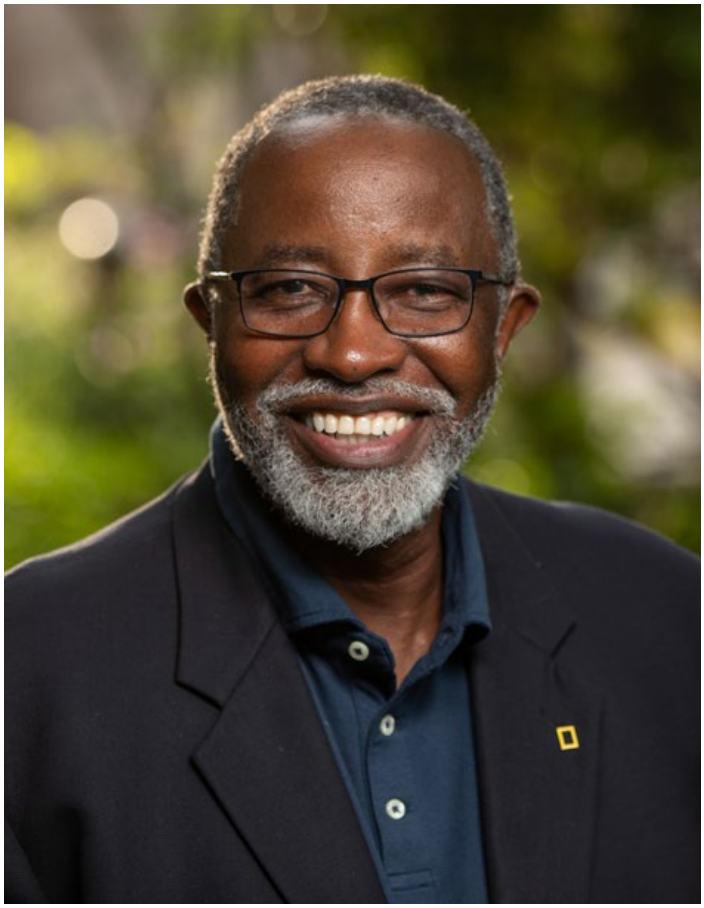
All Walk, No Talk

After witnessing an oil spill, John Francis decided to walk the walk — but vowed to not talk the talk.

By Anica Graney

Francis leaving Montana and walking his way to UW–Madison. Photo by Glenn Oakley

On January 18, 1971, two oil tankers, the *Arizona Standard* and the *Oregon Standard*, collided in the San Francisco Bay. The result was an 800,000-gallon oil spill that polluted the environment, decimated wildlife, and prompted John Francis, then 26-years-old, to make a change in his life. "When I went to visit the oil spill, I never actually saw it, but I could smell it. If you can imagine, an oil tanker with hundreds of thousands of gallons of oil just washing up on the beach," Francis said. "It was horrific."



John Francis

To take a stand against the oil that caused such environmental devastation, Francis vowed to no longer use motor vehicles. That meant no cars, no buses, and no airplanes. He could have biked or used other forms of non-oil dependent forms of transportation, but Francis' preferred method of getting around was walking, often averaging 20 miles per day.

His friends thought he was crazy. They figured that, eventually, Francis would stop walking everywhere. Francis thought the opposite — that others would start walking with him. Both were wrong, and for over two decades, Francis walked everywhere he needed to go. "My friends would drive by and wave," Francis said. "They would stop to talk to me and ask if I wanted a ride, but after a while, they realized that I didn't."

"What I discovered from across the world, was that how we treated each other was how we treated the environment."

— John Francis

During this time, Francis was working as a volunteer fireman — but he couldn't quickly respond to fires on foot. So, he moved to dispatch. Little did he know that he would soon be adding a vow of silence to his ban against motor vehicles. "Not speaking became a way for me to break a habit of making nonsense up and saying things that really weren't true to aggrandize myself in other people's minds," Francis said.

At first, Francis had only planned on not speaking for a day. A day turned into a year as he enjoyed just listening

to others and not feeling compelled to speak back. Every birthday, Francis reassessed his decision, and ultimately, his vow lasted 17 years. Today, Francis meditates to start his day, taking in the silence of the morning. Sometimes, it carries through the whole day. "I try to warn my family, but usually they just figure it out," Francis chuckled.

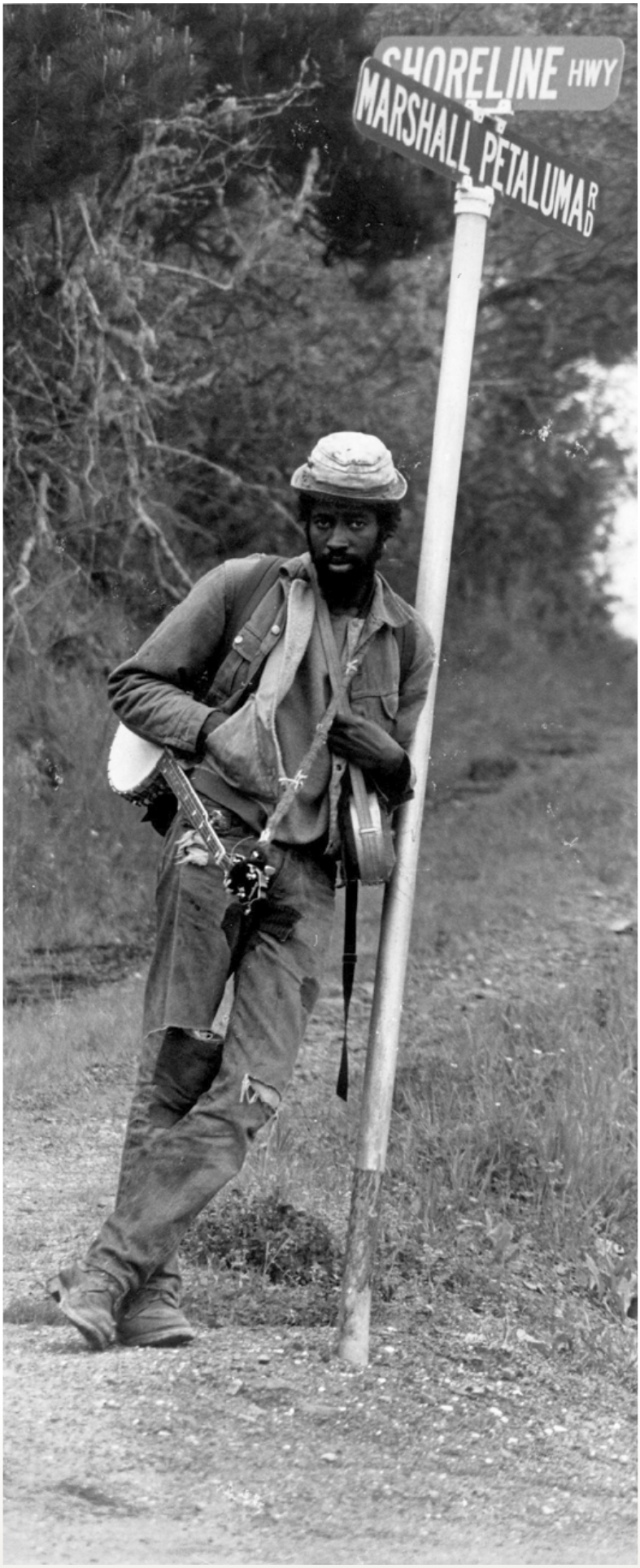
During his silent, walking-only era, Francis completed his undergraduate degree at Southern Oregon University (~350 miles), his master's degree at the University of Montana (~800 miles), and his PhD in land resources at the Nelson Institute for Environmental Studies (~1,400 miles). To travel these long distances, Francis would set out months — sometimes years — in advance, stopping occasionally to play music on his banjo or pick up odd jobs. "Things happened along the way that made walking the most wonderful adventure," he said. "I can't imagine not having done that and missing that part of my life on the planet."

"When I went to visit the oil spill, I never actually saw it, but I could smell it. If you can imagine, an oil tanker with hundreds of thousands of gallons of oil just washing up on the beach. It was horrific."

— John Francis

Walking shoes are typically up for replacement every 500 miles, which meant Francis would have needed a new pair of shoes almost every month. As he had little money at the time and size 13 feet, that wasn't an option. "We had a free box in town, and I would get whatever shoes I could find, but they didn't always fit. My feet suffered terribly because I walked so much," Francis said. Eventually, after Francis gained some recognition, the shoe company Timberland® sponsored him, providing new shoes whenever he needed them, but he still had to carry extra soles with him for repairs.

After making the over 1,400-mile trek to Wisconsin to begin his PhD, Francis met with all his professors to ensure them that he took his vows seriously. "I had to assure them that this wasn't a joke — that I wasn't trying to get out of work because I didn't speak," Francis said. "Actually, the ability to listen not only to my professors but [also] to my colleagues in school was phenomenal for my education in environmental studies."



Left: A self-portrait taken by Francis while on one of his treks, banjo in tow.
Top: Frances smiles for a photograph in California. Photo by Art Rogers.
Bottom:John Francis and Paul Robbins at Rendezvous on the Terrace 2022.
Photo by Ingrid Laas

After completing his degrees, Francis walked to Washington, D.C. (~850 miles), where he joined the United States Coast Guard to aid in their response to the Exxon Valdez disaster in Alaska and contributed to drafting legislation for the Oil Pollution Act of 1990. In 1991, he was appointed United Nations Environmental Program Goodwill Ambassador to the World's Grassroots Communities. Francis also founded Planetwalk, a nonprofit environmental awareness organization, to spread international friendship and raise environmental consciousness through newsletters, films, and other publications.

In 1994, Francis sailed through the Caribbean to begin a walk along the length of South America to continue his pilgrimage across the world. But as he walked through Venezuela, he had a realization: his vow against motor vehicles had become somewhat of a prison, rather than a living, breathing decision. So, Francis hopped a plane home to visit his parents. "They were freaked out, but overjoyed because they thought they would never see me again," Francis said. "I believed that I owed the people who helped me get to this place something more. So, I used motorized vehicles to do work and to get back to where I left off so I could continue walking."

Francis got married and in 2011 returned to Wisconsin, where he served as a visiting associate professor at the University of Wisconsin–Madison. Among his many accomplishments, Francis has written multiple books, was the first ever National Geographic Society Education Fellow, and continues to walk extraordinary distances in the name of environmental consciousness and kindness — most recently beginning a walk the length of Africa (~6,000 miles) at the age of 79 years old. "What I discovered from across the U.S. was that as I was treated with kindness, I flourished," Francis said, reflecting on his time spent walking the planet that all started with an oil spill. "I understood that it's really about kindness. If we are all a part of the environment then how we treat each other is how we treat the environment."

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